KEADBY
NEXT GENERATION
POWER STATION
Hydrogen-enabled flexible power
A collaboration between SSE Thermal and Equinor

The Keadby Next Generation Power Station Project

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The Keadby Next Generation Power Station Development Consent Order [year]

Appendix 13A: Phase 1 Desk Based Assessment Addendum

Annex 5 – Fugro (2023) Keadby 3 Low Carbon Gas Power Station Project, Factual Ground Investigation Report, March 2023

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: Keadby Next Generation Limited

Date: August 2025

Version: V0

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KEADBY
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Appendix J	Monitoring Records	TR	KB	NHA
Appendix K	Geotechnical Laboratory Test Results	TR	SBP	NHA
Appendix L	Geoenvironmental Laboratory Test Results	TR	KB	NHA

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3 March 2023

For the attention of: Ashley White

Dear Ms White,

Keadby 3 Low Carbon Gas Power Station Project

This report presents the factual data for the above project. We thank you for the opportunity to be of service to you during this project. If you require any additional information or clarification, please contact those listed below.

Yours faithfully,

N H Armstrong
Lead Consultant

Frontispiece

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1. Introduction

1.1 Overview

On the instructions and under the supervision of Keadby Generation Limited (the Client), a ground investigation has been carried out by Fugro GeoServices Limited (FGSL) on the site of the proposed Keadby 3 Low Carbon Gas Power Station.

1.2 Proposed Development

It is proposed to construct a low carbon combined cycle gas turbine (CCGT) generating station and its associated infrastructure, road improvements and temporary works including construction haul roads and hardstandings. Flood mitigation measures will require the existing ground level to be raised by between 2 m and 3 m before constructed commences.

1.3 Objectives of the Investigation

The objective of the investigation was to determine the ground, groundwater and ground contamination conditions at the site and to provide information that would assist the Client in the geotechnical and geoenvironmental appraisal of the site.

The scope of the investigation was determined by Client's pre-investigation geotechnical advisor, Fugro and the Client.

1.4 Scope of Work

The final scope of works was modified where necessary to accommodate the site conditions encountered as the investigation progressed, and as the development proposals were updated.

The site work was undertaken between 23 August 2022 and 14 November 2022.

The final works comprised 113 exploratory locations, to a maximum depth below ground level (BGL) of 42.00 m BGL and may be summarised as follows:

- Inspection pitting (IP) at all exploratory locations;
- Cable percussion boring (CP) at 9 exploratory locations;
- Cable percussion boring (CP) with rotary cored (RC) follow-on at 27 exploratory locations;
- Dynamic sampling (windowless sampling) (DS) at 9 exploratory locations;
- Static Cone penetration (CPT) testing at 63 exploratory locations;
- Seismic Cone penetration testing (SCPT) at 3 exploratory locations;
- Cone pressuremeter (CPM) testing at 3 exploratory locations;
- High pressure dilatometer (HPD) tests at 4 locations;
- Plate Loading Tests (PBT) at 16 exploratory locations;
- Dynamic Cone Penetrometer Test (DCP) at 8 exploratory locations;

- Light Weight Deflectometer Tests (LWD) at 8 exploratory locations;
- In situ and down hole testing, including photo-ionisation detection tests, hand vane tests standard penetration tests, TRL dynamic probe tests, and variable head permeability tests:
- Down hole geophysical logging at 3 exploratory locations;
- Geotechnical logging, subsampling and photography;
- Geoenvironmental sampling of soils and groundwater;
- Installation of groundwater monitoring and ground gas monitoring standpipes in 32 exploratory locations
- Land Surveying;
- Long-term monitoring programme of installations post-development.

On completion of the site work, laboratory testing and analysis was carried out on samples of soil, rock and groundwater.

Details of each component of the investigation are given in the body of the report and in the appendices referenced therein.

1.5 Method Statements and Operating Procedures

The Construction Phase Plan (CPP), Environmental Management Plan (EMP), Site Waste Management Plan (SWMP) and Quality Plan (QP), along with their associated risk assessments, method statements and operating procedures set out the specific health, safety, environmental and quality requirements of the project:

- CPP reference;
- EMP reference;
- SWMP reference;
- QP reference.

The CPP, EMP, SWMP and QP are provided as digital data to this report.

Detailed method statements for this work were issued as part of the Risk Assessment Method Statements (RAMS) folder prior to commencement of site activities and were updated as required throughout the project.

1.6 Reporting

A report on ground investigation without geotechnical evaluation has been prepared. The report includes the methods used when undertaking the ground investigation and presents the exploratory location records, photographic records, field and laboratory test records, survey information and location plans. The report has been provided in PDF format. The exploratory location records and the field and laboratory test data have also been provided in AGS (Association of Geotechnical and Geoenvironmental Specialists) 4.0.4 format and the photographs in JPEG format.

The factual data in this report should be used in conjunction with the interpretative report provided seprately. Guidelines on the limitations of the use of the report and the data provided within it are given in Appendix A.

2. The Site Setting

2.1 Site Location and Description

The site is located approximately 1 km west of Keadby, near Scunthorpe, Lincolnshire. The centre of the site may be located by its approximate National Grid reference SE 828 116.

A general location plan is presented in Appendix B.

For the purposes of the investigation the site has been subdivided into three distinct areas: Main Site, Ash Tip, and Access Roads. Main Site explorations generally have a prefix of MS except for one CPT and one DCP location having HR as a prefix and one CPT and one LWD location having BR as a prefix on the southern end of the Main Site. Ash Tip explorations do not have a prefix and are named based on exploration method. The Access Roads site is split into two smaller investigation sites which are located to the southwest and east of the site. One follows the route of an existing site access road, from bridge at the A18 to the bridge over Keadby Canal and to the north of Keadby Canal. Explorations along the existing site access road are prefixed by AR. The second Access Roads site follows the route of a construction road Trent Side to Chapel Lane, then along Bonnyhale Road to the Keadby 3 site. These explorations are prefixed with HR and BR.

At the time of the investigation the Main Site area comprised sensibly level, sometimes hummocky, open land potentially containing inert and industrial waste associated with the former Keadby power station. It is bounded by Keadby Common, Keadby windfarm and agricultural land to the north, open land (Keadby common and agricultural land), and Ash Tip to the west, open farmland to the south and electricity generation infrastructure and construction hardstanding to the east.

Ash Tip area is located within the ash tip of the historical Keadby Power Station Landfill situated immediately to the west of the proposed development site. The ash tip reaches heights of up to 20 m above former ground level and covers an area of about 0.28 km^2.

2.2 Geology

Data provided by the British Geological Survey (BGS) online suggest the site is underlain by Warp (silts and clays). The solid geology comprises Mercia Mudstone Group.

Information provided with the Contract documentation indicates the following soils and rock are present across the site

Table 2.1 Anticipated Geology

Geology	Expected Location	Typical Description
Made Ground	Although not mapped at the site, made ground is expected across the Proposed Development Main Site given the historical phases of	Mixed nature in both Main Site and Ash Tip. Expected to be composed of a mixture of clay/silt, sand, gravel with occasional

Geology	Expected Location	Typical Description
	development that have taken place. The Ash Tip is confirmed Made Ground.	rubble, ash, glass, slag etc. The Ash Tip Site is expected to be dominated by silt and sandy silty with variably abundant clinker/slag. Records on historical landfill composition unavailable. Historical landfill anticipated to comprise approximately 20m of made ground at its thickest locations (above ground).
Warp (artificially induced alluvium)	Across the majority of the Proposed Development Site Potentially Ash Tip Area	Clay and silt.
Cohesive Alluvium	Across the Proposed Development Site. potentially Ash Tip Area	Normally consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel.
Granular Alluvium	Beneath the Cohesive Alluvium. (May potentially be divided into more than one distinctive stratum), potentially Ash Tip Area	Sands, silts and clays, with occasional peat layers.
Mercia Mudstone Group	Across the proposed development site and Ash Tip, beneath the superficial deposits	Mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum widespread. Sandstones are also present. The top of the strata is likely to be weathered.

The University of Sheffield's BRITICE Glacial Map v2.0 suggests the area was previously the site of a morain-dammed north-south trending glacial lake which extended from Northallerton in the north to Cambridge in the South.

3. Method of Investigation – General

3.1 Introduction

The investigation was carried out in general accordance with BS 5930:2015+A1:2020, BS EN ISO 14688–1:2018 and BS EN ISO 14689:2018 and BS 10175:2011+A2:2017 as appropriate.

Location plans, showing the approximate positions of the exploratory locations, provided by the Client are presented in Appendix B.

A Schedule of Exploratory Locations is presented in Appendix C. It sets out which investigation techniques were undertaken at each exploratory location and summarises the survey details, in situ field testing carried out, details of the monitoring installations and reasons for termination of the location before the scheduled depth where applicable.

The geotechnical and geoenvironmental laboratory testing programmes are detailed in Section 9 and Section 10, respectively.

3.2 Underground Hazards

3.2.1 Utilities

PAS 128:2014 compliant underground utility surveys and Survey Category Type B surveys were undertaken at all exploratory locations prior to intrusive works to identify the possible presence of any buried utilities at or near the exploratory locations. The methods used included:

- Ground penetrating radar;
- Cable avoidance tool and signal generator;
- Visual identification of service trenches/scars.

PAS 128:2014 compliant underground utility surveys and Survey Category Type A (verification and positioned by physical identification) surveys were undertaken when an exploratory location was understood to be near a major utility.

If utilities were not identified by the PAS 128:2014 surveys, exploratory locations were initiated with cable avoidance tool (CAT) surveys at depth intervals in conjunction with hand-dug inspection pits to 1.20 m BGL to confirm the absence of buried utilities.

Utilities identified and obstructions encountered are detailed on the relevant exploratory location records in Appendix D.

3.3 Contaminated Site Procedures

The site was designated to be in the British Drilling Association's (BDA, 2008) contaminated land classification yellow (Main Site and Access Roads) and red category (Ash Tip) and appropriate protection measures were undertaken.

"Red zones" were established on the Ash Tip, and decontamination units employed to segregate personnel and equipment. Ground protection and suitable bunds were used in areas where intrusive activities were to be undertaken to avoid contamination of the ground surface and to prevent uncontrolled surface water runoff. Plant and equipment were washed down before demobilising from the exploratory location.

Samples for geoenvironmental laboratory testing were taken as appropriate for the intended analyses.

Suitable personal protective equipment was used to mitigate any exposure risk where the possible presence of asbestos had been highlighted in the preconstruction information or its presence detected during laboratory screening. Personal protective equipment included asbestos rated (type FFP3) masks, or half-combination masks if other contaminants were also likely to be present, disposable overalls (Tyvek suits), disposable gloves and non-laced safety boots.

Personal gas alarms were deployed to monitor the air quality during field works to ensure safe working limits were not exceeded.

3.4 Waste Management

Fugro operates under a Waste Management Policy which abides by relevant current legislation and duty of care and includes the segregation of waste on all sites and appropriate processing and disposal of waste.

The management of waste at the site is detailed in the Site Waste Management Plan.

3.5 Groundwater Observations

During boring, drilling and excavation, attention was given to recording any evidence of water inflow in order that the groundwater level beneath the site could be established. Water levels at breaks in boring were recorded where appropriate.

Where water was added to facilitate penetration of the strata, or to maintain a positive hydrostatic head in the granular strata, this is noted on the exploratory location records. The addition of water during boring or the use of drilling flush may obscure any groundwater strikes.

3.6 Soil Description and Identification

Guidance notes on the exploratory hole location records and soil description and identification are given in Appendix D.

The strata descriptions given in the exploratory location records, unless otherwise noted, are compiled from examination of the disturbed samples, together with the results of any field and laboratory testing.

3.7 Rock Description and Identification

3.7.1 Introduction

Guidance notes on the exploratory hole location records are given in Appendix D.

The strata descriptions given in the exploratory location records, unless otherwise noted, are compiled from examination of the disturbed samples and recovered core, together with the results of any field and laboratory testing.

3.7.2 Core Recovery

Assumed zones of core loss (AZCL) have been identified only where the total core recovery (TCR), for both soil and rock, is less than or equal to 90 %:

- Generally, where an assumed zone of core loss is 0.50 m thick or greater, it is assigned strata boundaries and is reflected in both the strata legend and the fracture index or fracture spacing column on the exploratory location records;
- Zones of core loss less than 0.50 m thick are entered as depth-related remarks within the strata descriptions and are reflected only in the fracture index column on the exploratory location records.

In rock strata only, the solid core recovery (SCR) and rock quality designation (RQD) have been determined using the modified proposal, as given in Norbury et al (1986) that a 'solid cylinder' should be defined as having a full diameter (but not necessarily a full circumference) without discontinuities and should be measured axially along the core. Where the logging engineer assessed that some core from one run was recovered with the core from the next run, the recorded depths have been corrected and the total core recovery (TCR), SCR and RQD have been determined assuming that the core had been recovered from the core run in which it had first been drilled.

Deere et al (1968 and 1989), on the use of RQD in rock classification schemes, advised that pieces of core which are not 'hard and sound' (ISRM 1978) 'should not be counted for the RQD even though they possess the requisite 4 inches (100 mm) length'. Subsequently, 'sound core' was defined as 'any core which is fresh to moderately weathered and which has sufficient strength to resist hand breakage'. This approach to RQD assessment is adopted by some international standards such as ASTM D6032.

3.7.3 Fractures and Discontinuities

Drilling induced fractures are not included on the borehole and discontinuity records and are discounted in the calculation of fracture indices and rock core characteristics given on the exploratory location records; incipient fractures are included on both records but are not included in the calculation of fracture indices and rock core characteristics.

Discontinuities are generally clean unless otherwise stated on the discontinuity records. Aperture width is based on the infill measurements (mm, rounded to whole number) on the discontinuity records. The record will be left blank if infill has not been observed.

Where possible, discontinuities have been classified into bedding fractures (BF), fractures (FR), joints (J) and faults/shear planes (F) and assumed drilling induced (DI) noted.

Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.

3.8 Geotechnical Sampling and Core Subsampling

The sample categories and achievable quality classes are defined in BS EN ISO 22475–1:2021 for each sample/sampler system. Samples were transported directly to the laboratory for examination and testing as scheduled by Fugro with the agreement of the Client. Geotechnical laboratory testing details are given in Section 9.

3.8.1 Disturbed Samples

Disturbed samples were taken at each change in soil type and at regular vertical intervals during boring to identify and give a record of the strata encountered. Disturbed samples of soil were placed in a plastic tub (D) or double-sealed in plastic bulk bags (B/LB).

3.8.2 Undisturbed Samples

In cohesive soils, nominal 100 mm diameter general purpose dynamically driven open tube UT (thin-walled) samples were taken and subsequently sealed to preserve their natural moisture contents.

Immediately after recovery, open tube samples were 'end' logged and sealed with wax to prevent moisture loss. No extrusion of the samples was undertaken on site.

3.8.3 Rotary Core Samples

Intact samples from the recovered core were cut, tightly wrapped in plastic film, aluminium foil and muslin cloth. The samples were then dipped in paraffin wax before being bubble wrapped.

Subsampling from recovered cores was undertaken at the on-site logging facility.

The remaining core was wrapped in plastic liner and sealed in their plastic tubes.

3.9 Geoenvironmental Sampling

Geoenvironmental soil samples were collected at pre-specified intervals as instructed by Fugro. Sampling for environmental chemical analysis was undertaken in accordance with the standards listed below:

- Sampling general: BS EN ISO 22475–1:2021;

- Soils: BS 10175:2011+A2:2017.

The sample volumes and container types used were dictated by the requirements of the chemical testing as set out in the project specification. Containers were provided by the selected environmental testing laboratory and filled as instructed by laboratory guidelines, ensuring minimisation of sample headspace. Geoenvironmental laboratory testing details are given in Section 10.

3.10 Photographic Records

Photographic records of the soil and rock core recovered, are presented in Appendix E. The photographs are also presented as digital data in JPEG format.

3.11 Positioning

The positions of the exploratory locations were set out using the Global Positioning System (GPS) technique.

The ground elevations and grid coordinates of the as-built exploratory locations were determined using Trimble Global Positioning System (GPS) equipment. GPS ellipsoid heights were transformed to orthometric (mean sea level) heights (Ordnance Datum Newlyn).

4. Exploratory Location Types

4.1 Inspection Pitting

All exploratory locations were initiated with hand-dug inspection pits. The inspection pit records are presented in Appendix D and are referenced by their Location ID.

Four inspection pits were terminated on encountering shallow obstructions or as instructed by the Client. These inspection pits are shown on the Schedules of Exploratory Locations in Appendix C.1.

4.2 Cable Percussion Boring

Nine boreholes were advanced using Dando 3000 light cable tool percussion boring rigs. The borehole records are presented in Appendix D and are referenced by their Location ID. A summary of boreholes advanced by light cable tool percussion boring techniques is shown in Appendix C.1, Schedules of Exploratory Locations.

4.3 Cable Percussion Boring with Rotary Cored Follow on

Twenty seven boreholes were initiated using light cable tool percussion boring techniques and then further advanced by rotary coring techniques as shown in Appendix C.1 Schedules of Exploratory Locations. The borehole records are presented in Appendix D and are referenced by their Location ID.

Comacchio MC300, Comacchio MC405, and Fraste multi ML rotary rigs were used on site.

4.4 Dynamic Sampling

Nine dynamic sampling boreholes were advanced using a DS4 sampling rig and the dynamic soil sampling (windowless) system, as shown in Appendix C.1 Schedules of Exploratory Locations. The dynamic sampling borehole records are presented in Appendix D and are referenced by their Location ID.

Sampler penetration was obtained by driving a series of decreasing diameter open sampler tubes by percussion using a drop hammer.

5. In Situ and Field Testing

5.1 Photoionisation Detector Tests

Hand-held photoionisation detectors (PID) were used to give a semi-quantitative indication of the presence of volatile organic compounds at the exploratory locations.

The headspaces within disturbed geoenvironmental soil samples were also screened and PID measurements were recorded. Appendix C.1 Schedules of Exploratory Locations shows the exploratory locations in which PIDs were undertaken. The results are presented on the relevant exploratory location records in Appendix D and the relevant PID equipment calibration reports are presented in Appendix F.

5.2 Standard Penetration Tests

Standard penetration tests (SPT) using a split spoon (S) or a solid 60º cone (C) were carried out in accordance with BS EN ISO 22476–3:2005+A1:2011.

The exploratory locations within which SPTs were undertaken are shown in Appendix C.1 Schedules of Exploratory Locations. The results are presented on the exploratory location records in Appendix D and the relevant SPT equipment calibration reports are presented in Appendix F.

At exploratory locations where blowing sand was encountered, the proposed SPT campaign was temporarily suspended.

5.3 Dynamic Cone Penetrometer Tests

Seven dynamic cone penetrometer (DCP) tests were carried out using a CNS Farnell A2465 dynamic cone penetrometer, which comprised a weight of 8 kg falling 575 mm with a 60° cone having a maximum diameter of 20 mm. The number of blows for the penetration of the probe was recorded relative to ground level.

Equivalent California Bearing Ratio (CBR) values have been calculated using the relationship Log10 (CBR) = 2.48 – 1.057 * Log10 (mm/blow), developed by the Transport Research Laboratory and taken from The Highways Agency Interim Advice Note 73/06 – Design Guidance for Road Pavement Foundations (2009). The testing schedule and results are presented in Appendix F.2.

5.4 Plate Bearing Tests

Incremental plate loading tests were carried to derive California Bearing Ratio (CBR) values out at 16 locations. The tests were undertaken in accordance with BS 1377–9:1990.

The testing schedule and results are presented in Appendix F.3.

5.5 Light Weight Deflectometer Tests

Light Weight Deflectometer Tests were carried out to derive California Bearing Ratio (CBR) values at 8 exploratory locations. The tests were undertaken in accordance with BS 1377-9:1990.

The testing schedule and results are presented in Appendix F.4.

5.6 Cone Penetration Tests

The exploratory locations in which cone penetration tests (CPTs) were undertaken are shown in Appendix G.2 Schedule of Cone Penetration Tests. The tests were carried out using Fugro's GB17 truck and EU-115 track-truck.

A schedule of CPTs undertaken, UKAS accreditation schedules and equipment calibration certificates are presented in Appendix G.3. Guidance notes on the techniques and equipment used are also presented in Appendix G.

5.6.1 Piezocone Testing

The results of the piezocone penetration tests performed at this site are presented in Appendix G.4.

- Plot 1 shows measured data including cone resistance (q_c), sleeve friction (f_s) pore-water pressure (u_2) and slope data in x and y directions. Derived values of friction ratio (R_f) and assumed hydrostatic pressure (u_0) are also presented;
- Plot 2 shows derived data including net cone resistance (q_n), pore pressure ratio (B_q) and friction ratio (R_f). The Soil Behaviour Type (SBT) based on Robertson (2009) is presented together with a manual assessment of the estimated soil type (see G.1.1.4 Introduction to Basic Interpretation of Cone Penetration Tests for key);
- Plot 3: Derived Parameter Data: cone resistance, friction ratio, density index and undrained shear strength;
- Plot 4: Derived Parameter Data: cone resistance, friction ratio, friction angle, shear modulus (G_{max}), SPT N_{60} and coefficient of volume compressibility.

5.6.2 Measured and Derived Parameters

Methods and equations used to calculate measured and derived parameters and estimated soil type are given in Appendix G.1. Water level has been assumed at 1.00 m below ground level for these calculations. A layer unit weights o 19 kN/m^3 has also been assumed.

It should be noted that parameters derived from cone penetration test data are approximate and the estimated soil types have not been adjusted to account for these derived parameters; correlation should be made with other available information, for example, intrusive works and laboratory testing on samples.

5.7 Seismic Cone Penetration Testing

Seismic Cone Penetration Tests (SCPT) were carried out at 3 positions using the CPT truck. The seismic cone measures the standard cone parameters as well as travel time of seismic waves created at the ground surface. Seismic data were acquired using a Fugro SECAS recording system with the following key parameters presented in Table 5.1:

Table 5.1: Seismic Data – Recording Parameters

Parameter	Description
Recording system	Fugro SECAS system
Geophone(s)	1 × triaxial cone mounted
Measurement axes	3 per geophone (1 × V, 2 × H)
Measurement interval	1.0 m
Record length	200 ms
Sample interval	100 µs

The results of the SCPTs are presented as two profiles for each test location in Appendix F. The first profile shows the Interval S-wave velocity values against test depths. The second profile plots the shear modulus values against test depths. For comparison purposes, relevant cone resistance profiles are shown on each of these plots.

5.8 Variable Head Permeability Tests

The exploratory positions in which variable head permeability tests were undertaken are shown in Appendix C.1.1 Schedule of Exploratory Locations. The results of the variable head permeability tests are presented in Appendix F and are referenced by Location ID and the test number.

The tests were undertaken in accordance with BS EN ISO 22282-2:2012. Estimates of the coefficient of permeability have been made adopting the intake factors stated in Al-Dhahir and Morgernstern's paper on intake factors for cylindrical piezometer tips (1969).

The test results should be used with an awareness of the various factors that may have affected the data. Such determinations in boreholes test only a small volume of soil which may have been disturbed by the boring/drilling process and the test sections are also prone to silting up during variable head tests. Standing water levels have been assumed from readings taken before the test was started or from later monitored water levels within installations, or within the borehole during shift changes. It should be noted that the permeability value of the soil mass as a whole may be significantly different from the values derived from these tests.

5.9 Cone Pressuremeter Tests

The exploratory locations in which cone pressuremeter tests were undertaken are shown in Appendix C.1 Schedules of Exploratory Locations.

Cone pressuremeter (CPM) tests were carried out at 3 of the CPT locations at depths determined by Fugro. The CPM test equipment comprises an electric piezocone which is connected to a pressuremeter behind the cone. Full details of the instrument are given on the datasheet in Appendix F.

The results of the tests are presented in Appendix F, together with the test method and records of equipment calibration.

5.10 High Pressure Dilatometer Tests

5.10.1 General

Nineteen high pressure dilatometer tests were undertaken in four of the boreholes for ground stiffness analyses. The tests are summarised in Appendix C.1 Schedules of Exploratory Locations. The results are presented in Appendix H.

The tests were carried out using 95 mm Cambridge High Pressure Dilatometer (HPD).

The HPD testing is generally undertaken in pockets of 2 m to 3 m length with a diameter between 98 mm and 101 mm.

The methodology is given in Appendix H preceded by the equipment datasheets and calibration certificates of the equipment.

The test data were analysed by Fugro and were reviewed and endorsed by Cambridge Insitu Ltd., who developed the equipment, the software, and the testing and analytical techniques.

5.10.2 Data Processing

The analytical methods are described in Appendix H and the results are also provided in Appendix H.

5.10.3 Commentary on Results

The initial stress state results, test strength results, linear interpretation of unload/reload cycles, and the non-linear interpretation of unload/reload cycles are summarised in Appendix H.

5.11 Borehole Geophysical Logging

Geophysical logging operations were carried out at three exploratory locations using the tools listed in table 5.2.

Table 5.2: Wireline Geophysics Logging Parameter Table and Glossary

Logging Method	Tol Mnemonic	Parameter	Unit	Abbreviation on Plot
Three Arm Caliper	CAL 3	Borehole Diameter	mm	3 Arm Caliper

Logging Method	Tol Mnemonic	Parameter	Unit	Abbreviation on Plot
P&S Suspension Logger	PSSL	P-wave velocity	m/s	Vp
		S-wave Velocity	m/s	Vs
		Poisson`s Ratio	None	Poisson`s Ratio

The key purpose of these borehole seismic measurements was to determine in situ compression (P) and shear (S) wave velocity data as a function of depth. Each tool logged from the bottom of the borehole up to bottom of the casing shoe. During the P & S logging shots were taken every 0.50 m within the open hole section of each borehole. Logging of MS-BH04 was aborted due to hole collapse.

Table 5.3 summarises details of the logging carried out at each exploratory location.

Table 5.3: Summary table of wireline borehole locations and depths logged

BH ID	Logging date	Casing shoe depth (m BGL)	CAL3 [m BGL]	PSL [m BGL]		
			From	To	From	To
MS-BH10	27-10-2022	16.50	39.31	14.00	36.50	17.00
MS-BH12	14-10-2022	15.00	41.50	13.00	39.50	15.50
MS-BH13	28-10-2022	4.40	38.96	13.00	37.00	15.00

Detailed descriptions of the methodologies used are given in Appendix I Equipment datasheets and calibration certificate are provided in Appendix I.1.2 and results of the geophysical surveys are presented in Appendix I.1.3.

6. Installations and Instrumentation

6.1 Overview

A summary of installations is set out in Table 6.1:

Table 6.1: Summary of Installations

Installation Type	Installation Diameter [mm]	Number of Installations	Remarks
Slotted standpipe	50	34	
Slotted standpipe with gas tap	50	4	

Summary details of the installations are provided in Appendix C.1.1 Schedule of Exploratory Locations and on the relevant exploratory location records in Appendix D.

7. Monitoring and Sampling

7.1 Groundwater Monitoring

Ground water level observations were made using:

- Manual reading using water level dip tape;
- Interface probe to record presence of light non aqueous phase liquid and dense non aqueous phase liquid (LNAPL/DNAPL).

7.1.1 Manual reading using water level dip tape

Observations of the ground water levels in the installations were made on 7 occasions after the fieldwork period using a water level dip tape. The are reported to datum and given in Appendix J.2.

7.1.2 Interface probe

As free product (LNAPL/DNAPL) was suspected in groundwater monitoring installations, an interface probe was used to identify the depth and depth range of any product. As none was detected, no samples of LNAPL product were collected.

7.2 Groundwater Sampling

Groundwater samples were collected from the standpipes and monitoring points as specified by the Client and sent to the laboratory for analysis.

The groundwater samples were obtained using low flow methods, with electrochemical tests measured to establish stability. Once in situ parameters stabilised, water samples were collected from each installation. The records are presented in Appendix J.4.

All samples were despatched under Chain of Custody to the testing laboratory within 24 hours of sampling.

The procedures adopted are described in the standard protocols given in Appendix J.1.1.

The results are presented in Appendix L.4.

7.3 Ground Gas Monitoring

Observations of the gas concentrations and flow rate in the installations are to be made on 3 occasions after the fieldwork period. At the time of issue of this Report, only one round had been completed.

Gas concentrations and flow rate were measured using GA5000 and the results are provided in Appendix J.3. Gas monitoring was undertaken prior to any other groundwater monitoring or sampling.

The procedures adopted are described in the standard protocols given in Appendix J.1.1.

7.4 Surface water sampling

Surface water samples were collected on two occasions after the fieldwork period from locations specified by the Client and sent to the ALS laboratory for analysis. At the time of this writing this report, the second round results were not available.

All samples were despatched under Chain of Custody to the testing laboratory within 24 hours of sampling.

The procedures adopted are as per BS ISO 5667–6:2016+A11:2020.

The results are presented in Appendix L.4.

8. Backfilling and Reinstatement of Exploratory Locations

8.1 Backfilling

All exploratory locations were backfilled, except for the CPT positions.

The inspection pits were backfilled with their arisings.

The trial pits were backfilled with material arisings, compacted in suitable layers using the excavator bucket.

Exploratory locations which did not require installations were backfilled with Mikolit™ bentonite pellets

Exploratory locations with installations were backfilled as shown on the exploratory location records in Appendix D.

8.2 Reinstatement

All exploratory locations without installation were reinstated to the requirements of the Client.

All monitoring installations were completed with headworks chambers having a drainpipe into the surrounding ground and lockable flush or raised covers.

9. Geotechnical Laboratory Testing

9.1 Overview

The geotechnical soil and rock laboratory testing programme was determined by Fugro in consultation with the Client and carried out at the following laboratories:

- Fugro GeoServices Limited (UKAS 1483);
- Derwentside Environmental Testing Services Limited (UKAS 2139);

The laboratories' UKAS accreditation certificates and relevant in-house geotechnical laboratory test procedures, General Notes on Laboratory Testing and a schedule of geotechnical laboratory test notices/clarifications are presented in Appendix K.

9.2 Summary of Geotechnical Laboratory Testing

The type and number of geotechnical laboratory tests that were completed are summarised in Table 9.1.

The geotechnical laboratory test results are presented in Appendix K.

Table 9.1: Laboratory Testing Method Standards and Statements

Laboratory Tests	Laboratory Test Method(s)	Number of Tests Scheduled	Number of Tests Reported	Laboratory Reference
Classification				
Moisture content	BS 1377-2:1990 BS EN ISO 17892-1:2014	129	90	
Liquid limit, plastic limit, plasticity index	BS 1377-2:1990 BS EN ISO 17892-12:2018	101	93	
Linear shrinkage	BS 1377-2:1990	3	3	
Density by linear measurement	BS 1377-2:1990 BS EN ISO 17892-2:2014	6	5	
Particle size distribution including	BS 1377-2:1990 BS EN ISO 17892-4:2016	161	147	
Sedimentation by pipette	BS 1377-2:1990 BS EN ISO 17892-4:2016	120	92	
Shear Strength (Total Stress)				
Undrained shear strength of a single 100 mm diameter specimen in triaxial compression without the	BS 1377-7:1990 BS EN ISO 17892-8:2018	**3**	**2**	

Laboratory Tests	Laboratory Test Method(s)	Number of Tests Scheduled	Number of Tests Reported	Laboratory Reference
measurement of pore pressure				
Shear strength of a set of three 60 mm x 60 mm square specimens by direct shear	BS 1377-7:1990	**3**	**2**	
Chemical and Electrochemical				
Organic matter content *	Lab in-house method	19	19	
Mass loss on ignition *	Lab in-house method	3	3	
BRE SD1 A	Lab in-house method	7	7	
BRE SD1 B	Lab in-house method	5	5	
BRE SD1 C	Lab in-house method	64	64	
Compaction related				
Dry density/moisture content relationship using 2.5 kg rammer (5 stages inclusive)	BS 1377-4:1990	16	8	
California Bearing Ratio on recompacted disturbed sample	BS 1377-4:1990	4	0	
Compressibility, Permeability and Durability				
One-dimensional consolidation properties/Incremental loading oedometer test	BS 1377-5:1990 BS EN ISO 17892-5:2017	7	7	
Rock/Aggregate Testing				
Natural water content of rock sample	ISRM Suggested Methods 1974-2006.	72	72	
Uniaxial compressive strength	ISRM Suggested Methods 1974-2006. End preparation to ASTM D4543-19.	73	58	
Measurement of point load strength index of rock specimen	ISRM Suggested Methods 1974-2006	386	380	

Notes
All preceding Laboratory Tests listed comprise a single test of a single specimen only, unless explicitly stated otherwise in the description.
* = Specified test is not carried out by FGSL; subcontracted to third party laboratory

9.3 Asbestos Screening

For health and safety purposes, asbestos screening was carried out prior to geotechnical testing of designated Made Ground material.

Asbestos was detected in 5 samples and the scheduled geotechnical testing was cancelled as summarized in Appendix K.3.

9.4 Quality of Results

In general, the results of the geotechnical laboratory tests are considered good quality and, except for Made Ground that is inherently variable, are considered to be appropriate for the soils and rock that were tested.

10. Geoenvironmental Laboratory Testing

10.1 Overview

The geoenvironmental laboratory testing programme was determined and scheduled by Fugro and undertaken at the following laboratory:

- ALS Life Sciences Limited (UKAS 1291);

The laboratories' UKAS accreditation certificates are presented in Appendix L. Testing to MCERTS is shown on the certificates where relevant.

10.2 Summary of Geoenvironmental Laboratory Testing

Analytical testing suites specific to the project, together with guidance notes on geoenvironmental testing, are detailed in Appendix L. The number of analytical testing suites undertaken are listed in Table 10.1 below.

Table 10.1: Summary of Geoenvironmental Laboratory Tests Undertaken (Sites A and B)

Analytical Suite/Group	Number of Analyses
Soil Suite E (General)	119
Soil Suite F (TPH CWG)	20
Soil Suite G (SVOC/VOC)	14
Soil Suite H (Pesticides/Herbicides)	14
Soil Suite I (Asbestos screen)	86
Asbestos Quantification	3
Soil Suite J (PCBs)	6
Leachate Suite K	18
Groundwater Suite L (General) (Round 1 only)	30
Groundwater Suite M (TPH CWG) (Round 1 only)	23
Groundwater Suite N (SVOC/VOC) (Round 1 only)	14
Groundwater Suite O (Pesticides/Herbicides) (Round 1 only)	7
Groundwater Suite P (PCBs) (Round 1 only)	3

Appendix L.3.1 (Schedule of Geoenvironmental Laboratory Soil Testing) correlates the chain of custody references, relevant exploratory locations, the laboratory certificates of analysis references and, if required in the specification, trip blanks and duplicate samples.

The results are given in ALS certificate of analysis in Appendix L. These results include details of any deviating samples and the reasons for any deviations.

10.3 Quality of Results

In general, the results of the geoenvironmental laboratory tests are considered good quality.

Laboratory certificates of analysis may contain one or more deviating tests or tests with clarifications. The laboratory certificates of analysis should be referred to for details of the specific samples or analytes affected and the reason for deviation/clarification.

11. Digital Data

Digital data to accompany the information presented within this report are listed in Table 11.1 below.

Table 11.1: Digital Data

Content	Data Format	File Reference	Remarks
Exploratory Hole Records, Field Test and Laboratory Test Data, and CPT records	Association of Geotechnical Specialists (AGS) Version 4.0	xxxxx.ags	Accompanying this report.
Core Photographs	JPEG	(various)	Provided via Fugro Gaia Books.
Water Level Monitoring – Diver Data (raw data)	Excel	(various)	Provided via .
Borehole Geophysics Results	Log ASCII Standard (LAS)	xxx.zip	Provided via Fugro Gaia Books.
	Excel	xxx.zip	
HPD (raw data)	(various)	(various)	Provided via Fugro Gaia Books
Geotechnical Laboratory Test Data	Excel	(various)	Provided via Fugro Gaia Books
Geotechnical Chemical Laboratory Test Data	Excel	(various)	Provided via Fugro Gaia Books
Geoenvironmental Laboratory Test Data	Excel	(various)	Provided via Fugro Gaia Books

Notes:
Fugro Gaia Books – https://fugro.sharepoint.com/sites/GBLand/GaiaBooks/StdPjcts/SitePages/Home.aspx

12. References

12.1 Ground Investigation References

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Appendix A

Guidelines on Use of Report

Appendix A Contents

A.1 Limitations and Use of Data

A.1 Limitations and Use of Data

The scope of the investigation was determined by Keadby Generation Limited for the particular project requirements set out in the Specification for the Contract. A factual report only was required, without interpretation of the data from the present investigation or consideration of data from other sources, except where noted. The data presented in this report reflects the site conditions encountered at the time the investigation was performed. The investigation has disclosed evidence of conditions at point locations across the site which provides information about discrete volumes of soil or rock. Accordingly, there may be ground conditions at the site which may not have been revealed by the investigation, and the passage of time may give rise to changes in the conditions encountered. Any interpolation or extrapolation of strata from the exploratory holes is subject to the interpretation of the reader. Any cross sections or plots are generalised by necessity and have been based on information found at the exploratory locations and depths sampled and tested. The records should be read in conjunction with the Guidance Notes in Appendix D. Particular attention is drawn to the comments made on groundwater and interpretation which are given in these notes.

The investigation has been carried out by Fugro GeoServices Limited and the report has been prepared for the sole internal use of Keadby Generation Limited. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Fugro GeoServices Limited. If an unauthorised third party comes into possession of this report they rely upon it at their peril and the authors owe them no duty of care and skill.

It is Fugro GeoServices Limited's understanding that this report is to be used for the purposes as described in the Specification for the investigation and as summarised in the text of the report. Should the purpose for which the report is used or the proposed use of the site change, this report may no longer be valid. Any further use or reliance upon the report in these circumstances by Keadby Generation Limited without further review by and advice from Fugro GeoServices Limited shall be at their sole and own risk.

Appendix B

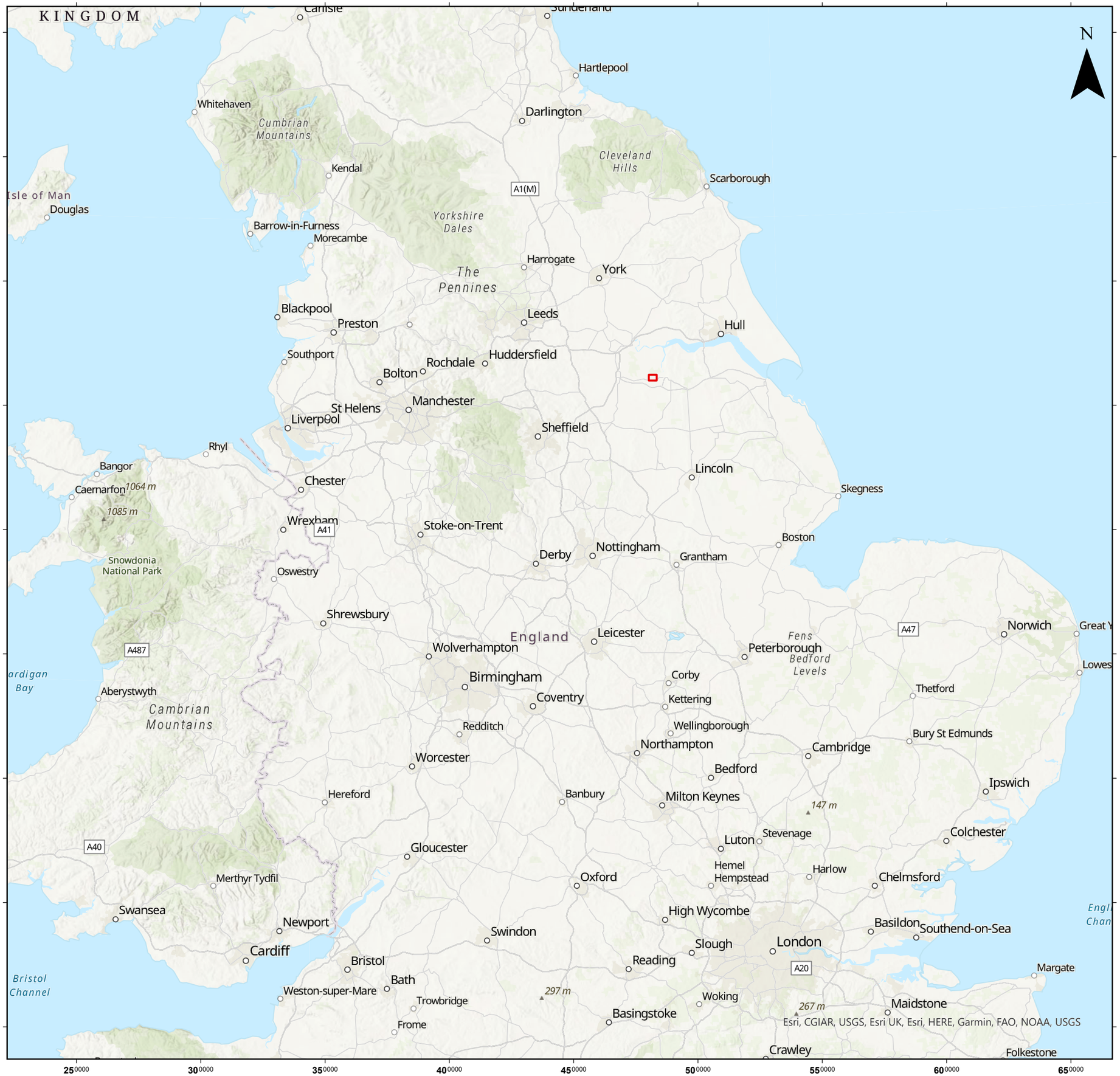
Drawings

Appendix B Contents

B.1 Location Plans

B.1 Location Plans

Title	Reference
Project Location Map	B.1.0
Exploration Location Map - General	B.1.1
Exploration Location Map - Main Site	B.1.2
Exploration Location Map - Ash Tip	B.1.3
Exploration Location Map - Access Road	B.1.4
Exploration Location Map - Bonnyhale Road & Haulage Road	B.1.5



Location

Scale: 1:500,000

0 5 10 20 30 40 Kilometers

Legend

Project Area

Rev.	Date	Description	Initials
0	06/12/2022	Draft Issue	LGD
1	21/02/2023	Final Issue	LGD

Scale: 1:1,500,000

0 15 30 60 90 120 Kilometers

Coordinate System

British National Grid

Client

SSE Generation Limited
Keadby Power Station Trentside
Keadby
Scunthorpe
DN17

Consultant

Fugro GeoServices Limited
Fugro House, Hithercroft Road, Wallingford,
Oxfordshire, OX10 9RB, United Kingdom
Registered in England No. 1284352
VAT No. GB 133 1704 09
www.fugro.com

Project Title

Keadby 3 Low Carbon Gas Power Station Project

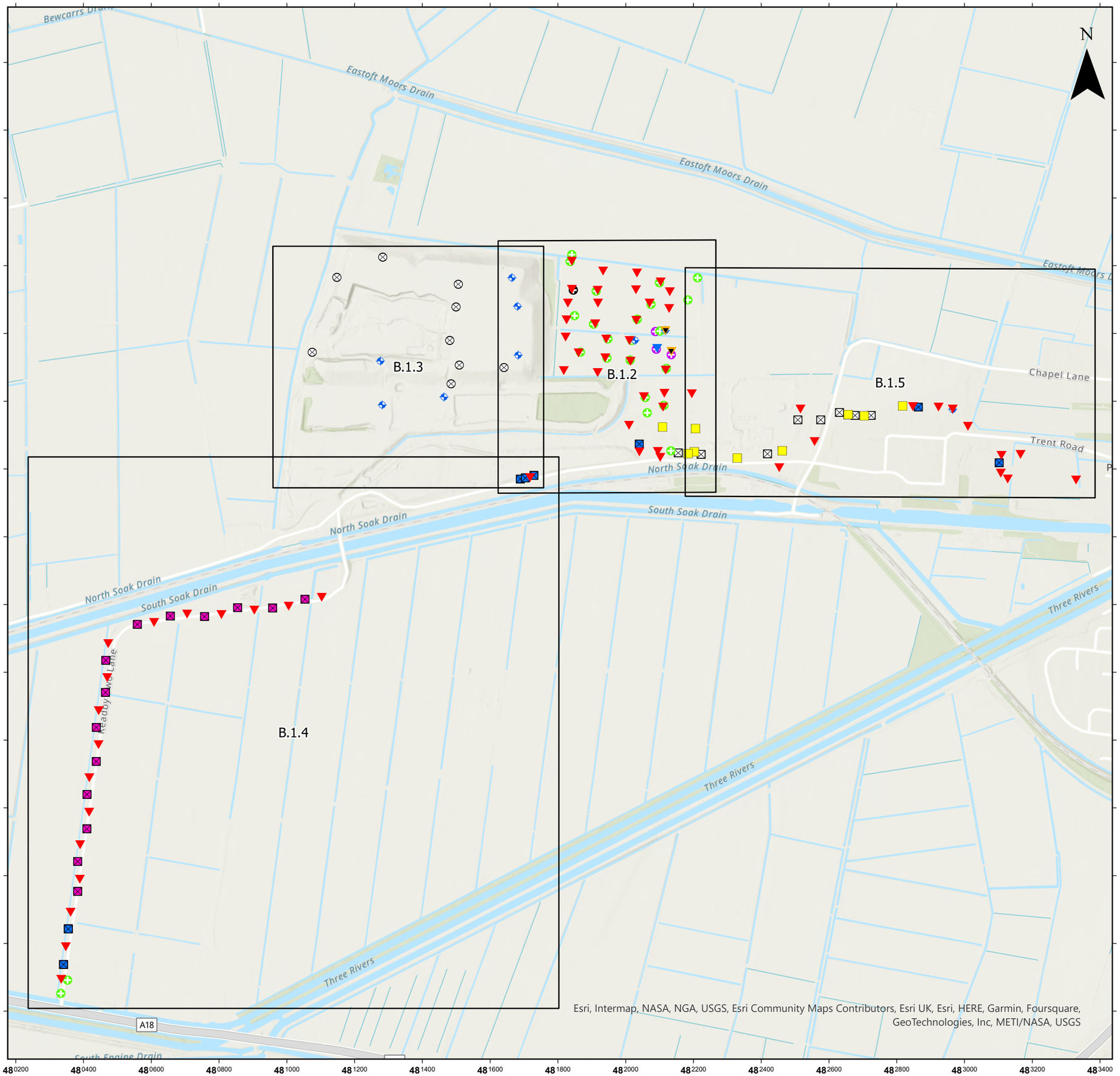
Figure Title

Project Location Plan

Figure Number

B.1.0

Drawn by	Checked by	Issued On	Project no.	Sheet Size	Rev.
LGD	SBP	21/02/2023	F212561	A3	1



Location

Scale: 1:500,000

0 5 10 20 30 40 Kilometers

Legend

- Project Area
- Factual Report Areas

Exploration Type

- Cable Percussion Borehole
- Cable Percussion with Rotary Follow On
- Cable Percussion with Rotary Follow On and High Pressure Dilatometer Test
- Cable Percussion with Rotary Follow On, High Pressure Dilatometer Test and Borehole Geophysical Logging
- Inspection Pit
- Window Sampling
- Cone Penetration Test
- Cone Pressuremeter Test
- Seismic Cone Penetration and Cone Pressuremeter Test
- Seismic Cone Penetration Test
- Dynamic Cone Penetrometer Test
- Light Weight Deflectometer Test
- Plate Bearing Test

Note: Borehole and CPT locations include an Inspection Pit.

Rev.	Date	Description	Initials
0	06/12/2022	Draft Issue	LGD
1	21/02/2023	Final Issue	LGD

Scale: 1:11,000

0 125 250 500 750 1,000 Meters

Coordinate System

British National Grid

Client

SSE Generation Limited
Keadby Power Station Trentside
Keadby
Scunthorpe
DN17

Consultant

Fugro GeoServices Limited
Fugro House, Hithercroft Road, Wallingford,
Oxfordshire, OX10 9RB, United Kingdom
Registered in England No. 1284352
VAT No. GB 133 1704 09
www.fugro.com

Project Title

Keadby 3 Low Carbon Gas Power Station Project

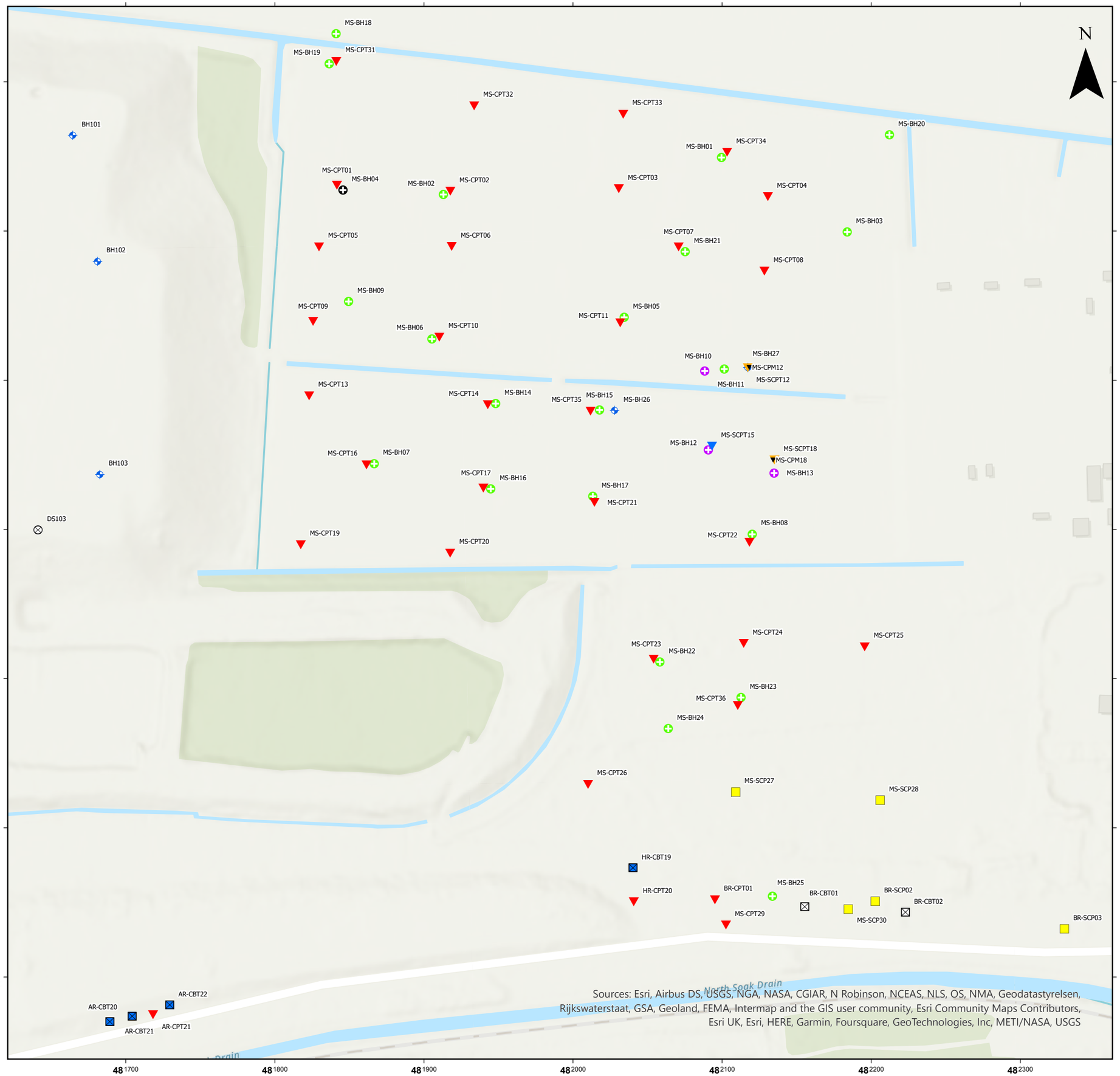
Figure Title

Exploration Location Map - General

Figure Number

B.1.1

Drawn by	Checked by	Issued On	Project no.	Sheet Size	Rev.
LGD	SBP	21/02/2023	F212561	A3	1



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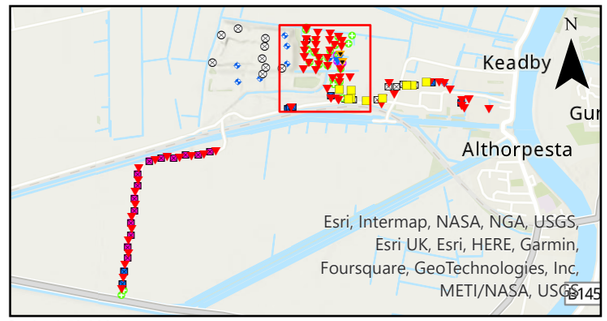

Scale: 1:50,000

0 0.5 1 2 3 4 Kilometers

Legend

- Main Site

Exploration Type

- Cable Percussion Borehole
- Cable Percussion with Rotary Follow On
- Cable Percussion with Rotary Follow On and High Pressure Dilatometer Test
- Cable Percussion with Rotary Follow On, High Pressure Dilatometer Test and Borehole Geophysical Logging
- Inspection Pit
- Window Sampling
- Cone Penetration Test
- Cone Pressuremeter Test
- Seismic Cone Penetration and Cone Pressuremeter Test
- Seismic Cone Penetration Test
- Dynamic Cone Penetrometer Test
- Light Weight Deflectometer Test
- Plate Bearing Test

Note: Borehole and CPT locations include an Inspection Pit.

Rev.	Date	Description	Initials
0	06/12/2022	Draft Issue	LGD
1	21/02/2023	Final Issue	LGD

Scale: 1:2,500

0 25 50 100 150 200 Meters

Coordinate System

British National Grid

Client

SSE Generation Limited
Keadby Power Station Trentside
Keadby
Scunthorpe
DN17

Consultant

Fugro GeoServices Limited
Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB, United Kingdom
Registered in England No. 1284352
VAT No. GB 133 1704 09
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Project Title

Keadby 3 Low Carbon Gas Power Station Project

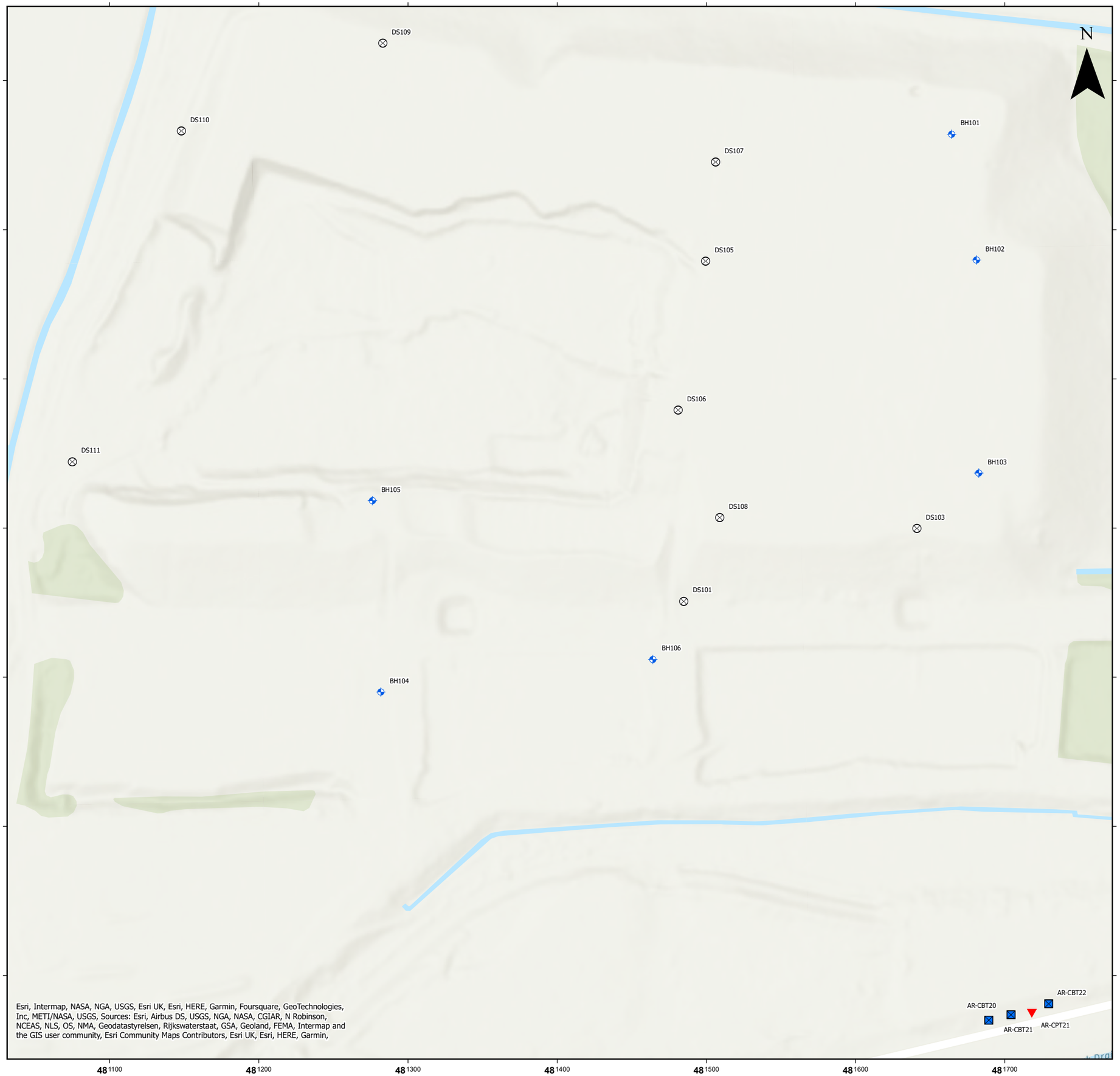
Figure Title

Exploration Location Map - Main Site

Figure Number

B.1.2

Drawn by	Checked by	Issued On	Project no.	Sheet Size	Rev.
LGD	SBP	21/02/2023	F212561	A3	1



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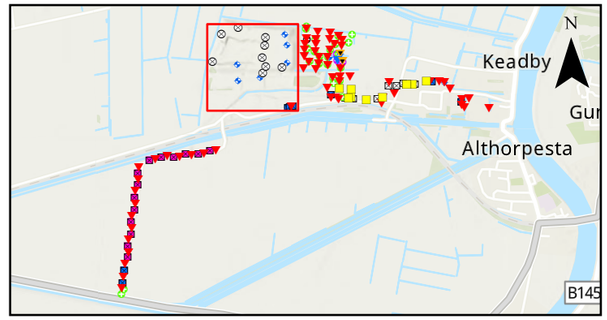

Scale: 1:50,000

0 0.5 1 2 3 4 Kilometers

Legend

Ash Tip

Exploration Type

- Cable Percussion Borehole
- Cable Percussion with Rotary Follow On
- Cable Percussion with Rotary Follow On and High Pressure Dilatometer Test
- Cable Percussion with Rotary Follow On, High Pressure Dilatometer Test and Borehole Geophysical Logging
- Inspection Pit
- Window Sampling
- Cone Penetration Test
- Cone Pressuremeter Test
- Seismic Cone Penetration and Cone Pressuremeter Test
- Seismic Cone Penetration Test
- Dynamic Cone Penetrometer Test
- Light Weight Deflectometer Test
- Plate Bearing Test

Note: Borehole and CPT locations include an Inspection Pit.

Rev.	Date	Description	Initials
0	06/12/2023	Draft Issue	LGD
1	21/02/2023	Final Issue	LGD

Scale: 1:2,500

0 25 50 100 150 200 Meters

Coordinate System

British National Grid

Client

SSE Generation Limited
Keadby Power Station Trentside
Keadby
Scunthorpe
BN17

Consultant

Fugro GeoServices Limited
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Project Title

Keadby 3 Low Carbon Gas Power Station Project

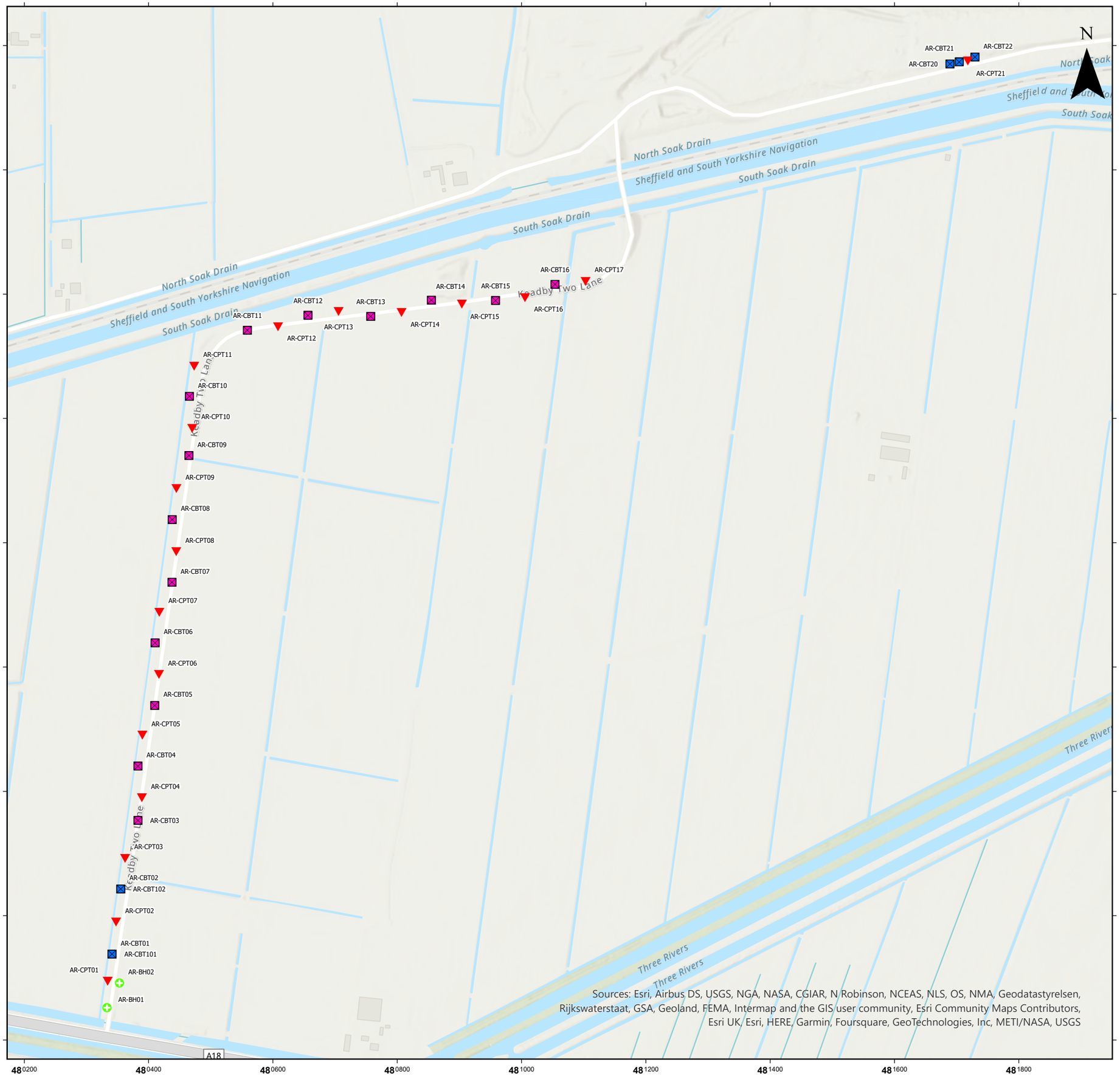
Figure Title

Exploration Location Map - Ash Tip

Figure Number

B.1.3

Drawn by	Checked by	Issued On	Project no.	Sheet Size	Rev.
LGD	SBP	21/02/2023	F212561	A3	1



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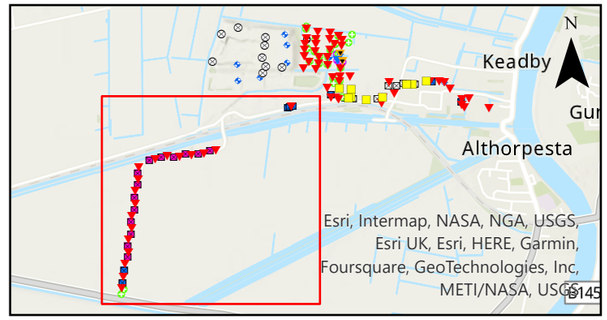

Scale: 1:50,000

0 0.5 1 2 3 4 Kilometers

Legend

- Access Road

Exploration Type

- Cable Percussion Borehole
- Cable Percussion with Rotary Follow On
- Cable Percussion with Rotary Follow On and High Pressure Dilatometer Test
- Cable Percussion with Rotary Follow On, High Pressure Dilatometer Test and Borehole Geophysical Logging
- Inspection Pit
- Window Sampling
- Cone Penetration Test
- Cone Pressuremeter Test
- Seismic Cone Penetration and Cone Pressuremeter Test
- Seismic Cone Penetration Test
- Dynamic Cone Penetrometer Test
- Light Weight Deflectometer Test
- Plate Bearing Test

Note: Borehole and CPT locations include an Inspection Pit.

Rev.	Date	Description	Initials
0	06/12/2022	Draft Issue	LGD
1	21/02/2023	Final Issue	LGD

Scale: 1:6,000

0 50 100 200 300 400 Meters

Coordinate System

British National Grid

Client

SSE Generation Limited
Keadby Power Station Trentside
Keadby
Scunthorpe
DN17

Consultant

Fugro GeoServices Limited
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Registered in England No. 1284352
VAT No. GB 133 1704 09
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Project Title

Keadby 3 Low Carbon Gas Power Station Project

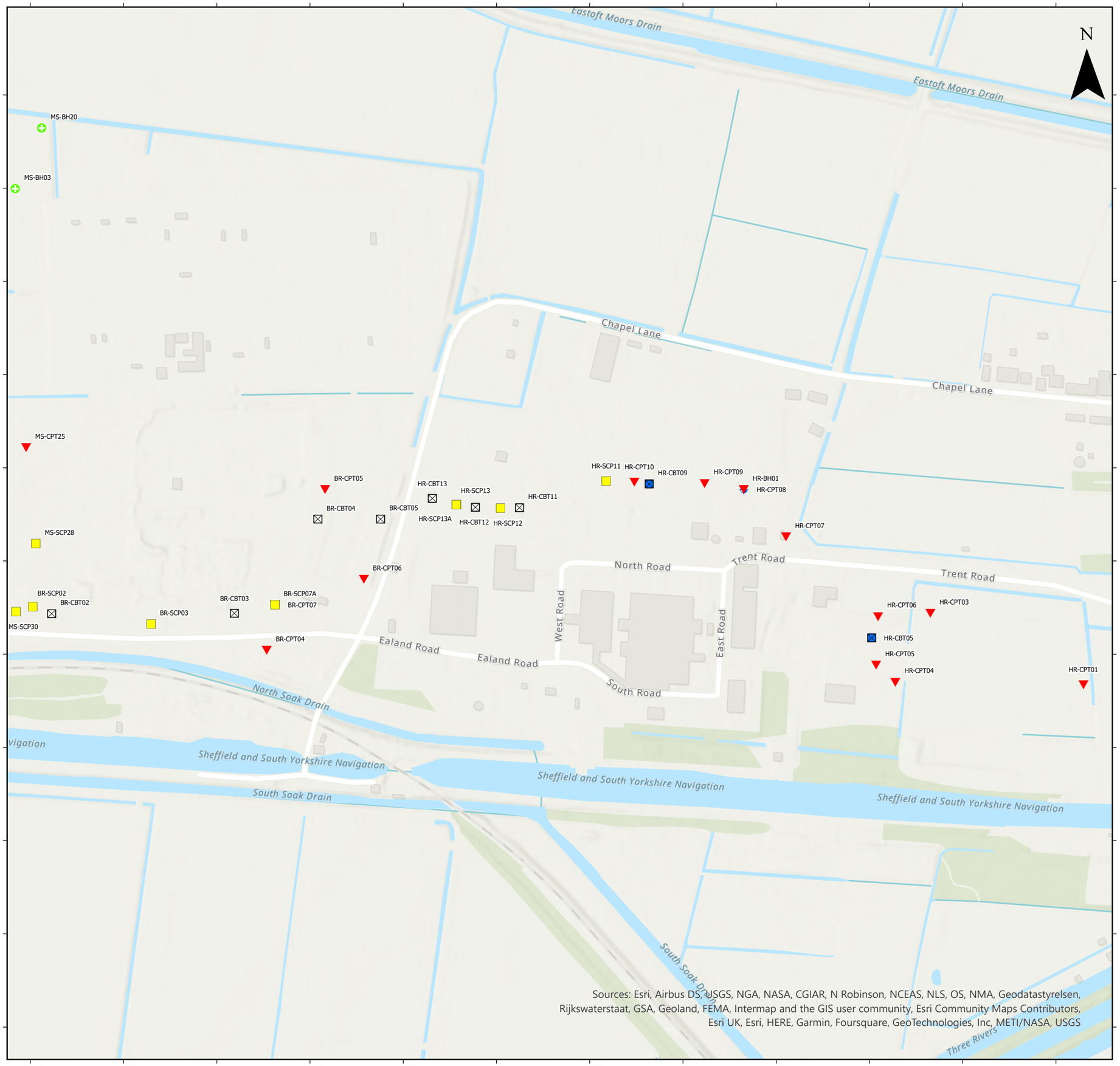
Figure Title

Exploration Location Map - Access Road

Figure Number

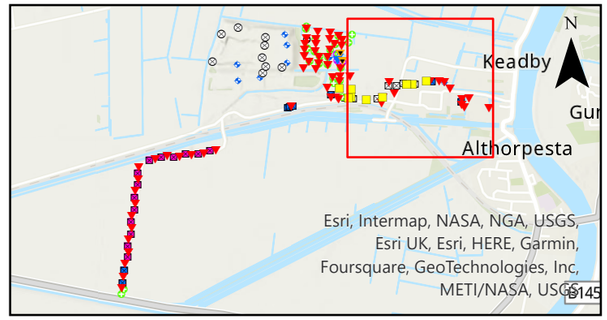
B.1.4

Drawn by	Checked by	Issued On	Project no.	Sheet Size	Rev.
LGD	SBP	21/02/2023	F212561	A3	1



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Location



Scale: 1:50,000

0 0.5 1 2 3 4 Kilometers

Legend

- Bonnyhale Road & Haulage Road

Exploration Type

- Cable Percussion Borehole
- Cable Percussion with Rotary Follow On
- Cable Percussion with Rotary Follow On and High Pressure Dilatometer Test
- Cable Percussion with Rotary Follow On, High Pressure Dilatometer Test and Borehole Geophysical Logging
- Inspection Pit
- Window Sampling
- Cone Penetration Test
- Cone Pressuremeter Test
- Seismic Cone Penetration and Cone Pressuremeter Test
- Seismic Cone Penetration Test
- Dynamic Cone Penetrometer Test
- Light Weight Deflectometer Test
- Plate Bearing Test

Note: Borehole and CPT locations include an Inspection Pit.

Rev.	Date	Description	Initials
0	06/12/2023	Draft Issue	LGD
1	21/02/2023	Final Issue	LGD

Scale: 1:4,000

0 50 100 200 300 Meters

Coordinate System

British National Grid

Client

SSE Generation Limited
Keadby Power Station Trentside
Keadby
Scunthorpe
DN17

Consultant

Fugro GeoServices Limited
Fugro House, Hithercroft Road, Wallingford,
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Project Title

Keadby 3 Low Carbon Gas Power Station Project

Figure Title

Exploration Location Map - Bonnyhale Road & Haulage Road

Figure Number

B.1.5

Drawn by	Checked by	Issued On	Project no.	Sheet Size	Rev.
LGD	SBP	21/02/2023	F212561	A3	1

Appendix C

Schedules

Appendix C Contents

C.1 Schedule of Exploratory Locations
C.1.1 Schedule of Exploratory Locations

C.1 Schedules of Exploratory Locations

Title	Reference
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Schedule of Exploratory Locations – Ash Tip	C.1.2
Schedule of Exploratory Locations – Access Roads	C.1.3

C.1.1 Schedule of Exploratory Locations – Main Site

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
MS-BH01	CP+RC	482099.63	412149.27	0.54	25.30	50mm SP: 2.00m to 5.00m [7.00m to 10.00m]	PID (3) SPT (12)	
MS-BH02	CP+RC	481913.09	412124.53	0.49	25.05	50mm SP: 9.00m to 12.00m [9.00m to 12.00m]	PID (4) SPT (12) HV (3)	
MS-BH03	CP+RC	482183.96	412099.42	0.72	25.00	50mm SP: 3.00m to 6.00m [3.00m to 6.00m]	PID (3) SPT (15)	
MS-BH04	CP+RC	481845.73	412127.48	0.33	37.50		PID (4) SPT (12) HPD	
MS-BH05	CP+RC	482034.31	412042.06	0.65	25.30	50mm SP: 3.00m to 6.00m [3.00m to 6.00m]	PID (3) SPT (12)	
MS-BH06	CP+RC	481905.41	412027.74	0.44	25.00		PID (4) SPT (11) HV (3)	
MS-BH07	CP+RC	481866.68	411944.14	0.62	25.50	50mm SP: 9.50m to 12.50m [9.50m to 12.50m]	PID (4) SPT (12)	
MS-BH08	CP+RC	482120.22	411896.84	0.80	25.20		PID (4) SPT (12)	
MS-BH09	CP+RC	481849.52	412052.65	0.48	28.30	50mm SP: 3.00m to 9.00m [3.00m to 9.00m]	PID (4) SPT (12)	
MS-BH10	CP+RC	482088.35	412006.19	0.71	40.10	50mm SP: 7.00m to 10.00m [7.00m to 10.00m]	PID (4) SPT (12) PSSL	

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
							HPD	
MS-BH11	CP+RC	482101.50	412007.46	0.74	25.25		PID (4) SPT (12)	
MS-BH12	CP+RC	482090.82	411953.31	0.74	42.00	50mm SP: 5.00m to 8.00m [5.00m to 8.00m]	PID (3) SPT (5) PSSL HPD VHT (1)	
MS-BH13	CP+RC	482134.93	411937.86	0.71	40.00	50mm SP: 7.00m to 10.00m [7.00m to 10.00m]	PID (4) SPT (8) PSSL HPD	
MS-BH14	CP+RC	481948.16	411984.28	0.81	25.50		PID (7) SPT (12)	
MS-BH15	CP+RC	482017.81	411980.09	0.76	25.25		PID (4) SPT (12)	
MS-BH16	CP+RC	481944.89	411927.05	0.57	25.20		PID (6) SPT (12)	
MS-BH17	CP+RC	482013.34	411922.17	0.91	25.20	50mm SP: 3.00m to 6.00m [3.00m to 6.00m]	PID (7) SPT (7) VHT (1)	
MS-BH18	CP+RC	481841.08	412232.23	0.68	25.40		PID (8) SPT (7)	
MS-BH19	CP+RC	481836.46	412212.25	0.60	25.00	50mm SP: 3.00m to 6.00m [3.00m to 6.00m]	PID (4) SPT (11)	

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
MS-BH20	CP+RC	482212.27	412164.55	0.98	25.20	50mm SP: 9.00m to 12.00m [9.00m to 12.00m]	PID (3) SPT (12)	
MS-BH21	CP+RC	482075.22	412086.20	0.81	25.00	50mm SP: 14.50m to 17.50m [14.50m to 17.50m]	PID (3) SPT (12)	
MS-BH22	CP+RC	482058.24	411811.08	1.02	25.30		PID (4) SPT (12)	
MS-BH23	CP+RC	482112.71	411787.26	0.98	25.20	50mm SP: 1.00m to 6.00m [1.00m to 6.00m]	PID (4) SPT (12)	
MS-BH24	CP+RC	482063.92	411766.34	0.98	26.20		PID (4) SPT (12)	
MS-BH25	CP+RC	482133.83	411653.96	2.30	25.20	50mm SP: 3.00m to 5.00m [3.00m to 5.00m]	PID (12) SPT (12)	
MS-BH26	CP	482027.90	411979.70	0.68	6.50		SPT (1)	
MS-BH27	CP	482117.30	412008.50	0.85	7.45		SPT (1)	
BR-SCP01	IP	482095.20	411651.80	2.34	1.10			BR-CPT01 done through backfilled inspection pit
BR-SCP02	IP	482095.2	411651.8	2.341	1.1			BR-SCP02 done through backfilled inspection pit
HR-SCP20	IP	482040.79	411650.29	1.42	1.20			HR-CPT20 done through backfilled inspection pit
MS-SCP01	IP	481841.71	412130.80	0.29	1.20			MS-CPT01 done through backfilled inspection pit
MS-SCP02	IP	481917.79	412126.69	0.40	1.20			MS-CPT02 done through backfilled inspection pit
MS-SCP03	IP	482030.81	412128.35	0.21	1.20			MS-CPT03 done through backfilled inspection pit

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
MS-SCP04	IP	482130.74	412122.98	0.52	1.20			MS-CPT04 done through backfilled inspection pit
MS-SCP05	IP	481829.72	412089.45	0.33	1.20			MS-CPT05 done through backfilled inspection pit
MS-SCP06	IP	481918.67	412089.67	0.70	1.20			MS-CPT06 done through backfilled inspection pit
MS-SCP07	IP	482070.93	412089.33	0.68	1.20			MS-CPT07 done through backfilled inspection pit
MS-SCP08	IP	482128.44	412073.17	0.65	1.20			MS-CPT08 done through backfilled inspection pit
MS-SCP09	IP	481825.75	412039.48	0.51	1.20			MS-CPT09 done through backfilled inspection pit
MS-SCP10	IP	481910.37	412029.00	0.36	1.20			MS-CPT10 done through backfilled inspection pit
MS-SCP11	IP	482031.79	412038.38	0.62	1.20			MS-CPT11 done through backfilled inspection pit
MS-SCP12	IP	482117.30	412008.50	0.85	1.20			MS-SCPT12 done through backfilled inspection pit
MS-SCPM12	IP	482118.30	412008.50	0.85	1.20			MS-CPM12 done through backfilled inspection pit
MS-SCP13	IP	481823.05	411989.59	0.73	1.20			MS-CPT13 done through backfilled inspection pit
MS-SCP14	IP	481942.85	411983.42	0.81	1.20			MS-CPT14 done through backfilled inspection pit
MS-SCP15	IP	482093.25	411955.82	0.69	1.20			MS-SCPT15 done through backfilled inspection pit

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
MS-SCP16	IP	481861.56	411943.34	0.53	1.20			MS-CPT16 done through backfilled inspection pit
MS-SCP17	IP	481939.92	411927.62	0.66	1.20			MS-CPT17 done through backfilled inspection pit
MS-SCP18	IP	482135.21	411946.57	0.60	1.20			MS-SCPT18 done through backfilled inspection pit
MS-SCPM18	IP	482134.20	411946.60	0.60	1.20			MS-CPM18 done through backfilled inspection pit
MS-SCP19	IP	481817.50	411889.77	0.53	1.20			MS-CPT19 done through backfilled inspection pit
MS-SCP20	IP	481917.71	411884.14	0.75	1.20			MS-CPT20 done through backfilled inspection pit
MS-SCP21	IP	482014.44	411918.06	1.07	1.20			MS-CPT21 done through backfilled inspection pit
MS-SCP22	IP	482118.34	411891.47	1.02	1.20			MS-CPT22 done through backfilled inspection pit
MS-SCP23	IP	482054.12	411813.03	0.98	1.20			MS-CPT23 done through backfilled inspection pit
MS-SCP24	IP	482114.48	411823.43	0.91	1.20			MS-CPT24 done through backfilled inspection pit
MS-SCP25	IP	482195.67	411821.30	0.98	1.20			MS-CPT25 done through backfilled inspection pit
MS-SCP26	IP	482010.17	411729.07	1.22	1.20			MS-CPT26 done through backfilled inspection pit
MS-SCP27	IP	482109.17	411723.95	1.98	0.60			Inspection pit terminated at depth of 0.60m. Planned CPT test cancelled.

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
MS-SCP28	IP	482206.11	411718.48	1.86	0.35			Inspection pit terminated at depth of 0.35m due to soakaway encountered. Planned CPT test cancelled.
MS-SCP29	IP	482102.60	411634.78	0.40	1.20			Inspection pit widened 10cm to the north due to concrete at 0.40m. MS-CPT29 done through backfilled inspection pit
MS-SCP30	IP	482184.64	411645.51	2.28	0.85			Inspection pit terminated at depth of 0.85m due to refusal on concrete. Planned CPT test cancelled.
MS-SCP31	IP	481841.29	412213.69	0.50	1.20			MS-CPT31 done through backfilled inspection pit
MS-SCP32	IP	481933.75	412183.97	0.27	1.20			MS-CPT32 done through backfilled inspection pit
MS-SCP33	IP	482033.72	412178.42	0.37	1.20			MS-CPT33 done through backfilled inspection pit
MS-SCP34	IP	482103.39	412152.65	0.35	1.20			MS-CPT34 done through backfilled inspection pit
MS-SCP35	IP	482011.77	411979.34	0.78	1.20			MS-CPT35 done through backfilled inspection pit
MS-SCP36	IP	482110.55	411781.98	0.92	1.20			MS-CPT36 done through backfilled inspection pit
Notes	SPT = Standard Penetration Testing HV = Hand Vane PID = Photo-ionisation Detector Screening HPD = High Pressure Dilatometer PSSL = P&S Suspension Logging DCP = Dynamic Cone Penetration PBT = Plate Bearing Test LWD = Light Weight Deflectometer Test VHT = Variable Head Permeability Test					m Metres mm Millimetres m OD Metres Ordnance Datum m BGL Metres below Ground Level		

C.1.2 Schedule of Exploratory Locations – Ash Tip

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
BH101	CP	481664.45	412164.10	18.01	30.50	50mm SP: 18.00m to 21.00m [18.00m to 21.00m]	PID (22) SPT (22) VHT (1)	
BH102	CP	481681.12	412079.64	18.75	30.00	50mm SP: 18.00m to 30.00m [18.00m to 30.00m]	PID (23) SPT (21) VHT (1)	
BH103	CP	481682.62	411936.78	19.08	30.00	50mm SP: 17.20m to 29.20m [17.20m to 29.20m]	PID (27 SPT (20) VHT (1)	
BH104	CP	481281.83	411790.02	6.52	15.80	50mm SP: 4.50m to 9.00m [4.50m to 9.00m]	PID (15) SPT (13) VHT (1)	
BH105	CP	481276.19	411918.22	14.48	6.00		PID (9) SPT (6)	
BH106	CP	481464.20	411812.00	6.33	15.65	50mm SP: 1.00m to 5.00m [1.00m to 5.50m]	PID (8) SPT (8)	
DS101	WLS	481484.92	411850.94	7.22	5.00	50mm SP: 0.50m to 5.00m [0.50m to 5.00m]	PID (13)	
DS103	WLS	481641.20	411899.60	18.70	5.00	50mm SP: 0.50m to 5.00m [0.50m to 5.00m]	PID (12)	
DS105	WLS	481499.58	412078.89	18.70	5.00	50mm SP: 0.50m to 4.50m [0.50m to 5.00m]	PID (14)	
DS106	WLS	481481.09	411979.01	18.43	5.00	50mm SP: 0.50m to 4.50m [0.50m to 5.00m]	PID (11)	

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
DS107	WLS	481506.26	412145.26	18.72	5.00	50mm SP: 0.50m to 4.50m [0.50m to 5.00m]	PID (9)	
DS108	WLS	481509.08	411906.87	17.78	5.00	50mm SP: 0.50m to 5.00m [0.50m to 5.00m]	PID (12)	
DS109	WLS	481283.12	412224.88	18.30	5.00	50mm SP: 0.50m to 5.00m [0.50m to 5.00m]	PID (8)	
DS110	WLS	481148.08	412166.12	9.53	5.00	50mm SP: 0.50m to 5.00m [0.50m to 5.00m]	PID (14)	
DS111	WLS	481075.00	411944.38	5.22	5.00	50mm SP: 0.50m to 4.70m [0.50m to 5.00m]	PID (13)	
Notes	SPT = Standard Penetration Testing HV = Hand Vane PID = Photo-ionisation Detector Screening HPD = High Pressure Dilatometer PSSL = P&S Suspension Logging DCP = Dynamic Cone Penetration PBT = Plate Bearing Test LWD = Light Weight Deflectometer Test VHT = Variable Head Permeability Test					m Metres mm Millimetres m OD Metres Ordnance Datum m BGL Metres below Ground Level		

C.1.3 Schedule of Exploratory Locations – Access Roads

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
AR-BH01	CP+RC	480333.23	410052.38	2.32	25.00	50mm SP: 2.00m to 5.00m [2.00m to 5.00m]	PID (4) SPT (10) VHT (1)	
AR-BH02	CP+RC	480353.22	410091.56	1.40	25.20	50mm SP: 7.00m to 10.00m [7.00m to 10.00m]	PID (8) SPT (7)	
HR-BH01	CP	482965.30	411776.58	1.50	15.05	50mm SP: 2.00m to 5.00m [2.00m to 5.00m]	PID (3) SPT (7) VHT (1)	
AR-SCP01	IP	480334.31	410094.40	1.81	1.30			AR-CPT01 done through backfilled inspection pit
AR-SCP02	IP	480347.81	410189.59	1.30	1.20			AR-CPT02 done through backfilled inspection pit
AR-SCP03	IP	480362.27	410292.25	1.59	1.20			AR-CPT03 done through backfilled inspection pit
AR-SCP04	IP	480389.27	410389.61	1.28	1.20			AR-CPT04 done through backfilled inspection pit
AR-SCP05	IP	480390.06	410490.44	1.54	1.20			AR-CPT05 done through backfilled inspection pit
AR-SCP06	IP	480416.83	410587.66	1.40	1.20			AR-CPT06 done through backfilled inspection pit
AR-SCP07	IP	480417.41	410688.22	1.19	1.20			AR-CPT07 done through backfilled inspection pit
AR-SCP08	IP	480444.65	410785.62	0.75	1.20			AR-CPT08 done through backfilled inspection pit

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
AR-SCP09	IP	480444.94	410886.70	1.40	1.20			AR-CPT09 done through backfilled inspection pit
AR-SCP10	IP	480470.24	410984.11	1.30	1.20			AR-CPT10 done through backfilled inspection pit
AR-SCP11	IP	480473.42	411084.17	1.39	1.30			AR-CPT11 done through backfilled inspection pit
AR-SCP12	IP	480608.39	411147.51	1.35	1.20			AR-CPT12 done through backfilled inspection pit
AR-SCP13	IP	480705.86	411171.71	1.26	1.20			AR-CPT13 done through backfilled inspection pit
AR-SCP14	IP	480807.18	411170.16	1.30	1.30			AR-CPT14 done through backfilled inspection pit
AR-SCP15	IP	480904.21	411183.54	1.22	1.20			AR-CPT15 done through backfilled inspection pit
AR-SCP16	IP	481005.77	411194.36	1.28	1.30			AR-CPT16 done through backfilled inspection pit
AR-SCP17	IP	481103.20	411220.50	1.28	1.20			AR-CPT17 done through backfilled inspection pit
AR-SCP21	IP	481718.31	411574.56	2.20	1.20			AR-CPT21 done through backfilled inspection pit
BR-SCP03	IP	482329.683	411632.128	2.299	0.65			Inspection pit terminated early at 0.65m due to refusal in made ground. Following static cone penetration test has been cancelled.
BR-SCP04	IP	482453.70	411604.00	2.02	1.20			BR-CPT04 done through backfilled inspection pit
BR-SCP05	IP	482516.32	411776.49	1.72	1.20			BR-CPT05 done through backfilled inspection pit

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
BR-SCP06	IP	482557.80	411680.40	1.70	1.20			BR-CPT06 done through backfilled inspection pit
BR-SCP07	IP	482462.51	411652.94	1.80	0.71			Inspection pit terminated at depth of 0.71m due to refusal on concrete.
BR-SCP07A	IP	482462.51	411652.94	1.80	1.20			BR-CPT07 done through backfilled inspection pit
HR-CBT11	IP	496899.40	388556.50	1.86	0.50			Inspection pit terminated at depth of 0.50m due to concrete covering the entire base of pit. CBR testing unable to be carried out due to concrete, lightweight deflectometer used.
HR-CBT12	IP	482677.50	411757.50	1.82	0.30			Inspection pit terminated at depth of 0.30m due to compacted gravel (roadstone). Unable to carry out CBR test.
HR-CBT13	IP	482631.20	411767.00	1.91	0.50			Unable to carry out CBR test due to gravel above 20mm.
HR-SCP01	IP	483329.69	411567.00	0.93	1.20			HR-CPT01 done through backfilled inspection pit
HR-SCP03	IP	483165.50	411587.50	0.32	1.20			HR-CPT03 done through backfilled inspection pit
HR-SCP04	IP	483127.94	411569.96	0.62	0.70			Inspection pit terminated at depth of 0.70m due to water covering base of pit. HR-CPT04 done through backfilled inspection pit
HR-SCP05	IP	483107.33	411588.29	0.64	0.65			Inspection pit terminated at depth of 0.65m due to water covering base of pit. HR-CPT05 done through backfilled inspection pit

Exploratory Location Name	Method of Exploration	Easting [m E]	Northing [m N]	Ground Level [m OD]	Hole Depth [m BGL]	Instrumentation Details Type Diameter: Slotted Section or Tip [Response Zone] [m BGL]	In Situ Field Testing	Remarks
HR-SCP06	IP	483109.39	411640.30	0.76	0.60			Inspection pit terminated at depth of 0.60m due to water covering base of pit. HR-CPT06 done through backfilled inspection pit
HR-SCP07	IP	483010.62	411725.72	1.62	1.20			HR-CPT07 done through backfilled inspection pit
HR-SCP08	IP	482965.30	411776.58	1.50	1.20			HR-CPT08 done through backfilled inspection pit
HR-SCP09	IP	482923.40	411783.20	1.82	1.20			HR-CPT09 done through backfilled inspection pit
HR-SCP11	IP	482817.732	411785.841	1.865	**0.97**			Inspection pit terminated early at 0.97m due to refusal on hard strata.
HR-SCP12	IP	482704.47	411756.70	1.90	0.30			Inspection pit terminated at depth of 0.30m due to refusal on concrete.
HR-SCP13	IP	482656.95	411760.32	1.83	1.20			
HR-SCP13A	IP	482656.95	411760.32	1.83	0.85			Inspection pit terminated at depth of 0.85m due to concrete at base of pit.
Notes	SPT = Standard Penetration Testing HV = Hand Vane PID = Photo-ionisation Detector Screening HPD = High Pressure Dilatometer PSSL = P&S Suspension Logging DCP = Dynamic Cone Penetration PBT = Plate Bearing Test LWD = Light Weight Deflectometer Test VHT = Variable Head Permeability Test					m Metres mm Millimetres m OD Metres Ordnance Datum m BGL Metres below Ground Level		

Appendix D

Exploratory Location Records

Appendix D Contents

D.1 Guidance Notes
D.1.1 Guidance Notes on Exploratory Location Records
D.2 Exploratory Location Records

D.1 Guidance Notes

Title	Reference
Guidance Notes on Exploratory Location Records	D.1.1
a. Operating Procedures	D.1.1.1
b. Groundwater	D.1.1.2
c. Chiselling	D.1.1.3
d. Identification and Description of Soils	D.1.1.4
e. In Situ Tests	D.1.1.5
f. Samples, Quality Classification and Sampling Category	D.1.1.6

D.1.1 Guidance Notes on Exploratory Location Records

D.1.1.1 Operating Procedures

The procedures used for the intrusive works and the laboratory testing and sample descriptions are generally in accordance with the standards and procedures listed in Section 12 References.

D.1.1.2 Groundwater

Exploratory location water levels are recorded together with the depths at which seepages or inflows of water are detected. These observations are noted on the exploratory location records, but may be misleading for the following reasons:

- The borehole is rarely left open at the relevant depth for a sufficient time for the water level to reach equilibrium;
- A permeable stratum may have been sealed off by the casing;
- Water may have been added to the borehole to facilitate progress;
- The permeability may have been altered by the excavation, boring or drilling process.

Standpipes or standpipe piezometers should be installed when an accurate record of groundwater level is required, however, it should be noted that groundwater levels may vary significantly due to seasonal, climatic or artificial effects. Water levels recorded during the intrusive works and/or long-term monitoring of installations and any advice or comment made accordingly may therefore not be appropriate to particular foundation, geotechnical design, or temporary works solutions. Long term monitoring of standpipes or piezometers is always recommended when water levels are likely to have a significant effect on design.

D.1.1.3 Chiselling

The remarks in the exploratory location records contain information on the time spent advancing the borehole by chiselling techniques, or where slow progress was achieved, and the depths over which it occurred. Such information may be affected by a wide range of variable factors, unrelated to the geotechnical properties of the strata. Such factors include, but are not restricted to, plant, equipment and operator. The data should therefore only be used subjectively and with extreme caution.

D.1.1.4 Identification and Description of Soils

The identification system follows appropriate standards and clarifications.

The consistency of fine material is based on manual assessment. The undrained shear strength is determined by reference to laboratory triaxial tests or based on in situ vane test results.

Density index terms for coarse-grained material are given where supported by SPT *N*-values (uncorrected). The field assessment of compactness or relative density for coarse soils is only given on trial pit records where appropriate assessment of the soils has been undertaken.

Where 'and' links two terms, for example 'soft and firm', 'medium and coarse', they indicate conditions which are close to the borderline between the two terms and cannot be precisely defined by inspection only, or range between the two terms.

Where 'to' links two terms, as in 'slightly sandy to sandy', 'fine to coarse' this again represents a range or a borderline case where the precise proportions cannot be determined.

Where there is a degree of uncertainty regarding the density index or consistency of the soil, the terms are given in brackets or the terms 'probably' or 'possibly' have been used and the descriptions given should be treated with caution.

The name of the geological formation is only given where this has been requested and can be determined with confidence (in accordance with Clause 33.5 of BS 5930:2015+A1:2020).

D.1.1.5 In Situ Tests

The following in situ tests are reported on the exploratory location records, in the 'Sampling and In Situ Testing' columns where appropriate.

Table D.1: In Situ Test Notation

Abbreviation	Description
SPT, '*N*-value' (S)	Standard penetration test *N*-value (uncorrected), using a 50 mm diameter split-barrel sampler, normally undertaken in fine-grained and mixed soils.
SPT, '*N*-value' (C)	Standard penetration test *N*-value (uncorrected), using a 50mm diameter, 60 degree apex, solid cone normally used in coarse-grained soil and weak rock.
HPD or SBP	Pressuremeter test type and depth and test reference only – refer to separate test results for detailed information.
Bvane, 'peak' kPa *('residual' kPa)*	Borehole shear vane test (undrained shear strength, c_u in kPa) peak and residual values – refer to separate test results for detailed information.
Hvane, 'peak' kPa *('residual' kPa)*	Hand shear vane test (direct reading of undrained shear strength in kPa) peak and residual values. The values are indicative and should not be taken as being equivalent to laboratory test results. The Pilcon vane results have a factor varying from about a sixth for the 33 mm vane to a third for the 19 mm vane which reduces the BS1377 shear vane value. The values presented are therefore approximate and should be treated with great caution if used for design purposes.
Pen, '#' kPa	Pocket Penetrometer unconfined compressive soil strength read from instrument in kg/cm^2 to the nearest 0.25 kg/cm^2. Equivalent undrained shear strength c_u reported in kPa (approximately 50 x unconfined compressive soil strength in kg/cm^2). Pocket penetrometers are an aid to logging fine-grained soils; the equipment used is not calibrated and the results are indicative and should not be relied upon.
PID, '#' ppm	Photoionisation detector readings in headspace of small disturbed geoenvironmental samples. Result given in ppm by volume.

D.1.1.6 Samples, Quality Classification and Sampling Category

The following samples are reported on the Exploratory Location Records, in the 'Sampling and In Situ Testing' columns where appropriate.

Table D.2: Sample Notation

Abbreviation	Description
Geotechnical Samples – undisturbed samples	
U/UT	General purpose open tube sample. Sample normally taken with open tube sampler approximately 100 mm diameter and 450 mm long and driven with 80 kg sinker bar and 56 kg sliding hammer, unless noted otherwise. 'U' denotes steel or plastic liner sample in general use up to year 2010 designated OS/TKW in accordance with BS EN ISO 22475-1:2021 with an area ratio greater than 25%. 'UT' denotes thin wall open tube sampler designated OS/TW with an area ratio less than 15%. 'xx/xxx' in the Test Results column denotes the number of hammer blows/sample recovered (mm). The height of hammer drop can be variable depending on operator technique. Depths given in the 'Depth' column indicate the actual length of penetration.
U/UT(X)	General purpose open tube sample (X) mm diameter.
TW(X)	Thin wall (push) sample (X) mm diameter.
P(X)	Piston sample (X) mm diameter.
Geotechnical Samples – disturbed and core samples	
D	Small disturbed sample (plastic tub or jar with airtight lid).
B	Bulk disturbed sample (polythene bag, tied at neck – size dependent on purpose).
LB	Large bulk disturbed sample (normally several bulk samples of the same material – size dependent on purpose).
W	Water sample.
C	Core sample.
CBR	Sample taken in CBR mould.
NR	Sample not recovered.
Geoenvironmental Samples	
ES	Environmental soil sample.
EW	Environmental water sample.
G	Environmental gas sample
Notes All samples recovered are recorded and handled in accordance with BS EN ISO 22475-1:2021.	

D.2 Exploratory Location Records

Title	Reference
Main Site Borehole Records	Referenced by Location ID
Ash Tip Borehole and Dynamic Sampling Records	Referenced by Location ID
Access Roads Borehole Records	Referenced by Location ID
Main Site Inspection Pit Records	Referenced by Location ID
Access Roads Inspection Pit Records	Referenced by Location ID

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH01**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum)	0.54	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/08/2022	26/08/2022	Hand excavated			OE/HR	OE	
1.20	14.70	CP	26/08/2022	31/08/2022	Dando 3000			HR/GD	OE	
14.70	25.30	RC	08/09/2022	12/09/2022	Comacchio 405		PCD	HW	SP/GW/XS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/08/2022	07:00	0.00			Sunny
26/08/2022	18:00	4.50	4.50		Stormy Drizzle
30/08/2022	07:00	4.50	4.50		
30/08/2022	18:00	11.00	10.50		
31/08/2022	07:00	11.00	10.50		
31/08/2022	18:00	14.70	14.50		
09/09/2022	08:00	14.70	14.50		
09/09/2022	17:00	25.30	14.50		

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.70	15.60		100	Brown	00:07
15.30	16.80		95	Brown	00:15
16.80	18.30		95	Brown	00:19
18.30	19.80		95	Brown	00:22
19.80	21.30		95	Brown	00:21
21.30	22.80		95	Brown	00:22
22.80	24.30		95	Brown	00:25
24.30	25.30		95	Brown	00:17

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.70	15.40	102
15.40	16.80	102
16.80	18.30	102
18.30	19.80	102
19.80	21.30	102
21.30	22.80	102
22.80	24.30	102
24.30	25.30	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
14.70	200	14.50	200
25.30	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.30	14.50	01:30	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
6.00	3.05	20	6.00	
13.90	3.90	20	13.50	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.70m and continued by rotary coring techniques to 25.30m.
3. SPTs between 2.00m and 12.45m possibly affected by drilling disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117404) used for photo-ionisation detection (PID).
6. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	10.00	7.00	10.00	12/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	7.00	50	Plain
1	7.00	10.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	12/09/2022
0.50	7.00	Bentonite	12/09/2022
7.00	10.00	Gravel	12/09/2022
10.00	25.30	Bentonite	12/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH01**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum) 0.54	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1							MADE GROUND. Dark brown slightly sandy CLAY with occasional subrounded medium and coarse gravel sized fragments of flint and brick and with frequent rootlets (<2mm) and occasional black organic matter. Sand is mainly fine. [MADE GROUND] [CLAY]	(0.60)				
0.10 - 0.30	B	2												
0.10	PID		< 0.1 ppm											
0.25	D	3												
0.30 - 0.50	B	5												
0.35	ES	4												
0.35	PID		< 0.1 ppm											
0.40	D	6												
0.55	ES	7								0.60	-0.06			
0.55	PID		< 0.1 ppm											
0.60 - 1.00	B	10							Light brown and brown very silty SAND with occasional black possible organic fragments (<1mm). Sand is fine. [ALLUVIUM] [SAND]	(0.60)				
								1						
1.10	D	9												
1.20 - 1.65	D	10								1.20	-0.66			
1.20 - 1.70	B	11							Possibly medium dense brown clayey SAND with occasional black sand sized (<1mm) carbonaceous debris. Sand is fine. [ALLUVIUM] [SAND]					
1.20 - 1.65	SPT		N = 11 (S)											
1.80	D	12												
2.00 - 2.45	D	13						2						
2.00 - 2.50	B	14												
2.00 - 2.45	SPT		N = 1 (S)							(1.80)				
2.80	D	15												
3.00 - 3.45	D	16						3		3.00	-2.46		▼	
3.00 - 3.50	B	17							Very loose brown very clayey SAND with occasional sand sized (<1mm) carbonaceous debris. Sand is fine and medium predominantly fine. Slight organic odour. Depth of upper interface approximate. [ALLUVIUM] [SAND]					
3.00 - 3.45	SPT		N = 3 (S)							(0.80)				
3.80	D	18								3.80	-3.26		▼	
4.00 - 4.45	D	19						4	Very loose brown silty SAND with occasional black sand sized (<1mm) carbonaceous debris. Sand is fine. Depth of upper interface approximate. [ALLUVIUM] [SAND]					
4.00 - 4.50	B	20												
4.00 - 4.45	SPT		N = 2 (S)							(0.70)				
4.80	D	21							Very loose to loose brown very silty SAND with occasional black sand sized (<1mm) carbonaceous debris. Sand is fine and medium predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [SAND]	4.50	-3.96			
5.00 - 5.45	D	22												
5.00 - 5.50	B	23							Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH01**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum) 0.54	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 4 (S)							(1.50)				
5.80	D	24												
6.00 - 6.45	D	25						6	Very loose to loose brown silty SAND with occasional black sand sized (<1mm) carbonaceous debris. Sand is fine. [ALLUVIUM] [SAND]	6.00	-5.46			
6.00 - 6.50	B	26												
6.00 - 6.45	SPT		N = 4 (S)							(1.50)				
7.00	D	27						7	At 7.00m; sand is fine and medium, predominantly fine.					
7.50 - 7.95	D	28							Loose brown slightly gravelly silty SAND. Sand is mainly fine and medium, mainly fine. Gravel is subangular and subrounded fine and medium of carbonaceous debris and occasional quartz. [ALLUVIUM] [SAND]	7.50	-6.96			
7.50 - 8.00	B	29												
7.50 - 7.95	SPT		N = 6 (S)					8						
8.50	D	30												
9.00 - 9.45	D	31						9	9.00m to 10.00m; gravel is fine to coarse.					
9.00 - 9.50	B	32												
9.00 - 9.45	SPT		N = 6 (S)							(4.50)				
10.00	D	33							Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH01**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum) 0.54	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.50 - 10.95	D	34													
10.50 - 11.00	B	35													
10.50 - 10.95	SPT		N = 6 (S)												
								11							
11.50	D	36													
12.00 - 12.45	D	37						12							
12.00 - 12.50	B	38							MUDSTONE: Recovered as very soft becoming soft with depth brown silty SAND with occasional subangular and subrounded fine and medium gravel sized mudstone lithorelicts. Sand is fine to coarse predominantly medium possibly of mudstone peds. Possibly Residual Mercia Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	12.00	-11.46				
12.00 - 12.45	SPT		N = 6 (S)												
										(1.50)					
13.00	D	39						13							
13.50 - 13.95	D	40								13.50	-12.96				
13.50 - 14.00	B	41							MUDSTONE. Recovered as soft and firm reddish brown mottled grey CLAY with occasional fine to coarse sand sized mudstone peds and subangular and subrounded fine to coarse gravel sized mudstone lithorelicts. Destructured Mercia Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]						
13.50 - 13.95	SPT		N = 40 (S)												
								14	13.50m to 13.95m; recovered as soft, reddish brown mottled with greenish grey.	(1.20)					
14.30	D	42													
14.50 - 14.70	D	44													
14.50 - 14.60	SPT		50/20 mm (S)						14.50m to 14.70m; recovered as subangular fragments (<50mm) of extremely weak and very weak reddish brown mottled grey mudstone in soft brown clay matrix with occasional silty dusting. Possibly distinctly weathered.						
14.70 - 15.60	C	1	603							14.70	-14.16				
14.70 - 14.80							NA								
									Extremely weak locally very weak thinly to thickly laminated reddish brown mottled greenish grey MUDSTONE with weak closely						
15.00 - 15.10	C	1	100 mm												

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum) 0.54	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.70 - 15.40				100	85	70			spaced very thin beds greyish brown mudstone	(0.70)				
14.80 - 15.40							20 110 220		and subhorizontal closely spaced gypsum veins (1mm to 5mm). Partially to distinctly weathered. Bedding fractures are subhorizontal undulating smooth very closely and closely spaced very tight clean.					
15.30 - 16.80	C	2	1500						[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	15.40	-14.86			
									14.70m to 14.80m; stiff slightly sandy gravelly clay. Sand is predominantly coarse. Gravel is subangular fine to coarse of mudstone lithorelicts. Destructured mudstone.					
15.40 - 16.16							20 70 160		Very weak locally extremely weak thickly laminated to very thinly bedded reddish brown locally mottled greenish grey MUDSTONE. Partially weathered. Bedding fractures are subhorizontal very closely and closely spaced planar smooth very tight clean.					
								16						
15.40 - 16.80				96	70	19			[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
16.16 - 16.40							NI		15.40m to 15.60m; greenish grey with very closely spaced subhorizontal gypsum veins (1mm to 20mm).	(1.95)				
16.40 - 16.54							10 40		16.16m to 16.40m; non intact possible drilling disturbed. Recovered as angular (<10mm x 60mm) mudstone lithorelicts.					
16.54 - 16.68							60 NI		16.25m to 16.50m; extremely weak reddish brown and greenish grey. Distinctly weathered.					
16.68 - 16.80							30		16.54m to 16.68m; non intact possible drilling disturbed. Recovered as angular (<2mm x 50mm) mudstone lithorelicts.					
16.80 - 18.30	C	3	1500				30 40		16.75m to 16.80m; assumed zone of core loss.					
16.80 - 17.20							20 80 150	17						
17.20 - 17.35							NI		17.20m to 17.35m; occasional gypsum veins (<2mm).					
17.40 - 17.48	C	2	80 mm							17.35	-16.81			
16.80 - 18.30				100	90	90			Very weak thickly laminated to very thinly bedded greenish grey locally reddish brown MUDSTONE with subhorizontal closely spaced gypsum veins (2mm to 60mm). Partially weathered. Bedding fractures are subhorizontal closely spaced planar smooth very tight clean.					
17.35 - 18.55							20 160 350	18	[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.20)				
									17.90m to 18.20m; locally extremely weak with deformed laminations possibly soft sediment deformation.					
18.30 - 19.80	C	4	1500											
18.55 - 18.71	C	3	160 mm							18.55	-18.01			
18.73 - 18.80	C	4	70 mm						Very weak thickly laminated to very thinly bedded reddish brown mottled greenish grey MUDSTONE with subhorizontal medium spaced gypsum veins (2mm to 50mm) and deformed laminations possibly soft sediment deformation. Partially weathered. Bedding fractures are subhorizontal very closely to closely spaced planar smooth very tight clean.					
18.30 - 19.80				93	93	60		19						
18.55 - 19.70							10 120 290		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.25)				
									19.45m to 19.70m; with slump structures possibly soft sediment deformation.					
19.70 - 19.80							NR		19.70m to 19.80m; assumed zone of core loss.					
19.80 - 21.30	C	5	1500							19.80	-19.26			
19.85 - 20.20	C	5	350 mm						Medium strong thinly laminated greenish grey MUDSTONE with horizontal to vertical medium					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum) 0.54	Sheet 5 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.20 - 20.30	C	6	100 mm						spaced gypsum veins (<25mm). With deformed laminations and slump structures possibly soft sedimentary deformation. Partially weathered. Bedding fractures are horizontal closely to medium spaced planar rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.75)				
19.80 - 21.30				100	99	90			Very weak to weak thickly laminated to very thinly bedded greenish grey MUDSTONE with generally subhorizontal occasionally subvertical closely spaced gypsum veins (1mm to 25mm). With deformed laminations and slump structures possibly soft sediment deformation. Partially weathered. Bedding fractures are subhorizontal planar smooth and rough closely spaced very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	20.55	-20.01			
19.80 - 22.40							5 210 450	21						
21.30 - 22.80	C	6	1500						21.30m to 21.39m; non-intact					
21.40 - 21.48	C	7	80 mm							(1.85)				
									21.58m to 21.65m; non-intact					
									21.90m to 22.40m; greenish grey mottled grey.					
21.30 - 22.80				100	87	77		22		22.40	-21.86			
22.62 - 22.80	C	8	180 mm						Very weak and weak thinly to medium bedded dark grey mottled reddish brown MUDSTONE with subhorizontal very closely to closely spaced gypsum veins (3mm to 20mm). Partially weathered. Bedding fractures are subhorizontal undulating rough closely to medium spaced very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
22.40 - 23.15							5			(0.75)				
22.80 - 24.30	C	7	1500				130							
22.88 - 23.10	C	9	220 mm				270	23	22.70m to 22.80m; deformed laminations.					
									Extremely weak indistinctly laminated reddish brown MUDSTONE with horizontal to inclined (45 degrees) closely to medium spaced gypsum veins (1mm to 111mm). Partially to distinctly weathered. Bedding fractures are subhorizontal planar smooth closely spaced very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	23.15	-22.61			
22.80 - 24.30				93	90	73								
23.15 - 24.19							40 170 290			(1.00)				
								24	23.90m to 24.15m; with some gypsum nodules (7mm x 5mm).					
24.19 - 24.30							NR			24.15	-23.61			
24.30 - 24.56	C	10	260 mm						Weak dark greenish grey locally reddish brown MUDSTONE with horizontal and subhorizontal (10 degrees) closely spaced gypsum veins (3mm to 30mm). With deformed laminations possibly soft sediment deformation. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
24.30 - 25.30	C	8	1000											
24.63 - 24.79	C	11	160 mm						24.19m to 24.30m; assumed zone of core loss.	(1.15)				
24.30 - 25.30				100	92	83	150							
24.30 - 25.30							420							
24.81 - 25.05	C	12	240 mm				860							
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum)	0.54	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details					Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									End of Borehole at 25.30 m	25.30	-24.76			
								26						
								27						
								28						
								29						

Notes
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum)	0.54	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

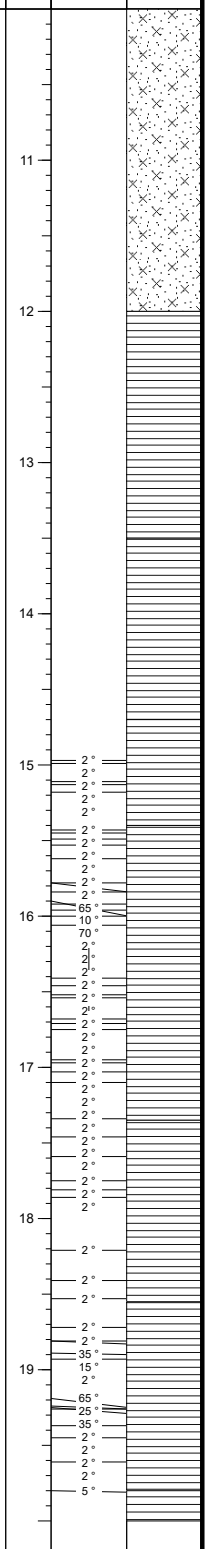
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum)	0.54	Sheet 2 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
14.97	BF	2		VT	Un	Sm					
14.99	BF	2		VT	Un	Sm					
15.11	BF	2		VT	Un	Sm					
15.13	BF	2		VT	Un	Sm					
15.18	BF	2		VT	Un	Sm					
15.43	BF	2		VT	Pl	Sm					
15.45	BF	2		VT	Pl	Sm					
15.49	BF	2		VT	Pl	Sm					
15.53	BF	2		VT	Pl	Sm					
15.62	BF	2		VT	Pl	Sm					
15.78	BF	2		VT	Pl	Sm					
15.78 - 15.84	J	65		VT	Pl	Sm					
15.84	J	10		VT	Pl	Sm					
15.90 - 16.00	J	70		VT	Un	Sm					
15.92	BF	2		VT	Pl	Sm					
15.96	BF	2		VT	Pl	Sm					
16.00	BF	2		VT	Pl	Sm					
16.06	BF	2		VT	Pl	Sm					
16.16 - 16.40	NI										
16.41	BF	2		VT	Pl	Sm					
16.46	BF	2		VT	Pl	Sm					
16.52	BF	2		VT	Pl	Sm					
16.54	BF	2		VT	Pl	Sm					
16.54 - 16.68	NI										
16.68	BF	2		VT	Pl	Sm					
16.71	BF	2		VT	Pl	Sm					
16.75	BF	2		VT	Pl	Sm					
16.75 - 16.80	NR										
16.95	BF	2		VT	Pl	Sm					
16.97	BF	2		VT	Pl	Sm					
17.03	BF	2		VT	Pl	Sm					
17.10	BF	2		VT	Pl	Sm					
17.34	BF	2		VT	Pl	Sm					
17.46	BF	2		VT	Pl	Sm					
17.59	BF	2		VT	Pl	Sm					
17.75	BF	2		VT	Pl	Sm					
17.81	BF	2		VT	Pl	Sm					
17.86	BF	2		VT	Pl	Sm					
18.21	BF	2		VT	Pl	Sm					
18.41	BF	2		VT	Pl	Sm					
18.53	BF	2		VT	Pl	Sm					
18.72	BF	2		VT	Pl	Sm					
18.81	BF	2		VT	Pl	Sm					
18.81 - 18.83	J	35		VT	Pl	Ro					
18.89 - 18.90	J	15		VT	Pl	Ro					
18.93	BF	2		VT	Pl	Sm					
19.19 - 19.25	J	65		VT	Un	Sm					
19.24 - 19.26	J	25		VT	Pl	Sm					
19.25 - 19.29	J	35		VT	Pl	Sm					
19.26	BF	2		VT	Pl	Sm					
19.37	BF	2		VT	Pl	Sm					

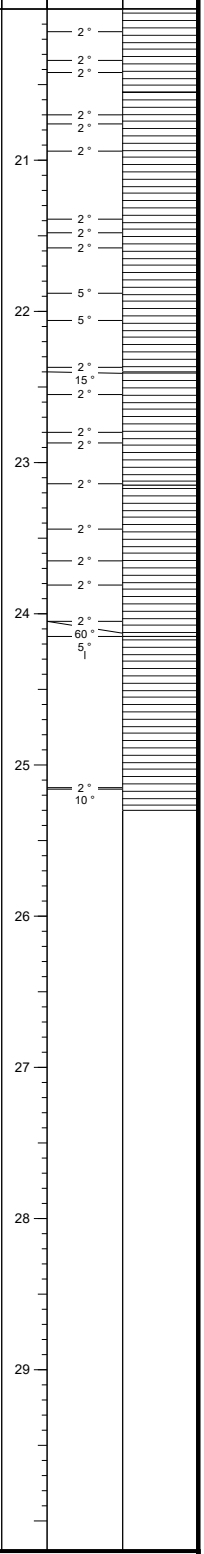


Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum)	0.54	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
19.45	BF	2		VT	Pl	Sm					
19.61	BF	2		VT	Un	Ro					
19.70 - 19.80	NR										
19.80 - 19.81	J	5		O	Un	Ro		stiff greenish grey clay infill (2mm)			
20.15	BF	2		VT	Pl	Sm					
20.34	BF	2		VT	Pl	Ro					
20.42	BF	2		VT	Pl	Ro					
20.70	BF	2		VT	Pl	Sm					
20.76	BF	2		VT	Pl	Sm					
20.94	BF	2		VT	Pl	Sm					
21.39	BF	2		VT	Pl	Sm					
21.48	BF	2		VT	Pl	Sm					
21.58	BF	2		VT	Pl	Sm					
21.88	J	5		VT	Un	Ro					
22.06	J	5		VT	Un	Ro					
22.37	BF	2		VT	Pl	Ro					
22.40 - 22.41	J	15		VT	Un	Ro					
22.55	BF	2		VT	Un	Ro					
22.80	BF	2		VT	Un	Ro					
22.87	BF	2		VT	Un	Ro					
23.14	BF	2		VT	Pl	Sm					
23.44	BF	2		VT	Pl	Sm					
23.65	BF	2		VT	Pl	Sm					
23.81	BF	2		VT	Pl	Sm					
24.05	BF	2		VT	Pl	Sm					
24.05 - 24.13	J	60		VT	Pl	Ro					
24.15	J	5		VT	Pl	Ro					
24.19 - 24.30	NR										
25.15	BF	2		VT	Pl	Ro					
25.16	J	10		VT	Pl	Ro					



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH02**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum)	0.49	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	30/08/2022	30/08/2022	Hand excavated			BS	BS	
1.20	15.50	CP	30/08/2022	31/08/2022	Dando 3000			BS	RF	
15.50	25.00	RC	14/09/2022	15/09/2022	Comacchio MC300		PCD	RC/DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
30/08/2022	07:00	0.00			Sunny
30/08/2022	18:00	3.00	3.00	2.00	Fine
31/08/2022	07:00	3.00	3.00	1.50	Dry sunny spells
31/08/2022	18:00	15.50	15.50	3.50	
14/09/2022	07:30	15.50	15.50	0.59	
14/09/2022	17:30	21.40	15.50	2.41	
15/09/2022	07:30	21.40	15.50	2.44	
15/09/2022	17:30	25.00	15.50	1.51	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.50	16.90	P	100	Brown	00:37
16.90	18.40	P	100	Brown	00:41
18.40	19.90	P	0	Brown	00:43
19.90	21.40	P	0	Brown	00:47
21.40	22.90	P	0	Brown	00:47
22.90	24.40	P	0	Brown	00:51
24.40	25.00	P	0	Brown	00:19

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.50	16.90	102
16.90	18.40	102
18.40	19.90	102
19.90	21.40	102
21.40	22.90	102
22.90	24.40	102
24.40	25.00	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	250	3.00	250
15.50	200	15.50	200
25.00	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
5.50	3.70	20	5.50	

Water Added

Depth From (m)	Depth To (m)
1.20	2.50

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.50m and continued by rotary coring techniques to 25.05m.
3. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
4. Tiger PID (T-117404) used for photo-ionisation detection (PID).
5. Borehole terminated at scheduled depth of 25.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	12.00	9.00	12.00	22/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	9.00	50	Plain
1	9.00	12.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	9.00	Bentonite	22/09/2022
9.00	12.00	Gravel	22/09/2022
12.00	25.00	Bentonite	22/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH02**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum) 0.49	Sheet 1 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
0.00 - 0.30	B	3							MADE GROUND. Dark brown slightly sandy CLAY with rare brick fragments (2 to <20mm), rare glass fragments (20 x 30mm) and occasional rootlets (<1mm). Sand is fine. [MADE GROUND] [CLAY]	(0.40)					
0.10	D	1													
0.10	ES	2													
0.10	PID		< 0.1 ppm												
0.40 - 0.70	B	6							MADE GROUND. Greyish brown slightly sandy CLAY with occasional brick, glass and slag fragments (2 to <60mm), occasional rootlets (<1mm) and occasional black organic debris (<1mm). Sand is fine. [MADE GROUND] [CLAY]	0.40	0.09				
0.45	ES	4								(0.30)					
0.45	PID		0.1 ppm												
0.50	D	5								0.70	-0.21				
0.50	HVane		100 kPa (*43 kPa*)												
0.50	HVane		116 kPa (*32 kPa*)												
0.50	HVane		120 kPa (*42 kPa*)												
0.70 - 1.00	B	8							MADE GROUND. Dark grey to black SILT with occasional pockets (<30mm) of firm greyish brown clay, rare pockets (20 x 10mm) of light yellowish brown fine sand, occasional wood fragments (<20 x 40mm) and occasional brick fragments (2 to <60mm). [MADE GROUND] [SILT]	(0.90)					
0.80	D	7													
0.85	ES	9													
0.85	PID		< 0.1 ppm					1							
1.20	ES	10													
1.20 - 1.65	D	11													
1.20 - 1.65	SPT		N = 6 (S)												
1.20	PID		0.1 ppm												
1.60	D	12							MADE GROUND. Dark orangish brown mottled dark grey sandy CLAY with occasional brick fragments (2mm to <20mm) and rare elongated wood fragments (40mm x 10mm). Strong hydrocarbon odour. [MADE GROUND] [CLAY]	1.60	-1.11				
1.60 - 1.90	B	13								(0.30)					
2.00 - 2.45	D	14						2		1.90	-1.41				
2.00 - 2.45	SPT		N = 4 (S)						Soft and firm dark orangish brown slightly sandy CLAY. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	(0.60)					
2.50	D	15							Firm dark orangish brown sandy CLAY. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [CLAY] At 2.50m; slightly gravelly.	2.50	-2.01				
3.00 - 3.45	D	16						3		(1.00)					
3.00 - 3.45	SPT		N = 5 (S)												
3.50	D	17							Soft and firm dark orangish brown slightly sandy SILT with rare black staining becoming abundant with depth. Sand is fine and medium. Strong organic odour. Depth of upper interface approximate. [ALLUVIUM] [SILT]	3.50	-3.01				
4.00 - 4.45	D	18						4							
4.00 - 4.45	SPT		N = 4 (S)												
4.50	D	19								(2.00)					
5.00 - 5.45	D	20													
5.00 - 5.45	SPT		N = 7 (S)						Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation	Location ID	**MS-BH02**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481913.09 N412124.53 Ground Elevation (m Datum) 0.49	Sheet 2 of 5	
	Hole Type	Cable Percussion to Rotary Coring	Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
5.50	D	21								5.50	-5.01				
									Stiff dark orangish brown sandy SILT with occasional black sand sized (<1mm) carbonaceous debris. Sand is fine to coarse. Slight to strong organic odour. Depth of upper interface approximate. [ALLUVIUM] [SILT]						
6.00 - 6.45 6.00 - 6.45	D SPT	22	N = 9 (S)					6							
6.50	D	23								(2.45)					
								7							
7.50 - 7.95 7.50 - 7.95	D SPT	24	N = 10 (S)						7.50m to 7.95m; silty clay.						
										7.95	-7.46				
								8	Loose and medium dense dark orangish brown silty SAND with rare black sand sized (<1mm) carbonaceous debris. Sand is fine to coarse. Gravel is fine. [ALLUVIUM] [SAND]						
8.20	D	25													
9.00 - 9.45 9.00 - 9.45	D SPT	26	N = 10 (S)					9	9.00m to 9.45m: slightly gravelly and silty						
										(3.00)					
9.70	D	27													
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH02**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum) 0.49	Sheet 3 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95	D	28												
10.50 - 10.95	SPT		N = 9 (S)											
								11	Loose dark orangish brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is angular to subrounded fine and medium of mudstone, quartz and carbonaceous debris. Depth of upper interface approximate. [ALLUVIUM] [SAND]	10.95	-10.46			
11.20	D	29												
12.00 - 12.45	D	30						12						
12.00 - 12.45	SPT		N = 9 (S)							(3.00)				
12.70	D	31												
								13						
13.50 - 13.95	D	32												
13.50 - 13.95	SPT		N = 9 (S)											
								14	MUDSTONE. Recovered as firm reddish brown and rarely bluish grey CLAY with frequent subangular to subrounded gravel sized mudstone lithorelicts (2 to <20mm) and abundant fine to coarse sand sized mudstone peds. Residual Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	13.95	-13.46			
14.10	D	33								(0.65)				
14.10 - 14.40	B	34												
									MUDSTONE. Recovered as firm reddish brown and greenish grey CLAY with frequent angular and subangular locally subrounded fine to coarse gravel sized extremely weak mudstone lithorelicts (2mm to <60mm) and frequent fine	14.60	-14.11			
15.00 - 15.45	D	35												
15.00 - 15.45	SPT		N = 20 (S)											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH02**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum) 0.49	Sheet 4 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									to coarse sand sized mudstone peds. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 14.60m to 15.50m; reddish brown locally bluish grey.					
15.50	D	36							15.50m to 16.34m; greenish grey.	(1.74)				
15.50 - 16.34							NA	16						
15.50 - 16.90				100	14	9								
16.40 - 16.53	C	1	130 mm						Very weak locally extremely weak thinly laminated greenish grey MUDSTONE. Partially weathered to distinctly weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	16.34	-15.85			
16.34 - 16.77							20 70 170		16.34m to 16.77m; moderately weak and medium strong, bedding fractures are horizontal very closely spaced planar rough very tight clean.					
16.77 - 16.90							NI		16.77m to 16.90m; non intact (possibly drilling disturbed). Recovered as angular and subangular (<30mm x 50mm) very weak mudstone lithorelicts with occasional matrix of soft clay.					
16.90 - 17.30							NA	17	16.90m to 17.30m; recovered as reddish brown clayey sand. Sand is fine to coarse. Possibly destructured mudstone.	(1.31)				
17.37 - 17.48	C	2	110 mm						17.30m to 17.50m; medium strong					
17.30 - 17.65							30 110 220		17.50m to 17.65m; extremely weak and dark greenish grey.					
16.90 - 18.40				95	28	11			Extremely weak reddish brown MUDSTONE with horizontal closely and medium spaced gypsum veins (5mm rarely 90mm). Occasionally recovered as mudstone lithorelicts in soft reddish brown clay matrix. Distinctly weathered locally destructured. Bedding fractures are horizontal closely to medium spaced planar smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	17.65	-17.16			
17.65 - 18.40							100 210 370	18	18.33m to 18.40m; assumed zone of core loss.	(0.75)				
									Very weak thinly laminated greenish grey mottled reddish brown MUDSTONE with horizontal closely spaced locally extremely closely spaced gypsum veins (1mm to 30mm rarely 50mm to 60mm). Partially weathered. Bedding fractures are horizontal very closely and closely spaced undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	18.40	-17.91			
18.69 - 18.85	C	3	160 mm											
18.40 - 19.34							20			(0.94)				
18.88 - 18.97	C	4	90 mm				140 270	19						
18.40 - 19.90				100	80	51			19.19m to 19.27m; soft greenish grey mottled reddish brown clay with subangular fine to coarse extremely weak mudstone lithorelicts. Destructured mudstone (possibly drilling disturbed).	19.34	-18.85			
19.34 - 19.90							NA		Stiff and very stiff fissured reddish brown silty CLAY with subhorizontal (5 to 10 degrees) closely spaced gypsum veins (5mm to 10mm). Possibly destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.56)				
									Extremely weak and very weak thinly laminated	19.90	-19.41			

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH02**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum) 0.49	Sheet 5 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.90 - 20.68							15 110 285		greenish grey locally mottled reddish brown MUDSTONE with subhorizontal (<5 degrees) closely and medium spaced gypsum veins (30mm to 40mm). Partially to distinctly weathered. Bedding fractures are horizontal very closely and closely spaced undulating rough very tight clean and tight with clay coating. Joints are inclined (15 to 25 degrees) medium spaced undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.78)				
19.90 - 21.40				100	50	16				20.68	-20.19			
20.68 - 21.52							20 110 250	21	Extremely weak reddish brown mottled greenish grey MUDSTONE with very weak medium spaced thin interbeds of greenish grey mudstone and subhorizontal (10 degrees) medium spaced gypsum veins (1mm to 10mm). Distinctly weathered. Bedding fractures are horizontal very close to closely spaced planar and undulating rough very tight clean locally tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.91m to 21.01m; joints are inclined (25 to 40 degrees) very closely and closely spaced planar rough very tight clean.	(0.84)				
21.40 - 22.90				100	67	28				21.52	-21.03			
21.52 - 23.10							30 150 360	22	Very weak locally extremely weak thinly laminated greenish grey mottled reddish brown MUDSTONE with subhorizontal (0 to 10 degrees) closely spaced locally very closely spaced gypsum veins (<1mm to 50mm). Distinctly to partially weathered. Bedding fractures are horizontal very closely and closely spaced planar occasionally undulating rough occasionally smooth very tight clean occasionally tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.91m to 22.31m; joints are inclined (10 to 20 degrees) very closely and closely spaced undulating rough very tight clean. 21.93m to 22.20m; extremely weak locally recovered as mudstone fragments in soft and firm reddish brown clay matrix. Destructured mudstone. 22.7m to 22.90m; moderately weak. 22.90m to 23.10m; mudstone lithorelicts in clay matrix. Destructured mudstone.	(1.58)				
22.77 - 22.90	C	5	130 mm							23.10	-22.61			
23.10 - 23.63							20 60 110	23	Weak dark greenish grey occasionally light greenish grey MUDSTONE with inclined (15 to 25 degrees) closely spaced gypsum veins (1mm to 50mm). Partially weathered. Bedding fractures are horizontal to subhorizontal (2 degrees) very closely to closely spaced planar rough and smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 23.10m to 23.16m; joints are inclined (15 degrees) very closely spaced planar rough very tight clean.	(0.53)				
23.48 - 23.58	C	6	100 mm							23.63	-23.14			
22.90 - 24.40				100	69	45								
23.63 - 24.16							55 160 245	24	Weak to moderately weak thinly and thickly laminated greenish grey mottled reddish brown MUDSTONE with subhorizontal (0 to 10 degrees) very closely and closely spaced gypsum veins (2mm to 30mm). Partially weathered. Joints are subhorizontal and inclined (5 to 20 degrees) closely and medium spaced undulating and planar rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
24.16 - 24.32							20 30							
24.40 - 24.64	C	7	240 mm				40			(1.37)				
24.64 - 24.80 24.32 - 25.00 24.40 - 25.00	C	8	160 mm	100	100	92	110 180 330							
									End of Borehole at 25.00 m	25.00	-24.51			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH02**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum)	0.49	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH02**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum)	0.49	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
16.36	BF	0		VT	Pl	Ro			11	0 °	
16.38	BF	0		VT	Pl	Ro				0 °	
16.55	BF	0		VT	Pl	Ro				0 °	
16.58	BF	0		VT	Pl	Ro				0 °	
16.62	BF	0		VT	Pl	Ro				0 °	
16.67	BF	0		VT	Pl	Ro				0 °	
16.71	BF	0		VT	Pl	Ro				0 °	
16.77	BF	0		VT	Pl	Ro			12	0 °	
16.77 - 16.90	NI										
17.30 - 17.37	J	80		VT	Un	Ro				80 °	
17.54 - 17.57	J	25		VT	Un	Ro				25 °	
17.60 - 17.64	J	25		VT	Un	Ro				25 °	
18.02	BF	0		VT	Pl	Sm			13	0 °	
18.15	BF	0		VT	Pl	Sm				0 °	
18.24 - 18.26	J	10		VT	Un	Sm				10 °	
18.67	BF	0		VT	Un	Ro				0 °	
18.69	BF	0		VT	Un	Ro				0 °	
18.87	BF	0		VT	Un	Ro				0 °	
18.98	BF	0		VT	Un	Ro			14	0 °	
19.01	BF	0		VT	Un	Ro		clay coating		0 °	
19.17 - 19.19	J	10		T	Un	Ro				10 °	
19.48 - 19.51	J	10		VT	Un	Ro				10 °	
									15		
									16		
									17		
									18		
									19		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

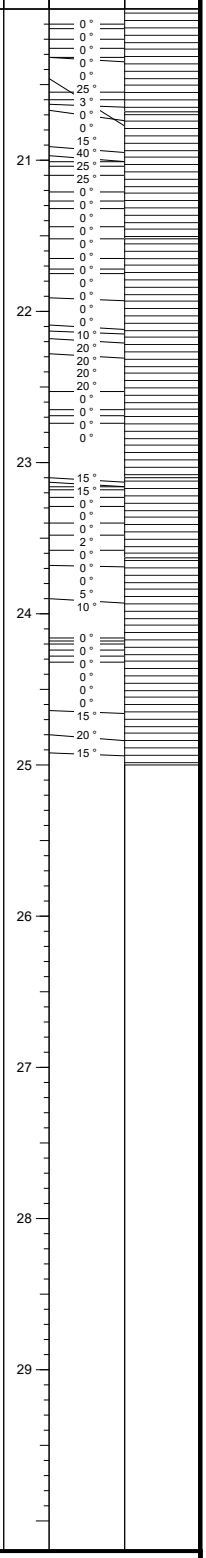
Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
Client	SSE Generation Limited (SSE)			**MS-BH02**
Fugro Reference	F212561			
Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum)	0.49	Sheet 3 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
20.10	BF	0		VT	Un	Ro		
20.13	BF	0		VT	Un	Ro		
20.20	BF	0		VT	Un	Ro		
20.26	BF	0		VT	Un	Ro		
20.32	BF	0		VT	Un	Ro		
20.32 - 20.35	J	25		VT	Un	Ro		
20.46 - 20.78	BF	3		T	Un	Ro		clay coating
20.55	BF	0		T	Un	Ro		clay coating
20.60	BF	0		T	Un	Ro		clay coating
20.63 - 20.65	J	15		VT	Un	Ro		
20.67 - 20.74	J	40		VT	Pl	Ro		
20.91 - 20.95	J	25		VT	Pl	Ro		
20.97 - 21.01	J	25		VT	Pl	Ro		
21.01	BF	0		VT	Pl	Ro		
21.04	BF	0		VT	Pl	Sm		
21.10	BF	0		VT	Un	Ro		
21.21	BF	0		VT	Un	Ro		
21.27	BF	0		T	Un	Ro		clay coating
21.32	BF	0		VT	Un	Ro		
21.44	BF	0		VT	Pl	Ro		
21.52	BF	0		VT	Pl	Ro		
21.65	BF	0		VT	Pl	Ro		
21.72	BF	0		T	Pl	Ro		clay coating
21.75	BF	0		VT	Pl	Ro		
21.91 - 21.93	J	10		VT	Un	Ro		
22.09 - 22.12	J	20		VT	Un	Ro		
22.13 - 22.15	J	20		VT	Un	Ro		
22.18 - 22.21	J	20		VT	Un	Ro		
22.28 - 22.31	J	20		VT	Un	Ro		
22.53	BF	0		T	Un	Ro		clay coating
22.65	BF	0		VT	Pl	Sm		
22.69	BF	0		VT	Pl	Sm		
22.74	BF	0		VT	Un	Ro		
23.10 - 23.13	J	15		VT	Pl	Ro		
23.13 - 23.16	J	15		VT	Pl	Ro		
23.16	BF	0		VT	Pl	Ro		
23.18	BF	0		VT	Pl	Ro		
23.23	BF	0		VT	Pl	Ro		
23.29	BF	2		VT	Pl	Ro		
23.40	BF	0		VT	Pl	Sm		
23.48	BF	0		VT	Pl	Sm		
23.58	BF	0		VT	Pl	Sm		
23.68 - 23.69	J	5		VT	Pl	Ro		
23.90 - 23.93	J	10		VT	Un	Ro		
24.16	BF	0		VT	Un	Ro		
24.18	BF	0		T	Un	Ro		clay coating
24.20	BF	0		T	Un	Ro		clay coating
24.24	BF	0		T	Un	Ro		clay coating
24.28	BF	0		T	Un	Ro		clay coating
24.32	BF	0		T	Un	Ro		clay coating
24.64 - 24.66	J	15		VT	Un	Ro		
24.80 - 24.84	J	20		VT	Un	Ro		
24.92 - 24.94	J	15		VT	Un	Ro		

Discontinuity Information

Depth (m) | Discontinuity Log | Legend



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH03**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum)	0.72	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			OE/HR	OE	
1.20	15.00	CP	25/08/2022	25/08/2022	Dando 3000			HR/GD	NHA	
15.20	25.00	RC	06/09/2022	08/09/2022	Comacchio 405		PCD	HW	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	08:00	0.00			Sunny
25/08/2022	17:00	15.40	15.00	0.60	
07/09/2022	08:00	15.20	15.00	1.00	Sunny
07/09/2022	17:00	25.00	15.00		

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.20	16.70		100	Brown	00:11
16.70	18.20		100	Brown	00:14
18.20	19.70		100	Brown	00:19
19.70	21.20		100	Brown	00:22
21.20	22.70		100	Brown	00:26
22.70	24.20		100	Brown	00:36
24.20	25.00		100	Brown	00:11

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.20	16.70	102
16.70	18.20	102
18.20	19.70	102
19.70	21.20	102
21.20	22.70	102
22.70	24.20	102
24.20	25.00	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
6.00	250	6.00	250
15.40	200	15.00	200
25.00	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.70	15.00	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
3.90	3.70	20	3.90	14.00
15.00	0.60	20	14.90	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.00m and continued by rotary coring techniques to 25.00m.
3. SPTs at 3.00m and 4.00m possibly affected by borehole disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117408) used for photo-ionisation detection (PID).
6. Borehole terminated at scheduled depth of 25.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	7.00	3.00	6.00	08/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	3.00	50	Plain
1	3.00	6.00	50	Slotted
1	6.00	7.00	50	Plain

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	08/09/2022
0.50	3.00	Bentonite	08/09/2022
3.00	7.00	Gravel	08/09/2022
7.00	25.00	Bentonite	08/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH03**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum) 0.72	Sheet 1 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1							Turf over TOPSOIL.	(0.10)				
0.10 - 0.20	B	2							[TOPSOIL]	0.10	0.62			
0.10	PID		< 0.1 ppm						MADE GROUND. Dark brown slightly sandy CLAY with occasional subangular and subrounded fine to coarse gravel sized fragments of flint, quartz and brick and with frequent rootlets (<2mm). Sand is fine to coarse.					
0.25	D	3												
0.30	ES	4												
0.30	PID		< 0.1 ppm											
0.40 - 0.50	B	5								(0.80)				
0.55	D	6							[MADE GROUND] [CLAY]					
0.80	ES	8												
0.80	PID		< 0.1 ppm											
0.90 - 1.20	B	9								0.90	-0.18			
1.00	D	8						1	Very loose to loose light greyish brown with irregular patches of orange brown and dark brown, locally thinly laminated, very silty SAND. Locally dark grey, slightly organic with slight organic odour. Sand is fine and medium predominantly fine. Occasional pockets / possibly layers (<30mm) of firm slightly sandy clay with slight organic odour. Rare rootlets.					
1.20 - 1.70	B	11												
1.20 - 1.65	SPT		N = 4 (S)											
									[ALLUVIUM] [SAND]	(1.10)				
									0.90m to 1.20m; slightly gravelly.					
1.80	D	12												
2.00 - 2.45	D	13						2	Stiff greyish brown and brownish grey occasional with grey reduction patches, slightly sandy CLAY. Sand is fine and medium. Slight organic odour.	2.00	-1.28			
2.00 - 2.50	B	14												
2.00 - 2.45	SPT		N = 10 (S)											
									[ALLUVIUM] [CLAY]	(0.80)				
2.80	D	15								2.80	-2.08			
3.00 - 3.50	B	17						3	Possibly loose, grey brown silty locally very silty SAND. Sand is mainly fine and medium. Frequent carbonaceous debris (<1mm) and rare pockets or possible layers (<10mm thick) soft grey brown clay.					
3.00 - 3.45	SPT		N = 1 (S)											
									[ALLUVIUM] [SAND]	(1.00)				
3.80	D	18								3.80	-3.08			
4.00 - 4.50	B	20						4	Possibly soft and firm greyish brown very silty SWAND with frequent carbonaceous debris (<2mm) and rare pockets or possible layers (<10mm thick) soft grey. brown clay. Sand is fine and medium predominantly fine.					
4.00 - 4.45	SPT		N = 1 (S)											
									[ALLUVIUM]					
									Upper interface, approximate depth.					
4.80	D	21												
5.00 - 5.45	D	22												
5.00 - 5.50	B	23												

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum)	0.72	Sheet 2 of 5
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 5 (S)						5.00m to 5.50m: becoming slightly sand silt	(2.45)				
5.80	D	24												
6.00 - 6.45	UT	25	19/0 mm					6						
6.00 - 6.50	B	25												
									Medium dense grey brown silty SAND. Sand is mainly fine and medium. Frequent carbonaceous debris (<2mm) and rare pockets or possible layers (<10mm thick) of soft grey brown clay. [ALLUVIUM] [SAND]	6.25	-5.53			
7.00	D	26						7						
7.50 - 7.95	D	27												
7.50 - 8.00	B	28												
7.50 - 7.95	SPT		N = 20 (S)											
								8						
8.50	D	29												
9.00 - 9.45	D	30						9						
9.00 - 9.50	B	31												
9.00 - 9.45	SPT		N = 24 (S)											
10.00	D	32												

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH03**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum) 0.72	Sheet 3 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
										(7.75)					
10.50 - 10.95	D	33													
10.50 - 11.00	B	34							Below 10.50m; rare fine and medium subangular to rounded gravel of ironstone/sandstone, quartz and limestone.						
10.50 - 10.95	SPT		N = 20 (S)												
								11							
11.50	D	35													
12.00 - 12.45	D	36						12							
12.00 - 12.50	B	37													
12.00 - 12.45	SPT		N = 16 (S)												
13.00	D	38						13							
13.50	D	39													
13.50 - 14.00	B	40													
13.50 - 13.95	SPT		N = 19 (S)												
14.00 - 14.50	B	41						14	Blue grey calcareous MUDSTONE with occasional veins and beds of fibrous and crystalline gypsum (<30mm). Recovered as angular coarse gravel and cobble sized fragments. With depth grades into very stiff, locally soft, firm and stiff, locally thinly interlaminated, red brown and grey slightly sandy clay with rare veins (<20 mm) and very thin laminae (<2 mm) of crystalline, variably decomposed gypsum with frequent sand to gravel sized (<2 x 10mm) extremely weak and weak calcareous mudstone and gypsum lithorelicts. [MERCIA MUDSTONE GROUP - MUDSTONE]	14.00	-13.28				
14.80	D	42								(1.00)					
15.00 - 15.32	SPT		50/170 mm (S)							15.00	-14.28				

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum) 0.72	Sheet 4 of 5	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.20 - 16.70	C	1	1500						[MUDSTONE] MUDSTONE. Recovered as very soft locally firm reddish brown mottled grey CLAY with closely spaced extremely weak reddish brown mudstone. Destructured Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 15.20m to 15.25m; assumed zone of core loss. 15.20m to 15.42m; firm reddish brown clay. Destructured mudstone. 15.42m to 15.58m; very weak very thinly bedded grey mudstone with very closely spaced thin and thick laminae of soft reddish brown clay. Bedding fractures are subhorizontal (<2 degrees) very closely spaced planar smooth very tight and clean.					
15.20 - 15.42							NA								
15.42 - 15.58							20 40 60			(1.00)					
15.58 - 16.00							NA								
15.20 - 16.70				97	51	15		16		16.00	-15.28				
16.29 - 16.35 16.00 - 16.70	C	1	60 mm				30 90 160		Extremely weak and very weak thickly laminated and very thinly bedded greenish grey MUDSTONE with subhorizontal closely spaced gypsum veins (<30mm x 50mm). Distinctly weathered. Bedding fractures are subhorizontal (<2 degrees) very closely and closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.70)					
16.70 - 16.93 16.70 - 18.20 16.70 - 16.93 16.70 - 16.80	D C SPT	2 3	1500 50/100 mm (S)				NR		Extremely weak thickly interlaminated greenish grey reddish brown MUDSTONE with closely spaced horizontal gypsum veins (<10mm). Distinctly weathered. Bedding fractures are subhorizontal (<2 degrees) very closely and closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 16.70m to 16.80m; assumed zone of core loss. 16.80m to 16.88m; stiff reddish brown mottled grey clay. Destructured mudstone. 17.10m to 17.22m; non intact recovered as angular fragments (<20mm x 50mm) of extremely weak mudstone lithorelicts.	16.70	-15.98				
16.80 - 17.22							20 120 250	17		(0.52)					
17.22 - 17.50 16.70 - 18.20				93	37	17	20 100 180			17.22 (0.50)	-16.50				
17.50 - 17.82							30 45 90	18	Very weak reddish brown mottled grey MUDSTONE. Partially to distinctly weathered. Bedding fractures are subhorizontal (<3 degrees) very closely and closely planar smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	17.72	-17.00				
18.20 - 19.70 18.20 - 18.40	C SPT	4	1500 50/80 mm (C)						Very thinly and thinly interbedded extremely weak reddish brown MUDSTONE extremely weak and very weak greenish grey MUDSTONE with very closely spaced thin and thick laminae of soft reddish brown clay and firm grey clay with subhorizontal closely to medium spaced gypsum veins (2mm to 100mm). Partially weathered. Bedding fractures are subhorizontal (<2 degrees) very closely and closely spaced rarely medium spaced planar smooth very tight clean occasionally tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 17.78m to 17.82m; gypsum vein with very stiff clay infills ((<2mm x 30mm). 17.96m to 18.13m; non intact possible drilling induced. Recovered as subangular fragments (<40mm x 60mm) of very weak reddish brown mudstone lithorelicts. Fractures are possibly irregular very closely spaced planar smooth very tight clean. 18.13m to 18.25m; firm reddish brown clay. Destructured mudstone. 19.03m to 19.13m; gypsum vein. 19.20m to 19.30m; non intact possible drilling induced. Recovered as angular fragments (<20mm x 40mm) of extremely weak reddish brown mudstone. Fractures are possibly irregular						
17.82 - 19.20							20 60 120								
18.20 - 19.70				100	80	27		19		(2.13)					
19.20 - 19.30							NI								
19.48 - 19.58 19.30 - 19.85	C	2	100 mm				100 180								
19.70 - 21.20 19.70 - 19.85	C SPT	5	1500 50/60 mm (C)				270			19.85	-19.13				

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH03**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum) 0.72	Sheet 5 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.01 - 20.12	C	3	120 mm						very closely spaced planar smooth very tight clean. Destructured mudstone. 19.70m to 19.75m; assumed zone of core loss. 19.70m to 19.83m; non intact recovered as angular fragments (<40mm x 60mm) of mudstone lithorelicts.	(0.84)				
19.85 - 20.69							10 40 80							
19.70 - 21.20				97	60	16			Extremely weak and very weak reddish brown locally mottled grey MUDSTONE with very closely spaced very thin beds of extremely weak reddish brown mudstone and occasional grey reduction spots (<3mm). Partially and distinctly weathered. Bedding fractures are subhorizontal (<2 degrees) very closely to closely spaced planar smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	20.69	-19.97			
								21	20.01m to 20.13m; very weak reddish brown mottled grey mudstone.					
21.20 - 22.70	C	6	1500						Extremely weak and very weak greenish grey and reddish brown MUDSTONE with very closely spaced thin and thick laminae of stiff reddish brown clay and very stiff grey clay. Locally with deformed laminations possible soft sediments deformation with subhorizontal very closely to closely spaced gypsum veins (2mm to 60mm). Partially to distinctly weathered. Bedding fractures are subhorizontal (<2 degrees) very closely spaced and closely spaced planar smooth and rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
21.20 - 21.30	SPT		50/30 mm (C)											
21.20 - 22.70				100	77	53		22	21.54m to 21.56m; gypsum vein.					
22.25 - 22.34	C	4	90 mm											
20.69 - 24.06							20 120 280			(3.37)				
22.70 - 24.20	C	7	1500						22.70m to 22.75m; assumed zone of core loss.					
22.94 - 23.10	C	5	160 mm						22.87m to 22.96m; gypsum vein.					
								23						
									23.30m to 23.63m; with rare deformed lamination.					
22.70 - 24.20				97	88	84								
								24	23.98m to 24.02m; micro fault.					
										24.06	-23.34			
24.20 - 24.43	C	6	230 mm						Weak to moderately weak locally very weak thickly laminated and very thinly bedded grey MUDSTONE with deformed laminations and slumped structure possible soft sediment deformation with horizontal closely spaced gypsum veins (2mm to 10mm) . Bedding fractures are closely to possibly medium spaced subhorizontal (0 to 10 degrees) undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
24.06 - 25.00							100 275 450			(0.94)				
24.20 - 25.00				90	90	90								
24.88 - 25.00	C	7	120 mm						24.72m to 24.80m; assumed zone of core loss.					
									End of Borehole at 25.00 m	25.00	-24.28			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum)	0.72	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum)	0.72	Sheet 2 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
15.42	BF	2		VT	Pl	Sm			11		
15.47	BF	2		VT	Pl	Sm					
15.50	BF	2		VT	Pl	Sm					
15.52	BF	2		VT	Pl	Sm					
15.58	BF	2		T	Pl	Sm					
16.04	FR	2		VT	Un	Sm			12		
16.06	BF	2		VT	Pl	Sm					
16.10	BF	2		VT	Pl	Sm					
16.26	BF	2		T	Pl	Sm					
16.29	BF	2		T	Pl	Sm					
16.43 - 16.47	J	45		VT	Pl	Ro					
16.55	BF	2		VT	Pl	Sm					
16.62	BF	3		VT	Pl	Sm					
16.95	BF	2		T	Pl	Ro			13		
16.97	BF	2		T	Pl	Ro					
17.07	BF	2		VT	Pl	Sm					
17.09	BF	2		VT	Pl	Sm					
17.11 - 17.13	FR	5		VT	Pl	Ro					
17.26 - 17.28	FR	5		VT	Pl	Ro					
17.44	BF	2		VT	Pl	Sm					
17.47	BF	2		VT	Pl	Sm					
17.49	BF	2		VT	Pl	Sm					
17.52	BF	2		VT	Pl	Sm					
17.55	BF	2		VT	Pl	Sm					
17.64	BF	2		VT	Pl	Sm			14		
17.67	BF	2		VT	Pl	Sm					
17.71	BF	2		VT	Pl	Sm					
17.78	BF	2		VT	Pl	Sm					
17.82	BF	2		VT	Pl	Sm					
17.96 - 17.97	FR	10		VT	Pl	Sm					
18.13 - 18.15	FR	5		VT	Un	Ro					
18.39	BF	2		T	Pl	Sm					
18.43	BF	3		T	Pl	Sm					
18.46	BF	3		T	Pl	Sm					
18.50	BF	3		T	Pl	Sm			15		
18.62	BF	3		VT	Pl	Sm					
18.66	BF	3		VT	Pl	Sm					
18.68	BF	3		VT	Pl	Sm					
18.72	BF	3		VT	Pl	Sm					
18.80	BF	5		VT	Pl	Sm					
18.83	BF	2		VT	Pl	Sm					
18.90	BF	2		VT	Pl	Sm					
18.95	BF	2		VT	Pl	Sm					
19.02	BF	5		T	Pl	Sm					
19.12	BF	2		VT	Pl	Sm					

Notes

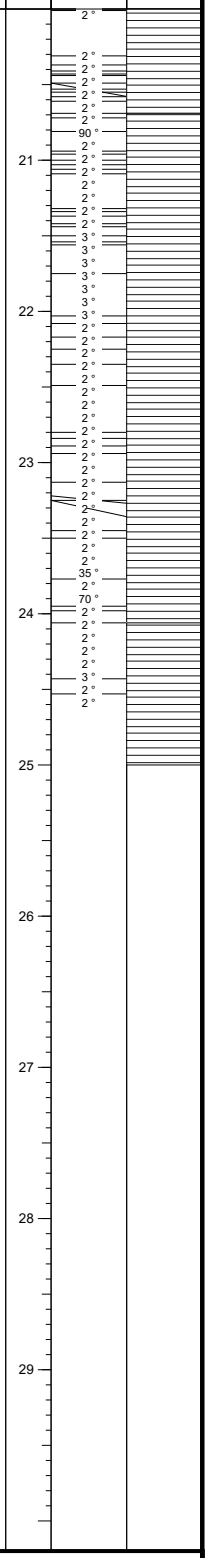
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum)	0.72	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
19.38	J	10		VT	Un	Ro		
19.48	BF	2		VT	Pl	Sm		
19.58	BF	2		VT	Pl	Sm		
19.70 - 19.73	FR	3		VT	Un	Ro		
19.85	BF	2		VT	Pl	Sm		
20.01	FR	2		VT	Pl	Ro		
20.31	BF	2		VT	Pl	Sm		
20.37	BF	2		VT	Pl	Sm		
20.41	BF	2		VT	Pl	Sm		
20.43	BF	2		VT	Pl	Sm		
20.44	BF	2		VT	Pl	Sm		
20.49	BF	2		VT	Pl	Sm		
20.49 - 20.58	J	90		VT	Pl	Sm		
20.53	BF	2		VT	Pl	Sm		
20.55	BF	2		VT	Pl	Sm		
20.58	BF	2		VT	Pl	Sm		
20.61	BF	2		VT	Pl	Sm		
20.69	BF	2		VT	Pl	Sm		
20.72	BF	2		VT	Pl	Sm		
20.81	BF	2		VT	Pl	Sm		
20.94	BF	3		VT	Pl	Sm		
20.96	BF	3		VT	Pl	Sm		
21.00	BF	3		VT	Pl	Sm		
21.03	BF	3		VT	Pl	Sm		
21.06	BF	3		VT	Pl	Sm		
21.09	BF	3		VT	Pl	Sm		
21.32	BF	3		VT	Pl	Sm		
21.34	BF	2		VT	Pl	Ro		
21.37	BF	2		T	Pl	Sm		
21.42	BF	2		T	Pl	Sm		
21.44	BF	2		T	Pl	Sm		
21.50	BF	2		VT	Pl	Ro		
21.54	BF	2		VT	Pl	Ro		
21.56	BF	2		VT	Pl	Ro		
21.75	BF	2		VT	Un	Ro		
22.03	BF	2		VT	Pl	Ro		
22.08	BF	2		VT	Pl	Ro		
22.17	BF	2		VT	Pl	Ro		
22.25	BF	2		VT	Pl	Ro		
22.35	BF	2		VT	Pl	Ro		
22.49	BF	2		VT	Un	Sm		
22.80	BF	2		VT	Pl	Sm		
22.84	BF	2		VT	Pl	Sm		
22.89	BF	2		VT	Pl	Sm		
22.94	BF	2		VT	Pl	Sm		
23.13	BF	2		VT	Pl	Sm		
23.22 - 23.27	J	35		VT	Pl	Sm		
23.25	BF	2		VT	Pl	Sm		
23.25 - 23.36	J	70		VT	Pl	Sm		
23.45	BF	2		VT	Pl	Sm		
23.50	BF	2		VT	Pl	Sm		
23.77	BF	2		VT	Pl	Sm		
23.95	BF	2		VT	Pl	Sm		
23.98	BF	2		VT	Pl	Sm		
24.06	FR	3		VT	Pl	Ro		
24.43	BF	2		VT	Un	Ro		
24.53	BF	2		VT	Un	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH04**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum)	0.33	Sheet 1 of 1
Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	13/09/2022	13/09/2022	Hand excavated			BS	BS	
1.20	14.70	CP	13/09/2022	14/09/2022	Dando 3000			HR/GD	BS	
14.70	37.50	RC	29/09/2022	10/10/2022	Fraste Multi ML		PCD	AC/LS	RS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
13/09/2022	08:00	0.00			Sunny
13/09/2022	18:00	11.00	11.00	Dry	Showers
14/09/2022	08:00	11.00	11.00	Dry	Dry
14/09/2022	18:00	14.70	14.50	3.90	
29/09/2022	08:00	14.70	14.50	1.20	
29/09/2022	18:00	18.00	14.50	1.20	
30/09/2022	08:00	18.00	14.50	1.50	
30/09/2022	14:00	21.00	14.50	1.50	
03/10/2022	08:00	21.00	14.50	1.55	
03/10/2022	18:00	24.00	14.50	1.55	
04/10/2022	08:00	24.00	14.50	1.60	
04/10/2022	18:00	27.00	14.50	1.60	
05/10/2022	08:00	27.00	14.50	1.40	
05/10/2022	18:00	30.00	14.50	1.40	
06/10/2022	08:00	30.00	14.50	1.55	
06/10/2022	18:00	33.00	14.50	1.55	
07/10/2022	08:00	33.00	14.50	1.50	
07/10/2022	14:00	36.00	14.50	1.50	
10/10/2022	08:00	36.00	14.50	1.50	
10/10/2022	18:00	37.50	14.50	1.50	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.70	15.00	Water	100	Grey	00:03
15.00	18.00	Water	100	Grey	01:30
18.00	21.00	Water	100	Grey	01:10
21.00	24.00	Water	100	Grey	01:00
24.00	27.00	Water	100	Grey	01:00
27.00	30.00	Water	100	Grey	01:05
30.00	31.50	Water	100	Brown	00:50
31.50	33.00	Water	100	Brown	00:50
33.00	36.00	Water	100	Brown	01:10
36.00	37.50	Water	0	Brown	00:50

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.70	15.00	102
15.00	18.00	79
18.00	21.00	79
21.00	24.00	79
24.00	27.00	79
27.00	30.00	79
30.00	31.50	102
31.50	33.00	102
33.00	36.00	79
36.00	37.50	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
14.70	200	14.50	200
37.50	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.30	14.50	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	14.70

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.70m and continued by rotary coring techniques to 37.50m.
3. Water was added during cable percussion drilling to facilitate penetration of granular strata.
4. SPT sample D17 at 3.00m possibly affected by drilling disturbance.
5. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities. 6. Tiger PID (T-117408) used for photo-ionisation detection (PID).
7. High pressure dilatometer testing (HPD) carried out; results presented separately. Reduced diameter core barrel used over test depth.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY/NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum) 0.33	Sheet 1 of 8
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1							MADE GROUND. Dark brown sandy CLAY with occasional angular and subangular fine to coarse gravel sized fragments of brick and with abundant rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	(0.40)				
0.10 - 0.30	B	2												
0.10	PID		< 0.1 ppm											
0.30	D	3												
										0.40	-0.07			
0.50	ES	4							MADE GROUND. Light brown clayey SAND with rare rootlets (<1mm). Sand is fine. [MADE GROUND] [SAND]	(0.30)				
0.50 - 0.70	B	5												
0.50	PID		< 0.1 ppm											
0.70	D	6								0.70	-0.37			
0.80	ES	7							MADE GROUND. Black sandy CLAY with occasional decomposed wood fragments (<340mm). Sand is fine. [MADE GROUND] [CLAY]	(0.30)				
0.80 - 1.00	B	8												
0.80	PID		< 0.1 ppm											
								1	MADE GROUND. Dark blackish brown silty SAND with occasional black decomposed wood fragments (<20mm). [MADE GROUND] [SAND]	1.00	-0.67			
1.10	D	9								(0.20)				
1.20	ES	10								1.20	-0.87			
1.20 - 1.65	D	11							Loose dark brown silty SAND with occasional to abundant black sand sized carbonaceous debris and frequent to abundant pockets /layers (<10mm) of dark brown clayey sand and sandy clay. Sand is fine and medium. [ALLUVIUM] [SAND]					
1.20 - 1.70	B	12												
1.20 - 1.65	SPT		N = 11 (S)											
1.20	PID		< 0.1 ppm											
									1.20m to 1.65m; light brown stained black, with occasional pockets (<10mm) of black clayey fine sand.					
1.80	D	13												
2.00 - 2.45	D	14						2	2.00m to 2.45m; with occasional pockets (<10mm) of grey clay.	(1.60)				
2.00 - 2.50	B	15												
2.00 - 2.45	SPT		N = 7 (S)											
										2.80	-2.47			
2.80	D	16							Possibly soft dark brown sandy CLAY with frequent black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [CLAY]					
3.00 - 3.45	D	17						3						
3.00 - 3.50	B	18												
3.00 - 3.45	SPT		N = 2 (S)							(1.00)				
										3.80	-3.47			
3.80	D	19							Firm dark brown sandy SILT with frequent black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SILT]					
4.00 - 4.45	D	20						4						
4.00 - 4.50	B	21												
4.00 - 4.45	SPT		N = 6 (S)							(0.65)				
										4.45	-4.12			
4.80	D	22							Firm and stiff dark brown sandy SILT with frequent black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SILT]					
5.00 - 5.45	D	23												
5.00 - 5.50	B	24												

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum) 0.33	Sheet 2 of 8
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 8 (S)						At 5.00m; becoming slightly gravelly.	(1.35)				
5.80	D	25							Loose dark brown clayey SAND with abundant pockets/layers (<20mm) of dark brown clay and abundant black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	5.80	-5.47			
6.00 - 6.45	D	26						6	6.00m to 6.50m; slightly gravelly. Gravel is subangular fine of mudstone.					
6.00 - 6.50	B	27												
6.00 - 6.45	SPT		N = 6 (S)							(1.20)				
7.00	D	28						7	Medium dense dark brown silty SAND with abundant black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	7.00	-6.67			
7.50 - 7.95	D	29							At 7.00m; frequent pockets (<20mm) of dark brown clay.					
7.50 - 8.00	B	30							At 7.50m; occasional pockets/layers (<20mm) of dark brown clay.					
7.50 - 7.95	SPT		N = 13 (S)											
								8						
8.50	D	31												
9.00 - 9.45	D	32						9	At 9.00m; rare pockets/layers (<20mm) of dark brown clay and occasional gravel					
9.00 - 9.50	B	33												
9.00 - 9.45	SPT		N = 13 (S)							(5.00)				
10.00	D	34							Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum) 0.33	Sheet 3 of 8
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.50 - 10.95	D	35													
10.50 - 11.00	B	36							10.50m to 11.00m; rare gravel and frequent pockets (<20mm) of dark brown clay. Gravel is subrounded fine of mudstone.						
10.50 - 10.95	SPT		N = 15 (S)												
								11							
11.50	D	37													
12.00 - 12.45	D	38						12		12.00	-11.67				
12.00 - 12.50	B	39							Loose and medium dense dark brown slightly gravelly silty SAND with abundant black sand sized organic debris. Sand is fine and medium. Gravel is subangular fine and medium of mudstone. Depth of upper interface approximate. [ALLUVIUM] [SAND]						
12.00 - 12.45	SPT		N = 12 (S)												
13.00	D	40						13		(2.00)					
13.00 - 13.45	D	41													
13.00 - 13.50	B	42													
13.00 - 13.45	SPT		N = 10 (S)												
14.00	D	43						14	MUDSTONE. Recovered as reddish brown CLAY with frequent fine and medium sand sized mudstone peds and frequent subangular and subrounded fine gravel sized extremely weak mudstone lithorelicts. Possibly destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	14.00	-13.67				
										(0.70)					
14.50 - 14.70	D	44							14.50m to 14.70m; recovered as greenish grey stained reddish brown clayey gravel. Gravel is angular fine to coarse of mudstone and gypsum lithorelicts. Possibly destructured.	14.70	-14.37				
14.50 - 14.70	SPT		50/50 mm (S)												
14.78 - 15.00	C	45							Extremely weak to very weak greenish grey MUDSTONE. Distinctly weathered. [MERCIA MUDSTONE GROUP - MUDSTONE]	(0.30)					
14.70 - 15.00				100	73	73	- 300 -								
14.70 - 15.00										15.00	-14.67				

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum) 0.33	Sheet 4 of 8
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									[MUDSTONE] 14.70m to 14.78m; non-intact, recovered as gravelly silty sand. Probably drilling induced. ASSUMED ZONE OF CORE LOSS. [NO RECOVERY]					
15.00 - 16.50							NR	16		(1.50)				
15.00 - 18.00				50	28	17				16.50	-16.17			
16.50 - 16.90							NI		Extremely weak locally thinly laminated greenish grey MUDSTONE with horizontal to inclined (<20 degrees) closely spaced locally extremely closely spaced gypsum veins (2mm to 40mm). Partially to distinctly weathered. Bedding fractures are subhorizontal (5 degrees) medium spaced locally very closely spaced undulating and planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 16.50m to 16.60m; non-intact, recovered as subangular gypsum fragments (40mm x 80mm). 16.60m to 16.90m; non-intact, recovered as greenish grey angular and subangular mudstone lithorelicts in clay matrix. 17.20m to 17.40m; non-intact, recovered as angular fine and medium gravel sized mudstone lithorelicts in clay matrix.	(0.90)				
16.90 - 18.00							40 200 470	17		17.40	-17.07			
17.56 - 17.68	C	46												
17.68 - 17.91	C	47								(0.60)				
18.04 - 18.17	C	48							Moderately weak greenish grey MUDSTONE with subhorizontal (<10 degrees) and inclined (15 to 20 degrees) extremely closely spaced gypsum veins (<35mm).					
18.00 - 18.66							NI	18	[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] Extremely weak reddish brown, thin and thickly laminated MUDSTONE with subhorizontal (0-10 degrees), closely to medium spaced gypsum veins (<6mm locally up to 130mm). Recovered as angular, fine and medium gravel sized mudstone lithorelicts in clay matrix. Destructed mudstone. Highly fractured. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 18.04m to 18.17m; horizontal gypsum vein.	18.00	-17.67			
										(0.66)				
18.66 - 19.75							30 120 240			18.66	-18.33			
18.00 - 21.00 19.50	HPD	2		85	54	35		19	Very weak to weak locally moderately weak thin and thickly laminated greenish grey MUDSTONE with horizontal to subhorizontal (10 degrees) and inclined (25 to 40 degrees) closely spaced locally very closely spaced gypsum veins (<10 mm). Partially weathered. Bedding fractures are subhorizontal (5 to 10 degrees) closely to medium spaced locally very closely spaced undulating and planar rough very tight clean. Joints are inclined (10 to 20 degrees) closely to medium spaced undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 18.66m to 18.70m; inclined (35 degrees) gypsum vein. 18.96m to 19.00m; subhorizontal (5 degrees) gypsum vein.	(1.79)				
19.75 - 20.05							NI							
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum) 0.33	Sheet 5 of 8
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									19.53m to 19.60m; subhorizontal and inclined (21 degrees) very closely to closely spaced gypsum vein (<18mm).					
20.19 - 20.41	C	49							19.75m to 20.05m; non-intact, recovered as reddish brown mottled greenish grey angular fine and medium gravel sized mudstone lithorelicts in clay matrix. With inclined (25-40 degrees) very closely spaced gypsum veins (<30mm). Partially to destructed mudstone.					
20.05 - 20.45							45 120 215		20.14m to 20.40m; subhorizontal very closely spaced gypsum veins (<5mm).					
20.45 - 20.55							NA		20.40m to 20.45m; subhorizontal gypsum vein.	20.45 (0.10) 20.55	-20.12 -20.22			
									Extremely weak reddish brown MUDSTONE. Distinctly weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
								21	ASSUMED ZONE OF CORE LOSS. [NO RECOVERY]					
20.55 - 22.00							NR			(1.45)				
								22	Extremely weak reddish brown MUDSTONE with subhorizontal (0 to 10 degrees) very closely to closely spaced gypsum veins (<21mm). Destructed mudstone. Highly fractured. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	22.00	-21.67			
21.00 - 24.00				67	9	6	NA		22.44m to 22.57m; inclined (55 degrees) gypsum vein (<10mm).	(1.00)				
22.00 - 23.00														
23.00	HPD	3						23		23.00	-22.67			
23.00 - 23.33							NI		Very weak to weak locally extremely weak greenish grey to light greenish grey locally reddish brown thinly laminated MUDSTONE with subhorizontal (0 to 10 degrees) and inclined (15 to 35 degrees) very closely to closely spaced gypsum vein (<20mm). Partially weathered. Bedding fractures are subhorizontal (5 degrees) closely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.59)				
23.33 - 23.40	C	50							23.00m to 23.33m; extremely weak reddish brown mottled greenish grey mudstone. Distinctly weathered. Highly fractured.					
23.40 - 23.59	C	51							23.14m to 23.20m; inclined (35 degrees) gypsum vein (<18mm).					
23.33 - 23.59							10 90 190		23.33m to 23.34m; subhorizontal (5 degrees) gypsum vein (40mm).	23.59	-23.26			
								24	Very weak to weak locally extremely weak thinly to thickly laminated reddish brown locally greenish grey MUDSTONE with horizontal to subhorizontal (0 to 10 degrees) and inclined (15 to 40 degrees) very closely to closely gypsum veins (<35mm). Partially and distinctly weathered. Bedding fractures are subhorizontal (5-10 degrees) closely and medium spaced locally widely spaced undulating locally planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
23.59 - 26.36														
25.00 - 25.24	C	52							Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum) 0.33	Sheet 6 of 8	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
							15 340 860		23.71m to 23.79m; inclined (40 degrees) gypsum vein (<20mm). 23.83m to 23.86m; inclined (15 degrees) gypsum vein (<10mm). 23.91m to 23.95m; subhorizontal to inclined (0 to 15 degrees) extremely closely spaced gypsum veins (<14mm). 25.17m to 25.25m; greenish grey moderately weak mudstone.					
24.00 - 27.00				90	44	39									
25.71 - 26.00	C	53													
26.00	HPD	4						26							
26.29 - 26.50	C	54													
26.36 - 26.70							NI		26.32m to 26.62m; extremely weak thinly laminated greenish grey mudstone, recovered as subangular fine and medium gravel sized mudstone fragments in clay matrix. 26.62m to 26.70m; extremely weak thinly laminated reddish brown mudstone, recovered as subangular fine and medium gravel sized mudstone fragments in clay matrix.	(5.55)				
26.70 - 27.00							NR		26.70m to 27.00m; assumed zone of core loss.						
27.10 - 27.38	C	55						27							
27.90	HPD	5						28							
27.00 - 29.14							45 360 800								
28.31 - 28.61	C	56													
27.00 - 30.00				97	76	75									
28.61 - 28.95	C	57													
								29							
									Extremely weak reddish brown mottled greenish grey thickly laminated MUDSTONE with subhorizontal (0 to 10 degrees) and inclined (15 to 35 degrees) closely spaced gypsum veins (<30mm). Distinctly weathered. Bedding fractures are subhorizontal (5 to 10 degrees) closely to medium spaced undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	29.14	-28.81			
29.14 - 29.90							55 210 420		29.65m to 29.90m; reddish brown mudstone.	(0.86)					
29.90 - 30.00							NR		29.90m to 30.00m; assumed zone of core loss.						
30.00 - 30.30	C	58							Continued next page	30.00	-29.67				

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum) 0.33	Sheet 7 of 8
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
30.30 - 30.41	C	59							Very weak reddish brown locally mottled greenish grey MUDSTONE with horizontal to subhorizontal (0 to 10 degrees) widely spaced and locally very closely to closely spaced inclined (35 to 45 degrees) closely spaced gypsum veins (<10 mm). Partially weathered. Bedding fractures are subhorizontal (5 to 10 degrees) closely to medium spaced undulating and planar rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
30.00 - 31.50				100	100	100			30.46m to 30.48m; subhorizontal (5 degrees) gypsum vein (<25mm). 30.61m to 30.78m; inclined (45 degrees) gypsum vein (<15mm).					
								31	31.01m to 31.17m; inclined (45 degrees) gypsum vein (<15mm).					
									31.15m to 31.30m; inclined (45 degrees) gypsum vein (<10mm).					
									31.36m to 31.49m; inclined (40 degrees) gypsum vein (<15mm).					
30.00 - 33.21							30 240 520			(3.21)				
31.82 - 32.20	C	60							31.62m to 31.72m; horizontal to subhorizontal (0 to 10 degrees) very closely to closely spaced gypsum veins (<8mm).					
								32						
32.20 - 32.30	C	61							32.05m to 32.12m; subhorizontal (5 to 10 degrees) gypsum veins (<15mm).					
31.50 - 33.00				100	100	91			32.31m to 32.32m; inclined (10 degrees) gypsum vein (<7mm).					
									32.48m to 32.50m; subhorizontal (<10 degrees) gypsum vein (<20mm). 32.49m to 32.70m: greenish grey mottled reddish brown mudstone.					
									32.88m to 32.98m; inclined (30 degrees) gypsum vein (<3mm).					
								33						
33.07 - 33.32	C	62							33.15m to 33.21m; inclined (40 degrees) gypsum vein (<2mm).	33.21	-32.88			
									Very weak locally extremely weak thinly laminated reddish brown MUDSTONE. With subhorizontal (0 to 10 degrees) medium spaced and inclined (25 to 40 degrees) closely spaced gypsum veins (<60mm). Partially to distinctly weathered. Bedding fractures are subhorizontal (5 degrees) closely to medium spaced planar and undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
33.86 - 33.93	C	63							33.31m to 33.40m; inclined (40 degrees) gypsum vein (<2mm). 33.55m to 33.56m; subhorizontal (5 degrees) gypsum vein (<10mm). 33.57m to 33.69m; extremely weak mudstone. 33.59m to 33.65m; extremely weak mudstone. 33.86m to 33.93m; subhorizontal (5 degrees) gypsum vein (<60mm). 34.13m to 34.15m; subhorizontal (5 degrees) gypsum vein (<15mm).					
33.21 - 34.73							30 230 450	34		(1.52)				
33.00 - 36.00				93	87	72								
34.50	HPD	6												
34.70 - 34.90	C	64								34.73	-34.40			
									Very weak locally extremely weak thinly and thickly laminated reddish brown and greenish grey MUDSTONE. With subhorizontal (<10					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum)	0.33	Sheet 8 of 8
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									degrees) closely and medium spaced and inclined (10 to 15 degrees) widely spaced gypsum veins (<40mm). Partially to distinctly weathered. Bedding fractures are subhorizontal (5 degrees) closely to medium spaced planar locally undulating rough locally smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 35.00m to 35.04m; subhorizontal (5 degrees) gypsum vein (<40mm). 35.34m to 35.36m; subhorizontal (5 degrees) gypsum vein (<15mm). 35.44m to 36.10m; extremely weak mudstone.					
34.73 - 37.28							20 210 460	36						
36.14 - 36.31	C	65							36.10m to 36.31m; deformed laminations with micro faulting, possible soft sediment deformation. Subhorizontal to inclined (5-15 degrees) very closely to closely spaced gypsum veins (<10mm).	(2.77)				
									36.49m to 36.53m; inclined (15 degrees) gypsum vein (<20mm).					
36.00 - 37.50				100	83	51								
								37						
37.13 - 37.24	C	66												
37.24 - 37.28	C	67							37.24m to 37.28m; subhorizontal (5 degrees) gypsum vein (<40mm).					
37.28 - 37.50							NI		37.28m to 37.50m; non-intact, recovered as angular fine to coarse gravel sized mudstone fragments. Possibly drilling induced.	37.50	-37.17			
									End of Borehole at 37.50 m					
								38						
								39						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH04**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum)	0.33	Sheet 1 of 4
Hole Type	Discontinuity Log			Status: Final

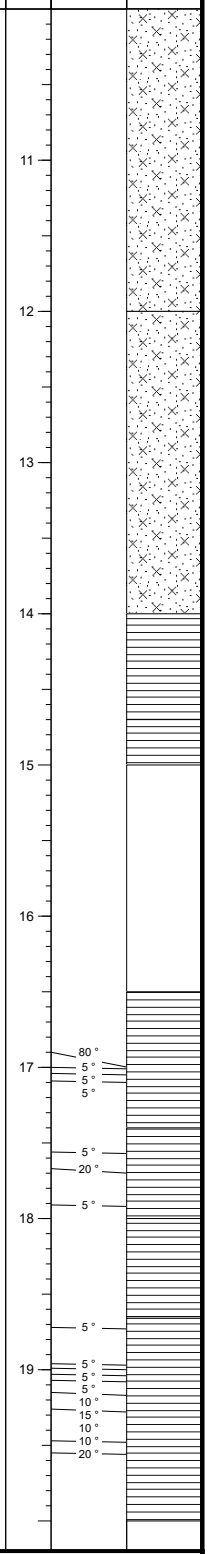
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH04**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum)	0.33	Sheet 2 of 4	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
16.90 - 17.00	J	80		VT	Pl	Ro					
17.00 - 17.01	BF	5		VT	Pl	Ro					
17.04 - 17.05	BF	5		VT	Pl	Ro					
17.09 - 17.10	BF	5		VT	Pl	Ro					
17.56 - 17.57	BF	5		VT	Un	Ro					
17.67 - 17.70	J	20		VT	Un	Ro					
17.91 - 17.92	BF	5		VT	Un	Ro					
18.72 - 18.73	BF	5		VT	Un	Ro					
18.96 - 18.97	BF	5		VT	Pl	Ro					
18.99 - 19.00	BF	5		VT	Pl	Ro					
19.03 - 19.04	BF	5		VT	Un	Ro					
19.07 - 19.08	J	10		VT	Un	Ro					
19.15 - 19.17	J	15		VT	Un	Ro					
19.26 - 19.28	J	10		VT	Un	Ro					
19.47 - 19.48	BF	10		VT	Un	Ro					
19.55 - 19.56	J	20		VT	Un	Ro					



Notes

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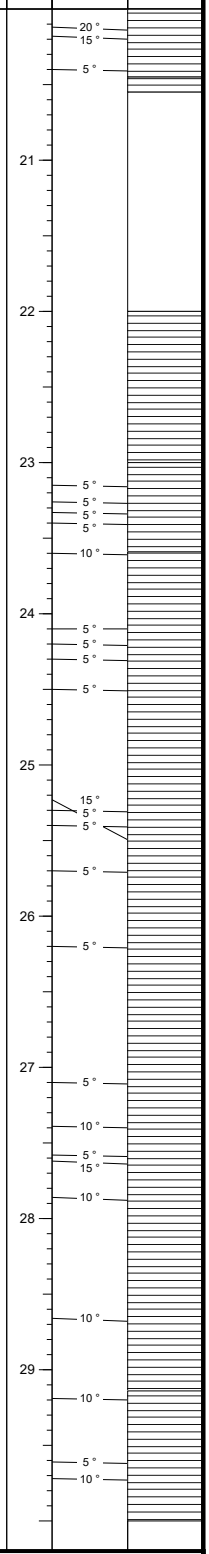
FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum)	0.33	Sheet 3 of 4
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
20.12 - 20.14	J	20		VT	Un	Ro					
20.18 - 20.20	J	15		VT	Un	Ro					
20.40 - 20.41	BF	5		VT	Un	Ro					
23.15 - 23.16	BF	5		VT	Un	Ro					
23.26 - 23.27	BF	5		VT	Un	Ro					
23.33 - 23.34	BF	5		VT	Un	Ro					
23.40 - 23.41	BF	5		VT	Un	Ro					
23.60 - 23.61	BF	10		VT	Pl	Ro					
24.10	BF	5		VT	Un	Ro					
24.20 - 24.21	BF	5		VT	Un	Ro					
24.30 - 24.31	BF	5		VT	Un	Ro					
24.50 - 24.51	BF	5		VT	Un	Ro					
25.23 - 25.50	BF	15		VT	Un	Ro					
25.30 - 25.31	BF	5		VT	Un	Ro					
25.40 - 25.41	BF	5		VT	Un	Ro					
25.70 - 25.71	BF	5		VT	Un	Ro					
26.20 - 26.21	BF	5		VT	Un	Ro					
27.10 - 27.11	BF	5		VT	Un	Ro					
27.39 - 27.40	J	10		VT	Un	Ro					
27.58 - 27.59	BF	5		VT	Un	Ro					
27.62 - 27.64	J	15		VT	Un	Ro					
27.86 - 27.88	BF	10		VT	Un	Ro					
28.66 - 28.68	J	10		VT	Un	Ro					
29.19 - 29.20	BF	10		VT	Un	Ro					
29.61 - 29.62	BF	5		VT	Un	Ro					
29.72 - 29.73	BF	10		VT	Un	Ro					



Notes

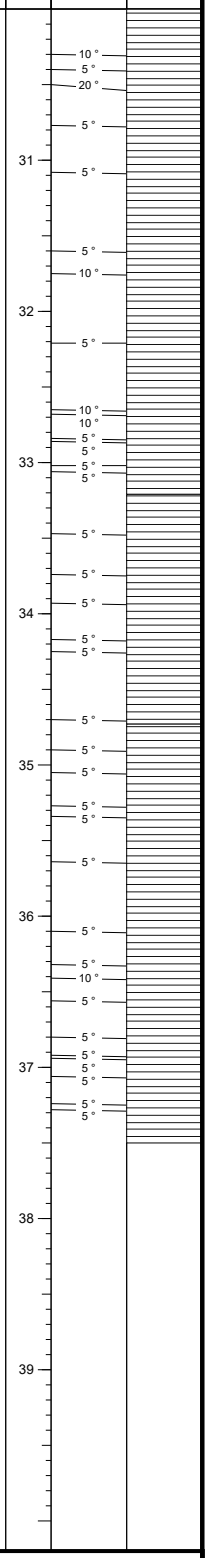
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum)	0.33	Sheet 4 of 4
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
30.30 - 30.31	BF	10		VT	Un	Ro		
30.40 - 30.41	BF	5		VT	Un	Ro		
30.50 - 30.54	J	20		VT	Pl	Ro		
30.77 - 30.78	BF	5		VT	Pl	Ro		
31.08 - 31.09	BF	5		VT	Un	Ro		
31.60 - 31.61	BF	5		VT	Un	Ro		
31.75 - 31.76	BF	10		VT	Un	Ro		
32.21	BF	5		VT	Un	Ro		
32.65 - 32.66	BF	10		VT	Pl	Ro		
32.68 - 32.69	BF	10		VT	Pl	Ro		
32.84 - 32.85	BF	5		VT	Pl	Ro		
32.86 - 32.87	BF	5		VT	Pl	Ro		
33.02	BF	5		VT	Pl	Ro		
33.06 - 33.07	BF	5		VT	Un	Ro		
33.47 - 33.48	BF	5		VT	Pl	Ro		
33.74 - 33.75	BF	5		VT	Un	Ro		
33.93 - 33.94	BF	5		VT	Pl	Sm		
34.17 - 34.18	BF	5		VT	Un	Ro		
34.25 - 34.26	BF	5		VT	Pl	Ro		
34.70 - 34.71	BF	5		VT	Un	Ro		
34.90 - 34.91	BF	5		VT	Pl	Ro		
35.05 - 35.06	BF	5		VT	Pl	Sm		
35.27 - 35.28	BF	5		VT	Pl	Ro		
35.34 - 35.35	BF	5		VT	Pl	Ro		
35.64 - 35.65	BF	5		VT	Un	Ro		
36.10 - 36.11	BF	5		VT	Pl	Ro		
36.32 - 36.33	BF	5		VT	Pl	Ro		
36.41 - 36.42	J	10		VT	Un	Ro		
36.56 - 36.57	BF	5		VT	Un	Ro		
36.80 - 36.81	BF	5		VT	Un	Ro		
36.92 - 36.93	BF	5		VT	Pl	Ro		
36.94 - 36.95	BF	5		VT	Pl	Ro		
37.06 - 37.07	BF	5		VT	Pl	Ro		
37.24 - 37.25	BF	5		VT	Pl	Ro		
37.28 - 37.29	BF	5		VT	Pl	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum)	0.65	Sheet 1 of 1
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/09/2022	06/09/2022	Hand excavated			OE	OE	
1.20	15.40	CP	06/09/2022	07/09/2022	Dando 3000			HR/GD	OE	
15.40	25.30	RC	13/09/2022	13/09/2022	Comacchio 405		PCD	HW	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/09/2022	16:15	0.00			Overcast
06/09/2022	18:00	4.50	4.50	2.90	Sunny
07/09/2022	07:00	4.50	4.50	4.10	Sunny
07/09/2022	18:00	15.40	15.00	3.60	
13/09/2022	08:10	15.40	15.00		
13/09/2022	17:00	25.30	15.00	0.00	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.40	16.80		100	Brown	00:14
16.80	18.30		100	Brown	00:17
18.30	19.80		100	Brown	00:18
19.80	21.30		100	Brown	00:22
21.30	22.80		100	Brown	00:25
22.80	24.30		100	Brown	00:27
24.30	25.30		100	Brown	00:19

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.40	16.80	102
16.80	18.30	102
18.30	19.80	102
19.80	21.30	102
21.30	22.80	102
22.80	24.30	102
24.30	25.30	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
6.00	250	6.00	250
15.40	200	15.00	200
25.30	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.80	15.00	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	15.40

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.40m and continued by rotary coring techniques to 25.30m.
3. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
4. Tiger PID (T-117408) used for photo-ionisation detection (PID).
5. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	6.00	3.00	6.00	14/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	3.00	50	Plain
1	3.00	6.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	14/09/2022
0.50	3.00	Bentonite	14/09/2022
3.00	6.00	Gravel	14/09/2022
6.00	25.30	Bentonite	14/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH05**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum) 0.65	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
0.10	ES	1							MADE GROUND. Brown sandy CLAY with frequent rootlets (<1mm), roots (<2mm) and rare subangular and subrounded fine to coarse gravel sized brick fragments. Sand is fine and medium.						
0.10 - 0.30	B	3							[MADE GROUND] [CLAY]						
0.10	PID		< 0.1 ppm						0.25m to 0.30m; 1 No. subangular cobble (<64mm x 70mm x 75mm) of brick	(0.50)					
0.15	D	2													
0.50	ES	4								0.50	0.15				
0.50 - 0.80	B	6							Light brown very silty SAND with rare rootlets (<1mm). Sand is fine and medium.						
0.50	PID		< 0.1 ppm						[ALLUVIUM] [SAND]						
0.60	D	5								(0.70)					
1.00	ES	7						1	1.00m to 1.20m; mottled orangish brown						
1.00 - 1.20	B	9													
1.00	PID		< 0.1 ppm												
1.10	D	8								1.20	-0.55				
1.20 - 1.65	D	10							Very loose and loose brown silty locally slightly silty SAND with occasional black organic debris. Sand is fine.						
1.20 - 1.70	B	11							[ALLUVIUM] [SAND]						
1.20 - 1.65	SPT		N = 8 (S)						1.20m to 2.80m; occasional wood fragments (<10mm)						
1.90	D	12													
2.00 - 2.45	D	13						2	2.00m to 2.50m; slightly silty						
2.00 - 2.50	B	14							2.00m to 3.50m; rare pockets of soft brown clay (<10mm - 20mm)						
2.00 - 2.45	SPT		N = 3 (S)												
2.80	D	15													
3.00 - 3.45	D	16						3	3.00m to 3.45m; very silty. with rare gravel of mudstone. gravel is subangular medium.						
3.00 - 3.50	B	17								(3.80)					
3.00 - 3.45	SPT		N = 4 (S)												
3.80	D	18													
4.00 - 4.45	D	19						4							
4.00 - 4.50	B	20													
4.00 - 4.45	SPT		N = 7 (S)												
4.80	D	21							4.80m; sand is fine and medium						
5.00 - 5.45	D	22								5.00	-4.35				
5.00 - 5.50	B	23							Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH05**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum) 0.65	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 10 (S)						Loose to medium dense brown slightly silty SAND with occasional black carbonaceous debris. Sand is fine and medium predominantly fine. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	(1.00)				
5.80	D	24												
6.00 - 6.45	D	25						6	Loose brown slightly silty SAND with locally occasional pockets/layers (<10mm) of soft brown clay and occasional black organic sand size carbonaceous debris. Sand is fine to coarse. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	6.00	-5.35			
6.00 - 6.50	B	26												
6.00 - 6.45	SPT		N = 9 (S)											
									6.00m to 7.00m; occasional pockets of soft brown clay					
7.00	D	27						7		(2.50)				
7.50 - 7.95	D	28												
7.50 - 8.00	B	29												
7.50 - 7.95	SPT		N = 9 (S)											
								8						
8.50	D	30							Medium dense with depth brown silty SAND with occasional black sand size carbonaceous debris. Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	8.50	-7.85			
9.00 - 9.45	D	31						9						
9.00 - 9.50	B	32												
9.00 - 9.45	SPT		N = 12 (S)											
10.00	D	33												

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum) 0.65	Sheet 3 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
										(3.50)					
10.50 - 10.95	D	34													
10.50 - 11.00	B	35													
10.50 - 10.95	SPT		N = 13 (S)												
								11							
11.50	D	36													
12.00 - 12.45	D	37						12		12.00	-11.35				
12.00 - 12.50	B	38							Medium dense brown slightly gravelly slightly clayey SAND with rare pockets (<30mm) of soft brown clay and occasional black sand sized carbonaceous debris. Sand is fine to coarse. Gravel is subangular medium of mudstone and possibly carbonaceous mudstone. Depth of upper interface is approximate. [ALLUVIUM] [SAND]						
12.00 - 12.45	SPT		N = 12 (S)												
13.00	D	39						13		(1.95)					
13.50 - 13.95	D	40													
13.50 - 14.00	B	41													
13.50 - 13.95	SPT		N = 16 (S)												
14.00 - 14.50	B	42						14	MUDSTONE. Recovered as soft and firm brown CLAY with occasional cobble sized mudstone fragments with abundant angular and subangular fine to coarse gravel sized mudstone lithorelicts and with abundant fine to coarse sand sized mudstone peds. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	13.95	-13.30				
14.80	D	43								(1.45)					
15.00 - 15.40	D	44													
15.00 - 15.38	SPT		50/225 mm (S)												

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum) 0.65	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.40 - 16.80	C	1	1400											
15.40 - 15.56							NA		Very weak locally extremely weak thickly interlaminated to very thinly interbedded reddish brown MUDSTONE and very weak greenish grey MUDSTONE with subhorizontal (<5 degrees) very closely spaced gypsum veins (2mm to 40mm). Partially weathered. Bedding fractures are subhorizontal (0 to 5 degrees) very closely and closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	15.40	-14.75			
15.56 - 16.35							10 80 170	16		(0.95)				
15.40 - 16.80				100	84	69			15.40m to 15.56m; stiff reddish brown gravelly clay. Gravel is angular and subangular fine to coarse of extremely weak mudstone. Destructured mudstone, possibly disturbed by drilling.					
16.35 - 16.47	C	1	120 mm						Extremely weak thinly laminated reddish brown mottled greenish grey MUDSTONE with subhorizontal (0 to 10 degrees) and inclined (20 degrees) very closely spaced gypsum veins (2mm to 35mm). Partially to distinctly weathered. Joints are subhorizontal (3 to 10 degrees) closely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	16.35	-15.70			
16.35 - 16.83							80 120 160			(0.48)				
16.80 - 16.90	C	2	100 mm					17		16.83	-16.18			
16.83 - 17.30							30 100 170		Very weak thinly laminated to very thinly bedded greenish grey MUDSTONE with subhorizontal (<2 degrees) and inclined (20 degrees) very closely to closely spaced gypsum veins (2mm to 40mm). Partially weathered. Bedding fractures are subhorizontal (<3 degrees) very closely and closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.47)				
16.80 - 18.30				97	90	69			17.25m to 17.30m; assummed zone of core loss.	17.30	-16.65			
17.30 - 18.93							20 135 270	18	Very weak locally extremely weak thickly laminated to very thinly bedded reddish brown mottled greenish grey MUDSTONE with (0 to 80 degrees) closely spaced gypsum veins (1mm to 50mm). Partially to distinctly weathered. Bedding fractures are subhorizontal (0 to 5 degrees) very closely and closely spaced rarely medium spaced planar smooth very tight and clean. Joints are subhorizontal (5 degrees) occasionally inclined (70 degrees) closely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.63)				
18.30 - 19.80	C	3	1500						18.42m to 18.93m; extremely weak.	18.93	-18.28			
18.30 - 19.80				100	93	85		19	Weak locally moderately weak thinly laminated greenish grey MUDSTONE with subhorizontal (<2 degrees) and inclined (<20 degrees) very closely and closely spaced locally extremely closely spaced gypsum veins (1mm to 20mm). Partially weathered to unweathered. Bedding fractures are subhorizontal (<2 degrees) closely to medium spaced occasionally very closely spaced planar rough very tight and clean. Joints are subhorizontal (0 to 10 degrees) very closely to medium spaced planar rough very tight and clean. Joints are inclined (15 to 35 degrees) very closely to medium spaced planar rough undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE]					
19.15 - 19.30	C	3	250 mm											
19.42 - 19.64	C	4	220 mm							(1.17)				
19.80 - 21.30	C	4	1500											

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH05**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum) 0.65	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
18.93 - 21.11							40 220 435		[MUDSTONE] 19.30m to 19.41m; extremely closely spaced gypsum veins (1mm to 2mm).	20.10	-19.45			
20.34 - 20.75	C	5	410 mm						Strong thinly laminated thinly bedded greenish grey MUDSTONE. With slump structures and disturbed bedding possibly soft sedimentary deformation. Unweathered. Bedding fractures are horizontal medium to widely spaced planar rough very tight clean.					
19.80 - 21.30				100	95	83				(0.83)				
									[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.50m to 20.70m; deformed lamination and slump structures, possibly soft-sediment deformation.	20.93	-20.28			
								21	Weak locally moderately weak thinly laminated greenish grey MUDSTONE with subhorizontal (<2 degrees) and inclined (<20 degrees) very closely and closely spaced locally extremely closely spaced gypsum veins (generally 1mm to 30mm rarely 60mm). Partially weathered. Bedding fractures are subhorizontal (<2 degrees) closely to medium spaced occasionally very closely spaced planar rough very tight and clean. Joints are subhorizontal (0 to 10 degrees) very closely to medium spaced planar rough very tight and clean.					
21.30 - 22.80	C	5	1500							(0.99)				
21.11 - 21.92							20 130 305		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.10m to 21.30m; very weak	21.92	-21.27			
21.30 - 22.80				100	100	90		22	Very weak locally extremely weak dark greenish grey mottled dark reddish brown MUDSTONE with subhorizontal (<3 degrees) and inclined (15 to 20 degrees) closely spaced gypsum veins (10mm to 20mm rarely 60mm). Partially to distinctly weathered. Joints are subhorizontal (<5 degrees) closely to medium spaced undulating rough very tight and clean.					
21.92 - 22.84							60 200 360			(0.92)				
									[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.30m to 22.55m; extremely weak.					
22.80 - 24.30	C	6	1500							22.84	-22.19			
22.84 - 23.05							NA		Weak locally extremely weak greenish grey MUDSTONE with subhorizontal (<2 degrees) closely spaced gypsum veins (10mm to 30mm). Partially weathered. Joints are subhorizontal closely spaced undulating rough very tight and clean.					
								23		(0.56)				
23.05 - 23.40							100 120 150		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 23.00m to 23.05m; assummed zone of core loss. 23.05m to 23.10m; non intact possibly drilling disturbed. Recovered as angular extremely weak mudstone fragments (<5mm x 30mm).	23.40	-22.75			
22.80 - 24.30				97	91	80								
									Very weak locally weak reddish brown locally mottled dark greenish grey and grey MUDSTONE with subhorizontal (<3 degrees) and inclined (20 degrees) extremely closely and very closely spaced gypsum veins (5mm to 30mm). Partially to distinctly weathered. Joints are subhorizontal closely spaced planar rough very tight and partly open with clay infill (0.25mm). Joints are inclined (20 degrees) medium spaced planar smooth undulating rough and very tight and clean.					
								24						
24.20 - 24.30	C	6	100 mm											
24.30 - 24.53	C	7	230 mm											
23.40 - 25.30							80 210 420		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 24.20m to 24.54m; weak	(1.90)				
24.30 - 25.30				100	85	90			24.80m to 24.86m; soft reddish brown clay. Destructured mudstone.					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum)	0.65	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details					Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									End of Borehole at 25.30 m	25.30	-24.65			
								26						
								27						
								28						
								29						

Notes
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum)	0.65	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH05**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum)	0.65	Sheet 2 of 3	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
15.56	BF	2		VT	Pl	Sm					
15.66	BF	2		VT							
15.76	BF	2		VT	Pl	Sm					
15.79	BF	2		VT	Pl	Sm					
15.83	BF	2		VT	Pl	Sm					
15.86	BF	2		VT	Pl	Sm					
15.93	BF	2		VT	Pl	Sm					
16.10	BF	0		VT	Pl	Sm					
16.18	BF	0		VT	Pl	Sm					
16.32	BF	2		VT	Pl	Sm					
16.34	BF	2		VT	Pl	Sm					
16.48 - 16.50	J	10		VT	Un	Ro					
16.65	J	3		VT	Un	Ro					
16.74 - 16.76	J	10		VT	Un	Ro					
16.99	BF	2		VT	Pl	Sm					
17.06	BF	2		VT	Pl	Sm					
17.09	BF	2		VT	Pl	Sm					
17.30 - 17.40	J	70		VT	Un	Ro					
17.38 - 17.39	J	5		VT	Un	Ro					
17.58 - 17.59	J	5		VT	Un	Ro					
17.72	BF	2		VT	Pl	Sm					
17.82	BF	2		VT	Pl	Sm					
17.84	BF	2		VT	Pl	Sm					
18.00	BF	2		VT	Pl	Sm					
18.04	BF	2		VT	Pl	Sm					
18.19	BF	2		VT	Pl	Sm					
18.26	BF	2		VT	Pl	Sm					
18.38	BF	2		VT	Pl	Sm					
18.65	BF	2		VT	Pl	Sm					
18.89	BF	2		VT	Pl	Ro					
18.98 - 18.99	BF	3		VT	Pl	Sm					
19.03 - 19.04	BF	3		VT	Pl	Sm					
19.41 - 19.43	J	10		VT	Un	Ro					
19.64 - 19.65	J	5		VT	Pl	Ro					

Notes

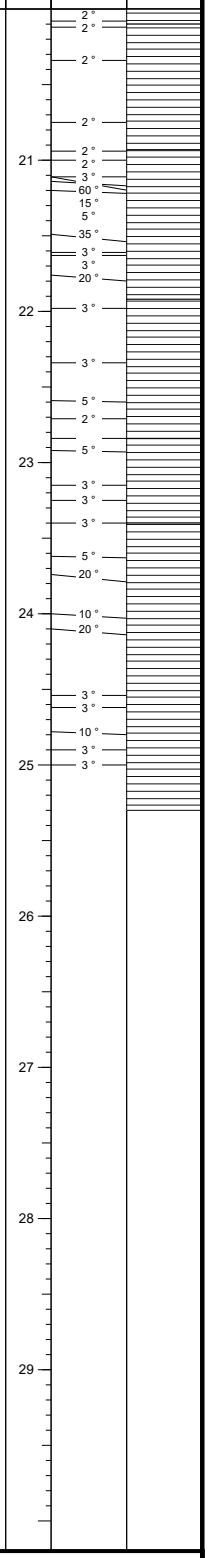
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum)	0.65	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
20.08	BF	2		VT	Pl	Ro		
20.12	BF	2		VT	Pl	Ro		
20.34	BF	2		VT	Pl	Ro		
20.75	BF	2		VT	Pl	Ro		
20.94	BF	2		VT	Pl	Ro		
21.00	BF	2		VT	Pl	Ro		
21.11	J	3		VT	Pl	Ro		
21.11 - 21.20	J	60		VT	Pl	Ro		
21.14 - 21.17	J	15		VT	Pl	Ro		
21.20 - 21.22	J	5		VT	Pl	Ro		
21.49 - 21.54	J	35		VT	Un	Ro		
21.61	J	3		VT	Pl	Sm		
21.63	J	3		VT	Pl	Sm		
21.76 - 21.80	J	20		VT				
21.98	J	3		VT	Un	Ro		
22.34	J	3		VT	Un	Ro		
22.59 - 22.60	J	5		VT	Un	Ro		
22.71	J	2		VT	Un	Ro		
22.84	J			VT	Un	Ro		
22.92 - 22.93	J	5		VT	Un	Ro		
23.15	J	3		VT	Un	Ro		
23.25	J	3		VT	Un	Ro		
23.40	J	3		VT	Un	Ro		
23.62 - 23.63	J	5		VT	Un	Ro		
23.74 - 23.79	J	20		VT	Pl	Sm		
24.00 - 24.03	J	10		VT	Un	Ro		
24.10 - 24.14	J	20		VT	Un	Ro		
24.54	J	3		VT	Un	Ro		
24.62	J	3		VT	Un	Ro		
24.78 - 24.80	J	10		VT	Pl	Sm		
24.90	J	3		VT				
25.00	J	3		VT	Un	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum)	0.44	Sheet 1 of 1
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	01/09/2022	01/09/2022	Hand excavated			BS/BS/MAJ	BS	
1.20	14.87	CP	01/09/2022	01/09/2022	Dando 3000			BS	OE/SP	
14.60	25.00	RC	12/09/2022	13/09/2022	Comacchio MC300		PCD	RC/DQ	OE/GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
01/09/2022	07:00	0.00			Sunny
01/09/2022	18:00	14.87	14.20	4.50	
12/09/2022	07:30	14.60	14.20	0.62	Overcast, showers
12/09/2022	17:30	21.40	14.20	0.99	Dry, sunny
13/09/2022	07:30	21.40	14.20	1.73	
13/09/2022	17:30	25.00	14.20	2.21	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.60	15.40	M	100	Grey	00:23
15.40	16.90	M	100	Brown	00:38
16.90	18.40	M	0	Brown	00:45
18.40	19.90	M	0	Brown	00:49
19.90	21.40	M	0	Brown	00:47
21.40	22.90	Water	0	Brown	00:51
22.90	24.40	Water	0	Brown	00:47
24.40	25.00	Water	0	Brown	00:18

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.60	15.40	102
15.40	16.90	102
16.90	18.40	102
18.40	19.90	102
19.90	21.40	102
21.40	22.90	102
22.90	24.40	102
24.40	25.00	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
14.50	200	14.20	200
25.00	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.20	14.50	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	10.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.87m and continued by rotary coring techniques to 25.00m.
3. SPTs between 6.00m and 12.45m possibly affected by drilling disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117404) used for photo-ionisation detection (PID).
6. Borehole terminated at scheduled depth of 25.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	25.00	Bentonite	13/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum) 0.44	Sheet 1 of 5	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							MADE GROUND. Brown slightly sandy CLAY with frequent rootlets (<1mm), roots (<3mm) and rare medium gravel sized subangular brick fragments. Sand is fine.	(0.30)				
0.10	ES	2												
0.10 - 0.30	B	3												
0.10	PID		< 0.1 ppm						[MADE GROUND] [CLAY]	0.30	0.14			
									0.10m to 0.30m; rare pockets (<30mm) of black organic matter.					
0.40	HVane		112 kPa (*38 kPa*)						MADE GROUND. Brown CLAY with occasional rootlets (<1mm) and roots (<2mm), occasional black medium sand sized organic debris, rare wood fragments (10 x 250mm) and rare fine to coarse gravel sized slag fragments. Slight organic odour.	(0.50)				
0.40	HVane		114 kPa (*38 kPa*)											
0.40	HVane		120 kPa (*42 kPa*)											
0.50	D	4												
0.50	ES	5												
0.50	PID		< 0.1 ppm						[MADE GROUND] [CLAY]	0.80	-0.36			
0.90	D	6							Greyish brown silty SAND with occasional pockets/layers (<30mm) of soft dark brown clay, occasional pockets (<20mm) of soft brown clay and occasional black carbonaceous debris. Sand is fine and medium.	(0.60)				
0.90	ES	7												
0.90 - 1.20	B	8						1						
0.90	PID		< 0.1 ppm											
1.20	ES	9												
1.20 - 1.65	D	11												
1.20 - 1.65	SPT		N = 12 (S)						[ALLUVIUM] [SAND]					
1.20	PID		< 0.1 ppm							1.40	-0.96			
1.50	D	12							Loose brown slightly sandy CLAY with occasional black medium and coarse sand sized carbonaceous debris. Sand is fine and medium.	(0.30)				
1.50 - 1.70	B	13												
									[ALLUVIUM] [CLAY]	1.70	-1.26			
2.00 - 2.45	D	14						2	Firm becoming stiff with depth silty SAND with occasional sand sized carbonaceous debris. Sand is fine. Depth of upper interface is approximate.					
2.00 - 2.45	SPT		N = 7 (S)						[ALLUVIUM] [SAND]					
2.50	D	15												
3.00 - 3.45	D	16						3						
3.00 - 3.45	SPT		N = 10 (S)											
3.50	D	17								(3.80)				
4.00 - 4.45	D	18						4	4.00m to 5.00m; slightly clayey.					
4.00 - 4.45	SPT		N = 11 (S)											
4.50	D	19												
5.00 - 5.45	D	20												
5.00 - 5.45	SPT		N = 10 (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH06**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum) 0.44	Sheet 2 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details					Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.50	D	21							Firm brown sandy CLAY with occasional sand sized carbonaceous debris. Sand is fine. Depth of upper interface is approximate. [ALLUVIUM] [CLAY]	5.50	-5.06			
6.00 - 6.45 6.00 - 6.45	D SPT	22	N = 5 (S)					6		(1.20)				
6.70	D	23							Loose brown silty SAND with rare pockets/ layers (<30mm) of soft brown clay and occasional black medium and coarse sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	6.70	-6.26			
7.50 - 7.95 7.50 - 7.95	D SPT	24	N = 4 (S)					7	7.50m to 7.95m; very loose to loose.					
8.20	D	25						8		(2.30)				
9.00 - 9.45 9.00 - 9.45	D SPT	26	N = 6 (S)					9	Very loose and loose brown locally slightly gravelly silty SAND with rare rootlets (<30mm) and occasional black medium and coarse sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	9.00	-8.56			
9.70	D	27							At 9.70m; slightly gravelly.					
									Continued next page					

Notes

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum) 0.44	Sheet 3 of 5	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95	D	28												
10.50 - 10.95	SPT		N = 4 (S)											
								11						
11.20	D	29							11.20m to 12.70m; slightly gravelly. gravel is subangular fine of mudstone.					
										(5.00)				
12.00 - 12.45	D	30						12	12.00m to 12.45m: possibly very loose					
12.00 - 12.45	SPT		N = 3 (S)											
12.70	D	31							At 12.70m; slightly gravelly.					
								13						
13.50 - 13.95	D	32							13.50m to 13.95m; medium dense.					
13.50 - 13.95	SPT		N = 13 (S)											
14.00 - 14.20	B	34						14	MUDSTONE. Recovered as soft and firm reddish brown mottled greenish grey slightly sandy CLAY with frequent angular and subangular fine to coarse gravel sized extremely weak mudstone lithorelicts. Sand is fine to coarse. With subhorizontal (<2 degrees) closely spaced gypsum veins (30mm to 50mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE]	14.00	-13.56			
14.10	D	33							[MUDSTONE] 14.00m to 14.20m; Recovered as cobbles (<65mm x 80mm x 20mm) and angular fragments (<40mm) of very weak and weak greenish grey mudstone with occasional matrix of soft greenish grey mottled reddish brown gravelly clay.					
14.60 - 14.81							NA							
14.81 - 15.10							20							
14.60 - 15.40				100	0	0								

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum)	0.44	Sheet 4 of 5
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
							30 40		14.60m to 14.81m; brown slightly gravelly slightly silty sand with rare black possibly organic debris. Sand is fine to coarse predominantly fine and medium. Gravel is subangular and subrounded fine and medium of extremely weak reddish brown mudstone. Possibly drilling disturbance, caved in alluvium sand. 14.81m to 15.10m; extremely weak reddish brown mudstone. Bedding fractures are subhorizontal (0 to 5 degrees) planar rough and undulating rough very tight clean. Distinctly weathered.	(2.12)				
15.10 - 16.12							NA	16							
15.40 - 16.90				100	17	13			Extremely weak greenish grey MUDSTONE generally recovered as angular mudstone fragments (<30mm x 55mm) within a matrix of soft slightly sandy clay. Distinctly weathered. Bedding fractures are subhorizontal (<2 degrees) very closely and closely spaced planar smooth very tight. Destructured Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	16.12	-15.68			
16.12 - 16.50							80 130 200			(0.88)					
16.50 - 16.90							20 110 300								
16.90 - 17.00							NA	17	16.90m to 17.00m; soft reddish brown gravelly clay. Gravel is subangular fine to coarse of extremely weak mudstone. Destructured mudstone.	17.00	-16.56			
17.00 - 18.10							30 100		Medium strong thinly laminated greenish grey MUDSTONE. Partially weathered. Bedding fractures are subhorizontal (<2 degrees) very closely and closely spaced planar smooth very tight clean. Joints are inclined (70 degrees) and subvertical (85 degrees) very closely spaced planar smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.75)				
16.90 - 18.40 17.66 - 17.75	C	1	90 mm	100	21	9	225		17.00m to 17.08m; non intact possible drilling disturbed recovered as angular fragments (<40mm x 60mm) of very weak mudstone lithorelicts.	17.75	-17.31			
								18	Very weak thinly laminated greenish grey MUDSTONE. Partially weathered locally distinctly weathered and destructured. Bedding fractures are subhorizontal (<2 degrees) very closely and closely spaced planar smooth very tight clean. Joints are inclined (20 to 30 degrees) closely spaced planar smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.82)				
18.10 - 18.26							NA								
18.27 - 18.40 18.26 - 18.40	C	2	130 mm				NA								
18.40 - 18.57							NI		17.75m to 17.80m; gypsum vein (40mm) inclined 30 degrees. 18.10m to 18.26m; firm greenish grey gravelly clay. Gravels are angular fine to coarse of mudstone. Destructured mudstone. 18.40m to 18.57m; non intact possibly drilling disturbed recovered as angular fragments (<20mm x 50mm) of very weak mudstone.	18.57	-18.13			
18.57 - 19.15							15 70 130	19		(0.73)					
18.40 - 19.90 19.15 - 19.30				100	28	18	NI		Very weak dark greenish grey MUDSTONE with inclined (<20 degrees) and subvertical (<80 degrees) very closely to closely spaced gypsum veins (<10mm x 30mm). Partially weathered. Joints are inclined (5 to 30 degrees) undulating rough very tight clean to tight with clay coating occasionally partly open and open with soft clay infill (<2.5mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	19.30	-18.86			
									19.15m to 19.30m; non intact possible drilling disturbed recovered as angular fragments (<5mm x 50mm) of very weak mudstone lithorelicts. With occasional matrix of dark greenish grey clay.					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH06**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum) 0.44	Sheet 5 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.30 - 20.90							NA		MUDSTONE. Recovered as soft greenish grey slightly sandy CLAY with frequent angular and subangular fine to coarse gravel sized extremely weak mudstone lithorelicts. Sand is fine to coarse. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.60)				
19.90 - 21.40				100	33	0			20.60m to 20.90m; firm reddish brown slightly gravelly clay. Destructured mudstone.					
										20.90	-20.46			
								21	Very weak greenish grey mottled reddish brown MUDSTONE locally with medium bed of extremely weak reddish brown MUDSTONE with generally closely to medium spaced occasionally very closely spaced gypsum veins (2mm to 50mm). Partially and distinctly weathered. Bedding fractures are subhorizontal (<2 degrees) very closely and closely spaced planar smooth very tight clean. Joints are inclined (15 to 50 degrees) closely and medium spaced undulating rough and planar smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.90 - 21.72							30 90 190							
21.72 - 22.00							NA		21.58m to 21.72m; extremely weak reddish brown mudstone.					
22.00 - 22.12	C	3	120 mm					22	21.72m to 22.00m; soft greenish grey slightly gravelly sandy clay. Destructured mudstone.					
21.40 - 22.90				100	50	27			22.00m to 22.37m; moderately weak					
22.23 - 22.38	C	4	150 mm							(2.70)				
22.00 - 22.77							70 180 340		22.37m to 22.70m; extremely weak reddish brown mudstone recovered as angular mudstone fragments (<20mm x 40mm) in a matrix of stiff clay. Destructured mudstone.					
22.77 - 22.90							NA		22.77m to 22.90m; very stiff fissured reddish brown clay. Destructured mudstone.					
								23						
23.37 - 23.50 22.90 - 23.85	C	5	130 mm				20 150 325							
23.60 - 23.85 22.90 - 24.40	C	6	250 mm	100	84	75			Moderately weak thickly laminated greyish brown mottled brown MUDSTONE with subhorizontal very closely and closely spaced gypsum veins (10mm to 30mm). Partially weathered.	23.60	-23.16			
23.85 - 24.05							NA	24	[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
									23.85m to 23.92m; non intact possible drilling disturbed. Recovered as angular fragments (<40mm x 60mm) of very weak mudstone. With occasional firm matrix of clay. Destructured mudstone.	(1.40)				
24.05 - 25.00							110							
24.54 - 24.64	C	7	100 mm				190							
24.66 - 24.93 24.40 - 25.00	C	8	270 mm	92	92	92	350							
									End of Borehole at 25.00 m	25.00	-24.56			

Notes

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum)	0.44	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

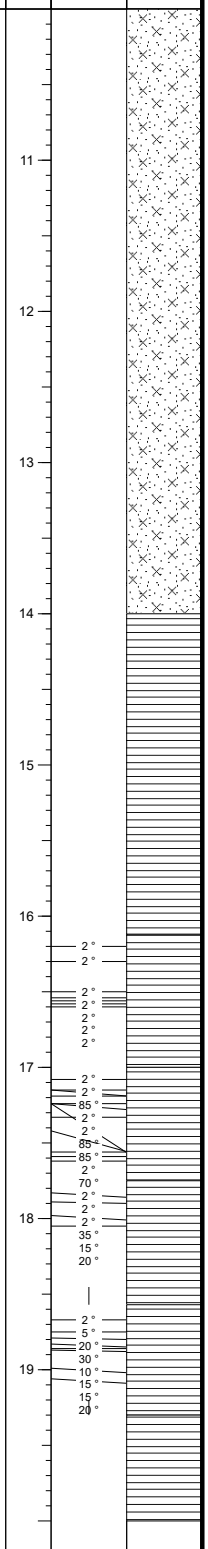
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH06**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum)	0.44	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
16.20	BF	2		VT	Pl	Sm		
16.30	BF	2		VT	Pl	Sm		
16.50	BF	2		VT	Pl	Sm		
16.54	BF	2		VT	Pl	Sm		
16.56	BF	2		VT	Pl	Sm		
16.58	BF	2		VT	Pl	Sm		
16.60	BF	2		VT	Pl	Sm		
17.08	BF	2		VT	Pl	Sm		
17.15	BF	2		VT	Pl	Sm		
17.15 - 17.19	J	85		VT	Pl	Sm		
17.19	BF	2		VT	Pl	Sm		
17.24	BF	2		VT	Pl	Sm		
17.24 - 17.28	J	85		VT	Pl	Sm		
17.24 - 17.57	J	85		VT	Pl	Sm		
17.33	BF	2		VT	Pl	Sm		
17.42 - 17.56	J	70		VT	Pl	Sm		
17.56	BF	2		VT	Pl	Sm		
17.59	BF	2		VT	Pl	Sm		
17.62	BF	2		VT	Pl	Sm		
17.83 - 17.86	J	35		MW	Pl	Sm		infilled with stiff reddish brown clay (<10 mm)
17.89 - 17.90	J	15		VT	Pl	Sm		
17.98 - 18.01	J	20		VT	Pl	Sm		
18.05	BF			VT	Pl	Sm		
18.40 - 18.57	NI							
18.67	BF	2		VT	Pl	Sm		
18.75	J	5		O	Un	Ro		greenish grey soft clay (<2.5 mm)
18.79 - 18.80	J	20		PO	Un	Ro		soft greenish grey clay (<0.5 mm)
18.83 - 18.85	J	30		T	Un	Ro		clay coating
18.86	J	10		VT	Un	Ro		
18.87 - 18.88	J	15		T	Un	Ro		clay coating
18.99 - 19.02	J	15		VT	Un	Ro		
19.06 - 19.09	J	20		VT	Un	Ro		
19.15 - 19.30	NI							

Discontinuity Information



Notes

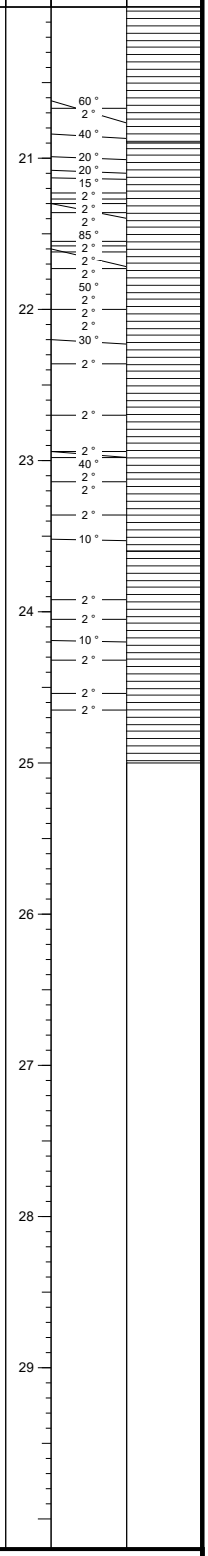
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum) 0.44	Sheet 3 of 3	
	Hole Type	Discontinuity Log		Status	Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
20.62 - 20.77	J	60		VT	Pl	Sm		
20.67	BF	2		VT	Pl	Sm		
20.84 - 20.87	J	40		VT	Pl	Sm		
20.99 - 21.01	J	20		VT	Un	Ro		
21.08 - 21.10	J	20		VT	Un	Ro		
21.13 - 21.14	J	15		VT	Un	Ro		
21.23	BF	2		VT	Pl	Sm		
21.27	BF	2		VT	Pl	Sm		
21.30	BF	2		VT	Pl	Sm		
21.30 - 21.40	J	85		VT	Pl	Sm		
21.36	BF	2		VT	Pl	Sm		
21.55	BF	2		VT	Pl	Sm		
21.58	BF	2		VT	Pl	Sm		
21.60 - 21.72	J	50		VT	Pl	Sm		
21.62	BF	2		VT	Pl	Sm		
21.73	BF	2		VT	Pl	Sm		
22.00	BF	2		VT	Pl	Sm		
22.20 - 22.23	J	30		VT	Un	Ro		
22.36	BF	2		VT	Pl	Sm		
22.70	BF	2		VT	Pl	Sm		
22.94	BF	2		VT	Pl	Sm		
22.94 - 22.98	J	40		VT	Pl	Ro		
22.98	BF	2		VT	Pl	Sm		
23.14	BF	2		VT	Pl	Sm		
23.36	BF	2		VT	Pl	Sm		
23.52 - 23.53	J	10		VT	Un	Ro		
23.85 - 23.92	NI							
23.92	BF	2		VT	Pl	Sm		
24.05	BF	2		VT	Pl	Sm		
24.19 - 24.20	J	10		VT	Pl	Sm		
24.32	BF	2		VT	Un	Ro		
24.54	BF	2		VT	Un	Ro		
24.65	BF	2		VT	Un	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH07**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum)	0.62	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	23/08/2022	23/08/2022	Hand excavated			BS/HR/RW	BS	
1.20	15.40	CP	23/08/2022	24/08/2022	Dando 3000			HR/GD	OE/BS	
15.40	25.40	RC	31/08/2022	01/09/2022	Comacchio MC300		PCD	RC/DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
23/08/2022	07:00	0.00			Cloudy
23/08/2022	18:00	6.00	6.00	3.10	Dry Sunny
24/08/2022	07:00	6.00	6.00	4.00	
24/08/2022	18:00	15.40	15.00	3.65	
31/08/2022	07:00	15.40	15.00	0.57	
31/08/2022	18:00	16.40	15.00	0.49	
01/09/2022	07:00	16.40	15.00	1.83	
01/09/2022	18:00	25.40	15.00	2.47	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.40	16.40	Water	0	Grey	00:15
16.40	17.90	M	100	Grey	00:28
17.90	19.40	M	100	Grey	00:35
19.40	20.90	M	100	Brown	00:42
20.90	22.40	M	100	Brown	00:46
22.40	23.90	M	100	Brown	00:39
23.90	25.40	M	100	Brown	00:41

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.40	16.40	102
16.40	17.90	102
17.90	19.40	102
19.40	20.90	102
20.90	22.40	102
22.40	23.90	102
23.90	25.40	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
8.00	250	8.00	250
15.40	200	15.00	200
25.40	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
13.30	13.50	01:00	
14.70	15.00	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
4.00	2.90	20	3.90	
13.20	4.00	20	11.90	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.45m and continued by rotary coring techniques to 25.50m.
3. Water was added during cable percussion drilling to facilitate penetration of granular strata.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117404) used for photo-ionisation detection (PID).
6. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	12.50	9.50	12.50	05/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	9.50	50	Plain
1	9.50	12.50	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	9.50	Bentonite	05/09/2022
9.50	12.50	Gravel	05/09/2022
12.50	25.40	Bentonite	05/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH07**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum) 0.62	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
0.10 - 0.30	B	2							TOPSOIL. [TOPSOIL]	(0.30)					
0.20 - 0.30	ES	1													
0.20	PID		< 0.1 ppm												
0.30	D	3							MADE GROUND. Stiff blackish brown sandy CLAY with occasional subangular and subrounded fine to coarse gravel sized fragments of slag and with occasional rootlets (<1mm). Sand is mainly fine and medium. [MADE GROUND] [CLAY]	0.30	0.32				
0.50 - 0.60	ES	4								(0.60)					
0.50 - 0.70	B	5													
0.50	PID		< 0.1 ppm												
1.00 - 1.10	ES	6						1	MADE GROUND. Light brown mottled greyish black silty SAND. Sand is fine to coarse. [MADE GROUND] [SAND]	0.90	-0.28				
1.00 - 1.20	B	7								(0.30)					
1.00	PID		0.7 ppm												
1.20	D	8							MADE GROUND. Light brown mottled dark grey silty SAND with occasional pockets (<30 x 50mm) of soft and firm dark grey silty clay, with occasional angular and subangular fine and medium gravel sized fragments of slag and quartzite and with occasional rootlets (<2mm). Sand is fine and medium predominantly fine. [MADE GROUND] [SAND]	1.20	-0.58				
1.20 - 1.65	D	9								(0.80)					
1.20 - 1.70	B	10													
1.20 - 1.65	SPT		N = 33 (S)												
1.80	D	11													
1.90 - 2.00	ES	12													
1.90	PID		< 0.1 ppm												
2.00 - 2.45	D	13						2	Medium dense greenish brown silty SAND with occasional pockets (15 x 30mm) of soft and firm dark grey silty clay. Sand is fine. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	2.00	-1.38				
2.00 - 2.50	B	14								(1.00)					
2.00 - 2.45	SPT		N = 21 (S)												
2.80	D	15													
3.00 - 3.45	D	16						3	Soft and firm greyish brown slightly sandy CLAY. Sand is fine and medium predominantly fine. [ALLUVIUM] [CLAY]	3.00	-2.38				
3.00 - 3.50	B	17								(1.00)					
3.00 - 3.45	SPT		N = 4 (S)												
3.80	D	18													
4.00 - 4.45	D	19						4	Loose greyish brown slightly very silty SAND. Sand is fine. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	4.00	-3.38				
4.00 - 4.50	B	20													
4.00 - 4.45	SPT		N = 6 (S)												
4.80	D	21													
5.00 - 5.45	D	22								(2.00)					
5.00 - 5.50	B	23							Continued next page						

Notes

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH07**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum) 0.62	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 9 (S)												
5.80	D	24													
6.00 - 6.45	D	25						6	Medium dense greyish brown slightly gravelly silty SAND with occasional black carbonaceous fragments (<1mm). Sand is mainly fine and medium. Gravel is subangular and subrounded fine to coarse of quartz, mudstone and sandstone. [ALLUVIUM] [SAND]	6.00	-5.38				
6.00 - 6.50	B	26													
6.00 - 6.45	SPT		N = 17 (S)												
7.00	D	27						7							
7.50 - 7.95	D	28													
7.50 - 8.00	B	29													
7.50 - 7.95	SPT		N = 20 (S)												
								8							
8.50	D	30													
9.00 - 9.45	D	31						9	9.00m to 9.50m; occasional lenses/pockets (<20mm x 50mm) of greyish brown silty sand.						
9.00 - 9.50	B	32													
9.00 - 9.45	SPT		N = 21 (S)							(7.20)					
10.00	D	33							Continued next page						

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum) 0.62	Sheet 3 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.50 - 10.95	D	34							At 10.50m; becoming slightly silty						
10.50 - 11.00	B	35													
10.50 - 10.95	SPT		N = 24 (S)												
								11							
11.50	D	36													
12.00 - 12.45	D	37						12	12.00m to 12.50m; rare pockets (<30mm) of soft greyish brown slightly sandy clay.						
12.00 - 12.50	B	38													
12.00 - 12.45	SPT		N = 21 (S)												
13.00	D	39						13							
										13.20	-12.58				
13.30	D	40							MUDSTONE. Recovered as greenish grey mottled brown angular fine to coarse gravel sized (<30mm x 60mm) extremely weak and very weak mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.30)					
13.50 - 13.95	D	41								13.50	-12.88				
13.50 - 14.00	B	42							MUDSTONE. Recovered as soft to stiff (possibly drilling disturbed) greenish grey mottled brown CLAY with frequent angular fine to coarse gravel sized lithorelicts of mudstone. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]						
13.50 - 13.80	SPT		50/150 mm (S)												
								14							
14.50	D	43								(1.90)					
15.00 - 15.35	D	44													
15.00 - 15.10	SPT		50/80 mm (S)												
									Continued next page						

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum)	0.62	Sheet 4 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.56 - 15.68	C	1	120 mm											
15.40 - 16.40				100	95	0								
15.40 - 16.65							NI	16	Extremely weak to very weak reddish brown MUDSTONE with 1 No. thick bed of weak greenish grey mudstone. with frequent subhorizontal (0 to 10 degrees) and inclined (20 to 30 degrees) gypsum veins (10mm to 30mm). Partially to distinctly weathered locally destructured to soft reddish brown and dark grey clay. Fractures are subhorizontal (0-10 degrees) extremely closely to very closely spaced planar smooth and undulating rough very tight and clean. Fractures are inclined (20 to 30 degrees) closely spaced undulating rough and planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	15.40	-14.78			
									15.49m to 15.59m; non intact. Drilling disturbed recovered as angular fragments (<20mm x 40mm). 16.40m to 17.35m; weak greenish grey mudstone. 16.55m to 16.62m; nodular gypsum.	(1.25)				
16.65 - 17.27							NA	17	MUDSTONE. Recovered as stiff and very stiff reddish brown mottled dark greenish grey CLAY with frequent angular and subangular gravel sized mudstone lithorelicts. Destructured mudstone. With occasional subhorizontal (<2 degrees) gypsum veins (10mm to 20mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	16.65	-16.04			
16.40 - 17.90				100	93	0				(0.62)				
17.27 - 18.07							5		Very weak to weak thinly and medium bedded greenish grey MUDSTONE with occasional subhorizontal (<5 degrees) and inclined (<20 degrees) gypsum veins (2mm to10mm). Partially weathered. Bedding fractures are subhorizontal (<2 degrees) closely spaced planar rough tight with occasional clay infill (<0.25mm). Joints are inclined (30 degrees) medium spaced planar smooth partly open with clay infill (0.25mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	17.27	-16.66			
17.78 - 17.92	C	2	140 mm				170 370	18		(0.80)				
17.90 - 19.40				100	92	0				18.07	-17.45			
18.07 - 19.47							10 310 540		Extremely weak reddish brown MUDSTONE locally grading into very weak greenish grey mudstone. With subhorizontal (<5 degrees) and inclined (15 to 20 degrees) gypsum veins (1mm to 10mm) . Distinctly weathered. Fractures are subhorizontal (0 to 5 degrees) medium spaced undulating rough to planar smooth very tight clean to tight with occasional clay infill (0.1mm). Fractures are inclined (20 degrees) planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.40)				
								19	18.15m to 18.34m; soft reddish brown mottled grey fine to coarse gravelly lithorelicts clay. Destructured mudstone. 18.34m to 18.47m; very weak greenish grey mudstone. 18.73m to 18.76m; fibrous nodular gypsum.					
									19.40m to 19.47m; destructured mudstone. Recovered as soft reddish brown gravelly clay. Gravel is fine to coarse lithorelics of mudstone.	19.47	-18.86			
									Very weak and weak thickly laminated to thinly bedded reddish brown mottled grey MUDSTONE locally becoming medium strong with depth with occasional subhorizontal (<10 degrees) gypsum veins (2mm to 10mm). Partially to locally distinctly weathered. Bedding					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH07**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum) 0.62	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.40 - 20.90				100	97	23			fractures are subhorizontal (0 to 5 degrees) closely and medium spaced planar smooth partly opened with clay infilled (<0.2mm). Fractures are subhorizontal (<2 degrees) very closely to closely spaced planar smooth and rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.47 - 20.66	C	3	190 mm						20.37m to 20.44m; fibrous gypsum nodule. 20.47m to 20.85m; weak greyish mudstone.					
19.47 - 22.40							20 260 715	21	20.82m to 20.90m; destructured mudstone. Firm reddish brown mottled grey gravelly clay. Gravel is fine to coarse lithorelics of mudstone. 20.97m to 21.18m; destructured mudstone. Firm reddish brown gravelly clay. Gravel is fine to coarse lithorelics of mudstone. 21.18m to 21.27; fibrous gypsum nodule.	(2.93)				
21.60 - 21.90 20.90 - 22.40	C	4	300 mm	100	93	43			21.56m to 22.40m; moderately weak to medium strong grey mudstone.					
22.00 - 22.10	C	5	100 mm					22						
										22.40	-21.78			
22.40 - 23.05							130 220 320		Very weak and weak locally moderately weak to medium strong thinly laminated to thickly bedded reddish brown mottled grey MUDSTONE with some inclined (5 to 20 degrees) gypsum veins (2mm to 30mm). Partially weathered. Bedding fractures are subhorizontal (<3 degrees) very closely spaced and medium spaced planar rough and undulating rough and smooth very tight to partly open with occasional clay infill (<0.25mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.65)				
22.40 - 23.90				100	97	41		23		23.05	-22.44			
23.05 - 23.94							NA		MUDSTONE. Recovered as firm and stiff reddish brown slightly sandy CLAY with frequent angular and subangular fine to coarse gravel sized mudstone lithorelics. Sand is fine to coarse. With occasional inclined (<10 degrees) gypsum veins (2mm to 30mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 23.51m to 23.58m; non intact. Drilling disturbed recovered as angular fragments (20mm x 30mm) of gypsum and mudstone. 23.90m to 23.94m; fibrous gypsum nodule. 23.90m to 24.09m; weak reddish brown mudstone.	(0.89)				
24.09 - 24.50	C	6	410 mm					24		23.94	-23.32			
23.90 - 25.40 23.94 - 25.40				97	90	67	30 250		Weak and moderately weak thinly laminated to thinly bedded grey and reddish brown MUDSTONE with some subhorizontal (<10 degrees) gypsum veins (2mm to 10mm). Unweathered. Fractures are subhorizontal (<5 degrees) closely spaced planar smooth and rough very tight and tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.46)				
24.80 - 25.02	C	7	220 mm				450							

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum)	0.62	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									25.21m to 25.35m; non intact. Drilling disturbed recovered as angular fragments (<20mm x 50mm). 25.35m to 25.40m; assumed zone of core loss. End of Borehole at 25.40 m	25.40	-24.78				
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH07**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum)	0.62	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

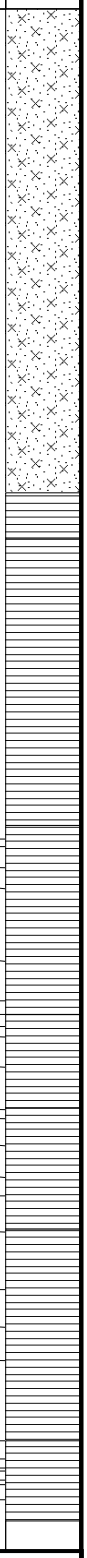
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH07**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum)	0.62	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
15.49	FR	2		VT	Pl	Sm		Clean.			
15.54	FR	2		VT	Pl	Sm		Clean.			
15.67 - 15.68	FR	20		VT	Un	Ro		Clean.			
15.77 - 15.82	FR	20		VT	Un	Ro		Clean.			
16.25 - 16.30	FR	30		VT	Pl	Ro		Clean.			
16.56	FR	5		VT	Un	Ro		Clean.			
16.65	FR	2		VT	Un	Ro		Clean.			
16.73	FR	2		VT	Un	Ro		Clean.			
16.78 - 16.80	FR	3		VT	Pl	Ro		Clean.			
16.97 - 17.00	FR	5		VT	Pl	Sm		Clean.			
17.27 - 17.28	BF	2		T	Pl	Ro		Clay infill 0.2mm.			
17.33 - 17.34	BF	2		T	Pl	Ro		Clay infill 0.2mm.			
17.48 - 17.52	FR	20		VT	Un	Ro		Clean.			
17.68 - 17.73	J	30		PO	Pl	Sm		Clay infill 0.25mm.			
17.85	FR	2		VT	Pl	Ro		Clean.			
18.07 - 18.09	J	30		T	Pl	Sm		Clay infill 0.1mm.			
18.47	FR	2		VT	Pl	Sm		Clean.			
18.69 - 18.72	FR	20		VT	Pl	Sm		Clean.			
18.93 - 18.94	FR	5		VT	Un	Ro		Clean.			
19.47	BF	2		T	Un	Sm		Clay infill 0.1mm.			
19.59	BF	2		PO	Pl	Sm		Clay infill 0.25mm.			
19.65	BF	2		T	Un	Ro		Clay infill 0.1mm.			
19.67	FR	2		VT	Pl	Sm		Clean.			
19.73	FR	2		VT	Pl	Sm		Clean.			
19.76	FR	2		VT	Pl	Ro		Clean.			
19.86	FR	2		VT	Pl	Sm		Clean.			



Notes

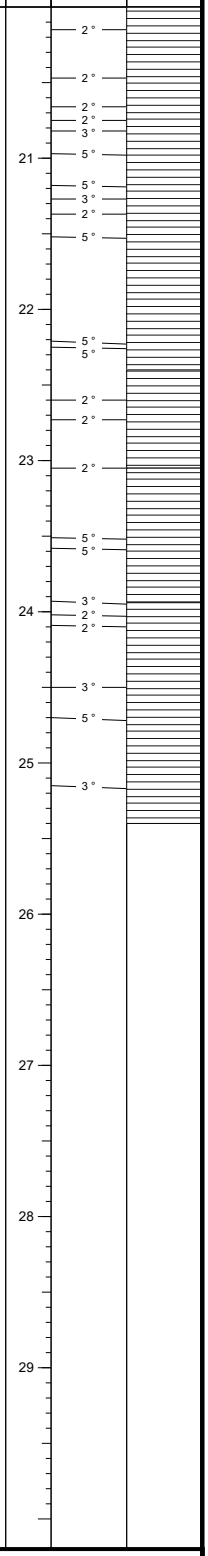
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH07**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum)	0.62	Sheet 3 of 3	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
20.15	BF	2		PO	Pl	Sm		Clean.
20.47	BF	2		PO	Pl	Sm		Clean.
20.66	FR	2		VT	Un	Sm		Clean.
20.75	FR	2		VT	Un	Sm		Clean.
20.82	FR	3		VT	Un	Ro		Clean.
20.97 - 20.98	FR	5		VT	Pl	Sm		Clean.
21.18 - 21.19	FR	5		VT	Pl	Sm		Clay infill <0.1mm.
21.27	FR	3		VT	Pl	Sm		Clay infill <0.1mm.
21.37	FR	2		VT	Un	Sm		Clean.
21.52 - 21.53	BF	5		PO	Pl	Sm		Clay infill 0.25mm.
22.21 - 22.23	FR	5		VT	Pl	Sm		Clean.
22.25 - 22.26	FR	5		VT	Pl	Sm		Clean.
22.60	BF	2		PO	Un	Ro		Clean.
22.73	BF	2		VT	Un	Ro		Clean.
23.05	BF	2		T	Pl	Sm		Clean.
23.51 - 23.52	FR	5		VT	Un	Ro		Clean.
23.58 - 23.59	FR	5		VT	Un	Ro		Clean.
23.93 - 23.95	FR	3		VT	Un	Ro		Clean.
24.02 - 24.03	BF	2		VT	Pl	Ro		Clean.
24.09 - 24.10	BF	2		PO	Pl	Ro		Clean.
24.50	FR	3		VT	Pl	Sm		Clean.
24.70 - 24.72	FR	5		T	Pl	Sm		Clay infill 0.1mm.
25.15 - 25.17	FR	3		VT	Pl	Sm		Clean.

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
Client	SSE Generation Limited (SSE)			**MS-BH08**
Fugro Reference	F212561			
Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum)	0.80	Sheet 1 of 1
Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	09/09/2022	09/09/2022	Hand excavated			BS	BS	
1.20	15.20	CP	12/09/2022	14/09/2022	Dando 3000			ES/TB	BS	
15.20	25.20	RC	21/09/2022	22/09/2022	Comacchio MC300		PCD	RC/DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
09/09/2022	11:00	0.00			Raining
09/09/2022	12:30	1.20	1.20	Dry	Showers
12/09/2022	08:00	1.20	1.20	Dry	Clear
12/09/2022	18:00	9.00	9.00	4.80	Dry
13/09/2022	07:30	9.00	9.00	5.40	Sunny spell
13/09/2022	19:10	14.00	14.00	7.90	Overcast
14/09/2022	07:30	14.00	14.00	1.30	
14/09/2022	19:30	15.20	14.35	8.60	
21/09/2022	11:00	15.20	14.35	0.67	
21/09/2022	17:30	19.70	14.35	0.00	
22/09/2022	07:30	19.70	14.35	0.82	
22/09/2022	17:30	25.20	14.35	1.54	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.20	16.70	P	100	Brown	01:13
16.70	18.20	P	100	Grey	00:48
18.20	19.70	P	100	Grey	00:49
19.70	21.20	P	100	Grey	00:51
21.20	22.70	P	100	Grey	00:49
22.70	24.20	P	100	Grey	00:52
24.20	25.20	P	100	Grey	00:39

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.20	16.70	102
16.70	18.20	102
18.20	19.70	102
19.70	21.20	102
21.20	22.70	102
22.70	24.20	102
24.20	25.20	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	250	1.20	250
15.20	200	14.35	200
25.20	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
2.00	1.50	20	2.00	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2.The location was advanced by cable percussion techniques to 15.20m and continued by rotary coring techniques to 25.20m.
3. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
4. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	25.20	Bentonite	23/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH08**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum) 0.80	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							MADE GROUND. Dark brown sandy CLAY with occasional subangular fine to coarse gravel sized fragments of quartz, concrete and brick and with rootlets (<1mm). Sand is mainly fine and medium. [MADE GROUND] [CLAY]					
0.10 - 0.30	ES	2												
0.10	PID		0.1 ppm											
0.50 - 0.70	ES	4								(0.90)				
0.50	PID		< 0.1 ppm											
0.60	D	5												
0.90	D	7								0.90	-0.10			
0.90	ES	8							Light brown stained orange silty SAND with rootlets (<1mm). Sand is fine and medium. [ALLUVIUM] [SAND]					
0.90	PID		< 0.1 ppm					1		(0.30)				
1.20 - 1.65	D	10							Medium dense light brown silty SAND with rootlets (<1mm). Sand is fine and medium. [ALLUVIUM] [SAND]	1.20	-0.40			
1.20 - 1.65	SPT		N = 12 (S)						1.20m to 1.65m; occasional pockets (<30mm) of soft black clay.					
1.20	PID		< 0.1 ppm											
1.65 - 2.00	B	11							1.65m to 2.00m; abundant black sand sized carbonaceous debris.					
2.00 - 2.45	D	12						2	2.00m to 2.45m; slightly silty.					
2.00 - 2.45	SPT		N = 11 (S)							(1.80)				
2.70	D	13							At 2.70m; dark brown with occasional black sand sized carbonaceous debris.					
3.00 - 3.45	D	14						3	Stiff dark brown sandy CLAY with occasional black sand sized carbonaceous debris and rare (<5mm) of decomposed plant debris. Sand is fine and medium [ALLUVIUM] [CLAY]	3.00	-2.20			
3.00 - 3.45	SPT		N = 13 (S)							(0.50)				
3.50	D	15							Dark brown slightly gravelly sandy SILT with abundant black sand sized carbonaceous debris. Sand is mainly fine and medium. Gravel is fine and medium of mudstone and quartz. [ALLUVIUM] [SILT]	3.50	-2.70			
3.50 - 4.00	B	16								(0.40)				
4.00 - 4.45	D	17						4	Medium dense dark brown silty SAND with abundant black sand sized carbonaceous debris. Sand is fine and medium becoming fine below 4.50m. [ALLUVIUM] [SAND]	3.90	-3.10			
4.00 - 4.45	SPT		N = 21 (S)											
4.50	D	18							4.50m to 5.00m; frequent pockets/layers (<70mm) of dark brown slightly sandy clay.	(1.10)				
4.50 - 5.00	B	19												
5.00 - 5.45	D	20								5.00	-4.20			
5.00 - 5.45	SPT		N = 14 (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum) 0.80	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									Stiff dark brown sandy CLAY with abundant black sand sized carbonaceous debris and occasional decomposed wood fragments (~4mm x 10mm). Sand is fine and medium. [ALLUVIUM] [CLAY]	(0.50)				
5.50	D	21								5.50	-4.70			
									Medium dense dark brown silty SAND with abundant black sand sized carbonaceous debris. Sand is fine. [ALLUVIUM] [SAND]					
									At 5.50m; sand is fine and medium.					
								6						
6.50 - 7.00 6.50 - 6.95	B SPT	22	N = 23 (S)											
								7						
7.50	D	23								(4.00)				
8.00 - 8.50 8.00 - 8.45	B SPT	24	N = 14 (S)					8						
9.00	D	25						9	At 9.00m; sand is fine and medium.					
9.50 - 10.00 9.50 - 9.95	B SPT	26	N = 9 (S)						Loose dark brown slightly silty SAND with occasional to frequent black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	9.50	-8.70			
10.00	D	27												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH08**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum) 0.80	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
										(1.50)					
11.00 - 11.50 11.00 - 11.45	B SPT	28	N = 7 (S)					11	Loose and medium dense dark brown gravelly SAND with abundant black sand sized carbonaceous debris. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone and quartz. [ALLUVIUM] [SAND]	11.00	-10.20				
12.00	D	29						12							
12.50 - 13.00 12.50 - 12.95	B SPT	30	N = 10 (S)							(3.00)					
12.80	D	31						13							
14.00 - 14.35 14.00 - 14.35 14.00 - 14.34	B D SPT	33 32	100/225 mm (S)					14	MUDSTONE. Recovered as firm reddish brown CLAY with frequent fine to coarse sand sized mudstone peds and occasional subangular and subrounded fine to coarse gravel sized extremely weak mudstone lithorelicts. Residual mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	14.00	-13.20				
14.35 - 14.60 14.35 - 14.60	D SPT	34	100/150 mm (S)							(1.80)					
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum) 0.80	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.20 - 15.81							NA							
										15.80	-15.00			
15.20 - 16.70				100	0	0		16	MUDSTONE. Recovered as stiff indistinctly fissured reddish brown mottled grey CLAY. Residual mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
15.81 - 16.70							NA		16.19m to 16.22m; inclined (10 degrees) gypsum vein. Partially decomposed. 16.24m to 16.37m; firm and stiff greenish grey.	(0.90)				
										16.70	-15.90			
16.70 - 16.85							20 30		Extremely weak thinly laminated reddish brown mottled greenish grey MUDSTONE locally recovered as angular lithorelicts of mudstone (20mm x 50mm) with occasional matrix of soft reddish brown slightly sandy clay. With subhorizontal (5 degrees) and inclined (15 to 30 degrees) closely spaced gypsum veins (5mm to 30mm). Distinctly weathered locally destructured. Bedding fractures are horizontal very closely spaced locally closely spaced planar smooth very tight clean locally partly open with clay infill 0.25mm. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
16.85 - 17.11							60 NA	17						
17.18 - 17.22	C	1	40 mm											
17.11 - 17.37							20 40 80							
16.70 - 18.20				100	24	7								
17.37 - 17.77							NA		16.85m to 17.11m; recovered as stiff reddish brown mottled grey clay with angular fine to coarse gravel sized extremely weak mudstone lithorelicts. Destructured mudstone. 17.18m to 17.22m; 1 No. horizontal gypsum vein (30mm). 17.37m to 17.56m; recovered as firm reddish brown and greenish grey clay with angular fine to coarse gravel sized extremely weak mudstone lithorelicts. Destructured mudstone.					
18.06 - 18.12	C	2	60 mm					18						
18.23 - 18.30	C	3	70 mm						17.60m to 17.77m; recovered as firm reddish brown and greenish grey clay with angular fine to coarse gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments. Destructured mudstone. 17.98m to 18.36m; extremely weak and very weak thinly laminated to medium bedded greenish grey mudstone. 18.56m to 19.04m; with very closely spaced thick laminations and very thin beds of soft reddish brown clay.					
17.77 - 19.17							20 90 240			(3.90)				
18.20 - 19.70				100	55	0		19						
19.08 - 19.15	C	4	70 mm											
19.17 - 19.50							NI		19.17m to 19.50m; non intact recovered as angular fragments (40mm x 60mm). Possibly drilling disturbed.					
19.50 - 19.98							NA		19.50m to 19.70m; recovered as stiff to very stiff reddish brown mottled grey clay with a dissolved gypsum vein (<2mm). Destructured mudstone. 19.70m to 19.98m; recovered as soft reddish brown mottled grey clay with angular fine to coarse gravel sized extremely weak mudstone lithorelicts. Destructured mudstone.					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH08**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum) 0.80	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.98 - 20.20							NI		19.98m to 20.20m; non intact recovered as angular mudstone fragments (30mm x 50mm). Possibly drilling disturbed. 20.20m to 20.60m; extremely weak greenish grey thinly laminated to medium bedded mudstone.					
20.20 - 20.60 19.70 - 21.20				100	19	13	20 50 100							
20.60 - 20.72	C	5	120 mm							20.60	-19.80			
20.60 - 20.80							35 70 130		Very weak locally extremely weak thinly laminated greenish grey MUDSTONE. Locally with horizontal to vertical (0 to 90 degrees) very closely spaced gypsum veins (<1mm to 5mm). Partially weathered locally distinctly weathered. Joints are subhorizontal (5 to 10 degrees) closely spaced undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.60)				
20.80 - 21.20							NI	21						
21.27 - 21.33	C	6	60 mm							21.20	-20.40			
21.33 - 21.57	C	7	240 mm						20.80m to 21.05m; non intact recovered as angular mudstone fragments (20mm x 50mm). Possibly drilling disturbed. 21.05m to 21.08m; gypsum vein (30mm). Partially dissolved. 21.08m to 21.20m; extremely weak mudstone. Recovered as angular and subangular fragments (20mm x 40mm) with occassional firm greenish grey clay and partially dissolved gypsum vein (<30mm). Distinctly weathered.	(0.75)				
21.20 - 21.65							10 100 240							
21.65 - 21.95							NI							
21.20 - 22.70				100	82	65		22	Medium strong thinly laminated greenish grey MUDSTONE. Unweathered and partially weathered. Bedding fractures are horizontal medium spaced locally very closely spaced undulating locally planar rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	21.95	-21.15			
21.95 - 22.86							60 200 360		21.65m to 21.92m; extremely weak. Recovered as angular and subangular fragments (20mm x 40mm) with occassional soft greenish grey clay. Distinctly weathered. 21.92m to 21.95m; horizontal gypsum vein (30mm) with occasional lenses (<2mm x 40mm) of stiff clay. Partially dissolved.					
22.86 - 22.96							NA							
23.13 - 23.39	C	8	260 mm					23	Weak greenish grey mottled reddish brown MUDSTONE with subhorizontal (0 to 10 degrees) and inclined (15 to 30 degrees) very closely spaced gypsum veins (<2mm to 20mm). Partially weathered. Joints are subhorizontal (<5 to 10 degrees) medium spaced and inclined (20 to 30 degrees) widely spaced undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
23.40 - 23.55	C	9	150 mm											
22.70 - 24.20 22.96 - 24.00				100	77	67	425 - 615		22.65m to 22.70m; horizontal gypsum vein (35mm) with occassional lenses (<3mm x 50mm) of stiff clay. 22.81m to 22.86m; horizontal gypsum veins (20mm to 40mm). 22.86m to 22.96m; recovered as soft to stiff dark brown clay with angular fine gravel sized extremely weak mudstone lithorelicts. 23.84m to 24.00; extremely weak. 23.91m to 24.00m; inclined (30 degrees) gypsum viens (5mm to 10mm). Partially dissolved.	(3.25)				
								24						
24.00 - 24.37							NA		24.00m to 24.37m; stiff reddish brown clay with angular fine and medium gravel sized mudstone lithorelicts and very thin bed (<30mm) of extremely weak greenish grey mottled reddish brown mudstone and partially dissolved gypsum vein (<40mm).					
24.36 - 24.48	C	10	120 mm											
24.20 - 25.20				100	87	87								
24.37 - 25.20							145 210 270							
25.00 - 25.20	C	11	200 mm											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum)	0.80	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									End of Borehole at 25.20 m	25.20	-24.40				
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH08**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum)	0.80	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH08**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum)	0.80	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
16.85	BF	0		VT	Pl	Sm			11	0 °	
17.11	BF	0		VT	Pl	Sm			12	0 °	
17.14	BF	0		VT	Pl	Sm				0 °	
17.18	BF	0		VT	Pl	Sm				0 °	
17.22	BF	0		VT	Pl	Sm				0 °	
17.30	BF	0		VT	Pl	Sm				0 °	
17.33	BF	0		VT	Pl	Sm				80 °	
17.33 - 17.37	J	80		VT	Pl	Sm				0 °	
17.35	BF	0		VT	Pl	Sm				0 °	
17.37	BF	0		VT	Pl	Sm				0 °	
17.79	BF	0		VT	Pl	Sm				30 °	
17.82 - 17.88	J	30		VT	Pl	Ro			13	0 °	
17.95	BF	0		VT	Pl	Sm				0 °	
17.98	BF	0		VT	Pl	Sm				0 °	
18.01	BF	0		VT	Pl	Sm				0 °	
18.05	BF	0		VT	Pl	Sm				0 °	
18.12	BF	0		VT	Pl	Sm				0 °	
18.15	BF	0		VT	Pl	Sm				0 °	
18.17	BF	0		VT	Pl	Sm				0 °	
18.23	BF	0		VT	Pl	Sm				0 °	
18.30	BF	0		VT	Pl	Sm				0 °	
18.36	BF	0		VT	Pl	Sm				0 °	
18.40	BF	0		VT	Pl	Sm			14	0 °	
18.47	BF	0		VT	Pl	Sm				0 °	
18.50	BF	0		VT	Pl	Sm				0 °	
18.55	BF	0		VT	Pl	Sm				0 °	
18.60	BF	0		VT	Pl	Sm				0 °	
18.64	BF	0		VT	Pl	Sm				0 °	
18.70	BF	0		VT	Pl	Sm				0 °	
18.76	BF	0		PO	Pl	Sm		clay infill 0.25mm	15	0 °	
18.83	BF	0		PO	Pl	Sm		clay infill 0.25mm		0 °	
									16		
									17		
									18		
									19		

Notes

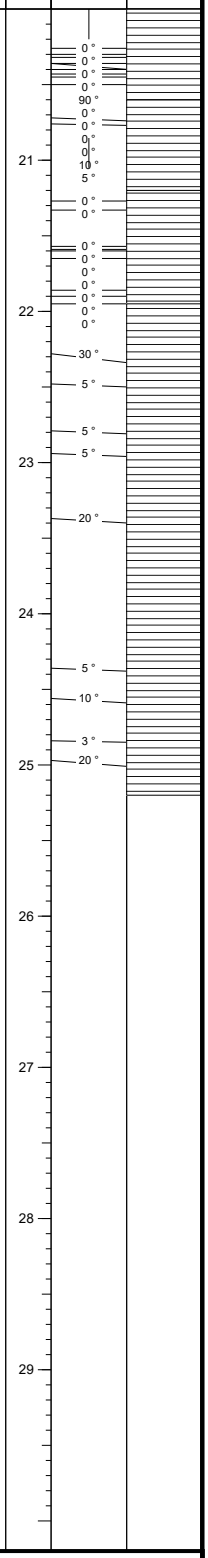
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum)	0.80	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
18.87	BF	0		PO	Pl	Sm		clay infill 0.25mm
18.89	BF	0		PO	Pl	Sm		clay infill 0.25mm
18.93	BF	0		PO	Pl	Sm		clay infill 0.25mm
18.97	BF	0		PO	Pl	Sm		
19.01	BF	0		PO	Pl	Sm		
19.08	BF	0		PO	Pl	Sm		
19.17 - 19.50	NI							
19.98 - 20.20	NI							
20.26	BF	0		VT	Pl	Sm		
20.30	BF	0		VT	Pl	Sm		
20.32	BF	0		PO	Pl	Sm		clay infill 0.25mm
20.36	BF	0		PO	Pl	Sm		clay infill 0.25mm
20.36 - 20.40	J	90		VT	Pl	Ro		
20.40	BF	0		PO	Pl	Sm		clay infill 0.25mm
20.43	BF	0		VT	Pl	Sm		
20.45	BF	0		VT	Pl	Sm		
20.50	BF	0		VT	Pl	Sm		
20.72 - 20.74	J	10		VT	Un	Ro		
20.76 - 20.77	J	5		VT	Un	Ro		
20.80 - 21.05	NI							
21.27	BF	0		VT	Pl	Ro		
21.33	BF	0		VT	Un	Ro		
21.57	BF	0		VT	Un	Ro		
21.59	BF	0		VT	Un	Ro		
21.60	BF	0		VT	Un	Ro		
21.65	BF	0		VT	Un	Ro		
21.86	BF	0		VT	Un	Ro		
21.90	BF	0		VT	Un	Ro		
21.95	BF	0		PO	Un	Ro		clay infill 0.25mm
22.28 - 22.34	J	30		VT	Un	Ro		
22.48 - 22.50	J	5		VT	Un	Ro		
22.79 - 22.81	J	5		VT	Un	Ro		
22.94 - 22.96	J	5		VT	Un	Ro		
23.37 - 23.40	J	20		VT	Un	Ro		
24.36 - 24.38	J	5		VT	Un	Ro		
24.56 - 24.59	J	10		VT	Un	Ro		
24.84 - 24.85	J	3		VT	Un	Ro		
24.97 - 25.01	J	20		VT	Un	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH09**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum)	0.48	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	14/09/2022	14/09/2022	Hand excavated			BS	BS	
1.20	15.05	CP	14/09/2022	15/09/2022	Dando 3000			HR/GD	BS	
15.05	28.30	RC	03/10/2022	04/10/2022	Comacchio MC300		PCD	RC/DQ	SBP	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
14/09/2022	07:00	0.00		Dry	Overcast
14/09/2022	18:00	6.00	6.00	2.30	Dry with sunny spells
15/09/2022	07:00	6.00	6.00	3.40	
15/09/2022	18:00	15.05	14.50	4.80	
03/10/2022	07:30	15.05	14.50	0.61	
03/10/2022	17:30	25.30	14.50	2.04	
04/10/2022	07:30	25.30	14.50	1.72	
04/10/2022	17:30	28.30	14.50	2.11	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.05	15.80	P	100	Brown	00:13
15.80	17.30	P	100	Brown	00:29
17.30	18.80	P	100	Grey	00:37
18.80	20.30	P	100	Grey	00:41
20.30	21.80	P	100	Grey	00:44
21.80	23.30	P	100	Brown	00:47
23.30	24.80	P	100	Brown	00:42
24.80	25.30	P	100	Grey	00:14
25.30	26.80	P	15	Brown	00:54
26.80	28.30	P	28	Brown	00:49

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.05	15.80	102
15.80	17.30	102
17.30	18.80	102
18.80	20.30	102
20.30	21.80	102
21.80	23.30	102
23.30	24.80	102
24.80	25.30	102
25.30	26.80	102
26.80	28.30	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
15.05	200	14.50	200
28.30	146	15.00	146

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.30	14.50	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
3.00	14.80

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.80m and continued by rotary coring techniques to 28.30m.
3. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
4. Tiger PID (T-117408) used for photo-ionisation detection (PID).
5. Borehole terminated at 28.30m after the cancellation of in-situ testing.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	9.00	3.00	9.00	06/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	3.00	50	Plain
1	3.00	9.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	06/10/2022
0.50	3.00	Bentonite	06/10/2022
3.00	9.00	Gravel	06/10/2022
9.00	28.30	Bentonite	06/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/WL/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH09**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum) 0.48	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1							MADE GROUND. Dark brown sandy CLAY with occasional angular fine and medium gravel sized fragments of brick, with rare angular cobble sized fragments of angular concrete and with abundant rootlets (<1mm). Sand is mainly fine and medium.					
0.10 - 0.30	B	2												
0.10	PID		< 0.1 ppm							(0.45)				
0.30	D	3												
									[MADE GROUND] [CLAY]	0.45	0.03			
0.50	ES	4							MADE GROUND. Light brown silty SAND with pockets (<30mm) of black clay with rootlets (<1mm).					
0.50	PID		< 0.1 ppm							(0.25)				
									[MADE GROUND] [SAND]	0.70	-0.22			
0.80	D	6							MADE GROUND. Black sandy CLAY with abundant fragments of decomposed wood (<100mm). Sand is fine.	(0.30)				
1.00	ES	7						1	[MADE GROUND] [CLAY]	1.00	-0.52			
1.00 - 1.20	B	8							Orangish dark brown silty SAND with occasional pockets (<40mm) of black clay. Sand is fine and medium.					
1.00	PID		< 0.1 ppm							(0.20)				
1.20	ES	9							[ALLUVIUM] [SAND]	1.20	-0.72			
1.20 - 1.65	D	10							Loose orangish light brown SAND with frequent pockets (<5mm) of black silt. Sand is fine and medium.					
1.20 - 1.70	B	11												
1.20 - 1.65	SPT		N = 8 (S)											
1.20	PID		< 0.1 ppm						[ALLUVIUM] [SAND]					
1.90	D	12							1.90m to 2.80m; light brown.					
2.00 - 2.45	D	13						2	2.00m to 2.45m; occasional pockets (<20mm) of black sandy clay.	(1.80)				
2.00 - 2.50	B	14												
2.00 - 2.45	SPT		N = 6 (S)											
2.80	D	15							At 2.80m; dark brown with occasional black sand-sized carbonaceous debris.					
3.00 - 3.45	D	16						3		3.00	-2.52			
3.00 - 3.50	B	17							Very loose and loose dark brown silty SAND with occasional pockets/layers (<10mm) of dark brown clay and occasional black sand sized carbonaceous debris. Sand is fine and medium.					
3.00 - 3.45	SPT		N = 6 (S)						[ALLUVIUM] [SAND]					
									3.00m to 3.45m; silty clayey SAND.					
3.80	D	18												
4.00 - 4.45	D	19						4						
4.00 - 4.50	B	20												
4.00 - 4.45	SPT		N = 7 (S)											
										(2.80)				
4.80	D	21												
5.00 - 5.45	D	22												
5.00 - 5.50	B	23												

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH09**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum) 0.48	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 4 (S)						5.00m to 5.50m; abundant pockets (<100mm) of dark brown clay.					
5.80	D	24								5.80	-5.32			
6.00 - 6.45	D	25						6	Very loose and loose dark brown slightly gravelly silty SAND. Sand is mainly fine and medium, gravel is subangular fine and medium of mudstone and possibly lignite. [ALLUVIUM] [SAND]					
6.00 - 6.50	B	26												
6.00 - 6.45	SPT		N = 4 (S)						At 5.80m; occasional pockets (<20mm) of dark brown clay.					
										(1.70)				
7.00	D	27						7						
7.50 - 7.95	D	28							Loose becoming medium dense with depth dark brown slightly gravelly silty SAND with with abundant black sand sized carbonaceous debris. Sand is mainly fine and medium, gravel is subangular fine of mudstone and possibly lignite. Depth of upper interface approximate. [ALLUVIUM] [SAND]	7.50	-7.02			
7.50 - 8.00	B	29												
7.50 - 7.95	SPT		N = 8 (S)											
								8	7.50m to 8.00m; frequent pockets (<50mm) of dark brown clay.					
8.50	D	30							At 8.50m; gravel is subangular fine of possible lignite.					
9.00 - 9.45	D	31						9						
9.00 - 9.50	B	32												
9.00 - 9.45	SPT		N = 12 (S)											
10.00	D	33												

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH09**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum) 0.48	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.50 - 10.95	D	34													
10.50 - 11.00	B	35							Below 10.50m; becoming very silty.						
10.50 - 10.95	SPT		N = 11 (S)							(6.50)					
								11							
11.50	D	36							At 11.50m; gravel is angular and subangular fine and medium of quartz and mudstone.						
12.00 - 12.45	D	37						12							
12.00 - 12.50	B	38													
12.00 - 12.45	SPT		N = 14 (S)												
13.00	D	39						13	At 13.00m; with frequent pockets (<30mm) of dark brown clay.						
13.50 - 13.95	D	40													
13.50 - 14.00	B	41													
13.50 - 13.95	SPT		N = 14 (S)												
								14		14.00	-13.52				
14.10	D	42							MUDSTONE. Recovered as firm and stiff reddish brown speckled greenish grey sandy CLAY with angular and subangular fine and medium gravel sized extremely weak mudstone lithorelicts. Destructured Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.50)					
14.50 - 14.80	D	43								14.50	-14.02				
14.50 - 14.80	SPT		50/150 mm (S)						MUDSTONE. Recovered as greenish grey subangular fine and medium gravel sized mudstone and gypsum lithorelicts within very stiff grey clay matrix. Destructured Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.30)					
										14.80	-14.32				
									MUDSTONE. Recovered as firm reddish brown						
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH09**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum) 0.48	Sheet 4 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.05 - 15.80				100	0	0			and greenish grey CLAY with angular and subangular gravel sized extremely weak mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.75)				
15.05 - 16.55							NA	16						
15.80 - 17.30				100	35	22			Medium strong thinly laminated greenish grey MUDSTONE with slump structures, possibly soft sedimentary deformation. Partially weathered. Bedding fractures are very closely and closely spaced horizontal undulating smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	16.55	-16.07			
16.89 - 17.08 16.55 - 17.28	C	1	190 mm				20 90 220	17		(0.73)				
17.16 - 17.28	C	2	120 mm						16.55m to 16.85m; with very closely spaced thick laminae and very thin beds of extremely weak destructured mudstone.					
17.28 - 17.90							NA		MUDSTONE. Recovered as firm to stiff reddish brown CLAY with angular and subangular gravel sized extremely weak mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	17.28 (0.62)	-16.80			
17.95 - 18.07	C	3	120 mm						17.30m to 17.50m; greenish grey. 17.70m to 17.90m; with very closely spaced inclined (40 to 50 degrees) gypsum veins (15mm to 20mm).	17.90	-17.42			
17.30 - 18.80				100	45	45		18	Very weak to weak dark grey MUDSTONE with closely spaced inclined (30 to 75 degrees) gypsum veins (1mm to 15mm). Partially weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
17.90 - 18.55							150 220 300			(0.90)				
18.55 - 18.70							NI		18.40m to 18.55m; thickly laminated greenish grey, with deformed laminations, possibly soft sedimentary deformation. 18.55m to 18.70m; non-intact: extremely weak to very weak thickly laminated greenish grey and reddish brown Mudstone. Distinctly weathered. Bedding fractures are extremely closely spaced undulating smooth very tight and clean.					
18.70 - 18.80							- 100 -			18.80	-18.32			
18.80 - 20.00							NA	19	MUDSTONE. Recovered as very stiff dark grey becoming reddish brown with depth CLAY with angular and subangular gravel sized extremely weak mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.20)				
18.80 - 20.30				100	20	19								
									Continued next page	20.00	-19.52			

Notes

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH09**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum) 0.48	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.30 - 20.61	C	4	310 mm						Weak and moderately weak thickly laminated to very thinly bedded dark greenish grey MUDSTONE with deformed laminations, possibly soft sedimentary deformation. With subhorizontal very closely and closely spaced gypsum veins (2mm to 25mm). Partially weathered. Bedding fractures are subhorizontal medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.00 - 20.90							220 300 400			(0.90)				
20.70 - 20.88	C	5	180 mm											
										20.90	-20.42			
20.30 - 21.80				100	47	37		21	MUDSTONE. Recovered as very stiff reddish brown mottled greenish grey CLAY with angular and subangular gravel sized extremely weak mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.90 - 21.65							NA			(0.75)				
										21.65	-21.17			
21.65 - 21.80							- 150		Very weak locally extremely weak reddish brown and greenish grey MUDSTONE with closely spaced subhorizontal to inclined (20 degrees) gypsum veins (2mm to 80mm). Partially weathered locally distinctly weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
21.80 - 22.00							- NI	22	21.80m to 22.00m; highly fractured, extremely weak thickly laminated greenish grey and reddish brown Mudstone. Distinctly weathered. Bedding fractures are extremely closely spaced undulating smooth very tight and clean.					
22.35 - 22.42	C	6	100 mm						22.42m to 22.50m; highly fractured, extremely weak thickly laminated reddish brown Mudstone. Distinctly weathered. Bedding fractures are extremely closely spaced undulating smooth very tight and clean.	(1.35)				
22.00 - 23.00							100							
21.80 - 23.30				100	78	78	250							
22.58 - 22.80	C	7	220 mm				500		22.80m to 22.85m; destructured mudstone recovered as clay with gravel sized mudstone lithorelicts					
								23		23.00	-22.52			
23.30 - 24.80				100	83	83		24	Very weak and weak thinly to thickly laminated reddish brown locally greenish grey MUDSTONE with deformed laminations and locally with slump structures, possibly soft sedimentary deformation, and very closely and closely spaced subhorizontal gypsum veins (3mm to 40mm). Partially weathered. Bedding fractures are subhorizontal generally medium spaced undulating and planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
23.00 - 26.55							30		24.05m to 24.30m; recovered as very stiff reddish brown mottled greenish grey clay with gravel sized mudstone lithorelicts. Destructured mudstone.					
24.80 - 25.10	C	8	300 mm				460 1200							
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH09**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum) 0.48	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
24.80 - 25.30 25.10 - 25.25	C	9	150 mm	100	100	100				(4.10)				
25.30 - 26.80				93	62	53		26	26.02m to 26.10m; non-intact. Recovered as angular gypsum and mudstone fragments.					
26.55 - 26.65							NA		26.55m to 26.65m; recovered as clay with gravel sized mudstone lithorelicts. Destructured mudstone .					
26.65 - 26.75							NR		26.65m to 26.75m; assumed zone of core loss.					
26.75 - 27.10							- - -	27						
									NO RECOVERY. Brown fine and medium SAND was recovered. Within the core sample grass was observed. Possibly caved in alluvium sand. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	27.10	-26.62			
26.80 - 28.30				20	17	7								
27.10 - 28.30							NR			(1.20)				
								28						
									End of Borehole at 28.30 m	28.30	-27.82			
								29						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH09**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum)	0.48	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH09**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum)	0.48	Sheet 2 of 3	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
16.55	BF	0		VT	Un	Sm			11		
16.57	BF	0		VT	Un	Sm					
16.59	BF	0		VT	Un	Sm					
16.61	BF	0		VT	Un	Sm					
16.66	BF	0		VT	Un	Sm					
16.70	BF	0		VT	Un	Sm					
16.76	BF	0		VT	Un	Sm					
16.80	BF	0		VT	Un	Sm					
16.89	BF	0		VT	Un	Sm					
17.11	BF	0		VT	Un	Sm					
17.16	BF	0		VT	Un	Sm					
17.30 - 17.90	NI								12		
17.90 - 17.95	FR	60									
17.93	FR	20									
18.10	BF	5		VT	Un	Ro					
18.10 - 18.20	FR	45									
18.30 - 18.32	FR	15									
18.40	BF	0		VT	Un	Sm					
18.55 - 18.70	NI								13		
18.80 - 20.00	NI										

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH09**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum) 0.48	Sheet 3 of 3	
	Hole Type	Discontinuity Log		Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
20.25	FR										
20.28	BF	5		VT	Un	Ro					
20.68	BF	5		VT	Un	Ro					
20.90 - 21.65	NI										
21.70	FR	5									
21.80 - 22.00	NI										
22.32	BF	0		VT	Pl	Sm					
22.42 - 22.50	NI										
22.90	FR										
23.00	BF	5		VT	Un	Ro					
23.26	FR	5									
23.60	FR	5									
23.71	FR	0									
23.84	BF	0		VT	Pl	Sm					
24.00	BF	0		VT	Pl	Sm					
24.05 - 24.40	NI										
24.75	FR	5									
25.10	FR	5									
25.60	BF	0		VT	Un	Sm					
25.65	FR	5									
25.85	BF	0		VT	Pl	Sm					
25.89	FR	0									
26.02 - 26.10	NR										
26.20	BF	0		VT	Pl	Sm					
26.32	FR	10									
26.48	FR	5									
26.49	BF	0		VT	Un	Sm					
26.50	FR	10									
26.50	FR	15									
26.51	FR	5									
26.55 - 26.75	NI										
26.88	BF	5		VT	Pl	Sm					
27.00	BF	5		VT	Pl	Sm					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH10**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	14/09/2022	14/09/2022	Hand excavated			BS	BS	
1.20	14.35	CP	14/09/2022	15/09/2022	Dando 3000			BS	BS	
14.10	40.10	RC	18/10/2022	26/10/2022	Fraste Multi ML		PCD	AC/RC	RS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
14/09/2022	10:00	0.00			Overcast
14/09/2022	18:00	12.00	12.00	4.00	Cloudy, sunny
15/09/2022	07:30	12.00	12.00	3.00	Dry
15/09/2022	15:00	14.35	14.00	2.00	
18/10/2022	08:00	14.10	14.00	1.60	
18/10/2022	18:00	15.00	14.00	1.60	Rain
19/10/2022	08:00	15.00	14.00	1.80	
19/10/2022	18:00	21.00	14.00	1.80	
20/10/2022	08:00	21.00	14.00	1.70	Showers
20/10/2022	18:00	25.50	14.00	1.70	
21/10/2022	08:00	25.50	14.00	1.80	
21/10/2022	15:00	28.50	14.00	1.80	
24/10/2022	08:00	28.50	14.00	1.80	
24/10/2022	18:00	30.00	14.00	1.80	
25/10/2022	08:00	30.00	14.00	1.80	
25/10/2022	18:00	34.50	14.00	1.80	
26/10/2022	08:00	34.50	14.00	1.80	
26/10/2022	18:00	40.10	14.00	1.80	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.10	15.00	Water	100	Brown	00:30
15.00	16.50	Water	100	Brown	00:45
16.50	19.50	Water	100	Brown	01:15
19.50	21.00	Water	100	Grey	00:40
21.00	24.00	Water	100	Cream	01:30
24.00	25.50	Water	100	Cream	00:45
25.50	28.50	Water	100	Cream	01:15
28.50	30.00	Water	100	Cream	00:45
30.00	33.00	Water	100	Brown	01:05
33.00	34.50	Water	100	Brown	00:50
34.50	37.50	Water	100	Brown	01:15
37.50	39.00	Water	100	Brown	00:55
39.00	40.10	Water	100	Brown	00:40

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.10	15.00	102
15.00	16.50	102
16.50	19.50	80
19.50	21.00	102
21.00	24.00	80
24.00	25.50	102
25.50	28.50	80
28.50	30.00	102
30.00	33.00	80
33.00	34.50	102
34.50	37.50	80
37.50	39.00	102
39.00	40.10	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	250	3.00	250
14.10	200	14.00	200
40.10	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
13.80	14.10	01:00	Rock

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	10.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.35m and continued by rotary coring techniques to 40.10m.
3. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
4. Tiger PID (T-117408) used for photo-ionisation detection (PID).
5. High pressure dilatometer testing (HPD) carried out; results presented separately. Reduced diameter core barrel used over test depth. 6. Wireline Geophysics was carried out; results reported separately.
7. Borehole terminated below scheduled depth of 40.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	10.00	7.00	10.00	27/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	7.00	50	Plain
1	7.00	10.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	04/11/2022
0.50	7.00	Bentonite	04/11/2022
7.00	10.00	Gravel	04/11/2022
10.00	40.10	Bentonite	27/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum) 0.71	Sheet 1 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							MADE GROUND. Dark brown sandy CLAY with occasional angular and subangular fine to coarse gravel sized fragments of brick and with frequent rootlets (<1mm). Sand is mainly fine and medium. [MADE GROUND] [CLAY]	(0.60)				
0.10	ES	2												
0.10 - 0.40	B	3												
0.10	PID		< 0.1 ppm											
0.45	ES	4												
0.45	PID		< 0.1 ppm											
										0.60	0.11			
0.70	D	5							MADE GROUND. Light brown clayey SAND with occasional rootlets (<1mm) and pockets (<30mm) of black clay. Sand is fine and medium. [MADE GROUND] [SAND]	(0.20)				
0.70 - 1.00	B	6								0.80	-0.09			
0.85	ES	7												
0.85	PID		< 0.1 ppm											
1.00 - 1.20	B	10						1	MADE GROUND. Black silty SAND with abundant fragments of decomposed wood (<50 mm). Sand is fine. [MADE GROUND] [SAND]	(0.40)				
1.10	D	8												
1.10	ES	9												
1.10	PID		< 0.1 ppm							1.20	-0.49			
1.20 - 1.65	D	11							Medium dense dark brown and blackish grey very silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]					
1.20 - 1.65	SPT		N = 11 (S)											
1.60	D	12								(0.80)				
1.60 - 1.90	B	13												
2.00 - 2.45	D	14						2	Firm dark brown sandy SILT with occasional rootlets (<1mm). Sand is fine and medium. [ALLUVIUM] [SILT]	2.00	-1.29			
2.00 - 2.45	SPT		N = 6 (S)											
2.50	D	15							2.50m to 2.51m; silty sand with rare pockets (<10mm) of dark brown clay.					
3.00 - 3.45	D	16						3	3.00m to 4.00m; abundant black sand sized carbonaceous debris.	(2.00)				
3.00 - 3.45	SPT		N = 6 (S)											
3.50	D	17							At 3.50m; layer of clayey sand with rare gravel. Gravel is subrounded fine of carbonaceous debris.					
4.00 - 4.45	D	18						4	Very loose and loose dark brown silty SAND with occasional pockets/layers (<40mm) of dark brown clay and abundant black sand sized organic debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	4.00	-3.29			
4.00 - 4.45	SPT		N = 6 (S)											
4.50	D	19							4.00m to 4.45m; loose with rare gravel. Gravel is subrounded fine of carbonaceous debris.					
5.00 - 5.45	D	20												
5.00 - 5.45	SPT		N = 4 (S)											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 2 of 9
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									5.00m to 5.50m; occasional pockets/thin beds (<60mm) of dark brown clay.	(2.70)				
5.50	D	21												
6.00 - 6.45 6.00 - 6.45	D SPT	22	N = 8 (S)					6	6.00m to 6.70m; occasional pockets/thin beds (<30mm) of dark brown sandy clay. Sand is fine and medium.					
6.70	D	23							Loose and medium dense dark brown slightly gravelly silty SAND with occasional pockets/thin beds (<40mm) of dark brown clay and abundant black sand sized carbonaceous debris. Sand is mainly fine and medium. Gravel is subangular mainly fine of mudstone. Depth of upper interface approximate. [ALLUVIUM] [SAND]	6.70	-5.99			
7.50 - 7.95 7.50 - 7.95	B SPT	24	N = 11 (S)					7						
8.20	D	25						8						
9.00 - 9.45 9.00 - 9.45	D SPT	26	N = 10 (S)					9						
9.70	D	27												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 3 of 9
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
										(6.80)					
10.50 - 10.95	D	28													
10.50 - 10.95	SPT		N = 10 (S)												
								11							
11.20	D	29													
12.00 - 12.45	D	30						12							
12.00 - 12.45	SPT		N = 12 (S)												
12.70	D	31													
								13							
13.50 - 13.95	D	32							Medium dense dark brown SAND with abundant black sand sized carbonaceous debris and occasional pockets/thin beds (<50mm) of dark red sandy clay. Sand is fine and medium. [ALLUVIUM] [SAND]	13.50	-12.79				
13.50 - 13.95	SPT		N = 25 (S)							(0.40)					
13.80 - 14.10	B	34													
13.90	D	33								13.90	-13.19				
								14	MUDSTONE. Recovered as firm and stiff reddish brown and greenish grey sandy CLAY with abundant subangular and subrounded fine and medium gravel sized extremely weak mudstone and gypsum lithorelicts. Sand is fine and medium. Destructured Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.45)					
14.10 - 14.35	D	35													
14.10 - 14.34	SPT		50/95 mm (S)												
14.10 - 14.35							NR								
										14.35	-13.64				
14.10 - 15.00				72	0	0			MUDSTONE. Recovered as reddish brown SILT with occasional angular to subrounded fine and medium gravel sized greenish grey extremely weak thinly laminated mudstone lithorelicts. With subhorizontal (5 to 10 degrees) and inclined (10 to 15 degrees) closely spaced gypsum veins (<2mm). Destructed mudstone.						
14.35 - 15.00							NA			(0.65)					
14.90 - 15.00	C	36													
15.00 - 15.07	C	37								15.00	-14.29				
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum) 0.71	Sheet 4 of 9	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.00 - 16.10							NI		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] Extremely weak reddish brown MUDSTONE locally with thin beds of extremely weak to very weak thinly laminated greenish grey mudstone with subhorizontal (5 degrees) medium spaced gypsum veins (<5mm). Distinctly weathered. Joints are randomly oriented extremely to very closely spaced very tight clean occasionally tight with brown staining.					
15.00 - 16.50				93	15	0			[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.50)				
								16	15.00m to 15.07m; subhorizontal (5 degrees) gypsum vein (<70mm). 15.07m to 15.25m; thinly laminated greenish grey mudstone. 16.00m to 16.10m; very weak to weak thinly laminated greenish grey mudstone. 16.10m to 16.20m; assumed zone of core loss.					
16.10 - 16.20							NR							
16.26 - 16.31	C	38												
16.20 - 16.50							NI							
									16.47m to 16.50m; subhorizontal (5 degrees) gypsum vein (30mm).	16.50	-15.79			
16.50 - 16.95							NR		ASSUMED ZONE OF CORE LOSS [NO CORE RECOVERY]	(0.45)				
										16.95	-16.24			
17.01 - 17.05	C	39					40	17	Extremely weak to very weak locally moderately weak greenish grey and reddish brown thinly and thickly laminated MUDSTONE with closely to medium spaced very thin to medium interbeds of extremely weak reddish brown mudstone recovered as angular fine and medium gravel sized mudstone lithorelicts with clay and silt. With subhorizontal widely spaced gypsum veins (<40mm). Partially and distinctly weathered. Bedding fractures are subhorizontal (5 degrees) predominantly very closely to closely spaced planar rough clean very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
16.95 - 17.13							60 85							
17.13 - 17.42							NI							
17.61 - 17.73	C	40												
17.42 - 17.95							50 140 240							
17.94	HPD	1												
16.50 - 19.50				85	49	20		18	17.05m to 17.09m; subhorizontal (5 degrees) gypsum vein (<40mm). 17.13m to 17.42m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts with silt.	(2.31)				
17.95 - 18.46							NI		17.51m to 17.52m; subhorizontal (5 degrees) gypsum vein (<35mm). 17.71m to 17.76m; subhorizontal (5 degrees) gypsum vein (<25mm). 17.95m to 18.46m; non intact recovered as reddish brown angular fine and medium gravel sized mudstone lithorelicts with silt.					
18.46 - 18.59	C	41												
18.46 - 18.72							120 - 150		18.21m to 18.25m; subhorizontal (5 degrees) extremely closely spaced gypsum veins (2mm).					
18.72 - 18.85							NI		18.58m to 18.61m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts with silt. 18.72m to 18.85m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts with silt.					
18.85 - 19.26							20 70 140	19	19.08m to 19.12m; subhorizontal (5 degrees) gypsum vein extremely closely spaced (40mm). 19.12m to 19.17m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts with silt. 19.25m to 19.26m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts with silt.	19.26	-18.55			
19.26 - 20.50							30 120 245		Very weak to weak locally extremely weak thinly and thickly laminated greenish grey MUDSTONE with horizontal to subhorizontal (10 degrees) medium and widely spaced gypsum veins (<25mm). Locally deformed laminations, possibly soft sedimentary	(1.24)				
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum) 0.71	Sheet 5 of 9	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.50 - 21.00				100	80	63			deformations. Partially weathered locally distinctly weathered. Bedding fractures are subhorizontal (5 to 10 degrees) very closely to closely spaced planar locally undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 19.41m to 19.46m; subhorizontal (5 degrees) extremely closely spaced gypsum veins (up to 25mm). 19.50m to 19.60m; recovered as reddish brown mottled greenish grey silty clay with angular fine and medium gravel sized mudstone lithorelicts. Destructed mudstone. 20.03m to 20.08m; non intact recovered as silty clay with angular fine and medium gravel sized mudstone lithorelicts and gypsum fragments. Destructed mudstone. 20.07m to 20.11m; non intact recovered as greenish grey silty clay. Destructed mudstone. 20.13m to 20.25m; deformed laminations, possibly soft deformation. 20.30m to 20.35m; subhorizontal (5 degrees) gypsum gypsum vein (<30mm).					
20.50 - 20.75	C	42								20.50	-19.79			
20.75 - 21.00	C	43												
20.50 - 21.20							- 705 -			(0.70)				
21.00 - 21.20	C	44						21						
21.20 - 21.37							5 70			21.20	-20.49			
21.37 - 21.49							145 NI							
21.49 - 22.04							10 140 350		Medium strong thinly laminated greenish grey MUDSTONE. With slump structures and deformed laminations possibly soft sedimentary deformation. Partially weathered. Bedding fractures are subhorizontal (5 degrees) widely spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.84)				
22.04	HPD	2						22	Very weak to weak locally extremely weak greenish grey thinly and thickly laminated MUDSTONE with horizontal to subhorizontal (<10 degrees) medium spaced locally very closely spaced gypsum veins (<25mm). Partially weathered locally distinctly weathered. Bedding fractures are subhorizontal (5 to 10 degrees) very closely to closely spaced planar and undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.20m to 21.22m; subhorizontal (5 degrees) gypsum gypsum vein (<20mm). 21.37m to 21.49m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts with silt. 21.58m to 21.65m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts with silt.	22.04	-21.33			
21.00 - 24.00				100	69	46								
22.70 - 22.92	C	45												
22.92 - 23.04	C	46												
22.04 - 24.00							30	23						
23.04 - 23.16	C	47					180 400							
									Weak and moderately weak locally medium strong locally thickly laminated reddish brown mottled greenish grey MUDSTONE with subhorizontal (5 to 10 degrees) to inclined (15-30 degrees) very closely to closely spaced gypsum veins (2mm to 75mm). Locally extremely weak mudstone recovered as clay with angular fine and medium gravel sized mudstone lithorelicts. Partially weathered locally destructed mudstone. Bedding fractures are subhorizontal (0 to 10 degrees) very closely to closely spaced locally medium to widely spaced planar and undulating rough very tight clean. Joints are inclined (15 to 50 degrees) medium to widely spaced locally very closely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.08m to 22.15m; subhorizontal (5 to 10 degrees) gypsum vein (<20mm). 22.23m to 22.25m; subhorizontal (5 to 10 degrees) gypsum vein (<25mm). 22.33m to 22.37m; inclined (25 degrees) gypsum vein (<20mm). 22.64m to 22.69m; subhorizontal (5 to 10 degrees) gypsum vein (<40mm). 22.70m to 22.83m; deformed laminations, possibly	(3.31)				
24.00 - 24.20							NR	24						
24.20 - 24.38							NI							
24.54 - 24.73	C	48												
24.73 - 25.10	C	49		87	69	69								
24.00 - 25.50														
24.38 - 25.35							170 360 620							

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum) 0.71	Sheet 6 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									soft sedimentary deformation. 22.72m to 22.80m; inclined (50 degrees) gypsum vein (<30mm). 23.06m to 23.16m; subhorizontal (5 degrees) gypsum vein (90mm). 23.16m to 23.70m; extremely weak reddish brown mudstone. Distinctly weathered. 24.00m to 24.20m; assumed zone of core loss. 24.20m to 24.38m; non intact recovered as clay with angular fine to coarse gravel sized mudstone lithorelicts. Destructed mudstone. 24.46m to 24.54m; inclined (70 degrees) gypsum vein (<2mm). 24.52m to 24.55m; inclined (15 degrees) gypsum vein (<30mm). 24.60m to 24.66m; inclined (10 to 20 degrees) very closely spaced gypsum veins (<15mm). 24.65m to 24.76m; deformed laminations, possibly soft sedimentary deformation. 24.96m to 25.05m; inclined (10 to 20 degrees) very closely spaced gypsum veins (<15mm). 25.29m to 25.32m; subhorizontal (5 degrees) gypsum vein (<20mm).	25.35	-24.64			
25.55 - 25.67	C	50													
25.35 - 26.52							45 400 760	26		(1.17)					
									Extremely weak reddish brown MUDSTONE with inclined (10 to 15 degrees) and subhorizontal (5 to 10 degrees) closely spaced gypsum veins (up to 10mm). Distinctly weathered. Bedding fractures are subhorizontal (5 to 10 degrees) widely spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	26.52	-25.81			
26.74	HPD	3													
26.82 - 27.11	C	51													
25.50 - 28.50				95	58	50		27	25.43m to 25.46m; inclined (15 degrees) gypsum vein (<10mm). 25.46m to 25.48m; inclined (10 degrees) gypsum vein (<10mm). 25.55m to 25.67m; very weak greenish grey mottled reddish brown mudstone. 25.93m to 26.11m; subvertical (80 degrees) gypsum veins (<2mm). 26.15m to 26.32m; very weak greenish grey mottled reddish brown mudstone. 26.15m to 26.59m; subvertical (80 degrees) gypsum vein (<2mm).					
26.52 - 28.35							10 260 640			(2.18)					
									Moderately weak locally very weak and extremely weak reddish brown mottled greenish grey locally thickly laminated MUDSTONE with inclined (10 to 20 degrees) and subhorizontal (5 to 10 degrees) closely spaced gypsum veins (<2mm). Partially and distinctly weathered. Bedding fractures are very closely to closely spaced locally medium spaced, planar locally undulating rough clean very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
28.00 - 28.05	C	52						28	26.52m to 26.58m; inclined (20 degrees) gypsum vein (<10mm). 27.07m to 27.11m; inclined (25 degrees) gypsum vein (<10mm). 27.32m to 27.34m; subhorizontal (5 degrees) gypsum vein (<20mm). 27.38m to 27.46m; soft sedimentary deformation. 27.51m to 27.55m; subhorizontal (5 degrees) gypsum vein (<40mm). 27.74m to 27.76m; extremely weak mudstone (destructed mudstone). 27.80m to 28.10m; extremely weak mudstone (destructed mudstone). 28.00m to 28.05m; subhorizontal (5 degrees) gypsum vein (<50mm). 28.17m to 28.24m; soft sedimentary deformation. 28.35m to 28.70m; assumed zone of core loss.					
28.35 - 28.70							NR								
28.70 - 29.26	C	53	560 mm					29		28.70	-27.99				
28.50 - 30.00				87	87	81									
29.26 - 29.42	C	54	160 mm												
									Weak reddish brown MUDSTONE with subhorizontal (5 to 10 degrees) and inclined (10 to 30 degrees) very closely to closely spaced locally extremely closely spaced gypsum veins (<30mm). Partially weathered. Bedding fractures are predominantly subhorizontal (5 to 10 degrees) closely to medium spaced locally very closely spaced planar and undulating rough very tight and clean.					
28.70 - 31.22							30								

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum) 0.71	Sheet 7 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
							250 590		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
									30.38m to 30.42m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts with silt.					
30.57 - 30.65	C	55							30.58m to 30.65m; subhorizontal (5 degrees) gypsum vein (<80mm). 30.65m to 30.70m; non intact recovered as silt with angular, fine and medium gravel sized mudstone lithorelicts. 30.84m to 30.86m; subhorizontal (5 degrees) gypsum vein (<20mm).					
								31	30.97m to 31.01m; non intact recovered as clay with subangular gravel sized mudstone lithorelicts.					
31.22 - 31.35							NI		31.22m to 31.35m; non intact recovered as angular fine and medium gravel sized mudstone and gypsum fragments.					
31.35 - 31.64	C	56							31.35m to 34.95m; Joints are inclined (15 to 20 degrees) widely spaced undulating rough very tight and clean.					
31.43	HPD	4												
30.00 - 33.00				100	85	76				(6.25)				
								32	32.00m to 32.06m; inclined (30 degrees) gypsum vein (<30mm). 32.06m to 32.09m; inclined (15 degrees) gypsum vein (<20mm).					
32.08 - 32.48	C	57	400 mm						32.57m to 32.63m; non intact recovered as angular fine to coarse gravel sized mudstone lithorelicts with clay.					
31.35 - 34.50							170 610 1385	33						
									33.15m to 33.18m; inclined (15 degrees) gypsum vein (<20mm).					
33.54 - 34.00	C	58												
33.00 - 34.50				100	100	100			33.74m to 33.81m; inclined (20 degrees) gypsum vein (<45mm).					
34.00 - 34.50	C	59						34	33.93m to 34.07m; subhorizontal (5 degrees) gypsum vein (<50mm).					
									34.18m to 34.26m; greenish grey mudstone.					
									34.50m to 34.56m; subhorizontal gypsum vein recovered as angular fragments (20-40mm)					
									34.69m to 34.74m; subhorizontal gypsum vein with greenish grey mudstone bands (2mm x 30mm).					
34.82 - 34.95	C	60	130 mm						34.90m to 34.95m; subhorizontal gypsum vein.	34.95	-34.24			
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum) 0.71	Sheet 8 of 9	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
35.14 - 35.27	C	61	130 mm						Very weak locally extremely weak thinly laminated reddish brown molted greenish grey MUDSTONE with very closely and closely spaced subhorizontal (0 to 10 degrees) and inclined (15 to 60 degrees) gypsum veins (<10mm). Partially weathered. Bedding fractures are horizontal to subhorizontal (5 degrees) very closely and closely spaced locally medium to widely spaced planar smooth and rough occasionally undulating rough very tight and clean. Joints are inclined (15 to 40 degrees locally 50 to 60 degrees) medium to widely spaced locally closely spaced planar and undulating rough and smooth very tight and clean.					
35.86	HPD	5												
34.50 - 37.40							30							
34.50 - 37.50				97	63	42	130 290	36	[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
									35.80m to 35.88m; non intact possibly drilling disturbed. Recovered as angular mudstone fragments (<40mm).					
								37						
37.16 - 37.40	C	62	240 mm											
37.40 - 37.50							NR		37.40m to 37.50m; assumed zone of core loss.					
37.50 - 37.69							NA		37.50m to 37.69m; recovered as soft reddish brown silty clay with angular and subangular fine to coarse gravel sized mudstone lithorelicts.	(5.15)				
								38						
38.20 - 38.40	C	63	200 mm											
37.50 - 39.00				100	73	49								
38.48 - 38.56	C	64												
37.69 - 40.10							20 70 140							
39.04 - 39.09	C	65						39						
39.09 - 39.12	C	66							39.04m to 39.12m; subhorizontal (<5 degrees) gypsum vein.					
39.00 - 40.10				95	95	22								
39.59 - 39.67	C	67												
39.95 - 40.00	C	68												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 9 of 9
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									40.05m to 40.10m; assumed zone of core loss. End of Borehole at 40.10 m	40.10	-39.39				
								41							
								42							
								43							
								44							

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH10**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 1 of 5
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH10**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 2 of 5	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
17.00 - 17.01	BF	5		VT	Pl	Ro			17	5 °	
17.04 - 17.05	BF	5		VT	Pl	Ro				5 °	
17.38 - 17.39	BF	5		VT	Pl	Ro				5 °	
17.51 - 17.52	BF	5		VT	Pl	Ro				5 °	
17.56 - 17.57	BF	5		VT	Pl	Ro				5 °	
17.80 - 17.81	BF	5		T	Pl	Ro		Greenish grey clay		5 °	
17.96 - 17.97	BF	5		VT	Pl	Ro			18	5 °	
18.44 - 18.45	BF	5		VT	Pl	Ro				5 °	
18.57 - 18.58	BF	5		VT	Pl	Ro				5 °	
18.83 - 18.84	BF	10		VT	Pl	Ro				10 °	
18.89 - 18.90	BF	5		VT	Pl	Ro				5 °	
18.91 - 18.92	BF	5		VT	Pl	Ro			19	5 °	
18.98 - 18.99	BF	5		VT	Un	Ro		Incipient		5 °	
19.00 - 19.09	J	45		VT	Pl	Ro				45 °	
19.10 - 19.11	BF	5		VT	Pl	Ro				5 °	
19.24 - 19.25	BF	5		VT	Pl	Ro				5 °	
19.32 - 19.33	BF	5		VT	Pl	Ro				5 °	
19.35 - 19.36	BF	5		VT	Un	Ro				5 °	
19.40 - 19.41	BF	5		VT	Pl	Ro				5 °	
19.45	BF	5		VT	Pl	Ro				5 °	
19.60 - 19.61	BF	5		VT	Un	Ro				10 °	
19.70 - 19.71	BF	10		VT	Un	Ro				15 °	

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum) 0.71	Sheet 3 of 5	
	Hole Type	Discontinuity Log		Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
19.88 - 19.89	J	15		VT	Pl	Ro					
20.04 - 20.05	BF	10		VT	Pl	Ro					
20.07 - 20.08	BF	10		VT	Pl	Ro					
20.25 - 20.26	BF	5		VT	Pl	Ro					
20.26 - 20.27	BF	5		VT	Pl	Ro					
20.36 - 20.37	BF	5		VT	Pl	Ro					
21.20 - 21.21	BF	5		VT	Pl	Ro			21		
21.22 - 21.23	BF	5		VT	Pl	Ro					
21.84 - 21.85	BF	5		VT	Pl	Ro					
21.88 - 21.89	BF	10		VT	Pl	Ro					
22.00 - 22.01	BF	5		VT	Pl	Ro			22		
22.03 - 22.04	BF	5		VT	Un	Ro					
22.13 - 22.14	BF	5		VT	Un	Ro					
22.18 - 22.19	BF	5		VT	Pl	Ro					
22.27 - 22.28	BF	5		VT	Pl	Ro					
22.33 - 22.34	BF	5		VT	Pl	Ro					
22.49 - 22.50	BF	5		VT	Pl	Ro					
22.69 - 22.70	BF	5		VT	Un	Ro					
22.69 - 22.76	J	50		VT	Un	Ro		'DI?' Not defined			
22.92 - 22.93	BF	10		VT	Un	Ro					
23.04 - 23.05	BF	5		VT	Un	Ro			23		
23.40 - 23.45	J	30		VT	Un	Ro					
23.50 - 23.52	J	15		VT	Un	Ro					
23.56 - 23.57	J	15		VT	Un	Ro					
23.60 - 23.61	J	15		VT	Un	Ro					
24.54 - 24.55	BF	5		VT	Pl	Ro			24		
24.73 - 24.74	BF	5		VT	Pl	Ro					
25.39 - 25.40	BF	5		VT	Pl	Ro			25		
26.15 - 26.16	BF	10		VT	Pl	Ro					
26.52 - 26.53	BF	10		VT	Pl	Ro			26		
27.11 - 27.12	BF	5		VT	Pl	Ro					
27.16 - 27.17	BF	5		VT	Pl	Ro					
27.34 - 27.35	BF	5		VT	Un	Ro					
27.49 - 27.50	BF	5		VT	Pl	Ro					
27.54 - 27.55	BF	5		VT	Pl	Ro					
27.67 - 27.68	BF	5		VT	Pl	Ro			27		
28.30 - 28.32	BF	10		VT	Pl	Ro			28		
29.26 - 29.32	BF	5		VT	Un	Ro					
29.44 - 29.45	BF	5		VT	Un	Ro					
29.51 - 29.52	BF	5		VT	Un	Ro					
29.81 - 29.82	BF	5		VT	Un	Ro			29		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 4 of 5
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
30.03 - 30.04	BF	5		VT	Pl	Ro				5 °	
30.08 - 30.09	BF	5		VT	Un	Ro				5 °	
30.24 - 30.25	BF	5		VT	Un	Ro		(DI?)		5 °	
30.46 - 30.47	BF	10		VT	Un	Ro				10 °	
30.49 - 30.50	BF	5		VT	Un	Ro				5 °	
30.86 - 30.87	BF	5		VT	Pl	Ro				5 °	
30.97 - 30.98	BF	5		VT	Pl	Ro			31	5 °	
31.01 - 31.02	BF	10		VT	Pl	Ro				10 °	
31.64 - 31.67	BF	5		VT	Pl	Ro				5 °	
31.89 - 31.91	J	20		VT	Un	Ro				20 °	
32.47 - 32.48	J	10		VT	Un	Ro			32	10 °	
33.10 - 33.13	J	15		VT	Un	Ro		(DI?)		15 °	
33.36 - 33.37	BF	10		VT	Un	Ro		(DI?)		10 °	
33.53 - 33.54	BF	5		VT	Un	Ro		(DI?)		5 °	
34.56	BF	0		VT	Pl	Sm			33	0 °	
34.65	BF	5		VT	Un	Ro				5 °	
34.74	BF	5		VT	Pl	Ro				5 °	
34.82	BF	0		VT	Pl	Ro				0 °	
34.95	BF	5		VT	Pl	Ro				5 °	
35.00	BF	5		VT	Pl	Ro			34	5 °	
35.04	BF	0		VT	Pl	Ro				0 °	
35.09	BF	0		VT	Pl	Ro				0 °	
35.13	BF	0		VT	Pl	Ro				0 °	
35.19	BF	0		VT	Pl	Ro				0 °	
35.26	BF	0		VT	Pl	Ro				0 °	
35.31	BF	0		VT	Pl	Ro				0 °	
35.44	BF	0		VT	Pl	Ro				0 °	
35.55	BF	0		VT	Pl	Ro				0 °	
35.60	BF	0		VT	Pl	Ro			35	0 °	
35.65	BF	0		VT	Pl	Ro				0 °	
35.71	BF	0		VT	Pl	Ro				40 °	
35.80	BF	0		VT	Pl	Ro				15 °	
35.80 - 35.88	NI										
35.95 - 36.00	J	40		VT	Un	Ro				15 °	
36.10 - 36.14	J	15		VT	Un	Sm				20 °	
36.39 - 36.42	J	15		VT	Un	Ro				15 °	
36.50 - 36.54	J	20		VT	Un	Ro				20 °	
36.58 - 36.61	J	15		VT	Un	Ro				5 °	
36.75 - 36.82	J	20		VT	Un	Ro			36	5 °	
36.84	BF	5		VT	Un	Ro				0 °	
36.96	BF	5		VT	Un	Ro				0 °	
37.12	BF	0		VT	Un	Ro					
37.15	BF	0		VT	Un	Ro					
37.50 - 37.69	FR							Clay soil STATE AND TYPE NO DEFINED, FILLED SO LOG CAN BE PUBLISHED.			
37.72 - 37.79	J	40		VT	Pl	Ro				40 °	
37.88	BF	0		VT	Pl	Ro			37	0 °	
37.90	BF	0		VT	Pl	Ro				0 °	
37.97	BF	0		VT	Un	Ro				0 °	
38.07	BF	5		VT	Un	Ro				5 °	
38.11	BF	5		VT	Un	Ro				5 °	
38.20	BF	5		VT	Pl	Ro				5 °	
38.24	BF	5		VT	Pl	Ro				5 °	
38.36	BF	5		VT	Pl	Ro				5 °	
38.43 - 38.46	J	20		VT	Pl	Ro				20 °	
38.48 - 38.50	J	20		VT	Pl	Ro			38	20 °	
38.56	BF	5		VT	Pl	Ro				5 °	
38.69	BF	0		VT	Pl	Ro				0 °	
38.74 - 38.79	J	50		VT	Pl	Sm				50 °	
38.79	BF	0		VT	Pl	Ro				0 °	
38.86	BF	0		VT	Pl	Ro				0 °	
38.86 - 38.92	J	60		VT	Pl	Ro				60 °	
38.96	BF	0		VT	Pl	Ro			39	0 °	
38.96 - 39.00	J	45		VT	Pl	Ro				45 °	
39.04	BF	0		VT	Pl	Sm		Gypsum vein		0 °	
39.09	BF	0		VT	Pl	Sm		Gypsum vein		0 °	
39.12	BF	0		VT	Pl	Sm		Gypsum vein		0 °	
39.14	BF	5		VT	Pl	Sm				5 °	
39.20	BF	5		VT	Pl	Sm				5 °	
										5 °	
										5 °	
										5 °	

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 5 of 5
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
39.22	BF	5		VT	Pl	Sm				5 °	
39.28	BF	5		VT	Pl	Sm				5 °	
39.30	BF	5		VT	Pl	Sm				5 °	
39.44	BF	5		VT	Pl	Sm				5 °	
39.51	BF	5		VT	Pl	Sm				30 °	
39.59	BF	5		VT	Pl	Sm				30 °	
39.67	BF	5		VT	Pl	Sm				20 °	
39.71	BF	5		VT	Pl	Sm				5 °	
39.80 - 39.85	J	30		VT	Pl	Sm					
39.85 - 39.88	J	30		VT	Pl	Sm					
39.92 - 39.95	J	20		VT	Pl	Ro					
40.00	BF	5		VT	Pl	Sm					
									41		
									42		
									43		
									44		
									45		
									46		
									47		
									48		
									49		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH11**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum)	0.74	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	15/09/2022	15/09/2022	Hand excavated			BS	BS	
1.20	14.75	CP	16/09/2022	20/09/2022	Dando 3000			BS		
14.75	25.25	RC	27/09/2022	28/09/2022	Comacchio MC300		PCD	RC/DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
16/09/2022	08:00	0.00		Dry	Overcast
16/09/2022	18:00	4.50	4.50	2.00	Sunny
20/09/2022	08:00	4.50	4.50	2.00	Overcast showers
20/09/2022	17:05	14.75	14.20	4.00	Dry sunny spells
27/09/2022	07:30	14.75	14.20	0.76	
27/09/2022	17:30	23.75	14.20	1.33	
28/09/2022	07:30	23.75	14.20	1.65	
28/09/2022	13:30	25.25	14.20	1.83	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.75	16.25	P	100	Brown	00:39
16.25	17.75	P	100	Grey	00:41
17.75	19.25	P	100	Grey	00:40
19.25	20.75	P	100	Grey	00:44
20.75	22.25	P	100	Grey	00:42
22.25	23.75	P	100	Brown	00:46
23.75	25.25	P	100	Brown	00:47

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.75	16.25	102
16.25	17.75	102
17.75	19.25	102
19.25	20.75	102
20.75	22.25	102
22.25	23.75	102
23.75	25.25	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
14.75	200	14.20	200
25.25	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
13.90	14.20	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	14.20

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.65m and continued by rotary coring techniques to 25.25m.
3. SPT at 4.00m possibly affected by borehole disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117408) used for photo-ionisation detection (PID).
6. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	25.25	Bentonite	28/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/WL/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH11**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum) 0.74	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							MADE GROUND. Dark brown sandy CLAY with occasional subangular fine to coarse gravel sized fragments of brick. Sand is mainly fine and medium. [MADE GROUND] [CLAY]	(0.60)				
0.10	ES	2												
0.10 - 0.40	B	3												
0.10	PID		< 0.1 ppm											
0.45	ES	4												
0.45	PID		< 0.1 ppm											
										0.60	0.14			
0.70	D	5							MADE GROUND. Light brown silty SAND with occasional rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.13) 0.73	0.01			
0.70 - 1.00	B	7												
0.80	ES	6												
0.80	PID		< 0.1 ppm											
								1	MADE GROUND. Black very sandy SILT with abundant decomposed wood fragments (<100mm). Sand is fine. [MADE GROUND] [SILT]	(0.47)				
1.20	ES	8								1.20	-0.46			
1.20 - 1.65	D	9							Medium dense dark brown silty SAND with frequent pockets (<30 x 50mm) of light brown clay and abundant black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]					
1.20 - 1.65	SPT		N = 11 (S)											
1.20	PID		< 0.1 ppm											
1.40	D	11												
1.40 - 1.70	B	10							1.20m to 1.65m; light brown.	(0.80)				
2.00 - 2.45	D	12						2	Firm dark brown sandy CLAY with frequent black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	2.00	-1.26			
2.00 - 2.45	SPT		N = 5 (S)							(0.50)				
2.50	D	13							Very loose and loose dark brown silty SAND with rare pockets (<20 x 50mm) of brown clay and frequent black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	2.50	-1.76			
3.00 - 3.45	D	14						3						
3.00 - 3.45	SPT		N = 4 (S)											
3.50	D	15							At 3.50m; abundant pockets (<20 x 50mm) of brown fine sandy clay.	(2.50)				
4.00 - 4.45	B	18						4	4.00m to 4.50m; with abundant pockets of sandy clay.					
4.00 - 4.45	SPT		N = 2 (S)											
4.50	D	17												
5.00 - 5.45	D	19								5.00	-4.26			
5.00 - 5.45	SPT		N = 7 (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH11**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum) 0.74	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details					Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									Firm dark brown sandy CLAY with abundant black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	(0.45)				
5.50	D	20							Loose becoming medium dense with depth dark brown silty SAND with frequent pockets/ layers (<30 x 50mm) of brown fine sandy clay and abundant black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	5.45	-4.71			
6.00 - 6.45 6.00 - 6.45	D SPT	21	N = 10 (S)					6	6.00m to 6.45m; abundant pockets (<20 x 50mm) of brown fine sandy clay.					
6.70	D	22												
								7						
									7.30m to 7.60m; occasional black particles (<2mm) of possible coal.					
7.50 - 7.95 7.50 - 7.95	D SPT	23	N = 7 (S)						7.50m to 7.95m; rare gravel. Gravel is subangular fine of possible lignite.					
								8						
8.20	D	24												
9.00 - 9.45 9.00 - 9.45	D SPT	25	N = 6 (S)					9	9.00m to 9.45m; frequent subangular gravel sized fragments of mudstone.					
9.70	D	26								(8.45)				
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH11**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum) 0.74	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95	D	27												
10.50 - 10.95	SPT		N = 10 (S)						10.50m to 10.95m; rare subangular gravel sized fragments of mudstone.					
								11						
11.20	D	28							11.20m to 11.21m; rare subangular gravel sized fragments of mudstone.					
12.00 - 12.45	D	29						12						
12.00 - 12.45	SPT		N = 13 (S)						12.00m to 12.45m; rare pocket (<50 x 90mm) of brown clay and occasional gravel. Gravel is subangular fine and medium of mudstone.					
12.70	D	30												
								13						
13.50 - 13.95	D	31												
13.50 - 13.95	SPT		N = 20 (S)						13.00m to 13.95m; frequent gravel. Gravel is subangular to subrounded fine and medium of mudstone and quartz.					
13.90 - 14.20	B	33								13.90	-13.16			
14.00	D	32						14	MUDSTONE. Recovered as firm greenish grey stained dark red CLAY with frequent angular and subangular fine to coarse gravel sized (<20 x 30mm) extremely weak mudstone and gypsum lithorelicts with abundant fine to coarse sand sized mudstone peds and with low cobble content. Residual mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.30)				
14.20 - 14.65	D	34								14.20	-13.46			
14.20 - 14.65	SPT		N = 50 (S)											
14.75 - 15.13							NA		MUDSTONE. Recovered as dark red CLAY with abundant angular fine to coarse of extremely weak gravel sized mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.93)				
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH11**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum) 0.74	Sheet 4 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
										15.13	-14.39			
									MUDSTONE. Recovered as firm reddish brown mottled greenish grey gravelly CLAY with angular and subangular fine to coarse gravel sized (<15mm x 30mm) extremely weak mudstone lithorelicts. Possibly Destructured mudstone, may have been disturbed by drilling. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
14.75 - 16.25				100	0	0								
15.13 - 16.20							NA			(1.07)				
								16	16.03m to 16.20m; stiff 16.10m to 16.14m; horizontal vein (<2mm x 20mm) of gypsum.	16.20	-15.46			
16.20 - 16.57							NI		Extremely weak thinly laminated reddish brown mottled grey locally greenish grey mottled red MUDSTONE with occasional thick lamination and very thin beds of soft reddish brown clay and horizontal closely spaced vein of gypsum (<2mm to 30mm). Distinctly weathered. Bedding fractures are subhorizontal (0 to 5 degrees) extremely closely to closely spaced, occasionally closely spaced, planar smooth very tight clean, occasionally tight with clay smear.					
16.57 - 16.63	C	1	70 mm											
16.25 - 17.75				100	73	7		17	[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 16.25m to 16.57m; non intact (possibly drilling induced). Recovered as angular lithorelicts (<10mm x 50mm) of extremely weak mudstone and partially dissolved gypsum. 16.57m to 16.63m; horizontal vein of gypsum. 16.76m to 16.83m; horizontal vein of gypsum. 17.23m to 17.27m; horizontal vein of gypsum. 17.46m to 17.78m; medium bed of very weak greenish grey mudstone with 1no. very thin bed of soft greenish grey clay. 17.58m to 17.61m; horizontal vein of gypsum.					
17.43 - 17.47	C	5	40 mm											
17.56 - 17.62	C	2	40 mm											
16.57 - 18.72							10							
17.65 - 17.75	C	3	100 mm				60 130							
										(3.46)				
								18	18.33m to 18.40m; horizontal vein of gypsum, partially dissolved.					
17.75 - 19.25				100	55	9								
18.72 - 18.85							NI		18.72m to 18.85m; non intact (possibly drilling disturbed). Recovered as angular fragments (<10mm x 30mm) of mudstone.					
18.98 - 19.03	C	4	50 mm					19						
18.85 - 19.66							20 50 100		19.14m to 19.19m; non intact (possibly drilling induced). Recovered as angular fragments (<20mm x 50mm) of extremely weak mudstone					
19.54 - 19.59	C	6	50 mm						19.43m to 19.66m; medium bed of thickly laminated extremely weak to very weak greenish grey mudstone with 1No. very thin bed of soft gravelly clay.					
19.66 - 19.75	C	7	90 mm						19.54m to 19.59m; horizontal vein of gypsum.	19.66	-18.92			
19.76 - 19.87	C	8	110 mm						Extremely weak to very weak thinly laminated greenish grey MUDSTONE with very thin and thin beds of soft greenish grey mottled reddish brown clay. Partially to distinctly weathered.					
19.66 - 20.11							70 90							
19.25 - 20.75				100	43	13	120							

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum) 0.74	Sheet 5 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.11 - 20.55							NA		Bedding fractures are subhorizontal (0 to 5 degrees) very closely and closely spaced planar smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.11m to 20.55m; recovered as firm to stiff greenish grey clay with angular lithorelicts (<20mm x 30mm) of mudstone. Destructured. 20.24m to 20.28m; horizontal vein of gypsum, partially dissolved.	(1.12)				
20.55 - 20.78							50							
20.67 - 20.72	C	9	50 mm				50		20.67m to 20.78m; very weak reddish brown mottled greenish grey mudstone					
20.83 - 21.14	C	10	310 mm				70			20.78	-20.04			
								21	Strong and very strong thinly laminated greenish grey MUDSTONE. With deformed laminations and slump structures possibly soft sedimentary deformation. Unweathered. Bedding fractures are horizontal and subhorizontal (5 degrees) closely and medium spaced locally very closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.78m to 21.14m; with deformed laminations and slump structure (possible soft sediment deformation)	(0.70)				
20.78 - 21.60							30							
21.25 - 21.47	C	11	220 mm				130							
							320							
20.75 - 22.25				100	73	55				21.48	-20.74			
21.54 - 21.60	C	12	60 mm											
21.60 - 21.84							NI		Very weak thinly laminated greenish grey MUDSTONE. Partially to distinctly weathered. Bedding fractures are horizontal and subhorizontal (5 degrees) medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.48m to 21.51m; horizontal vein of gypsum. 21.51m to 21.54m; recovered as very thin bed of soft greenish grey clay. Destrucured. 21.54m to 21.60m; extremely weak. 21.60m to 21.84m; non intact (possibly drilling induced). Recovered as angular fragments (<10mm x 40mm) of extremely weak greenish grey mudstone with occassionally soft clay. 21.84m to 21.91m; extremely weak. 21.91m to 22.02m; non intact (possibly drilling induced). Recovered as angular fragments (<10mm x 50mm) of extremely weak greenish grey mudstone with occassionally soft clay.	(0.54)				
21.84 - 21.91							20							
21.91 - 22.02							-							
							50	22		22.02	-21.28			
							NI							
22.25 - 22.42	C	13	170 mm											
22.49 - 22.70	C	14	210 mm											
22.02 - 23.09							NA							
22.25 - 23.75				100	56	56		23	Moderately weak dark greenish grey MUDSTONE with very closely and closely spaced subhorizontal (0 to 10 degrees) occasionally inclined (<15 degrees) gypsum veins (<2mm to 20mm). Partially weathered. Bedding fractures are subhorizontal (0 to 10 degrees) are very closely to medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.22m to 22.25m; very thin bed of horizontal vein of gypsum. 22.37m to 22.42m; subhorizontal (<5 degrees) vein of gypsum. 22.82m to 22.91m; subhorizontal (<10 degrees) vein of gypsum. 22.98m to 23.09m; thin bed of extremely weak dark brown mudstone. 23.09m to 23.35m; recovered as firm dark greenish grey and dark brown clay with angular and subangular lithorelicts (<10mm x 30mm) of extremely weak mudstone and partially dissolved gypsum. Destructured. 23.35m to 23.44m; horizontal vein of gypsum, partially dissolved. 23.44m to 23.75m; recovered as firm to stiff reddish brown clay with subangular lithorelicts (<20mm x 30mm) of extremely weak mudstone and partially dissolved gypsum. Destructured. 23.89m to 23.91m; very thin bed of subhorizontal (<10 degrees) vein of gypsum, partially dissolved. 24.10m to 24.28m; recovered as firm reddish brown clay with angular and subangular lithorelicts (<20mm x 30mm) of mudstone. Destructured.	(3.23)				
23.09 - 23.75							NA							
23.75 - 24.10							75							
							110	24						
							150							
24.10 - 24.28							NA							
24.28 - 24.42							NI							
24.42 - 24.63	C	15	210 mm											
23.75 - 25.25				100	77	70								
24.42 - 25.25							NA							

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum)	0.74	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
25.08 - 25.18	C	16	100 mm						24.28m to 24.42m; non intact (possibly drilling induced). Recovered as angular fragments (<30mm x 50mm) of mudstone and gypsum. 24.42m to 25.25m; mottled reddish brown.						
									End of Borehole at 25.25 m	25.25	-24.51				
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum)	0.74	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH11**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum)	0.74	Sheet 2 of 3	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
14.75 - 16.20	NI							Clay (Destructured)			
16.20 - 16.57	NI										
16.63	BF	0		VT	Pl	Sm		clean			
16.66	BF	0		VT	Pl	Sm		clean			
16.67	BF	0		VT	Pl	Sm		clean			
16.69	BF	0		VT	Pl	Sm		clean			
16.70	BF	0		VT	Pl	Sm		clean			
16.71	BF	0		VT	Pl	Sm		clean			
16.73	BF	0		VT	Pl	Sm		clean			
16.76	BF	0		VT	Pl	Sm		clean			
16.83	BF	0		VT	Pl	Sm		clean			
16.85	BF	0		VT	Pl	Sm		clean			
16.87	BF	0		VT	Pl	Sm		clean			
16.92	BF	0		VT	Pl	Sm		clean			
16.95	BF	0		VT	Pl	Sm		clean			
16.99	BF	0		VT	Pl	Sm		clean			
17.02	BF	0		VT	Pl	Sm		clean			
17.05	BF	0		VT	Pl	Sm		clean			
17.08	BF	0		VT	Pl	Sm		clean			
17.12	BF	0		VT	Pl	Sm		clean			
17.14	BF	0		VT	Pl	Sm		clean			
17.18	BF	0		VT	Pl	Sm		clean			
17.27	BF	0		VT	Pl	Sm		clean			
17.36 - 17.37	BF	5		VT	Pl	Sm		clean			
17.44 - 17.45	BF	5		VT	Pl	Sm		clean			
17.55	BF	0		VT	Pl	Sm		clean			
17.58	BF	0		VT	Pl	Sm		clean			
17.62	BF	0		VT	Pl	Sm		clean			
17.65	BF	0		VT	Pl	Sm		clean			
17.78	BF	0		VT	Pl	Sm		clean			
17.80	BF	0		VT	Pl	Sm		clean			
17.84	BF	0		VT	Pl	Sm		clean			
17.85	BF	0		VT	Pl	Sm		clean			
17.91 - 17.92	BF	5		VT	Pl	Sm		clean			
17.99 - 18.00	BF	5		VT	Pl	Sm		clean			
18.04	BF	0		VT	Pl	Sm		clean			
18.13	BF	0		VT	Pl	Sm		clean			

Notes

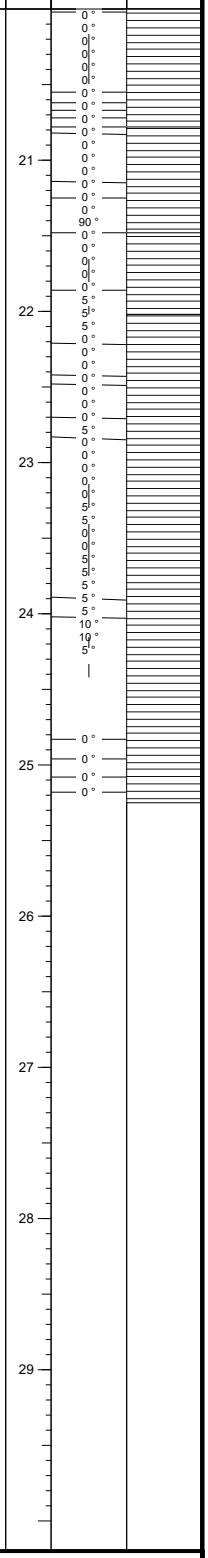
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
Client	SSE Generation Limited (SSE)			**MS-BH11**
Fugro Reference	F212561			
Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum)	0.74	Sheet 3 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
18.22	BF	0		VT	Pl	Sm		clean
18.26	BF	0		VT	Pl	Sm		clean
18.28	BF	0		VT	Pl	Sm		clean
18.33	BF	0		VT	Pl	Sm		clean
18.40	BF	0		VT	Pl	Sm		clean
18.43	BF	0		VT	Pl	Sm		clean
18.47	BF	0		VT	Pl	Sm		clean
18.48	BF	0		VT	Pl	Sm		clean
18.50	BF	0		VT	Pl	Sm		clean
18.52	BF	0		VT	Pl	Sm		clean
18.55	BF	0		VT	Pl	Sm		clean
18.57	BF	0		VT	Pl	Sm		clean
18.60	BF	0		VT	Pl	Sm		clean
18.62	BF	0		VT	Pl	Sm		clean
18.65	BF	0		VT	Pl	Sm		clean
18.68	BF	0		VT	Pl	Sm		clean
18.72 - 18.85	NI							clean
18.88	BF	0		VT	Pl	Sm		clean
18.90	BF	0		VT	Pl	Sm		clean
18.92	BF	0		VT	Pl	Sm		clean
18.98	BF	0		VT	Pl	Sm		clean
19.03	BF	0		VT	Pl	Sm		clean
19.06	BF	0		VT	Pl	Sm		clean
19.10	BF	0		VT	Pl	Sm		clean
19.10 - 19.14	J	90		VT	Pl	Sm		clean
19.14	BF	0		VT	Pl	Sm		clean
19.18	BF	0		VT	Pl	Sm		clean
19.20	BF	0		VT	Pl	Sm		clean
19.30	BF	0		VT	Pl	Sm		clean
19.33	BF	0		VT	Pl	Sm		clean
19.38 - 19.39	BF	5		VT	Pl	Sm		clean
19.47 - 19.48	BF	5		VT	Pl	Sm		clean
19.50 - 19.51	BF	5		VT	Pl	Sm		clean
19.54	BF	0		VT	Pl	Sm		clean
19.59	BF	0		VT	Pl	Sm		clean
19.64	BF	0		VT	Pl	Sm		clean
19.66	BF	0		VT	Pl	Sm		clean
19.75	BF	0		VT	Pl	Sm		clean
19.87	BF	0		VT	Pl	Sm		clean
19.95	BF	0		VT	Pl	Sm		clean
20.02	BF	5		VT	Pl	Sm		clean
20.11 - 20.55	NI							Clay (Destructured)
20.55	BF	0		VT	Pl	Sm		clean
20.62	BF	0		VT	Pl	Sm		clean
20.67	BF	0		VT	Pl	Sm		clean
20.72	BF	0		VT	Pl	Sm		clean
20.78	BF	0		VT	Pl	Sm		clean
20.82 - 20.83	BF	5		VT	Pl	Sm		clean
21.14 - 21.15	BF	5		VT	Pl	Sm		clean
21.25	BF	0		VT	Pl	Sm		clean
21.48	BF	0		VT	Un	Ro		clean
21.51 - 21.54	NI							Clay (Destructured)
21.60 - 21.84	NI							
21.86	BF	5		VT	Un	Ro		clean
21.91 - 22.02	NI							
22.21 - 22.22	BF	5		VT	Un	Ro		clean
22.42 - 22.43	BF	5		VT	Un	Ro		clean
22.48 - 22.49	BF	5		VT	Un	Ro		clean
22.70 - 22.71	BF	5		VT	Un	Ro		clean
22.83 - 22.85	J	10		VT	Un	Ro		clean
23.09 - 23.35	NI							Clay (Destructured)
23.35 - 23.75	NI							Clay (Destructured)
23.89 - 23.91	J	10		VT	Un	Ro		clean
24.02 - 24.03	BF	5		VT	Un	Ro		clean
24.10 - 24.28	NI							Clay (Destructured)
24.28 - 24.42	NI							
24.83	BF	0		VT	Un	Ro		clean
24.96	BF	0		VT	Un	Ro		clean
25.08	BF	0		VT	Un	Ro		clean
25.18	BF	0		VT	Un	Ro		clean

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH12**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 1 of 1
Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	14/09/2022	14/09/2022	Hand excavated			BS	BS	
1.20	15.25	CP	26/09/2022	27/09/2022	Dando 3000			TG/AC	RF	
14.60	42.00	RC	29/09/2022	13/10/2022	Comacchio 405		PCD	DMcG/SD	SBP	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/09/2022	06:00	0.00		Dry	Fine
26/09/2022	18:00	5.00	4.70	2.00	Fine
27/09/2022	08:00	5.00	5.00	2.50	Overcast and raining
27/09/2022	18:30	15.25	14.60	2.50	Sunny
29/09/2022	08:00	14.60	14.60	1.88	
29/09/2022	18:00	16.50	14.60	2.46	
04/10/2022	08:00	16.50	14.60	1.40	
04/10/2022	18:00	21.00	14.60	1.40	
05/10/2022	08:00	21.00	14.60	1.44	
05/10/2022	18:00	25.50	14.60	1.44	
06/10/2022	08:00	25.50	14.60	1.48	
06/10/2022	18:00	30.00	14.60	1.48	
10/10/2022	05:30	30.00	14.60	1.38	
10/10/2022	18:00	33.00	14.60	1.45	
11/10/2022	08:00	33.00	14.60	1.35	
11/10/2022	18:00	34.50	14.60	1.76	
12/10/2022	08:00	34.50	14.60	1.45	
12/10/2022	18:00	37.50	14.60	1.98	
13/10/2022	08:00	37.50	14.60	0.98	
13/10/2022	18:30	42.00	14.60	1.54	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.60	15.40	PB	100	Brown	00:30
15.40	16.50	PB	100	Brown	00:45
16.50	19.50	PB	100	Brown	02:00
19.50	21.00	PB	100	Brown	00:45
21.00	24.00	PB	100	Brown	01:10
24.00	25.50	PB	100	Brown	00:45
25.50	28.50	PB	100	Brown	01:30
28.50	30.00	PB	100	Brown	01:15
30.00	33.00	PB	100	Brown	03:00
33.00	34.50	PB	100	Brown	01:50
34.50	37.50	PB	100	Brown	02:00
37.50	39.00	PB	100	Brown	01:00
39.00	40.20	PB	100	Brown	01:00
40.20	42.00	PB	100	Brown	02:00

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.60	15.40	102
15.40	16.50	102
16.50	19.50	85
19.50	21.00	102
21.00	24.00	85
24.00	25.50	102
25.50	28.50	85
28.50	30.00	102
30.00	33.00	85
33.00	34.50	102
34.50	37.50	85
37.50	39.00	102
39.00	40.20	102
40.20	42.00	85

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
5.00	250	4.70	250
15.25	200	14.60	200
40.20	146		
42.00	101		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	15.25

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located. 2. The location was advanced by cable percussion techniques to 15.25m and continued by rotary coring techniques to 42.00m. 3. Driller noted that sand blowing inside of casing from 5.00m to 13.60m made them unable to take SPTs. 4. Hand vane testing carried out in situ using a 19mm vane (T-117408). 5. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities. 6. Tiger PID (T-117408) used for photo-ionisation detection (PID). 7. Variable head permeability test carried out; results reported separately. 8. High pressure dilatometer testing (HPD) carried out; results presented separately. Reduced diameter core barrel used over test depth. 9. Wireline Geophysics was carried out; results reported separately. 10. Borehole terminated below scheduled depth of 40.00m for HPD testing.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	8.00	5.00	8.00	13/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	5.00	50	Plain
1	5.00	8.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	13/10/2022
0.50	5.00	Bentonite	13/10/2022
5.00	8.00	Gravel	13/10/2022
8.00	42.00	Bentonite	13/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/WL/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum) 0.74	Sheet 1 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
0.10	D	2							MADE GROUND. Black sandy CLAY with occasional subrounded fine gravel sized fragments of mudstone and with abundant roots (<30mm) and rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	(0.70)					
0.10	ES	1													
0.10 - 0.40	B	3													
0.10	PID		< 0.1 ppm												
0.50	D	5													
0.50	ES	4													
0.50 - 0.80	B	6													
0.50	PID		< 0.1 ppm							0.70	0.04				
									MADE GROUND. Black silty SAND with occasional rootlets (<1mm). Sand is fine and medium predominantly fine. [MADE GROUND] [SAND]	(0.30)					
1.00	D	8						1	MADE GROUND. Light brown silty SAND with rare pockets (<10mm) of black silt. Sand is predominantly fine and medium. [MADE GROUND] [SAND]	1.00	-0.26				
1.00	ES	7								(0.20)					
1.00 - 1.20	B	9													
1.00	PID		< 0.1 ppm							1.20	-0.46				
1.20 - 1.65	D	10							Loose and medium dense light orangish brown silty SAND. Sand is predominantly fine and medium. [ALLUVIUM] [SAND]						
1.20 - 1.65	SPT		N = 10 (S)												
										(1.00)					
1.80	D	11							1.80m - 2.10m: Orangish brown, with rare to occasional coarse sand sized carbonaceous debris.						
1.80 - 2.10	B	12						2							
2.20 - 2.65	D	13							Very loose and loose brown silty SAND. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	2.20	-1.46				
2.20 - 2.65	SPT		N = 4 (S)							(0.45)					
										2.65	-1.91				
2.80	D	14							Brown locally slightly gravelly SAND. With occasional locally frequent black sand sized carbonaceous debris. Sand is fine to coarse, gravel is angular and subangular fine of mudstone and carbonaceous debris. Depth of upper interface approximate. [ALLUVIUM] [SAND]	(0.35)					
2.80 - 3.10	B	15						3		3.00	-2.26				
3.20 - 3.65	D	16							Loose dark brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]						
3.20 - 3.65	SPT		N = 7 (S)							(0.80)					
3.80	D	17							Soft dark brown sandy CLAY locally grading to sandy SILT. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	3.80	-3.06				
3.80 - 4.10	B	18						4							
4.20 - 4.65	D	19							4.20m to 4.65m; sandy SILT.						
4.20 - 4.65	SPT		N = 3 (S)							(1.20)					
									Continued next page	5.00	-4.26				

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum) 0.74	Sheet 2 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									Coarse SAND (Drillers description). [ALLUVIUM] [SAND]	(0.30)				
5.30 5.30 - 5.80	D B	20 21							Dark brown slightly sandy CLAY. Sand is predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	5.30 (0.50)	-4.56			
								6	Dark brown silty SAND. Sand is fine to coarse. Depth of upper interface approximate. [ALLUVIUM] [SAND]	5.80 (0.50)	-5.06			
6.30 6.30 - 6.60	D B	22 23							Dark brown silty SAND, locally grading into very silty SAND. With with occasional black sand sized carbonaceous black debris. Sand is fine and medium. [ALLUVIUM] [SAND] 6.30m to 6.60m; very silty SAND.	6.30	-5.56			
								7						
7.30 7.30 - 7.60	D B	24 25								(2.00)				
								8						
8.30 8.30 - 8.60	D B	26 27							Dark brown silty SAND with occasional black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	8.30	-7.56			
								9						
9.30 9.30 - 9.60	D B	28 29								(2.00)				
									Continued next page					

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum) 0.74	Sheet 3 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.30	D	30													
10.30 - 10.60	B	31							Dark brown slightly gravelly silty SAND with occasional black sand sized carbonaceous debris. Sand is fine to coarse. Gravel is rounded and subrounded fine of mudstone and carbonaceous debris. [ALLUVIUM] [SAND]	10.30	-9.56				
								11							
11.30	D	32							11.30m to 11.60m; silty SAND. Sand is fine and medium.						
11.30 - 11.60	B	33													
								12		(3.30)					
12.30	D	34													
12.30 - 12.60	B	35													
								13							
13.30 - 13.60	B	37													
13.30 - 13.60	D	36													
									Brown slightly gravelly SAND. Sand is fine to coarse. Gravel is angular to subrounded fine and medium of possibly coal and mudstone. [ALLUVIUM] [SAND]	13.60 (0.40)	-12.86				
14.00	D	38						14		14.00	-13.26				
14.00 - 14.60	B	39							MUDSTONE. Recovered as bluish grey and rare mottled reddish brown slightly sandy CLAY with abundant angular and subangular fine to coarse mudstone lithorelicts (<20mm x 30mm). Residual mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.60)					
14.60 - 15.05	D	40								14.60	-13.86				
14.80 - 15.18	SPT		52/230 mm (S)				NA		MUDSTONE. Recovered as firm reddish brown gravelly CLAY with angular and subangular mudstone lithorelicts (<15mm x 20mm). Destructured to residual mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE]	(0.50)					
14.60 - 15.00															
14.60 - 15.40				87	19	19									

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum) 0.74	Sheet 4 of 9	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.00 - 15.10							NR		[MUDSTONE]					
15.10 - 15.16	C	1	60 mm						15.00m to 15.10m; assumed zone of core loss	15.10	-14.36			
									Extremely weak locally very weak thinly to thickly laminated greenish grey and reddish brown MUDSTONE with horizontal to subhorizontal closely to medium spaced gypsum veins (3mm to 45mm). Distinctly weathered. Bedding fractures are horizontal closely to medium spaced undulating smooth and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
15.45 - 15.55	C	2	100 mm											
15.10 - 16.40							50 200 390			(1.30)				
15.40 - 16.50				91	55	45		16	16.00m to 16.40m; very weak thinly to thickly laminated mudstone generally recovered as angular mudstone fragments, possible bedding fractures are horizontal extremely closely to very closely spaced planar smooth.					
										16.40	-15.66			
									Assumed Zone of Core Loss. Possibly Destructured Mudstone. [NO CORE RECOVERY]					
								17						
16.40 - 18.30							NR			(1.90)				
16.50 - 19.50				40	8	0		18						
										18.30	-17.56			
									Very weak locally extremely weak thickly laminated to very thinly bedded greenish grey MUDSTONE. Distinctly weathered. Bedding fractures are horizontal and subhorizontal planar smooth and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
18.30 - 18.80							30 80 120							
18.80 - 18.96							NI		18.35m to 18.50m; destructured 18.80m to 18.96m; non intact; possibly bedding fractures are extremely closely spaced	(1.20)				
								19						
18.96 - 19.50							100 170 350		19.15m to 19.30m; destructured					
										19.50	-18.76			
19.72 - 19.80	C	3	100 mm						Medium strong thinly to thickly laminated greenish grey MUDSTONE with deformed laminations and slump structures, possibly soft sedimentary deformation. Unweathered. Bedding fractures are predominantly horizontal very closely to closely spaced undulating locally planar smooth and very tight.	(0.63)				
									Continued next page					

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation	Location ID	**MS-BH12**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482090.82 N411953.30 Ground Elevation (m Datum) 0.74	Sheet 5 of 9	
	Hole Type	Cable Percussion to Rotary Coring	Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.50 - 21.00				100	100	60			[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	20.13	-19.39			
19.50 - 21.50							50 300 780		Weak thinly to thickly laminated greenish grey MUDSTONE with subhorizontal to inclined (45 degrees) closely spaced gypsum veins (5mm to 40mm). Partially weathered. Bedding fractures are predominantly horizontal closely to medium spaced undulating smooth and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.30m to 20.50m; extremely weak, distinctly weathered	(1.37)				
								21						
21.50 - 21.65							20 50		Extremely weak reddish brown MUDSTONE with subhorizontal to inclined (20 degrees) very closely to closely spaced gypsum veins (10mm to 35 mm). Distinctly weathered locally destructured. Bedding fractures are predominantly horizontal very closely to closely spaced planar smooth and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	21.50	-20.76			
21.65 - 21.90							70 NI							
22.20 21.90 - 22.60	HPD	2					NA	22	21.65m to 21.90m; non intact; recovered as angular mudstone and gypsum fragments Below 21.90m; recovered as CLAY with abundant gravel sized mudstone lithorelicts.	(1.10)				
21.00 - 24.00				92	42	22				22.60	-21.86			
22.73 - 22.85 22.60 - 23.00	C	4	120 mm				40 100 150		Weak thickly laminated greenish grey MUDSTONE with deformed laminations and slump structures, possibly soft sedimentary deformation with subhorizontal very closely to closely spaced gypsum veins (5mm to 15mm). Partially weathered. Bedding fractures are closely spaced planar smooth and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.40)				
23.00 - 23.15							150 - 150	23		23.00	-22.26			
23.15 - 23.45							NA		Extremely weak and very weak reddish brown and greenish grey MUDSTONE with subhorizontal to inclined (20 degrees) closely spaced locally very closely spaced gypsum veins (3mm to 20 mm). Distinctly weathered locally destructured. Bedding fractures are horizontal to subhorizontal, smooth locally rough and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
23.45 - 23.75							10 - 290							
23.75 - 24.00							NR							
24.00 - 24.20	C	9	200 mm					24	23.15m to 23.45m; destructured mudstone recovered as soft and firm reddish brown gravelly clay. 23.75m to 24.00m; assumed zone of core loss	(2.50)				
24.00 - 25.15							1150 - 1150							
24.00 - 25.50				100	93	93								
									Continued next page					

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum) 0.74	Sheet 6 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
25.15 - 25.25							NA		25.15m to 25.25m; destructured mudstone					
25.25 - 25.50							250 - 250							
										25.50	-24.76			
25.70 - 25.89	C	6	190 mm					26	Weak and moderately weak locally extremely weak to very weak thinly to thickly laminated greenish grey and reddish brown MUDSTONE with deformed laminations and slump structures, possibly soft sedimentary deformation and with subhorizontal to inclined (up to 45 degrees) very closely spaced gypsum veins (1mm to 40mm). Partially weathered locally distinctly weathered. Bedding fractures are horizontal closely to medium spaced undulating planar smooth and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
									26.42m to 26.54m; destructured mudstone					
25.50 - 27.70							50 330 800			(2.20)				
26.75 - 26.88	C	7	130 mm											
25.50 - 28.50				88	85	85		27						
27.40 - 27.55	C	8	150 mm											
										27.70	-26.96			
27.70 - 28.15							NA	28	Extremely weak reddish brown MUDSTONE with subhorizontal to inclined (20 degrees) closely spaced locally very closely spaced gypsum veins (1mm to 3 mm). Distinctly weathered locally destructured. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.80)				
									27.85m to 27.95m; weak, partially weathered					
28.15 - 28.50							NR		28.15m to 28.50m; assumed zone of core loss					
										28.50	-27.76			
29.00 - 29.35	C	10	350 mm					29	Weak and moderately weak locally extremely weak to very weak thinly to thickly laminated greenish grey and reddish brown MUDSTONE with deformed laminations, possibly soft sedimentary deformation and with subhorizontal to inclined (20 degrees) very closely to closely spaced gypsum veins (5mm to 35mm). Partially weathered locally distinctly weathered. Bedding fractures are horizontal closely to medium spaced undulating planar smooth and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
28.50 - 30.00				100	93	90								
29.35 - 29.50	C	11	150 mm						28.70m to 29.00m; extremely weak to very weak					
									Continued next page					

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum) 0.74	Sheet 7 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details					Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
28.50 - 31.80							80 340 740			(3.30)				
									30.50m to 30.55m; non intact, recovered as subangular gravel sized mudstone fragments					
30.98 - 31.05	C	13	70 mm					31						
31.05 - 31.30	C	12	250 mm											
31.05	HPD	4												
30.00 - 33.00				82	78	67								
										31.80	-31.06			
								32	Very weak and weak locally extremely weak reddish brown MUDSTONE with subhorizontal to inclined (20 degrees) closely spaced gypsum veins (5mm to 30 mm). Distinctly weathered locally destructured. Bedding fractures are horizontal to subhorizontal generally medium spaced locally closely spaced planar smooth very tight and clean. Joint are sporadic generally 10 to 15 degrees undulating smooth and occasionally shows slickenside surfaces. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
								33	33.00m to 33.20m; moderately weak with very closely spaced gpsum veins (1mm to 30mm)					
									33.20m to 33.60m; very weak					
33.60 - 33.75	C	14	150 mm											
33.00 - 34.50				97	97	83								
								34						
31.80 - 37.10							50							
34.50 - 34.74	C	15	240 mm				580 1750			(5.78)				
									Continued next page					

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 8 of 9
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
35.65	HPD	5												
35.75 - 35.85	C	16	100 mm						35.67m to 35.75m; non intact, possibly extremely weak with extremely closely spaced beeding fractures					
34.50 - 37.50				87	92	76		36	36.00m to 36.05m; non intact, possibly destructured mudstoned recovered as angular mudstone fragments in clay matrix					
									36.25m to 36.34m; non intact, possibly destructured mudstoned recovered as angular mudstone fragments in clay matrix					
								37						
									37.10m to 37.50m; assummed zone of core loss.					
37.10 - 37.50							NR							
37.50 - 37.58							NA							
									Very weak and weak thinly to thickly laminated reddish brown MUDSTONE locally with very thin to thin beds of greenish grey mudstone and with subhorizontal to inclined (15 degrees) closely to medium spaced gypsum veins (5mm to 30mm). Partially and distinctly weathered. Bedding fractures are subhorizontal closely and medium spaced, rarely very close becoming extremely closely and very closely spaced, planar smooth, occasionally undulating smooth, very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	37.58	-36.84			
37.79 - 37.97	C	17	200 mm					38						
37.50 - 39.00				100	99	90								
38.54 - 38.77	C	18	230 mm						38.50m to 39.20m; interbedded with very thin to thin bed of very weak greenish grey mudstone.					
37.58 - 40.20							20							
38.93 - 38.98	C	19	50 mm				120		39.83m to 39.88m; horizontal vien of gypsum					
							230	39						
39.00 - 40.20				100	100	88								
39.76 - 39.87	C	20	110 mm							(4.42)				
									Continued next page					

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	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 9 of 9
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									40.20m to 42.00m; becoming extremely weak and very weak. Highly fractured. Bedding fractures are subhorizontal extremely to very closely spaced planar smooth very tight and clean.						
									40.55m to 41.15m; with deformed laminations and micro-faulting, possibly soft sedimentary deformation.						
40.77 - 40.82	C	21	50 mm												
								41							
40.20 - 42.00				100	56	0	NI								
40.20 - 42.00															
									41.24m to 41.40m; with slump brecciated structure, possiblY soft sediment deformation.						
41.29 - 41.35	C	22	60 mm												
41.50	HPD	6													
41.82 - 41.87	C	23	50 mm												
								42	End of Borehole at 42.00 m	42.00	-41.26				
								43							
								44							

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Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 1 of 5
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

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Client	SSE Generation Limited (SSE)			
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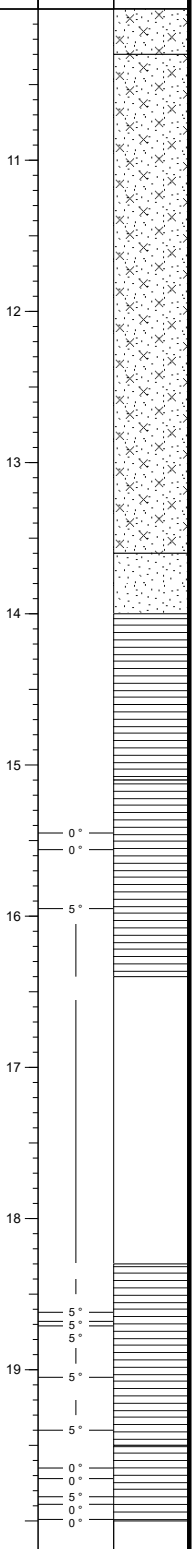
Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 2 of 5
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
15.45	BF	0		VT	Un	Sm					
15.56	BF	0		VT	Un	Sm					
15.95	BF	5		VT	Pl	Sm					
16.00 - 16.40	NI										
16.50 - 18.30	NR										
18.35 - 18.50	NI										
18.62	BF	5		VT	Un	Sm					
18.68	BF	5		VT	Un	Sm					
18.71	BF	5		VT	Un	Sm					
18.80 - 18.96	NI										
19.05	BF	5		VT	Un	Sm					
19.15 - 19.30	NI										
19.40	BF	5		VT	Un	Sm					
19.65	BF	0		VT	Un	Sm					
19.72	BF	0		VT	Un	Sm					
19.84	BF	5		VT	Un	Sm					
19.89	BF	0		VT	Pl	Sm					
19.99	BF	0		VT	Un	Sm					



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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 3 of 5
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
20.13	BF	0		VT	Un	Sm					
20.18	BF	0		VT	Un	Sm					
20.25	BF	5		VT	Un	Sm					
20.35 - 20.44	FR	45									
20.40 - 20.45	FR	20									
20.50 - 20.53	FR	15									
20.60	BF	5									
20.68 - 20.72	FR	15									
20.81 - 20.91	FR	45									
21.10	FR	5							21		
21.27	FR	5									
21.34	FR	5									
21.37	FR										
21.38	BF	0		VT	Pl	Sm					
21.52	BF	0		VT	Pl	Sm					
21.58	BF	0		VT	Pl	Sm					
21.65 - 21.90	NI										
22.00	BF	0		VT	Pl	Sm			22		
22.07	FR	15									
22.19	FR										
22.23	FR										
22.33 - 22.38	FR	45									
22.40	FR	5									
22.69	BF	0		VT	Un	Sm					
22.73	BF	0		VT	Pl	Sm					
22.85	BF	0		VT	Pl	Sm					
23.00	BF	0		VT	Pl	Sm			23		
23.15 - 23.45	NI										
23.62	FR	0									
23.66	FR	0									
23.74	BF	0		VT	Un	Sm					
24.46	FR	0							24		
24.53	FR										
25.64	BF	0		VT	Un	Sm					
25.69	BF	0		VT	Un	Sm					
25.93	FR	0							25		
25.95	BF	0									
25.98	FR	0									
26.08	FR	0									
26.16	FR	0									
26.20	FR	0									
26.28	FR	0									
26.44	FR	0									
26.75	BF	0		VT	Pl	Sm					
26.90	BF	0		VT	Un	Sm			26		
26.95	FR	0									
27.00	FR	0									
27.02	FR	0									
27.05	FR	0									
27.09	FR	0									
27.13	FR	0									
27.15	FR	0									
27.18	FR	0									
27.30	BF	0		VT	Pl	Sm					
27.38	BF	0		VT	Pl	Sm					
27.55	BF	0		VT	Pl	Sm			27		
27.58	FR	0									
27.60	FR	0									
27.65	FR	0									
27.67	FR	0									
27.70	FR	0									
28.15 - 28.50	NR										
28.69	FR	5									
28.81	BF	0		VT	Un	Sm					
28.87	FR	0							28		
28.91	FR	0									
29.55	BF	5		VT	Un	Sm					
29.78	BF	0		VT	Un	Sm			29		

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 4 of 5
	Hole Type	Discontinuity Log			Status: Final

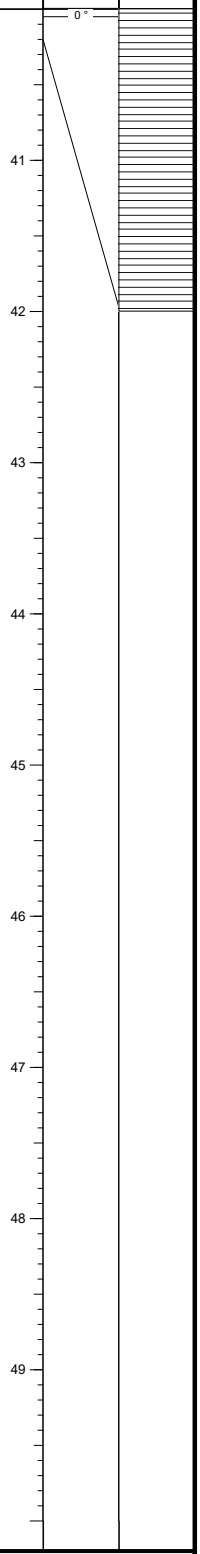
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
30.08	FR	0								0 °	
30.19	FR	0								0 °	
30.35	FR	0								0 °	
30.50	BF	0		VT	Pl	Sm				0 °	
30.50 - 30.55	NI									0 °	
30.58	FR	0								0 °	
30.64	FR	0								5 °	
30.70	FR	5								0 °	
30.71	BF	0		VT	Pl	Sm			31	0 °	
30.88	BF	0		VT	Pl	Sm				0 °	
30.96	BF	0		VT	Pl	Sm					
31.06	BF	0		VT	Pl	Sm				0 °	
31.32	BF	0		VT	Pl	Sm				0 °	
31.45	FR	0									
31.70	FR	10								10 °	
31.88	FR	0								0 °	
31.90	FR	0							32	0 °	
31.98	FR	0								0 °	
32.01	FR	10								10 °	
32.08	FR	0								0 °	
32.10	FR	5								5 °	
32.15	FR	10								10 °	
32.22	FR	0								0 °	
32.30	FR	0								0 °	
32.35	FR	10								10 °	
32.45 - 33.00	NR										
33.10	FR	5							33	5 °	
									34		
34.75	J	15		VT	Pl	Sm				15 °	
34.77	FR	0								0 °	
34.83	FR	0								0 °	
34.87	FR	0							35	0 °	
34.91	J	10		VT	Un	Sm				10 °	
34.98	BF	5		VT	Un	Sm				5 °	
35.06 - 35.12	J	50		VT	Un	St				50 °	
35.16	FR	5								5 °	
35.27	FR	5								5 °	
35.29	BF	0		VT	Pl	Sm				0 °	
35.53	FR	0								0 °	
35.57	FR	0									
35.67 - 35.75	NI									0 °	
35.85	BF	0		VT	Pl	Sm			36	0 °	
35.90	FR	0								0 °	
35.93	BF	0		VT	Pl	Sm				0 °	
36.00 - 36.05	NI										
36.09	FR	0								0 °	
36.20	FR	0								0 °	
36.25 - 36.34	NI									0 °	
36.50	BF	0		VT	Pl	Sm				0 °	
36.55	BF	0		VT	Pl	Sm				0 °	
36.65	FR	0							37	0 °	
36.72	FR									10 °	
36.84	BF	0		VT	Pl	Sm					
36.88	FR	0									
36.96	BF	0		VT	Pl	Sm					
37.05	FR	10								0 °	
37.58	BF	0		VT	Pl	Sm					
37.79	BF	0		VT	Pl	Sm				0 °	
37.97	BF	5		VT	Un	Sm			38	5 °	
38.12	BF	0		VT	Un	Sm				0 °	
38.23	BF	0		VT	Pl	Sm				0 °	
38.36	BF	5		VT	Pl	Sm				5 °	
38.50	BF	0		VT	Pl	Sm				0 °	
38.54	BF	0		VT	Pl	Sm				0 °	
38.77	BF	5		VT	Un	Sm				5 °	
38.93	BF	0		VT	Pl	Sm				0 °	
38.98	BF	0		VT	Pl	Sm			39	0 °	
39.16	BF	0		VT	Un	Sm				0 °	
39.20	BF	0		VT	Un	Sm				0 °	
39.38	BF	5		VT	Un	Sm				5 °	
39.55	BF	5		VT	Pl	Sm				5 °	
39.76	BF	5		VT	Pl	Sm				5 °	
39.87	BF	0		VT	Pl	Sm				0 °	
39.89	BF	0		VT	Pl	Sm				0 °	
39.97	BF	0		VT	Pl	Sm				0 °	

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH12**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 5 of 5
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
40.05	BF	0		VT	Pl	Sm					
40.20 - 42.00	NI										



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH13**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum)	0.71	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	04/10/2022	04/10/2022	Hand excavated			GW	GW	
1.20	14.95	CP	04/10/2022	05/10/2022	Dando 3000			TG/AC	GW	
14.60	40.00	RC	18/10/2022	27/10/2022	Comacchio 405		PCD	DMcG/SD	SBP/OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
04/10/2022	08:00	0.00			Dry
04/10/2022	18:00	6.65	6.20	2.00	Wet
05/10/2022	08:00	6.65	6.65	2.50	Raining
05/10/2022	18:00	14.95	14.60	5.00	Sunny
18/10/2022	13:30	14.60	14.60	1.98	
18/10/2022	18:00	17.50	14.60	1.12	
19/10/2022	08:00	17.50	14.60	0.48	
19/10/2022	18:00	22.00	14.60	0.50	
20/10/2022	08:00	22.00	14.60	0.55	
20/10/2022	18:00	25.00	14.60	0.50	
21/10/2022	08:00	25.00	14.60	0.45	
21/10/2022	19:15	29.50	14.60	1.05	
24/10/2022	05:30	29.50	14.60	1.21	
24/10/2022	18:00	31.00	14.60	1.33	
25/10/2022	08:00	31.00	14.60	1.54	
25/10/2022	18:00	34.00	14.60	1.20	
26/10/2022	08:00	34.00	14.60	1.11	
26/10/2022	18:00	35.50	14.60	1.54	
27/10/2022	08:00	35.50	14.60		
27/10/2022	18:00	40.00	14.60		

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.60	16.10	PB	100	Brown	00:40
16.10	17.50	PB	100	Brown	00:35
17.50	20.50	PB	100	Brown	03:00
20.50	22.00	PB	100	Brown	00:45
22.00	23.00	PB	100	Brown	01:00
23.00	25.00	PB	100	Brown	02:00
25.00	26.50	PB	100	Brown	01:00
26.50	29.50	PB	100	Brown	01:30
29.50	31.00	PB	100	Brown	01:00
31.00	34.00	PB	100	Brown	04:30
34.00	35.50	PB	100	Brown	01:00
35.50	38.50	PB	100	Brown	
38.50	40.00	PB	100	Brown	

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.60	16.10	102
16.10	17.50	102
17.50	20.50	85
20.50	22.00	102
22.00	23.00	85
23.00	25.00	85
25.00	26.50	102
26.50	29.50	85
29.50	31.00	102
31.00	34.00	85
34.00	35.50	102
35.50	38.50	85
38.50	40.00	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
6.65	250	6.20	250
14.95	200	14.60	200
35.50	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	14.95

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.95m and continued by rotary coring techniques to 40.00m.
3. Driller noted that sand blowing inside of casing from 7.00m to 13.60m made them unable to take SPTs. Programme of SPTs cancelled between 6.20m and 14.00m. 4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities. 5. Tiger PID (T-117408) used for photo-ionisation detection (PID).
6. High pressure dilatometer testing (HPD) carried out; results presented separately. Reduced diameter core barrel used over test depth. 7. Wireline Geophysics was carried out; results reported separately. 8. Borehole terminated at scheduled depth of 40.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	10.00	7.00	10.00	31/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	7.00	50	Plain
1	7.00	10.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	31/10/2022
0.50	6.90	Bentonite	31/10/2022
6.90	10.10	Gravel	31/10/2022
10.10	39.40	Bentonite	31/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 1 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	2							TOPSOIL.	(0.10)				
0.10	ES	1							[TOPSOIL]	0.10	0.61			
0.10 - 0.40	B	3							MADE GROUND. Brown slightly clayey SAND with occasional subangular fine gravel sized fragments of possible chert and with frequent rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND]					
0.10	PID		< 0.1 ppm											
0.40	ES	4								(0.60)				
0.40	PID		< 0.1 ppm											
0.70	D	6								0.70	0.01			
0.70	ES	5							Light brown slightly gravelly slightly silty SAND. Sand is fine to coarse predominantly fine and medium. Gravel is subangular fine of chert (10mm x 10mm). [ALLUVIUM] [SAND]					
0.70 - 1.00	B	7						1		(0.50)				
0.70	PID		< 0.1 ppm											
1.20	ES	8								1.20	-0.49			
1.20 - 1.65	D	9							Medium dense orange brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]					
1.20 - 1.65	SPT		N = 22 (S)											
1.20	PID		< 0.1 ppm							(0.60)				
1.80	D	10								1.80	-1.09			
1.80 - 2.10	B	11						2	Brown silty SAND with occasional black carbonaceous debris (<1mm). Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	(0.40)				
2.20 - 2.65	D	12								2.20	-1.49			
2.20 - 2.50	SPT		N = 6 (S)						Firm brown slightly sandy SILT with rare pockets of (<5mm x 20mm) clay. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SILT]					
2.80	D	13								(0.80)				
2.80 - 3.10	B	14												
3.20 - 3.65	D	15						3		3.00	-2.29			
3.20 - 3.65	SPT		N = 4 (S)						Soft and firm brown sandy CLAY with rare black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [CLAY]					
3.80	D	16								(0.80)				
3.80 - 4.10	B	17												
4.20 - 4.65	D	18						4		3.80	-3.09			
4.20 - 4.65	SPT		N = 6 (S)						Loose brown very clayey SAND with rare black sand sized carbonaceous debris. Sand is fine and medium predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [SAND]					
4.80	D	19								(1.40)				
4.80 - 5.10	B	20							Between 4.80m and 5.10m; rare pockets (<5 x 10mm) of clay.					
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 2 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
5.20 - 5.65 5.20 - 5.65	D SPT	21	N = 5 (S)						Firm brown sandy SILT with rare black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SILT]	5.20 (0.60)	-4.49				
5.80 5.80 - 6.10	D B	22 23						6	Brown slightly sandy Silty CLAY with rare pocket of (100mm x 150mm) of clay. Sand is predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	5.80 (0.40)	-5.09				
6.20 - 6.65 6.20 - 6.65	D SPT	24	N = 5 (S)						Firm brown slightly sandy SILT with occasional black sand sized carbonaceous debris (<2mm). Sand is fine and medium. [ALLUVIUM] [SILT]	6.20 (0.80)	-5.49				
6.80 6.80 - 7.10	D B	25 26							At 6.80m; rare pockets (5 x 20mm) of brown clay.						
7.30 7.30 - 7.60	D B	27 28						7 8	Brown silty SAND with occasional black carbonaceous material (<2mm). Sand is fine and medium. [ALLUVIUM] [SAND]	7.00 (3.30)	-6.29				
8.30 8.30 - 8.60	D B	29 30						9							
9.30 9.30 - 9.60	D B	31 32													
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 3 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.30	D	33													
10.30 - 10.60	B	34							Brown slightly gravelly silty SAND with rare black organic material (<1mm). Sand is fine and medium. Gravel is subangular and subrounded fine of grey green mudstone. [ALLUVIUM] [SAND]	10.30	-9.59				
										(1.00)					
								11							
11.30	D	35								11.30	-10.59				
11.30 - 11.60	B	36							Brown slightly gravelly silty SAND with occasional black organic material (<3mm). Sand is predominantly fine and medium. Gravel is fine. [ALLUVIUM] [SAND]						
								12							
12.30	D	37								(2.00)					
12.30 - 12.60	B	38													
								13							
13.30	D	39								13.30	-12.59				
13.30 - 13.60	B	40							Brown slightly gravelly silty SAND with occasional black sand sized carbonaceous debris (<2mm) and occasional pockets (<50 x 100mm) of sandy clay. Sand is predominantly fine and medium. Gravel is subangular and subrounded fine of mudstone. [ALLUVIUM] [SAND]	(0.30)					
										13.60	-12.89				
13.80	D	41							MUDSTONE. Recovered as brown slightly sandy CLAY with occasional subangular and subrounded fine gravel sized mudstone and gypsum lithorelicts and occasional fine and medium sand sized mudstone peds. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]						
14.00 - 14.45	D	42						14							
14.00 - 14.80	B	44													
14.00 - 14.80	D	43								(1.00)					
14.00 - 14.30	SPT		50/150 mm (S)												
14.50 - 14.95	D	45													
14.50 - 14.73	SPT		52/80 mm (S)												
										14.60	-13.89				
14.60 - 14.85							NI		Extremely weak and very weak locally weak to moderately weak thinly laminated reddish brown locally greenish grey MUDSTONE with horizontal to inclined (20 degrees) very closely to closely spaced gypsum veins (2mm to						
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 4 of 9	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.85 - 15.60							30 190 560		50mm). Distinctly weathered. Bedding fractures are horizontal very closely and closely spaced locally medium spaced planar smooth very tight clean locally open with firm clay infilling. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.00)				
15.35 - 15.48	C	1	130 mm	100	73	45			14.60m to 14.73m; drilling disturbed. Recovered as firm reddish brown sandy clay with abundant angular gravel sized mudstone lithorelicts. Destructured mudstone.					
14.60 - 16.10									14.70m to 14.85m; highly fractured, possibly drilling disturbed. 14.80m to 15.10m; weak to moderately weak, partially weathered. 14.95m to 14.97m; highly fractured, possibly drilling disturbed.	15.60	-14.89			
15.60 - 15.83							20 50 100		14.97m to 15.02m; horizontal gypsum vein.	(0.45)				
15.83 - 15.96							NI							
15.96 - 16.05							-	16	Moderately weak thinly to thickly laminated greenish grey MUDSTONE with subhorizontal to inclined (20 degrees) very closely to closely spaced gypsum veins (2mm to 35mm) and with deformed laminations possibly soft sedimentary deformations. Partially weathered. Bedding fractures are horizontal very closely and closely spaced planar and undulating smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	16.05	-15.34			
							90 -		15.78m to 15.80m; non-intact, recovered as angular mudstone fragments. 15.83m to 15.94m; non-intact, recovered as angular mudstone fragments.					
16.24 - 16.37	C	2	130 mm											
16.05 - 17.05							60 190 360			(1.00)				
16.77 - 16.89	C	3	120 mm	100	74	59								
16.10 - 17.50								17	Extremely weak and very weak thinly laminated reddish brown locally greenish grey MUDSTONE with subhorizontal medium spaced gypsum veins (2mm to 25mm). Distinctly weathered. Bedding fractures are horizontal locally subhorizontal (5 degrees) medium spaced locally very closely and closely spaced planar and undulating smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	17.05	-16.34			
17.05 - 17.18							- 130		16.15m to 16.20m; sandy clay with abundant gravel sized mudstone lithorelicts.	(0.45)				
17.18 - 17.50							- NI			17.50	-16.79			
								18	Extremely weak reddish brown mottled greenish grey MUDSTONE with subhorizontal to inclined (45 degrees) gypsum veins (3mm to 20mm). Distinctly weathered. Highly fractured. Joints are irregular very closely spaced undulating smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
17.50 - 18.65							NR		17.18m to 17.50m; non-intact, recovered as angular gravel to cobble size mudstone fragments.	(1.15)				
18.70	HPD	1							ASSUMED ZONE OF CORE LOSS. Possibly destructured mudstone [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	18.65	-17.94			
18.65 - 19.25							NA		MUDSTONE. Recovered as stiff greenish grey locally reddish brown CLAY with abundant angular gravel sized mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.60)				
17.50 - 20.50				62	30	16		19						
19.27 - 19.48	C	4	210 mm							19.25	-18.54			
19.48 - 19.57	C	5	90 mm						Medium strong and strong locally very weak thinly to thickly laminated greenish grey MUDSTONE with subhorizontal medium spaced gypsum veins (up to 40mm) and with deformed laminations and locally slump structures, possibly soft sedimentary deformation. Partially weathered. Bedding fractures are horizontal very closely to closely spaced planar and undulating smooth very tight clean.					
19.25 - 19.93							30 100 220			(1.25)				
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 5 of 9	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.93 - 20.10							NI		[MERCIA MUDSTONE GROUP - MUDSTONE]					
20.10 - 20.37	C	6	170 mm						[MUDSTONE]					
20.10 - 20.27							- 170		19.67m to 19.75m; non intact, recovered as angular mudstone fragments locally in clay matrix.					
20.27 - 20.40							- NI		19.93m to 20.10m; non intact, recovered as angular mudstone fragments locally in clay matrix.					
20.40 - 20.50							30 40		20.27m to 20.33m; very stiff greenish grey clay with abundant angular gravel sized mudstone lithorelicts.	20.50	-19.79			
20.50 - 20.92							70 30 100 170		20.33m to 20.41m; non intact, recovered as angular mudstone and gypsum fragments. 20.47m to 20.50m; non intact, recovered as angular mudstone fragments.					
20.92 - 21.08							NA	21	Very weak locally extremely weak reddish brown and greenish grey MUDSTONE with subhorizontal to inclined (up to 30 degrees) very closely to closely spaced gypsum veins (3mm to 10mm). Distinctly weathered. Bedding fractures are horizontal and subhorizontal (5 degrees) closely to medium spaced locally very closely spaced undulating smooth very tight clean locally planar smooth tight with clay coating.					
20.50 - 22.00				100	59	45	70 - 300			(1.50)				
21.08 - 21.50														
21.33 - 21.45	C	7	120 mm											
21.50 - 21.85							NA		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.92m to 21.08m; stiff reddish brown clay with abundant angular gravel sized mudstone lithorelicts. 21.15m to 21.20m; non intact, recovered as angular mudstone fragments. 21.20m to 21.50m; weak. 21.50m to 21.85m; stiff greenish grey clay with abundant angular gravel sized mudstone lithorelicts. 21.95m to 22.00m; non intact, possibly drilling induced. Recovered as angular mudstone and gypsum fragments.					
21.85 - 22.00							- 150	22		22.00	-21.29			
22.13 - 22.26	C	8	130 mm				-							
22.00 - 22.40							130 130 140		Moderately weak locally thinly laminated reddish brown and greenish grey MUDSTONE with subhorizontal to inclined (15 degrees) very closely to closely spaced gypsum veins (up to 15mm). Partially weathered. Bedding fractures are horizontal and subhorizontal (5 degrees) closely to medium spaced locally very closely spaced undulating smooth very tight clean locally open with stiff clay infill.	(0.80)				
22.00 - 23.00				80	57	40	NA							
22.40 - 22.65														
22.65 - 22.80							30 50			22.80	-22.09			
22.80 - 23.00							80 NR							
								23	[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.40m to 22.48m; firm to stiff reddish brown clay with abundant angular gravel sized mudstone lithorelicts. 22.50m to 22.65m; firm to stiff reddish brown clay with abundant angular gravel sized mudstone lithorelicts.					
23.70	HPD	2							MUDSTONE. Recovered as stiff to very stiff reddish brown locally greenish grey CLAY with gravel sized extremely weak mudstone lithorelicts and with inclined (10 degrees) closely to medium spaced gypsum veins (5mm to 35mm). Destructured mudstone.	(1.80)				
23.00 - 24.60							NA		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.80m to 23.00m; assumed zone of core loss. 23.30m to 23.39m; moderately weak greenish grey mudstone.					
23.00 - 25.00				85	18	10		24						
24.60 - 25.07							30		Weak locally extremely weak locally thinly laminated reddish brown and greenish grey MUDSTONE with horizontal to inclined (15 degrees) closely spaced gypsum veins (5mm to 50mm). Partially weathered locally distinctly	24.60	-23.89			
24.90 - 24.99	C	9	90 mm				100 230							

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 6 of 9	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
25.07 - 25.21							NI		weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
25.21 - 25.53							320 -		24.60m to 28.24m; bedding fractures are horizontal to subhorizontal (5 degrees) very closely to closely spaced locally medium spaced planar and undulating smooth and rough very tight clean locally tight with clay coating.					
25.53 - 25.70							NA		24.74m to 24.80m; non intact, recovered as angular mudstone fragments.					
25.70 - 25.78	C	10	80 mm						24.84m to 24.88m; non intact, recovered as angular mudstone fragments.					
25.00 - 26.50				100	93	32			25.07m to 25.21m; highly fractured, extremely weak.					
25.91 - 26.00	C	11	90 mm						25.48m to 25.53m; horizontal gypsum vein.					
								26	25.53m to 25.70m; firm to stiff greenish grey clay with gravel sized extremely weak mudstone lithorelicts.					
25.70 - 26.42							40 80 160		26.00m to 26.04m; non-intact, recovered as angular mudstone and gypsum fragments. 26.18m to 26.20m; firm greenish grey clay. 26.20m to 26.22m; horizontal gypsum vein. 26.28m to 26.35m; non intact, recovered as angular mudstone fragments in grey clay matrix.					
26.42 - 26.50							NA		26.42m to 26.50m; stiff reddish brown clay with abundant angular gravel sized mudstone lithorelicts and occasional gypsum fragments.					
26.50 - 26.74							NI		26.50m to 26.74m; highly fractured with occassional matrix of soft clay. Fractures are horizontal to subvertical.					
26.87 - 27.00	C	12	130 mm											
								27						
26.74 - 27.86							20							
27.30	HPD	3					110 240							
27.50 - 27.75	C	13	150 mm							(6.13)				
27.86 - 28.00							NI		27.86m to 28.00m; recovered as soft reddish brown clay with abundant angular and subangular gravel sized mudstone lithorelicts and partially dissolved gypsum fragments.					
26.50 - 29.50				98	46	23		28						
28.00 - 28.25							20 60 ~~110~~		28.24m to 28.39m; highly fractured with occasional matrix of soft dark greenish grey clay and partially dissolved gypsum fragments (20mm).					
28.25 - 28.67							NA		28.39m to 28.67m; recovered as soft and firm reddish brown clay with abundant angular and subangular gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments.					
28.67 - 29.10							NI		28.67m to 29.03m; highly fractured with occasional matrix of soft reddish brown clay.					
								29						
29.10 - 29.23							NA		29.03m to 29.10m; subhorizontal (10 degrees) vein of gypsum. Partially dissolved. 29.10m to 29.23m; recovered as firm to stiff reddish brown clay with abundant angular and subangular gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments.					
29.23 - 29.35							5 ~~40~~							
29.35 - 29.55							65 NA		29.23m to 30.19m; joints are subhorizontal (5 degrees) to inclined (15 to 40 degrees) very closely to closely spaced undulating locally planar rough very tight clean locally tight with clay coating. 29.35m to 29.45m; recovered as stiff reddish brown clay with abundant angular and subangular gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments.					
29.69 - 29.79	C	14	100 mm											

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 7 of 9
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
29.55 - 30.73 29.50 - 31.00				100	89	52	25 140 335		29.45m to 29.50m; assumed zone of core loss. 29.50m to 29.55m; non intact (possible scoured by drilling).					
30.59 - 30.67	C	15	80 mm											
30.73 - 30.91							NA	31	Extremely weak locally very weak thinly laminated reddish brown and greenish grey MUDSTONE with subangular (<10 degrees) closely spaced gypsum veins (5mm to 50mm). Partially weathered locally distinctly weathered and destructured. Bedding fractures are predominantly subhorizontal (5 degrees) very closely to closely spaced planar locally undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	30.73	-30.02			
30.91 - 31.54							20 70 140		31.19m to 31.50m; very weak.					
31.41 - 31.50	C	16	90 mm											
31.54 - 31.75 31.70	HPD	4					NA		31.54m to 31.75m; recovered as soft to firm reddish brown clay with abundant angular gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments.					
31.75 - 31.93							30 70							
31.93 - 32.12							120 NA	32	31.92m to 32.12m; recovered as soft to firm reddish brown clay with abundant angular gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments. 32.12m to 33.02m; highly fractured recovered as angular fragments of extremely weak mudstone with occassional matrix of soft reddish brown and greenish grey clay.					
31.00 - 34.00 32.12 - 33.02				100	28	7	NI			(3.67)				
33.02 - 33.12	C	17	100 mm					33						
33.02 - 33.29							20 50 100							
33.29 - 33.52							NI		33.29m to 33.52m; highly fractured recovered as angluar fragments of extremely weak mudstone with occassional matrix of soft reddish brown clay. 33.52m to 33.92m; recovered as soft to firm reddish brown clay with abundant angular gravel sized extremely weak mudstone lithorelicts.					
33.52 - 34.40							NA	34						
34.59 - 34.93	C	18	320 mm						Very weak and weak reddish brown mottled grey MUDSTONE with occasional thick lamination of soft reddish brown silty clay and with very closely and closely spaced subhorizontal to subvertical (<80 degrees) gypsum veins (2mm to 20mm). Partially weathered. Bedding fractures are subhorizontal (5 degrees) widely spaced planar smooth very	34.40	-33.69			
34.00 - 35.50				100	71	63								
34.40 - 35.50 34.96 - 35.16	C	19	200 mm				20 220 570							

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 8 of 9	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									tight and clean. Joints are subhorizontal (10 degrees) to inclined (20 degrees) closely spaced locally widely spaced planar smooth very tight and clean locally partially open with clay infill. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.45)				
35.50 - 35.60							NR		35.50m to 35.60m; assumed zone of core loss.					
35.60 - 35.71							NA		35.60m to 35.71m; non intact, possible drilling disturbed. Recovered as very soft silty clay with abundant subangular gravel sized very weak mudstone lithorelicts and partially dissolved gypsum fragments.					
35.71 - 35.85	C	20	140 mm											
35.71 - 35.85							-							
35.89 - 35.98	C	21	90 mm				140 -			35.85	-35.14			
								36	Extremely weak locally very weak dark reddish brown locally greenish grey thinly and thickly laminated MUDSTONE with closely spaced very thin bed of soft reddish brown silty clay locally with closely spaced horizontal gypsum veins (5mm to 50mm). Partially to distinctly weathered locally destructured. Bedding fractures are horizontal to subhorizontal (5 degrees) very closely and closely spaced planar smooth very tight and clean locally tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
35.85 - 36.55							20 60 100							
36.55 - 36.76							NA		35.86m to 36.32m; very weak. 36.55m to 36.76m; recovered as soft and firm reddish brown silty clay with abundant angular gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments.					
36.76 - 36.99							50 70							
35.50 - 38.50				97	50	12	90	37						
36.99 - 37.33							NI		36.99m to 37.33m; highly fractured with occassional matrix of soft reddish brown silty clay. Distinctly weathered. 37.15m to 37.33m; highly fractured with occassional matrix of soft reddish brown silty clay. Distinctly weathered.	(2.73)				
37.50	HPD	5												
37.63 - 37.76	C	22	130 mm						37.58m to 37.76m; very weak.					
37.33 - 38.10							20 60 130							
								38						
38.10 - 38.33							NI		38.10m to 38.33m; highly fractured with occassional matrix of soft reddish brown silty clay. Distinctly weathered.					
38.33 - 38.50							NA		38.33m to 38.50m; recovered as soft and firm reddish brown clay with abundant angular gravel sized extremely weak mudstone lithorelicts.					
38.50 - 38.54	C	23	40 mm						38.50m to 38.58m; very weak greenish grey thinly laminated mudstone.					
38.54 - 38.76	C	24	220 mm							38.58	-37.87			
38.50 - 39.17							20 90 220		Very weak locally extremely weak reddish brown locally mottled greenish grey thinly laminated MUDSTONE with very clsoely and closely spaced subhorizontal to inclined (<40 degrees) gypsum veins (2mm to 40mm).					
								39	Partially to distinctly weathered. Bedding fractures are horizontal and subhorizontal (5 to 10 degrees) very closely to closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.84)				
38.50 - 40.00				100	82	37								
39.17 - 39.42							NI		38.88m to 39.03m; disturbed lamination with microfault. 39.17m to 39.40m; highly fractured.					
										39.42	-38.71			
39.64 - 39.72	C	25	60 mm						Very weak thickly laminated to very thinly bedded reddish brown and greenish grey MUDSTONE with occasional closely spaced thick laminations of very soft greenish grey silty clay and with closely spaced subhorizontal (<5 degrees) gypsum veins (2mm to 50mm).					
39.42 - 40.00							10			(0.58)				
39.72 - 39.76	C	26	60 mm				40							
							80							
39.90 - 39.95	C	27	50 mm											
										40.00	-39.29			

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum)	0.71	Sheet 9 of 9
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									Partially weathered. Bedding fractures are horizontal and subhorizontal (< 5 degrees) very closely and closely spaced planar smooth very tight and tight clean and with clay coating and reddish brown staining. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
									End of Borehole at 40.00 m					
								41						
								42						
								43						
								44						

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum)	0.71	Sheet 1 of 5
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

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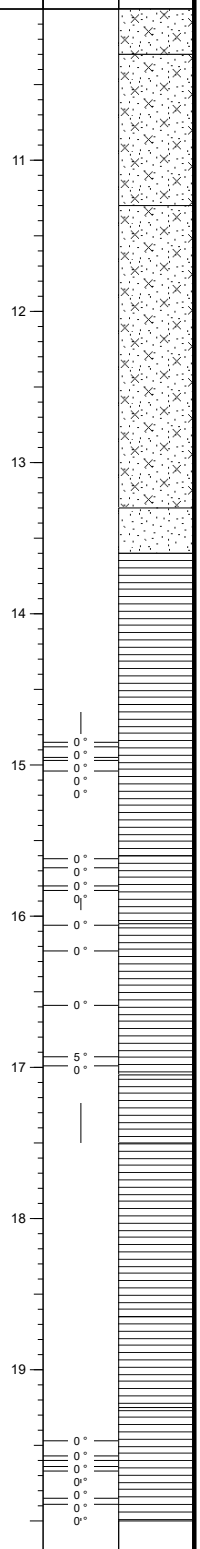
FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum)	0.71	Sheet 2 of 5
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
14.60 - 14.85	NI										
14.85	BF	0	1	O	Pl	Sm					
14.88	BF	0		VT	Pl	Sm					
14.95	BF	0		VT	Pl	Sm					
14.95 - 14.97	NI										
14.97	BF	0		VT	Pl	Sm					
15.02 - 15.04	NI										
15.04	BF	0		VT	Pl	Sm					
15.62	BF	0		VT	Un	Sm					
15.68	BF	0		VT	Un	Sm					
15.78 - 15.80	NI										
15.80	BF	0		VT	Pl	Sm					
15.83	BF	0		VT	Pl	Sm					
15.83 - 15.96	NI										
16.06	BF	0		VT	Un	Sm					
16.23	BF	0		VT	Pl	Sm					
16.59	BF	0		VT	Pl	Sm					
16.93	BF	5		VT	Un	Sm					
16.99	BF	0		VT	Pl	Sm					
17.18 - 17.50	NI										
19.47	BF	0		VT	Un	Sm					
19.57	BF	0		VT	Un	Sm					
19.60	BF	0		VT	Pl	Sm					
19.64	BF	0		VT	Pl	Sm					
19.67	BF	0		VT	Pl	Sm					
19.67 - 19.75	NI										
19.85	BF	0		VT	Un	Sm					



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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum) 0.71	Sheet 3 of 5	
	Hole Type	Discontinuity Log		Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
19.89	FR	0		VT	Un	Sm					
19.93 - 20.10	NI										
20.27	BF	0		VT	Pl	Sm					
20.27 - 20.40	NI										
20.40	BF	0		VT	Un	Sm					
20.47	BF	0		VT	Un	Sm					
20.52	FR	5									
20.52 - 20.58	FR	35									
20.65	BF	5		VT	Un	Sm					
20.68	BF	5		VT	Un	Sm					
20.85	BF	5		T	Pl	Sm					
21.15 - 21.20	NI										
21.45	FR	0									
22.14	BF	5		VT	Un	Sm					
22.27	BF	5		VT	Un	Sm					
22.69	BF	0		VT	Un	Sm					
22.72	BF	5	1	O	Un	Sm					
22.78	FR	0									
24.67	BF	0		VT	Un	Ro					
24.71	BF			VT	Un	Ro					
24.74 - 24.80	NI										
25.03	BF	0		T	Pl	Sm					
25.07	BF	0		T	Pl	Sm					
25.07 - 25.21	NI										
25.86	BF	5		VT	Un	Sm					
25.86 - 25.92	FR										
25.92	BF	5		VT	Un	Sm					
26.00 - 26.04	NI										
26.10	BF	0		VT	Pl	Sm					
26.18	BF	0		VT	Pl	Sm					
26.22	BF	0		VT	Pl	Sm					
26.28	BF	0		VT	Pl	Sm					
26.28 - 26.35	NI										
26.35	BF	0		VT	Pl	Sm					
26.42 - 26.50	NI										
26.50 - 26.80	NI										
26.85	BF	0		VT	Pl	Ro					
26.87	BF	0		VT	Pl	Ro					
27.11	BF	5		VT	Pl	Ro					
27.18 - 27.19	J	10		VT	Un	Ro					
27.21	BF	0		VT	Pl	Ro					
27.31	BF	5		VT	Pl	Ro					
27.36	BF	0		VT	Pl	Ro					
27.38	BF	0		VT	Pl	Ro					
27.41 - 27.42	J	10		VT	Un	Ro					
27.64	BF	5		VT	Pl	Ro					
27.71	BF	0		VT	Pl	Ro					
27.74	BF	0		VT	Pl	Ro					
27.86 - 28.00	NI										
28.04	BF	0		VT	Pl	Ro					
28.09	BF	0		VT	Un	Ro					
28.12	BF	0		VT	Pl	Ro					
28.23	BF	5		VT	Pl	Ro					
28.25 - 28.39	NI										
28.39 - 28.67	NI										
28.67 - 29.10	NI										
29.10 - 29.23	NI										
29.23 - 29.33	J	40		T	Un	Ro					
29.34 - 29.35	J	15		VT							
29.35 - 29.45	NI										
29.45 - 29.50	NR										
29.50 - 29.55	NI										
29.61	J	5		VT	Un	Ro					
29.69	J	5		VT	Un	Ro					
29.79	J	5		VT	Un	Ro					
29.90	J	5		VT	Un	Ro					

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- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum)	0.71	Sheet 4 of 5
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
29.93 - 29.96	J	15		VT	Un	Ro					
30.00 - 30.03	J	20		VT	Un	Ro					
30.03 - 30.06	J	20		VT	Un	Ro					
30.07 - 30.11	J	20		VT	Un	Ro					
30.09 - 30.14	J	20		VT	Pl	Ro					
30.14 - 30.19	J	20		VT	Pl	Ro					
30.31	FR	0		VT	Un	Ro					
30.37	FR	0		VT	Un	Ro					
30.40	FR	0			Pl	Sm					
30.50	BF	0		VT	Pl	Sm					
30.59	BF	0		VT	Pl	Sm					
30.73 - 30.90	NI										
30.93	BF	0		VT	Pl	Ro					
31.07	BF	5		VT	Pl	Ro					
31.12	BF	5		VT	Pl	Ro					
31.19	BF			VT	Pl	Ro					
31.26	BF	5		VT	Pl	Ro					
31.34	BF	5		VT	Pl	Ro					
31.37	BF	5		VT	Pl	Ro					
31.39	BF	5		VT	Pl	Ro					
31.41	BF	5		VT	Pl	Ro					
31.50	BF	5		VT	Pl	Ro					
31.54 - 31.75	NI										
31.87	BF	5		VT	Pl	Ro					
31.90	BF	5		VT	Pl	Ro					
31.93	BF	5		VT	Pl	Ro					
31.93 - 32.12	NI										
32.12 - 33.02	NI										
33.12	BF	5		VT	Un	Ro					
33.17	BF	5		VT	Pl	Ro					
33.21	BF	5		VT	Pl	Ro					
33.24	BF	5		VT	Pl	Ro					
33.27	BF	5		VT	Pl	Ro					
33.29	BF	5		VT	Pl	Ro					
33.29 - 33.52	NI										
33.52 - 33.92	NI										
34.00 - 34.40	NI										
34.52 - 34.54	J	10		PO	Pl	Sm					
34.58 - 34.60	J	10		VT	Pl	Sm					
35.16	BF	5		VT	Pl	Sm					
35.25 - 35.36	J	20		VT	Pl	Sm					
35.46 - 35.48	NI										
35.50 - 35.60	NR										
35.60 - 35.71	NI										
35.85	FR	0									
35.89	BF	0		VT	Pl	Sm					
35.98	BF	0		VT	Pl	Sm					
36.07	BF	0		T	Pl	Sm					
36.10	BF	0		T	Pl	Sm					
36.20	BF	0		VT	Pl	Sm					
36.23	BF	0		VT	Pl	Sm					
36.32	BF	0		VT	Pl	Sm					
36.39	BF	0		T	Pl	Sm					
36.45	BF	0		T	Pl	Sm					
36.47	BF	0		T	Pl	Sm					
36.55 - 36.76	NI										
36.85	BF	5		T	Pl	Sm					
36.94	BF	5		T	Pl	Sm					
36.99 - 37.33	NI	0			Pl	Sm					
37.37	BF	0		T	Pl	Sm					
37.44	BF	0		T	Pl	Sm					
37.47	BF	0		T	Pl	Sm					
37.54	BF	0		VT	Pl	Sm					
37.54 - 37.58	J	90									
37.58	BF	0		VT	Pl	Sm					
37.63	BF	0		VT	Pl	Sm					
37.76	BF	5		VT	Sp						
37.83	BF	5		VT	Pl	Sm					
37.87	BF	5		VT	Pl	Sm					
37.89	BF	5		VT	Pl	Sm					
37.93	BF	5		VT	Pl	Sm					
37.97	BF	5		VT	Pl	Sm					
38.03	BF	0		VT	Pl	Sm					
38.05	BF	0		VT	Pl	Sm					
38.10	BF	0		VT	Pl	Sm					
38.10 - 38.33	NI										
38.33 - 38.50	NI										
38.54	BF	0		VT	Pl	Sm					
38.76	BF	0		VT	Pl	Sm					
38.78	BF	0		VT	Pl	Sm					
38.86 - 38.88	BF	10		VT	Pl	Sm					
38.88 - 38.90	BF	10		VT	Pl	Sm					
38.90 - 38.96	J	50		VT	Pl	Sm					
38.96	BF	5		VT	Pl	Sm					
39.03	BF	5		VT	Pl	Sm					
39.06	BF	0		VT							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum)	0.71	Sheet 5 of 5
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
39.10	BF	0		VT	Pl	Sm				5 °	
39.14	BF	0		VT	Pl	Sm				0 °	
39.17	BF	0		VT	Pl	Sm				0 °	
39.17 - 39.40	NI									5 °	
39.48	BF	5		T	Pl	Sm				5 °	
39.50	BF	5		T	Pl	Sm				5 °	
39.52 - 39.54	J	40		VT	Pl	Sm				0 °	
39.54	BF	5		VT	Pl	Sm				0 °	
39.61	BF	5		VT	Pl	Sm				0 °	
39.64	BF	5		T	Pl	Sm			41		
39.72	BF	0		T	Pl	Sm					
39.78	BF	0		T	Pl	Sm					
39.81	BF	5		T	Pl	Sm					
39.84	BF	5		T	Pl	Sm					
39.88	BF	5		T	Pl	Sm					
39.90	BF	0		VT	Pl	Sm					
39.95	BF	0		VT	Pl	Sm					
39.97	FR	0							42		
									43		
									44		
									45		
									46		
									47		
									48		
									49		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH14**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum)	0.81	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	23/08/2022	23/08/2022	Hand excavated			BS/BS/MJ	BS	
1.20	15.17	CP	23/08/2022	24/08/2022	Dando 3000			BS	OE/BS	
15.00	25.50	RC	07/09/2022	08/09/2022	Comacchio MC300		PCD	RC/DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
23/08/2022	07:00	0.00			Cloudy
23/08/2022	18:00	4.50	4.50	1.50	
24/08/2022	07:00	4.50	4.50	2.00	Sunny, showers
24/08/2022	18:00	15.00	15.00	5.00	Dry sunny spells
07/09/2022	07:00	15.00	15.00	0.61	Overcast showers
07/09/2022	18:00	21.00	15.00	0.79	
08/09/2022	07:00	21.00	15.00	1.14	
08/09/2022	18:00	24.50	15.00	1.32	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.00	16.50	M	100	Brown	00:38
16.50	18.00	M	100	Brown	00:43
18.00	19.50	M	0	Brown	00:49
19.50	21.00	M	0	Brown	00:52
21.00	22.50	M	100	Brown	00:49
22.50	24.00	M	100	Brown	00:54
24.00	25.50	M	100	Brown	00:17

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.00	16.50	102
16.50	18.00	102
18.00	19.50	102
19.50	21.00	102
21.00	22.50	102
22.50	24.00	102
24.00	25.50	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
13.50	250	13.50	250
15.00	200	15.00	200
25.50	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.70	15.00	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	13.50

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.17m and continued by rotary coring techniques to 25.50m.
3. SPT at 12.00m possibly affected by borehole disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117404) used for photo-ionisation detection (PID).
6. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	25.50	Bentonite	08/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY/NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH14**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum) 0.81	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							TOPSOIL.					
0.10 - 0.30	B	2							[TOPSOIL] [SAND]	(0.30)				
0.15	ES	3												
0.15	PID		< 0.1 ppm							0.30	0.51			
0.30 - 0.60	B	5							MADE GROUND. Blackish brown clayey SAND with occasional rootlets (<1mm) and frequent black sand sized carbonaceous debris. Sand is fine and medium.					
0.40	D	4												
0.45	ES	6												
0.45	PID		< 0.1 ppm						[MADE GROUND] [SAND]	(0.50)				
0.70	D	7												
0.70 - 1.00	B	8								0.80	0.01			
0.80	ES	9							Light yellowish brown streaked black SAND with rootlets (<1mm) and frequent black sand sized carbonaceous debris. Sand is fine and medium.					
0.80	PID		< 0.1 ppm											
1.00 - 1.20	B	11						1	[ALLUVIUM] [SAND]	(0.40)				
1.10	D	10												
1.20	ES	12								1.20	-0.39			
1.20 - 1.65	D	13							Very loose to medium dense greyish brown silty SAND with occasional pockets (<20mm) of soft dark brown silty clay, occasional white possibly chalk fragments (<1mm) and occasional black possibly organic fragments (<1mm). Sand is fine.					
1.20 - 1.65	SPT		N = 10 (S)											
1.20	PID		0.1 ppm											
1.70 - 2.00	B	15							[ALLUVIUM] [SAND]					
									At 1.70m; dark brown (Driller's description).					
1.80	D	14												
1.80	ES	16												
1.80	PID		0.1 ppm											
2.00 - 2.45	D	17						2						
2.00 - 2.45	SPT		N = 4 (S)							(1.80)				
2.50	D	18												
2.80	ES	19												
2.80	PID		0.3 ppm											
3.00 - 3.45	D	20						3		3.00	-2.19			
3.00 - 3.45	SPT		N = 3 (S)						Soft greyish brown mottled orangish brown sandy CLAY. Sand is fine. Depth of upper interface approximate.					
3.50	D	21							[ALLUVIUM] [CLAY]					
									At 3.50m; rare subangular fine quartz gravel.					
3.80	ES	22												
3.80	PID		0.7 ppm											
4.00 - 4.45	D	23						4		(2.00)				
4.00 - 4.45	SPT		N = 2 (S)						Below 4.00m; rare subangular fine gravel of quartz.					
4.50	D	24												
5.00 - 5.45	D	25								5.00	-4.19			
5.00 - 5.45	SPT		N = 4 (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum) 0.81	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.50	D	26							Very loose and loose light greyish brown very clayey SAND. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	(1.50)				
6.00 - 6.45 6.00 - 6.45	D SPT	27	N = 4 (S)					6						
6.60 6.60 - 6.90	D B	28 29							Loose and medium dense greyish brown silty SAND with occasional black sand sized carbonaceous debris (<1mm) and rare white possible chalk fragments (<1mm). Sand is fine and medium. [ALLUVIUM] [SAND]	6.50	-5.69			
7.50 - 7.95 7.50 - 7.95	D SPT	30	N = 11 (S)					7						
8.50	D	31						8		(4.70)				
9.00 - 9.45 9.00 - 9.45	D SPT	32	N = 4 (S)					9						
9.70	D	33												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum) 0.81	Sheet 3 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95 10.50 - 10.95	D SPT	34	N = 8 (S)					11						
11.20	D	35							Loose and medium dense greyish brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is subangular and subrounded fine to coarse of chalk, mudstone and quartz. Depth of upper interface approximate. [ALLUVIUM] [SAND]	11.20	-10.39			
12.00 - 12.45 12.00 - 12.45	B SPT	36	N = 4 (S)					12	12.00m to 12.45m; silty sand	(2.70)				
12.70	D	37						13						
13.50 - 13.95 13.50 - 13.95	D SPT	38	N = 30 (S)						13.50m to 13.90m; occasional pockets (<30mm) of soft greyish brown slightly gravelly clay. Gravel is very weak mudstone and gypsum.	13.90	-13.09			
14.00 14.00 - 14.30	D B	39 40						14	MUDSTONE. Recovered as soft greenish grey mottled reddish brown very sandy SILT with abundant angular fine to coarse gravel sized mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.10)				
15.00 - 15.17 15.00 - 15.17	D SPT	41	50/90 mm (S)						Continued next page	15.00	-14.19			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH14**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum) 0.81	Sheet 4 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.00 - 16.10							NA		MUDSTONE. Recovered as soft reddish brown mottled grey CLAY with frequent angular and subangular fine to coarse gravel sized mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 15.00m to 15.17m; affected by standard penetration test. extremely weak thinly laminated greenish grey mottled reddish brown mudstone. Distinctly weathered. Fractures are subhorizontal (0-10 degrees), very closely spaced, planar, smooth, with silt dusting and clay infill (<1mm). 15.45m to 15.53m; extremely weak reddish brown mottled grey mudstone.	(1.10)				
15.00 - 16.50				100	0	0									
								16		16.10	-15.29				
16.10 - 17.38							NA		MUDSTONE. Recovered as soft greenish grey CLAY with frequent angular and subangular fine to coarse gravel sized mudstone lithorelicts with low cobble content. Cobbles (<65mm x 70mm x 75mm) are subangular fragments of very weak mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 16.15m to 16.22m; very weak grey mudstone. 16.69m to 16.80m; extremely weak grey mudstone. Bedding fractures are subhorizontal (<3 degrees) very closely spaced planar smooth and very tight.	(1.28)				
								17	16.98m to 17.04m; extremely weak grey mudstone.						
16.50 - 18.00				100	31	19			17.19m to 17.31m; extremely weak grey mudstone. Bedding fractures are subhorizontal (<3 degrees) very closely spaced planar smooth and very tight.	17.38	-16.57				
17.38 - 18.00							120		Medium strong thinly laminated greenish grey MUDSTONE with occasional deformed laminations and slump structures possible soft sediment deformation. Partially weathered. Joints are subhorizontal (<10 degrees) and subvertical (70 degrees) closely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.62)				
17.76 - 18.00	C	1	140 mm				220 340								
								18		18.00	-17.19				
18.00 - 19.08							NA		MUDSTONE. Recovered as soft dark reddish brown CLAY with frequent angular and subangular fine to coarse gravel sized mudstone and gypsum lithorelicts. With closely to moderately spaced gypsum veins (1mm to 20mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 18.00m to 18.10m; possibly drilling disturbance. 18.20m to 18.45m; weak thinly laminated greenish grey mudstone. 18.47m to 18.52m; gypsum vein.	(1.08)				
18.00 - 19.50				100	33	9									
								19		19.08	-18.27				
19.13 - 19.26	C	2	130 mm						Weak dark greenish grey MUDSTONE with inclined (20 degree) closely spaced gypsum veins (<30mm x 50mm). Partially weathered. Joints are subhorizontal 0 to 10 degrees closely spaced undulating rough very tight and clean rarely tight with clay coating [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
19.08 - 19.60							80 130 190			(0.52)					
										19.60	-18.79				
19.60 - 20.35							NA		MUDSTONE. Recovered as soft reddish brown CLAY with frequent angular and subangular fine to coarse gravel sized mudstone lithorelicts. With subhorizontal (<10 degrees) closely spaced gypsum veins (2mm to 10mm).	(0.75)				
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum) 0.81	Sheet 5 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.50 - 21.00				97	30	27			Destructured mudstone. Bedding fractures are subhorizontal (0 to 10 degrees) very closely and closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	20.35	-19.54			
20.78 - 20.95	C	3	170 mm						Very weak and weak thinly laminated greenish grey mottled reddish brown MUDSTONE with subhorizontal very closely to closely spaced gypsum veins (<1mm to 3mm). Partially weathered. Joints are inclined (20 degrees) closely spaced undulating rough very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.35 - 21.54							80 240 410	21	20.35m to 20.60m; extremely weak. Distinctly weathered. 20.95m to 21.00m; assumed zone of core loss.	(1.35)				
21.29 - 21.53	C	4	240 mm						21.25m to 21.30m; extremely weak. Distinctly weathered.					
									21.54m to 21.64m; soft and firm greenish grey mottled brown slightly sandy clay.					
21.00 - 22.50				100	31	24			MUDSTONE. Recovered as soft and firm reddish brown becoming grey CLAY with frequent subangular to angular fine to coarse gravel sized mudstone lithorelicts. With subhorizontal (<2 degrees) to inclined (40 degrees) closely spaced gypsum veins (< 3mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	21.70	-20.89			
								22	21.95m to 22.00m; non intact possibly drilling disturbed. Recovered as angular extremely weak mudstone fragments (<20mm x 40mm). 22.00m to 22.05m; extremely weak grey mottled reddish brown mudstone. 22.37m to 22.50m; non intact possibly drilling induced. Recovered as angular extremely weak mudstone fragments<20mm x 40mm). 22.70m to 23.07m; extremely weak grey mottled reddish brown mudstone. Joints are subhorizontal (<10 degrees) closely spaced undulating rough tight with clay coating.					
21.54 - 23.52							NA			(1.82)				
								23						
22.50 - 24.00				100	55	49								
										23.52	-22.71			
23.87 - 23.99	C	5	120 mm						Weak thinly laminated greenish grey mottled reddish brown MUDSTONE with subhorizontal (<3 degrees) and inclined (<20 degrees) very closely to closely spaced gypsum veins (<10mm x 40mm) becoming dark greenish grey with depth. Partially weathered. Joints are closely spaced subhorizontal (10 degrees) planar rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
23.52 - 24.45							140 340 590	24	23.52m to 23.57m; gypsum vein. 23.95m to 24.45m; dark greenish grey.	(0.93)				
24.26 - 24.51	C	6	250 mm											
										24.45	-23.64			
24.53 - 24.62	C	7	90 mm						Extremely weak and very weak reddish brown mottled grey MUDSTONE with subhorizontal (<5 degrees) and inclined (<20 degrees) closely spaced gypsum veins (<2mm x 40mm). Partially and distinctly weathered. Joints are subhorizontal (0 to 10 degrees) very closely and closely spaced undulating rough very tight clean and rarely tight with clay coating. Joints					
24.45 - 24.86							80 100 100							
24.00 - 25.50				100	70	60				(1.05)				

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum)	0.81	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
24.86 - 25.50 25.20 - 25.36	C	8	160 mm				NA		are vertical (90 degrees) undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 24.72m to 24.81m; extremely weak reddish brown mottled grey mudstone. 24.86m to 24.92m; firm reddish brown clay. 24.92m to 25.00m; gypsum vein 25.37m to 25.50m; extremely weak reddish brown mottled grey mudstone. End of Borehole at 25.50 m	25.50	-24.69			
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH14**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum)	0.81	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

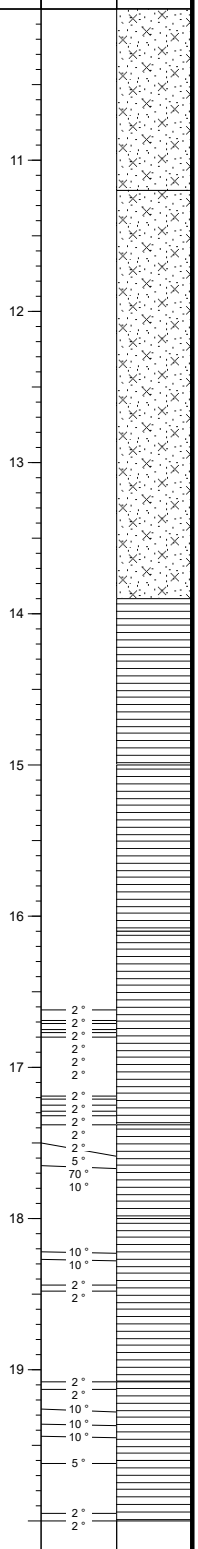
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH14**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum)	0.81	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
16.62	BF	2		VT	Pl	Sm					
16.69	BF	2		VT	Pl	Sm					
16.71	BF	2		VT	Pl	Sm					
16.75	BF	2		VT	Pl	Sm					
16.77	BF	2		VT	Pl	Sm					
16.80	BF	2		VT	Un	Sm					
17.19	BF	2		VT	Pl	Sm					
17.21	BF	2		VT	Pl	Sm					
17.25	BF	2		VT	Pl	Ro					
17.29	BF	2		VT	Pl	Sm					
17.32	BF	2		T	Pl	Sm					
17.38	FR	5		VT	Pl	Ro					
17.50 - 17.59	J	70		VT	Un	Ro					
17.65 - 17.67	J	10		VT	Un	Ro					
18.22 - 18.23	J	10		T	Un	Ro					
18.27 - 18.28	J	10		T	Un	Ro					
18.44	BF	2		VT	Pl	Sm					
18.48	BF	2		VT	Pl	Sm					
19.08	FR	2		VT	Un	Ro					
19.13	FR	2		VT	Un	Ro					
19.26 - 19.28	J	10		VT	Un	Ro					
19.36 - 19.37	J	10		VT	Un	Ro					
19.44 - 19.45	J	10		VT	Un	Ro					
19.62	FR	5		VT	Un	Ro					
19.95	BF	2		VT	Pl	Sm					
20.00	BF	2		VT	Pl	Sm					



Notes

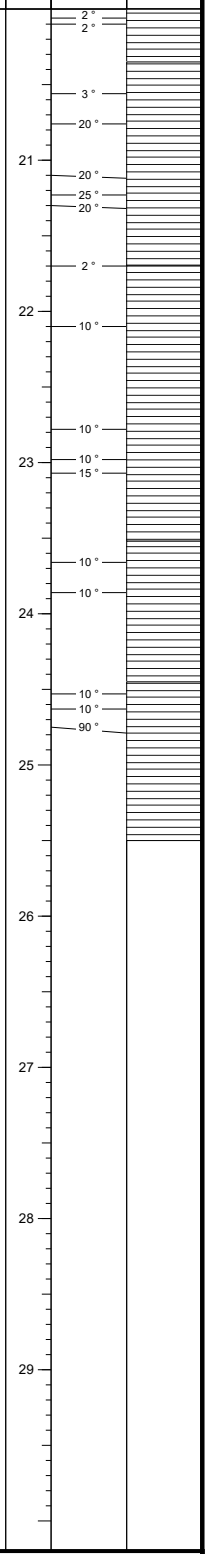
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH14**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum)	0.81	Sheet 3 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
20.06	BF	2		VT	Pl	Sm		
20.10	BF	2		VT	Pl	Sm		
20.56	FR	3		VT	Un	Ro		
20.76	J	20		VT	Un	Ro		
21.10 - 21.12	J	20		VT	Un	Ro		
21.23	J	25		PO	Un	Ro		
21.30 - 21.32	J	20		PO	Un	Ro		
21.70	FR	2		VT	Un	Ro		
22.10	J	10		PO	Un	Ro		
22.78	J	10		PO	Un	Ro		
22.98	J	10		PO	Un	Ro		
23.07	J	15		T	Pl	Ro		
23.66	J	10		VT	Un	Ro		
23.86	J	10		VT	Un	Ro		
24.53	J	10		T	Un	Ro		
24.63	J	10		PO	Un	Ro		
24.75 - 24.79	J	90		VT	Un	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
Client	SSE Generation Limited (SSE)			**MS-BH15**
Fugro Reference	F212561			
Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum)	0.76	Sheet 1 of 1
Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	12/09/2022	12/09/2022	Hand excavated			BS	BS	
1.20	15.23	CP	12/09/2022	13/09/2022	Dando 3000			BS	BS	
15.00	25.25	RC	26/09/2022	30/09/2022	Comacchio MC300		PCD	RC/DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
12/09/2022	08:00	0.00			Overcast
12/09/2022	18:00	4.50	4.50	3.00	Drizzle
13/09/2022	08:00	4.50	4.50	2.00	
13/09/2022	18:00	15.23	14.80	6.00	Fine
26/09/2022	07:30	15.00	14.80	0.57	Dry
26/09/2022	14:30	20.25	14.80	0.77	Sunny
30/09/2022	08:00	20.25	14.80	1.67	
30/09/2022	17:00	25.25	14.80	1.97	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.00	15.75	P	100	Brown	00:17
15.75	17.25	P	100	Brown	00:36
17.25	18.75	P	100	Grey	00:41
18.75	20.25	P	100	Grey	00:45
20.25	21.75	P	100	Brown	00:48
21.75	23.25	P	100	Brown	00:45
23.25	24.75	P	100	Grey	00:47
24.75	25.25	P	100	Grey	00:14

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.00	15.75	102
15.75	17.25	102
17.25	18.75	102
18.75	20.25	102
20.25	21.75	102
21.75	23.25	102
23.25	24.75	102
24.75	25.25	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
15.00	200	14.80	200
25.25	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	4.00
4.50	10.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Survey was carried out, an inspection pit was hand-dug to 1.20m and rescanned using a CAT to check for services; services were not located.
2. SPT at 4.00m possibly affected by borehole disturbance.
3. The location was advanced by cable percussion techniques to 15.23m and continued by rotary coring techniques to 25.25m.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117408) used for photo-ionisation detection (PID).
6. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	25.00	Bentonite	29/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	WL/NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH15**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum) 0.76	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	3							Dark brown sandy CLAY with rootlets (<1mm). Sand is fine. Possibly Made Ground. [MADE GROUND] [CLAY]	(0.50)				
0.10	ES	2												
0.10 - 0.40	B	1												
0.10	PID		< 0.1 ppm											
0.50	ES	4							Black sandy CLAY. Sand is fine and medium. Possibly Made Ground. [MADE GROUND] [CLAY]	0.50	0.26			
0.50	PID		< 0.1 ppm							(0.20)				
0.60	D	5								0.70	0.06			
0.60 - 0.90	B	6							Light brown slightly gravelly SAND. Sand is fine and medium. Gravel is subrounded fine and medium of mudstone. [ALLUVIUM] [SAND]	(0.50)				
0.85	ES	37												
0.85	PID		< 0.1 ppm											
0.90 - 1.20	B	8						1						
1.00	D	7												
1.20	ES	9							Loose light brown SAND with occasional black sand sized organic debris. Sand is fine. [ALLUVIUM] [SAND]	1.20	-0.44			
1.20 - 1.65	D	10								(0.45)				
1.20 - 1.65	SPT		N = 6 (S)											
1.20	PID		< 0.1 ppm											
1.70 - 2.00	B	12							Dark brown silty SAND with occasional pockets (<30mm - 60mm) of dark brown clay and frequent black sand sized carbonaceous debris. Sand is fine and medium predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [SAND]	1.65	-0.89			
1.80	D	11								(0.35)				
2.00 - 2.45	D	13						2	1.70m to 2.00m; occasional pockets (<60mm) of dark brown clay	2.00	-1.24			
2.00 - 2.45	SPT		N = 4 (S)											
2.50	D	14							Soft and firm dark brown slightly sandy CLAY with occasional decomposed wood fragments (<5mm). Sand is fine. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	(0.50)				
										2.50	-1.74			
3.00 - 3.45	D	15						3	Very loose and loose dark brown clayey SAND with occasional sand sized black organic debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	(1.00)				
3.00 - 3.45	SPT		N = 4 (S)											
3.50	D	16							Soft and firm dark brown sandy CLAY with occasional sand sized black organic debris. Sand is fine and medium predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [SILT]	3.50	-2.74			
4.00 - 4.45	B	17						4						
4.00 - 4.45	SPT		N = 3 (S)											
4.50	D	18								(2.50)				
5.00 - 5.45	D	19												
5.00 - 5.45	SPT		N = 8 (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH15**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum) 0.76	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details					Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									5.00m to 5.45m; clayey sand					
5.50	D	20												
6.00 - 6.45	D	21						6	Firm and stiff dark brown sandy CLAY. Sand is mainly fine. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	6.00	-5.24			
6.00 - 6.45	SPT		N = 8 (S)							(0.50)				
6.50 - 6.80	B	22							6.45m to 8.20m; sand is fine and medium	6.50	-5.74			
6.70	D	23							Medium dense with depth dark brown very silty SAND with frequent and abundant sand sized black carbonaceous debris. Sand is fine and medium predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [SAND]					
								7						
7.50 - 7.95	D	24							7.50m to 7.95m; loose					
7.50 - 7.95	SPT		N = 9 (S)											
								8						
8.20	D	25												
9.00 - 9.45	D	26						9						
9.00 - 9.45	SPT		N = 12 (S)											
9.80	D	27												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH15**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum) 0.76	Sheet 3 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
										(7.45)				
10.50 - 10.95	D	28												
10.50 - 10.95	SPT		N = 11 (S)											
								11						
11.20	D	29												
12.00 - 12.45	D	30						12	Below 12.00m; slightly gravelly. Gravel is subrounded fine of quartz and mudstone					
12.00 - 12.45	SPT		N = 13 (S)											
12.70	D	31												
								13						
13.50 - 13.95	D	32												
13.50 - 13.95	SPT		N = 14 (S)											
										13.95	-13.19			
14.00 - 14.30	B	33						14	MUDSTONE. Recovered as reddish brown streaked greenish grey sandy CLAY with occasional angular fine and medium gravel sized extremely weak mudstone lithorelicts. Sand is fine to coarse. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
14.20	D	34												
										(1.05)				
14.80	D	35												
15.00 - 15.23	D	36								15.00	-14.24			
15.00 - 15.22	SPT		50/120 mm (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH15**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum) 0.76	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.00 - 15.75				100	0	0			Extremely weak reddish brown mottled greenish grey MUDSTONE. Generally recovered as firm reddish brown mottled greenish grey slightly sandy CLAY with angular and subangular fine to coarse lithorelicts of extremely weak to very weak mudstone (<15mm x 35mm), locally with 2No. closely spaced subhorizontal (<10 degrees) gypsum veins (2mm to 20mm). Sand is fine to coarse. Destructured Mercia Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
15.00 - 16.15							NA		15.83m to 15.90m; very thin bed of extremely weak reddish brown mottled greenish grey mudstone. Distinctly weathered Mercia Mudstone. Bedding fractures are horizontal (0 degrees) very closely spaced planar smooth very tight and clean.	(1.15)				
								16		16.15	-15.39			
16.29 - 16.33	C	1	40 mm						Extremely weak thinly laminated reddish brown mottled greenish grey MUDSTONE with closely spaced subhorizontal (<10 degrees) and inclined (<30 degrees) gypsum veins (2mm to 20mm). Partially to distinctly weathered. Bedding fractures are horizontal (0 to 2 degrees) very closely and closely spaced planar smooth very tight and clean, occasionally tight with clay smear. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
16.33 - 16.45	C	2	120 mm						16.29m to 16.33m; very thin bed of gypsum vein.					
16.48 - 16.53	C	3	50 mm	100	43	16			16.33m to 16.74m; medium bed of thinly laminated extremely weak to very weak greenish grey mudstone. Partially weathered Mercia Mudstone.					
15.75 - 17.25									16.48m to 16.53m; very thin bed of gypsum vein, partially dissolved.					
16.58 - 16.65	C	4	70 mm						16.74m to 16.94m; extremely weak reddish brown mottled dark grey mudstone. Recovered as soft and firm reddish brown mottled dark grey slightly sandy clay with angular and subangular fine to coarse extremely weak mudstone lithorelicts (<15mm x 40mm) and partially dissolved gypsum. Sand is fine to coarse. Destructured Mercia Mudstone.					
16.15 - 17.42							20 110 290		17.12m to 17.36m; medium bed of thinly laminated very weak greenish grey mudstone. Partially weathered Mercia Mudstone.					
								17	17.42m to 17.81m; non intact (possibly drilling disturbed). Recovered as angular fragments (<10mm x 50mm) with occasionalmatrix of soft reddish brown clay. Destructured Mercia Mudstone.	(2.12)				
17.42 - 17.81							NI		17.98m to 18.10m; non intact (possibly drilling disturbed). Recovered as angular fragments (<10mm x 40mm) with occasionalmatrix of soft reddish brown clay. Destructured Mercia Mudstone.					
17.81 - 17.98							20 30							
17.25 - 18.75				97	55	15	40	18						
17.98 - 18.10							NI							
18.10 - 18.27							80 - 90			18.27	-17.51			
18.44 - 18.68	C	5	240 mm						Very weak to weak thinly laminated greenish grey MUDSTONE with closely spaced subhorizontal (0 to 5 degrees) rarely inclined (<30 degrees) gypsum veins (2mm to 20mm) occasionally partially dissolved. Partially to distinctly weathered. Bedding fracture are horizontal closely to medium spaced locally very closely spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
18.27 - 18.75							NA		18.70m to 18.75m; assummed zone of core loss.					
18.80 - 18.94	C	6	140 mm						18.75m to 18.78m; very thin bed of horizontal vein of gypsum.	(1.28)				
								19	19.15m to 19.47m; extremely weak with occasional matrix of soft greenish grey clay. Distinctly weathered Mercia Mudstone.					
18.75 - 20.25				100	80	68				19.55	-18.79			
18.75 - 20.50							30		Strong thinly laminated greenish grey MUDSTONE. Locally with deformed laminations and slump structures. Unweathered. Bedding fractures are predominantly horizontal closely to medium spaced locally very closely spaced planar					
19.70 - 20.00	C	7	300 mm				140 300			(0.77)				
20.00 - 20.17	C	8	170 mm											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH15**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum) 0.76	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
									Very weak to weak locally extremely weak thinly laminated greenish grey MUDSTONE with closely spaced subhorizontal (<5 degrees) gypsum veins (up to to 35mm). Partially to distinctly weathered. Bedding fracture are horizontal to subhorizontal (0 to 2 degrees) very closely to closely spaced planar and undulating rough and smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	20.32	-19.56			
20.50 - 20.80							NI			(0.68)				
20.86 - 20.98	C	9	120 mm				-							
20.80 - 21.00							200							
20.25 - 21.75				100	80	60	-	21	20.32m to 20.36m; very thin bed of horizontal (3 degrees) gypsum vein. 20.36m to 20.40m; extremely weak with occasional matrix of soft greenish grey clay. 20.50m to 20.80m; non intact (possibly drilling disturbed). Recovered as angular fragments (<10mm x 40mm) with occasionalmatrix of soft reddish brown slightly sandy clay. Sand is fine to coarse. Destructured Mercia Mudstone.	21.00	-20.24			
21.19 - 21.25	C	14	60 mm											
21.00 - 22.18							-		Weak thinly laminated dark greenish grey mottled reddish brown MUDSTONE with extremely to very closely spaced subhorizontal (0 to 10 degrees) gypsum vein (<1mm to 20mm). Partially weathered. Joints are closely to medium spaced spaced undulating rough, rarely planar rough, very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
21.75 - 22.09	C	10	340 mm				1800 -	22	22.18m to 22.30m; extremely weak with soft clay matrix and partially dissolved gypsum vein. 22.30m to 23.08m; thick bed of extremely weak reddish brown mottled dark greenish grey mudstone with occasional matrix of firm to stiff reddish brown clay with some partially dissolved veins of gypsum.					
21.75 - 23.25				100	40	40								
22.18 - 23.08							NA			(3.75)				
								23						
23.40 - 23.69	C	11	290 mm						23.40m to 23.80m; thick bed of thinly laminated weak greenish grey mudstone.					
23.08 - 24.75							65							
23.25 - 24.75				100	100	84	200 325	24						
24.13 - 24.25	C	12	120 mm											
24.75 - 24.93							NA		Medium strong thinly laminated greenish grey MUDSTONE. Locally with deformed laminations. Unweathered.	24.75	-23.99			
24.93 - 25.16	C	13	230 mm							(0.40)				
24.75 - 25.25				100	64	64								

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH15**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum) 0.76	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
24.93 - 25.25							- 320 -		[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 24.75m to 24.93m; non intact (possible drilling disturbed) recovered as angular fragments (<50m) of possibly medium strong greenish grey mudstone.	25.15	-24.39			
									End of Borehole at 25.25 m					
								26						
								27						
								28						
								29						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH15**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum)	0.76	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

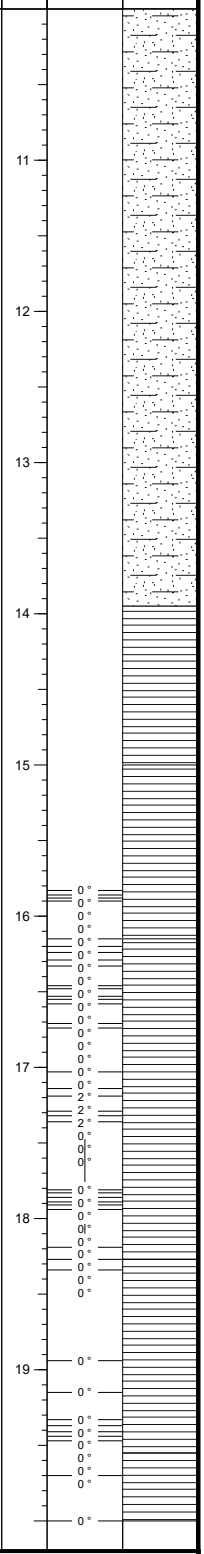
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH15**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum)	0.76	Sheet 2 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
15.83	BF	0		VT	Pl	Sm					
15.86	BF	0		VT	Pl	Sm					
15.88	BF	0		VT	Pl	Sm					
15.90	BF	0		VT	Pl	Sm					
16.15	BF	0		VT	Pl	Sm					
16.20	BF	0		VT	Pl	Sm					
16.24	BF	0		VT	Pl	Sm					
16.29	BF	0		VT	Pl	Sm					
16.33	BF	0		VT	Pl	Sm					
16.46	BF	0		T	Pl	Sm					
16.48	BF	0		T	Pl	Sm					
16.53	BF	0		T	Pl	Sm					
16.55	BF	0		T	Pl	Sm					
16.58	BF	0		T	Pl	Sm					
16.71	BF	0		VT	Pl	Sm					
16.74	BF	0		VT	Pl	Sm					
17.03	BF	2		VT	Pl	Sm					
17.14	BF	2		VT	Pl	Sm					
17.19	BF	2		VT	Pl	Sm					
17.29	BF	0		VT	Pl	Sm					
17.32	BF	0		VT	Pl	Sm					
17.36	BF	0		VT	Pl	Sm					
17.42 - 17.81	NI										
17.81	BF	0		VT	Pl	Sm					
17.83	BF	0		VT	Pl	Sm					
17.86	BF	0		VT	Pl	Sm					
17.89	BF	0		VT	Pl	Sm					
17.91	BF	0		VT	Pl	Sm					
17.94	BF	0		VT	Pl	Sm					
17.98 - 18.10	NI										
18.19	BF	0		VT	Pl	Ro					
18.27	BF	0		VT	Pl	Ro					
18.34	BF	0		VT	Pl	Ro					
18.70 - 18.75	NR										
18.94	BF	0		VT	Pl	Ro					
19.15	BF	0		VT	Pl	Ro					
19.33	BF	0		VT	Pl	Ro					
19.37	BF	0		VT	Pl	Ro					
19.41	BF	0		VT	Pl	Ro					
19.44	BF	0		VT	Pl	Ro					
19.47	BF	0		VT	Pl	Ro					
19.70	BF	0		VT	Pl	Sm					
20.00	BF	0		VT	Pl	Sm					



Notes

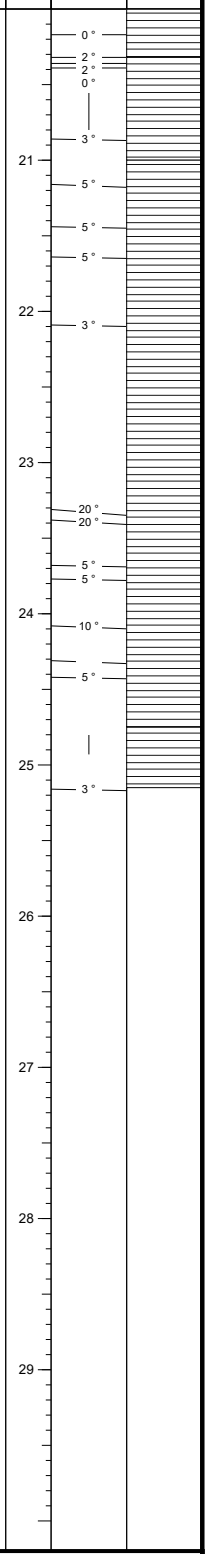
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH15**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum)	0.76	Sheet 3 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
20.17	BF	0		VT	Pl	Sm		
20.32	BF	2		VT	Pl	Sm		
20.36	BF	2		VT	Pl	Sm		
20.39	BF	0		VT	Pl	Sm		
20.50 - 20.80	NI							
20.86 - 20.87	FR	3		VT	Un	Ro		
21.16 - 21.18	FR	5		VT	Un	Ro		
21.44 - 21.45	FR	5		VT	Un	Ro		
21.64 - 21.65	FR	5		VT	Un	Ro		
22.09 - 22.10	FR	3		VT	Un	Ro		
23.31 - 23.35	J	20		VT	Un	Ro		
23.38 - 23.41	J	20		VT	Un	Ro		
23.68 - 23.69	J	5		VT	Un	Ro		
23.77 - 23.78	J	5		VT	Un	Ro		
24.08 - 24.10	J	10		VT	Un	Ro		
24.31 - 24.33	J			VT	Un	Ro		
24.42 - 24.43	J	5		VT	Un	Ro		
24.75 - 24.93	NI							
25.16 - 25.17	FR	3						

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH16**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum)	0.57	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			OE/BS	OE	
1.20	15.24	CP	25/08/2022	26/08/2022	Dando 3000			BS	OE/BS	
15.20	25.20	RC	05/09/2022	06/09/2022	Comacchio MC300		PCD	RC/DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	07:00	0.00			Sunny
25/08/2022	18:00	10.50	10.50	2.00	Drizzle and fine
26/08/2022	07:00	10.50	10.50	2.00	Dry sunny and shower
26/08/2022	18:00	15.24	15.00	5.00	
05/09/2022	07:00	15.20	15.00	0.62	
05/09/2022	18:00	20.70	15.00	1.21	
06/09/2022	07:00	20.70	15.00	2.17	
06/09/2022	18:00	25.20	15.00	2.49	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.20	16.20	M	100	Grey	00:26
16.20	17.70	M	100	Grey	00:38
17.70	19.20	M	100	Grey	00:43
19.20	20.70	M	100	Grey	00:51
20.70	22.20	M	100	Brown	00:53
22.20	23.70	M	100	Brown	00:49
23.70	25.20	M	100	Brown	00:51

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.20	16.20	102
16.20	17.70	102
17.70	19.20	102
19.20	20.70	102
20.70	22.20	102
22.20	23.70	102
23.70	25.20	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
7.50	250	7.50	250
15.00	200	15.00	200
25.20	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.60	15.00	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	10.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.24m and continued by rotary coring techniques to 25.20m.
3. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
4. Tiger PID (T-117408) used for photo-ionisation detection (PID).
5. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	25.20	Bentonite	06/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	ROR/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum) 0.57	Sheet 1 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							MADE GROUND. Dark brown slightly sandy CLAY with frequent rootlets (<1mm) with occasional subangular and subrounded fine to coarse gravel sized quartz, aggregate (type 3), concrete and slag fragments. Sand is fine to coarse.					
0.10	ES	2												
0.10 - 0.40	B	3												
0.10	PID		< 0.1 ppm							(0.60)				
0.45	ES	4							[MADE GROUND] [CLAY]					
0.45	PID		< 0.1 ppm						0.09m; 1 No. subangular cobble (<65mm x 85mm x 100mm) of concrete.					
0.60	D	5							0.50m to 1.00m; driller noted with brick, rubber, wire, metal and wood fragments.	0.60	-0.03			
0.60 - 0.90	B	6								(0.20)				
0.80	ES	7							MADE GROUND. Dark brown slightly sandy CLAY with frequent subangular and subrounded fine to coarse gravel sized fragments of sandstone, quartz, aggregate (type 3), concrete and slag with rare subangular cobble sized (<65mm x 70mm x 100mm) fragments of concrete and frequent rootlets (<1mm), with rare timber fragment (<20mm x 200mm), rare plastic and rare geosynthetic material. 1 No. helical coil spring (<3mm). 1 No. rebar (<20mm x 300mm). Sand is fine to coarse.	0.80	-0.23			
0.80	PID		< 0.1 ppm											
1.00 - 1.20	B	9						1		(0.40)				
1.10	D	8												
1.20	ES	10								1.20	-0.63			
1.20 - 1.65	D	11												
1.20 - 1.65	SPT		N = 10 (S)							(0.20)				
1.20	PID		< 0.1 ppm							1.40	-0.83			
1.40	D	12							[MADE GROUND] [CLAY]					
1.40	ES	13												
1.40 - 1.70	B	14												
1.40	PID		< 0.1 ppm						MADE GROUND. Brown mottled black slightly sandy CLAY with frequent subangular and subrounded fine to coarse gravel sized fragments of quartz, aggregate (type 3), brick, concrete and slag with rare cobble sized fragments of quartz, brick, concrete and slag with occasional pockets (<30mm x 50mm) of black peaty clay and occasional rootlets (<1mm). Sand is fine to coarse.	(0.40)				
1.80	D	15								1.80	-1.23			
1.80 - 2.00	B	17												
1.90	ES	16												
1.90	PID		< 0.1 ppm					2						
2.00 - 2.45	B	18												
2.00 - 2.45	SPT		N = 4 (S)						[MADE GROUND] [CLAY]					
2.50	D	19							MADE GROUND. Dark brown silty SAND with occasional subangular medium gravel sized fragments of quartz and very weak mudstone. Sand is fine and medium.					
									[MADE GROUND] [SAND]					
3.00 - 3.45	D	20						3	MADE GROUND. Brown mottled black slightly sandy CLAY with frequent subangular and subrounded fine to coarse gravel sized fragments of aggregate (type 3), brick, concrete and slag. with rare subangular cobble sized (<65mm x 70mm x 80mm) fragments of brick and concrete. with occasional pockets (<30mm) of black peaty clay and occasional rootlets (<1mm). Sand is fine to coarse.					
3.00 - 3.45	SPT		N = 4 (S)							(2.70)				
									[MADE GROUND] [CLAY]					
									1.40m to 1.70m; 1 No. timber fragment (<30mm x 50mm).					
3.50	D	21							Very loose and loose becoming loose brown clayey SAND with rare pockets (<50mm) of soft brown clay and occasional black possible mica (<1mm). Sand is fine and medium predominantly fine.					
									[ALLUVIUM] [SAND]					
4.00 - 4.45	D	22						4						
4.00 - 4.45	SPT		N = 8 (S)											
4.50	D	23							Very soft and soft brown sandy CLAY. Sand is fine to coarse predominantly fine.	4.50	-3.93			
									[ALLUVIUM] [CLAY]					
5.00 - 5.45	D	24												
5.00 - 5.45	SPT		N = 4 (S)											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum) 0.57	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.50	D	25								(2.20)				
6.00 - 6.45 6.00 - 6.45	D SPT	26	N = 2 (S)					6						
6.70	D	27							Loose becoming medium dense brown slightly gravelly clayey SAND. Sand is fine and medium predominantly fine. Gravel is subangular and subrounded fine and medium of quartz and very weak mudstone. [ALLUVIUM] [SAND]	6.70	-6.13			
7.50 - 7.95 7.50 - 7.95	D SPT	28	N = 7 (S)					7						
8.20	D	29						8		(3.80)				
9.00 - 9.45 9.00 - 9.45	D SPT	30	N = 11 (S)					9						
9.70	D	31												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum)	0.57	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.50 - 10.95	D	32													
10.50 - 10.95	SPT		N = 13 (S)						Medium dense brown slightly gravelly silty SAND with occasional black possible mica (<1mm). Sand is fine to coarse. Gravel is subangular and subrounded fine to coarse of quartz, flint and very weak mudstone. [ALLUVIUM] [SAND]	10.50	-9.93				
								11							
11.20	D	33													
12.00 - 12.45	D	34						12							
12.00 - 12.45	SPT		N = 11 (S)							(3.60)					
12.70	D	35													
								13							
13.50 - 13.95	D	36													
13.50 - 13.95	SPT		N = 13 (S)												
								14							
14.10	D	37							MUDSTONE. Recovered as soft and firm greenish grey mottled reddish brown sandy CLAY with frequent subangular and subrounded fine and medium gravel sized extremely weak and very weak mudstone lithorelicts and nodular gypsum and occasional white streak and fibre (<1mm) of partially pulverised possible satin spar gypsum. Sand is fine to coarse. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	14.10	-13.53				
14.10 - 14.40	B	38							14.10m to 14.40m; 1 No. subangular cobble (70mm x 70mm x 90mm) of possible satin spar	(1.10)					
15.00 - 15.24	D	39													
15.00 - 15.24	SPT		50/155 mm (S)						Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum) 0.57	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									gypsum.					
										15.20	-14.63			
15.20 - 16.20 15.20 - 16.20				100	0	0	NA	16	MUDSTONE. Recovered as very soft reddish brown mottled grey slightly sandy CLAY with frequent angular and subangular fine to coarse gravel sized mudstone lithorelicts. Sand is fine to coarse. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 15.20m to 15.27m; brown sand with rare black organic debris. Sand is fine to coarse. Possible caved in Alluvium sand. 15.80m to 16.20m; grey	(1.00)				
										16.20	-15.63			
16.20 - 16.82 16.66 - 16.78	C	1	100 mm				40 100 200		Medium strong thickly laminated and very thinly bedded greenish grey MUDSTONE. Partially weathered and unweathered. Bedding fractures are subhorizontal (<2 degrees) very closely to closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 16.28m to 16.34m; non intact 16.56m to 16.60m; non intact 16.82m to 17.15m; non intact extremely closely to very closely spaced bedding fractures and irregular joints.	(0.95)				
16.20 - 17.70 16.82 - 17.15				97	35	23	NI	17						
										17.15	-16.58			
17.15 - 17.65							NA		MUDSTONE. Recovered as soft grey slightly sandy CLAY with frequent angular and subangular fine to coarse gravel sized mudstone lithorelicts. Sand is fine to coarse. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.55)				
										17.70	-17.13			
17.65 - 17.86							30 - 180		Very weak and weak grey mottled reddish brown MUDSTONE. Locally extremely weak with very closely spaced gypsum veins. Partially weathered, locally distinctly weathered. Joints are inclined (20 degrees) medium spaced planar smooth and tight with clay coating. Bedding fractures are subhorizontal closely spaced planar smooth and rough rarely undulating rough very tight and clean. Gypsum veins (2mm to 50mm) are subhorizontal (<5 degrees) and inclined (<45 degrees). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 17.82m to 17.86m; extremely weak grey mottled reddish brown mudstone. 17.86m to 18.13m; soft reddish brown gravelly clay with very closely spaced subhorizontal gypsum veins (5mm to 50mm). Destructured mudstone. 18.13m to 18.50m; firm reddish brown gravelly clay. Destructured. 18.88m to 18.89m; weak grey mottled reddish brown mudstone.					
17.86 - 18.50							NA	18						
17.70 - 19.20				100	49	41				(1.50)				
18.50 - 19.20 18.90 - 19.00 19.00 - 19.20	C C	2 3	100 mm 200 mm				90 - 610	19						
										19.20	-18.63			
19.20 - 20.16							NA		MUDSTONE. Recovered as very soft and soft fissured reddish brown and mottled grey sandy CLAY with frequent angular and subangular fine to coarse gravel sized mudstone lithorelicts. Sand is fine to coarse. With closely spaced thick laminae of extremely weak dark grey mudstone with subhorizontal and inclined (<30 degrees) moderately spaced gypsum veins (3mm to 15mm). Fissures are polished. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE]	(0.96)				
19.20 - 20.70				100	34	30								

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum)	0.57	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.18 - 20.28	C	4	100 mm						[MUDSTONE] 19.52m to 19.70m; firm fissured reddish brown gravelly clay. Destructured. 19.70m to 19.77m; with very closely spaced subhorizontal to 20 degrees gypsum veins (5mm to 10mm). 19.78m to 19.90m; extremely weak dark greenish grey mudstone. 19.90m to 20.16m; soft dark greenish grey slightly sandy gravelly clay.	20.16	-19.59			
20.40 - 20.60 20.16 - 20.68	C	5	200 mm				10 120 230			(0.52)				
									Weak greenish grey mottled reddish brown MUDSTONE with very closely to closely spaced gypsum veins. Unweathered to partially weathered. Bedding fractures are subhorizontal closely spaced planar rough very tight and clean. Gypsum veins (1mm to 30mm) are subhorizontal. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	20.68	-20.11			
20.68 - 22.20 20.70 - 22.20				100	5	0	NA	21	MUDSTONE. Recovered as soft and firm fissured reddish brown CLAY with closely to medium spaced thin bed of extremely weak greenish grey mudstone with closely to medium spaced gypsum veins (1mm to 10mm). Destructured mudstone locally distinctly weathered. Fissures are polished. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.86m to 20.92m; gypsum vein 21.10m to 21.18m; extremely weak greenish grey mudstone. 21.70m to 21.78m; very stiff fissured reddish brown gravelly clay. Destructured. 21.78m to 21.83m; extremely weak greenish grey mudstone. Highly fractured 0 to 90 degrees extremely closely spaced planar smooth very tight and clean.	(1.52)				
22.22 - 22.32	C	6	100 mm					22		22.20	-21.63			
22.44 - 22.74	C	7	300 mm						Very weak locally extremely weak thickly laminated to very thinly bedded greenish grey mottled brown MUDSTONE with horizontal to inclined (15 degrees) very closely to closely spaced gypsum veins (1mm to 10mm). Partially weathered. Bedding fractures are subhorizontal (<5 degrees) closely to medium spaced planar smooth and rough rarely undulating rough very tight clean. Joints are inclined (<20 degrees) medium spaced planar smooth partly opened with clay infill (0.2mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.38m to 22.43m; soft reddish brown coarse gravelly clay. Destructured. 23.41m to 23.56m; soft reddish brown coarse gravelly clay. Destructured.					
22.20 - 23.62 22.20 - 23.70				97	81	69	50 200 440	23						
23.62 - 23.80							NI		23.62m to 23.65m; non intact recovered as angular fragments (<20mm x 40mm) of extremely weak mudstone. 232.65m to 23.70m; assumed zone of core loss 23.70m to 23.80m; non intact recovered as angular fragments (<20mm x 40mm) of extremely weak mudstone.	(3.00)				
23.70 - 25.20 23.80 - 25.20 24.55 - 24.75	C	8	200 mm	100	81	78	30 270 490	24	24.24m to 24.30m; non intact recovered as angular fragments (<20mm x 40mm) of extremely weak mudstone lithorelicts.					
24.93 - 25.11	C	9	180 mm						24.81m to 24.88m; non intact recovered as angular fragments (<20mm x 40mm) of extremely weak mudstone lithorelicts.					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum)	0.57	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									25.14m to 25.20m; non intact recovered as angular fragments (<20mm x 40mm) of extremely weak mudstone lithorelicts.	25.20	-24.63				
									End of Borehole at 25.20 m						
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum)	0.57	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH16**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum)	0.57	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

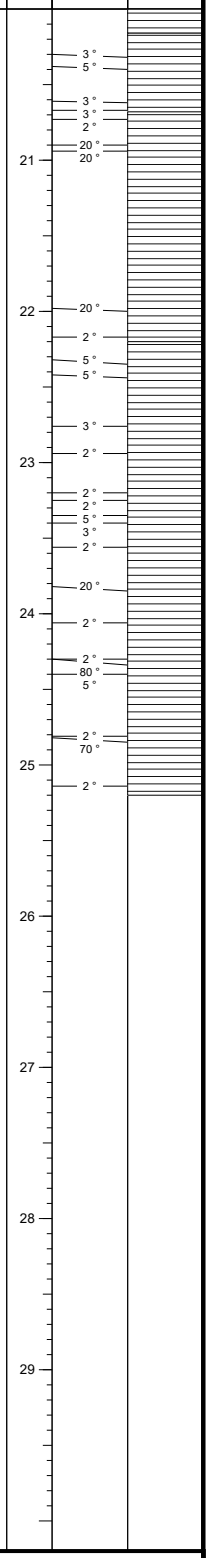
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
16.28	BF	2		VT	Pl	Sm			11		
16.34	BF	2		VT	Pl	Sm					
16.38	BF	2		VT	Pl	Sm					
16.42	BF	2		VT	Pl	Sm					
16.50	FR	2			Un	Ro					
16.56	FR	3			Un	Ro					
16.62	BF	2		VT	Pl	Sm					
16.68	FR	2			Un	Ro					
16.82	BF	2		VT	Pl	Sm			12		
16.96	BF	2		VT	Pl	Sm					
17.04	BF	2		T	Pl	Sm		clay coating			
17.08	BF	2		VT	Pl	Sm					
17.83	BF	2		VT	Pl	Sm			13		
17.88	BF	2		VT	Pl	Sm					
17.98	BF	2		VT	Pl	Sm					
17.99 - 18.01	J	20		T	Pl	Sm		clay coating			
18.04 - 18.06	J	20		T	Pl	Sm		clay coating			
18.08 - 18.09	J	20		T	Pl	Sm		clay coating			
18.11 - 18.12	J	20		T	Pl	Sm		clay coating			
18.14 - 18.16	J	20		T	Pl	Sm		clay coating			
18.37 - 18.39	FR	3			Pl	Sm			14		
18.46	FR	3			Pl	Sm					
18.52	FR	2			Pl	Ro					
18.58 - 18.60	J	20		T	Un	Ro		clay coating			
									15		
									16		
										2 °	
										2 °	
										2 °	
										2 °	
										2 °	
										3 °	
										2 °	
										2 °	
										2 °	
									17	2 °	
										2 °	
										2 °	
										2 °	
										2 °	
										2 °	
									18	20 °	
										20 °	
										20 °	
										20 °	
										20 °	
										3 °	
										3 °	
										2 °	
										20 °	
									19		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH16**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum)	0.57	Sheet 3 of 3	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
20.30 - 20.32	FR	3			Un	Ro					
20.38 - 20.40	BF	5		VT	Un	Ro					
20.61 - 20.62	BF	3		VT	Pl	Ro					
20.67	BF	3		VT	Pl	Ro					
20.73	FR	2			Pl	Sm					
20.90	FR	20			Pl	Sm					
20.94	FR	20			Pl	Sm					
21.98 - 22.00	J	20		VT	Un	Sm					
22.17	FR	2			Pl	Sm					
22.32 - 22.35	J	5		PO	Pl	Sm		soft reddish brown clay infill (<0.25mm)			
22.42 - 22.44	J	5		PO	Pl	Sm		soft reddish brown clay infill (<0.25mm)			
22.76	J	3		PO	Un	Ro		soft reddish brown clay infill (<0.25mm)			
22.94	FR	2			Un	Ro					
23.20	BF	2		VT	Pl	Sm					
23.25	BF	2		VT	Pl	Sm					
23.35	BF	5		VT	Un	Ro					
23.40	BF	3		VT	Pl	Ro					
23.56	BF	2		VT	Un	Ro					
23.82 - 23.85	FR	20			Pl	Ro					
24.06	FR	2			Pl	Ro					
24.30	J	2		PO	Un	Ro		soft reddish brown clay infill (<0.25mm)			
24.30 - 24.34	J	80		VT	Un	Ro					
24.40	FR	5			Un	Ro					
24.81	BF	2		VT	Un	Ro					
24.82 - 24.85	J	70		VT	Un	Ro					
25.14	FR	2			Un	Ro					



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH17**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum)	0.91	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	15/09/2022	15/09/2022	Hand excavated			BS	BS	
1.20	15.35	CP	15/09/2022	20/09/2022	Dando 3000			TG/AC	BS	
14.70	25.20	RC	27/09/2022	21/10/2022	Comacchio 405 & Comacchio MC300		PCD	DMcG/SD/ RC/DQ	SBP	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
15/09/2022	08:00	0.00	0.00		Sunny
15/09/2022	18:00	4.80	4.60	4.60	Fine
16/09/2022	08:00	4.80	4.60	2.00	Overcast
16/09/2022	18:00	11.80	11.80	4.00	Rain
20/09/2022	06:00	11.80	11.80	4.00	
20/09/2022	18:00	15.35	14.90	10.00	
27/09/2022	15:00	15.35	14.90	2.31	
27/09/2022	18:00	18.20	14.90	6.95	
20/10/2022	07:30	18.20	16.80	1.33	
20/10/2022	17:30	20.20	16.80	1.84	
21/10/2022	07:30	20.20	16.80	1.97	
21/10/2022	13:30	25.20	16.80	2.38	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.70	15.20	AM	100	Brown	00:10
15.20	16.70	AM	100	Grey	00:20
16.70	18.20	AM	100	Grey	00:20
18.20	18.70	M	100	Brown	00:09
18.70	20.20	P	100	Brown	00:37
20.20	21.70	P	100	Brown	00:45
21.70	23.20	P	100	Brown	00:42
23.20	24.70	P	100	Brown	00:46
24.70	25.20	P	100	Brown	00:18

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.70	15.20	102
15.20	16.70	102
16.70	18.20	102
18.20	18.70	102
18.70	20.20	102
20.20	21.70	102
21.70	23.20	102
23.20	24.70	102
24.70	25.20	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.80	250	4.60	250
16.80	200	16.80	200
25.20	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	4.80

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.35m and by rotary coring techniques to 25.20m.
3. Driller noted blowing sand between 4.80m and 11.80m pulling casing back to 9.50m for weekend. 20/09/2022 Driller restarted borehole at 9.50m. Programme of SPTs cancelled between 8.00m and 14.40m. Rotary coring lost tool downhole at 18.20m and 200mm casing had to extend to 16.80m.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities. 5. Tiger PID (T-117408) used for photo-ionisation detection (PID).
6. Variable head permeability test carried out; results reported separately. 7. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	6.00	3.00	6.00	01/11/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	3.00	50	Plain
1	3.00	6.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	01/11/2022
0.50	2.80	Bentonite	01/11/2022
2.80	6.10	Gravel	01/11/2022
6.10	24.70	Bentonite	01/11/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	ROR/WL/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH17**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum) 0.91	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	2							MADE GROUND. Dark brown silty SAND with frequent rootlets (<1mm) with abundant subangular to subrounded fine to coarse gravel sized quartz, concrete and brick fragments. Sand is fine and medium. [MADE GROUND] [SAND]	(0.80)				
0.10	ES	1												
0.10 - 0.40	B	3												
0.10	PID		< 0.1 ppm											
0.50	ES	4												
0.50	PID		< 0.1 ppm											
0.80	D	5								0.80	0.11			
0.80 - 1.20	B	6							MADE GROUND. Light brown and black silty SAND with occasional rootlets (<1mm) and occasional decomposed wood fragments (<50mm). Sand is fine and medium. [MADE GROUND] [SAND]	(0.40)				
1.00	ES	7						1						
1.00	PID		< 0.1 ppm											
1.20 - 1.65	D	8								1.20	-0.29			
1.20 - 1.65	SPT		N = 27 (S)						MADE GROUND. Dark brown silty SAND with occasional black sand sized organic debris with frequent subangular fine and medium gravel sized mudstone, brick and concrete fragments. Sand is fine and medium. [MADE GROUND] [SAND] 1.20m to 1.65m; light brown.					
1.80	D	9												
1.80	ES	10												
1.80 - 2.10	B	11												
1.80	PID		< 0.1 ppm					2		(1.60)				
2.20 - 2.65	D	12												
2.20 - 2.65	SPT		N = 21 (S)						2.20m to 2.65m; light brown.					
2.80	D	13								2.80	-1.89			
2.80	ES	14												
2.80 - 3.10	B	15												
2.80	PID		0.1 ppm					3	Firm dark brown slightly gravelly slightly sandy CLAY with rare fine gravel sized lignite fragments. Sand is fine and medium. Gravel is subangular fine and medium of mudstone. [ALLUVIUM] [CLAY]					
3.20 - 3.65	D	16												
3.20 - 3.65	SPT		N = 6 (S)						3.20m to 3.65m; Sand is predominantly fine.	(0.85)				
3.80	D	17								3.65	-2.74			
3.80	ES	18												
3.80 - 4.10	B	19												
3.80	PID		< 0.1 ppm					4	Loose dark brown clayey SAND with frequent pockets (<30mm) of brown clay and with abundant black sand sized organic debris. Sand is fine and medium. [ALLUVIUM] [SAND]					
4.20 - 4.65	D	20												
4.20 - 4.65	SPT		N = 4 (S)						4.20m to 4.65m; Very loose to loose, slightly gravelly. Gravel is subangular fine of mudstone.					
4.70	D	21								(2.15)				
4.70 - 4.80	B	23												
4.70 - 4.80	ES	22												
4.70	PID		0.1 ppm											
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH17**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum) 0.91	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.20 - 5.65 5.20 - 5.65	D SPT	24	N = 5 (S)											
5.80 5.80 - 6.10	D B	25 26						6	Dark brown sandy CLAY. Sand is predominantly fine. [ALLUVIUM] [CLAY]	5.80 (0.70)	-4.89			
6.50 6.50 - 6.80	D B	27 28						7	Loose dark brown silty SAND with frequent pockets (<30mm) of brown clay and with abundant black sand sized organic debris. Sand is fine and medium. [ALLUVIUM] [SAND]	6.50	-5.59			
7.20 - 7.65 7.20 - 7.65	D SPT	29	N = 5 (S)											
7.80 7.80 - 8.10	D B	30 31						8	7.80m to 8.10m; with rare pockets (<30mm) of brown clay.	(3.70)				
8.50 8.50 - 8.90	D B	32 33						9	At 8.50m; black and white sand sized organic debris. 8.50m to 10.50m; clay pockets (<20mm).					
9.50 9.50 - 9.90	D B	34 35												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH17**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum) 0.91	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
										10.20	-9.29				
10.50	D	36							Dark brown silty SAND with abundant black sand sized organic debris. Sand is fine and medium. [ALLUVIUM] [SAND]						
10.50 - 10.90	B	37													
										(1.30)					
								11							
11.50	D	38								11.50	-10.59				
11.50 - 11.80	B	39							Dark brown silty SAND with abundant black sand sized organic debris and rare fine gravel sized lignite fragments. Sand is fine and medium. [ALLUVIUM] [SAND]						
									11.50m to 11.80m; slightly gravelly. Gravel is of mudstone.						
								12							
12.50	D	40													
12.50 - 12.90	B	41													
										(2.90)					
								13							
13.50	D	42													
13.50 - 13.90	B	43							At 13.50m; with rare pockets (<10mm) of brown clay.						
								14							
14.40	D	44								14.40	-13.49				
14.40 - 14.90	B	45							MUDSTONE. Recovered as dark red sandy CLAY with abundant angular and subangular fine to coarse gravel sized gypsum and mudstone lithorelicts. Residual Mercia Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.30)					
14.70 - 14.85	C	1	150 mm							14.70	-13.79				
14.70 - 14.95															
14.90 - 15.35	D	46					-		Extremely weak thinly to thickly laminated						
14.90 - 15.21	SPT		51/160 mm (S)	50	50	50	170			(0.50)					
14.70 - 15.20															
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH17**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum)	0.91	Sheet 4 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.95 - 15.20							NR		reddish brown locally greenish grey MUDSTONE with inclined (20 degrees) to horizontal closely spaced gypsum veins (2mm to 25mm). Distinctly weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 14.95m to 15.20m; assumed zone of core loss.	15.20	-14.29			
15.50 - 15.60	C	2	100 mm						Very weak and weak thinly to thickly laminated reddish brown and greenish grey MUDSTONE with subhorizontal closely spaced gypsum veins (2mm to 50mm) and with deformed laminations possibly soft sedimentary deformations. Partially weathered. Bedding fractures are horizontal closely to medium spaced locally extremely closely and very closely spaced undulating smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 15.20m to 15.55m; greenish grey mottled reddish brown. 15.39m to 15.43m; horizontal gypsum vein. 15.55m to 15.90m; reddish brown mottled greenish grey. 15.85m to 15.90m; horizontal gypsum vein partially dissolved. 15.90m to 16.35m; greenish grey. 16.28m to 16.29m; non-intact. Recovered as angular gravel sized mudstone fragments. 16.32m to 16.33m; horizontal gypsum vein. 16.35m to 17.52m; reddish brown mottled greenish grey. 16.36m to 16.39m; non-intact. Recovered as angular gravel sized mudstone and gypsum fragments. 16.61m to 16.70m; assumed zone of core loss. 16.70m to 17.02m; highly fractured, possibly drilling induced. Bedding fractures are horizontal extremely closely to very closely spaced undulating smooth very tight and clean. Fractures are inclined to subvertical very closely spaced undulating rough. 17.19m to 17.54m; highly fractured, possibly drilling induced. Bedding fractures are horizontal extremely closely to very closely spaced undulating smooth very tight and clean. Fractures are inclined to subvertical very closely spaced undulating rough. 17.31m to 17.33m; subhorizontal (5 degrees) gypsum vein partially dissolved. 17.52m to 17.63m; greenish grey. 17.54m to 17.57m; subhorizontal gypsum vein. 17.57m to 17.62m; non-intact. Recovered as angular gravel sized mudstone fragments.	(2.43)				
15.20 - 16.70 15.20 - 16.70				94	91	77	20 150 460	16							
16.70 - 17.02							NI	17							
17.02 - 17.19							20 55 80								
17.19 - 17.63 16.70 - 18.20				97	43	12	NI			17.63	-16.72				
17.80 - 17.93	C	3	130 mm												
17.63 - 18.20							10 70 180	18		(0.57)					
										18.20	-17.29				
18.20 - 18.70 18.20 - 18.70				84	0	0	NI		Weak locally thinly laminated greenish grey MUDSTONE with subhorizontal to inclined (40 degrees) medium spaced gypsum veins (<5mm) and with slump structures possibly soft sedimentary deformation. Partially weathered. Bedding fractures are subhorizontal (<5 degrees) closely to medium spaced locally very closely and very closely spaced undulating smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 17.69m to 17.72m; non-intact. Recovered as angular gravel sized mudstone fragments. 18.03m to 18.07m; thinly laminated, deformed laminations. 18.16m to 18.20m; assumed zone of core loss.	(0.50)				
										18.70	-17.79				
18.94 - 19.10	C	4	160 mm					19							
18.70 - 19.45							30 80 210			(0.75)					
18.70 - 20.20				100	42	22			Reddish brown and greenish grey MUDSTONE recovered as subangular gravel to cobble size mudstone and gypsum fragments locally in clay matrix. Possibly destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	19.45	-18.54			
19.45 - 20.05							NA		Medium strong thinly laminated greenish grey MUDSTONE with deformed laminations possibly soft sedimentary deformation. Partially	(0.60)				

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH17**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum)	0.91	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									weathered. Bedding fractures are subhorizontal very closely to closely spaced locally medium spaced planar and undulating smooth generally very tight and clean locally moderately wide with soft clay infilling (5mm to 10mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 18.80m to 18.85m; non-intact. Recovered as mudstone fragments (<10mm x 20mm) in clay matrix. 19.14m to 19.16m; non-intact. Recovered as mudstone fragments (<45mm x 50mm). 19.42m to 19.45m; non-intact. Recovered as mudstone fragments (<50mm x 60mm).	20.05	-19.14			
20.38 - 20.55 20.05 - 20.80	C	5	170 mm				20 100 220			(0.75)				
20.60 - 20.80	C	6	200 mm							20.80	-19.89			
20.20 - 21.70				100	36	28		21	Firm greenish grey sandy CLAY with abundant angular fine to coarse gravel sized extremely weak mudstone lithorelicts and gypsum fragments. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.80 - 21.70							NA			(0.90)				
									Moderately weak to medium strong greenish grey MUDSTONE with subhorizontal medium spaced gypsum veins (10mm to 40mm). Partially weathered. Bedding fractures are horizontal and subhorizontal (5 degrees) very closely to closely spaced locally medium spaced undulating smooth very tight clean locally tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.26m to 20.30m; non-intact. Weak mudstone recovered as mudstone fragments (<30mm x 40mm).	21.70	-20.79			
21.90 - 22.09 21.70 - 22.10	C	7	190 mm				30 90 210	22		(0.40)				
										22.10	-21.19			
21.70 - 23.20				100	21	21			Very stiff brown sandy CLAY with abundant angular fine to coarse gravel sized extremely weak mudstone lithorelicts. With subhorizontal to inclined (<20 degrees) very closely to closely spaced gypsum veins (5mm to 20mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.45m to 21.53m; moderately grey weak mudstone.					
22.10 - 23.20							NA			(1.10)				
								23	Moderately weak locally extremely weak to very weak dark greenish grey MUDSTONE with inclined (30 degrees to 50 degrees) medium spaced locally very closely spaced gypsum veins (10mm). Partially weathered locally distinctly weathered. Bedding fractures are subhorizontal (5 degrees) closely to medium spaced undulating smooth tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.70m to 21.73m; non-intact. Recovered as angular gravel sized mudstone and gypsum fragments. 21.85m to 21.89m; non-intact. Recovered as angular gravel sized mudstone and gypsum fragments.	23.20	-22.29			
23.20 - 23.60							20 60 150							
23.65 - 23.95	C	8	300 mm							(1.10)				
23.20 - 24.70 23.60 - 24.30 24.03 - 24.30	C	9	270 mm	100	69	55	20 220 380	24	Very stiff brown sandy CLAY with abundant angular fine to coarse gravel sized extremely weak mudstone lithorelicts. With subhorizontal to inclined (<20 degrees) very closely to closely spaced gypsum veins (5mm to 30mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.10m to 22.25m; dark greenish grey.					
										24.30	-23.39			
24.30 - 25.20							NA		Weak grey and greenish grey MUDSTONE with subhorizontal to inclined (20 degrees) very closely to closely spaced gypsum veins (5mm to 40mm). Partially weathered locally distinctly weathered. Bedding fractures are subhorizontal (<5 degrees) medium spaced undulating rough	(0.90)				
24.70 - 25.20				90	18	0								

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH17**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum)	0.91	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 23.20m to 23.60m; with very closely and closely spaced thick laminations and very thin beds of soft to firm greenish grey sandy clay with abundant fine to medium gravel sized mudstone lithorelicts (destructured mudstone). Bedding fractures are horizontal very closely to closely spaced planar smooth tight with clay coating.	25.20	-24.29				
								26	Very stiff brown sandy CLAY with abundant angular fine to coarse gravel sized extremely weak mudstone lithorelicts. With subhorizontal very closely to closely spaced gypsum veins (1mm to 20mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 24.74m to 24.79m; moderately weak to medium strong mudstone. 24.84m to 24.88m; moderately weak to medium strong mudstone.						
								27	End of Borehole at 25.20 m						
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH17**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum)	0.91	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH17**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum)	0.91	Sheet 2 of 3	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
14.87 - 14.95	NI										
14.95 - 15.20	NR										
15.31	FR	5									
15.38	BF	0		VT	Un	Sm					
15.40	BF	0		VT	Un	Sm					
15.44	BF	0		VT	Un	Sm					
15.48	BF	0		VT	Un	Sm					
15.51	FR	5									
15.61	FR	5									
15.77	FR	5									
15.81	FR	5									
15.89	FR	5									
15.94	BF	5		VT	Un	Sm					
16.01	FR	5									
16.05	FR	5									
16.13	BF	0		VT	Un	Sm					
16.16	BF	0		VT	Un	Sm					
16.16 - 16.18	NI										
16.18	BF	0		VT	Un	Sm					
16.28	BF	0		VT	Un	Sm					
16.28 - 16.29	NI										
16.32	BF	0		PO	Un	Sm		soft greenish grey clay			
16.36	BF	0		VT	Un	Sm					
16.36 - 16.39	NI										
16.39	BF	0		PO	Un	Sm		soft greenish grey clay			
16.40 - 16.44	FR	25									
16.52	FR	5									
16.62 - 16.70	NR										
16.70 - 17.02	NI										
17.04	J	5		VT	Un	Sm					
17.11	BF	5		VT	Pl	Sm					
17.19	BF	5		VT	Pl	Sm					
17.19 - 17.54	NI										
17.57 - 17.62	NI										
17.63	BF	5		VT	Un	Sm					
17.69	BF	5		VT	Un	Sm					
17.69 - 17.72	NI										
17.75 - 17.83	FR	40									
17.77 - 17.81	J	35		VT	Un	Ro					
17.97	BF	5		VT	Un	Sm					
17.97 - 17.99	J	15		VT	Un	Ro					
18.00 - 18.03	J	15		VT	Un	Ro					
18.03	BF	5		VT	Un	Sm					
18.07	BF	5		VT	Un	Sm					
18.15 - 18.20	NR										
18.73	BF	0		VT	Pl	Sm					
18.80	BF	0		VT	Un	Sm					
18.80 - 18.85	NI										
18.85	BF	0		VT	Pl	Sm					
18.93	BF	0		VT	Pl	Sm					

Notes

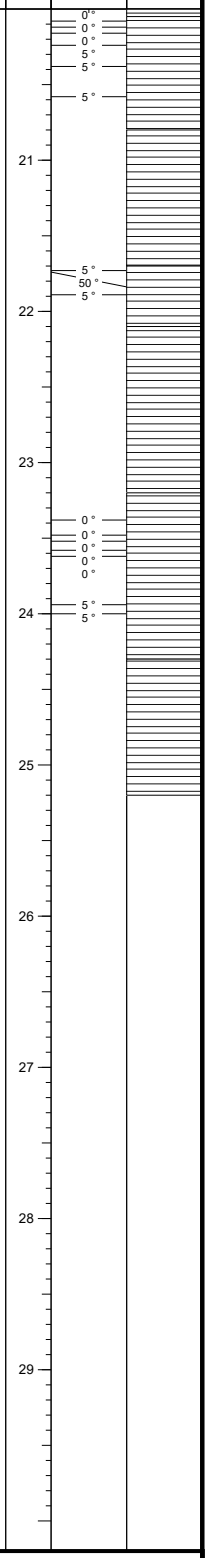
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**MS-BH17**
	Fugro Reference	F212561			
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum)	0.91	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
19.14	BF	0		VT	Un	Sm		
19.14 - 19.16	NI							
19.16	BF	0		VT	Pl	Sm		
19.24	BF	0	10	MW	Un	Sm		soft greenish grey clay
19.30	BF	0	5	MW	Un	Sm		soft greenish grey clay
19.42	BF	0		VT	Un	Sm		
19.42 - 19.45	NI							
19.45 - 20.05	NI							
20.08	BF	0		T	Un	Sm		clay coating
20.12	BF	0		VT	Un	Sm		
20.16	BF	0		VT	Un	Sm		
20.24	BF	5		VT	Un	Sm		
20.26 - 20.30	NI							
20.38	BF	5		VT	Un	Sm		
20.58	BF	5		VT	Un	Sm		
21.73	BF	5		T	Un	Sm		clay coating
21.74 - 21.84	FR	50						
21.84 - 21.89	NI							
21.89	BF	5		T	Un	Sm		clay coating
23.35 - 23.38	NI							
23.38	BF	0		T	Pl	Sm		clay coating
23.46 - 23.48	NI							
23.48	BF	0		T	Pl	Sm		clay coating
23.50 - 23.52	NI							
23.52	BF	0		T	Pl	Sm		clay coating
23.56 - 23.58	NI							
23.58	BF	0		T	Pl	Sm		clay coating
23.62	BF	0		T	Pl	Sm		clay coating
23.94	FR	5						
24.00	BF	5		VT	Un	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH18**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum)	0.68	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/10/2022	06/10/2022	Hand excavated			BS	BS	
1.20	14.25	CP	06/10/2022	10/10/2022	Dando 3000			TG/AC	BS	
13.90	25.40	RC	12/10/2022	12/10/2022	Comacchio MC300		PCD	RC/DQ	RS	Overdrilled from 13.90m to 14.25m.

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/10/2022	08:00	0.00			Fine
06/10/2022	18:00	4.65	4.65	1.00	Windy
07/10/2022	08:00	4.65	4.65	2.50	Fine
07/10/2022	18:00	11.65	11.60	2.50	Dry sunny spells
10/10/2022	08:00	6.00	10.00	2.50	
10/10/2022	18:00	14.25	13.90	5.00	
12/10/2022	07:30	13.90	13.90	0.69	
12/10/2022	17:30	25.40	13.90	3.11	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
13.90	14.40	P	100	Brown	00:15
14.40	15.90	P	100	Brown	00:37
15.90	17.40	P	100	Brown	00:39
17.40	18.90	P	100	Grey	00:41
18.90	20.40	P	100	Grey	00:41
20.40	21.90	P	100	Grey	00:44
21.90	23.40	P	100	Brown	00:47
23.40	24.90	P	100	Brown	00:45
24.90	25.40	P	100	Grey	00:19

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
13.90	14.40	102
14.40	15.90	102
15.90	17.40	102
17.40	18.90	102
18.90	20.40	102
20.40	21.90	102
21.90	23.40	102
23.40	24.90	102
24.90	25.40	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.65	250	4.65	250
14.25	200	13.90	200
25.40	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	14.25

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.25m and continued by rotary coring techniques to 25.40m.
3. Blowing sand encountered between 6.00m and 12.60m; proposed SPT's abandoned.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117408) used for photo-ionisation detection (PID).
6. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	25.40	Bentonite	13/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH18**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum) 0.68	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
0.10	D	1							MADE GROUND. Dark brown sandy CLAY with angular and subangular fine to coarse gravel sized fragments of brick and clinker and with abundant to frequent rootlets (<1mm). Sand is mainly fine and medium. [MADE GROUND] [CLAY]	(0.70)					
0.10	ES	2													
0.10 - 0.40	B	3													
0.10	PID		0.1 ppm												
0.40	ES	4													
0.40	PID		0.1 ppm												
0.70	D	5							Possibly MADE GROUND. Black clayey SAND. Sand is fine. [MADE GROUND] [SILT]	0.70 (0.20)	-0.02				
0.70	ES	6													
0.70 - 1.00	B	7													
0.70	PID		< 0.1 ppm							0.90	-0.22				
1.00	ES	8						1	Yellowish light brown mottled black silty SAND with occasional pockets of silt. Sand is fine. [ALLUVIUM] [SAND]	(0.30)					
1.00	PID		< 0.1 ppm												
1.20 - 1.65	D	9							Medium dense greyish light brown slightly silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	1.20 (0.70)	-0.52				
1.20 - 1.65	SPT		N = 17 (S)												
1.70	D	10							Below 1.70m; slightly gravelly, with frequent black sand sized carbonaceous debris.						
1.70 - 1.90	B	11													
2.20 - 2.65	D	12						2	Very loose to loose dark brown silty SAND with occasional pockets (<40mm) of black clay and frequent black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND] 2.20m to 2.65m; rare pockets (<40mm) of black clay.	1.90 (0.90)	-1.22				
2.20 - 2.65	SPT		N = 4 (S)												
2.80	D	13							Firm to stiff dark brown sandy CLAY. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	2.80	-2.12				
2.80 - 3.10	B	14						3							
3.20 - 3.65	D	15							Below 3.20m; occasional black sand sized organic debris.	(0.85)					
3.20 - 3.65	SPT		N = 8 (S)												
3.80	D	16							Dark brown very clayey SAND with frequent pockets (<30mm) of dark brown clay and occasional black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	3.65 (0.55)	-2.97				
3.80 - 4.10	B	17						4							
4.20 - 4.65	D	18							Medium dense dark brown silty SAND with frequent pockets (<30mm) of dark brown clay and occasional becoming frequent with depth, black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	4.20 (0.45)	-3.52				
4.20 - 4.65	SPT		N = 21 (S)												
4.80	D	19							Possibly medium dense dark brown very clayey SAND with frequent black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	4.65	-3.97				
4.80 - 5.10	B	20													
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH18**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum) 0.68	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.20 - 5.65	D	21												
5.20 - 5.65	SPT		N = 12 (S)											
5.80	D	22												
5.80 - 6.10	B	23						6						
6.20 - 6.80	B	25												
6.30 - 6.50	D	24												
								7						
7.30	D	26												
7.30 - 7.80	B	27												
								8		(6.65)				
8.30	D	28												
8.30 - 8.60	B	29												
								9						
9.30	D	30							9.30m to 9.60m; clayey					
9.30 - 9.60	B	31												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH18**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum) 0.68	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.30	D	32						11							
10.30 - 10.60	B	33													
11.30 - 11.60	B	35							Dark brown silty gravelly SAND with abundant black sand sized carbonaceous debris. Sand is fine to coarse predominantly fine and medium. Gravel is subangular fine to coarse of mudstone and quartz. Depth of upper interface approximate. [ALLUVIUM] [SAND]	11.30	-10.62				
11.30 - 11.60	D	34													
								12		(1.30)					
12.30	D	36													
12.30 - 12.60	B	37													
12.60 - 12.95	D	38							MUDSTONE. Recovered as hard greenish grey CLAY with frequent mainly fine and medium sand sized mudstone peds and occasional angular and subangular fine to coarse gravel sized extremely weak mudstone and gypsum lithorelicts. with medium cobble content. Cobbles are angular (<90 x 80mm) lithorelicts of extremely weak mudstone. Residual and Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	12.60	-11.92				
12.60 - 13.05	SPT		N = 82 (S)												
13.00	D	39						13							
13.00	D	40													
13.00 - 13.60	B	41								(1.65)					
13.80	D	43													
13.80 - 14.00	B	44													
13.80 - 14.25	D	42													
13.80 - 13.95	SPT		100/75 mm (S)					14							
13.90 - 14.25							NA								
14.15 - 14.22	C	45		90	10	0									
13.90 - 14.40										14.25	-13.57				
14.25 - 15.50							10 80 200		Extremely weak to very weak locally thickly laminated greenish grey MUDSTONE locally with medium interbeds of thickly laminated greenish grey clay. with horizontal to subhorizontal (10 degrees) closely spaced locally very closely spaced gypsum veins (5mm to 55mm). Partially and distinctly weathered. Bedding fractures are (0-10 degrees) very closely to closely spaced predominately undulating rough very tight and clean	(1.24)					
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH18**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum) 0.68	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.40 - 15.90				100	47	8			occasionally open with brown silty clay infill (up to 15mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 14.35m to 14.40m; assumed zone of core loss 14.40m to 14.49m; non intact recovered as clay with angular and subangular gravel sized mudstone lithorelicts. 14.57m to 14.61m; non intact recovered as angular fine to coarse gravel sized mudstone lithorelicts. Possibly disturbed by drilling. 14.78m to 14.85m; subhorizontal (<10 degrees) gypsum vein . 15.36m to 15.49m; subhorizontal (<10 degrees) gypsum vein .	15.49	-14.81			
15.49 - 15.69	C	46												
15.69 - 15.80	C	47												
15.93 - 16.18	C	48												
15.50 - 16.53							NA	16	MUDSTONE. Recovered as firm reddish brown clay and greenish grey silty clay with angular gravel sized mudstone lithorelicts locally with very thin beds of extremely weak to very weak thinly laminated greenish grey mudstone. With horizontal to inclined (20 degrees) widely spaced gypsum veins (up to 50mm). Destructured locally distinctly weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.04)				
16.18 - 16.26	C	49								16.53	-15.85			
15.90 - 17.40				100	58	42			Very weak and weak locally thinly laminated greenish grey MUDSTONE with subhorizontal (5 to 10 degrees) and inclined (35 to 40 degrees) closely spaced gypsum veins (<20mm). Partially weathered. Bedding fractures are horizontal and subhorizontal (5 degrees) closely spaced locally medium spaced planar predominantly smooth occasionally rough very tight and tight locally open with silty clay infill (<10mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 16.88m to 16.98m; subhorizontal (<10 degrees) gypsum vein . 17.30m to 17.40m; inclined (25-30 degree) gypsum vein. 17.40m to 17.49m; non intact recovered as greenish grey mudstone and gypsum fragments. 17.47m to 17.49m; subhorizontal (<5 degrees) gypsum vein (up to 15mm).					
16.53 - 17.49							80 170 375	17		(0.96)				
17.69 - 17.94	C	50								17.49	-16.81			
17.94 - 18.08	C	51												
17.40 - 18.90				100	29	29		18	Extremely weak reddish brown thinly to thickly laminated MUDSTONE predominantly recovered as clay with subangular gravel sized mudstone lithorelicts. Locally with thin beds of moderately weak to medium strong greenish grey mudstone. With horizontal to inclined (45 to 80 degrees) closely to medium spaced gypsum veins (1mm to 40mm). Distinctly weathered to destructured locally partially weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 17.59m to 17.70m; inclined (50 degrees) gypsum vein (up to 30mm). 17.93m to 17.94m; subhorizontal (5 degrees) gypsum vein (up to 9mm). 17.94m to 18.02m; subvertical (85 degrees) gypsum vein (up to 5mm). 17.94m to 18.08m; greenish grey mudstone. 18.02m to 18.08m; inclined (70 degrees) gypsum vein (up to 5mm). 18.08m to 18.19m; inclined (45 degrees) gypsum vein (up to 15mm) 18.62m to 18.68m; greenish grey mudstone. 18.98m to 19.27m; non intact recovered as greenish grey clay with angular fine and medium gravel sized mudstone lithorelicts and gypsum fragments.					
17.49 - 19.27							NA			(1.78)				
19.27 - 19.56	C	52						19		19.27	-18.59			
19.56 - 19.70	C	53												
18.90 - 20.40 19.27 - 20.13				100	65	57	125 210 280		Weak reddish brown locally greenish grey MUDSTONE with subhorizontal (rare inclined up to 20 degrees) very closely to closely spaced locally medium spaced gypsum veins (1mm to 70mm). Partially weathered. Bedding					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH18**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum) 0.68	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									fractures are predominantly subhorizontal (5 to 10 degrees) closely to medium spaced locally very closely spaced undulating locally planar rough locally smooth very tight and clean. Joints are inclined (10 to 20 degrees) medium to widely spaced locally closely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.13 - 20.75							NA		19.39m to 19.45m; thinly laminated with 25 degree inclination. 19.56m to 19.65m; inclined (10 to 25 degrees) extremely closely spaced gypsum veins (up to 8mm). 19.61m to 20.11m; greenish grey mudstone. 19.70m to 19.74m; horizontal gypsum vein. 19.84m to 19.86m; horizontal gypsum vein. 19.93m to 19.94m; horizontal gypsum vein. 20.13m to 20.40m; non intact recovered as reddish brown silty clay with angular fine and medium gravel sized gypsum and mudstone fragments. 20.47m to 20.75m; non intact recovered as silty clay. 20.58m to 20.63m; assumed zone of core loss. 20.63m to 20.70m; 24 degree gypsum vein (40mm). 20.70m to 20.75m; non intact recovered as sandy clay with abundant gravel sized mudstone lithorelicts. 21.02m to 21.08m; subhorizontal gypsum vein (up to 40mm). 21.14m to 21.60m; subhorizontal and subvertical gypsum vein (up to 1mm). 21.62m to 21.68m; subhorizontal (10 degrees) gypsum vein (up to 60mm). 21.81m to 21.88m; subhorizontal (10 degrees) gypsum vein (60mm). 21.96m to 22.11m; inclined (40-45 degrees) gypsum vein (35mm). 22.13m to 22.16m; subhorizontal (5 degrees) gypsum vein (30mm). 22.23m to 22.27m; partially drilling disturbed. 22.43m to 22.48m; subhorizontal extremely closely spaced gypsum veins (up to 30mm). 22.49m to 22.56m; inclined (37 degrees) gypsum vein (15mm) . 22.60m to 23.00m; horizontal to subhorizontal (up to 10 degrees) very closely spaced gypsum veins (up to 30 mm). 22.90m to 22.96m; inclined (20 degrees) gypsum vein (up to 30mm). 22.98m to 23.15m; thinly laminated greenish grey mottled reddish brown mudstone. laminations locally deformed. 23.23m to 23.29m; subhorizontal (5 degrees) gypsum vein (up to 40mm). 23.40m to 23.46m; greenish grey mudstone with subvertical and subhorizontal extremely closely spaced gypsum veins (1mm).	(4.18)				
20.86 - 21.09	C	54						21							
21.01 - 21.30	C	55													
20.40 - 21.90				97	78	75									
20.75 - 23.45							30 200 390	22							
22.34 - 22.66	C	56													
21.90 - 23.40				100	99	96									
22.66 - 22.90	C	57						23							
										23.45	-22.77				
23.45 - 24.14							- 690 -		Extremely weak thinly laminated reddish brown MUDSTONE with subhorizontal and subvertical very closely to closely spaced gypsum veins (1-5mm). Distinctly weathered locally destructured. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 23.72m to 23.77m; subhorizontal (10 degrees) gypsum vein (up to 40mm). 24.14m to 24.40m; assumed zone of core loss.	(0.95)				
23.40 - 24.90				82	82	79		24							
24.14 - 24.40							NR								
24.40 - 24.53	C	58								24.40	-23.72				
24.53 - 24.86	C	59							Weak reddish brown MUDSTONE with subhorizontal (up to 10 degrees) very closely to medium spaced gypsum veins (1mm to 55mm). Partially weathered. Bedding fractures are subhorizontal (5 to 10 degrees) closely to medium spaced locally very closely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE]					
24.90 - 25.05	C	60					50 210 520			(1.00)					
24.40 - 25.40															

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH18**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum) 0.68	Sheet 6 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

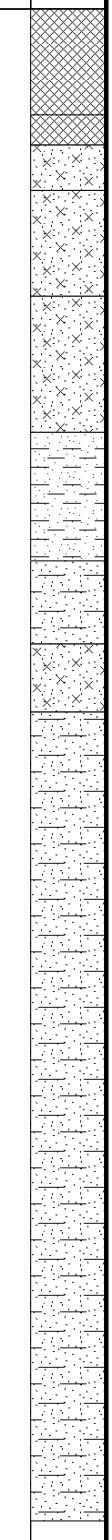
Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
24.90 - 25.40				100	90	80			[MUDSTONE] 24.81m to 24.88m; inclined (30 degrees) gypsum vein (up to 55mm). 24.90m to 25.05m; medium strong thinly laminated light greenish grey mudstone with deformed laminations. 25.26m to 25.30m; subhorizontal (5 degrees) very closely spaced gypsum veins (up to 12mm). 25.35m to 25.40m; non intact drilling disturbed. End of Borehole at 25.40 m	25.40	-24.72				
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH18**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum)	0.68	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend

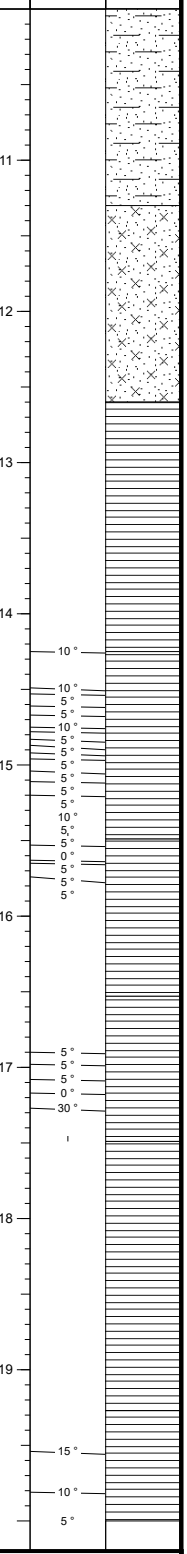


Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH18**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum)	0.68	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
14.25 - 14.26	BF	10		VT	Un	Ro					
14.35 - 14.40	NR										
14.40 - 14.49	NI										
14.49 - 14.51	BF	10		VT	Un	Ro					
14.53 - 14.54	BF	5		VT	Un	Ro					
14.57 - 14.61	NI										
14.61 - 14.62	BF	5		VT	Un	Ro					
14.67 - 14.68	BF	10		VT	Un	Ro					
14.75 - 14.76	BF	5		O	Un	Ro					
14.78 - 14.79	BF	5		O	Un	Ro		clay infill(<5mm)			
14.83 - 14.85	BF	5		O	Un	Ro		brown clay infill(<2mm)			
14.87 - 14.90	BF	5		O	Pl	Ro		brown clay infill(<2mm)			
14.92 - 14.94	BF	5		O	Un	Ro		brown clay infill(<4mm)			
14.96 - 14.97	BF	5		PO	Un	Ro		brown clay infill(<2mm)			
15.04 - 15.06	BF	10		O	Un	Ro		grey clay infill(<15mm)			
15.11 - 15.12	BF	5		PO	Un	Ro		brown clay infill(<2mm)			
15.20 - 15.21	BF	5		VT	Pl	Sm					
15.40 - 15.47	NI										
15.53 - 15.54	BF	0		T	Pl	Sm		with clay infill (<1mm)			
15.63 - 15.64	BF	5		O	Pl	Ro					
15.65 - 15.66	BF	5		O	Un	Ro					
15.74 - 15.78	BF	5		MW	Un	Ro		gypsum crystal infill			
16.90 - 16.91	BF	5		T	Pl	Ro					
16.98 - 16.99	BF	5		VT	Pl	Sm					
17.08 - 17.09	BF	5		VT	Pl	Sm					
17.17 - 17.18	BF	0		VT	Pl	Sm					
17.27 - 17.29	J	30		O	Pl	Sm					
17.40 - 17.49	NI										
19.54 - 19.56	J	15		VT	Un	Ro					
19.81 - 19.82	BF	10		VT	Un	Ro					
20.00 - 20.01	BF	5		VT	Pl	Ro					



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH18**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum)	0.68	Sheet 3 of 3	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
20.13 - 20.40	NI										
20.47 - 20.75	NI							recovered as silty clay			
20.58 - 20.63	NR										
20.86 - 20.87	BF	5		VT	Un	Ro				5 °	
21.09 - 21.10	BF	5		VT	Pl	Sm			21	5 °	
21.12 - 21.14	J	15		VT	Un	Ro				15 °	
21.49 - 21.50	BF	10		VT	Un	Ro				10 °	
21.64 - 21.66	J	25		VT	Un	Ro				25 °	
21.80 - 21.81	J	10		VT	Un	Ro				10 °	
22.04 - 22.05	BF	5		VT	Un	Ro			22	5 °	
22.24 - 22.26	BF	10		VT	Un	Ro				10 °	
22.30 - 22.31	BF	5		VT	Un	Ro				5 °	
22.33 - 22.34	BF	5		VT	Un	Ro				5 °	
22.65 - 22.69	J	20		VT	Un	Ro				20 °	
23.05 - 23.07	BF	5		VT	Un	Ro			23	5 °	
23.16 - 23.17	BF	5		VT	Pl	Ro				5 °	
24.14 - 24.40	NR								24		
24.53 - 24.54	BF	5		VT	Un	Ro				5 °	
25.05 - 25.06	BF	5		VT	Un	Ro			25	5 °	
25.10 - 25.11	BF	10		VT	Un	Ro				10 °	
25.25 - 25.26	BF	10		VT	Un	Ro				10 °	
25.35 - 25.40	NI								26		
									27		
									28		
									29		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH19**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum)	0.60	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	09/09/2022	09/09/2022	Hand excavated			BS	BS	
1.20	13.75	CP	09/09/2022	12/09/2022	TQD4			HW/GD	BS	
13.75	25.00	RC	14/09/2022	15/09/2022	Comacchio 405		PCD	HW	OE/XS/GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
09/09/2022	07:00	0.00			Fine
09/09/2022	18:00	4.50	3.90	1.00	Overcast, raining
12/09/2022	07:00	4.50	3.90	3.10	Fine, sunny
12/09/2022	18:00	13.75	13.40	4.80	
14/09/2022	11:15	13.75	13.40		
14/09/2022	17:00	20.00	13.40		
15/09/2022	08:00	20.00	13.40	2.00	
15/09/2022	17:00	25.00	13.40		

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
13.50	14.00		100	Brown	00:06
14.00	15.50		100	Brown	00:15
15.50	17.00		100	Brown	00:18
17.00	18.50		100	Brown	00:23
18.50	20.00		100	Brown	00:24
20.00	21.50		100	Brown	00:25
21.50	23.00		100	Brown	00:23
23.00	24.50		100	Brown	00:22
24.50	25.00		100	Brown	00:07

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
13.50	14.00	102
14.00	15.50	102
15.50	17.00	102
17.00	18.50	102
18.50	20.00	102
20.00	21.50	102
21.50	23.00	102
23.00	24.50	102
24.50	25.00	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
13.75	200	13.70	200
25.00	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
13.30	13.50	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	13.75

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 13.80m and continued by rotary coring techniques to 25.00m.
3. SPT at 5.00m possibly affected by drilling disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Borehole terminated at scheduled depth of 25.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	6.00	3.00	6.00	15/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	3.00	50	Plain
1	3.00	6.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	15/09/2022
0.50	3.00	Bentonite	15/09/2022
3.00	6.00	Gravel	15/09/2022
6.00	25.00	Bentonite	15/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW | Print Date | 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH19**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum) 0.60	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1							MADE GROUND. Dark brown sandy CLAY with abundant rootlets (<1mm) with frequent subangular fine to coarse gravel sized brick fragments. Sand is fine and medium. [MADE GROUND] [CLAY]					
0.10 - 0.30	B	2												
0.10	PID		< 0.1 ppm							(0.45)				
0.30	D	3												
										0.45	0.15			
0.50	ES	4							MADE GROUND. Light brown silty SAND. Sand is fine and medium. With occasional rootlets (<1mm). [MADE GROUND] [SAND]	(0.15)				
0.50 - 0.80	B	5								0.60	0.00			
0.50	PID		< 0.1 ppm							(0.26)				
0.80	D	6							MADE GROUND. Black sandy CLAY. Sand is fine with occasional rootlets (<1mm). Driller notes as peaty. [MADE GROUND] [CLAY]	0.86	-0.26			
1.00	ES	7						1	Light brown slightly gravelly silty SAND. Sand is mainly fine and medium. Gravel is subrounded fine of quartz. [ALLUVIUM] [SAND]					
1.00 - 1.20	B	8												
1.00	PID		< 0.1 ppm											
1.20	D	9												
1.20	ES	10								(0.84)				
1.20 - 1.65	D	11												
1.20 - 1.70	B	12												
1.20 - 1.65	SPT		N = 8 (S)											
1.20	PID		< 0.1 ppm											
										1.70	-1.10			
1.80	D	13							Loose light brown clayey SAND. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]					
2.00 - 2.45	D	14						2	At 1.80m; light brown, with occasional black sand sized carbonaceous debris.					
2.00 - 2.50	B	15							2.00m to 2.50m; occasional rootlets (<1mm).					
2.00 - 2.45	SPT		N = 9 (S)											
										(1.80)				
2.80	D	16							At 2.80m; grades into clayey sand with frequent black sand sized carbonaceous debris.					
3.00 - 3.45	D	17						3	3.00m to 3.50m; loose to medium dense. with rare fine and medium gravel sized subrounded carbonaceous debris.					
3.00 - 3.50	B	18												
3.00 - 3.45	SPT		N = 10 (S)											
										3.50	-2.90			
3.80	D	19							Loose dark brown very silty SAND. Sand is fine to coarse predominantly fine. With frequent black sand sized, locally fine gravel sized, carbonaceous debris. Depth of upper interface approximate. [ALLUVIUM] [SAND]					
4.00 - 4.45	D	20						4						
4.00 - 4.50	B	21												
4.00 - 4.45	SPT		N = 6 (S)											
										(2.50)				
4.80	D	22							4.80m to 5.80m; with rare pockets (<20mm) of dark brown clayey sand.					
5.00 - 5.45	D	23												
5.00 - 5.50	B	24												

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH19**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum) 0.60	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 3 (S)												
5.80	D	25													
6.00 - 6.45	D	26						6	Stiff dark brown sandy CLAY. Sand is fine and medium predominantly fine. With frequent black sand and gravel sized carbonaceous debris. Driller noted as laminated. [ALLUVIUM] [CLAY]	6.00	-5.40				
6.00 - 6.50	B	27													
6.00 - 6.45	SPT		N = 10 (S)							(0.80)					
6.80	D	28							Medium dense dark brown silty SAND. Sand is fine to coarse with frequent black sand sized carbonaceous debris. [ALLUVIUM] [SAND]	6.80	-6.20				
7.00 - 7.40	B	29						7							
7.50 - 7.95	D	30							7.50m to 8.00m; occasional pockets/layers (<50mm) of dark brown clay.	(1.20)					
7.50 - 8.00	B	31													
7.50 - 7.95	SPT		N = 11 (S)												
								8	Medium dense dark brown slightly silty SAND. Sand is fine to coarse predominantly fine and medium. With frequent black sand sized, locally gravel sized, carbonaceous debris. Depth of upper interface approximate. [ALLUVIUM] [SAND]	8.00	-7.40				
8.50	D	32													
9.00 - 9.45	D	33						9	9.00m to 9.50m; black subrounded fine and medium gravel sized carbonaceous debris.						
9.00 - 9.50	B	34													
9.00 - 9.45	SPT		N = 12 (S)												
10.00	D	35							Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH19**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum)	0.60	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									10.00m to 11.00m; slightly gravelly. Gravel is subrounded fine and medium of mudstone. with gravel sized possible lignite fragments.						
10.50	D	36								(5.00)					
10.50 - 11.00	B	37													
10.50 - 10.95	SPT		N = 16 (S)					11							
11.50	D	38							At 11.50m; occasional black fine and medium gravel sized carbonaceous debris						
12.00 - 12.45	D	39						12							
12.00 - 12.50	B	40							12.00m to 12.45m; slightly gravelly. Gravel is subrounded fine of mudstone and quartz.						
12.00 - 12.45	SPT		N = 17 (S)												
13.00	D	41						13		13.00	-12.40				
									MUDSTONE. Recovered as very stiff reddish brown sandy CLAY with frequent subangular and subrounded fine to coarse gravel sized extremely weak mudstone lithorelicts. Sand is fine and medium. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.50)					
13.50 - 14.00	C	1	500							13.50	-12.90				
13.50 - 13.75	SPT		50/100 mm (S)						MUDSTONE. Recovered as greenish grey CLAY with abundant angular fine to coarse gravel sized mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.30)					
13.50 - 14.00				100	54	54				13.80	-13.20				
13.50 - 14.18							NA								
14.00 - 15.50	C	2	1500					14	MUDSTONE. Recovered as firm greenish grey slightly sandy CLAY with frequent angular and subangular fine to coarse gravel sized extremely weak mudstone lithorelicts. Sand is fine to coarse. With subhorizontal (<5 degrees) and inclined (20 to 30 degrees) closely spaced gypsum veins (30mm to 40mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.38)					
14.18 - 14.31							30 40 70			14.18	-13.58				
									14.00m to 14.05m; assummed zone of core loss.						
14.00 - 15.50				100	83	72			Extremely weak reddish brown MUDSTONE with some grey and greenish grey reduction patches (<30mm x 70mm). With subhorizontal (2 to 10 degrees) very closely and closely spaced gypsum veins (2mm to 40mm).						
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH19**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum) 0.60	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.31 - 15.83							5 170 435		Distinctly weathered. Bedding fractures are subhorizontal (<2 degrees) closely and medium spaced planar smooth very tight and clean. Joints are subhorizontal (3 to 10 degrees) inclined (15 to 35 degrees) closely and medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 14.18m to 14.31m; dark greenish grey.	(1.65)				
15.50 - 17.00	C	3	1500							15.83	-15.23			
15.83 - 16.44							15	16	Extremely weak and very weak thinly to thickly laminated greenish grey MUDSTONE locally with medium interbed of thickly laminated and very thinly bedded soft and firm reddish brown clay. With subhorizontal (0 to 10 degrees) closely spaced rarely very closely spaced gypsum veins (10mm to 60mm). Partially to distinctly weathered. Bedding fractures are subhorizontal very closely to closely spaced occasionally medium spaced planar smooth very tight and clean. Joints are subhorizontal (3 to 10 degrees) closely spaced rarely medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 16.00m to 16.28m; very thinly interbedded extremely weak greenish grey and extremely weak dark greenish grey mudstone. 16.00m to 17.37m; deformed laminations, possibly soft sediment deformation.					
15.50 - 17.00				100	97	60	100 180							
16.44 - 16.64							30 70 170			(1.78)				
17.00 - 18.50	C	4	1500					17						
16.64 - 17.40 17.10 - 17.22	C	1	120 mm				10 140 300							
17.23 - 17.37	C	2	140 mm											
17.40 - 17.50							NR		17.40m to 17.50m; assumed zone of core loss.					
17.50 - 17.61							NA			17.61	-17.01			
17.00 - 18.50				93	89	79		18	Extremely weak reddish brown locally mottled grey MUDSTONE. With subhorizontal (0 to 10 degrees) and inclined (15 to 25 degrees) very closely and closely spaced gypsum veins (<2mm to 40mm). Partially to distinctly weathered. Joints are generally inclined (3 to 30 degrees) closely spaced planar smooth and undulating smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 17.86m to 18.06m; medium interbed of very weak thinly laminated greenish grey mottled reddish brown mudstone. 18.60m to 18.80m; with very closely spaced very thin interbeds of very weak laminated greenish grey mottled reddish brown mudstone.					
17.61 - 19.17							25 140			(1.56)				
18.50 - 20.00	C	5	1500				270							
19.24 - 19.38 18.50 - 20.00	C	3	140 mm	100	91	79		19		19.17	-18.57			
19.45 - 19.50	C	4	50 mm						Weak greenish grey locally mottled reddish brown MUDSTONE. With subhorizontal to inclined very closely spaced gypsum veins (<2mm to 30mm). Partially to distinctly weathered. Joints are subhorizontal to inclined (3 to 30 degrees) closely and medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 19.61m to 19.87m; micro faults with an offset of ~10mm along the gypsum veins. 19.94m to 20.00m; assummed zone of core loss.					
19.50 - 19.55	C	5	50 mm											
20.00 - 21.50	C	6	1500											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH19**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum) 0.60	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.28 - 20.44	C	6	160 mm						20.08m to 20.44m; thinly laminated.					
19.17 - 21.80							50 390 930		20.48m to 20.65m; extremely weak reddish brown mudstone.	(2.63)				
20.00 - 21.50				100	97	87								
20.80 - 21.00	C	7	200 mm					21	20.80m to 21.05m; thickly interlaminated and very thinly interbedded light very weak greenish grey mudstone and very weak dark greenish grey mudstone.					
21.50 - 21.74	C	8	240 mm						21.45m to 21.50m; assummed zone of core loss.					
21.50 - 23.00	C	7	1500											
										21.80	-21.20			
21.50 - 23.00				100	95	84		22	Extremely weak locally very weak reddish brown mottled grey MUDSTONE. With subhorizontal to subvertical very closely and closely spaced gypsum veins (2mm to 40mm). Partially weathered. Joints are subhorizontal to inclined (3 to 30 degrees) medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.80m to 22.28m; very weak.					
21.80 - 23.45							70 270 530			(1.65)				
23.00 - 24.50	C	8	1500					23						
										23.45	-22.85			
23.00 - 24.50				100	95	93			Very weak thinly laminated greenish grey mottled reddish brown MUDSTONE locally with thick interlaminations of soft reddish brown clay. With subhorizontal (0 to 10 degrees) and inclined (15 to 20 degrees) very closely and closely spaced gypsum veins (2mm to 40mm). Partially weathered. Joints are inclined (10 to 25 degrees) medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 24.12m to 24.24m; thick laminations of soft reddish brown clay.					
23.45 - 24.30							110 210 320	24		(0.85)				
										24.30	-23.70			
24.41 - 24.58	C	9	170 mm						Weak locally extremely weak reddish brown MUDSTONE. With closely spaced and very closely spaced gypsum veins (5mm to 40mm). Partially weathered. Joints are subhorizontal (3 to 10 degrees) medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 24.64m to 24.68m; extremely weak. 24.75m to 25.00m; thinly laminated and very thinly					
24.50 - 25.00	C	9	500											
24.30 - 25.00							50 220 370			(0.70)				
24.72 - 25.00	C	10	280 mm	100	100	100								
24.50 - 25.00										25.00	-24.40			

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH19**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum)	0.60	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									bedded with deformed laminations, possibly soft sediment deformations.						
									End of Borehole at 25.00 m						
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH19**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum)	0.60	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

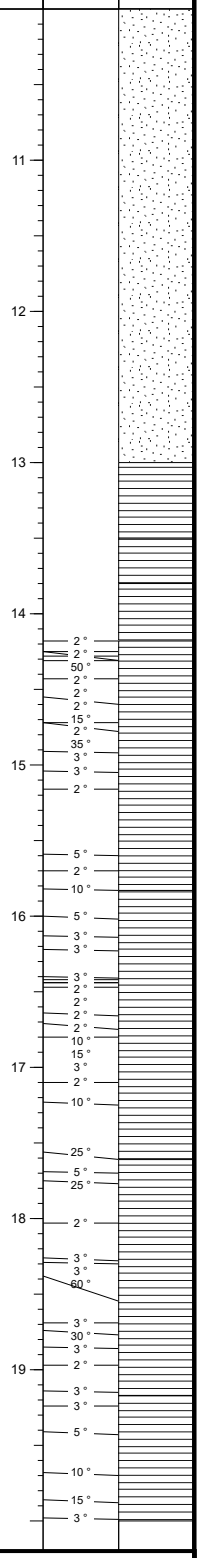
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH19**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum)	0.60	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
14.18	BF	2		VT	Pl	Sm					
14.25	BF	2		VT	Pl	Sm					
14.25 - 14.31	J	50		VT	Un	Ro					
14.28	BF	2		VT	Pl	Sm					
14.31	BF	2		VT	Pl	Sm					
14.43	BF	2		VT	Pl	Sm					
14.55 - 14.60	J	15		VT	Un	Ro					
14.72	BF	2		VT	Pl	Sm					
14.72 - 14.78	J	35		VT	Un	Ro					
14.91 - 14.92	J	3		VT	Un	Ro					
15.04 - 15.05	J	3		VT	Un	Ro					
15.16	J	2		VT	Un	Ro					
15.59 - 15.60	J	5		VT	Un	Ro					
15.70	J	2		VT	Un	Ro					
15.82 - 15.83	J	10		VT	Un	Ro					
16.00 - 16.02	J	5		VT	Un	Ro					
16.13 - 16.14	J	3		VT	Un	Ro					
16.22 - 16.23	J	3		VT	Un	Ro					
16.40 - 16.41	J	3		VT	Un	Ro					
16.42	BF	2		VT	Pl	Sm					
16.44	BF	2		VT	Pl	Sm					
16.44	BF	2		VT	Pl	Sm					
16.47	BF	2		VT	Pl	Sm					
16.64 - 16.66	J	10		VT	Un	Ro					
16.71 - 16.75	J	15		VT	Un	Ro					
16.80	J	3		VT	Un	Ro					
17.10	J	2		VT	Un	Ro					
17.23 - 17.25	J	10		VT	Un	Ro					
17.56 - 17.61	J	25		VT	Un	Ro					
17.69 - 17.70	J	5		VT	Un	Ro					
17.75 - 17.77	J	25		VT	Un	Ro					
18.03	BF	2		VT	Pl	Sm					
18.26 - 18.28	J	3		VT	Un	Ro					
18.29 - 18.30	J	3		VT	Un	Ro					
18.38 - 18.55	J	60		VT	Pl	Sm					
18.69	J	3		VT	Un	Ro					
18.74 - 18.77	J	30		VT	Un	Ro					
18.85 - 18.86	J	3		VT	Un	Ro					
18.97	J	2		VT	Un	Ro					
19.14 - 19.15	J	3		VT	Un	Ro					
19.24	J	3		VT	Un	Ro					
19.41 - 19.43	J	5		VT	Un	Ro					
19.68 - 19.70	J	10		VT	Un	Ro					
19.86 - 19.88	J	15		VT	Un	Ro					
19.98 - 19.99	J	3		VT	Un	Ro					



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH19**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum)	0.60	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
20.08 - 20.10	J	3		VT	Un	Ro				3 °	
21.01 - 21.03	J	15		VT	Un	Ro			21	15 °	
21.73 - 21.77	J	30		VT	Un	Ro				30 °	
21.98 - 21.99	J	3		VT	Un	Ro			22	3 °	
22.28 - 22.31	J	15		VT	Un	Ro				15 °	
22.61 - 22.66	J	30		VT	Un	Ro				30 °	
22.70 - 22.73	J	25		VT	Un	Ro				25 °	
23.24 - 23.25	J	5		VT	Un	Ro			23	5 °	
23.37 - 23.39	J	10		VT	Un	Ro				10 °	
23.54 - 23.58	J	25		VT	Un	Ro				25 °	
23.86 - 23.90	J	20		VT	Un	Ro				20 °	
24.10 - 24.12	J	10		VT	Un	Ro			24	10 °	
24.34 - 24.36	J	10		VT	Un	Ro				10 °	
24.63	J	3		VT	Un	Ro				3 °	
									25		
									26		
									27		
									28		
									29		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH20**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum)	0.98	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	08/09/2022	08/09/2022	Hand excavated			BS/HR	BS	
1.20	15.40	CP	08/09/2022	09/09/2022	Dando 3000			HR/GD	BS	
15.20	25.20	RC	20/09/2022	21/09/2022	Comacchio MC300		PCD	RC/DQ	OE/GW	Overdrilled from 15.20m to 15.40m.

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
08/09/2022	07:00	0.00			Overcast
08/09/2022	18:00	12.50	12.50	4.30	Dry sunny
09/09/2022	07:00	12.50	12.50	4.10	
09/09/2022	18:00	15.40	15.00	4.60	
20/09/2022	07:30	15.40	15.00	0.59	
20/09/2022	17:30	24.70	15.00	1.13	
21/09/2022	07:30	24.70	15.00	1.24	
21/09/2022	11:00	25.20	15.00	1.29	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.20	15.70	P	100	Grey	00:13
15.70	17.20	P	100	Grey	00:37
17.20	18.70	P	100	Brown	00:42
18.70	20.20	P	100	Brown	00:44
20.20	21.70	P	100	Grey	00:44
21.70	23.20	P	100	Brown	00:47
23.20	24.70	P	100	Brown	00:49
24.70	25.20	P	100	Brown	00:18

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.20	15.70	102
15.70	17.20	102
17.20	18.70	102
18.70	20.20	102
20.20	21.70	102
21.70	23.20	102
23.20	24.70	102
24.70	25.20	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
15.40	200	15.00	200
25.20	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.60	15.00	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	15.40

Water Strike Remarks

Groundwater not encountered during excavation and drilling by may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.40m and continued by rotary coring techniques to 25.20m.
3. SPTs at 2.00m and 4.00m possibly affected by drilling disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117408) used for photo-ionisation detection (PID).
6. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	12.00	9.00	12.00	22/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	9.00	50	Plain
1	9.00	12.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	22/09/2022
0.50	9.00	Bentonite	22/09/2022
9.00	12.00	Gravel	22/09/2022
12.00	25.20	Bentonite	22/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	WL/NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH20**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum) 0.98	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1							MADE GROUND. Dark brown sandy CLAY with abundant rootlets (<1mm) with occasional angular and subangular fine to coarse gravel sized fragments of brick. Sand is mainly fine and medium. [MADE GROUND] [CLAY]	(0.50)				
0.10 - 0.30	B	2												
0.10	PID		< 0.1 ppm											
0.30	D	3												
0.50	ES	4							MADE GROUND. Light brown clayey SAND with frequent rootlets (<1mm) with occasional subangular fine to coarse gravel sized brick fragments. Sand is mainly fine and medium. [MADE GROUND] [SAND]	0.50	0.48			
0.50 - 0.80	B	5								(0.40)				
0.50	PID		< 0.1 ppm											
0.80	D	6								0.90	0.08			
1.00	ES	7						1	Light brown very silty SAND. Sand is fine and medium predominantly fine. [ALLUVIUM] [SAND]	(0.30)				
1.00 - 1.20	B	8												
1.00	PID		< 0.1 ppm											
1.20	D	9								1.20	-0.22			
1.20 - 1.65	D	10							Very loose and loose light brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]					
1.20 - 1.70	B	11												
1.20 - 1.65	SPT		N = 8 (S)											
1.90	D	12												
2.00 - 2.45	D	13						2	At 1.90m; abundant fine to coarse sand sized organic debris. 2.00m to 2.50m; slightly gravelly, gravel is fine and medium of subangular mudstone.					
2.00 - 2.50	B	14												
2.00 - 2.45	SPT		N = 3 (S)											
2.80	D	15							2.80m to 4.80m; abundant fine to coarse sand sized organic debris. with rare pockets (<10mm) of grey sandy clay.					
3.00 - 3.45	D	16						3						
3.00 - 3.50	D	17												
3.00 - 3.45	SPT		N = 6 (S)											
3.80	D	18								(5.30)				
4.00 - 4.45	D	19						4						
4.00 - 4.50	B	20												
4.00 - 4.45	SPT		N = 2 (S)											
4.80	D	21												
5.00 - 5.45	D	22							Continued next page					
5.00 - 5.50	B	23												

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH20**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum) 0.98	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 8 (S)						5.00m to 6.50m; occasional black fine to coarse sand sized organic debris.					
5.80	D	24												
6.00 - 6.45	B	25						6						
6.00 - 6.50	B	26												
6.00 - 6.45	SPT		N = 4 (S)											
										6.50	-5.52			
									Loose becoming medium dense with depth dark brown slightly gravelly silty SAND with abundant black fine to coarse sand sized carbonaceous debris. Sand is mainly fine and medium. Gravel is angular and subangular fine and medium of quartz and mudstone. [ALLUVIUM] [SAND]					
7.00	D	27						7						
7.50 - 7.95	D	28												
7.50 - 8.00	B	29												
7.50 - 7.95	SPT		N = 9 (S)											
								8						
8.50	D	30												
9.00 - 9.45	D	31						9						
9.00 - 9.50	B	32							9.00m to 9.50m; silty sand.					
9.00 - 9.45	SPT		N = 14 (S)											
10.00	D	33												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH20**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum) 0.98	Sheet 3 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
										(7.50)				
10.50 - 10.95	D	34												
10.50 - 11.00	B	35												
10.50 - 10.95	SPT		N = 16 (S)											
								11						
11.50	D	36												
12.00 - 12.45	D	37						12						
12.00 - 12.50	B	38												
12.00 - 12.45	SPT		N = 15 (S)											
13.00	D	39						13						
13.50 - 13.95	D	40												
13.50 - 14.00	B	41												
13.50 - 13.95	SPT		N = 16 (S)											
								14	MUDSTONE. Recovered as greenish grey stained reddish brown CLAY with abundant fine to coarse sand sized mudstone peds and abundant subangular and subrounded fine to coarse gravel sized mudstone lithorelicts with low cobble content. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	14.00	-13.02			
14.50	D	42								(1.40)				
15.00 - 15.40	B	44												
15.00 - 15.40	D	43												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH20**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum) 0.98	Sheet 4 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.00 - 15.40	SPT		50/250 mm (S)											
									15.20m to 15.28m; greenish grey mottled reddish brown. Possibly drilling disturbed.					
15.20 - 15.70				100	0	0				15.40	-14.42			
									MUDSTONE. Recovered as soft fissured reddish brown locally greenish grey slightly sandy CLAY with angular and subangular fine to coarse extremely weak mudstone lithorelicts (<15mm x 30mm) and medium bed of extremely weak greenish grey mudstone with very closely spaced gypsum veins. Sand is fine to coarse. 2 No. gypsum veins are subhorizontal (<5 degrees). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
15.20 - 16.60							NA	16		(1.20)				
									15.77m to 16.03m; extremely weak greenish grey mudstone. Recovered as angular fragments (<20mm x 40mm) of mudstone lithorelicts with occasional matrix of soft sandy clay. Distinctly weathered.					
15.70 - 17.20				100	37	15			16.33m to 16.36m; very thin bed of subhorizontal (<5 degrees) gypsum. Partially dissolved.					
									Very weak very thinly bedded greenish grey MUDSTONE with thick laminations of extremely weak dark greenish grey mudstone and occasional matrix of soft greenish grey clay with 1No. horizontal gypsum vein (60mm). Partially weathered. Bedding fractures are horizontal very closely to closely spaced planar smooth tight and partly open with clay infill 0.2mm. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	16.60	-15.62			
16.60 - 17.22							20 70 140	17		(0.62)				
									16.60m to 16.65m; non intact 16.75m to 16.80m; very thin bed of horizontal gypsum.	17.22	-16.24			
									Extremely weak reddish brown locally greenish grey MUDSTONE. Recovered as angular fragments (10mm x 50mm) of extremely weak to very weak mudstone lithorelicts with occasional matrix of soft reddish brown clay. Highly fractured destructured mudstone. Fractures are generally (0 to 90 degrees) extremely closely to widely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
17.22 - 18.27							NI							
17.20 - 18.70				100	4	0		18						
									17.26m to 17.28m; very thin bed of subhorizontal (<5 degrees) gypsum vein. 17.35m to 17.39m; very thin bed of subhorizontal (<5 degrees) gypsum vein. 17.61m to 17.64m; very thin bed of subhorizontal (<5 degrees) gypsum vein. 18.00m to 18.04m; very thin bed of very weak greenish grey mudstone. Partially weathered. 18.53m to 18.65m; thin bed of very weak greenish grey mudstone. Partially weathered. 18.65m to 19.70m; highly fractured 18.70m to 18.76m; very thin bed of very weak greenish grey mudstone. Partially weathered. 18.76m to 18.83m; thin bed of horizontal gysum vein.					
18.27 - 18.65							30 40 70							
18.70 - 18.76	C	1	60 mm							(2.98)				
18.76 - 18.83	C	2	70 mm					19						
18.65 - 19.70							NI							
18.70 - 20.20				100	12	8			19.41m to 19.44m; very thin bed of horizontal gypsum vein. 19.51m to 19.55m; very thin bed of horizontal gypsum vein.					
									19.68m to 19.78m; thin bed of very weak reddish brown mudstone. Partially weathered. 19.80m to 20.08m; non intact					
19.70 - 19.80							20							
							20 30							
19.80 - 20.08							NI							

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH20**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum) 0.98	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									20.00m to 20.20m; medium bed of extremely weak greenish grey mudstone with occasional matrix of firm clay. Distinctly weathered. 20.08m to 20.10m; very thin bed of horizontal gypsum vein.	20.20	-19.22			
20.08 - 21.07 20.62 - 20.70	C	3	80 mm				10 70 160		Extremely weak to very weak thinly interlaminated and very thinly interbedded greenish grey MUDSTONE and extremely weak reddish brown MUDSTONE. Locally with closely spaced gypsum vein (<2mm). Partially weathered. Bedding fractures are horizontal very closely and closely spaced planar smooth very tight and tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.20 - 21.70				100	50	0		21	20.88m to 21.07m; extremely weak greenish grey mudstone. Distinctly weathered. 21.07m to 21.67m; extremely weak medium bed of reddish brown mudstone. Recovered as angular fragments (20mm x 40mm) of extremely weak to very weak mudstone lithorelicts (<20mm x 45mm) with occassional matrix of soft greenish grey clay. Higly fractured. Fractures are (0 to 90 degrees) extremely closely spaced planar smooth very tight and clean. Distincly weathered.	(1.50)				
21.07 - 21.70							NI							
									21.67m to 21.70m; very thin bed of extremely weak greenish grey mudstone.	21.70	-20.72			
21.70 - 22.00							20 70 140		Extremely weak to very weak thinly and thickly laminated greenish grey mottled brown MUDSTONE with subhorizontal (<3 degrees) and inclined (15 to 60 degrees) closely to medium spaced gypsum veins (2mm to 10mm). Partially to distinctly weathered. Bedding fractures are horizontal very closely to medium spaced planar smooth very tight and clean. Joint is inclined (25 to 30 degrees) undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
22.00 - 22.11							NI	22	22.00m to 22.11m; extremely weak recovered as angular fragments (10mm x 30mm) of mudstone. 22.27m to 22.32m; very thin bed of horizontal gypsum vein. Partially dissolved. 22.40m to 22.52m; with deformed laminations. 22.65m to 22.77m; extremely weak recovered as angular fragments (10mm x 30mm) of mudstone. 22.77m to 22.86m; thin bed of horizontal gypsum vein with occassional matrix of soft reddish brown clay. 22.86m to 23.02m; with deformed laminations. 23.10m to 23.20m; non intact 23.20m to 23.50m; medium strong thinly laminated light greenish grey mudstone with deformed laminations.					
22.11 - 22.65 22.40 - 22.52 21.70 - 23.20	C	4	120 mm	100	39	23	10 90 250							
22.65 - 22.80							NI							
22.86 - 22.96	C	5	100 mm											
22.80 - 23.10							- 300 -	23						
23.10 - 23.20							NI			(2.86)				
23.20 - 24.56 23.20 - 24.70				100	77	17	20 120 300	24	23.93m to 24.56m; with thick lamination of soft reddish brown clay. 24.00m to 24.04m; very thin bed of gypsum vein partially dissolved					
24.05 - 24.12	C	8	70 mm											
24.15 - 24.20	C	6	50 mm											
24.48 - 24.55	C	7	70 mm											
										24.56	-23.58			
24.56 - 24.70							NI		Extremely weak reddish brown MUDSTONE. Recovered as angular fragments (30mm x 50mm) of mudstone lithorelicts (<20mm x 35mm) with occasional matrix of soft reddish brown clay. Distinctly weathered. Bedding fractures are horizontal very closely to closely					
24.70 - 24.97							30 70							
24.70 - 25.20				86	58	22	110			(0.64)				
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH20**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum) 0.98	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring	Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
24.97 - 25.20 25.10 - 25.15	C	9	50 mm				NI		spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 24.56m to 24.70m; non intact 24.87m to 25.03m; thin bed of extremely weak greenish grey mudstone. 24.97m to 25.07m; non intact 25.07m to 25.13m; thin bed of horizontal gypsum vien. 25.13m to 25.20m; assumed zone of core loss. End of Borehole at 25.20 m	25.20	-24.22				
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH20**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum)	0.98	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH20**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum)	0.98	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

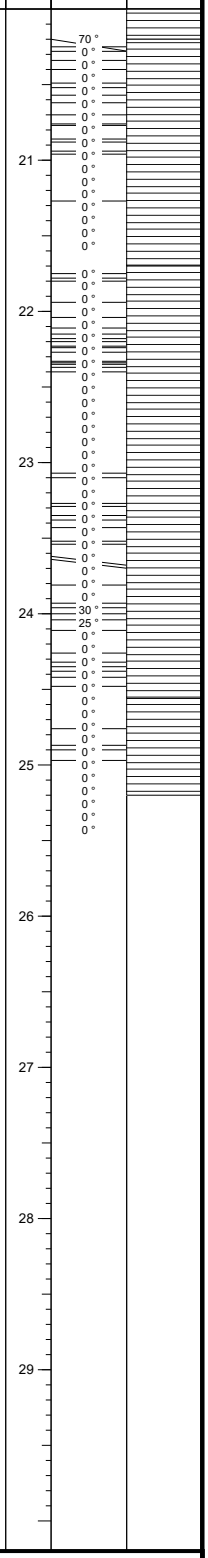
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
16.75	BF	0		T	Pl	Sm			11	0 °	
16.80	BF	0		PO	Pl	Sm				0 °	
16.82	BF	0		T	Pl	Sm				0 °	
16.86	BF	0		T	Pl	Sm				0 °	
16.88	BF	0		PO	Pl	Sm				0 °	
16.94	BF	0		VT	Pl	Sm				0 °	
16.96	BF	0		T	Pl	Sm				0 °	
17.00	BF	0		VT	Pl	Sm				0 °	
17.05	BF	0		VT	Pl	Sm				0 °	
17.08	BF	0		VT	Pl	Sm				0 °	
18.27	BF	0		VT	Pl	Sm			12	0 °	
18.27 - 18.35	J	90		VT	Pl	Sm				90 °	
18.32	BF	0		VT	Pl	Sm				0 °	
18.35	BF	0		VT	Pl	Sm				0 °	
18.43	BF	0		VT	Pl	Sm				0 °	
18.50	BF	0		VT	Pl	Sm				0 °	
18.53	BF	0		VT	Pl	Sm				0 °	
18.53 - 18.58	J	60		VT	Un	Sm				60 °	
18.60	BF	0		VT	Pl	Sm				0 °	
18.61 - 18.67	J	90		VT	Un	Sm				90 °	
19.70	BF	0		VT	Pl	Sm			13	0 °	
19.73	BF	0		VT	Pl	Sm				0 °	
19.75	BF	0		VT	Pl	Sm				0 °	
19.78	BF	0		VT	Pl	Sm				0 °	
19.94	BF	0		VT	Pl	Sm				0 °	
									14		
									15		
									16		
									17		
									18		
									19		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH20**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum)	0.98	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
20.20 - 20.28	J	70		VT	Pl	Sm					
20.25	BF	0		VT	Pl	Sm					
20.28	BF	0		VT	Pl	Sm					
20.34	BF	0		VT	Pl	Sm					
20.40	BF	0		VT	Pl	Sm					
20.49	BF	0		VT	Pl	Sm					
20.52	BF	0		VT	Pl	Sm					
20.57	BF	0		VT	Pl	Sm					
20.62	BF	0		VT	Pl	Sm					
20.70	BF	0		VT	Pl	Sm					
20.76	BF	0		VT	Pl	Sm					
20.77	BF	0		VT	Pl	Sm					
20.86	BF	0		VT	Pl	Sm					
20.88	BF	0		VT	Pl	Sm					
20.94	BF	0		VT	Pl	Sm					
20.96	BF	0		VT	Pl	Sm					
21.27	BF	0		VT	Pl	Sm					
21.75	BF	0		VT	Pl	Sm					
21.78	BF	0		VT	Pl	Sm					
21.80	BF	0		VT	Pl	Sm					
21.94	BF	0		VT	Pl	Sm					
22.04	BF	0		VT	Pl	Sm					
22.11	BF	0		VT	Pl	Sm					
22.15	BF	0		VT	Pl	Sm					
22.18	BF	0		VT	Pl	Sm					
22.20	BF	0		VT	Pl	Sm					
22.23	BF	0		VT	Pl	Sm					
22.24	BF	0		VT	Pl	Sm					
22.27	BF	0		VT	Pl	Sm					
22.33	BF	0		VT	Pl	Sm					
22.34	BF	0		VT	Pl	Sm					
22.35	BF	0		VT	Pl	Sm					
22.37	BF	0		VT	Pl	Sm					
22.40	BF	0		VT	Pl	Sm					
23.07	BF	0		VT	Pl	Sm					
23.10	BF	0		VT	Pl	Sm					
23.27	BF	0		VT	Pl	Sm					
23.29	BF	0		VT	Pl	Sm					
23.35	BF	0		VT	Pl	Sm					
23.38	BF	0		VT	Pl	Sm					
23.43	BF	0		VT	Pl	Sm					
23.52	BF	0		VT	Pl	Sm					
23.54	BF	0		VT	Pl	Sm					
23.62 - 23.68	J	30		VT	Un	Ro					
23.64 - 23.70	J	25		VT	Un	Ro					
23.81	BF	0		VT	Pl	Sm					
23.93	BF	0		T	Pl	Sm					
23.96	BF	0		T	Pl	Sm					
24.00	BF	0		VT	Pl	Sm					
24.04	BF	0		VT	Pl	Sm					
24.11	BF	0		VT	Pl	Sm					
24.26	BF	0		T	Pl	Sm					
24.32	BF	0		T	Pl	Sm					
24.35	BF	0		T	Pl	Sm					
24.38	BF	0		T	Pl	Sm					
24.42	BF	0		T	Pl	Sm					
24.48	BF	0		T	Pl	Sm					
24.76	BF	0		VT	Pl	Sm					
24.87	BF	0		VT	Pl	Sm					
24.90	BF	0		VT	Pl	Sm					
24.97	BF	0		VT	Pl	Sm					



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum)	0.81	Sheet 1 of 1
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	01/09/2022	01/09/2022	Hand excavated			BS/HR	BS	
1.20	14.70	CP	01/09/2022	02/09/2022	Dando 3000			HR/GD	BS	
14.70	25.00	RC	21/09/2022	27/09/2022	Comacchio 405		PCD	DMcG/SD	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
01/09/2022	07:00	0.00			Sunny
01/09/2022	18:00	11.00	11.00	3.90	Sunny
02/09/2022	07:00	11.00	11.00	3.95	Windy and cold
02/09/2022	18:00	14.70	14.70	4.10	
21/09/2022	08:00	14.70	14.70	1.56	
21/09/2022	18:00	17.00	14.70	1.56	
26/09/2022	05:00	17.00	14.70	1.09	
26/09/2022	18:00	25.00	14.70	1.09	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.70	15.60	AM	100	Brown	00:30
15.60	17.00	AM	100	Brown	00:40
17.00	18.50	AM	100	Grey	00:50
18.50	20.00	AM	100	Grey	00:50
20.00	21.50	AM	100	Grey	00:50
21.50	23.00	AM	100	Grey	00:50
23.00	24.50	AM	100	Grey	00:50
24.50	25.00	AM	100	Grey	00:20

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.70	15.60	102
15.60	17.00	102
17.00	18.50	102
18.50	20.00	102
20.00	21.50	102
21.50	23.00	102
23.00	24.50	102
24.50	25.00	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
14.70	200	14.70	200
25.00	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.30	14.50	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
6.00	3.30	20	6.00	3.40
14.10	4.05	20	14.10	4.05

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.70m and by rotary coring techniques to 25.00m.
3. SPT samples D13 at 2.00m, D19 at 4.00m and D22 at 5.00m possibly affected by drilling disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117404) used for photo-ionisation detection (PID).
6. Borehole terminated at scheduled depth of 25.00m,

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	17.50	14.50	17.50	27/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	14.50	50	Plain
1	14.50	17.50	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	27/09/2022
0.50	14.50	Bentonite	27/09/2022
14.50	17.50	Gravel	27/09/2022
17.50	25.00	Bentonite	27/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY/NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH21**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum) 0.81	Sheet 1 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
0.10	ES	1							MADE GROUND. Dark brown sandy CLAY with abundant roots (<10mm) with occasional subangular fine and medium gravel sized brick fragments. Sand is fine and medium, mainly fine. [MADE GROUND] [CLAY]						
0.10 - 0.30	B	2													
0.10	PID		< 0.1 ppm												
0.20	D	3								(0.50)					
									0.40m to 0.50m; black, with abundant rootlets (<1mm) and occasional black organic fragments (<1mm)						
0.50	ES	4								0.50	0.31				
0.50	PID		< 0.1 ppm						Light brown streaked orange slightly silty SAND with fine sand sized black organic debris and occasional pockets (<30mm) of stiff black clay. Sand is fine and medium. [ALLUVIUM] [SAND]						
0.80	ES	7													
0.80 - 1.00	B	8								(0.70)					
0.80	PID		< 0.1 ppm					1							
1.10	D	9													
1.20 - 1.65	D	10								1.20	-0.39				
1.20 - 1.70	B	11							Loose dark brown slightly gravelly clayey SAND with occasional rootlets (<1mm) and occasional to frequent sand sized carbonaceous debris. Sand is mainly fine and medium. Gravel is subangular and subrounded fine to coarse of mudstone, quartz and carbonaceous debris. [ALLUVIUM] [SAND]						
1.20 - 1.65	SPT		N = 6 (S)												
1.80	D	12													
2.00 - 2.45	D	13						2							
2.00 - 2.50	B	14							2.00m to 2.45m; very loose to loose, with occasional pockets (<20mm) of dark brown sandy clay.						
2.00 - 2.45	SPT		N = 4 (S)							(1.80)					
2.80	D	15													
3.00 - 3.45	D	16						3		3.00	-2.19				
3.00 - 3.50	B	17							Soft and firm dark brown sandy SILT with occasional sand sized black carbonaceous debris. Sand is fine and medium predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [SILT]						
3.00 - 3.45	SPT		N = 8 (S)												
3.80	D	18													
4.00 - 4.45	D	19						4		(2.00)					
4.00 - 4.50	B	20													
4.00 - 4.45	SPT		N = 4 (S)												
4.80	D	21													
5.00 - 5.45	D	22							Continued next page	5.00	-4.19				
5.00 - 5.50	B	23													

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH21**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum) 0.81	Sheet 2 of 5
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 2 (S)						Possibly very loose dark brown clayey SAND with abundant sand sized black carbonaceous debris. Sand is fine. Depth of upper interface approximate. [ALLUVIUM] [SAND]	(1.00)				
5.80	D	24							At 5.80m; slightly gravelly. Gravel is subangular fine of possible lignite.					
6.00 - 6.45	D	25						6		6.00	-5.19		▽	
6.00 - 6.50	B	26							Loose dark brown silty SAND with frequent becoming occasional sand sized black organic debris. Sand is fine and medium. [ALLUVIUM] [SAND]					
6.00 - 6.45	SPT		N = 7 (S)						6.00m to 6.50m; with frequent pockets (<20mm) of soft dark brown sandy clay. Sand is fine.					
7.00	D	27						7		(2.50)				
7.50 - 7.95	D	28							7.50m to 7.95m; slightly silty.					
7.50 - 8.00	B	29												
7.50 - 7.95	SPT		N = 7 (S)											
								8						
8.50	D	30							Loose and medium dense dark brown slightly gravelly slightly silty becoming silty with depth SAND with occasional sand sized black carbonaceous debris. Sand is mainly fine and medium. Gravel is subangular and subrounded fine and medium of mudstone and carbonaceous debris, locally with quartz. Depth of upper interface approximate. [ALLUVIUM] [SAND]	8.50	-7.69			
9.00 - 9.45	D	31						9						
9.00 - 9.50	B	32												
9.00 - 9.45	SPT		N = 10 (S)							(2.00)				
10.00	D	33												

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum) 0.81	Sheet 3 of 5	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95	D	34												
10.50 - 11.00	B	35												
10.50 - 10.95	SPT		N = 11 (S)						Medium dense dark brown slightly gravelly silty SAND. Sand is mainly fine and medium. Gravel is subangular and subrounded fine and medium of mudstone and locally quartz. [ALLUVIUM] [SAND]	10.50	-9.69			
									10.50m to 10.95m; occasional sand sized black carbonaceous debris.					
								11						
11.50	D	36												
12.00 - 12.45	D	37						12						
12.00 - 12.50	B	38							12.00m to 12.50m; occasional fine sand sized black carbonaceous debris and occasional pockets (<30mm) of soft dark brown sandy clay.					
12.00 - 12.45	SPT		N = 11 (S)							(3.50)				
13.00	D	39						13	13.00m to 13.95m; grades into gravelly sand.					
13.50 - 13.95	D	40												
13.50 - 13.95	SPT		N = 15 (S)											
								14		14.00	-13.19			
14.10	D	42							MUDSTONE. Recovered as very stiff reddish brown CLAY with frequent fine and medium sand sized mudstone peds and subangular and subrounded fine to coarse gravel sized extremely weak mudstone lithorelicts. Residual mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
14.10	W	43								(0.70)				
14.50 - 14.70	B	45												
14.50 - 14.70	D	44												
14.50 - 14.70	SPT		50/50 mm (S)											
										14.70	-13.89			
14.79 - 14.84	C	1	50 mm						Extremely weak reddish brown MUDSTONE. Recovered as soft reddish brown CLAY with abundant angular gravel sized (20mmx 50mm) mudstone lithorelicts. Distinctly weathered.					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum) 0.81	Sheet 4 of 5	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.70 - 15.44							20		Bedding fractures are horizontal very closely rarely closely spaced planar smooth very tight and clean.					
14.70 - 15.60				100	44	38	70		[MERCIA MUDSTONE GROUP - MUDSTONE]					
							160		[MUDSTONE]					
									14.70m to 14.96m; medium bed of extremely weak greenish grey mudstone.					
15.50 - 15.60	C	2	100 mm						15.44m to 15.50m; non intact (possible drilling disturbed).					
15.44 - 15.72							NI		15.50m to 15.60m; horizontal gypsum vein.	(1.85)				
									15.50m to 15.72m; non intact (possible drilling disturbed).					
									15.72m to 16.12m; medium bed of very weak reddish brown mudstone. Highly fractured. Fractures are generally 0 to 90 degrees extremely closely to very close planar smooth very tight and clean.					
15.72 - 16.15							10							
							50	16						
							110							
									16.12m to 16.44m; destructured mudstone. Recovered as soft reddish brown slightly sandy gravely clay. Sand is fine to coarse. Gravel is angualr and subangular fine to coarse of extremely weak mudstone.					
15.60 - 17.00				93	31	16			16.12m to 16.66m; destructured mudstone. Recovered as soft reddish brown gravelly clay. Gravel is angualr and subangular fine to coarse predominantly medium of extremely weak mudstone.					
16.15 - 16.55							NA							
										16.55	-15.74			
16.55 - 16.90							NI		Extremely weak to very weak thinly laminated reddish brown mottled greenish grey MUDSTONE with closely spaced very thin beds of horizontal gypsum veins (50 to 60mm). Partially weathered. Bedding fractures are horizontal to subhorizontal (0 to 2 degrees) very closely to closely spaced planar rough and smooth very tight and clean. Joints are inclined (15 degrees) medium to widely spaced undulating rough very tight and clean.					
16.90 - 17.00							NR		[MERCIA MUDSTONE GROUP - MUDSTONE]					
17.00 - 17.05	C	5	50 mm					17	[MUDSTONE]					
									16.78m to 16.84m; non intact (possible drilling disturbed). Recovered as angular fragments (10mm x 30mm) of very weak mudstone.					
17.28 - 17.40	C	3	120 mm						16.90m to 17.00m; assumed zone of core loss.					
									17.54m to 18.00m; medium bed of thinly laminated very weak to weak greenish grey mudstone.					
17.00 - 18.50				100	98	45								
17.87 - 17.94	C	4	70 mm					18						
										(3.30)				
17.00 - 19.85							10							
							90							
18.56 - 18.72	C	6	120 mm				180		18.50m to 18.98m; medium bed of thinly laminated weak to very weak greenish grey mudstone.					
									18.73m to 18.88m; deformed laminations					
								19	Below 18.98m; becoming thickly laminated with very closely spaced subhorizontal gypsum veins (1mm to 5mm). Laminations are reddish brown and greenish grey.					
18.50 - 20.00				100	99	61								
19.38 - 19.45	C	7	70 mm											
										19.85	-19.04			
19.87 - 20.00	C	8	130 mm						Medium strong thinly laminated greenish grey MUDSTONE with horizontal to subhorizontal					
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum) 0.81	Sheet 5 of 5	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.08 - 20.58	C	9	500 mm						(10 degrees) medium spaced. Unweathered. Bedding fractures are horizontal medium spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.08m to 20.21m; 1 No. incipient joints inclined 70 degrees.	(0.70)				
										20.55	-19.74			
20.00 - 21.50				100	92	91			Weak thinly laminated greenish grey MUDSTONE with horizontal to subhorizontal (10 degrees) very closely to closely spaced gypsum veins (5 mm). Partially weathered. Bedding fractures are horizontal closely and medium spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.93m to 20.98m; gypsum vein.					
20.85 - 21.00	C	10	150 mm											
21.00 - 21.17	C	11	170 mm					21		(0.95)				
19.85 - 22.50							20 170 410							
										21.50	-20.69			
21.94 - 22.17	C	12	230 mm						Moderately weak thinly laminated greenish grey MUDSTONE with very closely and closely spaced subhorizontal (<10 degrees) and inclined (15 to 30 degrees) gypsum veins (<20mm). Partially weathered. Joints are subhorizontal (5 to 10 degrees) and inclined (15 to 70 degrees) medium spaced locally closely spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.98m to 22.40m; very weak dark greenish grey mudstone. 22.09m to 22.14m; horizontal gypsum vein. 22.16m to 22.58m; with occassional grey patches (<10mm x 40mm).					
								22		(1.00)				
21.50 - 23.00				100	92	89								
										22.50	-21.69			
									Very weak and weak reddish brown mottled greenish grey MUDSTONE with very closely to closely spaced subhorizontal (0 to 10 degrees) gypsum veins (2mm to 20mm). Partially weathered. Joints are subhorizontal (5 to 10 degrees) and inclined (15 to 35 degrees) closely and medium spaced undulating rough rarely planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.50m to 22.65m; 2 No. inclined (30 degrees) conjugate veins (30mm) crossing at 60 degrees. 23.00m to 23.25m; medium bed of weak greyish green mottled reddish brown mudstone. 23.30m to 23.45m; thin bed of very weak dark greenish grey mudstone.					
								23						
23.58 - 23.64	C	13	60 mm											
23.00 - 24.50				100	91	91	50			(2.50)				
22.50 - 25.00							210		23.77m to 23.89m; subhorizontal (10 degrees) gypsum vein.					
23.77 - 24.00	C	14	230 mm				400							
								24						
									24.39m to 24.41m; subhorizontal (5 degrees) gypsum vein. 24.50m to 25.00m; weak greenish grey mottled reddish brown mudstone					
24.62 - 25.00	C	15	370 mm											
24.50 - 25.00				100	96	96			24.68m to 28.72m; subhorizontal (10 degrees) gypsum vein.					
									End of Borehole at 25.00 m	25.00	-24.19			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum)	0.81	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

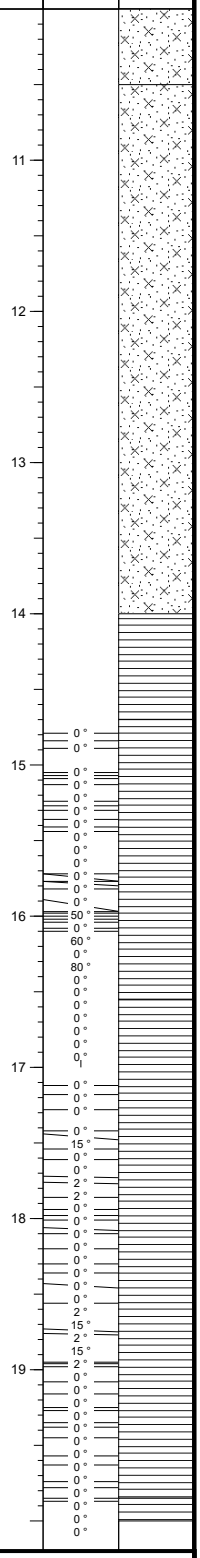
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum)	0.81	Sheet 2 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
14.79	BF	0		VT	Pl	Sm					
14.84	BF			VT	Pl	Sm					
14.89	BF	0		VT	Pl	Sm					
15.05	BF	0		VT	Pl	Sm					
15.07	BF	0		VT	Pl	Sm					
15.09	BF	0		VT	Pl	Sm					
15.13	BF	0		VT	Pl	Sm					
15.24	BF	0		VT	Pl	Sm					
15.27	BF	0		VT	Pl	Sm					
15.30	BF	0		VT	Pl	Sm					
15.36	BF	0		VT	Pl	Sm					
15.41	BF	0		VT	Pl	Sm					
15.44	BF	0		VT	Pl	Sm					
15.72	BF	0		VT	Pl	Sm					
15.72 - 15.77	J	50		VT	Un	Sm					
15.77	BF	0		VT	Pl	Sm					
15.77 - 15.80	J	60		VT	Pl	Sm					
15.82	BF	0		VT	Pl	Sm					
15.89 - 15.97	J	80		VT	Pl	Sm					
15.97	BF	0		VT	Pl	Sm					
15.98	BF	0		VT	Pl	Sm					
16.00	BF	0		VT	Pl	Sm					
16.02	BF	0		VT	Pl	Sm					
16.04	BF	0		VT	Pl	Sm					
16.08	BF	0		VT	Pl	Sm					
16.10	BF	0		VT	Pl	Sm					
16.90 - 17.00	NR							Assumed zone of core loss			
17.12	BF	0		VT	Pl	Ro					
17.18	BF	0		VT	Pl	Ro					
17.28	BF	0		VT	Pl	Ro					
17.42	BF	0		VT	Pl	Ro					
17.44 - 17.48	J	15		VT	Pl	Ro					
17.54	BF	0		VT	Pl	Ro					
17.61	BF	0		VT	Pl	Ro					
17.72 - 17.73	BF	2		VT	Pl	Ro					
17.76 - 17.77	BF	2		VT	Pl	Ro					
17.86	BF	0		VT	Pl	Ro					
17.94	BF	0		VT	Pl	Ro					
17.98	BF	0		VT	Pl	Ro					
18.01	BF	0		VT	Pl	Ro					
18.06 - 18.08	BF	0		VT	Un	Ro					
18.10	BF	0		VT	Pl	Ro					
18.20	BF	0		VT	Pl	Ro					
18.30	BF	0		VT	Pl	Ro					
18.36	BF	2		VT	Pl	Ro					
18.43 - 18.46	J	15		VT	Pl	Ro					
18.56	BF	2		VT	Pl	Ro					
18.73 - 18.75	J	15		VT	Pl	Ro					
18.76 - 18.77	BF	2		VT	Un	Ro					
18.95	BF	0		VT	Pl	Sm					
18.96	BF	0		VT	Pl	Sm					
18.98	BF	0		VT	Pl	Sm					
19.08	BF	0		VT	Pl	Sm					



Notes

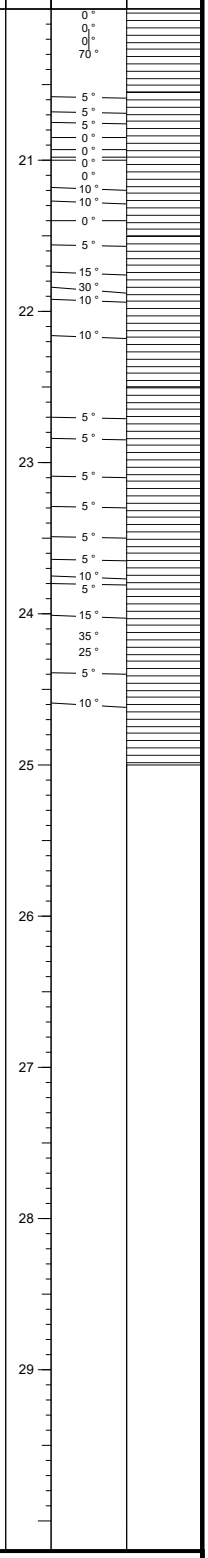
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum)	0.81	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
19.16	BF	0		VT	Pl	Sm		
19.25	BF	0		VT	Pl	Sm		
19.27	BF	0		VT	Pl	Sm		
19.35	BF	0		VT	Pl	Sm		
19.38	BF	0		VT	Pl	Sm		
19.45	BF	0		VT	Pl	Sm		
19.57	BF	0		VT	Pl	Sm		
19.63	BF	0		VT	Pl	Sm		
19.74	BF	0		VT	Pl	Sm		
19.78	BF	0		VT	Pl	Sm		
19.85	BF	0		VT	Pl	Sm		
19.87	BF	0		VT	Pl	Sm		
20.08 - 20.27	I	70		VT	Un	Ro		
20.58 - 20.59	BF	5		VT	Pl	Ro		
20.68 - 20.69	BF	5		VT	Pl	Ro		
20.75 - 20.76	BF	5		VT	Pl	Ro		
20.85	BF	0		VT	Pl	Ro		
20.93	BF	0		VT	Pl	Ro		
20.98	BF	0		VT	Pl	Ro		
21.00	BF	0		VT	Pl	Ro		
21.18 - 21.20	J	10		VT	Pl	Ro		
21.27 - 21.29	J	10		VT	Pl	Ro		
21.40	BF	0		VT	Pl	Ro		
21.56 - 21.57	J	5		VT	Pl	Ro		
21.64 - 21.70	NI							
21.74 - 21.76	J	15		VT	Pl	Ro		
21.84 - 21.88	J	30		VT	Pl	Ro		
21.92 - 21.94	J	10		VT	Pl	Ro		
22.16 - 22.18	J	10		VT	Pl	Ro		
22.70 - 22.71	J	5		VT	Pl	Ro		
22.84 - 22.85	J	5		VT	Pl	Ro		
23.09 - 23.10	J	5		VT	Un	Ro		
23.29 - 23.30	J	5		VT	Un	Ro		
23.49 - 23.50	J	5		VT	Un	Ro		
23.64 - 23.65	J	5		VT	Un	Ro		
23.75 - 23.77	J	10		VT	Un	Ro		
23.80 - 23.81	J	5		VT	Un	Ro		
24.01 - 24.03	J	15		VT	Un	Ro		
24.15 - 24.22	I	35		VT	Un	Ro		
24.25 - 24.28	I	25		VT	Un	Ro		
24.39 - 24.40	J	5		VT	Un	Ro		
24.59 - 24.62	J	10		VT	Un	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH22**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum)	1.02	Sheet 1 of 1
Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	28/09/2022	28/09/2022	Hand excavated			GW	GW	
1.20	14.85	CP	28/09/2022	29/09/2022	Dando 3000			BS	GW	
14.45	25.30	RC	06/10/2022	06/10/2022	Comacchio MC300		PCD	RC/DQ	SBP	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
28/09/2022	09:30	0.00			Dry and Sunny
28/09/2022	18:00	3.00	3.00	2.80	Fine/Sunny
29/09/2022	08:00	3.00	3.00	2.00	Dry sunny spells
29/09/2022	18:00	14.85	14.30	6.00	
06/10/2022	07:30	14.45	14.30	0.63	
06/10/2022	17:30	25.30	14.30	1.47	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.45	15.80	P	100	Brown	00:29
15.80	17.30	P	100	Brown	00:35
17.30	18.80	P	100	Grey	00:41
18.80	20.30	P	100	Grey	00:39
20.30	21.80	P	100	Grey	00:43
21.80	23.30	P	100	Grey	00:46
23.30	24.80	P	100	Grey	00:47
24.80	25.30	P	100	Grey	00:19

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.45	15.80	102
15.80	17.30	102
17.30	18.80	102
18.80	20.30	102
20.30	21.80	102
21.80	23.30	102
23.30	24.80	102
24.80	25.30	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	250	3.00	250
14.85	200	14.30	200
25.30	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	10.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.85m and continued by rotary coring techniques to 25.30m.
3. SPTs at 9.00m, 10.50m and 13.50m; possibly affected by drilling disturbance, treat results with caution.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117408) used for photo-ionisation detection (PID)
6. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	25.30	Bentonite	11/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	WL/NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum) 1.02	Sheet 1 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							Turf over brown TOPSOIL with frequent and abundant roots and rootlets (<10mm x 100mm). [TOPSOIL]	(0.10)				
0.10	ES	2								0.10	0.92			
0.10 - 0.30	B	3							Brown slightly gravelly sandy SILT with occasional to frequent rootlets (<1mm). Sand is fine to coarse predominantly fine and medium. [ALLUVIUM] [SAND]					
0.10	PID		< 0.1 ppm							(0.40)				
0.40	ES	4							At 0.35m; 1 No. root (30 x 300mm)					
0.40	PID		< 0.1 ppm							0.50	0.52			
0.60	D	5							Light brown silty SAND. Sand is fine and medium [ALLUVIUM] [SAND]	(0.25)				
0.60 - 0.90	B	6												
0.75	ES	7							Brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.75	0.27			
0.75	PID		< 0.1 ppm											
								1		(0.45)				
1.20	ES	8							Loose orangish brown silty SAND with rare clay pockets (<50 x 100mm). Sand is fine and medium predominantly fine. [ALLUVIUM] [SAND]	1.20	-0.18			
1.20 - 1.65	D	9												
1.20 - 1.65	SPT		N = 8 (S)											
1.20	PID		< 0.1 ppm							(0.45)				
1.50	D	10												
1.50 - 1.80	B	11												
									Very loose brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	1.65	-0.63			
2.00 - 2.45	B	12						2						
2.00 - 2.45	SPT		N = 3 (S)											
										(1.35)				
2.50	D	13												
3.00 - 3.45	D	14						3		3.00	-1.98			
3.00 - 3.45	SPT		N = 1 (S)						Very soft brown slightly sandy CLAY. Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [CLAY]					
3.50	D	15								(1.00)				
4.00 - 4.45	D	16						4		4.00	-2.98			
4.00 - 4.45	SPT		N = 4 (S)						Loose and medium dense brown silty SAND with rare pockets (<10 x 20mm) of clay. Sand is fine to coarse. Depth of upper interface is approximate. [ALLUVIUM] [SAND]					
4.50	D	17												
5.00 - 5.45	D	18								(2.00)				
5.00 - 5.45	SPT		N = 11 (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum) 1.02	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.50	D	19												
6.00 - 6.45 6.00 - 6.45	D SPT	20	N = 8 (S)					6	Firm and stiff brown sandy CLAY. Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [CLAY]	6.00 (0.45)	-4.98			
									Medium dense brown silty SAND with rare pockets (<5mm x 10mm) of clay. Sand is fine to coarse. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	6.45	-5.43			
								7						
7.20	D	21								(1.75)				
7.50 - 7.95 7.50 - 7.95	D SPT	22	N = 14 (S)											
								8						
8.20	D	23							Possibly very loose brown silty SAND with rare black sand sized carbonaceous material (<1mm). Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	8.20	-7.18			
9.00 - 9.45 9.00 - 9.45	B SPT	24	N = 1 (S)					9						
9.80	D	25								(3.00)				
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum)	1.02	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.50 - 10.95 10.50 - 10.95	B SPT	27	N = 2 (S)					11							
11.20	D	28							Possibly loose. Brown slightly silty slightly gravely SAND with rare to occasional black sand sized carbonaceous material (<1mm). Sand is fine and medium. Gravel is subangular and subrounded fine and medium of mudstone. [ALLUVIUM] [SAND]	11.20	-10.18				
12.00 - 12.45 12.00 - 12.45	B SPT	32	N = 4 (S)					12							
12.70	D	30								(2.70)					
13.50 - 13.95 13.50 - 13.95	B SPT	33	N = 2 (S)					13							
13.90 13.90 - 14.20	D B	34 35						14	MUDSTONE. Recovered as brown slightly sandy CLAY with frequent subangular fine to coarse gravel sized moderately weak mudstone and gypsum lithorelicts with rare black organic fragments (<2mm) and with pockets (<20 x 20mm) of light grey silt. Sand is fine to coarse. Residual mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	13.90 (0.80)	-12.88				
14.50 - 14.85 14.50 - 14.85	D SPT	36	50/200 mm (S)						MUDSTONE. Recovered as firm reddish brown mottled greenish grey CLAY with occasional angular and subangular gravel sized (<20mm x 50mm) mudstone lithorelicts. Residual locally	14.70	-13.68				

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum) 1.02	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.45 - 15.70 14.45 - 15.80				100	4	0	NA		destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.00)				
										15.70	-14.68			
								16	MUDSTONE. Recovered as firm to stiff reddish brown locally greenish grey CLAY with frequent angular and subangular extremely weak mudstone lithorelicts (<20mm x 45mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 15.70m to 15.76m; very thin bed of extremely weak mudstone. 15.75m to 15.80m; subhorizontal gypsum vein recovered as gypsum fragments (20mmx30mmx80mm). possibly disturbed by drilling.					
15.80 - 17.30				100	0	0			15.90m to 16.30m; thinly to thickly laminated extremely weak mudstone, highly fractured.					
15.70 - 17.70							NA		16.10m to 16.25m; inclined (60 degrees) gypsum vein (5mm). 16.60m to 16.65m; subhorizontal gypsum vein.	(2.00)				
								17						
									17.34m to 17.37m; very thin bed of extremely weak mudstone.					
									17.58m to 17.60m; very thin bed of extremely weak mudstone.					
										17.70	-16.68			
17.70 - 18.10							NI		Extremely weak thinly to thickly laminated reddish brown mottled greenish grey MUDSTONE. Distinctly weathered to destructured. Bedding fractures are horizontal extremely closely spaced locally very closely to closely spaced planar smooth and very tight. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
17.30 - 18.80				100	23	7		18		(1.00)				
18.25 - 18.30 18.10 - 18.40	C	1	50 mm				30 70 120		17.70m to 18.10m; bedding fractures are extremely closely spaced planar and smooth 18.10m to 18.15m; subhorizontal gypsum vein. 18.10m to 18.36m; very weak to weak greenish grey mudstone. Partially weathered. 18.36m to 18.40m; subhorizontal gypsum vein. 18.40m to 18.70m; bedding fractures are extremely closely spaced planar and smooth					
18.40 - 18.70							NI			18.70	-17.68			
									Extremely weak to very weak locally weak thinly to thickly laminated greenish grey and reddish brown MUDSTONE with subhorizontal closely to medium spaced gypsum veins (3mm to 40mm). Partially to distinctly weathered. Bedding fractures are subhorizontal (0 to 5 degrees) very closely to closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
								19						
18.95 - 19.30							NA		18.70m to 18.80m; deformed laminations. Possibly soft sedimentary deformation. 18.95m to 19.30m; very closely spaced locally closely spaced very thin beds of greenish grey and reddish brown destructured mudstone.					
18.70 - 20.11							20 90 210							
18.80 - 20.30				100	69	35			19.63m to 20.60m; very closely spaced locally closely spaced very thin beds of reddish brown destructured mudstone.	(1.90)				
19.80 - 19.92	C	2	120 mm						19.80m to 19.94m; deformed laminations. Possibly soft sedimentary deformation.					
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH22**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum) 1.02	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.11 - 20.60							NI		20.11m to 20.30m; extremely weak, highly fractured 20.33m to 20.60m; non intact, bedding fractures are subangular (5 degrees) extremely closely spaced and very closely spaced planar smooth very tight. 1 no. joint is subvertical (80 degrees) undulating smooth very tight.					
20.65 - 21.00	C	3	350 mm							20.60	-19.58			
20.30 - 21.80				100	80	50		21	Weak greenish grey MUDSTONE. Locally with subhorizontal gypsum veins (1mm to 3mm). Partially weathered. Bedding fractures are subhorizontal (5 degrees) very closely to closely spaced occasionally medium spaced undulating smooth very tight and clean. Joints are inclined (10 to 40 degrees) medium to widely spaced locally closely spaced undulating smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.95m to 21.70m; slump structures. Possibly soft sedimentary deformation. 21.00m to 21.60m; closely spaced thick laminae of greenish grey destructured mudstone.					
20.60 - 21.70							10 130 380			(1.10)				
										21.70	-20.68			
22.15 - 22.25	C	4	100 mm					22	Medium strong thinly to thickly laminated light greenish grey and greenish grey MUDSTONE with slump structures and deformed laminations possibly soft sedimentary deformation. Partially weathered. Bedding fractures are subhorizontal (5 degrees) generally closely to medium spaced locally very closely spaced undulating smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.87m to 21.92m; non-intact. Possibly drilling induced					
21.70 - 22.75							5			(1.05)				
22.25 - 22.50	C	5	250 mm				110 280							
21.80 - 23.30				100	90	81								
										22.75	-21.73			
22.75 - 23.90							20 190 530	23	Very weak locally extremely weak greenish grey MUDSTONE with subhorizontal to inclined (25 degrees) very closely spaced gypsum veins (5mm to 45mm). Partially to distinctly weathered. Bedding fractures are subhorizontal medium spaced undulating smooth and very tight. Joints are inclined (5 to 20 degrees) very closely to closely spaced occasionally medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.15)				
										23.90	-22.88			
23.30 - 24.80				100	93	90		24	Weak dark grey MUDSTONE with subhorizontal to inclined (20 degrees) very closely spaced gypsum veins (3mm to 40mm). Partially weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
24.15 - 24.40	C	6	250 mm											
23.90 - 24.80										(0.90)				
24.40 - 24.70	C	7	300 mm											
										24.80	-23.78			
									MUDSTONE. Recovered as soft to firm reddish brown CLAY with angular and subangular					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum)	1.02	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
24.80 - 25.30 24.80 - 25.30				100	18	0	NA		gravel sized mudstone lithorelicts (<20mm x 40mm) and with subhorizontal to inclined (40 degrees) gypsum veins (10mm to 40mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.50) 25.30	-24.28				
									End of Borehole at 25.30 m						
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH22**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum)	1.02	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

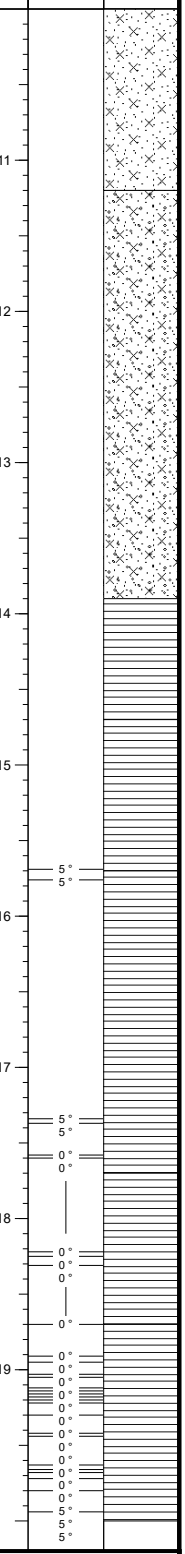
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum)	1.02	Sheet 2 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
15.69	BF	5		VT	Pl	Ro					
15.76	BF	5		VT	Pl	Sm					
17.34	BF	5		VT	Pl	Sm					
17.37	BF	5		VT	Pl	Sm					
17.58	BF	0		VT	Pl	Sm					
17.60	BF	0		VT	Pl	Sm					
17.70 - 18.10	NI										
18.22	BF	0		VT	Pl	Sm					
18.25	BF	0		VT	Pl	Sm					
18.31	BF	0		VT	Pl	Sm					
18.40 - 18.70	NI										
18.70	BF	0		VT	Pl	Sm					
18.91	BF	0		VT	Pl	Ro					
18.95	BF	0		VT	Pl	Sm					
19.03	BF	0		VT	Pl	Sm					
19.05	BF	0		VT	Pl	Sm					
19.12	BF	0		VT	Pl	Sm					
19.14	BF	0		VT	Pl	Sm					
19.16	BF	0		VT	Pl	Sm					
19.18	BF	0		VT	Pl	Sm					
19.20	BF	0		VT	Pl	Sm					
19.22	BF	0		VT	Pl	Sm					
19.30	BF	0		VT	Pl	Sm					
19.42	BF	0		VT	Pl	Sm					
19.44	BF	5		VT	Pl	Sm					



Notes

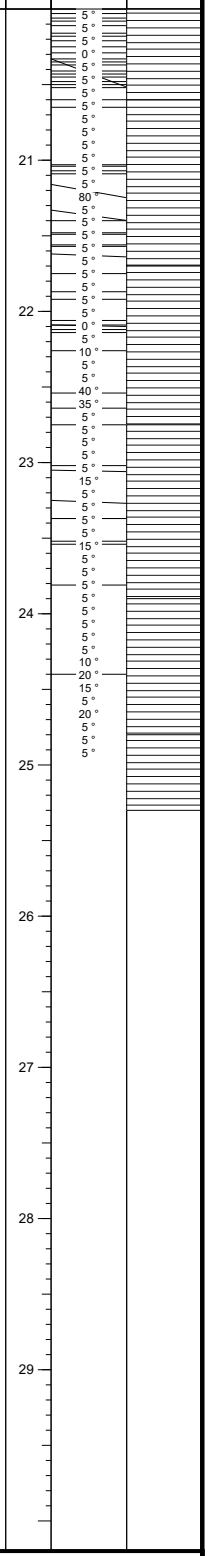
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum)	1.02	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
19.63	BF	5		VT	Pl	Sm		
19.66	BF	5		VT	Pl	Sm		
19.68	BF	5		VT	Pl	Sm		
19.72	BF	5		VT	Pl	Sm		
19.80	BF	5		VT	Pl	Sm		
19.94	BF	0		VT	Pl	Sm		
20.03	BF	5		VT	Pl	Sm		
20.06	BF	5		VT	Pl	Sm		
20.08	BF	5		VT	Pl	Sm		
20.11	BF	5		VT	Pl	Sm		
20.16	BF	5		VT	Pl	Sm		
20.18	BF	5		VT	Pl	Sm		
20.21	BF	5		VT	Pl	Sm		
20.25	BF	5		VT	Pl	Sm		
20.29	BF	5		VT	Pl	Sm		
20.33	BF	5		VT	Pl	Sm		
20.33 - 20.52	J	80		VT	Un	Sm		
20.35	BF	5		VT	Pl	Sm		
20.37	BF	5		VT	Pl	Sm		
20.41	BF	5		VT	Pl	Sm		
20.43	BF	5		VT	Pl	Sm		
20.45	BF	5		VT	Pl	Sm		
20.48	BF	5		VT	Pl	Sm		
20.50	BF	5		VT	Pl	Sm		
20.52	BF	5		VT	Pl	Sm		
20.60	BF	5		VT	Pl	Sm		
20.65	BF	0		VT	Un	Sm		
21.03	BF	5		VT	Un	Sm		
21.04	J	10		VT	Un	Sm		
21.07	BF	5		VT	Un	Sm		
21.09	BF	5		VT	Un	Sm		
21.16 - 21.25	J	40		VT	Un	Sm		
21.33 - 21.40	J	35		VT	Un	Sm		
21.40	BF	5		VT	Un	Sm		
21.48	BF	5		VT	Un	Sm		
21.49	BF	5		VT	Un	Sm		
21.56	BF	5		VT	Un	Sm		
21.57	BF	5		VT	Un	Sm		
21.62 - 21.64	J	15		VT	Un	Sm		
21.75	BF	5		VT	Un	Sm		
21.87	BF	5		VT	Un	Sm		
21.87 - 21.92	NI							
21.92	BF	5		VT	Un	Sm		
22.06	BF	5		VT	Un	Sm		
22.09	BF	5		VT	Un	Sm		
22.09 - 22.10	J	15		VT	Un	Sm		
22.12	BF	5		VT	Un	Sm		
22.14	BF	5		VT	Un	Sm		
22.26	BF	5		VT	Un	Sm		
22.54	BF	5		VT	Un	Sm		
22.64	BF	5		VT	Un	Sm		
22.75	BF	5		VT	Un	Sm		
23.02	J	5		VT	Un	Ro		
23.05 - 23.06	J	10		VT	Un	Ro		
23.25 - 23.27	J	20		VT	Un	Sm		
23.37	BF	5		VT	Un	Sm		
23.37	J	15		VT	Un	Ro		
23.52	J	20		VT	Un	Ro		
23.54	BF	5		VT	Un	Sm		
23.81	BF	5		VT	Un	Sm		
24.40	BF	5		VT	Un	Sm		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH23**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum)	0.98	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	30/09/2022	30/09/2022	Hand excavated			GW	GW	
1.20	14.20	CP	03/10/2022	04/10/2022	Dando 3000			BS	RF/GW	
14.20	25.20	RC	09/10/2022	10/10/2022	Comacchio MC300		PCD	RC, DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
03/10/2022	08:00	0.00		Dry	Dry
03/10/2022	17:50	10.00	10.00	6.00	Sunny
04/10/2022	08:00	10.00	10.00	4.00	Dry, sunny spells
04/10/2022	14:30	14.20	14.20	6.00	
09/10/2022	07:30	14.20	14.20	0.67	
09/10/2022	14:00	15.70	14.20	0.84	
10/10/2022	08:00	15.70	14.20	1.86	
10/10/2022	17:30	25.20	14.20	2.43	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.20	15.70	P	100	Brown	00:37
15.70	17.20	P	100	Brown	00:39
17.20	18.70	P	100	Brown	00:41
18.70	20.20	P	100	Grey	00:44
20.20	21.70	P	100	Grey	00:42
21.70	23.20	P	100	Grey	00:45
23.20	24.70	P	100	Grey	00:47
24.70	25.20	P	100	Grey	00:14

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.20	15.70	102
15.70	17.20	102
17.20	18.70	102
18.70	20.20	102
20.20	21.70	102
21.70	23.20	102
23.20	24.70	102
24.70	25.20	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
14.20	200	14.20	200
25.20	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	6.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.20m and continued by rotary coring techniques to 25.20m.
3. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
4. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	6.00	1.00	6.00	11/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	1.00	50	Plain
1	1.00	6.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	11/10/2022
0.50	1.00	Bentonite	11/10/2022
1.00	6.00	Gravel	11/10/2022
6.00	25.20	Bentonite	11/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH23**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum) 0.98	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							TOPSOIL.	(0.10)				
0.10	ES	2							[TOPSOIL] [SAND]	0.10	0.88			
0.10 - 0.40	B	3							Brown clayey SAND with abundant rootlets (<1mm). Sand is fine to coarse. [ALLUVIUM] [SAND]					
0.10	PID		< 0.1 ppm											
0.40	ES	4							At 0.15m; 1 No. cobble (70mm x 50mm) of possible quartzite. At 0.25m; 1 No. root (20mm x 120mm). At 0.30m; 1 No. cobble (50mm x 70mm) of possible quartzite. At 0.35m; 1 No. root (20mm x 300mm).	(0.50)				
0.40	PID		< 0.1 ppm											
0.60	D	5								0.60	0.38			
0.60 - 0.90	B	7							Light brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	(0.30)				
0.80	ES	8												
0.80	PID		< 0.1 ppm											
0.90 - 1.20	B	9						1	Orangish brown silty SAND. Sand is fine and medium predominantly fine. [ALLUVIUM] [SAND]	0.90	0.08			
1.20	ES	10								(0.40)				
1.20 - 1.65	D	11												
1.20 - 1.65	SPT		N = 8 (S)							1.30	-0.32			
1.20	PID		< 0.1 ppm						Loose brown silty SAND with occasional black carbonaceous material (<4mm). Sand is fine to coarse. [ALLUVIUM] [SAND]					
1.50	D	12								(0.70)				
2.00 - 2.45	D	13						2	Soft and firm interbedded brown fine and medium sandy SILT and very loose and loose brown silty fine to coarse SAND. Depth of upper interface approximate. Depth of upper interface approximate. [ALLUVIUM] [SILT]	2.00	-1.02			
2.00 - 2.45	SPT		N = 4 (S)											
2.50	D	14								(1.50)				
3.00 - 3.45	D	15						3						
3.00 - 3.45	SPT		N = 4 (S)											
3.50	D	16							Firm brown sandy CLAY with occasional beds of silty sand. Sand is fine and medium predominantly fine. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	3.50	-2.52			
3.50 - 3.90	B	17												
4.00 - 4.45	D	18						4						
4.00 - 4.45	SPT		N = 5 (S)											
4.50	D	19												
5.00 - 5.45	D	20								(2.95)				
5.00 - 5.45	SPT		N = 2 (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum) 0.98	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									5.00m to 5.45m; very soft to soft.					
5.50	D	21												
6.00 - 6.45 6.00 - 6.45	D SPT	22	N = 5 (S)					6						
6.50	D	23							Loose brown silty SAND with occasional black sand sized carbonaceous debris (<2mm) and occasional pockets (10mm x 20mm) of clay. Sand is fine to coarse predominantly fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	6.45	-5.47			
								7						
7.50 - 7.95 7.50 - 7.95	D SPT	24	N = 7 (S)							(2.55)				
								8						
8.20	D	25												
9.00 - 9.45 9.00 - 9.45	D SPT	26	N = 7 (S)					9	Loose becoming medium dense with depth slightly gravelly silty SAND with occasional black sand sized carbonaceous debris. Sand is fine to coarse, gravel is subangular and subrounded fine of quartz and mudstone. Depth of upper interface approximate. [ALLUVIUM] [SAND]	9.00	-8.02			
9.50	D	27							9.00m to 13.90m; slightly gravelly. Gravel is subangular and subrounded fine of quartz and mudstone.					
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum)	0.98	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.50 - 10.95	D	28													
10.50 - 10.95	SPT		N = 12 (S)												
								11							
11.20	D	29													
										(4.90)					
12.00 - 12.45	D	30						12							
12.00 - 12.45	SPT		N = 11 (S)												
12.70	D	31													
								13							
13.50 - 13.95	D	32													
13.50 - 13.95	SPT		N = 14 (S)												
13.90 - 14.20	B	34							MUDSTONE. Recovered as firm to very stiff reddish brown CLAY with frequent fine to coarse sand sized mudstone peds and occasional angular to subrounded coarse gravel sized mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	13.90	-12.92				
14.00	D	33						14		(0.30)					
14.20 - 14.59	D	35								14.20	-13.22				
14.20 - 14.59	SPT		50/240 mm (S)												
14.20 - 14.95							NA		MUDSTONE. Recovered as soft to firm locally stiff reddish brown locally greenish grey and mottled greenish grey CLAY with occasional fine to coarse sand sized mudstone peds and frequent angular fine to coarse gravel sized extremely weak mudstone lithorelicts. With medium spaced subhorizontal (0 to 10 degrees) gypsum veins (5mm to 30mm). Locally with						
14.20 - 15.70				100	9	0									

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum) 0.98	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.95 - 15.10							NI		very thin to medium bed of highly fractured and extremely weak mudstone. Destructured locally distinctly weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
15.10 - 15.15	C	1	50 mm						14.95m to 15.10m; thin bed of extremely weak greenish grey mudstone. Recovered as angular fragments (<10mm x 30mm). Fractures are generally subhorizontal extremely closely spaced planar smooth very tight and clean. Highly fractured.					
15.15 - 15.21	C	2	50 mm				NA		15.10m to 15.15m; very thin bed of very weak greenish grey mudstone.	(3.08)				
15.10 - 15.24									15.15m to 15.24m; subhorizontal (<5 degrees) vein of gypsum. Partially dissolved.					
								16	15.77m to 15.95m; medium bed of extremely weak reddish brown mottled greenish grey mudstone. Recovered as angular mudstone fragments (10mm x 40mm). Fractures (possibly bedding fractures) are generally subhorizontal extremely closely spaced planar smooth very tight and clean. Highly fractured.					
15.24 - 17.28							NA							
15.70 - 17.20				100	0	0								
								17						
									Extremely weak reddish brown mottled greenish grey MUDSTONE with very closely and closely spaced partially dissolved subhorizontal (0 to 10 degrees) gypsum veins (<20mm to 50mm). Distinctly weathered. Fractures (possibly bedding fractures) are generally subhorizontal extremely closely spaced. Highly fractured locally with matrix of soft reddish brown clay. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	17.28	-16.30			
17.28 - 18.06							NI			(0.78)				
17.20 - 18.70				100	23	0		18						
18.06 - 18.13	C	3	70 mm						Extremely weak to very weak greenish grey thinly laminated MUDSTONE with very closely to closely spaced thick laminae and very thin bed of soft greenish grey clay. Partially weathered to distinctly weathered. Bedding fractures are horizontal extremely closely and very closely spaced locally closely spaced planar and smooth and undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	18.06	-17.08			
18.25 - 18.33	C	4	80 mm						18.20m to 18.25m; very thin bed of soft greenish grey clay.					
18.06 - 18.66							10		18.33m to 18.36m; very thin bed of soft greenish grey clay.	(0.60)				
18.42 - 18.47	C	5	50 mm				40 80		18.42m to 18.47m; subhorizontal gypsum vein.					
									18.52m to 18.66m; destructured.	18.66	-17.68			
18.66 - 18.83							60 - 110							
18.83 - 18.95							NA	19						
									Extremely weak reddish brown mottled greenish grey MUDSTONE locally with occasional thick laminae and very thin bed of very weak greenish grey mudstone and soft greenish grey and reddish brown clay. With horizontal to subhorizontal (0 to 5 degrees) very closely spaced gypsum veins (1mm to 5mm). Partially to distinctly weathered. Bedding fractures are horizontal very closely spaced planar smooth locally undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE]					
18.95 - 19.39							20 30 60							
18.70 - 20.20				100	33	0				(1.68)				
19.39 - 20.20							NI							
19.80 - 19.87	C	6	70 mm											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum) 0.98	Sheet 5 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.20 - 20.34							NA	21	[MUDSTONE] 18.77m to 18.83m; non intact, recovered as subangular mudstone fragments. 19.32m to 19.34m; subhorizontal gypsum vein. 19.39m to 19.49m; highly fractured locally with matrix of soft reddish brown clay. Fractures are irregular (0 to 90 degrees) extremely closely spaced. 19.53m to 19.66m; highly fractured locally with matrix of soft reddish brown clay. Fractures are irregular (0 to 90 degrees) extremely closely spaced. 19.70m to 19.80m; highly fractured locally with matrix of soft reddish brown clay. Fractures are irregular (0 to 90 degrees) extremely closely spaced. 19.87m to 20.20m; non intact (possibly drilling disturbed), recovered as angular fragments (10mm x 50mm) locally with matrix of soft slightly sandy clay. 20.20m to 20.34m; recovered as stiff reddish brown sandy clay with occasional angular fine and medium gravel sized mudstone lithorelicts. Sand is fine to coarse. Destructured.	20.34	-19.36			
20.64 - 20.79	C	7	150 mm												
20.34 - 21.23							40 100 200								
20.20 - 21.70				100	64	45				(1.26)					
21.23 - 21.45							NA								
21.60 - 21.70	C	8	100 mm					22	Weak locally extremely weak greenish grey thinly laminated MUDSTONE locally with closely spaced horizontal to subhorizontal (0 to 10 degrees) gypsum veins (1mm to 10mm). Partially weathered. Bedding fractures are horizontal to subhorizontal (5 to 10 degrees) very closely and closely spaced undulating rough and planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.00m to 21.08m; non intact (possible drilling disturbed), recovered as soft greenish grey clay with abundant angular gravel sized extremely weak mudstone lithorelicts. 21.23m to 21.45m; recovered as soft greenish grey clay with abundant angular fine to coarse gravel sized mudstone lithorelicts. Destructured.	21.60	-20.62			
21.45 - 22.30							20 90 180			(0.65)					
22.25 - 22.30	C	9	50 mm							22.25	-21.27				
21.70 - 23.20 22.30 - 22.60				100	80	67	NI			(0.35) 22.60	-21.62				
22.89 - 23.08	C	10	190 mm					23	Medium strong greenish grey thinly laminated MUDSTONE locally with closely spaced horizontal to subhorizontal (0 to 10 degrees) gypsum veins (1mm to 10mm). Partially weathered. Bedding fractures are horizontal to subhorizontal (5 to 10 degrees) very closely and closely spaced undulating rough and planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] Very weak and extremely weak greenish grey thinly laminated MUDSTONE locally with closely spaced horizontal to subhorizontal (0 to 10 degrees) gypsum veins (1mm to 50mm). Partially and distinctly weathered. Fractures are generally irregular (0 to 90 degrees) very closely spaced undulating rough. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.30m to 22.60m; non intact (possible drilling disturbed), recovered as angular mudstone fragments (<20mm x 60mm).					
23.20 - 23.59	C	11	390 mm												
22.60 - 24.05							45 230 515			(1.45)					
23.20 - 24.70				100	58	47		24	Moderately weak dark greenish grey mottled reddish brown MUDSTONE with occasional grey patches (<20mm x 50mm), with very closely to closely spaced horizontal to subhorizontal (0 to 10 degrees) gypsum veins (<2mm to 20mm). Partially weathered. Bedding fractures are subhorizontal (5 to 10 degrees) closely and medium spaced locally very closely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 23.90m to 23.95m; extremely weak, recovered as mudstone fragments within soft clay matrix. 23.95m to 24.05m; subhorizontal (10 degrees) gypsum vein.	24.05	-23.07			
24.05 - 24.63							NA			(0.58)					
24.77 - 25.06	C	12	290 mm							24.63	-23.65				
24.63 - 25.20 24.70 - 25.20				100	95	86	- 570 -			(0.57)					
									Continued next page						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum) 0.98	Sheet 6 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									MUDSTONE. Recovered as stiff fissured reddish brown slightly sandy silty CLAY with fine to coarse sand sized mudstone peds and closely spaced subhorizontal (5 to 10 degrees) gypsum veins (2mm to 30mm). Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	25.20	-24.22			
								26	Very weak greenish grey locally mottled reddish brown thinly laminated MUDSTONE. Partially weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 23.05m to 25.11m; with very closely spaced very thin beds of soft greenish grey clay and soft white clay (possibly dissolved gypsum). 25.11m to 25.15m; subhorizontal (10 degrees) gypsum vein.					
									End of Borehole at 25.20 m					
								27						
								28						
								29						

Notes

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FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum)	0.98	Sheet 1 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH23**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum)	0.98	Sheet 2 of 3	
Hole Type	Discontinuity Log			Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
18.06	BF	0		VT	Un	Ro		clean			
18.13	BF	0		VT	Pl	Sm		clean			
18.17	BF	0		VT	Pl	Sm		clean			
18.20 - 18.25	NI							clay			
18.25	BF	0		VT	Un	Ro		clean			
18.33	BF	0		VT	Pl	Sm		clean			
18.36 - 18.38	BF	0		VT	Pl	Sm		clean			
18.39	BF	0		VT	Pl	Sm		clean			
18.40	BF	0		VT	Pl	Sm		clean			
18.42	BF	0		VT	Un	Ro		clean			
18.47	BF	0		VT	Un	Ro		clean			
18.52	BF	0		VT	Pl	Sm		clean			
18.58	BF	0		VT	Pl	Sm		clean			
18.64	BF	0		VT	Pl	Sm		clean			
18.64 - 18.70	NI										
18.77	BF	0		VT	Un	Ro		clean			
18.83	BF	0		VT	Un	Ro		clean			
18.83 - 18.95	J	75		VT	Un	Ro		clean			
18.95	BF	0		VT	Un	Ro		clean			
18.98	BF	0		VT	Pl	Sm		clean			
19.03	BF	0		VT	Pl	Sm		clean			

Notes

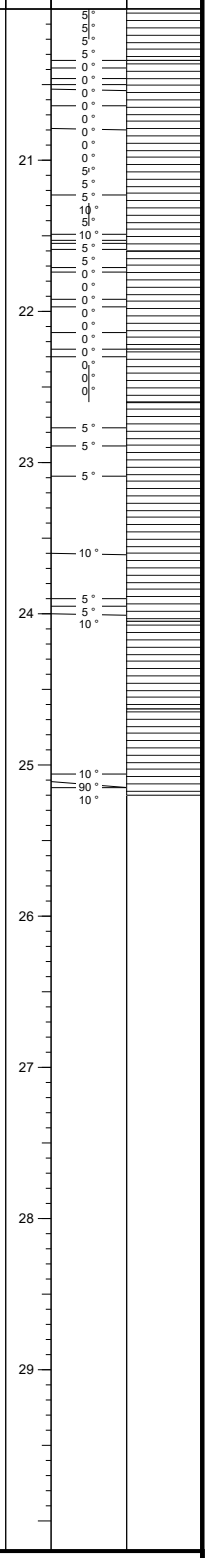
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum)	0.98	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
19.05	BF	5		VT	Pl	Sm		clean
19.11	BF	5		VT	Pl	Sm		clean
19.13	BF	5		VT	Pl	Sm		clean
19.15	BF	5		VT	Pl	Sm		clean
19.17	BF	5		VT	Pl	Sm		clean
19.20	BF	5		VT	Pl	Sm		clean
19.25	BF	5		VT	Pl	Sm		clean
19.27	BF	5		VT	Pl	Sm		clean
19.29	BF	5		VT	Pl	Sm		clean
19.32	BF	5		VT	Pl	Sm		clean
19.34	BF	0		VT	Pl	Sm		clean
19.36	BF	0		VT	Pl	Sm		clean
19.39	BF	0		VT	Pl	Sm		clean
19.39 - 19.49	NI	0		VT				
19.53 - 19.66	NI	0		VT	Pl	Sm		
19.70 - 19.80	NI	0		VT	Pl	Sm		
19.87	BF	0		VT	Pl	Sm		clean
19.87 - 20.20	NI							
20.34	BF	0		VT	Un	Ro		clean
20.39	BF	5		VT	Un	Ro		clean
20.46	BF	5		VT	Un	Ro		clean
20.50	BF	5		VT	Un	Ro		clean
20.53 - 20.54	BF	10		VT	Un	Ro		clean
20.64	BF	5		VT	Un	Ro		clean
20.79 - 20.80	BF	10		VT	Un	Ro		clean
21.00 - 21.08	NI							
21.23	BF	5		VT	Un	Ro		clean
21.23 - 21.45	NI							
21.49	BF	5		VT	Pl	Sm		clean
21.53	BF	0		VT	Pl	Sm		clean
21.55	BF	0		VT	Pl	Sm		clean
21.59	BF	0		VT	Pl	Sm		clean
21.71	BF	0		VT	Pl	Sm		clean
21.74	BF	0		VT	Pl	Sm		clean
21.92	BF	0		VT	Pl	Sm		clean
21.97	BF	0		VT	Pl	Sm		clean
22.14	BF	0		VT	Pl	Sm		clean
22.25	BF	0		VT	Pl	Sm		clean
22.30	BF	0		VT	Pl	Sm		clean
22.30 - 22.60	NI							
22.77	BF	5		VT	Un	Ro		clean
22.89	BF	5		VT	Un	Ro		clean
23.09	BF	5		VT	Un	Ro		clean
23.60 - 23.61	BF	10		VT	Un	Ro		clean
23.90	BF	5		VT	Un	Ro		clean
23.95	BF	5		VT	Un	Ro		clean
24.00 - 24.01	J	10		VT	Un	Ro		clean
25.06	FR	10		VT	Un	Ro		clean
25.11 - 25.15	J	90		VT	Pl	Sm		clean
25.15	FR	10		VT	Un	Ro		clean

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH24**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum)	0.98	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	04/10/2022	04/10/2022	Hand excavated			GW	GW	
1.20	14.70	CP	05/10/2022	05/10/2022	Dando 3000			BS	BS	
14.20	26.20	RC	13/10/2022	14/10/2022	Fraste Multi ML		PCD	AC/LS	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
05/10/2022	08:00	0.00			Raining
05/10/2022	18:00	14.70	14.20	8.00	Drizzle Fine Sunny
13/10/2022	08:00	14.20	14.20	1.35	Dry
13/10/2022	18:00	24.70	14.20	1.35	
14/10/2022	08:00	24.70	14.70	1.60	
14/10/2022	14:20	26.20	14.70	1.60	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
14.20	15.70	Water	100	Brown	00:40
15.70	17.20	Water	100	Brown	00:40
17.20	18.70	Water	100	Brown	00:35
18.70	20.20	Water	100	Grey	00:40
20.20	21.70	Water	100	Grey	00:40
21.70	23.20	Water	100	Grey	00:30
23.20	24.70	Water	100	Grey	00:25
24.70	26.20	Water	100	Brown	00:40

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
14.20	15.70	102
15.70	17.20	102
17.20	18.70	102
18.70	20.20	102
20.20	21.70	102
21.70	23.20	102
23.20	24.70	102
24.70	26.20	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.50	250	4.50	250
14.70	200	14.70	200
26.20	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.25	14.70	01:00	rock

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	10.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 14.89m and continued by rotary coring techniques to 26.20m.
3. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
4. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	26.20	Bentonite	17/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum) 0.98	Sheet 1 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							TOPSOIL.	(0.10)				
0.10	ES	2							[TOPSOIL] [SAND]	0.10	0.88			
0.10 - 0.40	B	3							Possibly MADE GROUND. Brown clayey SAND with abundant rootlets (<1mm) and roots (<5 x 200mm).					
0.10	PID		0.1 ppm						[MADE GROUND] [SAND]					
0.40	ES	4												
0.40	PID		< 0.1 ppm						At 0.50m; root (<5mm x 300mm).	(0.80)				
0.80	ES	5												
0.80	PID		< 0.1 ppm											
0.90 - 1.20	B	6							Possibly MADE GROUND. Light brown clayey SAND with rare pockets of clay (<20 x 30mm). Sand is fine and medium. [MADE GROUND] [SAND]	0.90	0.08			
1.00	D	7						1		(0.30)				
1.20	ES	8								1.20	-0.22			
1.20 - 1.65	D	9							Possibly MADE GROUND. Light brown speckled black silty SAND with occasional pockets (<5mm) of black silt and rare wood fragments (5 x 20mm). Sand is fine and medium. [MADE GROUND] [SAND]					
1.20 - 1.65	SPT		N = 8 (S)											
1.20	PID		< 0.1 ppm							(0.45)				
1.50	D	10												
2.00 - 2.45	D	11						2	Very loose and loose light brown speckled black silty SAND with frequent black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	1.65	-0.67			
2.00 - 2.45	SPT		N = 4 (S)						2.00m to 2.45m; occasional black sand sized carbonaceous debris.					
2.50	D	12								(1.75)				
3.00 - 3.45	D	13						3						
3.00 - 3.45	SPT		N = 1 (S)											
3.50	D	14							Medium dense dark brown silty SAND with occasional pockets/layers (<30mm) of dark brown clay and abundant black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	3.40	-2.42			
3.50 - 3.80	B	15							At 3.50m.; layer (thickness not determined) of dark brown sandy clay with abundant black sand sized carbonaceous debris. Sand is fine and medium.					
4.00 - 4.45	D	16						4						
4.00 - 4.45	SPT		N = 11 (S)							(1.60)				
4.50	D	17												
5.00 - 5.45	D	18								5.00	-4.02			
5.00 - 5.45	SPT		N = 5 (S)						Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum) 0.98	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
5.50	D	19							Loose dark brown slightly gravelly silty SAND with occasional pockets/layers (<30mm) of dark brown silt and abundant black sand sized carbonaceous debris. Sand is fine to coarse. Gravel is angular fine of mudstone. Depth of upper interface approximate. [ALLUVIUM] [SAND]	(1.70)					
6.00 - 6.45 6.00 - 6.45	D SPT	20	N = 8 (S)					6							
6.70	D	21								6.70	-5.72				
								7	Loose dark brown slightly gravelly, locally gravelly, slightly silty locally silty SAND with abundant black sand sized carbonaceous debris. Sand is mainly fine and medium. Gravel is subangular and subrounded mainly fine of mudstone. Depth of upper interface approximate. [ALLUVIUM] [SAND]						
7.50 - 7.95 7.50 - 7.95	D SPT	22	N = 5 (S)												
								8							
8.20	D	23								(3.00)					
9.00 - 9.45 9.00 - 9.45	D SPT	24	N = 7 (S)					9							
9.70	D	25								9.70	-8.72				
									Medium dense dark brown slightly gravelly, locally gravelly, silty SAND with abundant black sand sized carbonaceous debris. Sand is mainly fine and medium. Gravel is subangular						

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum) 0.98	Sheet 3 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									and subrounded mainly fine of mudstone. Depth of upper interface approximate. [ALLUVIUM] [SAND]					
10.50 - 10.95 10.50 - 10.95	D SPT	26	N = 13 (S)											
								11						
11.20	D	27												
										(4.40)				
12.00 - 12.45 12.00 - 12.45	D SPT	28	N = 13 (S)					12						
12.70	D	29												
								13						
13.50 - 13.95 13.50 - 13.95	D SPT	31	N = 17 (S)											
								14						
14.10	D	32							MUDSTONE. Recovered as soft and firm reddish brown locally mottled greenish grey CLAY with abundant fine to coarse sand sized mudstone peds and occasional angular fine to coarse gravel sized extremely weak mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	14.10	-13.12			
14.20 - 14.50	B	33												
14.70 - 14.89 14.70 - 14.88	D SPT	34	50/65 mm (S)											
14.20 - 15.70				77	0	0								
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum) 0.98	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
14.20 - 15.94							NA			(1.84)				
								16	Extremely weak thinly laminated reddish brown mottled greenish grey MUDSTONE with subhorizontal and subvertical closely spaced gypsum veins (2mm to 30mm). Distinctly weathered locally destructured. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	15.94	-14.96			
15.94 - 16.42							NI		15.94m to 16.42m; highly fractured. Fractures are subhorizontal to subvertical possible extremely closely spaced planar smooth and clean.					
15.70 - 17.20				100	21	0	20		16.42m to 16.63m; thin bed of extremely to very weak greenish grey thinly laminated mudstone. Bedding fractures are subhorizontal (5 degrees) very closely spaced planar smooth very tight and clean.					
16.42 - 16.53							30		16.47m to 16.51m; subhorizontal (<5 degrees) gypsum vein.					
16.53 - 16.67							40 NI		16.53m to 16.63m; non intact (possibly drilling disturbed), recovered as angular mudstone fragments (<10mm to 40mm).					
16.67 - 17.09							NA		16.63m to 16.67m; subhorizontal (<5 degrees) gypsum vein.					
								17	16.67m to 17.09m; recovered as soft and firm sandy clay with angular and subangular gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments. Sand is fine to coarse. Destructured.	(3.22)				
17.09 - 17.15	C	1	60 mm						17.09m to 17.15m; very thin bed of very weak greenish grey mudstone.					
17.09 - 17.20							NI		17.15m to 17.20m; non intact (possibly drilling disturbed), recovered as angular mudstone fragments (<10mm to 40mm).					
17.38 - 17.44	C	2	60 mm						17.20m to 18.40m; bedding fractures are horizontal to subhorizontal (5 degrees) very closely locally closely spaced planar smooth very tight and clean.					
17.20 - 18.45							20		17.29m to 17.76m; medium bed of extremely weak to very weak greenish grey mudstone.					
17.20 - 18.70				100	63	0	50 90	18	17.76m to 17.80m; subhorizontal (<5 degrees) gypsum vein.					
18.09 - 18.15	C	3	60 mm						18.40m to 18.45m; non intact (possibly drilling disturbed), recovered as angular mudstone fragments (<30mm).					
18.45 - 18.79							NA		18.45m to 18.79m; recovered as firm reddish brown mottled greenish grey sandy clay angular and subangular gravel sized extremely weak mudstone lithorelicts. Sand is fine to coarse. Destructured.					
18.79 - 19.16							20		18.79m to 19.16m; bedding fracture are horizontal to subhorizontal (5 degrees) very closely to closely spaced planar smooth very tight and clean.					
							50 110	19						
									Very weak thinly laminated greenish grey MUDSTONE with subhorizontal very closely to closely spaced gypsum veins (1mm to 20mm). Partially and distinctly weathered. Highly fractured. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	19.16	-18.18			
19.45 - 19.65	C	4	100 mm	100	20	7			19.16m to 19.45m; non intact (possibly drilling disturbed), recovered as angular mudstone fragments (<30mm).					
18.70 - 20.20									19.78m to 20.08m; highly fractured. Fractures are irregular (subhorizontal and subvertical, along gypsum veins), extremely closely and very closely					
19.16 - 20.37							NI			(1.24)				

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum) 0.98	Sheet 5 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									spaced. 20.20m to 20.37m; non intact (possibly drilling disturbed), recovered as angular mudstone fragments (<50mm). 20.27m to 20.31m; subhorizontal (<5 degrees) gypsum vein.	20.40	-19.42			
20.68 - 20.76 20.37 - 21.10	C	7	80 mm				20 60 110		Medium strong and strong thinly laminated greenish grey MUDSTONE. Unweathered. Bedding fractures are horizontal to subhorizontal (5 degrees) closely spaced locally extremely closely and very closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE]	(0.70)				
20.91 - 21.02 20.20 - 21.70	C	5	110 mm	100	59	7								
21.02 - 21.07	C	6	50 mm					21	[MUDSTONE]	21.10	-20.12			
21.10 - 21.55							NI		Weak locally very weak thinly laminated greenish grey MUDSTONE with subhorizontal and inclined (<20 degrees) closely spaced locally very closely spaced gypsum veins. Partially weathered. Bedding fractures are horizontal to subhorizontal (5 degrees) very closely and closely spaced locally medium spaced planar locally undulating smooth and rough very tight and clean. Joints are inclined (10 to 0 degrees) closely to medium spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE]	(1.23)				
21.58 - 21.66	C	8	80 mm											
21.70 - 21.80	C	9	100 mm											
21.55 - 22.33 21.96 - 22.12	C	10	170 mm				40 90 160	22	[MUDSTONE] 21.20m to 21.53m; highly fractured locally with matrix of soft greenish grey silty clay. 21.12m to 21.17m; subhorizontal (5 degrees) gypsum vein locally with occasional lenses (<1mm x 30mm) of greenish grey possible mudstone. 21.85m to 21.89m; inclined (20 degrees) gypsum vein. 22.26m to 22.31m; subhorizontal (5 degrees) gypsum vein.	22.33	-21.35			
22.45 - 22.53 21.70 - 23.20 22.33 - 22.64	C	11	80 mm	100	69	18	10 80 190		Extremely weak dark reddish brown locally dark greyish brown MUDSTONE with subhorizontal (<10 degrees) very closely spaced gypsum veins (2mm to 30mm). Distinctly weathered locally destructured. Bedding fractures are horizontal to subhorizontal (5 degrees) very closely and closely spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE]					
22.56 - 22.64	C	12	80 mm											
22.64 - 23.05							NA	23	[MUDSTONE] 22.64m to 23.05m; recovered as firm to stiff dark reddish brown sandy clay with angular gravel sized mudstone lithorelicts and partially dissolved gypsum fragments. Sand is fine to coarse. with horizontal to subhorizontal (10 degrees) very closely spaced gypsum veins. Destructured mudstone.	(1.42)				
23.14 - 23.20	C	13	60 mm											
23.05 - 23.75							20 60 115							
23.68 - 23.75	C	14	70 mm							23.75	-22.77			
23.20 - 24.70 23.75 - 24.33				100	55	27	NA	24	MUDSTONE. Recovered as soft and firm reddish brown silty CLAY with angular and subangular gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments with closely spaced subhorizontal (<5 degrees) gypsum veins. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE]	(0.58)				
24.39 - 24.58	C	15	180 mm						[MUDSTONE]	24.33	-23.35			
24.58 - 24.70	C	16	120 mm						Very weak greenish grey locally mottled reddish brown MUDSTONE with subhorizontal very closely spaced locally extremely closely spaced gypsum veins (2mm to 30mm). Partially weathered. Bedding fractures are horizontal to subhorizontal (5 to 10 degrees) closely spaced locally very closely spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE]					
24.33 - 25.51							30 100 190			(1.29)				

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum)	0.98	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

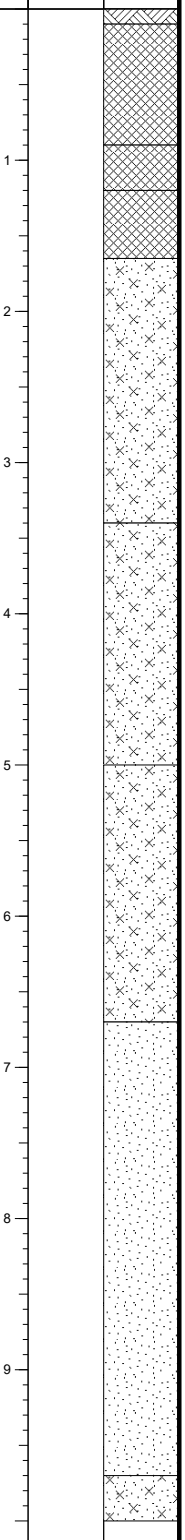
Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
25.24 - 25.36	C	17	120 mm						[MUDSTONE] 24.77m to 24.81m; subhorizontal (5 degrees) gypsum vein.					
25.36 - 25.45	C	18	90 mm											
24.70 - 26.20				100	53	21								
25.51 - 25.62							NI		25.51m to 25.62m; non intact (possibly drilling disturbed) recovered as angular mudstone fragments (<20mm) and gypsum fragments (<40mm) locally with matrix of soft dark greenish grey silty clay.	25.62	-24.64			
25.62 - 26.20							NA		MUDSTONE. Recovered as soft reddish brown CLAY with angular extremely weak mudstone lithorelicts and partially dissolved gypsum fragments. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE]	(0.58)				
								26	[MUDSTONE] 26.07m to 26.12m; very thin bed of extremely weak greenish grey mudstone. Highly fractured.	26.20	-25.22			
									End of Borehole at 26.20 m					
								27						
								28						
								29						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH24**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum)	0.98	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend

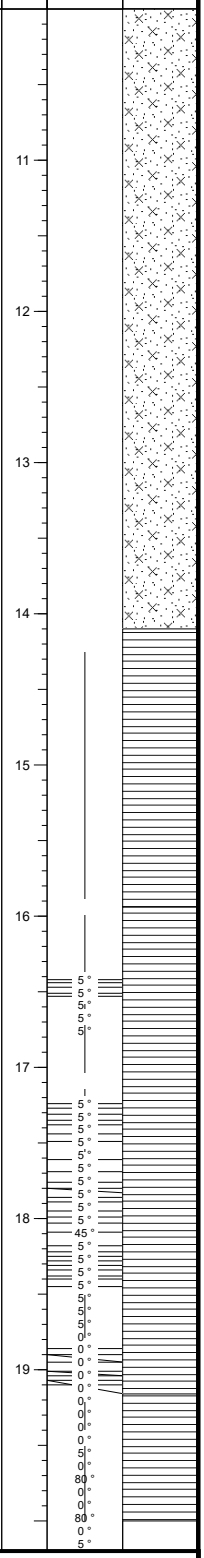


Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum) 0.98	Sheet 2 of 3	
	Hole Type	Discontinuity Log		Status	Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
14.20 - 15.94	NI										
15.94 - 16.42	NI										
16.42	BF	5		VT	Pl	Sm					
16.44	BF	5		VT	Pl	Sm					
16.47	BF	5		VT	Pl	Sm					
16.51	BF	5		VT	Pl	Sm					
16.53	BF	5		VT	Pl	Sm					
16.53 - 16.67	NI										
16.67 - 17.09	NI										
17.09 - 17.20	NI										
17.24	BF	5		VT	Pl	Sm					
17.27	BF	5		VT	Pl	Sm					
17.31	BF	5		VT	Pl	Sm					
17.35	BF	5		VT	Pl	Sm					
17.38	BF	5		VT	Pl	Sm					
17.44	BF	5		VT	Pl	Sm					
17.49	BF	5		VT	Pl	Sm					
17.49 - 17.56	NI			VT	Pl						
17.61	BF	5		VT	Pl	Sm					
17.69	BF	5		VT	Pl	Sm					
17.76	BF	5		VT	Pl	Sm					
17.80	BF	5		VT	Pl	Sm					
17.80 - 17.83	J	45		VT	Un	Ro					
17.86	BF	5		VT	Pl	Sm					
17.89	BF	5		VT	Pl	Sm					
17.95	BF	5		VT	Pl	Sm					
17.99	BF	5		VT	Pl	Sm					
18.03	BF	5		VT	Pl	Sm					
18.09	BF	5		VT	Pl	Sm					
18.18	BF	0		VT	Pl	Sm					
18.22	BF	0		VT	Pl	Sm					
18.25	BF	0		VT	Pl	Sm					
18.28	BF	0		VT	Pl	Sm					
18.31	BF	0		VT	Pl	Sm					
18.34	BF	0		VT	Pl	Sm					
18.38	BF	0		VT	Pl	Sm					
18.40	BF	0		VT	Pl	Sm					
18.45	BF	0		VT	Pl	Sm					
18.45 - 18.79	NI										

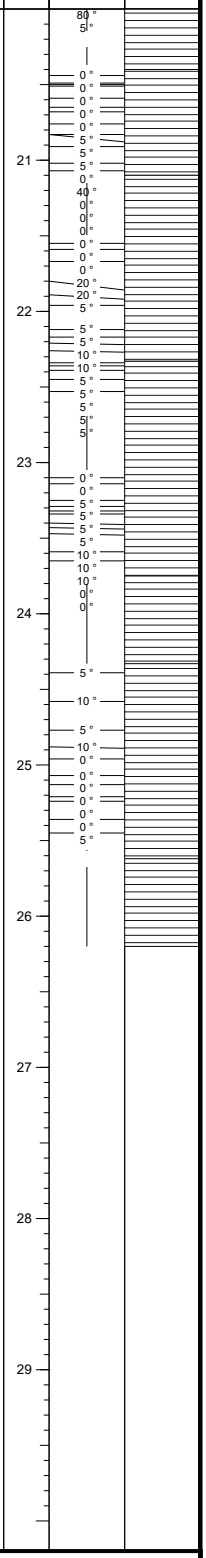


Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH24**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum)	0.98	Sheet 3 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
18.86	FR	5		VT	Pl	Ro					
18.90	BF	0		VT	Pl	Sm					
18.90 - 18.95	J	80		VT	Pl	Sm					
18.95	BF	0		VT	Pl	Sm					
19.01	BF	0		VT	Pl	Sm					
19.01 - 19.04	J	80		VT	Pl	Ro					
19.04	BF	0		VT	Pl	Sm					
19.07	BF	5		VT	Pl	Sm					
19.07 - 19.16	J	80		VT	Pl	Ro					
19.10	BF	5		VT	Pl	Sm					
19.16 - 19.45	NI										
19.45 - 20.20	NI										
20.20 - 20.37	NI										
20.44	BF	0		VT	Pl	Sm					
20.49	BF	0		VT	Pl	Sm					
20.50	BF	0		VT	Pl	Sm					
20.51	BF	0		VT	Pl	Sm					
20.59	BF	0		VT	Pl	Sm					
20.65	BF	5		VT	Pl	Sm					
20.68	BF	5		VT	Pl	Sm					
20.76	BF	5		VT	Pl	Sm					
20.83	BF	0		VT	Pl	Sm					
20.83 - 20.88	J	40		VT	Pl	Ro					
20.91	BF	0		VT	Pl	Sm					
21.02	BF	0		VT	Pl	Sm					
21.07	BF	0		VT	Pl	Sm					
21.10 - 21.55	NI										
21.55	BF	0		VT	Pl	Sm					
21.59	BF	0		VT	Un	Ro					
21.67	BF	0		VT	Pl	Sm					
21.80 - 21.86	J	20		VT	Pl	Ro					
21.89 - 21.92	J	20		VT	Pl	Ro					
21.96	BF	5		VT	Pl	Ro					
22.12	BF	5		VT	Pl	Ro					
22.17	BF	5		VT	Pl	Ro					
22.21 - 22.22	J	10		VT	Pl	Ro					
22.26 - 22.27	J	10		VT	Pl	Ro					
22.34	BF	5		VT	Pl	Ro					
22.36	BF	5		VT	Pl	Ro					
22.39	BF	5		VT	Pl	Ro					
22.45	BF	5		VT	Pl	Ro					
22.53	FR	5		VT	Un	Ro					
22.64 - 23.05	NI										
23.10	BF	0		VT	Pl	Ro					
23.14	BF	0		VT	Pl	Ro					
23.25	BF	5		VT	Pl	Ro					
23.29	BF	5		VT	Pl	Ro					
23.32	BF	5		VT	Pl	Ro					
23.34	BF	5		VT	Pl	Ro					
23.40 - 23.41	J	10		VT	Pl	Ro					
23.43 - 23.44	J	10		VT	Pl	Ro					
23.47 - 23.48	J	10		VT	Pl	Ro					
23.59	BF	0		VT	Pl	Ro					
23.65	BF	0		VT	Pl	Ro					
23.75 - 24.33	NI										
24.39	BF	5		VT	Pl	Ro					
24.58	BF	10		VT	Pl	Ro					
24.77	BF	5		VT	Pl	Ro					
24.88 - 24.89	BF	10		VT	Pl	Ro					
24.96	BF	0		VT	Pl	Ro					
25.07	BF	0		VT	Pl	Ro					
25.13	BF	0		VT	Pl	Ro					
25.21	BF	0		VT	Pl	Ro					
25.24	BF	0		VT	Pl	Ro					
25.36	BF	0		VT	Pl	Ro					
25.45	BF	5		VT	Pl	Ro					
25.51 - 25.62	NI										
25.62 - 26.20	NI										



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**MS-BH25**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum)	2.30	Sheet 1 of 1	
Hole Type	Cable Percussion to Rotary Coring			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/09/2022	26/09/2022	Hand excavated			BS	BS	
1.20	15.45	CP	27/09/2022	27/09/2022	Dando 3000			BS	RF	
15.45	25.20	RC	28/09/2022	29/09/2022	Comacchio MC300		PCD	RC, DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
27/09/2022	08:00	0.00			Fine
27/09/2022	18:00	15.45	14.80	8.00	Sunny Fine Drizzle
28/09/2022	13:30	15.45	15.45	2.41	Dry, sunny spells
28/09/2022	18:15	19.95	15.45	1.97	
29/09/2022	07:30	19.95	15.45	1.39	
29/09/2022	17:30	25.20	15.45	2.43	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
15.45	16.95	P	100	Brown	00:29
16.95	18.45	P	100	Brown	00:34
18.45	19.95	P	100	Grey	00:39
19.95	21.45	P	100	Grey	00:49
21.45	22.95	P	100	Grey	00:46
22.95	24.45	P	100	Grey	00:51
24.45	25.20	P	100	Grey	00:26

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
15.45	16.95	102
16.95	18.45	102
18.45	19.95	102
19.95	21.45	102
21.45	22.95	102
22.95	24.45	102
24.45	25.20	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	250	3.00	250
15.45	200	14.80	200
25.20	146	15.45	146

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
14.60	15.00	01:00	Rock

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	12.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.43m and continued by rotary coring techniques to 25.20m.
3. SPT at 3.00m possibly affected by borehole disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	3.00	5.00	04/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	3.00	50	Plain
1	3.00	5.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.30	Concrete	04/10/2022
0.30	3.00	Bentonite	04/10/2022
3.00	5.00	Gravel	04/10/2022
5.00	25.00	Bentonite	04/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH25**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum)	2.30	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.00 - 0.20	B	3							MADE GROUND. Brownish grey SAND with abundant angular to subrounded fine to coarse gravel sized fragments of concrete, clinker and glass. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.15)				
0.10	D	1								0.15	2.15			
0.10	ES	2												
0.10	PID		< 0.1 ppm											
0.20 - 0.40	B	6								(0.35)				
0.30	D	4												
0.40	ES	5							MADE GROUND. Grey SAND with abundant angular fine to coarse gravel sized fragments of quartz, glass, concrete and clinker . Sand is fine to coarse. [MADE GROUND] [SAND] At 0.40m; grey geomembrane.					
0.40	PID		< 0.1 ppm							0.50	1.80			
0.60	D	7												
0.60 - 0.90	B	8												
0.75	ES	9												
0.75	PID		< 0.1 ppm						MADE GROUND. Dark brown clayey SAND with abundant angular fine to coarse gravel sized fragments of quartz, glass, concrete and clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.70)				
								1						
1.20	ES	10								1.20	1.10			
1.20 - 1.52	D	11							MADE GROUND. Brown and off white silty SAND with abundant angular and subangular fine to coarse gravel sized fragments of clinker and concrete.. Sand is mainly fine and medium. [MADE GROUND] [SAND]					
1.20 - 1.52	SPT		50/170 mm (S)							(0.30)				
1.20	PID		< 0.1 ppm											
1.50	D	12								1.50	0.80			
1.50	ES	13							MADE GROUND. Dark grey SAND with abundant angular to subrounded fine and medium gravel sized fragments of clinker and concrete. Sand is fine to coarse. [MADE GROUND] [SAND]					
1.50	PID		< 0.1 ppm							(0.60)				
2.00 - 2.45	D	14						2						
2.00 - 2.45	SPT		N = 5 (S)							2.10	0.20			
2.20	D	15							MADE GROUND. Dark greyish brown CLAY with occasional angular to subrounded medium gravel sized fragments of clinker and concrete. Strong hydrocarbon odour. [MADE GROUND] [CLAY] 2.20m to 2.21m; with occasional pockets (20 x 10mm) of soft black clay. 2.20m to 2.50m; with low cobble content. Cobbles (150 x 100 x 60mm) are dark grey subrounded of concrete.					
2.20 - 2.50	B	16												
2.50	ES	17												
2.50	PID		< 0.1 ppm							(1.00)				
3.00 - 3.45	D	18						3						
3.00 - 3.45	SPT		N = 6 (S)							3.10	-0.80			
3.10 - 3.40	B	19							Firm dark orangish brown slightly gravelly sandy CLAY with occasional pockets (20 x 10mm) of soft black probably organic clay. Sand is fine and medium. [ALLUVIUM] [CLAY]	(0.35)				
3.50	D	20								3.45	-1.15			
3.50	ES	21							Very loose dark orangish brown slightly silty SAND. Sand is fine to coarse. Depth of upper interface approximate. [ALLUVIUM] [SAND] 3.45m to 3.50m (approximate depths); dark brown slightly sandy silt. Sand is fine.					
3.50	PID		0.6 ppm							(1.00)				
4.00 - 4.45	D	22						4						
4.00 - 4.45	SPT		N = 3 (S)							4.45	-2.15			
4.50	D	23							Loose dark orangish brown silty to very silty SAND. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND] 4.50m to 4.51m; dark brown slightly sandy silt. Sand is fine.					
4.50	ES	24												
4.50	PID		0.1 ppm											
5.00 - 5.45	D	25												
5.00 - 5.45	SPT		N = 8 (S)											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH25**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum) 2.30	Sheet 2 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.50	D	26							5.50m to 5.51m; dark brown.					
6.00 - 6.45 6.00 - 6.45	D SPT	27	N = 6 (S)					6		(3.75)				
6.70	D	28						7						
7.50 - 7.95 7.50 - 7.95	D SPT	29	N = 7 (S)					8						
8.20	D	30							Very loose and loose dark brown slightly silty SAND. Sand is fine to coarse. Slight organic odour. Depth of upper interface approximate. [ALLUVIUM] [SAND] At 8.20m; layer of dark brown very sandy SILT with rare black sand sized fragments of carbonaceous material. Sand is fine and medium. Slight organic odour.	8.20	-5.90			
9.00 - 9.45 9.00 - 9.45	D SPT	31	N = 4 (S)					9		(2.30)				
9.70	D	32							At 9.70m; layer of dark brown very silty sand with occasional black sand sized carbonaceous debris. Sand is fine to coarse. Slight organic odour.					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH25**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum) 2.30	Sheet 3 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95 10.50 - 10.95	D SPT	33	N = 13 (S)						Medium dense dark brown slightly silty SAND. Sand is fine to coarse. Depth of upper interface approximate. [ALLUVIUM] [SAND] 10.50m to 10.95m; slight organic odour.	10.50	-8.20			
								11						
11.20	D	34								(1.50)				
12.00 - 12.45 12.00 - 12.45	D SPT	35	N = 19 (S)					12	Medium dense dark brown silty SAND with rare black sand sized carbonaceous fragments. Sand is fine and medium. Locally grades into silty sand and very silty sand. [ALLUVIUM] [SILT]	12.00	-9.70			
12.70	D	36								(1.50)				
								13						
13.50 - 13.95 13.50 - 13.95	D SPT	37	N = 20 (S)						Medium dense dark brown slightly silty SAND. Sand is fine to coarse. Depth of upper interface approximate. [ALLUVIUM] [SAND]	13.50	-11.20			
								14		(1.00)				
14.50	D	38							Dark brown SAND with occasional angular to subrounded fine and medium gravel sized mudstone lithorelicts. Sand is fine to coarse. Depth of upper interface approximate. [ALLUVIUM] [SAND]	14.50 (0.10)	-12.20			
14.70 14.70 - 15.00	D B	39 40								14.60	-12.30			
15.00 - 15.43 15.00 - 15.42	D SPT	41	52/275 mm (S)						Stiff and very stiff reddish brown locally bluish grey CLAY with frequent angular and					
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH25**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum) 2.30	Sheet 4 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									subangular fine to coarse gravel sized mudstone lithorelicts, with occasional angular and subangular bluish grey cobble sized (200 x 150 x 60mm) mudstone lithorelicts. Destructured mudstone.	(0.85)				
									[MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	15.45	-13.15			
								16	Firm to stiff fissured reddish brown sandy CLAY with occasional angular and subangular gravel sized mudstone lithorelics and frequent white speckles (possibly dissolved gypsum). Sand is fine to coarse. Residual mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
15.45 - 16.95				100	0	0			16.12m to 16.30m; greenish grey.					
15.45 - 17.16							NA			(1.71)				
								17						
									Soft and firm reddish brown mottled greenish grey slightly sandy CLAY with angular extremely weak mudstone lithorelicts (<20mm x 40mm) and with medium spaced locally closely spaced thin to medium beds of extremely weak greenish grey Mudstone. Destructured locally distinctly weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	17.16	-14.86			
16.95 - 18.45				100	16	0	NA							
17.16 - 18.26									17.64m to 17.69m; horizontal gypsum vein. 17.69m to 17.73m; very thin bed of thinly laminated extremely weak greenish grey mudstone.					
								18						
18.19 - 18.26	C	1	70 mm						18.19m to 18.26m; horizontal gypsum vein.					
18.26 - 18.45							20		18.26m to 18.45m; medium bed of extremely weak greenish grey mudstone with thick lamination of soft clay. Bedding fractures are horizontal very closely spaced, rarely closely spaced, planar, smooth, very tight and clean. Distinctly weathered.					
18.38 - 18.43	C	2	50 mm				30							
18.45 - 18.55							50 NI							
18.59 - 18.64	C	3	50 mm				80		18.45m to 18.55m; non intact (possibly drilling disturbed) recovered as angular extremely weak mudstone lithorelicts.					
18.55 - 18.67							40		18.55m to 18.67m; thin bed of extremely weak greenish grey mudstone. Bedding fractures are horizontal, very closely and closely spaced, planar, smooth, very tight and clean. Distinctly weathered.	(2.96)				
18.67 - 19.23							NA	19	18.72m to 18.76m; very thin bed of horizontal gypsum vein. Partially dissolved.					
18.45 - 19.95				93	33	8								
19.23 - 19.28	C	4	50 mm						19.23m to 19.85m; medium bed of extremely weak greenish grey mottled reddish brown mudstone with thick lamination and very thin bed of soft reddish brown clay. Bedding fractures are horizontal, very closely spaced, planar, smooth, very tight and clean. Distinctly weathered.					
19.36 - 19.40	C	5	40 mm											
19.23 - 19.85							20 40 60							
19.85 - 19.95							NR		19.85m to 19.95m; assumed zone of core loss.					
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **MS-BH25**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum) 2.30	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.95 - 20.12							NA							
									Extremely weak thinly laminated greenish grey MUDSTONE with very closely and closely spaced very thin and thin beds of soft greenish grey clay with angular mudstone lithorelicts (<15mm x 35mm). Distinctly weathered and destructured. Bedding fractures are horizontal very closely spaced locally closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	20.12	-17.82			
20.36 - 20.50	C	6	140 mm											
20.12 - 20.95							20 60 140							
19.95 - 21.45				100	44	9				(1.33)				
20.85 - 20.95	C	7	100 mm						20.26m to 20.31m; horizontal gypsum vein. Partially dissolved.					
								21	20.95m to 21.00m; horizontal gypsum vein. Partially dissolved. 21.04m to 21.20m; medium bed of soft greenish grey clay with occasional angular gravel sized mudstone lithorelicts. Destructured.					
20.95 - 21.20							NA							
21.20 - 21.34							20							
21.28 - 21.32	C	8	40 mm				40		21.28m to 21.32m; horizontal gypsum vein.					
21.45 - 21.58	C	9	130 mm				50							
									Medium strong thinly laminated greenish grey MUDSTONE with deformed laminations, possibly soft sedimentary deformations. Unweathered. Bedding fractures are subhorizontal (5 degrees) closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	21.45	-19.15			
21.60 - 21.77	C	10	170 mm											
21.34 - 22.08							5			(0.45)				
21.79 - 21.86	C	11	70 mm				90 190							
								22		21.90	-19.60			
									Very weak thinly laminated greenish grey MUDSTONE with closely spaced locally extremely closely spaced horizontal gypsum veins (<5mm to 70mm). Partially and distinctly weathered. Bedding fractures are horizontal to subhorizontal (5 degrees) very closely and closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.50)				
21.45 - 22.95				100	73	63								
22.08 - 22.40							NA			22.40	-20.10			
									22.08m to 22.33m; extremely weak, recovered as angular mudstone fragments (10mm x 50mm) locally with soft clay matrix. Distinctly weathered to destructured.					
22.79 - 22.86	C	12	70 mm						22.33m to 22.40m; subhorizontal (<10 degrees) gypsum vein.					
								23						
									Very weak dark greenish grey MUDSTONE with extremely closely spaced subhorizontal (5 to 10 degrees) gypsum veins (<2mm to 20mm) and occasional grey possible reduction patches (<20mm). Partially weathered. Bedding fractures are horizontal and subhorizontal (5 degrees) closely spaced locally very closely and medium spaced undulating rough very tight and clean. Joints are inclined (10 to 15 degrees) closely to medium spaced locally widely spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
22.40 - 24.19							30 110 210			(1.79)				
23.53 - 23.65	C	15	120 mm											
22.95 - 24.45				100	73	55								
23.98 - 24.11	C	13	130 mm					24						
24.11 - 24.19	C	14	80 mm						22.95m to 23.07m; thin bed of very weak thinly laminated greenish grey mudstone. At 23.28m; becoming mottled reddish brown. 23.56m to 23.60m; subhorizontal (<5 degrees) gypsum vein. 23.72m to 23.76m; subhorizontal (<10 degrees) gypsum vein. 24.11m to 24.19m; horizontal gypsum vein.	24.19	-21.89			
									Soft and firm reddish brown, locally mottled greenish grey CLAY with angular gravel sized mudstone lithorelicts. Destructured. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
24.19 - 25.20							NA			(1.01)				
24.45 - 25.20				100	0	0			24.19m to 24.47m; recovered as firm to stiff dark reddish brown slightly sandy clay. Residual.					
24.91 - 24.95	C	16	40 mm											

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH25**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum)	2.30	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details					Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									End of Borehole at 25.20 m	25.20	-22.90			
								26						
								27						
								28						
								29						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH25**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum)	2.30	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

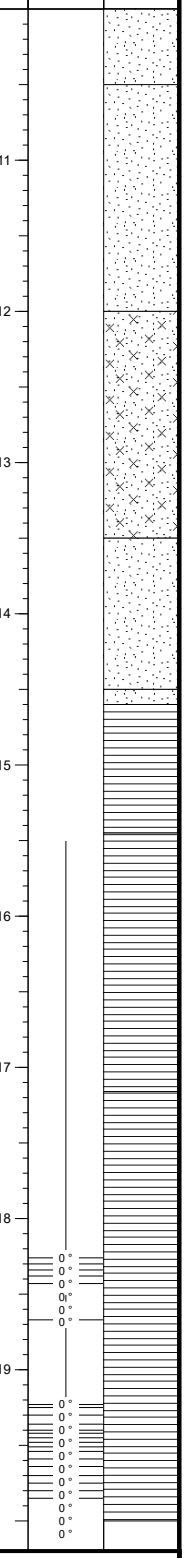
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH25**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum)	2.30	Sheet 2 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
15.45 - 18.26	NI							clay (Destructured)			
18.26	BF	0		VT	Pl	Sm					
18.30	BF	0		VT	Pl	Sm					
18.34	BF	0		VT	Pl	Sm					
18.38	BF	0		VT	Pl	Sm					
18.43	BF	0		VT	Pl	Sm					
18.45 - 18.55	NI										
18.67	BF	0		VT	Pl	Sm					
18.67 - 19.23	NI							clay (Destructured)			
19.23	BF	0		VT	Pl	Sm					
19.25	BF	0		VT	Pl	Sm					
19.30	BF	0		VT	Pl	Sm					
19.36	BF	0		VT	Pl	Sm					
19.40	BF	0		VT	Pl	Sm					
19.42	BF	0		VT	Pl	Sm					
19.45	BF	0		VT	Pl	Sm					
19.48	BF	0		VT	Pl	Sm					
19.51	BF	0		VT	Pl	Sm					

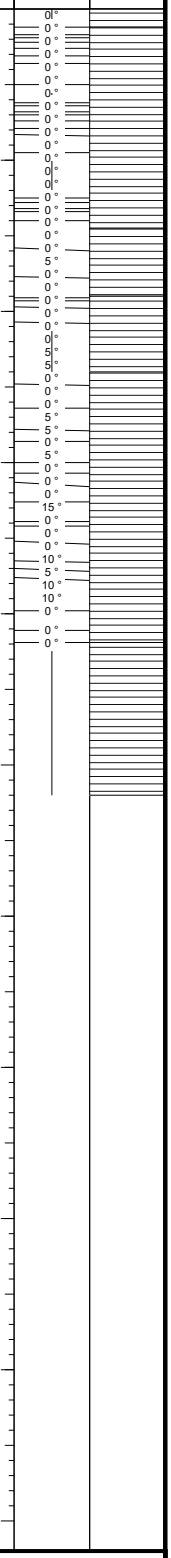


Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH25**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum)	2.30	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
19.54	BF	0		VT	Pl	Sm					
19.59	BF	0		VT	Pl	Sm					
19.64	BF	0		VT	Pl	Sm					
19.70	BF	0		VT	Pl	Sm					
19.75	BF	0		VT	Pl	Sm					
19.80	BF	0		VT	Pl	Sm					
19.85	BF	0		VT	Pl	Sm					
19.85 - 19.95	NR										
19.95 - 20.12	NI							clay (Destructured)			
20.12	BF	0		VT	Pl	Sm					
20.17	BF	0		VT	Pl	Sm					
20.19	BF	0		VT	Pl	Sm					
20.22	BF	0		VT	Pl	Sm					
20.26	BF	0		VT	Pl	Sm					
20.31	BF	0		VT	Pl	Sm					
20.36	BF	0		VT	Pl	Sm					
20.50	BF	0		VT	Pl	Sm					
20.50 - 20.60	NI										
20.62	BF	0		VT	Pl	Sm					
20.64	BF	0		VT	Pl	Sm					
20.68	BF	0		VT	Pl	Sm					
20.70	BF	0		VT	Pl	Sm					
20.74	BF	0		VT	Pl	Sm					
20.79	BF	0		VT	Pl	Sm					
20.83 - 20.84	BF	5		VT	Pl	Sm					
20.95	BF	0		VT	Pl	Sm					
20.95 - 21.20	NI										
21.25	BF	0		VT	Pl	Sm					
21.28	BF	0		VT	Pl	Sm					
21.32	BF	0		VT	Pl	Sm					
21.34	BF	0		VT	Pl	Sm					
21.40	BF	0		VT	Pl	Sm					
21.58 - 21.60	BF	5		VT	Pl	Sm					
21.77 - 21.78	BF	5		VT	Pl	Sm					
21.91	BF	0		VT	Pl	Sm					
21.93	BF	0		VT	Pl	Sm					
21.97 - 21.98	BF	0		VT	Pl	Sm					
22.07 - 22.08	BF	5		VT	Pl	Sm					
22.08 - 22.40	NI										
22.48 - 22.49	BF	5		VT	Un	Ro					
22.64	BF	0		VT	Un	Ro					
22.78 - 22.79	BF	5		VT	Un	Ro					
22.86	BF	0		VT	Un	Ro					
23.00	BF	0		VT	Un	Ro					
23.07	BF	0		VT	Un	Ro					
23.13 - 23.16	J	15		VT	Un	Ro					
23.26	BF	0		VT	Un	Ro					
23.39	BF	0		VT	Un	Ro					
23.42	BF	0		VT	Un	Ro					
23.52 - 23.54	J	10		VT	Un	Ro					
23.65 - 23.66	BF	5		VT	Un	Ro					
23.70 - 23.72	J	10		VT	Un	Ro					
23.76 - 23.78	J	10		VT	Un	Ro					
23.98	BF	0		VT	Un	Ro					
24.11	BF	0		VT	Un	Ro					
24.19	BF	0		VT	Un	Ro					
24.19 - 25.20	NI										



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH26**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482027.90 N411979.70	Ground Elevation (m Datum)	0.68	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.30	IP	07/11/2022	07/11/2022	Hand excavated			OE/TR	OE/TR	
1.20	6.50	CP	08/11/2022	08/11/2022	Dando 3000			TG/AC	OE/TR	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
07/11/2022	09:00	0.00		Dry	Cloudy
07/11/2022	10:00	1.30		Dry	Fine
08/11/2022	06:00	1.20	0.00	Dry	
08/11/2022	18:00	6.45	6.00	5.00	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
6.45	200	6.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	6.45

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 6.50m.
3. Borehole terminated at scheduled depth of 6.50m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	6.45	Bentonite	08/11/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**MS-BH26**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482027.90 N411979.70	Ground Elevation (m Datum) 0.68	Sheet 1 of 2	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Brown sandy CLAY with some roots (<2mm) and rootlets (<1mm). Sand is fine to coarse predominantly fine. [MADE GROUND] [CLAY]					
0.10 - 0.40	B	2				(0.40)				
0.40 - 0.50	B	4				0.40	0.28			
0.40 - 0.50	D	3			MADE GROUND. Dark brown sandy SILT with occasional rootlets (<1mm) and occasional pockets (<30mm) of light grey silty sand. Sand is fine and medium. [MADE GROUND] [CLAY]	(0.30)				
0.70	D	5				0.70	-0.02			
0.70 - 1.00	B	6			Orangish brown slightly gravelly silty SAND. Sand is fine and medium. Gravel is fine. [ALLUVIUM] [SAND]					
				1		(0.60)				
1.30	D	7				1.30	-0.62			
1.30 - 1.80	B	8			Brown silty SAND with occasional black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]					
				2		(1.50)				
2.30	D	9								
2.80	D	10				2.80	-2.12			
2.80 - 3.00	B	11			Soft brown slightly sandy CLAY with occasional rootlets (<1mm). Sand is fine. [ALLUVIUM] [CLAY]					
3.00 - 3.50	UT#B	12	35/100 mm	3	2.90m to 3.50m; with occasional pockets (<30mm) of black possible organic matter.	(0.70)				
3.50 - 3.60	D	13				3.50	-2.82			
3.80 - 4.30	UT	14	37/200 mm		Brown slightly clayey SAND. Sand is fine. Depth of upper interface is approximate. [ALLUVIUM] [SAND]					
				4		(1.50)				
4.30 - 4.40	D	15								
4.40 - 4.90	UT	16	26/300 mm		Below 4.40m; driller records orange slightly silty sand.					
4.90 - 5.00	D	17								
5.00 - 6.00	B	19				5.00	-4.32			
5.00 - 6.00	D	18			Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH26**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482027.90 N411979.70	Ground Elevation (m Datum)	0.68	Sheet 2 of 2
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
6.00 - 6.45 6.00 - 6.45	D SPT	20	N = 9 (S)	6	Stiff brown sandy CLAY. Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [CLAY]	(1.45)				
						6.45	-5.78			
					End of Borehole at 6.50 m					
				7						
				8						
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH27**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482117.30 N412008.50	Ground Elevation (m Datum)	0.85	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	03/11/2022	03/11/2022	Hand excavated			BS	BS	
1.20	7.45	CP	03/11/2022	03/11/2022	Dando 3000			TG/AC	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
03/11/2022	08:00	0.00			Overcast
03/11/2022	18:00	7.45	7.00	4.00	Fine, cold

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
7.45	200	7.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	7.45

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 7.45m.
3. Borehole terminated at scheduled depth of 7.45m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	7.45	Bentonite	03/11/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH27**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482117.30 N412008.50	Ground Elevation (m Datum)	0.85	Sheet 1 of 2
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Dark brown clayey SAND with abundant rootlets (<1mm), with occasional angular fragments of brick (<30mm x 50mm). Sand is mainly fine. [MADE GROUND] [SAND]	(0.50)				
0.10 - 0.50	B	2								
0.50 - 0.60	B	4				0.50	0.35			
0.50 - 0.60	D	3			MADE GROUND. Black sandy CLAY with fragments (50 x 30mm) of decomposed wood. Sand is fine. [MADE GROUND] [CLAY]	(0.16)				
0.70	D	5			0.50m to 0.66m; possible peat.	0.66	0.19			
0.70 - 1.20	B	6			MADE GROUND. Greyish light brown speckled orange silty SAND with pockets (<10mm) of clay. Sand is fine. [MADE GROUND] [SAND]	(0.54)				
				1						
1.20 - 1.70	UT	7	18/150 mm		Light brown speckled orange slightly silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	1.20	-0.35			
1.70 - 1.80	D	8								
1.80 - 2.30	UT	9	21/400 mm		1.80m to 2.30m; with occasional pockets (<5mm) of silt.	(1.40)				
				2						
2.30 - 2.40	D	10								
2.60 - 3.10	UT	11	9/400 mm		Dark brown silty SAND. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	2.60	-1.75			
3.00 - 4.00	B	15				(0.70)				
3.10 - 3.20	D	12		3						
3.20 - 3.70	UT	13	18/400 mm							
					Firm dark brown slightly sandy CLAY. Sand is fine. [ALLUVIUM] [CLAY]	3.30	-2.45			
3.70 - 3.80	D	14				(0.50)				
3.80 - 4.30	UT#B	16	38/100 mm		Dark brown slightly sandy SILT. Sand is fine. Depth of upper interface approximate. [ALLUVIUM] [SILT]	3.80	-2.95			
				4		(0.50)				
4.30 - 4.40	D#	17			Dark brown sandy SILT with occasional pockets (<5mm) of dark brown clay and with frequent black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SILT]	4.30	-3.45			
4.50 - 5.00	UT#B	18	22/0 mm			(0.70)				
5.00 - 5.10	D	19			Continued next page	5.00	-4.15			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH27**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482117.30 N412008.50	Ground Elevation (m Datum)	0.85	Sheet 2 of 2
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.20 - 5.70	UT#B	20	13/0 mm		Dark brown silty SAND with occasional black sand sized carbonaceous debris. Sand is fine. Depth of upper interface approximate. [ALLUVIUM] [SAND]	(0.70)				
5.70 - 5.80	D	21				5.70	-4.85			
5.90 - 6.40	UT	22	17/300 mm	6	Dark brown sandy CLAY with black sand sized carbonaceous debris. Sand is fine. Depth of upper interface approximate. [ALLUVIUM] [CLAY]	(0.80)				
6.40 - 6.50	D	23								
6.50 - 7.00	B	24				6.50	-5.65			
6.50 - 7.00	D	25			Medium dense dark brown very silty SAND with occasional black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]					
7.00 - 7.45	D	26		7		(0.95)				
7.00 - 7.45	SPT		N = 16 (S)							
					End of Borehole at 7.45 m	7.45	-6.60			
				8						
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**BH101**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum)	18.01	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	21/09/2022	21/09/2022	Hand excavated			BS	BS	
1.20	30.50	CP	21/09/2022	23/09/2022	Dando 3000			HR/GD	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
21/09/2022	07:00	0.00			Sunny
21/09/2022	18:00	10.95	10.40	Dry	
22/09/2022	08:00	10.95	10.40	Dry	
22/09/2022	18:00	25.00	25.00	17.00	
23/09/2022	08:00	25.00	25.00	17.05	
23/09/2022	18:00	30.50	30.00		

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
18.00	250	18.00	250
30.50	200	30.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
18.50	17.10	20	15.90	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Variable head permeability test carried out; results reported separately.
4. Borehole terminated below the scheduled depth of 30.00m due to standard penetration test.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	21.00	18.00	21.00	23/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	18.00	50	Plain
1	18.00	21.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	18.00	Bentonite	23/09/2022
18.00	21.00	Gravel	23/09/2022
21.00	30.50	Bentonite	23/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum) 18.01	Sheet 1 of 7	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.30	B	2			MADE GROUND. Light brown sandy CLAY with abundant angular fine and medium gravel sized fragments of clinker and with frequent wood fragments. Sand is mainly fine and medium. [MADE GROUND] [CLAY]	(0.30)				
0.20	ES	1								
0.20	PID		< 0.1 ppm							
0.30	D	3			MADE GROUND. Dark grey SAND with abundant angular fine to coarse gravel sized fragments of clinker. Sand is fine and medium of ash. [MADE GROUND] [SAND]	0.30	17.71			
0.50	ES	4								
0.50 - 0.70	B	5								
0.50	PID		< 0.1 ppm							
0.70	D	6				(0.90)				
1.00	ES	7		1						
1.00	PID		< 0.1 ppm							
1.20	ES	8			MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. [MADE GROUND] [SAND]	1.20	16.81			
1.20 - 1.65	D	9								
1.20 - 1.65	SPT		N = 6 (S)							
1.20	PID		< 0.1 ppm							
1.80	ES	10								
1.80	PID		< 0.1 ppm							
2.00 - 2.45	D	11		2						
2.00 - 2.45	SPT		N = 5 (S)							
2.80	ES	12								
2.80	PID		< 0.1 ppm							
3.00 - 3.45	D	13		3						
3.00 - 3.45	SPT		N = 6 (S)							
3.50 - 4.00	B	16								
3.80	D	14			At 3.80m; 1 No. pocket (<10mm x 15mm) of cemented fine and medium sand (ash).					
3.80	ES	15								
3.80	PID		< 0.1 ppm							
4.00 - 4.45	D	17		4	At 4.00m; rare pockets of light grey silt (ash).					
4.00 - 4.45	SPT		N = 6 (S)							
4.80	ES	18				(6.80)				
4.80	PID		< 0.1 ppm							
5.00 - 5.45	D	19								
5.00 - 5.45	SPT		N = 7 (S)		Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum) 18.01	Sheet 2 of 7	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					At 5.00m; 1 No. pocket (5mm x 7mm) of cemented fine and medium sand (ash).					
5.80 5.80	ES PID	20	< 0.1 ppm							
6.00 - 6.45 6.00 - 6.45	D SPT	21	N = 7 (S)	6						
6.80 6.80	ES PID	22	< 0.1 ppm							
				7						
7.50 - 7.95 7.50 - 7.95	D SPT	23	N = 7 (S)		At 7.50m; rare pockets of light grey fine sand.					
7.80 7.80	ES PID	24	< 0.1 ppm							
8.00 - 8.50	B	25		8	MADE GROUND. Dark grey silty SAND with rare and occasional angular fine to coarse gravel of clinker. Sand is fine and medium. Depth of upper interface is approximate. [MADE GROUND] [SAND] At 8.00m; rare pockets (<8mm x 10mm) of brownish orange medium and coarse sand (ash).	8.00	10.01			
8.80 8.80 8.80	D ES PID	26 27	< 0.1 ppm							
9.00 - 9.45 9.00 - 9.45	D SPT	28	N = 8 (S)	9						
9.80 9.80	ES PID	29	< 0.1 ppm							
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum) 18.01	Sheet 3 of 7	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details						Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95 10.50 - 10.95	D SPT	30	N = 10 (S)							
10.80 10.80	ES PID	31	< 0.1 ppm							
				11						
11.80 11.80	ES PID	33	0.1 ppm							
12.00 - 12.45 12.00 - 12.45	D SPT	32	N = 12 (S)	12						
12.80 12.80	ES PID	34	< 0.1 ppm							
				13		(10.50)				
13.50 - 13.95 13.50 - 13.95	D SPT	35	N = 11 (S)							
13.80 13.80	ES PID	36	< 0.1 ppm							
				14						
14.80 14.80	ES PID	37	< 0.1 ppm							
15.00 - 15.45 15.00 - 15.45	D SPT	38	N = 9 (S)		Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum) 18.01	Sheet 4 of 7	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.80 15.80	ES PID	39	< 0.1 ppm							
				16						
16.50 - 16.95 16.50 - 16.95	D SPT	40	N = 12 (S)							
16.80 16.80	ES PID	41	< 0.1 ppm							
				17						
17.80 17.80	ES PID	42	0.1 ppm							
18.00 - 18.45 18.00 - 18.45	D SPT	43	N = 13 (S)	18						
18.50 - 19.00	B	45			Firm brown sandy silty CLAY with occasional black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [CLAY]	18.50	-0.49			
18.80 18.80	ES PID	44	< 0.1 ppm							
19.00	D	46		19						
19.50 - 19.95 19.50 - 19.95	D SPT	47	N = 6 (S)							
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum) 18.01	Sheet 5 of 7	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details						Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
						(3.50)					
20.50	D	48									
21.00 - 21.45	D	49		21							
21.00 - 21.50	B	50									
21.00 - 21.45	SPT		N = 6 (S)								
22.00	D	51		22	Very loose and loose brown very silty SAND with rare pockets/ layers (<10mm x 20mm) of clay and rare black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [SAND]	22.00	-3.99				
22.50 - 22.95	D	52			22.50m to 22.95m; very loose to loose.						
22.50 - 23.00	B	53									
22.50 - 22.95	SPT		N = 4 (S)								
				23							
23.50	D	54				(3.00)					
24.00 - 24.45	D	55		24							
24.00 - 24.45	SPT		N = 3 (S)								
25.00	D	56			Continued next page	25.00	-6.99				
25.00 - 25.50	B	57									

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum) 18.01	Sheet 6 of 7	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					Medium dense brown silty SAND with rare pockets/layers (<10mm x 20mm) of clay and rare black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface is approximate. [ALLUVIUM] [SAND]					
25.50 - 25.95	D	58								
25.50 - 26.00	B	59			25.50m to 25.95m; loose to medium dense					
25.50 - 25.95	SPT		N = 10 (S)							
				26						
26.50	D	60				(3.00)				
27.00 - 27.45	D	61		27						
27.00 - 27.50	B	62								
27.00 - 27.45	SPT		N = 11 (S)							
28.00	D	63		28		28.00	-9.99			
					Medium dense brown slightly gravelly silty locally slightly silty SAND with occasional black sand sized carbonaceous debris. Sand is fine to coarse. Gravel is subangular and subrounded fine and medium of mudstone and possibly chert. [ALLUVIUM] [SAND]					
28.50 - 28.95	D	64								
28.50 - 29.00	B	65								
28.50 - 28.95	SPT		N = 13 (S)							
				29						
						(2.50)				
29.50	D	66			At 29.50m; rare pockets (<10mm x 20mm) of clay.					
30.00 - 30.45	D	67								
30.00 - 30.50	B	68			Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum)	18.01	Sheet 7 of 7
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
30.00 - 30.45	SPT		N = 15 (S)							
					End of Borehole at 30.50 m	30.50	-12.49			
				31						
				32						
				33						
				34						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum)	18.01	Sheet 1 of 2
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	0.00	Dry
2.00	S		N=5 (1,1/1,1,1,2)	450	TQ4	50	1.90	Dry
3.00	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	2.90	Dry
4.00	S		N=6 (1,2/1,2,1,2)	450	TQ4	50	3.90	Dry
5.00	S		N=7 (2,2/1,2,2,2)	450	TQ4	50	4.40	Dry
6.00	S		N=7 (1,1/1,2,2,2)	450	TQ4	50	5.90	Dry
7.50	S		N=7 (1,2/2,2,1,2)	450	TQ4	50	6.90	Dry
9.00	S		N=8 (2,2/2,2,2,2)	450	TQ4	50	8.90	Dry
10.50	S		N=10 (2,1/2,3,2,3)	450	TQ4	50	10.40	Dry
12.00	S		N=12 (2,2/3,3,3,3)	450	TQ4	50	11.90	Dry
13.50	S		N=11 (1,2/3,2,3,3)	450	TQ4	50	13.40	Dry
15.00	S		N=9 (2,2/2,2,2,3)	450	TQ4	50	14.90	Dry
16.50	S		N=12 (1,2/3,3,3,3)	450	TQ4	50	16.40	Dry
18.00	S		N=13 (2,3/3,3,4,3)	450	TQ4	50	15.90	Damp
19.50	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	19.40	17.00
21.00	S		N=6 (1,0/1,2,1,2)	450	TQ4	50	20.90	16.90
22.50	S		N=4 (0,0/1,0,1,2)	450	TQ4	50	22.40	17.10
24.00	S		N=3 (0,1/0,1,0,2)	450	TQ4	50	23.90	17.00
25.50	S		N=10 (2,2/2,3,2,3)	450	TQ4	50	25.40	
27.00	S		N=11 (1,2/2,3,3,3)	450	TQ4	50	26.90	
28.50	S		N=13 (2,2/3,3,4,3)	450	TQ4	50	28.40	
30.00	S		N=15 (1,3/4,3,4,4)	450	TQ4	50	29.90	

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.20	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm
1.80	< 0.1 ppm
2.80	< 0.1 ppm
3.80	< 0.1 ppm
4.80	< 0.1 ppm
5.80	< 0.1 ppm
6.80	< 0.1 ppm
7.80	< 0.1 ppm
8.80	< 0.1 ppm
9.80	< 0.1 ppm
10.80	< 0.1 ppm
11.80	0.1 ppm
12.80	< 0.1 ppm
13.80	< 0.1 ppm
14.80	< 0.1 ppm
15.80	< 0.1 ppm
16.80	< 0.1 ppm
17.80	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum)	18.01	Sheet 2 of 2
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
18.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**BH102**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum)	18.75	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/09/2022	26/09/2022	Hand excavated			BS	BS	
1.20	30.00	CP	26/09/2022	29/09/2022	Dando 3000			HR/GD	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/09/2022	08:00	0.00			Overcast
26/09/2022	18:00	7.00	6.00	Dry	
27/09/2022	08:00	7.00	6.00	Dry	
27/09/2022	18:00	19.00	19.00	Damp	
28/09/2022	08:00	19.00	19.00	18.40	
28/09/2022	18:00	30.00	30.00	19.80	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
18.00	250	18.00	250
30.00	200	30.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
19.00	18.40	20	18.40	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Variable head permeability test carried out; results reported separately.
4. Borehole terminated at the scheduled depth of 30.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	30.00	18.00	30.00	29/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	18.00	50	Plain
1	18.00	30.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	29/09/2022
0.50	18.00	Bentonite	29/09/2022
18.00	30.00	Gravel	29/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **BH102**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum) 18.75	Sheet 1 of 6
	Hole Type	Cable Percussion		Status Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1			MADE GROUND. Light brown clayey SAND with frequent rootlets (<1mm). Sand is fine and medium of ash.					
0.10 - 0.30	B	2			[MADE GROUND] [SAND]	(0.30)				
0.10	PID		0.1 ppm							
0.30	D	3				0.30	18.45			
					MADE GROUND. Dark grey slightly sandy slightly gravelly SILT. Sand is fine to coarse, predominantly fine of ash. Gravel is fine and medium.					
0.50	ES	4								
0.50 - 0.70	B	5			[MADE GROUND] [SILT]					
0.50	PID		< 0.1 ppm							
						(0.90)				
1.00	ES	6		1						
1.00	PID		< 0.1 ppm							
1.20	ES	7				1.20	17.55			
1.20 - 1.65	D	8			MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash.					
1.20 - 1.65	SPT		N = 7 (S)							
1.20	PID		< 0.1 ppm		[MADE GROUND] [SAND]					
1.80	ES	9								
1.80	PID		< 0.1 ppm							
2.00 - 2.45	D	10		2						
2.00 - 2.45	SPT		N = 4 (S)							
2.80	ES	11								
2.80	PID		< 0.1 ppm							
3.00 - 3.45	D	12		3						
3.00 - 3.45	SPT		N = 7 (S)			(3.80)				
3.80	ES	13								
3.80	PID		< 0.1 ppm							
4.00 - 4.45	D	14		4						
4.00 - 4.50	B	15								
4.00 - 4.45	SPT		N = 8 (S)							
4.70	D	16								
4.80	ES	17								
4.80	PID		< 0.1 ppm							
5.00 - 5.45	D	18				5.00	13.75			
5.00 - 5.45	SPT		N = 9 (S)		Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH102**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum) 18.75	Sheet 2 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Dark grey silty SAND with frequent subangular fine and medium gravel sized fragments of clinker. Sand is mainly fine and medium of ash. Depth of upper interface is approximate. [MADE GROUND] [SAND]	(1.45)				
5.80	ES	19								
5.80	PID		< 0.1 ppm							
6.00 - 6.45	D	20		6						
6.00 - 6.45	SPT		N = 8 (S)							
					MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. Depth of upper interface is approximate. [MADE GROUND] [SAND]	6.45	12.30			
6.80	ES	21			At 6.80m; weakly cemented.					
7.00 - 7.45	SPT		N = 11 (S)	7						
7.50 - 7.95	D	22								
7.80	ES	23								
7.80	PID		< 0.1 ppm							
				8						
8.80	ES	24								
8.80	PID		< 0.1 ppm							
9.00 - 9.45	D	25		9						
9.00 - 9.50	B	26								
9.00 - 9.45	SPT		N = 8 (S)							
9.70	D	27			At 9.70m; with occasional subangular fine gravel sized clinker.					
9.80	ES	28								
9.80	PID		< 0.1 ppm							
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH102**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum) 18.75	Sheet 3 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details						Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95 10.50 - 10.95	D SPT	29	 N = 11 (S)							
10.80 10.80	ES PID	30	 < 0.1 ppm							
				11						
11.80 11.80	ES PID	31	 < 0.1 ppm							
12.00 - 12.45 12.00 - 12.45	D SPT	32	 N = 12 (S)	12						
12.80 12.80	ES PID	33	 < 0.1 ppm			(12.55)				
				13						
13.50 - 13.95 13.50 - 13.95	D SPT	35	 N = 9 (S)							
13.80 13.80	ES PID	34	 < 0.1 ppm							
				14						
14.80 14.80	ES PID	36	 < 0.1 ppm							
15.00 - 15.45 15.00 - 15.45	D SPT	37	 N = 11 (S)		Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH102**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum) 18.75	Sheet 4 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.80 15.80	ES PID	38	< 0.1 ppm	16						
16.50 - 16.95 16.50 - 16.95	D SPT	40	N = 11 (S)							
16.80 16.80	ES PID	39	< 0.1 ppm	17						
18.00 - 18.50 18.00 - 18.45	B SPT	43	N = 4 (S)	18						
18.80 18.80	ES PID	44	< 0.1 ppm	19	Loose dark brown sandy SILT with occasional pockets/layers (<20mm) of brown clay and abundant black sand sized carbonaceous debris. Sand is fine and medium predominantly fine. [ALLUVIUM] [SILT]	19.00	-0.25			
19.50 19.50 - 20.00 19.50 - 19.95	D B SPT	45 46	N = 4 (S)		19.50m to 19.95m; very loose to loose					
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH102**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum) 18.75	Sheet 5 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.50	D	47								
21.00 - 21.45	D	48		21						
21.00 - 21.45	SPT		N = 6 (S)							
						(5.50)				
22.00	D	49		22						
22.50 - 22.95	D	50								
22.50 - 22.95	SPT		N = 6 (S)							
				23						
24.00 - 24.45	D	51		24						
24.00 - 24.50	B	52			24.00m to 24.45m; medium dense					
24.00 - 24.45	SPT		N = 11 (S)							
					Medium dense light brown silty SAND with frequent black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	24.50	-5.75			
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH102**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum)	18.75	Sheet 6 of 6
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
25.50 - 25.95 25.50 - 25.95	D SPT	53	N = 11 (S)							
				26						
27.00 - 27.45 27.00 - 27.50 27.00 - 27.45	D B SPT	54 55	N = 12 (S)	27						
						(5.50)				
28.00	D	56		28						
28.50 - 28.95 28.50 - 28.95	D SPT	57	N = 10 (S)		28.50m to 28.95m; loose to medium dense					
29.00 - 29.50	B	58		29	29.00m to 29.45m; slightly gravelly. gravel is subrounded fine of quartz.					
30.00	D	59			End of Borehole at 30.00 m	30.00	-11.25			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH102**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum)	18.75	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=7 (1,1/1,2,1,3)	450	TQ4	50	0.00	Dry
2.00	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	1.90	Dry
3.00	S		N=7 (1,1/2,1,2,2)	450	TQ4	50	2.90	Dry
4.00	S		N=8 (1,2/2,2,2,2)	450	TQ4	50	3.90	Dry
5.00	S		N=9 (1,2/2,2,2,3)	450	TQ4	50	4.90	Dry
6.00	S		N=8 (1,1/2,2,2,2)	450	TQ4	50	5.90	Dry
7.00	S		N=11 (1,2/2,3,3,3)	450	TQ4	50	6.90	Dry
9.00	S		N=8 (1,2/1,2,3,2)	450	TQ4	50	8.90	Dry
10.50	S		N=11 (1,2/2,2,3,4)	450	TQ4	50	10.40	Dry
12.00	S		N=12 (1,2/3,3,3,3)	450	TQ4	50	11.90	Dry
13.50	S		N=9 (1,1/2,2,2,3)	450	TQ4	50	13.40	Dry
15.00	S		N=11 (2,2/3,2,3,3)	450	TQ4	50	14.90	Dry
16.50	S		N=11 (2,3/2,3,3,3)	450	TQ4	50	16.40	Dry
18.00	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	17.90	Damp
19.50	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	19.40	18.40
21.00	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	20.90	19.10
22.50	S		N=6 (1,2/1,2,1,2)	450	TQ4	50	22.40	19.00
24.00	S		N=11 (1,2/3,2,3,3)	450	TQ4	50	23.90	19.10
25.50	S		N=11 (2,1/2,3,3,3)	450	TQ4	50	25.40	19.40
27.00	S		N=12 (1,1/2,3,3,4)	450	TQ4	50	26.90	19.80
28.50	S		N=10 (1,2/2,2,2,4)	450	TQ4	50	28.40	19.80

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm
1.80	< 0.1 ppm
2.80	< 0.1 ppm
3.80	< 0.1 ppm
4.80	< 0.1 ppm
5.80	< 0.1 ppm
7.80	< 0.1 ppm
8.80	< 0.1 ppm
9.80	< 0.1 ppm
10.80	< 0.1 ppm
11.80	< 0.1 ppm
12.80	< 0.1 ppm
13.80	< 0.1 ppm
14.80	< 0.1 ppm
15.80	< 0.1 ppm
16.80	< 0.1 ppm
18.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**BH103**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum)	19.08	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	29/09/2022	29/09/2022	Hand excavated			BS	BS	
1.20	30.00	CP	29/09/2022	03/10/2022	Dando 3000			HR/GD	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
29/09/2022	08:00	0.00			Sunny
29/09/2022	18:00	10.00	10.00	Dry	
30/09/2022	08:00	10.00	10.00	Dry	
30/09/2022	18:00	23.50	23.50	19.90	
03/10/2022	08:00	23.50	23.50	18.40	
03/10/2022	18:00	30.00	30.00		

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
19.00	250	19.00	250
30.00	200	30.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
19.50	18.35	20	19.40	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Variable head permeability test carried out; results reported separately.
4. Borehole terminated at the scheduled depth of 30.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	29.20	17.20	29.20	03/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	17.20	50	Plain
1	17.20	29.20	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	17.20	Bentonite	03/10/2022
17.20	29.20	Gravel	03/10/2022
29.20	30.00	Bentonite	03/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum) 19.08	Sheet 1 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.30	B	2			MADE GROUND. Turf over dark grey silty SAND with occasional angular fine to coarse gravel sized brick and clinker and with frequent rootlets (<1mm). Sand is fine and medium of ash. [MADE GROUND] [SAND]	(0.20)				
0.20	ES	1				0.20	18.88			
0.20	PID		< 0.1 ppm		MADE GROUND. Dark grey slightly gravelly silty SAND with occasional angular fine to coarse fragments of clinker. Sand is mainly fine of ash. [MADE GROUND] [SAND]					
0.30	D	3								
0.40 - 0.80	B	5								
0.50	ES	4								
0.50	PID		< 0.1 ppm							
0.80	D	6				(1.00)				
1.00	ES	7		1						
1.00	PID		< 0.1 ppm							
1.20	ES	8				1.20	17.88			
1.20 - 1.65	D	9			MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. Depth of upper interface approximate. [MADE GROUND] [SAND]					
1.20 - 1.65	SPT		N = 9 (S)							
1.20	PID		< 0.1 ppm							
1.20	Pen		0 kPa							
1.80	ES	10								
1.80	PID		< 0.1 ppm							
2.00 - 2.45	D	11		2						
2.00 - 2.50	B	12								
2.00 - 2.45	SPT		N = 8 (S)							
2.80	ES	13								
2.80	PID		< 0.1 ppm							
3.00 - 3.45	D	14		3						
3.00 - 3.45	SPT		N = 11 (S)							
3.50	D	15								
3.80	ES	16								
3.80	PID		< 0.1 ppm							
4.00 - 4.45	D	17		4						
4.00 - 4.45	SPT		N = 11 (S)							
4.80	ES	18								
4.80	PID		< 0.1 ppm							
5.00 - 5.45	D	19								
5.00 - 5.50	B	20			Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum) 19.08	Sheet 2 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details						Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 10 (S)							
5.80	ES	21								
5.80	PID		< 0.1 ppm							
6.00 - 6.45	D	22		6						
6.00 - 6.45	SPT		N = 10 (S)							
6.80	ES	23								
6.80	PID		0.1 ppm							
				7		(11.60)				
7.50 - 7.95	D	24								
7.50 - 7.95	SPT		N = 8 (S)							
7.80	ES	25								
7.80	PID		0.2 ppm							
				8						
8.80	ES	26								
8.80	PID		< 0.1 ppm							
9.00 - 9.45	D	27		9	9.00m to 9.45m; rare angular fine gravel sized clinker.					
9.00 - 9.50	B	28								
9.00 - 9.45	SPT		N = 13 (S)							
9.80	ES	29								
9.80	PID		< 0.1 ppm							
10.00	D	30			Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum) 19.08	Sheet 3 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95	D	31								
10.50 - 11.00	B	32			10.50m to 10.95m; rare angular fine gravel sized clinker.					
10.50 - 10.95	SPT		N = 13 (S)							
10.80	ES	33								
10.80	PID		< 0.1 ppm							
				11						
11.80	ES	34								
11.80	PID		< 0.1 ppm							
12.00 - 12.45	D	35		12						
12.00 - 12.45	SPT		N = 10 (S)							
12.80	ES	37								
12.80	PID		< 0.1 ppm		MADE GROUND. Dark grey sandy SILT with occasional angular fine to medium gravel sized fragments of clinker. Sand is fine to coarse of ash. Depth of upper interface approximate. [MADE GROUND] [SILT]	12.80	6.28			
13.00	D	36		13						
13.50 - 13.95	D	38								
13.50 - 13.95	SPT		N = 10 (S)							
13.80	ES	39								
13.80	PID		< 0.1 ppm							
				14						
14.80	ES	40								
14.80	PID		< 0.1 ppm			(4.15)				
15.00 - 15.45	D	41								
15.00 - 15.50	B	42			Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum) 19.08	Sheet 4 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.00 - 15.45	SPT		N = 11 (S)							
15.80	ES	43								
15.80	PID		< 0.1 ppm							
				16						
16.50 - 16.95	D	44								
16.50 - 16.95	SPT		N = 11 (S)							
16.80	ES	45								
16.80	PID		< 0.1 ppm							
				17	MADE GROUND. Dark grey silty SAND. Sand is fine and medium predominantly fine. Depth of upper interface approximate. [MADE GROUND] [SAND]	16.95	2.13			
17.80	ES	46								
17.80	PID		< 0.1 ppm							
18.00 - 18.45	D	47		18	18.00m to 18.45m; rare angular fine gravel sized clinker.	(2.05)				
18.00 - 18.45	SPT		N = 4 (S)							
18.80	ES	48								
18.80	PID		0.2 ppm							
				19	Very loose and loose light brown very silty SAND with occasional pockets/layers (<30mm) of brown clay and frequent black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	19.00	0.08			
19.50 - 19.95	D	49								
19.50 - 20.00	B	50			19.50m to 19.95m; very loose to loose.					
19.50 - 19.95	SPT		N = 4 (S)							
20.00	ES	51								
20.00	PID		0.3 ppm							
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum) 19.08	Sheet 5 of 6	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
21.00 - 21.45	SPT		N = 3 (S)	21		(4.50)				
22.50 - 22.95	D	53		22						
22.50 - 23.00	B	54								
22.50 - 22.95	SPT		N = 6 (S)							
				23						
23.50	D	55			Medium dense light brown silty SAND with abundant black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	23.50	-4.42			
24.00 - 24.45	D	56		24						
24.00 - 24.45	SPT		N = 12 (S)							
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum)	19.08	Sheet 6 of 6
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
25.50 - 25.95 25.50 - 25.95	D SPT	57	N = 12 (S)							
26.00 - 26.50	B	58		26						
26.80	D	59				(6.50)				
27.00 - 27.45 27.00 - 27.45	D SPT	60	N = 11 (S)	27						
				28						
28.50 - 28.95 28.50 - 28.95	D SPT	61	N = 13 (S)							
29.00 - 29.50	B	62		29						
30.00	D	63			End of Borehole at 30.00 m	30.00	-10.92			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum)	19.08	Sheet 1 of 2
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	1	N=9 (1,1/2,2,2,3)	450	TQ4	50	0.00	Dry
2.00	S	1	N=8 (2,1/2,2,2,2)	450	TQ4	50	1.90	Dry
3.00	S	1	N=11 (1,2/3,2,3,3)	450	TQ4	50	2.90	Dry
4.00	S	1	N=11 (1,1/2,3,3,3)	450	TQ4	50	3.90	Dry
5.00	S	1	N=10 (1,3/2,3,2,3)	450	TQ4	50	4.90	Dry
6.00	S	1	N=10 (1,1/1,2,4,3)	450	TQ4	50	5.90	Dry
7.50	S	1	N=8 (2,2/2,2,2,2)	450	TQ4	50	7.40	Dry
9.00	S	1	N=13 (1,2/3,3,4,3)	450	TQ4	50	8.90	Dry
10.50	S	1	N=13 (2,2/2,3,4,4)	450	TQ4	50	10.40	Dry
12.00	S	1	N=10 (1,2/3,2,2,3)	450	TQ4	50	11.90	Dry
13.50	S	1	N=10 (1,1/1,2,4,3)	450	TQ4	50	13.40	Dry
15.00	S	1	N=11 (3,2/2,2,3,4)	450	TQ4	50	14.90	Dry
16.50	S	1	N=11 (1,2/3,2,3,3)	450	TQ4	50	16.40	Dry
18.00	S	1	N=4 (1,1/1,1,1,1)	450	TQ4	50	17.90	Dry
19.50	S	1	N=4 (1,1/1,1,1,1)	450	TQ4	50	19.40	18.60
21.00	S	1	N=3 (1,0/1,0,1,1)	450	TQ4	50	20.90	18.70
22.50	S	1	N=6 (1,1/1,2,1,2)	450	TQ4	50	22.40	19.90
24.00	S	1	N=12 (1,2/3,3,3,3)	450	TQ4	50	23.90	18.40
25.50	S	1	N=12 (1,1/2,3,3,4)	450	TQ4	50	25.40	
27.00	S	1	N=11 (2,2/2,2,3,4)	450	TQ4	50	26.90	18.40
28.50	S	1	N=13 (1,2/3,3,3,4)	450	TQ4	50	28.40	18.40

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)
1.20	0.00

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.20	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm
1.80	< 0.1 ppm
2.80	< 0.1 ppm
3.80	< 0.1 ppm
4.80	< 0.1 ppm
5.80	< 0.1 ppm
6.80	0.1 ppm
7.80	0.2 ppm
8.80	< 0.1 ppm
9.80	< 0.1 ppm
10.80	< 0.1 ppm
11.80	< 0.1 ppm
12.80	< 0.1 ppm
13.80	< 0.1 ppm
14.80	< 0.1 ppm
15.80	< 0.1 ppm
16.80	< 0.1 ppm
17.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum)	19.08	Sheet 2 of 2
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
18.80	0.2 ppm
20.00	0.3 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH104**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481281.83 N411790.02	Ground Elevation (m Datum)	6.52	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/10/2022	06/10/2022	Hand excavated			BS	BS	
1.20	15.80	CP	06/10/2022	07/10/2022	Dando 3000			HR/GD	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/10/2022	10:56	0.00			Fine
06/10/2022	17:00	11.00	11.00	Dry	
07/10/2022	08:00	11.00	11.00	6.40	
07/10/2022	17:00	15.50	15.50		

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
7.50	250	7.50	250
15.50	200	15.50	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
15.40	15.70	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
7.50	6.45	20	7.40	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Variable head permeability test carried out; results reported separately.
4. Borehole terminated at 15.80m after reaching bedrock.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	9.00	4.50	9.00	10/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	4.50	50	Plain
1	4.50	9.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	4.50	Bentonite	10/10/2022
4.50	9.00	Gravel	10/10/2022
9.00	15.80	Bentonite	10/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH104**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481281.83 N411790.02	Ground Elevation (m Datum)	6.52	Sheet 1 of 4
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1			MADE GROUND. Dark brown silty SAND. Sand is fine and medium of ash.	(0.20)				
0.10 - 0.30	B	2			[MADE GROUND] [SAND]					
0.10	PID		< 0.1 ppm		MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash.	0.20	6.32			
0.30	D	3			[MADE GROUND] [SAND]					
0.50	ES	4								
0.50	PID		< 0.1 ppm							
						(1.00)				
1.00	ES	5		1						
1.00	PID		< 0.1 ppm							
1.20	ES	6			MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash.	1.20	5.32			
1.20 - 1.65	D	7			[MADE GROUND] [SAND]					
1.20 - 1.70	B	8								
1.20 - 1.65	SPT		N = 4 (S)							
1.20	PID		< 0.1 ppm							
1.80	D	9								
1.90	ES	10								
1.90	PID		< 0.1 ppm							
2.00 - 2.45	D	11		2						
2.00 - 2.45	SPT		N = 5 (S)							
						(2.80)				
2.80	ES	12								
2.80	PID		0.1 ppm							
3.00 - 3.45	D	13		3						
3.00 - 3.45	SPT		N = 6 (S)							
3.80	ES	14								
3.80	PID		< 0.1 ppm							
4.00 - 4.45	D	15		4						
4.00 - 4.45	SPT		N = 4 (S)		MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. Depth of upper interface approximate.	4.00	2.52			
					[MADE GROUND] [SAND]					
						(0.80)				
4.80	ES	16				4.80	1.72			
4.80	PID		< 0.1 ppm		MADE GROUND. Dark grey silty SAND with occasional angular to subrounded fine and medium gravel sized fragments of clinker.					
5.00 - 5.45	D	17								
5.00 - 5.50	B	18								
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH104**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481281.83 N411790.02	Ground Elevation (m Datum) 6.52	Sheet 2 of 4	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.00 - 5.45	SPT		N = 5 (S)		Sand is fine and medium of ash. Depth of upper interface approximate. [MADE GROUND] [SAND] 5.00m to 5.50m; rare gravel sized clinker.					
5.70	D	19								
5.80 5.80	ES PID	20	< 0.1 ppm							
6.00 - 6.45 6.00 - 6.45	D SPT	21	N = 4 (S)	6		(2.70)				
6.80 6.80	ES PID	22	< 0.1 ppm							
				7						
7.50 - 7.95 7.50 - 7.95	D SPT	23	N = 2 (S)		MADE GROUND. Brownish dark grey silty SAND. Sand is fine and medium. Depth of upper interface approximate. [MADE GROUND] [SAND]	7.50	-0.98			
7.80 7.80	ES PID	24	< 0.1 ppm							
8.00 - 8.50	B	25		8						
8.80	D	26			At 8.80m; rare angular fine gravel sized clinker.					
9.00 - 9.45 9.00 - 9.45	D SPT	27	N = 6 (S)	9	9.00m to 9.45m; rare angular fine gravel sized clinker.	(3.50)				
10.00	D	28								
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH104**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481281.83 N411790.02	Ground Elevation (m Datum) 6.52	Sheet 3 of 4	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.95 10.50 - 10.95	D SPT	29	N = 9 (S)		10.50m to 10.95m; rare angular fine gravel sized clinker.					
				11	Loose to medium dense dark brown silty SAND with abundant black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]	11.00	-4.48			
12.00 - 12.45 12.00 - 12.50 12.00 - 12.45	D B SPT	30 31	N = 10 (S)	12						
13.00	D	32		13		(3.70)				
13.50 - 13.95 13.50 - 13.95	D SPT	33	N = 10 (S)							
				14						
15.00 - 15.30 15.00 - 15.30	D SPT	34	50/150 mm (S)		MUDSTONE. Recovered as very stiff dark reddish brown sandy CLAY. Sand is mainly fine. Residual Mercia Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	14.70	-8.18			
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH104**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481281.83 N411790.02	Ground Elevation (m Datum)	6.52	Sheet 4 of 4
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.70 - 15.80 15.70 - 15.80	D SPT	35	50/50 mm (S)			(1.10)				
					End of Borehole at 15.80 m	15.80	-9.28			
				16						
				17						
				18						
				19						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH104**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481281.83 N411790.02	Ground Elevation (m Datum)	6.52	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=4 (1,1/1,1,1,1)	450	TQ4	50	0.00	Dry
2.00	S	0	N=5 (1,1/1,1,2,1)	450	TQ4	50	1.90	Dry
3.00	S	0	N=6 (1,1/2,1,2,1)	450	TQ4	50	2.90	Dry
4.00	S	0	N=4 (1,1/1,1,1,1)	450	TQ4	50	3.90	Dry
5.00	S	0	N=5 (1,2/1,2,1,1)	450	TQ4	50	4.90	Damp
6.00	S	0	N=4 (1,0/1,1,1,1)	450	TQ4	50	5.90	Damp
7.50	S	0	N=2 (0,0/1,0,1,0)	450	TQ4	50	7.40	6.60
9.00	S	1	N=6 (1,1/1,2,1,2)	450	TQ4	50	8.90	6.70
10.50	S	0	N=9 (1,2/2,2,2,3)	450	TQ4	50	10.40	6.90
12.00	S	0	N=10 (1,2/3,2,2,3)	450	TQ4	50	11.90	6.40
13.50	S	0	N=10 (1,2/2,2,3,3)	450	TQ4	50	13.40	
15.00	S	0	50 (4,7/50 for 150mm)	300	TQ4	50	14.90	
15.70	S	0	25 (50 for 50mm/25 for 50mm)	235	TQ4	50	15.50	

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm
1.90	< 0.1 ppm
2.80	0.1 ppm
3.80	< 0.1 ppm
4.80	< 0.1 ppm
5.80	< 0.1 ppm
6.80	< 0.1 ppm
7.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**BH105**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481276.19 N411918.22	Ground Elevation (m Datum)	14.48	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	05/10/2022	05/10/2022	Hand excavated			BS	BS	
1.20	6.00	CP	05/10/2022	05/10/2022	Dando 3000			HR/GD	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
05/10/2022	08:00	0.00			Fine
05/10/2022	18:00	6.00	6.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
6.00	250	6.00	250

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
6.00	6.00	01:00	

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at 6.00m due to hard strata and relocated to BH106 following the Client's instructions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	6.00	Bentonite	05/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **BH105**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481276.19 N411918.22	Ground Elevation (m Datum) 14.48	Sheet 1 of 2
	Hole Type	Cable Percussion		Status Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	ES	1			MADE GROUND. Dark grey silty SAND with frequent rootlets (<1mm). Sand is fine and medium of ash.					
0.10 - 0.30	B	2			[MADE GROUND] [SAND]	(0.40)				
0.10	PID		< 0.1 ppm							
0.40	D	3				0.40	14.08			
0.50	ES	4			MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash.					
0.50	PID		< 0.1 ppm		[MADE GROUND] [SAND]					
					0.40m to 0.41m; occasional rootlets (<1mm).	(0.60)				
1.00	ES	5		1		1.00	13.48			
1.00	PID		0.1 ppm		MADE GROUND. Dark grey silty SAND with frequent subangular fine to coarse gravel sized fragments of clinker. Sand is fine and medium of ash.	(0.20)				
1.20	ES	6			[MADE GROUND] [SAND]	1.20	13.28			
1.20 - 1.65	D	7			MADE GROUND. Dark grey sandy SILT with frequent subangular fine and medium gravel sized fragments of clinker. Sand is fine to coarse of ash. Depth of upper interface approximate.					
1.20 - 1.65	SPT		N = 4 (S)		[MADE GROUND] [SILT]					
1.20	PID		< 0.1 ppm							
1.80	ES	8								
1.80	PID		0.1 ppm			(1.50)				
2.00 - 2.45	D	9		2						
2.00 - 2.50	B	10								
2.00 - 2.45	SPT		N = 5 (S)							
2.70	D	11				2.70	11.78			
2.80	ES	12			MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. Depth of upper interface approximate.					
2.80	PID		0.1 ppm		[MADE GROUND] [SAND]					
3.00 - 3.45	D	13		3						
3.00 - 3.45	SPT		N = 6 (S)							
						(1.30)				
3.80	ES	14								
3.80	PID		0.1 ppm							
4.00 - 4.45	D	15		4		4.00	10.48			
4.00 - 4.45	SPT		N = 7 (S)		MADE GROUND. Dark grey slightly gravelly silty SAND. Sand is fine and medium of ash. Gravel is subangular fine of clinker. Depth of upper interface approximate.					
					[MADE GROUND] [SAND]	(0.45)				
						4.45	10.03			
					MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. Depth of upper interface approximate.					
					[MADE GROUND] [SAND]					
4.80	ES	16								
4.80	PID		0.1 ppm							
5.00 - 5.45	D	17								
5.00 - 5.45	SPT		N = 10 (S)							

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH105**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481276.19 N411918.22	Ground Elevation (m Datum)	14.48	Sheet 2 of 2
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
						(1.55)				
5.80	ES	18								
5.80	PID		0.1 ppm							
6.00	SPT		50/0 mm (S)	6	End of Borehole at 6.00 m	6.00	8.48			
				7						
				8						
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH105**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481276.19 N411918.22	Ground Elevation (m Datum)	14.48	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	1	N=4 (1,1/1,1,1,1)	450	TQ4	50	0.00	Dry
2.00	S	1	N=5 (1,1/1,1,2,1)	450	TQ4	50	1.90	Dry
3.00	S	1	N=6 (1,2/1,1,2,2)	450	TQ4	50	2.90	Dry
4.00	S	1	N=7 (1,1/2,1,2,2)	450	TQ4	50	3.90	Dry
5.00	S	1	N=10 (1,2/3,2,2,3)	450	TQ4	50	4.90	Dry
6.00	S	1	N=50 (25 for 0mm/50 for 0mm)	0	TQ4	50	6.00	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	0.1 ppm
1.20	< 0.1 ppm
1.80	0.1 ppm
2.80	0.1 ppm
3.80	0.1 ppm
4.80	0.1 ppm
5.80	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH106**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481464.20 N411812.00	Ground Elevation (m Datum)	6.33	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	21/10/2022	21/10/2022	Hand excavated			BS	BS	
1.20	15.65	CP	21/10/2022	25/10/2022	Dando 3000			TG/AC	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
21/10/2022	08:00	0.00		Dry	Overcast
21/10/2022	09:40	1.20	0.00	Dry	Fine
21/10/2022	18:00	4.65	4.65	Dry	
24/10/2022	06:00	4.65	4.60	Dry	
24/10/2022	18:00	9.80	9.50	6.00	
25/10/2022	08:00	9.50	9.50	8.00	
25/10/2022	18:00	15.65	14.35	12.00	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
4.65	250	4.65	250
15.65	200	14.35	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
9.50	15.65

Water Strike Remarks

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Driller records blowing sand between 5.30m and 11.20m. SPT campaign abandoned between these depths.
3. Tiger PID (T-117408) used for photo-ionisation detection (PID).
4. Borehole terminated at 15.65m after reaching bedrock

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.50	1.00	5.50	25/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	1.00	50	Plain
1	1.00	5.50	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.00	Bentonite	25/10/2022
1.00	5.50	Gravel	25/10/2022
5.50	15.65	Bentonite	25/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**BH106**
	Client	SSE Generation Limited (SSE)				
	Fugro Reference	F212561				
	Coordinates (m)	E481464.20 N411812.00	Ground Elevation (m Datum)	6.33	Sheet 1 of 4	
	Hole Type	Cable Percussion			Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	2			MADE GROUND. Dark grey silty SAND with frequent angular fine and medium gravel sized fragments of clinker. Sand is fine and medium of ash. [MADE GROUND] [SAND] 0.00m to 0.10m; with frequent rootlets (<1mm).					
0.10	ES	1								
0.10 - 0.30	B	3								
0.10	PID		0.1 ppm							
0.40	ES	4								
0.40	PID		0.1 ppm							
0.90	ES	5								
0.90	PID		0.1 ppm	1		(2.00)				
1.20	ES	6								
1.20 - 1.65	B	7								
1.20 - 1.65	SPT		N = 8 (S)							
1.20	PID		< 0.1 ppm							
1.80	D	8								
1.80	ES	9								
1.80 - 2.00	B	10								
1.80	PID		< 0.1 ppm	2	MADE GROUND. Orangish brown silty SAND, locally grading to silty SAND, with frequent angular fine and medium gravel sized fragments of clinker and with occasional, locally frequent pockets (<10mm) of grey sandy silt. Sand is fine to coarse of ash. [MADE GROUND] [SAND] 2.20m to 2.65m; with frequent fragments of decomposed wood (2mm x 4mm).	2.00	4.33			
2.20 - 2.65	D	11								
2.20 - 2.65	SPT		N = 5 (S)							
2.65	D	12								
2.80	ES	13								
2.80 - 3.10	B	14								
2.80	PID		0.1 ppm							
				3		(2.00)				
3.20 - 3.65	D	15								
3.20 - 3.65	SPT		N = 7 (S)							
3.80	D	16								
3.80	ES	17								
3.80 - 4.10	B	18								
3.80	PID		< 0.1 ppm	4	MADE GROUND. Dark brown streaked black silty SAND with frequent fragments of decomposed wood (2mm x 4mm) and frequent pockets (<10mm) of grey sandy clay. Sand is fine and medium. [MADE GROUND] [SAND] 4.30 to 4.65m; occasional subangular fine gravel sized fragments of clinker.	4.00	2.33			
4.20 - 4.65	D	19								
4.20 - 4.65	SPT		N = 6 (S)							
4.30	D	20				(0.65)				
4.30	ES	21								
4.30 - 4.65	B	22								
4.30	PID		< 0.1 ppm							
					Possibly MADE GROUND. Dark brown silty SAND with rare subangular fine gravel sized fragments of mudstone and with frequent black sand sized fragments of carbonaceous debris. Sand is fine and medium. [MADE GROUND] [SAND]	4.65	1.68			
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH106**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481464.20 N411812.00	Ground Elevation (m Datum) 6.33	Sheet 2 of 4	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.30 5.30 - 5.80	D B	23 24			At 5.30m; occasional gravel and frequent black sand sized fragments of carbonaceous debris. Sand is fine and medium. Gravel is subrounded fine of cement.	(1.65)				
				6						
6.30 6.30 - 6.80	D B	25 26			Dark brown locally slightly gravelly silty SAND with frequent black sand sized fragments of carbonaceous debris. Sand is fine and medium. Gravel is subangular fine of mudstone. [ALLUVIUM] [SAND]	6.30	0.03			
				7						
7.30 7.30 - 7.80	D B	27 28				(3.00)				
				8						
8.30 - 8.80 8.30 - 8.80	B D	30 29			8.30m to 8.80m; slightly gravelly					
				9						
9.30 9.30 - 9.80	D D	31 32			Dark brown clayey SAND with occasional pockets (<50mm) of brown clay and frequent black sand sized fragments of carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	9.30	-2.97			
						(1.00)				
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**BH106**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481464.20 N411812.00	Ground Elevation (m Datum) 6.33	Sheet 3 of 4	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.30	D	33								
10.30 - 10.80	B	34			Stiff dark brown sandy CLAY. Sand is fine and medium. [ALLUVIUM] [CLAY]	10.30	-3.97			
				11		(1.50)				
11.20 - 11.65	D	35								
11.20 - 11.65	SPT		N = 11 (S)							
11.80	D	36				11.80	-5.47			
11.80 - 12.10	B	37			Dark brown sandy becoming slightly sandy CLAY. Sand is fine and medium. [ALLUVIUM] [CLAY]					
				12						
12.20 - 12.65	D	38								
12.20 - 12.65	SPT		N = 11 (S)			(1.30)				
12.80	D	39								
12.80 - 13.10	B	40			12.80m to 13.10m; occasional pockets (<80mm) of soft brown clay.					
				13		13.10	-6.77			
13.20	D	41			MUDSTONE. Recovered as dark brown CLAY with frequent fine and medium sand sized mudstone peds occasional angular fine gravel sized extremely weak mudstone lithorelicts and frequent pockets (<30mm) of brown clay. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.50)				
13.20 - 13.60	B	42				13.60	-7.27			
13.80 - 14.20	B	44			MUDSTONE. Recovered as stiff and very stiff greenish grey, and white stained dark brown CLAY with frequent fine to coarse sand sized mudstone peds occasional locally frequent angular fine to coarse gravel sized extremely weak mudstone and gypsum lithorelicts and rare cobble sized (<70mm x 120mm) corestones of extremely weak mudstone and gypsum. Destructured Mercia Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]						
13.80 - 14.20	D	43								
				14						
14.20 - 14.65	D	45								
14.20 - 14.65	SPT		N = 78 (S)							
						(2.05)				
14.80	D	47								
14.80 - 15.10	B	48								
14.80 - 15.20	D	46								
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH106**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481464.20 N411812.00	Ground Elevation (m Datum)	6.33	Sheet 4 of 4
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.20 - 15.58 15.20 - 15.58	D SPT	49	100/230 mm (S)		End of Borehole at 15.65 m	15.65	-9.32			
				16						
				17						
				18						
				19						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH106**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481464.20 N411812.00	Ground Elevation (m Datum)	6.33	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=8 (1,2/3,2,1,2)	450	EQU061	60	0.00	Dry
2.20	S	0	N=5 (2,3/2,1,1,1)	450	EQU061	60	2.20	Dry
3.20	S	0	N=7 (1,2/1,3,2,1)	450	EQU061	60	3.20	Dry
4.20	S	1	N=6 (1,150/2,1,2,1)	450	EQU061	60	4.20	Dry
11.20	S	0	N=11 (2,2/2,3,3,3)	450	EQU061	60	11.20	8.00
12.20	S	0	N=11 (2,2/2,3,3,3)	450	EQU061	60	12.20	8.00
14.20	S	0	N=78 (2,5/10,15,26,27)	450	EQU061	60	14.20	8.00
15.20	S	0	N=100 (5,11/100 for 230mm)	380	EQU061	60	14.35	8.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.40	0.1 ppm
0.90	0.1 ppm
1.20	< 0.1 ppm
1.80	< 0.1 ppm
2.80	0.1 ppm
3.80	< 0.1 ppm
4.30	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**DS101**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481484.92 N411850.94	Ground Elevation (m Datum)	7.22	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	29/09/2022	29/09/2022	Hand excavated			BS	BS	
1.20	5.00	WLS	01/11/2022	01/11/2022	Dynamic Sampler : DS4			L/S	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
29/09/2022	15:49	0.00			Fine
29/09/2022	16:15	1.20		Dry	Dry
01/11/2022	08:00	1.20	0.00	Dry	
01/11/2022	18:00	5.00	0.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
5.00	101		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	5.00	01/11/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	5.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.30	Concrete	01/11/2022
0.30	0.50	Bentonite	01/11/2022
0.50	5.00	Gravel	01/11/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **DS101**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481484.92 N411850.94	Ground Elevation (m Datum) 7.22	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler	Status	Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1				MADE GROUND. Dark brown SAND with occasional angular and subangular fine and medium gravel sized fragments of brick and clinker and with abundant rootlets (<1mm). Sand is fine and medium of ash. [MADE GROUND] [SAND]	(0.20)				
0.10	ES	101					0.20	7.02			
0.10	ES	2									
0.10 - 0.40	B	3									
0.10	PID		< 0.1 ppm								
0.40	D	4				MADE GROUND. Dark grey SAND with frequent angular and subangular gravel sized fragments of clinker possibly slag and brick. Sand is fine and medium of ash. [MADE GROUND] [SAND]					
0.40	ES	104									
0.40	ES	5									
0.40 - 0.70	B	6									
0.40	PID		0.1 ppm								
0.70	ES	7					(1.00)				
0.70	PID		< 0.1 ppm								
0.90	ES	107									
0.90	PID		0.1 ppm		1						
1.20	ES	108		1.20		MADE GROUND. Dark grey silty SAND with occasional angular fine to coarse gravel sized fragments of clinker and possibly slag. Sand is mainly fine and medium of ash. [MADE GROUND] [SAND]	1.20	6.02			
1.20	ES	8					(0.45)				
1.20	PID		0.1 ppm								
				(100)							
1.65 - 2.00	ES	109				MADE GROUND. Light grey silty SAND. Sand is fine of ash. [MADE GROUND] [SAND]	1.65	5.57			
1.65	PID		0.1 ppm				(0.20)				
						MADE GROUND. Dark grey speckled light grey silty SAND with occasional angular fine to coarse gravel sized fragments of clinker and possibly slag. Sand is mainly fine and medium of ash. [MADE GROUND] [SAND]	1.85	5.37			
				2.00	2		(0.45)				
						MADE GROUND. Light grey silty SAND with occasional angular fine to coarse gravel sized fragments of clinker and possibly slag. Sand is fine of ash. [MADE GROUND] [SAND]	2.30	4.92			
2.50 - 3.00	ES	110		(96)							
2.50	PID		0.1 ppm								
				3.00	3		(1.30)				
3.50 - 4.00	ES	111		(98)							
3.50	PID		0.1 ppm				3.60	3.62			
						MADE GROUND. Dark grey speckled light grey silty SAND with frequent angular fine to coarse gravel sized fragments of clinker and possibly slag. Sand is fine and medium of ash. [MADE GROUND] [SAND]					
				4.00	4		(1.40)				
4.50 - 5.00	ES	112		(96)							
4.50	PID		0.1 ppm								
				5.00		End of Borehole at 5.00 m	5.00	2.22			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481484.92 N411850.94	Ground Elevation (m Datum)	7.22	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	0.1 ppm
0.70	< 0.1 ppm
0.90	0.1 ppm
1.20	0.1 ppm
1.65	0.1 ppm
2.50	0.1 ppm
3.50	0.1 ppm
4.50	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**DS103**	
Fugro Reference	F212561				
Coordinates (m)	E481641.20 N411899.60	Ground Elevation (m Datum)	18.70	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	29/09/2022	29/09/2022	Hand excavated			BS	BS	
1.20	5.00	WS	29/09/2022	29/09/2022	Archway Dart			AJ	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
29/09/2022	15:30	0.00			Fine
29/09/2022	17:00	5.00	0.00	Dry	Fine

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
5.00	87		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	5.00	29/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	5.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	29/09/2022
0.50	5.00	Gravel	29/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **DS103**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481641.20 N411899.60	Ground Elevation (m Datum) 18.70	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler		Status Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1				MADE GROUND. Dark brown silty SAND with abundant rootlets (<1mm). Sand is fine and medium of ash. [MADE GROUND] [SAND]	(0.30)				
0.10	ES	2									
0.10 - 0.40	B	3									
0.10	PID		< 0.1 ppm				0.30	18.40			
0.40	D	4				MADE GROUND. Dark grey silty SAND. Sand is fine of ash. [MADE GROUND] [SAND]					
0.40	ES	5									
0.40 - 0.70	B	6									
0.40	PID		0.1 ppm								
0.70	ES	7									
0.70	PID		< 0.1 ppm				(0.90)				
					1						
1.20	ES	8		1.20		MADE GROUND. Dark grey slightly gravelly silty SAND. Sand is fine. Gravel is angular fine and medium fragments of clinker and slag. [MADE GROUND] [SAND]	1.20	17.50			
1.20	PID		< 0.1 ppm								
1.50 - 2.00	ES	10									
1.50	PID		< 0.1 ppm	(92)							
				2.00	2						
2.50 - 3.00	ES	11		(96)							
2.50	PID		< 0.1 ppm								
				3.00	3		(3.80)				
3.50 - 4.00	ES	12		(97)							
3.50	PID		< 0.1 ppm								
				4.00	4						
4.50 - 5.00	ES	13		(96)							
4.50	PID		< 0.1 ppm								
				5.00		End of Borehole at 5.00 m	5.00	13.70			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481641.20 N411899.60	Ground Elevation (m Datum)	18.70	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**DS105**	
Fugro Reference	F212561				
Coordinates (m)	E481499.58 N412078.89	Ground Elevation (m Datum)	18.70	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	27/09/2022	27/09/2022	Hand excavated			BS	BS	
1.20	5.00	WS	27/09/2022	27/09/2022	Archway Dart			AJ	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
27/09/2022	13:30	0.00			Fine
27/09/2022	17:00	5.00	0.00	Dry	Fine

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
5.00	87		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	5.00	27/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	4.50	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	27/09/2022
0.50	5.00	Gravel	27/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**DS105**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481499.58 N412078.89	Ground Elevation (m Datum) 18.70	Sheet 1 of 1	
	Hole Type	Dynamic (Windowless) Sampler		Status	Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	2				MADE GROUND. Light brown silty SAND with abundant rootlets (<1mm). Sand is fine of ash. [MADE GROUND] [SAND]	(0.30)				
0.10	ES	1									
0.10 - 0.40	B	3									
0.10	PID		< 0.1 ppm				0.30	18.40			
0.40	D	4				MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. [MADE GROUND] [SAND]					
0.40	ES	5									
0.40 - 0.70	B	6									
0.40	PID		< 0.1 ppm								
0.80	ES	7									
0.80	PID		< 0.1 ppm		1						
1.20	ES	8		1.20							
1.20	PID		< 0.1 ppm								
1.50 - 2.00	ES	9									
1.50	PID		< 0.1 ppm	(100)							
2.00	PID		0.1 ppm	2.00	2						
2.50 - 3.00	ES	10		(100)							
2.50	PID		0.1 ppm				(4.70)				
3.00	PID		< 0.1 ppm	3.00	3						
3.50 - 4.00	ES	11		(100)							
3.50	PID		< 0.1 ppm								
4.00	PID		0.1 ppm	4.00	4						
4.50 - 5.00	ES	12		(100)							
4.50	PID		0.1 ppm								
				5.00		End of Borehole at 5.00 m	5.00	13.70			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS105**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481499.58 N412078.89	Ground Elevation (m Datum)	18.70	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.00	0.1 ppm
2.50	0.1 ppm
3.00	< 0.1 ppm
3.50	< 0.1 ppm
4.00	0.1 ppm
4.50	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**DS106**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481481.09 N411979.01	Ground Elevation (m Datum)	18.43	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	30/09/2022	30/09/2022	Hand excavated			BS	BS	
1.20	5.00	WS	30/09/2022	30/09/2022	Archway Dart			AJ	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
30/09/2022	08:00	0.00			Sunny
30/09/2022	18:00	5.00	0.00	Dry	Fine

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
5.00	87		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	5.00	30/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	4.50	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	30/09/2022
0.50	5.00	Gravel	30/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **DS106**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481481.09 N411979.01	Ground Elevation (m Datum) 18.43	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler		Status Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1				MADE GROUND. Light brown silty SAND with abundant rootlets (<1mm). Sand is fine of ash. [MADE GROUND] [SAND]	(0.30)				
0.10	ES	2									
0.10 - 0.40	B	3									
0.10	PID		< 0.1 ppm				0.30	18.13			
0.40	D	4				MADE GROUND. Dark grey silty SAND. Sand is fine of ash. [MADE GROUND] [SAND]					
0.40	ES	5									
0.40 - 0.70	B	6									
0.40	PID		< 0.1 ppm								
0.70	ES	7									
0.70	PID		< 0.1 ppm				(0.90)				
					1						
1.20	ES	8		1.20		MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. [MADE GROUND] [SAND]	1.20	17.23			
1.20	PID		< 0.1 ppm								
1.50 - 2.00	ES	9									
1.50	PID		< 0.1 ppm	(100)							
				2.00	2						
2.50 - 3.00	ES	10		(100)							
2.50	PID		< 0.1 ppm								
				3.00	3		(3.80)				
3.50 - 4.00	ES	11		(100)							
3.50	PID		< 0.1 ppm								
				4.00	4						
4.50 - 5.00	ES	12		(97)							
4.50	PID		< 0.1 ppm								
				5.00		End of Borehole at 5.00 m	5.00	13.43			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS106**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481481.09 N411979.01	Ground Elevation (m Datum)	18.43	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**DS107**	
Fugro Reference	F212561				
Coordinates (m)	E481506.26 N412145.26	Ground Elevation (m Datum)	18.72	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	27/09/2022	27/09/2022	Hand excavated			BS	BS	
1.20	5.00	WS	27/09/2022	27/09/2022	Archway Dart			AJ	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
27/09/2022	08:00	0.00			Fine
27/09/2022	15:00	5.00	0.00	Dry	Fine

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
5.00	87		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	5.00	27/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	4.50	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	27/09/2022
0.50	5.00	Gravel	27/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **DS107**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481506.26 N412145.26	Ground Elevation (m Datum) 18.72	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler		Status Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	2				MADE GROUND. Light brown sandy CLAY with frequent subangular fine gravel sized fragments of clinker. Sand is fine and medium mainly of ash. [MADE GROUND] [CLAY]	(0.40)				
0.10	D	4									
0.10	ES	1									
0.10 - 0.40	B	5									
0.10	PID		< 0.1 ppm								
0.40	D	7				MADE GROUND. Light grey sandy SILT with occasional subangular fine and medium gravel sized fragments of clinker. Sand is fine to coarse predominantly fine and medium. [MADE GROUND] [SILT]	0.40	18.32			
0.40	ES	4									
0.40 - 0.70	B	8									
0.40	PID		< 0.1 ppm								
0.80	ES	8					(0.80)				
0.80	PID		< 0.1 ppm								
					1						
1.20	ES	9		1.20		MADE GROUND. Dark grey silty SAND with frequent angular fine to coarse gravel sized fragments of clinker. Sand is fine. [MADE GROUND] [SAND]	1.20	17.52			
1.20	PID		< 0.1 ppm								
1.50 - 2.00	ES	9									
1.50	PID		< 0.1 ppm	(100)			(0.80)				
				2.00	2	MADE GROUND. Dark grey silty SAND. Sand is fine of ash. [MADE GROUND] [SAND]	2.00	16.72			
2.50 - 3.00	ES	10		(100)							
2.50	PID		< 0.1 ppm								
				3.00	3						
3.50 - 4.00	ES	11		(96)			(3.00)				
3.50	PID		< 0.1 ppm								
				4.00	4						
4.50 - 5.00	ES	12		(95)							
4.50	PID		< 0.1 ppm								
				5.00		End of Borehole at 5.00 m	5.00	13.72			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS107**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481506.26 N412145.26	Ground Elevation (m Datum)	18.72	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**DS108**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481509.08 N411906.87	Ground Elevation (m Datum)	17.78	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	29/09/2022	29/09/2022	Hand excavated			BS	BS	
1.20	5.00	WS	29/09/2022	29/09/2022	Archway Dart			AJ	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
29/09/2022	13:05	0.00			Fine
29/09/2022	15:15	5.00	0.00	Dry	Fine

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
5.00	87		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	5.00	29/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	5.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	29/09/2022
0.50	5.00	Gravel	29/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **DS108**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481509.08 N411906.87	Ground Elevation (m Datum) 17.78	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler		Status Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1				MADE GROUND. Dark brown silty SAND with abundant rootlets (<1mm). Sand is fine and medium of ash. [MADE GROUND] [SAND]	(0.15)				
0.10	ES	2					0.15	17.63			
0.10	PID		< 0.1 ppm			MADE GROUND. Dark grey slightly sandy slightly gravelly SILT. Sand is fine to coarse of ash. Gravel is fine and medium. [MADE GROUND] [SILT]					
0.40	D	3									
0.40	ES	4									
0.40 - 0.70	B	5									
0.40	PID		< 0.1 ppm								
0.70	ES	6					(1.05)				
0.70	PID		< 0.1 ppm								
					1						
1.20	ES	7		1.20			1.20	16.58			
1.20	PID		< 0.1 ppm			MADE GROUND. Dark grey silty SAND. Sand is fine of ash. [MADE GROUND] [SAND]					
1.50 - 2.00	ES	10									
1.50	PID		< 0.1 ppm	(100)							
				2.00	2						
2.50 - 3.00	ES	9		(95)							
2.50	PID		< 0.1 ppm								
				3.00	3		(3.80)				
3.50 - 4.00	ES	11		(96)							
3.50	PID		< 0.1 ppm								
				4.00	4						
4.50 - 5.00	ES	12		(100)							
4.50	PID		< 0.1 ppm								
				5.00		End of Borehole at 5.00 m	5.00	12.78			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS108**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481509.08 N411906.87	Ground Elevation (m Datum)	17.78	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**DS109**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481283.12 N412224.88	Ground Elevation (m Datum)	18.30	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	28/09/2022	28/09/2022	Hand excavated			BS	BS	
1.20	5.00	WLS	05/10/2022	05/10/2022	Archway Dart			AJ	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
28/09/2022	11:45	0.00			Fine
28/09/2022	12:17	5.00	0.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	5.00	05/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	5.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.30	Concrete	05/10/2022
0.30	0.50	Bentonite	05/10/2022
0.50	5.00	Gravel	05/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **DS109**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481283.12 N412224.88	Ground Elevation (m Datum) 18.30	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler		Status Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10	ES PID	2	0.1 ppm			MADE GROUND. Light brown silty SAND with abundant rootlets (<1mm). Sand is fine and medium of ash. [MADE GROUND] [SAND]	(0.40)				
0.40 0.40	ES PID	5	< 0.1 ppm			MADE GROUND. Dark grey silty SAND. Sand is fine and medium predominantly fine of ash. [MADE GROUND] [SAND]	0.40	17.90			
0.70 0.70	ES PID	7	0.1 ppm		1		(0.80)				
1.20 1.20	ES PID	8	< 0.1 ppm	1.20		MADE GROUND. Dark grey slightly gravelly silty SAND. Sand is fine and medium of ash. Gravel is angular fine and medium fragments of clinker. [MADE GROUND] [SAND]	1.20	17.10			
1.50 - 2.00 1.50 - 2.00 1.50	D ES PID	13 9	< 0.1 ppm	(100)							
				2.00	2						
2.50 - 3.00 2.50 - 3.00 2.50	D ES PID	14 10	< 0.1 ppm	(100)							
				3.00	3		(3.80)				
3.50 - 4.00 3.50 - 4.00 3.50	D ES PID	16 11	< 0.1 ppm	(98)							
				4.00	4						
4.50 - 5.00 4.50 - 5.00 4.50	D ES PID	15 12	< 0.1 ppm	(100)							
				5.00		End of Borehole at 5.00 m	5.00	13.30			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS109**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481283.12 N412224.88	Ground Elevation (m Datum)	18.30	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.40	< 0.1 ppm
0.70	0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	**DS110**
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Coordinates (m)	E481148.08 N412166.12	Ground Elevation (m Datum)	9.53	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	28/09/2022	28/09/2022	Hand excavated			BS	BS	
1.20	5.00	WS	29/09/2022	29/09/2022	Archway Dart			AJ	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
28/09/2022	15:05	0.00			Fine
28/09/2022	15:55	1.20		Dry	Fine
29/09/2022	08:00	1.20	0.00	Dry	
29/09/2022	10:00	5.00	0.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	87		
5.00	77		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	5.00	29/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	5.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	29/09/2022
0.50	5.00	Gravel	29/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **DS110**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481148.08 N412166.12	Ground Elevation (m Datum) 9.53	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler		Status Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1				MADE GROUND. Dark brown silty SAND with abundant rootlets (<1mm). Sand is fine and medium of ash. [MADE GROUND] [SAND]	(0.15)				
0.10	ES	2					0.15	9.38			
0.10	PID		0.1 ppm			MADE GROUND. Dark grey silty SAND. Sand is fine and medium predominantly fine of ash. [MADE GROUND] [SAND]					
0.40	D	3									
0.40	ES	4									
0.40 - 0.70	B	5									
0.40	PID		0.1 ppm								
0.70	ES	6					(1.05)				
0.70	PID		0.1 ppm								
					1						
1.20	ES	7		1.20		MADE GROUND. Dark grey silty SAND. Sand is fine of ash. [MADE GROUND] [SAND]	1.20	8.33			
1.20	PID		0.1 ppm								
1.50 - 2.00	ES	9									
1.50	PID		< 0.1 ppm	(100)							
				2.00	2						
2.50 - 3.00	ES	10		(100)							
2.50	PID		< 0.1 ppm								
				3.00	3		(3.80)				
3.50 - 4.00	D	13		(100)							
3.50 - 4.00	ES	11									
3.50	PID		< 0.1 ppm								
				4.00	4						
4.50 - 5.00	ES	12		(100)							
4.50	PID		< 0.1 ppm								
				5.00		End of Borehole at 5.00 m	5.00	4.53			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS110**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481148.08 N412166.12	Ground Elevation (m Datum)	9.53	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.40	0.1 ppm
0.70	0.1 ppm
1.20	0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**DS111**	
Fugro Reference	F212561				
Coordinates (m)	E481075.00 N411944.38	Ground Elevation (m Datum)	5.22	Sheet 1 of 1	
Hole Type	Dynamic (Windowless) Sampler			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	28/09/2022	28/09/2022	Hand excavated			BS	BS	
1.20	4.70	WLS	29/09/2022	29/09/2022	Archway Dart			AJ	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
28/09/2022	16:08	0.00			Fine
28/09/2022	16:26	1.20		Dry	Fine
29/09/2022	10:00	1.20	0.00	Dry	
29/09/2022	12:30	5.00	0.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	87		
5.00	77		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation and drilling.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Tiger PID (T-117408) used for photo-ionisation detection (PID).
3. Borehole terminated at the scheduled depth of 5.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	0.50	4.70	29/09/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	0.50	50	Plain
1	0.50	4.70	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	29/09/2022
0.50	4.70	Gravel	29/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **DS111**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E481075.00 N411944.38	Ground Elevation (m Datum) 5.22	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler		Status Final

Sampling and In Situ Testing					Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Run Depth (m) (Recovery) (%)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1				MADE GROUND. Light brown silty SAND with angular fine and medium gravel sized fragments of clinker. Sand is fine and medium of ash. [MADE GROUND] [SAND]	(0.20)				
0.10	ES	2					0.20	5.02			
0.10 - 0.40	B	3				MADE GROUND. Dark grey silty SAND with angular fine to coarse gravel sized fragments of clinker and possibly slag and with rare angular cobble sized (<85mm x 150mm) fragments of clinker and slag. Sand is fine and medium of ash. [MADE GROUND] [SAND]					
0.10	PID		< 0.1 ppm								
0.40	D	4									
0.40	ES	5									
0.40 - 0.70	B	6									
0.40	PID		< 0.1 ppm								
0.70	ES	7					(1.00)				
0.70	PID		< 0.1 ppm		1						
1.20	ES	8		1.20		MADE GROUND. Dark grey silty SAND. Sand is fine and medium of ash. [MADE GROUND] [SAND]	1.20	4.02			
1.20	PID		< 0.1 ppm								
1.50 - 2.00	ES	9					(0.66)				
1.50	PID		< 0.1 ppm	(100)							
				2.00	2	MADE GROUND. Dark grey mottled orangey brown silty SAND with angular fine to coarse gravel sized fragments of concrete and clinker. Sand is fine and medium of ash. [MADE GROUND] [SAND]	1.86	3.36			
2.50 - 3.00	B	13		(95)							
2.50 - 3.00	ES	10									
2.50	PID		< 0.1 ppm								
				3.00	3						
							(3.14)				
3.50 - 4.00	ES	11		(90)							
3.50	PID		< 0.1 ppm								
4.00 - 4.70	ES	12		4.00	4						
4.00	PID		0.1 ppm								
				(70)							
				4.70							
				5.00		End of Borehole at 5.00 m	5.00	0.22			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS111**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481075.00 N411944.38	Ground Elevation (m Datum)	5.22	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.00	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
Client	SSE Generation Limited (SSE)			**AR-BH01**
Fugro Reference	F212561			
Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum)	2.32	Sheet 1 of 1
Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	21/09/2022	21/09/2022	Hand excavated			BS	BS	
1.20	11.25	CP	21/09/2022	22/09/2022	Dando 2000			BS	BS	
11.25	25.00	RC	14/10/2022	17/10/2022	Comacchio MC300		PCD	DR/DQ/RC	RS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
21/09/2022	08:30	0.00			Sunny
21/09/2022	17:55	5.00	4.50	4.50	Clear
22/09/2022	08:00	5.00	4.50	2.00	
22/09/2022	18:00	11.20	11.20	5.00	
14/10/2022	07:30	11.20	11.20	2.40	Dry, sunny
14/10/2022	18:00	16.75	11.20	2.40	
17/10/2022	08:00	16.75	11.20	1.64	
17/10/2022	17:30	25.00	11.20	2.35	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
11.25	12.25	P	60	Brown	00:35
12.25	13.75	P	60	Brown	00:45
13.75	15.25	P	60	Brown	00:28
15.25	16.75	P	60	Brown	00:30
16.75	18.25	P	100	Brown	00:36
18.25	19.75	P	100	Brown	00:39
19.75	21.25	P	100	Grey	00:41
21.25	22.75	P	100	Grey	00:46
22.75	24.25	P	100	Grey	00:44
24.25	25.00	P	100	Grey	00:23

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
11.25	12.25	102
12.25	13.75	102
13.75	15.25	102
15.25	16.75	102
16.75	18.25	102
18.25	19.75	102
19.75	21.25	102
21.25	22.75	102
22.75	24.25	102
24.25	25.00	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
5.00	250	4.50	250
11.20	200	11.20	200
25.00	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark
10.90	11.20	01:00	rock

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	10.00

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 11.25m and continued by rotary coring techniques to 25.00m.
3. SPT sample D23 at 9.00m possibly affected by drilling disturbance.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Tiger PID (T-117408) used for photo-ionisation detection (PID).
6. Variable head permeability test carried out; results reported separately.
7. Borehole terminated at scheduled depth of 25.00m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	2.00	5.00	18/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	2.00	50	Plain
1	2.00	5.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	18/10/2022
0.50	2.00	Bentonite	18/10/2022
2.00	5.00	Gravel	18/10/2022
5.00	25.00	Bentonite	18/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **AR-BH01**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum) 2.32	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
0.10	D	1							MADE GROUND. Light brown SAND with abundant coarse angular to subangular gravel sized fragments of concrete and quartz, with frequent angular cobble sized (90-120mm) fragments of quartz and concrete and with frequent rootlets (<1mm). Sand is fine to coarse. [MADE GROUND]						
0.10	ES	2													
0.10 - 0.40	B	3													
0.10	PID		< 0.1 ppm												
0.45	ES	4													
0.45	PID		0.1 ppm							(1.20)					
0.80	ES	5													
0.80	PID		0.1 ppm												
1.00	D	6						1							
1.20	ES	7							1.10m to 1.20m; reddish brown silty sand with occasional pockets (<10mm) of red clay. Sand is fine and medium.	1.20	1.12				
1.20 - 1.65	B	8							MADE GROUND. Dark brown silty SAND with abundant black sand sized carbonaceous debris, with abundant fine gravel sized angular and subangular fragments of concrete and with occasional pockets (<20mm) of dark brown sandy clay. Sand is mainly fine and medium. [MADE GROUND] [SAND]						
1.20 - 1.65	SPT		N = 2 (S)												
1.20	PID		0.2 ppm												
1.30	D	9													
1.50	D	10								(1.30)					
2.00 - 2.45	B	11						2							
2.00 - 2.45	SPT		N = 3 (S)												
2.50	D	12							Dark brown clayey SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	2.50	-0.18				
										(0.50)					
3.00 - 3.45	B	13						3	Very loose dark brown slightly gravelly clayey SAND with frequent black sand sized carbonaceous debris. Sand is predominantly fine and medium. Gravel is fine. Depth of upper interface approximate. [ALLUVIUM] [SAND]	3.00	-0.68				
3.00 - 3.45	SPT		N = 2 (S)												
3.50	D	14								(1.00)					
4.00 - 4.45	D	15						4	Loose dark brown silty SAND with frequent pockets (<20mm) of dark brown clay and occasional black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	4.00	-1.68				
4.00 - 4.45	SPT		N = 8 (S)												
4.50	D	16								(1.45)					
5.00 - 5.45	D	17													
5.00 - 5.45	SPT		N = 9 (S)												

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**AR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum) 2.32	Sheet 2 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.50	D	18							Loose and medium dense dark brown slightly gravelly silty SAND with frequent pockets (<20mm) of dark brown clay and occasional black sand sized carbonaceous debris. Sand is mainly fine and medium, gravel is subangular and subrounded fine of mudstone. Depth of upper interface approximate. [ALLUVIUM] [SAND]	5.45	-3.13			
6.00 - 6.45 6.00 - 6.45	B SPT	19	N = 12 (S)					6	6.00m to 6.45m: lense of brown slightly gravelly sandy CLAY					
6.70	D	20							6.70m to 9.45m; frequent pockets (<50mm) of dark brown clay.					
								7						
7.50 - 7.95 7.50 - 7.95	D SPT	21	N = 8 (S)						7.50m to 7.95m; occasional pockets (<50mm) of dark brown clay. Gravel is subangular and subrounded fine of mudstone and possible lignite.	(4.00)				
								8						
8.20	D	22							At 8.20m; gravel absent.					
9.00 - 9.45 9.00 - 9.45	D SPT	23	N = 3 (S)					9						
									Medium dense dark brown silty SAND with abundant black sand sized carbonaceous debris. Sand is fine and medium. Depth of upper interface approximate. [ALLUVIUM] [SAND]	9.45	-7.13			
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **AR-BH01**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum) 2.32	Sheet 3 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.20	D	24								(1.35)					
10.50 - 10.95	D	25													
10.50 - 10.95	SPT		N = 25 (S)												
										10.80	-8.48				
10.90	D	26							MUDSTONE. Recovered as firm and stiff dark reddish brown and dark red SILT with occasional angular fine and medium gravel sized mudstone lithorelicts and frequent fine to coarse sand sized mudstone peds. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]						
10.90 - 11.20	B	27						11		(0.40)					
11.20 - 11.25	D	28								11.20	-8.88				
11.20 - 11.24	SPT		50/20 mm (S)							(0.05)	-8.93				
11.25 - 11.45	C	29								11.25					
11.45 - 11.60	IL	30							MUDSTONE. Recovered as very stiff greenish grey CLAY with abundant angular coarse gravel sized extremely weak mudstone lithorelicts. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]						
11.25 - 12.25				100	96	80	55			(1.00)					
11.25 - 12.25							130		Medium strong greenish grey locally reddish brown MUDSTONE with subhorizontal (5 to 10 degrees) very closely to closely spaced gypsum veins (1mm to 35mm). Partially weathered. Bedding fractures are subhorizontal (5 to 10 degrees) closely to medium spaced undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]						
							230	12	11.78m to 11.79m; subhorizontal (<10 degrees) gypsum vein (<3mm). 11.83m to 11.86m; inclined (<25 degrees) gypsum vein (<10mm). 11.93m to 11.97m; inclined (<20 degrees) gypsum vein (<30mm). 12.19m to 12.25m; non intact, very weak	12.25	-9.93				
12.70 - 12.85	C	31							Extremely weak thinly to thickly laminated reddish brown locally greenish grey MUDSTONE locally recovered as clay with angular fine to coarse gravel sized mudstone lithorelicts. With closely to medium spaced locally very closely spaced very thin to thin beds locally medium beds of very weak grey and dark greenish grey mudstone. With horizontal and inclined (20 degrees) gypsum veins (1 to 2mm predominantly <15mm). Bedding fractures are subhorizontal (5 to 10 degrees) medium to widely spaced locally very closely to closely spaced planar and undulating rough and smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]						
12.25 - 13.75				100	35	7		13							
13.26 - 13.30	IL	32													
13.75 - 13.86	C	33													
14.42 - 14.47	IL	34						14	12.25m to 12.42m; non intact recovered as silt with frequent angular and subangular fine to coarse gravel sized mudstone lithorelicts. 12.38m to 12.42m; subhorizontal (5 degrees) gypsum vein (40mm). 12.46m to 12.50m; non intact recovered as angular fine and medium gravel sized mudstone fragments. 12.60m to 12.70m; non intact recovered as silt with frequent angular fine to coarse gravel sized mudstone lithorelicts. 12.70m to 12.71m; subhorizontal (5 degrees) gypsum vein (10mm). 12.70m to 12.73m; subhorizontal (20 degrees) gypsum vein (15mm). 12.86m to 12.97m; non intact recovered as silty clay with frequent angular fine and medium gravel sized mudstone lithorelicts. 12.97m to 13.09m; greenish grey mudstone.						
13.75 - 15.25				100	24	7									

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum)	2.32	Sheet 4 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
12.25 - 18.35							NA		13.00m to 13.10m; subhorizontal (5 degrees) gypsum vein (10mm). 13.10m to 13.25m; non intact recovered as silty clay with frequent angular fine and medium gravel sized mudstone lithorelicts. 13.26m to 13.30m; subhorizontal (2 degrees) gypsum vein (40mm). 13.36m to 13.50m; non intact recovered as silty clay with frequent angular fine and medium gravel sized mudstone lithorelicts and occasional gypsum fragments. 13.50m to 13.53m; subhorizontal (2 degrees) gypsum vein (<30mm). 13.55m to 13.69m; greenish grey mudstone with horizontal very closely spaced gypsum veins (<2 mm).	(6.10)				
15.25 - 16.75				100	35	18		16	13.86m to 14.06m; non intact recovered as reddish brown silt with frequent angular fine and medium gravel sized mudstone and occasional gypsum fragments (<30mm). 14.06m to 14.60m; non intact recovered as greenish grey clay with frequent angular fine and medium gravel sized mudstone lithorelicts. 14.38m to 14.48m; subhorizontal (5 to 10 degrees) gypsum vein (<50mm). 14.60m to 15.25m; non intact recovered as silt with frequent angular fine and medium gravel sized mudstone lithorelicts and occasional gypsum fragments (<20mm x 30mm x 45mm).					
16.35 - 16.62	C	35												
16.62 - 16.68	C	36												
								17	15.31m to 16.10m; non intact recovered as silt with occasional angular fine and medium gravel sized mudstone lithorelicts and rare gypsum fragments (<2mm). 16.18m to 16.35m; non intact recovered as silt with abundant angular fine to coarse gravel sized mudstone lithorelicts. 16.35m to 16.75m; horizontal to inclined (30 degrees) very closely spaced gypsum vein (<2mm). 16.75m to 17.03m; non intact recovered as silty clay with abundant angular fine and medium gravel sized mudstone lithorelicts.					
16.75 - 18.25				100	33	16			16.96m to 17.03m; subhorizontal (5 degrees) extremely closely spaced gypsum veins (<15mm). 17.03m to 17.06m; greenish grey mudstone. 17.06m to 17.18m; non intact recovered as silt with abundant angular fine to coarse gravel sized mudstone lithorelicts.					
17.80 - 17.90	IL	37												
								18	17.25m to 17.40m; non intact recovered as silty clay with abundant angular fine and medium gravel sized mudstone lithorelicts and occasional gypsum fragments (<2mm). 17.40m to 17.57m; greenish grey mudstone. 17.50m to 17.58m; inclined (35 degrees) gypsum vein (<15mm). 17.58m to 17.80m; non intact recovered as silt with abundant angular fine to coarse gravel sized mudstone lithorelicts.					
18.09 - 18.20	C	38												
									17.90m to 18.09m; non intact recovered as silty clay with abundant angular fine and medium gravel sized mudstone lithorelicts. 18.03m to 18.07m; inclined (25 degrees) gypsum vein (<15mm) 18.20m to 18.35m; non intact recovered as silt with abundant angular fine and medium gravel sized mudstone lithorelicts.	18.35	-16.03			
18.58 - 18.72	C	39												
18.35 - 19.08							30 70 140							
18.25 - 19.75				100	56	24		19	Extremely weak to very weak locally weak thinly and thickly laminated reddish brown MUDSTONE with subhorizontal and inclined (5 to 25 degrees) medium spaced gypsum veins (<5mm). Distinctly and partially weathered. Bedding fractures are subhorizontal (5 to 10 degrees) very closely to closely spaced planar and undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
19.08 - 19.20							NI			(1.60)				
19.20 - 19.64							45 90 140							
19.64 - 19.75							NI		18.39m to 18.91m; non intact recovered as silt with abundant angular fine and medium gravel sized mudstone lithorelicts. 18.46m to 18.48m; non intact recovered as silt with abundant angular fine and medium gravel sized mudstone lithorelicts.					
19.75 - 19.95							10 - 195		18.55m to 18.58m; non intact recovered as clayey silt with abundant angular fine and medium gravel	19.95	-17.63			

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum)	2.32	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
19.95 - 20.52							20		sized mudstone lithorelicts. 18.96m to 19.02m; non intact recovered as angular fine and medium gravel sized mudstone lithorelicts. 19.08m to 19.20m; non intact recovered as silt with abundant angular fine to coarse gravel sized mudstone lithorelicts. 19.64m to 19.75m; non intact recovered as angular fine to coarse gravel sized mudstone lithorelicts. 19.89m to 19.95m; non intact recovered as silt with angular fine and medium gravel sized mudstone lithorelicts.	(0.57)				
20.32 - 20.37	IL	41					130 285								
20.45 - 20.59	C	42													
19.75 - 21.25				100	50	29				20.52	-18.20				
20.52 - 21.25							NA	21	Extremely weak to very weak thinly and thickly laminated greenish grey MUDSTONE with horizontal medium spaced locally extremely closely spaced gypsum veins (up to 80mm). Distinctly and partially weathered. Bedding fractures are subhorizontal (5 to 10 degrees) very closely to closely spaced planar locally undulating rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 20.28m to 20.30m; non intact recovered as greenish grey clay. 21.31m to 20.41m; horizontal gypsum vein.	(0.73)				
21.25 - 22.33							10 60 135			21.25	-18.93				
21.90 - 21.99	C	43							Extremely weak thinly and thickly laminated reddish brown MUDSTONE recovered as silty clay with angular fine to coarse gravel sized mudstone lithorelicts with occasional pockets and rare bands (<20mm x 30mm x 70mm) of gypsum. Destructured mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(1.08)				
21.25 - 22.75				100	76	22		22		22.33	-20.01				
22.47 - 22.67	C	44							Very weak thinly laminated greenish grey MUDSTONE with extremely closely to very closely spaced spaced thin and thick laminae of extremely weak reddish brown mudstone recovered as soft clay with gravel sized mudstone lithorelicts. Partially to distinctly weathered and destructured. Bedding fractures subhorizontal (5 to 10 degrees) very closely to closely spaced planar rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 21.80m to 21.85m; cross laminated. 21.92m to 21.96m; subhorizontal (5 degrees) gypsum vein (<40mm). 22.03m to 22.07m; non intact recovered as greenish grey angular fine and medium gravel sized mudstone lithorelicts. 22.27m to 22.33m; subhorizontal (5 to 10 degrees) gypsum vein (<30mm).					
22.33 - 23.37							10 120 350	23		(1.04)					
22.75 - 24.25				100	71	0				23.37	-21.05				
23.54 - 23.61	C	45							Very weak thinly laminated reddish brown MUDSTONE with extremely closely to very closely spaced thick laminae of extremely weak reddish brown mudstone recovered as angular fine and medium rarely coarse gravel sized mudstone lithorelicts with silt. With subhorizontal (5 degrees) closely spaced gypsum veins (<20mm). Bedding fractures are subhorizontal (5 to 10 degrees) very closely and closely spaced planar and undulating rough locally smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 22.55m to 22.57m; subhorizontal (5 to 10 degrees) gypsum vein (<7mm). 22.91m to 22.93m; subhorizontal (5 degrees) gypsum vein (16mm). 23.04m to 23.05m; subhorizontal (5 degrees) gypsum vein (11mm).					
23.37 - 24.25							10 40 80	24		(0.88)					
24.13 - 24.20	C	46								24.25	-21.93				
24.57 - 24.77	C	47													
24.25 - 25.00				93	91	61	30 200 450			(0.75)					
24.25 - 25.00									Very weak thinly laminated light greenish grey mottled dark greenish grey MUDSTONE with very closely spaced locally closely spaced thick laminae of extremely weak greenish grey mudstone generally recovered as gravel sized						
										25.00	-22.68				

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Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**AR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum) 2.32	Sheet 6 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

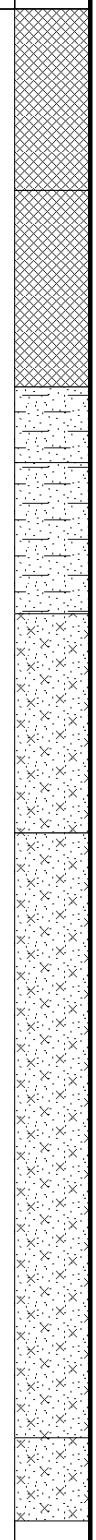
Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
									mudstone lithorelicts with silt. With subhorizontal (5 degrees) medium spaced gypsum veins (<25mm). Bedding fractures are subhorizontal (5 to 10 degrees) predominantly very closely spaced locally closely spaced planar locally undulating rough locally smooth very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
								26	Moderately weak thinly to thickly laminated greenish grey mottled dark greenish grey MUDSTONE with subhorizontal (<5 degrees) closely to medium spaced gypsum veins (1mm to 25mm). With deformed laminations possibly soft sedimentary deformation. Partially weathered. Bedding fractures are horizontal to subhorizontal (5 to 10 degrees) very closely to closely spaced planar and undulating smooth and rough very tight clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 24.85m to 25.87m; non intact recovered as gravel sized mudstone fragments. 24.95m to 25.00m; assumed zone of core loss.					
									End of Borehole at 25.00 m						
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH01**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum)	2.32	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend

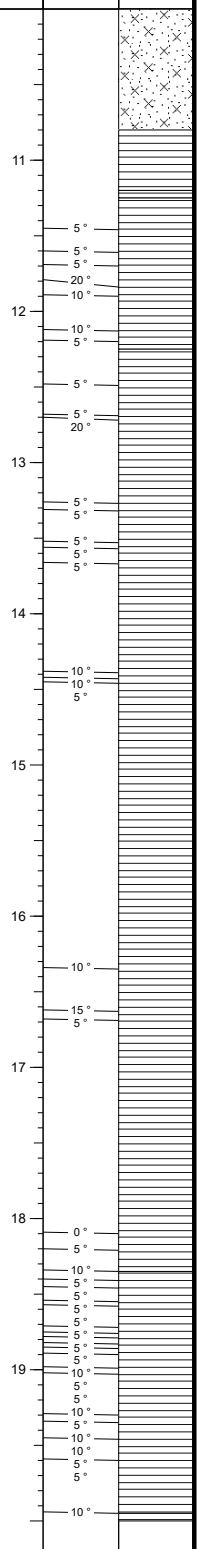


Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum)	2.32	Sheet 2 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
11.45 - 11.46	BF	5		VT	Un	Ro					
11.60 - 11.61	BF	5		VT	Un	Ro					
11.69 - 11.70	BF	5		VT	Un	Ro					
11.79 - 11.84	J	20		VT	Un	Ro					
11.89 - 11.90	BF	10		VT	Un	Ro					
12.12 - 12.13	BF	10		VT	Un	Ro					
12.19 - 12.20	BF	5		VT	Un	Ro					
12.48 - 12.49	BF	5		VT	Un	Ro					
12.68 - 12.69	BF	5		VT	Un	Ro					
12.70 - 12.72	J	20		VT	Pl	Sm					
13.26 - 13.27	BF	5		VT	Pl	Sm					
13.31 - 13.32	BF	5		VT	Un	Sm					
13.52 - 13.53	BF	5		VT	Un	Sm					
13.56 - 13.57	BF	5		VT	Un	Sm					
13.66 - 13.67	BF	5		VT	Pl	Ro					
14.38 - 14.39	BF	10		VT	Pl	Sm					
14.42 - 14.43	BF	10		VT	Un	Sm					
14.45 - 14.46	BF	5		VT	Un	Sm					
16.34 - 16.35	BF	10		VT	Un	Ro					
16.62 - 16.63	J	15		VT	Un	Ro					
16.68 - 16.69	BF	5		VT	Un	Ro					
18.09 - 18.10	BF	0		VT	Pl	Ro					
18.20 - 18.21	BF	5		VT	Un	Ro					
18.34 - 18.35	BF	10		T	Un	Ro					
18.40 - 18.41	BF	5		VT	Un	Ro					
18.45 - 18.46	BF	5		VT	Pl	Ro					
18.54 - 18.55	BF	5		VT	Pl	Ro					
18.57 - 18.58	BF	5		VT	Pl	Ro					
18.71 - 18.72	BF	5		VT	Pl	Ro					
18.75 - 18.76	BF	5		VT	Pl	Ro					
18.78 - 18.79	BF	5		VT	Pl	Ro					
18.82 - 18.83	BF	10		VT	Un	Ro					
18.85 - 18.86	BF	5		VT	Un	Ro					
18.89 - 18.90	BF	5		VT	Un	Ro					
18.98 - 18.99	BF	10		VT	Un	Ro					
19.02 - 19.03	BF	5		VT	Pl	Ro					
19.29 - 19.30	BF	10		VT	Pl	Ro					
19.34 - 19.35	BF	10		VT	Pl	Ro					
19.45 - 19.46	BF	5		VT	Un	Ro					
19.59 - 19.60	BF	5		VT	Un	Ro					
19.94 - 19.95	BF	10		VT	Pl	Ro					



Notes

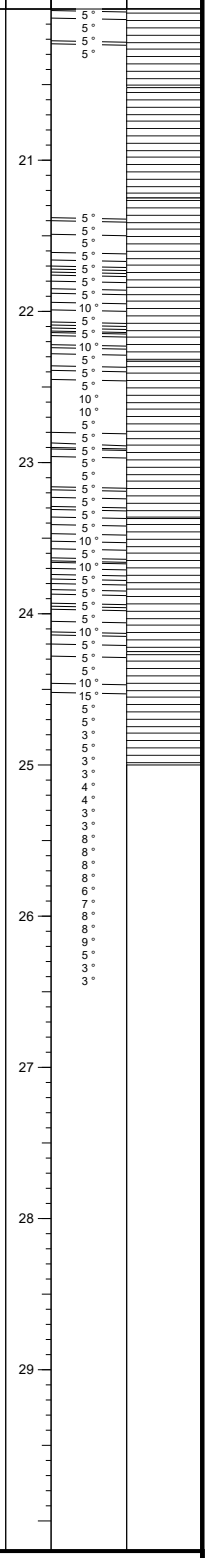
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum)	2.32	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details

Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks
20.01 - 20.02	BF	5		VT	Pl	Ro		
20.06 - 20.07	BF	5		T	Un	Ro		
20.21 - 20.22	BF	5		O	Pl	Ro		
20.23 - 20.24	BF	5		VT	Pl	Ro		
21.38 - 21.39	BF	5		VT	Pl	Ro		
21.40 - 21.41	BF	5		VT	Pl	Ro		
21.49 - 21.50	BF	5		VT	Pl	Ro		
21.61 - 21.62	BF	5		VT	Pl	Ro		
21.66 - 21.67	BF	5		VT	Pl	Ro		
21.70 - 21.71	BF	5		VT	Pl	Ro		
21.72 - 21.73	BF	5		VT	Pl	Ro		
21.74 - 21.75	BF	10		VT	Pl	Ro		
21.76 - 21.77	BF	5		VT	Pl	Ro		
21.80 - 21.81	BF	5		VT	Pl	Ro		
21.85 - 21.86	BF	10		VT	Pl	Ro		
21.88 - 21.89	BF	5		VT	Pl	Ro		
21.94 - 21.95	BF	5		VT	Pl	Ro		
21.99 - 22.00	BF	5		VT	Pl	Ro		
22.07 - 22.08	BF	10		VT	Pl	Ro		
22.09 - 22.10	BF	10		VT	Pl	Ro		
22.11 - 22.12	BF	5		VT	Pl	Ro		
22.13 - 22.14	BF	5		VT	Pl	Ro		
22.14 - 22.15	BF	5		VT	Pl	Ro		
22.16 - 22.17	BF	5		VT	Pl	Ro		
22.22 - 22.23	BF	5		VT	Pl	Ro		
22.24 - 22.25	BF	5		VT	Pl	Ro		
22.28 - 22.29	BF	5		VT	Pl	Sm		
22.36 - 22.37	BF	5		VT	Un	Ro		
22.39 - 22.40	BF	5		VT	Un	Ro		
22.45 - 22.46	BF	10		VT	Un	Ro		
22.80 - 22.81	BF	5		VT	Pl	Ro		
22.87 - 22.89	BF	10		VT	Un	Ro		
22.90 - 22.91	BF	5		VT	Pl	Ro		
22.91 - 22.92	BF	5		VT	Pl	Sm		
22.96 - 22.97	BF	5		VT	Un	Ro		
23.16 - 23.17	BF	5		VT	Pl	Ro		
23.18 - 23.19	BF	10		VT	Un	Ro		
23.23 - 23.24	BF	5		VT	Pl	Ro		
23.29 - 23.30	BF	5		VT	Pl	Ro		
23.31 - 23.32	BF	5		VT	Pl	Ro		
23.36 - 23.37	BF	10		VT	Pl	Ro		
23.41 - 23.42	J	15		VT	Pl	Ro		
23.47 - 23.48	BF	5		VT	Pl	Ro		
23.52 - 23.53	BF	5		VT	Pl	Ro		
23.57 - 23.58	BF	3		VT	Pl	Ro		
23.63 - 23.64	BF	5		VT	Pl	Ro		
23.65 - 23.66	BF	3		VT	Pl	Ro		
23.66 - 23.67	BF	3		VT	Pl	Ro		
23.70 - 23.71	BF	4		VT	Pl	Ro		
23.74 - 23.75	BF	4		VT	Pl	Ro		
23.77 - 23.78	BF	3		VT	Pl	Ro		
23.80 - 23.81	BF	3		VT	Pl	Ro		
23.84 - 23.85	BF	8		VT	Pl	Ro		
23.87 - 23.88	BF	8		VT	Pl	Ro		
23.93 - 23.94	BF	8		VT	Pl	Ro		
23.95 - 23.96	BF	8		VT	Pl	Ro		
23.97 - 23.98	BF	6		VT	Pl	Ro		
24.05 - 24.06	BF	7		VT	Pl	Ro		
24.12 - 24.13	BF	8		VT	Pl	Sm		
24.14 - 24.15	BF	8		VT	Pl	Sm		
24.20 - 24.21	BF	9		VT	Un	Ro		
24.28 - 24.29	BF	5		VT	Un	Ro		
24.46 - 24.47	BF	3		VT	Pl	Ro		
24.52 - 24.53	BF	3		VT	Pl	Ro		

Discontinuity Information



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
Client	SSE Generation Limited (SSE)			**AR-BH02**
Fugro Reference	F212561			
Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum)	1.40	Sheet 1 of 1
Hole Type	Cable Percussion to Rotary Coring			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.35	IP	12/10/2022	12/10/2022	Hand excavated			BS	BS	
1.35	11.50	CP	12/10/2022	13/10/2022	Dando 3000			TG/AC	BS	
11.10	25.20	RC	18/10/2022	19/10/2022	Comacchio MC300		PCD	RC/DQ	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
12/10/2022	08:00	0.00			Fine
12/10/2022	18:00	7.60	8.00	2.50	Overcast
13/10/2022	08:00	7.60	8.00	2.50	Dry sunny
13/10/2022	18:00	11.50	11.10	2.50	
18/10/2022	07:30	11.10	11.10	0.76	
18/10/2022	17:30	15.60	11.10	1.47	
19/10/2022	07:30	15.60	11.10	1.73	
19/10/2022	17:30	25.20	11.10	3.31	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)
11.10	12.60	P	100	Brown	00:36
12.60	14.10	P	100	Brown	00:39
14.10	15.60	P	100	Brown	00:44
15.60	17.10	P	100	Brown	00:43
17.10	18.60	P	100	Brown	00:45
18.60	20.10	P	100	Brown	00:44
20.10	21.60	P	100	Brown	00:47
21.60	23.10	P	100	Grey	00:49
23.10	24.60	P	100	Grey	00:51
24.60	25.20	P	100	Grey	00:19

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)
11.10	12.60	102
12.60	14.10	102
14.10	15.60	102
15.60	17.10	102
17.10	18.60	102
18.60	20.10	102
20.10	21.60	102
21.60	23.10	102
23.10	24.60	102
24.60	25.20	102

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	250	3.10	250
11.50	200	11.10	200
25.20	146		

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	11.50

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 11.50m and continued by rotary coring techniques to 25.20m.
3. Driller records blowing sand between 6.20m and 10.00m made them unable to take SPTs.
4. Spacing of fractures over an arbitrary length of core of similar intensity of fracturing recorded as minimum/mean/maximum to include bedding and joint discontinuities.
5. Borehole terminated below scheduled depth of 25.00m for casing adjustment.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	10.00	7.00	10.00	08/11/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	7.00	50	Plain
1	7.00	10.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.40	Concrete	08/11/2022
0.40	7.00	Bentonite	08/11/2022
7.00	10.00	Gravel	08/11/2022
10.00	25.00	Bentonite	08/11/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **AR-BH02**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum) 1.40	Sheet 1 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1							MADE GROUND. Dark brown SILT with abundant rootlets (<2mm) and occasional wood fragments (60 x 10mm). [MADE GROUND] [SILT]	(0.20)				
0.10	ES	2								0.20	1.20			
0.10 - 0.20	B	3							MADE GROUND. Dark brown streaked orange sandy CLAY with occasional rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	(0.30)				
0.10	PID		< 0.1 ppm							0.50	0.90			
0.30	D	4							MADE GROUND. Greyish dark brown slightly gravelly silty SAND. Sand is fine and medium. [MADE GROUND] [SAND]					
0.30	ES	5												
0.30 - 0.50	B	6								(0.60)				
0.30	PID		< 0.1 ppm											
0.70	D	7												
0.70	ES	8												
0.70 - 1.00	B	9												
0.70	PID		< 0.1 ppm											
1.00 - 1.20	B	12						1		1.10	0.30			
1.20	D	10							MADE GROUND. Orangish brown silty SAND. Sand is fine and medium. [MADE GROUND] [SAND]					
1.20	ES	11												
1.20 - 1.65	B	13												
1.20 - 1.65	SPT		N = 6 (S)							(0.60)				
1.20	PID		< 0.1 ppm											
										1.70	-0.30			
1.80	D	14							Very loose to loose brown slightly gravelly very silty SAND with rare black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [SAND]					
1.80 - 2.10	B	15						2						
2.20 - 2.65	B	16												
2.20 - 2.65	SPT		N = 4 (S)							(1.10)				
2.80	D	17												
2.80 - 3.10	B	18								2.80	-1.40			
3.20 - 3.65	D	19							Firm and stiff dark brown slightly sandy CLAY. Sand is fine. [ALLUVIUM] [CLAY]					
3.20 - 3.65	SPT		N = 9 (S)					3						
3.80	D	20												
3.80 - 4.10	B	21												
4.20 - 4.65	D	22						4						
4.20 - 4.65	SPT		N = 8 (S)							(3.00)				
4.80	D	23												
4.80 - 5.10	B	24												
									Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
Client	SSE Generation Limited (SSE)			**AR-BH02**
Fugro Reference	F212561			
Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum)	1.40	Sheet 2 of 6
Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details					Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.20 - 5.65 5.20 - 5.65	D SPT	25	N = 6 (S)											
5.80 5.80 - 6.10	D B	26 27							Firm dark brown slightly sandy CLAY with occasional black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [CLAY] At 5.80m; with rare (1 No.) gravel. Gravel is angular fine of slag.	5.80 (0.40)	-4.40			
6.30 6.30 - 6.60	D B	28 29						6	Dark brown clayey SAND with occasional pockets (<10mm) of brown clay and frequent becoming abundant black sand sized carbonaceous debris. Sand is predominantly fine and medium. [ALLUVIUM] [SAND] 6.30m to 6.60m; with occasional pockets (<30mm) of brown clay.	6.20	-4.80			
7.30 7.30 - 7.60	D B	30 31						7						
8.30 8.30 - 8.60	D B	32 33						8		(3.80)				
9.30 9.30 - 9.60	D B	34 35						9						
									Continued next page	10.00	-8.60			

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**AR-BH02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum) 1.40	Sheet 3 of 6	
	Hole Type	Cable Percussion to Rotary Coring		Status	Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50	D	36							MUDSTONE. Recovered as very stiff greenish grey SILT with frequent fine to coarse sand sized peds of mudstone and occasional angular fine to coarse gravel sized extremely weak mudstone lithorelicts. Destructured Mercia Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] At 10.50m; with cobbles. Cobbles (<65mm x 90mm) are angular of extremely weak mudstone lithorelicts. 10.50m to 11.40m; greenish grey with cobbles. Cobbles (<90mm x 160mm) are angular of extremely weak mudstone lithorelicts.	(1.10)				
10.50 - 11.40	B	37												
10.60 - 11.00	D	38												
10.60 - 11.05	SPT		N = 81 (S)											
11.00 - 11.40	D	39						11						
11.05 - 11.18	SPT		100/60 mm (S)							11.10	-9.70			
11.10 - 11.31							NI		Extremely weak to very weak reddish brown mottled greenish grey MUDSTONE with horizontal to subhorizontal (<10 degrees) medium spaced locally extremely closely to very closely spaced gypsum veins (<5mm). Distinctly weathered. Bedding fractures are subhorizontal very closely and closely spaced planar rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 11.10m to 11.31m; non intact (possibly drilling disturbed) recovered as angular mudstone fragments (<50mm) with occasional matrix of soft reddish brown clay. 11.58m to 11.98m; non intact (possibly drilling disturbed) recovered as angular mudstone and partially dissolved gypsum fragments (<50mm) with occasional matrix of soft reddish brown clay. 12.03m to 12.05m; subhorizontal (5 degrees) gypsum vein. 12.21m to 12.55m; recovered as soft to firm fissured reddish brown clay with frequent angular fine and medium gravel sized mudstone lithorelicts partially dissolved gypsum fragments. 12.50m to 12.53m; subhorizontal vein of partially dissolved gypsum. 12.75m to 13.05m; non intact (possibly drilling disturbed) recovered as angular mudstone and partially dissolved gypsum fragments (<50mm) with occasional matrix of soft reddish brown clay .					
11.35 - 11.43	C	1	80 mm											
11.31 - 11.58							40 70 100							
11.58 - 11.98							NI							
11.10 - 12.60				100	27	15		12						
11.98 - 12.21							60 70 120			(1.95)				
12.21 - 12.55							NA							
12.60 - 12.75	C	2	150 mm											
12.55 - 12.75							NA							
12.75 - 13.05							NI							
12.60 - 14.10				100	69	65		13		13.05	-11.65			
13.42 - 13.76	C	3	360 mm				40		Very weak to weak reddish brown mottled greenish grey MUDSTONE with horizontal to inclined (30 degrees) very closely spaced gypsum veins (<3mm). Locally with deformed laminations and slump structures possibly soft sediment deformation. Partially weathered. Bedding fractures are subhorizontal (<5 degrees) widely spaced locally closely spaced undulating rough very tight clean and open with clay infill (<2mm). [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(0.75)				
13.05 - 13.80							300 640							
13.80 - 14.00							NA			13.80	-12.40			
14.00 - 14.45							NI	14	Extremely weak to very weak thinly laminated dark greenish grey MUDSTONE locally with extremely closely spaced subvertical (<20 degrees) gypsum veins (<1mm to 10mm). Partially weathered. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE] 14.00m to 14.16m; recovered as soft dark greenish grey and greyish brown clay with frequent angular fine and medium gravel sized extremely weak mudstone lithorelicts and partially dissolved gypsum fragments. 14.16m to 14.45m; non intact (possibly drilling disturbed) recovered as angular mudstone fragments (<50mm) with occasional matrix of soft dark greenish grey clay. 14.35m to 14.45m; horizontal gypsum vein.	(0.65)				
14.45 - 14.98							NI			14.45	-13.05			
14.10 - 15.60				100	29	17			Extremely weak reddish brown locally mottled					

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **AR-BH02**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum) 1.40	Sheet 4 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
15.17 - 15.29	C	4	120 mm				20		greenish grey MUDSTONE with horizontal closely spaced gypsum veins (1mm to 10mm), occasionally partially dissolved. Distinctly weathered. Highly fractured, locally recovered as angular mudstone fragments (<40mm) with matrix of soft reddish brown clay. Bedding fractures are generally horizontal and subhorizontal (5 degrees) predominantly very closely spaced locally closely planar smooth and undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
14.98 - 15.58 15.32 - 15.45	C	5	130 mm				60 130			(1.72)				
15.58 - 16.17							NI		14.45m to 14.52m; greenish grey. 14.98m to 15.09m; very thin bed of very weak reddish brown mudstone. 15.07m to 15.29m; very thin bed of very weak mottled greenish grey mudstone. 15.32m to 15.58m; very thin bed of very weak reddish brown mudstone.					
								16		16.17	-14.77			
16.31 - 16.40 15.60 - 17.10	C	7	90 mm	100	49	37			Very weak locally extremely weak thinly laminated dark reddish brown locally greenish grey MUDSTONE with subhorizontal (<10 degrees) to inclined (<20 degrees) very closely to closely spaced gypsum veins (<30mm), locally occurring as white patches (<30mm) and spots (<10mm). Partially to distinctly weathered locally destructured. Locally highly fractured. Bedding fractures are horizontal and subhorizontal (5 degrees) closely and medium spaced locally very closely spaced planar and undulating rough and smooth very tight and clean. Joints are inclined (10 to 20 degrees) predominantly medium spaced planar and undulating rough very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
16.50 - 19.69 16.17 - 16.90	C	6	190 mm				30 140 280							
16.90 - 17.10							NI	17	16.90m to 17.10m; non intact (possibly drilling disturbed) recovered as angular mudstone and partially dissolved gypsum fragments (<40mm) with occasional matrix of soft reddish brown clay.					
17.10 - 17.90	C	8	90 mm											
17.10 - 17.32							50 70 90							
17.32 - 17.57							NI		17.33m to 17.57m; non intact (possibly drilling disturbed) recovered as angular mudstone and partially dissolved gypsum fragments (<40mm) with occasional matrix of firm reddish brown clay.					
17.57 - 17.65	C	9	80 mm						17.78m to 17.85m; recovered as soft reddish brown clay with frequent angular fine to coarse gravel sized extremely weak mudstone lithorelicts.					
17.57 - 18.03 17.10 - 18.60				100	43	23	30 70 130		17.94m to 18.00m; very thin bed of soft reddish brown clay with frequent angular fine and medium gravel sized extremely weak mudstone lithorelicts.					
								18	Destructured					
18.03 - 18.16							NA		18.03m to 18.16m; recovered as soft reddish brown clay with frequent angular fine to coarse gravel sized extremely weak mudstone lithorelicts. Destructured.					
18.16 - 18.28							NA		18.16m to 18.28m; deformed laminations (possibly soft sediment deformation).	(4.13)				
18.28 - 18.98							NI		18.28m to 18.60m; extremely weak, highly fractured recovered as angular fine to coarse gravel sized mudstone lithorelicts and partially dissolved gypsum fragments (<40mm) with occasional matrix of soft to firm reddish brown slightly sandy clay. Fractures are irregular (0 to 90 degrees) possibly extremely closely spaced planar smooth and rough very tight.					
								19						
19.04 - 19.10	C	10	60 mm											
18.98 - 19.60 18.60 - 20.10				100	43	17	30 80 160		19.23m to 19.31m; non intact (possibly drilling disturbed) recovered as angular mudstone fragments (<50mm) with occasional matrix of firm reddish brown clay.					
19.60 - 19.71							NI		19.39m to 19.44m; non intact (possibly drilling disturbed) recovered as angular mudstone fragments (<40mm) with occasional matrix of firm reddish brown clay.					
19.71 - 19.75	C	11	40 mm						19.60m to 19.71m; non intact (possibly drilling disturbed) recovered as angular very weak reddish brown and greenish grey mudstone fragments (<40mm) with occasional matrix of firm reddish brown clay.					
19.71 - 19.90							40 70							
19.90 - 20.00							110 NI							

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID **AR-BH02**
	Client	SSE Generation Limited (SSE)		
	Fugro Reference	F212561		
	Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum) 1.40	Sheet 5 of 6
	Hole Type	Cable Percussion to Rotary Coring		Status Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.00 - 20.10							40		19.90m to 20.20m; non intact (possibly drilling disturbed) recovered as angular mudstone and gypsum fragments (<50mm).					
20.10 - 20.20							60							
20.20 - 20.25	C	12	50 mm				NI		20.10m to 20.20m; non intact (possibly drilling disturbed) recovered as angular extremely weak greenish grey mudstone fragments (<50mm).					
20.20 - 20.30							50		20.10m to 20.30m; thin bed of extremely weak thinly laminated greenish grey mudstone.	20.30	-18.90			
							- 50		MUDSTONE. Recovered as soft to firm fissured reddish brown CLAY with frequent angular gravel sized mudstone lithorelicts and partially dissolved gypsum fragments. Destructured. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
20.30 - 21.00							NA			(0.70)				
20.10 - 21.60				100	30	9								
20.94 - 21.00	C	13	60 mm					21	20.94m to 21.00m; very thin bed of reddish brown mudstone with deformed laminations.	21.00	-19.60			
21.05 - 21.13	C	14	80 mm						Extremely weak thickly laminated to very thinly bedded greenish grey MUDSTONE with extremely closely to very closely spaced thick laminae of soft greenish grey and reddish brown clay. With horizontal closely spaced gypsum veins (2mm to 30mm). Distinctly weathered. Locally highly fractured. Bedding fractures are horizontal and subhorizontal (5 to 10 degrees) very closely and closely spaced planar smooth very tight and clean locally tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
21.00 - 21.60							10 40 70			(0.90)				
21.60 - 21.75							NR							
21.75 - 21.90							NI			21.90	-20.50			
21.90 - 22.16							20 40 60	22	21.17m to 21.27m; highly fractured recovered as angular mudstone fragments (20mm to 40mm) with occasional matrix of soft greenish grey clay. Fractures are irregular (0 to 90 degrees) extremely closely spaced.					
22.16 - 22.28							NI		21.30m to 21.40m; highly fractured recovered as angular mudstone fragments (20mm to 40mm) with occasional matrix of soft greenish grey clay. Fractures are irregular (0 to 90 degrees) extremely closely spaced.					
21.60 - 23.10				90	30	0			21.60m to 21.75m; assumed zone of core loss.					
22.28 - 22.70							20 30 40		21.70m to 21.90m; non intact (possibly drilling disturbed) recovered as angular mudstone fragments (<40mm) with occasional matrix of soft reddish brown clay.	(1.20)				
22.70 - 23.10							NI		Extremely weak thinly and thickly laminated reddish brown locally greenish grey MUDSTONE with very closely spaced thick laminae of soft reddish brown clay. With horizontal very closely to closely spaced gypsum veins (2mm to 20mm). Distinctly weathered. Bedding fractures are horizontal very closely spaced planar smooth very tight and clean locally tight with clay coating. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]					
23.10 - 23.20							NI	23	22.10m to 22.14m; horizontal gypsum vein.	23.10	-21.70			
23.20 - 23.68							20 40 70		22.17m to 22.28m; non intact (possibly drilling disturbed) recovered as angular mudstone fragments (<10mm to 40mm) with occasional matrix of soft reddish brown clay.					
23.68 - 23.78							NI		22.70m to 23.10m; non intact (possibly drilling disturbed) recovered as angular mudstone fragments (20mm to 50mm) with rare matrix of soft reddish brown clay.					
23.10 - 24.60				100	52	17								
23.97 - 24.10	C	15	130 mm					24						
24.13 - 24.28	C	16	130 mm						Weak to moderately weak locally extremely weak thinly and thickly laminated greenish grey MUDSTONE. Locally with very closely spaced subhorizontal (<10 degrees) gypsum veins (<15mm) and closely spaced thick laminations of soft greenish grey clay. Distinctly weathered. Bedding fractures are horizontal and subhorizontal (5 degrees) very closely spaced locally closely spaced planar smooth very tight and clean. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	(2.10)				
23.78 - 25.20							20 90 200							
24.66 - 24.88	C	17	220 mm											
24.90 - 25.02	C	18	120 mm	100	100	50			23.10m to 23.20m; non intact (possibly drilling					
24.60 - 25.20														

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum)	1.40	Sheet 6 of 6
	Hole Type	Cable Percussion to Rotary Coring			Status: Final

Depth (m)	Sampling and In Situ Testing			Core Recovery				Strata Details						Groundwater	
	Type	No.	Test Results	TCR (%)	SCR (%)	RQD (%)	If (mm)	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
									disturbed) recovered as angular mudstone fragments (<10mm to 40mm). 23.59m to 23.64m; subhorizontal (5 degrees) gypsum vein. Partially dissolved. 23.68m to 23.78m; highly fractured. Bedding fractures are horizontal to subhorizontal (<5 degrees) extremely closely to very closely spaced planar smooth very tight and clean. 24.60m to 24.88m; subvertical microfault undulating with 10mm offset along the discontinuity plane. 24.68m to 24.88m; with disturbed lamination. 25.17m to 25.20m; horizontal gypsum vein. End of Borehole at 25.20 m	25.20	-23.80				
								26							
								27							
								28							
								29							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH02**
Client	SSE Generation Limited (SSE)			
Fugro Reference	F212561			
Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum)	1.40	Sheet 1 of 3
Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
									1 2 3 4 5 6 7 8 9		

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum)	1.40	Sheet 2 of 3
	Hole Type	Discontinuity Log			Status: Final

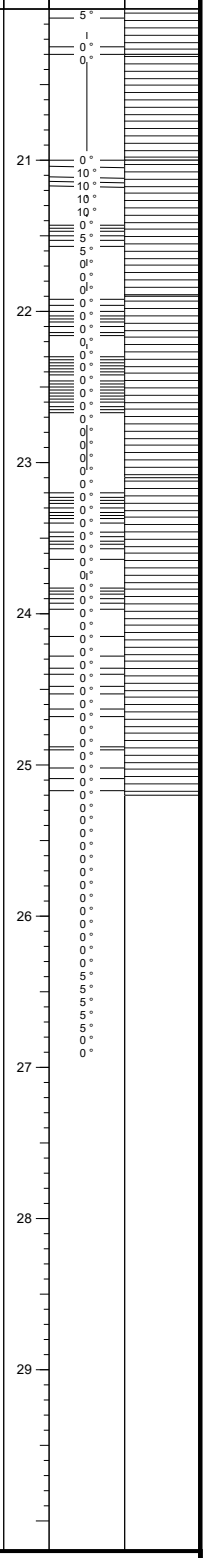
Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
11.10 - 11.31	NI										
11.35	BF	0		VT	Pl	Ro					
11.43	BF	5		VT	Pl	Ro					
11.53	BF	5		VT	Pl	Ro					
11.58 - 11.98	NR										
12.03	BF	5		VT	Pl	Ro					
12.05	BF	5		VT	Pl	Ro					
12.09	BF	5		VT	Pl	Ro					
12.21 - 12.55	NI										
12.75 - 13.05	NR										
13.12	BF	5		VT	Un	Ro					
13.76	BF	5		O	Un	Ro					
14.00 - 14.16	NR										
14.16 - 14.35	NR										
14.40	FR	0		VT	Pl	Sm					
14.45 - 14.98	NI										
15.01	BF	5		VT	Pl	Sm					
15.09	BF	5		VT	Pl	Sm					
15.09 - 15.17	NI										
15.17	BF	0		VT	Un	Ro					
15.29	BF	5		VT	Un	Ro					
15.32	BF	5		VT	Un	Ro					
15.45	BF	5		VT	Un	Ro					
15.48	BF	0		VT	Pl	Sm					
15.50	BF	0		VT	Pl	Sm					
15.52	BF	0		VT	Pl	Sm					
15.55	BF	0		VT	Pl	Sm					
15.58 - 16.17	NI										
16.17 - 16.22	J	70		VT	Pl	Ro					
16.25	BF	0		VT	Pl	Ro					
16.31	BF	5		VT	Pl	Ro					
16.40 - 16.43	J	20		VT	Un	Ro					
16.69 - 16.71	J	20		VT	Un	Ro					
16.90 - 17.10	NI										
17.19 - 17.20	J	10		VT	Un	Ro					
17.25	BF	5		VT	Un	Ro					
17.32 - 17.57	NI										
17.65	BF	0		VT	Pl	Sm					
17.78 - 17.85	NI										
17.94 - 18.00	NI										
18.03 - 18.16	NI										
18.28 - 18.60	NI										
18.60 - 18.98	NI										
19.01	BF	0		VT	Pl	Sm					
19.04	BF	0		VT	Pl	Sm					
19.10	BF	0		VT	Pl	Sm					
19.15	BF	0		VT	Pl	Sm					
19.23 - 19.31	NI										
19.39	BF	0		VT	Pl	Sm					
19.39 - 19.44	NI										
19.60 - 19.71	NI										
19.75	BF	0		VT	Pl	Sm					
19.86	BF	5		VT	Pl	Ro					
19.90 - 20.00	NI										

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**AR-BH02**
	Fugro Reference	F212561			
	Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum)	1.40	Sheet 3 of 3
	Hole Type	Discontinuity Log			Status: Final

Discontinuity Details									Discontinuity Information		
Depth (m)	Type	Dip (°)	Aperture (mm)	Aperture Observation	Medium Scale Roughness	Small Scale Roughness	Set Reference	Remarks	Depth (m)	Discontinuity Log	Legend
20.06	BF	5		VT	Pl	Sm					
20.10 - 20.20	NI										
20.25	BF	0		VT	Pl	Ro					
20.30	BF	0		VT	Pl	Ro					
20.30 - 20.94	NI										
21.00	BF	0		VT	Pl	Sm					
21.04 - 21.05	BF	10		VT	Pl	Sm					
21.11 - 21.12	BF	10		VT	Pl	Sm					
21.14 - 21.15	BF	10		T	Pl	Sm					
21.17 - 21.18	BF	10		T	Pl	Sm					
21.18 - 21.28	NI										
21.30 - 21.40	NI										
21.43	BF	0		VT	Pl	Sm					
21.45	BF	5		VT	Pl	Sm					
21.47	BF	5		VT	Pl	Sm					
21.50	BF	0		VT	Pl	Sm					
21.53	BF	0		VT	Pl	Sm					
21.57	BF	0		VT	Pl	Sm					
21.60 - 21.75	NR										
21.75 - 21.90	NI										
21.92	BF	0		VT	Pl	Sm					
21.96	BF	0		VT	Pl	Sm					
22.00	BF	0		T	Pl	Sm					
22.03	BF	0		VT	Pl	Sm					
22.05	BF	0		VT	Pl	Sm					
22.07	BF	0		VT	Pl	Sm					
22.10	BF	0		VT	Pl	Sm					
22.14	BF	0		VT	Pl	Sm					
22.16	BF	0		VT	Pl	Sm					
22.16 - 22.28	NI										
22.30	BF	0		VT							
22.32	BF	0		VT	Pl	Sm					
22.34	BF	0		VT	Pl	Sm					
22.36	BF	0		VT	Pl	Sm					
22.38	BF	0		VT	Pl	Sm					
22.40	BF	0		VT	Pl	Sm					
22.42	BF	0		VT	Pl	Sm					
22.46	BF	0		VT	Pl	Sm					
22.48	BF	0		VT	Pl	Sm					
22.50	BF	0		VT	Pl	Sm					
22.52	BF	0		VT	Pl	Sm					
22.54	BF	0		VT	Pl	Sm					
22.56	BF	0		VT	Pl	Sm					
22.58	BF	0		VT	Pl	Sm					
22.60	BF	0		VT	Pl	Sm					
22.63	BF	0		VT	Pl	Sm					
22.65	BF	0		VT	Pl	Sm					
22.67	BF			VT	Pl	Sm					
22.70 - 23.10	NI										
23.10 - 23.20	NI										
23.20	BF	0		VT	Pl	Sm					
23.23	BF	0		VT	Pl	Sm					
23.25	BF	0		VT	Pl	Sm					
23.27	BF	0		VT	Pl	Sm					
23.30	BF	0		VT	Pl	Sm					
23.33	BF	0		VT	Pl	Sm					
23.35	BF	0		VT	Pl	Sm					
23.37	BF	0		VT	Pl	Sm					
23.40	BF	0		VT	Pl	Sm					
23.46	BF	0		VT	Pl	Sm					
23.49	BF	0		VT	Pl	Sm					
23.52	BF	0		VT	Pl	Sm					
23.54	BF	0		VT	Pl	Sm					
23.57	BF	0		VT	Pl	Sm					
23.64	BF	0		VT	Pl	Sm					
23.68 - 23.78	NI										
23.83	BF	0		VT	Pl	Sm					
23.85	BF										
23.87	BF	0		VT	Pl	Sm					
23.90	BF	0		VT	Pl	Sm					
23.93	BF	0			Pl	Sm					
23.97	BF	0		VT	Pl	Sm					
24.15	BF	0		VT	Pl	Sm					
24.28	BF	0		VT	Pl	Sm					
24.36	BF	0		VT	Pl	Sm					
24.40	BF	0		VT	Pl	Sm					
24.48	BF	0		VT	Pl	Sm					
24.53	BF	0		VT	Pl	Sm					
24.63	BF	5		VT	Pl	Sm					
24.68	BF	5		VT	Pl	Sm					
24.88	BF	5		VT	Pl	Sm					
24.90	BF	5		VT	Pl	Sm					
25.02	BF	5		VT	Pl	Sm					
25.09	BF	0		VT	Pl	Sm					
25.17	BF	0		VT	Pl	Sm					



Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**HR-BH01**	
Fugro Reference	F212561				
Coordinates (m)	E482965.30 N411776.58	Ground Elevation (m Datum)	1.50	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/10/2022	26/10/2022	Hand excavated			BS	BS	
1.20	15.05	CP	27/10/2022	28/10/2022	Dando 3000			TG, AC	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
27/10/2022	08:00	0.00		Dry	Overcast
27/10/2022	18:00	10.00	10.00	7.00	
28/10/2022	08:00	10.00	10.00	8.00	
28/10/2022	18:00	15.05	14.70	4.00	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
15.05	200	14.70	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)
1.20	15.05

Water Strike Remarks

Groundwater not encountered during excavation and drilling but may have been masked by added water.

General Remarks

1. Prior to boring, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. The location was advanced by cable percussion techniques to 15.50m and supposed to continued by rotary coring techniques but it is cancelled.
3. Blowing sand encountered between 6.00m and 13.30m, unable to perform SPT.
4. Variable head permeability test carried out; results reported separately.
5. Borehole terminated above scheduled depth of 25.00m due to permission issues for rotary rig.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	5.00	2.00	5.00	28/10/2022

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
1	0.00	2.00	50	Plain
1	2.00	5.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Concrete	28/10/2022
0.50	2.00	Bentonite	28/10/2022
2.00	5.00	Gravel	28/10/2022
5.00	15.05	Bentonite	28/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	SBP/ROR	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	02/03/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482965.30 N411776.58	Ground Elevation (m Datum)	1.50	Sheet 1 of 4
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Dark brown speckled black sandy CLAY with abundant roots and rootlets (<2mm) and occasional angular fine to coarse gravel sized fragments of brick and concrete. Sand is fine and medium. [MADE GROUND] [CLAY]	(0.58)				
0.10	ES	2								
0.10 - 0.40	B	3								
0.10	PID		< 0.1 ppm							
						0.58	0.92			
0.70	D	4			MADE GROUND. Dark brown silty SAND with abundant pockets of black clay, occasional angular fine to coarse gravel sized fragments of concrete and occasional decomposed fragments of wood (<30mm x 150mm). Sand is fine and medium. [MADE GROUND] [SAND]	(0.40)				
0.70	ES	5								
0.70 - 1.00	B	6								
0.70	PID		< 0.1 ppm							
				1	MADE GROUND. Light brown silty SAND with frequent angular fine to coarse gravel sized fragments of concrete. Sand is fine and medium. [MADE GROUND] [SAND]	0.98	0.52			
						(0.22)				
1.20	B	8				1.20	0.30			
1.20	ES	7			MADE GROUND. Light orangish brown slightly gravelly sandy CLAY with abundant pockets (<20mm) of dark brown slightly sandy clay. Sand is fine to coarse predominantly fine and medium. Gravel is fine to coarse. [MADE GROUND] [CLAY]					
1.20 - 1.65	D	9								
1.20 - 1.65	SPT		N = 4 (S)							
1.20	PID		< 0.1 ppm			(0.60)				
1.80	D	10				1.80	-0.30			
1.80 - 2.10	B	11		2	MADE GROUND. Dark brown locally speckled dark orange clayey locally silty SAND with fragments of decomposed wood (<1mm x 2mm). Sand is fine and medium. [MADE GROUND] [SAND]					
2.20 - 2.65	D	12								
2.20 - 2.65	SPT		N = 6 (S)							
						(1.85)				
2.80	D	13								
2.80 - 3.10	B	14		3						
3.20 - 3.65	D	15								
3.20 - 3.65	SPT		N = 8 (S)							
						3.65	-2.15			
3.80	D	16			Dark brown speckled black, locally orangish dark brown sandy SILT. Sand is predominantly fine and medium. [ALLUVIUM] [SILT]					
3.80 - 4.10	B	17			3.80m to 4.20m; abundant pockets (<40mm) of dark brown clay. Sand is fine					
				4						
4.20 - 4.65	D	18				(1.05)				
4.20 - 4.65	SPT		N = 7 (S)							
						4.70	-3.20			
4.80	D	19			Dark brown locally speckled black slightly gravelly sandy SILT. Gravel is angular of mudstone (<15mm x 40mm). [ALLUVIUM] [SILT]					
4.80 - 5.10	B	20			4.80m to 5.20m; firm dark brown sandy SILT. SAnd is fine and medium.					
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation		Location ID	**HR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482965.30 N411776.58	Ground Elevation (m Datum) 1.50	Sheet 2 of 4	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
5.20 - 5.65 5.20 - 5.65	D SPT	21	N = 19 (S)			(1.10)				
5.80 5.80 - 6.10	D B	22 23		6	Firm dark brown sandy CLAY. Sand is fine. [ALLUVIUM] [CLAY]	5.80	-4.30			
				7		(1.50)				
7.30 7.30 - 7.80	D B	24 25			Firm dark brown sandy CLAY locally with occasional pockets (<20mm) of dark brown silt with frequent black sand sized carbonaceous debris. Sand is fine and medium. [ALLUVIUM] [CLAY] 7.30m to 7.31m; with frequent black sand sized carbonaceous debris. Sand is fine and medium.	7.30	-5.80			
				8		(1.50)				
8.30 8.30 - 8.80	D B	26 27			At 8.30m; layer of dark brown sandy silt with abundant pockets (<30mm) of dark brown clay. Sand is fine and medium.					
				9	Dark brown silty SAND with frequent black sand sized carbonaceous debris and rare pockets (<2mm) of dark brown clay. Sand is fine and medium. [ALLUVIUM] [SAND] 8.80m to 10.30m; rare pockets of dark brown clay	8.80	-7.30			
9.30 9.30 - 9.80	D B	28 29								
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482965.30 N411776.58	Ground Elevation (m Datum)	1.50	Sheet 3 of 4
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details						Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
10.30	D	30		11		(4.50)					
10.30 - 10.60	B	31									
11.30	D	32									
11.30 - 11.60	B	33		12							
12.30	D	34									
12.30 - 12.60	B	35		13							
13.30	D	36			MUDSTONE. Recovered as firm to very stiff orangish red and greenish grey stained dark red CLAY with frequent fine and medium sand sized mudstone peds and occasional fine and medium gravel sized extremely weak mudstone lithorelicts. Lithorelicts become abundant with depth. Destructured Mercia Mudstone. [MERCIA MUDSTONE GROUP - MUDSTONE] [MUDSTONE]	13.30	-11.80				
13.30 - 13.60	B	37									
13.60 - 14.05	D	38									
13.60 - 14.05	SPT		N = 55 (S)								
14.00	D	39		14	14.00m to 14.60m; orangish red fine gravel sized extremely weak mudstone lithorelicts.	(1.75)					
14.00 - 14.60	B	40									
14.60 - 15.00	B	42			14.60m to 15.00m; dark red.						
14.60 - 15.05	D	41									
14.60 - 14.99	SPT		100/240 mm (S)								

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482965.30 N411776.58	Ground Elevation (m Datum)	1.50	Sheet 4 of 4
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details						Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
					End of Borehole at 15.05 m	15.05	-13.55				
				16							
				17							
				18							
				19							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP01**	
Fugro Reference	F212561				
Coordinates (m)	E481841.71 N412130.80	Ground Elevation (m Datum)	0.29	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	02/09/2022	02/09/2022	Hand excavated			OE	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
02/09/2022	09:15	0.00			Fine
02/09/2022	09:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT01 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH04 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	02/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481841.71 N412130.80	Ground Elevation (m Datum)	0.29	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 0.30 - 0.50	D B	1 2			Probably MADE GROUND. Brown slightly sandy CLAY with frequent rootlets (<1mm). Sand is fine and medium predominantly fine. [MADE GROUND] [CLAY]	(0.50)				
0.70 0.70 - 0.90	D B	3 4		1	Probably MADE GROUND. Light brown clayey SAND with occasional rootlets (<1mm) and occasional black sand sized carbonaceous debris. Sand is fine and medium. [MADE GROUND] [SAND]	0.50 (0.70)	-0.21			
					End of Inspection Pit at 1.20 m	1.20	-0.91			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481917.79 N412126.69	Ground Elevation (m Datum)	0.40	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	01/09/2022	01/09/2022	Hand excavated			BS/GW/JK/ BW	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
01/09/2022	08:00	0.00			
01/09/2022	08:30	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT02 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	01/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSBG
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481917.79 N412126.69	Ground Elevation (m Datum)	0.40	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30	D	1			MADE GROUND. Dark brown slightly sandy CLAY with rare brick fragments (2mm to 20mm) rare glass fragments (20mm x 30mm) and occasional rootlets (<1mm). Sand is fine. [MADE GROUND] [CLAY]	(0.40)				
0.60	D	1			MADE GROUND. Greyish brown slightly sandy CLAY with occasional brick, glass and slag fragments (2mm to 60mm) occasional rootlets (<1mm) and occasional black organic debris (<1mm). Sand is fine. [MADE GROUND] [CLAY]	0.40 (0.30)	0.00			
				1	MADE GROUND. Dark grey to black SILT with occasional pockets (<30mm) of greyish brown clay, rare pockets (20mm x 10mm) of light yellowish brown fine sand, occasional wood fragments (20mm x 40mm) and occasional brick fragments (2mm to 60mm). [MADE GROUND] [SILT]	0.70 (0.50)	-0.30			
					End of Inspection Pit at 1.20 m	1.20	-0.80			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482030.81 N412128.35	Ground Elevation (m Datum)	0.21	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	02/09/2022	02/09/2022	Hand excavated			OE	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
02/09/2022	09:45	0.00			Fine
02/09/2022	10:30	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT03 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	02/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482030.81 N412128.35	Ground Elevation (m Datum)	0.21	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Dark brown slightly sandy CLAY with occasional subangular and subrounded gravel sized fragments of quartz and brick with occasional rootlets (<1mm) and occasional black sand sized carbonaceous debris. Sand is fine to coarse. [MADE GROUND] [CLAY]	(0.60)				
						0.60	-0.40			
					Dark brown slightly silty SAND with frequent rootlets (<1mm) and occasional pockets (<30mm) of black peaty clay. Sand is fine and medium predominantly fine. [ALLUVIUM] [SAND]	(0.30)				
						0.90	-0.70			
				1	Dark brown silty SAND with occasional pockets (<30mm) of greyish brown clay. Sand is fine and medium predominantly fine. [ALLUVIUM] [SAND]	(0.30)				
					End of Inspection Pit at 1.20 m	1.20	-1.00			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482130.74 N412122.98	Ground Elevation (m Datum)	0.52	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/08/2022	26/08/2022	Hand excavated			JJL/JK/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/08/2022	09:00	0.00			
26/08/2022	09:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT04 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH01, MS-BH03, MS-BH20 and MS-BH21 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	26/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482130.74 N412122.98	Ground Elevation (m Datum)	0.52	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 - 0.40	D	1			Probably MADE GROUND. Dark brown CLAY with frequent rootlets (<1mm x 1mm x 25mm). [MADE GROUND] [CLAY]	(0.60)				
0.30 - 0.60	B	2								
0.60 - 0.70	D	3			Orange and brown SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.60	-0.08			
0.70 - 1.00	B	4				(0.40)				
1.00 - 1.10	D	5		1	Greyish yellow SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	1.00	-0.48			
1.00 - 1.20	B	6				(0.20)				
					End of Inspection Pit at 1.20 m	1.20	-0.68			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP05**	
Fugro Reference	F212561				
Coordinates (m)	E481829.72 N412089.45	Ground Elevation (m Datum)	0.33	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			JJL/JK/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	16:00	0.00			
25/08/2022	16:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT05 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH04 and MS-BH09 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	25/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481829.72 N412089.45	Ground Elevation (m Datum)	0.33	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details				Groundwater	
Depth (m)	Type	No.	Test Results	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 - 0.40	D	1		Probably MADE GROUND. Light brown slightly sandy CLAY with occasional rootlets (<1mm x 2mm x 40mm). Sand is fine. [MADE GROUND] [CLAY]	(0.60)				
0.40 - 0.70	B	2							
0.60 - 0.70	D	3		Dark brown clayey SAND. Sand is fine and medium [ALLUVIUM] [SAND]	0.60	-0.27			
0.70 - 1.00	B	4			(0.60)				
				End of Inspection Pit at 1.20 m	1.20	-0.87			

1 2 3 4

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m, 0.40 m, 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481918.67 N412089.67	Ground Elevation (m Datum)	0.70	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/08/2022	26/08/2022	Hand excavated			JJL/JK/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/08/2022	10:00	0.00			
26/08/2022	10:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT06 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH02, MS-BH06 and MS-BH09 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	26/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481918.67 N412089.67	Ground Elevation (m Datum)	0.70	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Orange SAND. Sand is fine. [MADE GROUND] [SAND]					
0.30 - 0.40	D	1								
0.40 - 0.70	B	2				(1.00)				
1.00 - 1.10	D	3		1	Dark brown clayey SAND. Sand is fine and medium [ALLUVIUM] [SAND]	1.00	-0.30			
1.00 - 1.20	B	4				(0.20)				
					End of Inspection Pit at 1.20 m	1.20	-0.50			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482070.92 N412089.33	Ground Elevation (m Datum)	0.68	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	02/09/2022	02/09/2022	Hand excavated			OE	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
02/09/2022	11:35	0.00			Fine
02/09/2022	12:10	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT07 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH21 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	02/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482070.92 N412089.33	Ground Elevation (m Datum)	0.68	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Dark brown silty SAND with occasional rootlets (<1mm) and occasional pockets (<30mm) of brown clay. Sand is fine and medium predominantly fine. [MADE GROUND] [SAND]	(0.60)				
					Light brown mottled reddish brown silty SAND with occasional pockets (<20mm) of grey clay. Sand is fine. [ALLUVIUM] [SAND]	0.60	0.08			
				1		(0.60)				
					End of Inspection Pit at 1.20 m	1.20	-0.52			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482128.44 N412073.17	Ground Elevation (m Datum)	0.65	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/08/2022	26/08/2022	Hand excavated			JJL/JK/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/08/2022	08:30	0.00			Sunny
26/08/2022	09:15	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT08 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH03 and MS-BH21 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	26/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482128.44 N412073.17	Ground Elevation (m Datum)	0.65	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 - 0.40	D	1			MADE GROUND. Dark brown CLAY with frequent rootlets (<1mm x 1mm x 35mm). [MADE GROUND] [CLAY]	(0.60)				
0.30 - 0.60	B	2								
0.60 - 0.70	D	3			Greyish brown SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.60	0.05			
0.70 - 1.00	B	4				(0.40)				
1.00 - 1.10	D	5		1	Greyish yelllow SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	1.00	-0.35			
1.00 - 1.20	B	6				(0.20)				
					End of Inspection Pit at 1.20 m	1.20	-0.55			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP09**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481825.75 N412039.48	Ground Elevation (m Datum)	0.51	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			JJL/JK/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	14:00	0.00			
25/08/2022	14:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT09 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH09 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	25/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP09**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481825.75 N412039.48	Ground Elevation (m Datum)	0.51	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 - 0.40	D	1			Probably MADE GROUND. Dark brown CLAY with frequent rootlets (<1mm x 1mm x 25mm). [MADE GROUND] [CLAY]	(0.60)				
0.60 - 0.70	D	2			Probably MADE GROUND. Dark brown slightly silty SAND. Sand is fine and medium. [MADE GROUND] [SAND]	0.60 (0.40)	-0.09			
1.00 - 1.10	D	3		1	Greyish yellow SAND. Sand is fine and medium [ALLUVIUM] [SAND]	1.00 (0.20)	-0.49			
					End of Inspection Pit at 1.20 m	1.20	-0.69			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP10**	
Fugro Reference	F212561				
Coordinates (m)	E481910.37 N412029.00	Ground Elevation (m Datum)	0.36	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			JJL/RW/JK	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	12:00	0.00			
25/08/2022	12:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT10 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH06 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	25/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481910.37 N412029.00	Ground Elevation (m Datum)	0.36	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 - 0.40	D	1			Probably MADE GROUND. Brown CLAY with occasional roots (<1mm x 2mm x 35mm). [MADE GROUND] [CLAY]	(0.70)				
0.70 - 0.80	D	2			Orange and dark brown slightly clayey SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.70 (0.30)	-0.34			
1.00 - 1.20	D	3		1	Greyish yellow SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	1.00 (0.20)	-0.64			
					End of Inspection Pit at 1.20 m	1.20	-0.84			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482031.79 N412038.38	Ground Elevation (m Datum)	0.62	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	02/09/2022	02/09/2022	Hand excavated			BS/GW/JK/ BW	BS/GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
02/09/2022	08:34	0.00			Overcast
02/09/2022	08:56	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT11 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH05 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	02/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482031.79 N412038.38	Ground Elevation (m Datum)	0.62	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					Probably MADE GROUND. Dark brown sandy CLAY with frequent rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	(0.65)				
					Light brown silty SAND with pockets (<60mm) of dark brown clay with occasional rootlets (<1mm). [ALLUVIUM] [SAND]	0.65 (0.55)	-0.04			
				1	End of Inspection Pit at 1.20 m	1.20	-0.58			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**MS-SCP12**
	Fugro Reference	F212561			
	Coordinates (m)	E482117.30 N412008.50	Ground Elevation (m Datum)	0.85	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			JJL/JK/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	11:00	0.00			Grey
25/08/2022	12:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Seismic cone penetration test, MS-SCPT12 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH27 and surrounding MS-BH11 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	25/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482117.30 N412008.50	Ground Elevation (m Datum)	0.85	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.20	D	1			Probably MADE GROUND. Brown slightly sandy CLAY with frequent rootlet (<1mm x 1mm x 30mm). Sand is fine. [MADE GROUND] [CLAY]	(0.60)				
						0.60	0.25			
0.70 - 0.80	D	2			Probably MADE GROUND. Yellowish grey SAND with frequent pockets (<25mm x 50mm x 55mm) of dark grey clay. Sand is fine and medium predominantly fine. [MADE GROUND] [SAND]	(0.30)				
						0.90	-0.05			
1.00 - 1.10	D	3		1	Probably MADE GROUND. Yellowish grey SAND. Sand is fine and medium. [MADE GROUND] [SAND]	(0.30)				
					End of Inspection Pit at 1.20 m	1.20	-0.35			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**MS-SCPM12**
	Fugro Reference	F212561			
	Coordinates (m)	E482118.30 N412008.50	Ground Elevation (m Datum)	0.85	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	03/10/2022	03/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
03/10/2022	15:30	0.00			Dry
03/10/2022	16:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Cone pressuremeter test, MS-CPM12 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH27 and surrounding MS-BH11 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	03/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCPM12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482118.30 N412008.50	Ground Elevation (m Datum)	0.85	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					Grass over slightly clayey sandy TOPSOIL with frequent rootlets (<1mm) and roots (<5mm x 50mm). Sand is fine to coarse [TOPSOIL]	(0.15) 0.15	0.70			
					Possibly MADE GROUND. Orangish brown silty SAND with pockets (10mm x 20mm) of clay and frequent rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.28) 0.43	0.42			
					Possibly MADE GROUND. Dark brown slightly clayey SAND. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.27) 0.70	0.15			
				1	Possibly MADE GROUND. Light brown silty SAND. Sand is fine and medium. [MADE GROUND] [SAND]	(0.35) 1.05	-0.20			
					Possibly MADE GROUND. Orangish brown silty SAND. Sand is fine and medium. [MADE GROUND] [SAND]	(0.15) 1.20	-0.35			
					End of Inspection Pit at 1.20 m					
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW | Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481823.05 N411989.59	Ground Elevation (m Datum)	0.73	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	24/08/2022	24/08/2022	Hand excavated			JJL/RW/JK	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
24/08/2022	10:45	0.00			
24/08/2022	11:30	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT13 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH07 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	24/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481823.05 N411989.59	Ground Elevation (m Datum)	0.73	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					TOPSOIL. Grass over topsoil. [TOPSOIL]	(0.10) 0.10	0.63			
0.20 - 0.30 0.20 - 0.60	D B	1 2			Probably MADE GROUND. Dark brown clayey SAND with some rootlets (<1mm x 2mm x 55mm). Sand is fine and medium predominantly fine. [MADE GROUND] [SAND]	(0.80)				
0.90 - 1.00 0.90 - 1.20	D B	3 4		1	Light greyish yellow SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.90 (0.30)	-0.17			
					End of Inspection Pit at 1.20 m	1.20	-0.47			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481942.85 N411983.42	Ground Elevation (m Datum)	0.81	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	24/08/2022	24/08/2022	Hand excavated			JJL/RW/JK	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
24/08/2022	12:00	0.00			
24/08/2022	12:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT14 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	24/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481942.85 N411983.42	Ground Elevation (m Datum)	0.81	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 - 0.40	D	1			MADE GROUND. Brown silty CLAY with occasional brick fragments (2mm x 3mm x 3mm). [MADE GROUND] [CLAY]	(0.75)				
0.75 - 0.85	D	2		1	Greyish yellow SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.75 (0.45)	0.06			
					End of Inspection Pit at 1.20 m	1.20	-0.39			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP15**	
Fugro Reference	F212561				
Coordinates (m)	E482093.25 N411955.82	Ground Elevation (m Datum)	0.69	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	08/09/2022	08/09/2022	Hand excavated			BS	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
08/09/2022	15:40	0.00			Overcast
08/09/2022	16:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Seismic cone penetration and cone pressuremeter tests, MS-SCPT15 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed between 0.65m and 1.00m during pitting operations, probably made ground descriptions added considering adjacent MS-BH12 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	08/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP15**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482093.25 N411955.82	Ground Elevation (m Datum)	0.69	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Dark brown clayey SAND with rare subangular fine gravel sized brick fragments and rare rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [SAND]	(0.65)				
0.70	D	2			Probably MADE GROUND. Black clayey SAND with occasional rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [SAND]	0.65 (0.35)	0.04			
				1	Light brown streaked orange slightly silty SAND with rare pockets (<5mm) of black clay. Sand is fine and medium. [ALLUVIUM] [SAND]	1.00 (0.20)	-0.31			
1.20	D	3			End of Inspection Pit at 1.20 m	1.20	-0.51			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP16**	
Fugro Reference	F212561				
Coordinates (m)	E481861.56 N411943.34	Ground Elevation (m Datum)	0.53	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			JLL/JK/BL	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	08:00	0.00			
25/08/2022	09:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT16 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	25/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSBG
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481861.56 N411943.34	Ground Elevation (m Datum)	0.53	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					TOPSOIL.	(0.10)				
					[TOPSOIL]	0.10	0.43			
					MADE GROUND. Dark brown locally black slightly clayey silty SAND, with abundant rootlets (<1mm). Sand is fine to coarse.	(0.20)				
0.30	D	1			[MADE GROUND] [SAND]	0.30	0.23			
					MADE GROUND. Blackish brown sandy CLAY with occasional subangular and subrounded fine to coarse gravel sized fragments of slag, with occasional rootlets (<1mm). Sand is fine and medium.					
0.70	D	2			[MADE GROUND] [CLAY]	(0.60)				
						0.90	-0.37			
				1	MADE GROUND. Blackish brown sandy CLAY with occasional subangular and subrounded fine to coarse gravel sized fragments of slag and occasional rootlets (<1mm). Sand is fine and medium.	(0.30)				
					[MADE GROUND] [CLAY]					
					End of Inspection Pit at 1.20 m	1.20	-0.67			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP17**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481939.92 N411927.62	Ground Elevation (m Datum)	0.66	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	05/09/2022	05/09/2022	Hand excavated			BS/RW/BL	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
05/09/2022	09:00	0.00			Sunny
05/09/2022	09:35	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT17 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	05/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP17**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481939.92 N411927.62	Ground Elevation (m Datum)	0.66	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Dark brown sandy CLAY with abundant angular to subrounded fine to coarse gravel sized fragments of mudstone, brick and quartz. Sand is fine to coarse. [MADE GROUND] [CLAY]	(0.60)				
					MADE GROUND. Black sandy CLAY with abundant black organic material (peat). Sand is fine and medium. With pockets (<30mm) of light brown sandy clay. Sand is fine. [MADE GROUND] [CLAY]	0.60 (0.60)	0.06			
				1	End of Inspection Pit at 1.20 m	1.20	-0.54			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW	Print Date	03/02/2023

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP18**	
Fugro Reference	F212561				
Coordinates (m)	E482135.20 N411946.57	Ground Elevation (m Datum)	0.60	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			JJL/JK/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	09:00	0.00			
25/08/2022	09:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Seismic cone penetration test, MS-SCPT18 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH13 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	25/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP18**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482135.20 N411946.57	Ground Elevation (m Datum)	0.60	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 - 0.40 0.30 - 0.65	D B	1 2			Probably MADE GROUND. Grass over light orange grey and brown SAND. Sand is fine and medium. [MADE GROUND] [SAND]	(0.65)				
0.65 - 0.75 0.70 - 1.10	D B	3 4		1	Orange and brown SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.65 (0.55)	-0.05			
					End of Inspection Pit at 1.20 m	1.20	-0.60			

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**MS-SCPM18**
	Fugro Reference	F212561			
	Coordinates (m)	E482134.20 N411946.60	Ground Elevation (m Datum)	0.60	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	03/10/2022	03/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
03/10/2022	14:57	0.00			Dry
03/10/2022	15:15	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Cone pressuremeter test, MS-CPM18 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH13 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	03/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCPM18**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482134.20 N411946.60	Ground Elevation (m Datum)	0.60	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					Possibly MADE GROUND. Brown clayey SAND with abundant rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.45)				
					Light brown slightly silty SAND with occasional rootlets (<1mm). Sand is fine to coarse [ALLUVIUM] [SAND]	0.45 (0.40)	0.15			
				1	Orangish brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.85 (0.35)	-0.25			
					End of Inspection Pit at 1.20 m	1.20	-0.60			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP19**	
Fugro Reference	F212561				
Coordinates (m)	E481817.50 N411889.77	Ground Elevation (m Datum)	0.53	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	24/08/2022	24/08/2022	Hand excavated			JJL/RW/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
24/08/2022	10:00	0.00			
24/08/2022	10:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT19 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH07 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	24/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW | Print Date | 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP19**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481817.50 N411889.77	Ground Elevation (m Datum)	0.53	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.20 0.10 - 0.40	D B	1 2			TOPSOIL. Grass over topsoil. [TOPSOIL]	(0.10) 0.10	0.43			
					Probably MADE GROUND. Brown clayey SAND with some rootlets (<1mm x 2mm x 55mm). Sand is fine and medium predominantly fine. [MADE GROUND] [SAND]	(0.50)				
0.70 - 0.80 0.70 - 1.00	D B	3 4		1	Light greyish yellow SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.60 (0.60)	-0.07			
					End of Inspection Pit at 1.20 m	1.20	-0.67			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP20**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481917.71 N411884.14	Ground Elevation (m Datum)	0.75	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	24/08/2022	24/08/2022	Hand excavated			JJL/JK/BL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
24/08/2022	09:00	0.00			
24/08/2022	09:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT20 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH16 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	24/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP20**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481917.71 N411884.14	Ground Elevation (m Datum)	0.75	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details				Groundwater	
Depth (m)	Type	No.	Test Results	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.20 0.10 - 0.40	D B	1 2		Probably MADE GROUND. Light brown silty SAND with occasional rootlets (<1mm x 2mm x 45mm). Sand is fine and medium predominantly fine. [MADE GROUND] [SAND]	(0.50)				
0.50 - 0.60 0.60 - 0.90	D B	3 4		Dark brown clayey SAND with some rootlets (<1mm x 2mm x 55mm). Sand is fine and medium predominantly fine. [ALLUVIUM] [SAND]	0.50 (0.70)	0.25			
				End of Inspection Pit at 1.20 m	1.20	-0.45			

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW	Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482014.44 N411918.06	Ground Elevation (m Datum)	1.07	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	24/08/2022	24/08/2022	Hand excavated			JJL	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
24/08/2022	11:00	0.00			Grey
24/08/2022	12:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT21 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed below 1.00m during pitting operations, probably made ground descriptions added considering adjacent MS-BH17 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	24/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482014.44 N411918.06	Ground Elevation (m Datum)	1.07	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.20	D	1			MADE GROUND. Brown SAND with abundant angular to subrounded fine to coarse gravel sized fragments of quartz, sandstone, mudstone, brick and concrete (<40mm x 65mm) and with some rootlets (<1mm x 1mm x 8mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.70)				
0.70 - 0.80	D	2			MADE GROUND. Greyish yellow SAND with occasional pockets (<35mm x 50mm x 70mm) of dark grey clay with occasional rounded fine gravel sized fragments of limestone and sandstone. Sand is fine to coarse predominantly fine. [MADE GROUND] [SAND]	0.70 (0.30)	0.36			
1.00 - 1.10	D	3		1	Probably MADE GROUND. Orange and grey SAND. Sand is fine and medium. [MADE GROUND] [SAND]	1.00 (0.20)	0.06			
					End of Inspection Pit at 1.20 m	1.20	-0.14			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW	Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482118.34 N411891.47	Ground Elevation (m Datum)	0.90	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			JLL/JK/BL	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	09:00	0.00			
25/08/2022	10:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT22 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	25/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSBG

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482118.34 N411891.47	Ground Elevation (m Datum)	0.90	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30 - 0.50	B	1			MADE GROUND. Dark brown sandy CLAY with abundant subangular fine to coarse gravel sized fragments of quartz, concrete and brick. with occasional rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	(0.90)				
0.75 - 0.90	B	2				0.90	0.00			
				1	Light brown stained orange silty SAND with occasional rootlets (<1mm). Sand is fine and medium. [ALLUVIUM] [SAND]	(0.30)				
					End of Inspection Pit at 1.20 m	1.20	-0.30			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482054.12 N411813.03	Ground Elevation (m Datum)	0.98	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	04/10/2022	04/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
04/10/2022	14:01	0.00			Dry
04/10/2022	14:30	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT23 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	04/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482054.12 N411813.03	Ground Elevation (m Datum)	0.98	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			Turf over brown TOPSOIL with abundant rootlets (<1mm). [TOPSOIL]	(0.10) 0.10	0.88			
0.10 - 0.40	B	2			Brown slightly clayey SAND with frequent rootlets (<1mm). Sand is fine to coarse. [ALLUVIUM] [SAND]	(0.45)				
					At 0.40m; root (5mm x 40mm)					
0.55	D	3			Light brown silty SAND with rare pockets (<2mm x 5mm) of clay. Sand is fine and medium. [ALLUVIUM] [SAND]	0.55	0.43			
0.55 - 0.90	B	4				(0.45)				
1.00	D	5		1	Orangish brown SAND. Sand is fine and medium [ALLUVIUM] [SAND]	1.00	-0.02			
1.00 - 1.20	B	6				(0.20)				
					End of Inspection Pit at 1.20 m	1.20	-0.22			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP24**	
Fugro Reference	F212561				
Coordinates (m)	E482114.48 N411823.43	Ground Elevation (m Datum)	0.91	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	04/10/2022	04/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
04/10/2022	14:30	0.00			Dry
04/10/2022	14:55	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT24 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	04/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482114.48 N411823.43	Ground Elevation (m Datum)	0.91	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			Brown TOPSOIL with frequent rootlets (<1mm) and roots (50mm x 5mm). [TOPSOIL]	(0.10) 0.10	0.81			
0.10 - 0.40	B	2			Brown slightly clayey SAND with frequent roots (<5mm x 50mm) and rootlets (<1mm). Sand is fine to coarse. [ALLUVIUM] [SAND]	(0.40)				
					At 0.20m; root (10mm x 50mm)					
0.50	D	3			Light brown clayey SAND with pockets (<30mm x 60mm) of clay. Sand is fine and medium. [ALLUVIUM] [SAND]	0.50	0.41			
0.50 - 0.90	B	4				(0.70)				
1.10	D	5		1						
1.10 - 1.20	B	6			1.10m to 1.20m; orangish brown silty sand					
					End of Inspection Pit at 1.20 m	1.20	-0.29			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP25**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482195.66 N411821.30	Ground Elevation (m Datum)	0.98	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	04/10/2022	04/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
04/10/2022	14:55	0.00			Dry
04/10/2022	15:25	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT25 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	04/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP25**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482195.66 N411821.30	Ground Elevation (m Datum)	0.98	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			TOPSOIL.	(0.10)				
0.10 - 0.40	B	2			[TOPSOIL]	0.10	0.88			
					Brown clayey SAND with occasional tree debris and frequent to abundant roots (<3mm x 500mm) and rootlets (<3mm). Sand is fine to coarse. [ALLUVIUM] [SAND]	(0.45)				
0.55	D	3				0.55	0.43			
0.55 - 0.90	B	4			Brown silty SAND with pockets (10mm x 20mm) of clay. Sand is fine and medium. [ALLUVIUM] [SAND]	(0.45)				
1.00	D	5		1		1.00	-0.02			
1.00 - 1.20	B	6			Light brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	(0.20)				
					End of Inspection Pit at 1.20 m	1.20	-0.22			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.60 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP26**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482010.17 N411729.07	Ground Elevation (m Datum)	1.22	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	13/10/2022	13/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
13/10/2022	15:56	0.00		Dry	Dry
13/10/2022	17:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT26 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	13/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP26**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482010.17 N411729.07	Ground Elevation (m Datum)	1.22	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Dark blackish brown GRAVEL. Gravel is subangular and subrounded fine and medium of clinker. [MADE GROUND]	(0.10) 0.10	1.12			
0.20	D	1			MADE GROUND. Light yellowish brown GRAVEL. Gravel is subangular and subrounded fine and medium (100mm x 150mm) of roadstone. [MADE GROUND] [GRAVEL]	(0.20) 0.30	0.92			
0.40 - 0.50	B	4				(0.30)				
0.50	D	3			MADE GROUND. Light grey SAND with abundant subangular and subrounded fine gravel sized fragments of concrete. Sand is fine to coarse. [MADE GROUND] [SAND] At 0.35m; layer of geotextile.	0.60	0.62			
0.70	D	5				(0.40)				
0.70 - 0.90	B	6								
				1	MADE GROUND. Dark brown clayey SAND with frequent subangular and subrounded fine (<5mm x 10mm) gravel sized fragments of possibly clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	1.00	0.22			
1.10	D	7			Possibly MADE GROUND. Brown slightly sandy CLAY. Sand is fine and medium. [MADE GROUND] [CLAY] At 1.10m; 1 No. root (3mm x 70mm).	(0.20) 1.20	0.02			
1.10 - 1.20	B	8			End of Inspection Pit at 1.20 m					
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP27**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482109.17 N411723.95	Ground Elevation (m Datum)	1.98	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.60	IP	27/10/2022	27/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
27/10/2022	14:27	0.00		Dry	Dry/ Overcast
27/10/2022	15:00	0.60		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.60m.
2. Inspection pit terminated at 0.60m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.60	Arisings	27/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP27**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482109.17 N411723.95	Ground Elevation (m Datum)	1.98	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.20 0.20 - 0.30	D B	1 2			MADE GROUND. Black SAND with abundant subangular and subrounded fine gravel sized fragments of clinker and concrete. Sand is fine to coarse. [MADE GROUND]	(0.10) 0.10	1.88			
					MADE GROUND. Brownish yellow SAND with abundant subangular and subrounded fine to coarse gravel sized fragments of dolomite roadstone. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.50)				
					End of Inspection Pit at 0.60 m	0.60	1.38			
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP28**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482206.10 N411718.48	Ground Elevation (m Datum)	1.86	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.35	IP	13/10/2022	13/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
13/10/2022	12:10	0.00		Dry	Dry
13/10/2022	13:00	0.35		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.35m.
2. Inspection pit terminated at depth of 0.35m due to soakaway encountered.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.35	Arisings	13/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP28**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482206.10 N411718.48	Ground Elevation (m Datum)	1.86	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Blackish brown GRAVEL over asphalt. Gravel is subangular and subrounded (<30mm x 50mm). [MADE GROUND] [GRAVEL]	(0.30)				
					MADE GROUND. Yellowish brown GRAVEL. [MADE GROUND] [GRAVEL] At 0.30m; asphalt lining.	0.30 (0.05) 0.35	1.56 1.51			
					End of Inspection Pit at 0.35 m					
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**MS-SCP29**
	Fugro Reference	F212561			
	Coordinates (m)	E482102.60 N411634.78	Ground Elevation (m Datum)	0.40	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/10/2022	26/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/10/2022	08:49	0.00		Dry	Dry
26/10/2022	11:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Inspection pit widened 10cm to the north due to concrete at 0.40m.
3. Static cone penetration test, MS-CPT29 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	26/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP29**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482102.60 N411634.78	Ground Elevation (m Datum)	0.40	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.30	D B	1 2			MADE GROUND. Brownish black SAND with abundant subangular and subrounded fine and medium gravel sized fragments of clinker and brick. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.10) 0.10	0.30			
				1	MADE GROUND. Black brown SAND with abundant subangular and subrounded fine and medium gravel sized fragments of clinker and with occasional fragments of brick (100mm x 200mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(1.10)				
					End of Inspection Pit at 1.20 m	1.20	-0.80			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP30**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482184.64 N411645.51	Ground Elevation (m Datum)	2.28	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.85	IP	07/10/2022	07/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
07/10/2022	08:39	0.00			Dry
07/10/2022	10:20	0.85		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.85m.
2. Inspection pit terminated above scheduled depth of 1.20m due to refusal on concrete at 0.85m.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.85	Arisings	07/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP30**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482184.64 N411645.51	Ground Elevation (m Datum)	2.28	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.20 0.20 - 0.40	D B	1 2			MADE GROUND. Asphalt, clinker and concrete with rare fragments (<50mm x 100mm) of brick. [MADE GROUND]	(0.40)				
0.50 0.50 - 0.70	D B	3 4			MADE GROUND. Brown clayey SAND with frequent subangular and subrounded fine and medium gravel sized fragments of clinker and brick with occasional cobble sized (50mmx 100mm) fragments of clinker and rare cobble sized (50mmx 10mm) fragments of brick. Sand is fine to coarse. [MADE GROUND] [SAND] At 0.45m; 2 No. rebar (20mmx400mm) At 0.70m; 1No rebar	0.40 (0.45)	1.88			
				1	End of Inspection Pit at 0.85 m	0.85	1.43			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.65 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP31**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481841.29 N412213.69	Ground Elevation (m Datum)	0.50	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	01/09/2022	01/09/2022	Hand excavated			BS/BL/RW	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
01/09/2022	10:00	0.00			Overcast
01/09/2022	10:30	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT31 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH19 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	01/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP31**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481841.29 N412213.69	Ground Elevation (m Datum)	0.50	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30	D	1			Probably MADE GROUND. Light brown streaked pale orange sandy CLAY with rootlets (<1mm) and with abundant black medium and coarse sand size carbonaceous debris. [MADE GROUND] [CLAY]	(0.55)				
						0.55	-0.06			
0.70	D	2			Probably MADE GROUND. Light brown silty SAND with some rootlets (<1mm) and abundant pockets (<20mm) of brown sandy clay. Sand is fine. [MADE GROUND] [SAND]	(0.20)				
0.80	D	3				0.75	-0.26			
				1	Light brown mottled orange clayey SAND with occasional rootlets (<1mm). Sand is fine. [ALLUVIUM] [SAND]	(0.45)				
					End of Inspection Pit at 1.20 m	1.20	-0.70			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP32**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481933.75 N412183.96	Ground Elevation (m Datum)	0.27	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	07/09/2022	07/09/2022	Hand excavated			OE	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
07/09/2022	15:10	0.00			Sunny
07/09/2022	15:45	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT32 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH02 and MS-BH19 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	07/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP32**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481933.75 N412183.96	Ground Elevation (m Datum)	0.27	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					Probably MADE GROUND. Dark brown CLAY with occasional rootlets (<1mm), rare roots (3mm), with occasional subangular and subrounded fine to coarse gravel sized fragments of quartz and brick and occasional black sand sized carbonaceous debris. Sand is fine to coarse. [MADE GROUND] [CLAY]	(0.50)				
					Dark brown slightly silty SAND with frequent rootlets (<1mm) and occasional pockets (<30mm) of black peaty clay. Sand is fine and medium predominantly fine. [ALLUVIUM] [SAND]	0.50 (0.30)	-0.23			
				1	Brown silty SAND with occasional pockets (<30mm) of greyish brown clay. Sand is fine and medium predominantly fine. [ALLUVIUM] [SAND]	0.80 (0.40)	-0.53			
					End of Inspection Pit at 1.20 m	1.20	-0.93			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP33**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482033.72 N412178.42	Ground Elevation (m Datum)	0.37	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	01/09/2022	01/09/2022	Hand excavated			BS/BL/RW	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
01/09/2022	10:55	0.00			Overcast
01/09/2022	11:25	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT33 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering surrounding MS-BH01 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	01/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP33**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482033.72 N412178.42	Ground Elevation (m Datum)	0.37	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					Possibly MADE GROUND. Dark brown sandy CLAY with rootlets (<1mm) with decomposed wood fragments. Sand is fine. [MADE GROUND] [CLAY]	(0.40)				
					Light brown mottled orange sandy CLAY with occasional rootlets (<1mm). Sand is fine. [ALLUVIUM] [CLAY]	0.40 (0.30)	-0.03			
					Black sandy CLAY with frequent rootlets (<1mm). with frequent particles of organic matter. Sand is fine. [ALLUVIUM] [CLAY]	0.70 (0.30)	-0.33			
				1	Light brown SAND with pockets (<50mm) of black clay. with abundant particles of black organic matter. Sand is fine and medium. [ALLUVIUM] [SAND]	1.00 (0.20)	-0.63			
					End of Inspection Pit at 1.20 m	1.20	-0.83			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP34**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482103.39 N412152.65	Ground Elevation (m Datum)	0.35	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	02/09/2022	02/09/2022	Hand excavated			OE	OE	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
02/09/2022	15:00	0.00			Sunny
02/09/2022	15:20	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT34 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	02/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP34**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482103.39 N412152.65	Ground Elevation (m Datum)	0.35	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Dark brown slightly silty SAND with occasional subangular fine to coarse gravel sized fragments of brick and with frequent rootlets (<1mm) and occasional pockets of dark grey brown clay. [MADE GROUND] [SAND]	(0.50)				
						0.50	-0.15			
					Orangish brown mottled dark brown silty SAND with occasional pockets of dark brown clay and occasional rootlets (<1mm). Sand is fine. [ALLUVIUM] [SAND]	(0.70)				
				1						
					End of Inspection Pit at 1.20 m	1.20	-0.85			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stale	0.45 m 0.45 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP35**	
Fugro Reference	F212561				
Coordinates (m)	E482011.77 N411979.34	Ground Elevation (m Datum)	0.78	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	25/08/2022	25/08/2022	Hand excavated			JJL/JK/RW	JJL	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
25/08/2022	10:30	0.00			
25/08/2022	11:15	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT35 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent MS-BH15 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	25/08/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP35**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482011.77 N411979.34	Ground Elevation (m Datum)	0.78	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.20	D	1			Probably MADE GROUND. Brown and dark brown slightly sandy CLAY. Sand is fine. [MADE GROUND] [CLAY]	(0.80)				
0.80 - 0.90	D	2			Light greyish yellow SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.80 (0.40)	-0.02			
				1	End of Inspection Pit at 1.20 m	1.20	-0.42			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Good	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**MS-SCP36**	
Fugro Reference	F212561				
Coordinates (m)	E482110.54 N411781.98	Ground Elevation (m Datum)	0.92	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	04/10/2022	04/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
04/10/2022	15:25	0.00			Dry/Overcast
04/10/2022	15:40	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, MS-CPT36 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	04/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-SCP36**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482110.54 N411781.98	Ground Elevation (m Datum)	0.92	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			Brown TOPSOIL with frequent rootlets (<3mm)	(0.10)				
0.10 - 0.30	B	2			[TOPSOIL]	0.10	0.82			
					Brown clayey SAND with tree debris and frequent roots (<5mm x 200mm) and rootlets (<2mm). Sand is fine and medium. [ALLUVIUM] [SAND]	(0.40)				
0.50	D	3			Light brown silty SAND with rare pockets (<1mm x 5mm) of clay. Sand is fine and medium. [ALLUVIUM] [SAND]	0.50	0.42			
0.50 - 0.65	B	4				(0.20)				
0.70	D	5			Orangish brown silty SAND. Sand is fine and medium [ALLUVIUM] [SAND]	0.70	0.22			
0.70 - 1.10	B	6		1	At 0.90m; root (5mm x 150mm)	(0.50)				
					End of Inspection Pit at 1.20 m	1.20	-0.28			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**BR-SCP01**
	Fugro Reference	F212561			
	Coordinates (m)	E482095.20 N411651.80	Ground Elevation (m Datum)	2.34	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.10	IP	26/10/2022	26/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/10/2022	12:10	0.00		Dry	Dry
26/10/2022	14:45	1.10		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.10m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, BR-CPT01 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.10	Arisings	26/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482095.20 N411651.80	Ground Elevation (m Datum)	2.34	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.20	D	1			MADE GROUND. Brownish yellow slightly sandy subangular and subrounded fine and medium gravel sized roadstone. Sand is fine to coarse.					
0.20 - 0.30	B	2			[MADE GROUND] [GRAVEL]	(0.40)				
					0.00m to 0.10m; black gravel. Gravel is subangular and subrounded fine of clinker and bituminous paving material.					
0.40	D	3			At 0.30m; plastic sheeting.	0.40	1.94			
0.40 - 0.50	B	4			MADE GROUND. Black slightly clayey SAND with occasional subangular and subrounded fine gravel sized fragments of clinker with rare rootlets (<4mm). Sand is fine to coarse.					
					[MADE GROUND] [SAND]					
					At 0.40m; fragment of wire (5mm x 150mm)	(0.70)				
				1						
					End of Inspection Pit at 1.10 m	1.10	1.24			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**HR-SCP20**	
Fugro Reference	F212561				
Coordinates (m)	E482040.79 N411650.29	Ground Elevation (m Datum)	1.42	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/10/2022	06/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/10/2022	16:00	0.00		Dry	
06/10/2022	17:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, HR-CPT20 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	06/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP20**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482040.79 N411650.29	Ground Elevation (m Datum)	1.42	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.40	D B	1 2			MADE GROUND. SAND with abundant subangular and subrounded fine gravel sized (30mm x 70mm) fragments of clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.75)				
0.80 0.80 - 0.95	D B	3 4			Stiff brown CLAY with frequent pockets of orangish brown sand and black carbonaceous debris (<1mm). Sand is fine and medium. [ALLUVIUM] [CLAY]	0.75 (0.25)	0.67			
1.00 1.00 - 1.20	D B	5 6		1	Stiff blackish brown slightly sandy CLAY with occasional black carbonaceous debris (<5mm) and rare pockets of orangish brown fine to coarse sand. Sand is fine and medium. [ALLUVIUM] [CLAY] At 1.05m; black decomposed wood (10mm x 50mm)	1.00 (0.20)	0.42			
					End of Inspection Pit at 1.20 m	1.20	0.22			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW | Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480334.31 N410094.40	Ground Elevation (m Datum)	1.81	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.30	IP	18/10/2022	18/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
18/10/2022	10:40	0.00			Dry/sun
18/10/2022	11:17	1.30		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.30m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT01 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed between 0.40m and 1.00m during pitting operations, probably made ground descriptions added considering adjacent AR-BH01 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.30	Arisings	18/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480334.31 N410094.40	Ground Elevation (m Datum)	1.81	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. BITUMINOUS PAVING MATERIAL over slightly sandy subrounded medium gravel sized roadstone. [MADE GROUND]	(0.25)				
						0.25	1.56			
					MADE GROUND. Yellowish brown SAND with abundant subrounded fine and medium gravel sized roadstone. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.15)				
0.40 - 0.60	B	2				0.40	1.41			
0.50	D	1			Probably MADE GROUND. Blackish brown CLAY, with rare rootlets (<1mm). [MADE GROUND] [CLAY]	(0.60)				
1.00	D	3		1		1.00	0.81			
1.00 - 1.20	B	4			Soft brown slightly sandy CLAY. Sand is fine to coarse. With pockets of light brown fine and medium sand. [ALLUVIUM] [CLAY]	(0.30)				
					End of Inspection Pit at 1.30 m	1.30	0.51			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**AR-SCP02**
	Fugro Reference	F212561			
	Coordinates (m)	E480347.81 N410189.59	Ground Elevation (m Datum)	1.30	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	18/10/2022	18/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
18/10/2022	11:46	0.00			Dry sunny
18/10/2022	13:15	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT02 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed between 0.61m and 1.10m during pitting operations, probably made ground descriptions added considering general subsurface conditions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	18/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480347.81 N410189.59	Ground Elevation (m Datum)	1.30	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details				Groundwater	
Depth (m)	Type	No.	Test Results	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
				MADE GROUND. BITUMINOUS PAVING MATERIAL and dark brownish black subangular and subrounded gravel sized (<20mm x 30mm) roadstone. [MADE GROUND]	(0.30)				
				MADE GROUND. Yellowish brown slightly sandy subangular gravel sized roadstone. Sand is fine to coarse. [MADE GROUND] [GRAVEL]	0.30	1.00			
				0.30m to 0.40m; dark brownish black slightly sandy subangular and subrounded fine to coarse gravel sized roadstone. Sand is fine to coarse.	(0.30)				
0.60 - 0.70	B	2		Probably MADE GROUND. Dark brown sandy CLAY, with pockets of light brown sand. Sand is fine and medium [MADE GROUND] [CLAY]	0.60	0.70			
0.65	D	1			(0.20)				
0.80	D	3		Probably MADE GROUND. Dark brownish black silty sand with occasional pockets (50mm x 100mm) of brown clay. Sand is fine and medium predominantly fine. [MADE GROUND] [SAND]	0.80	0.50			
0.80 - 1.00	B	4			(0.30)				
1.10	D	5		Light brown silty SAND with pockets (<3mm x 5mm) of orangish brown sand and pockets (<2mm x 5mm) of clay. Sand is fine and medium. [ALLUVIUM] [SAND]	1.10	0.20			
1.10 - 1.20	B	6			(0.10)				
				End of Inspection Pit at 1.20 m	1.20	0.10			

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	stable	0.40 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**AR-SCP03**	
Fugro Reference	F212561				
Coordinates (m)	E480362.27 N410292.25	Ground Elevation (m Datum)	1.59	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	14/10/2022	14/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
14/10/2022	09:05	0.00		Dry	Dry
14/10/2022	10:10	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT03 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed between 0.60m and 0.85m during pitting operations, probably made ground descriptions added considering general subsurface conditions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	14/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480362.27 N410292.25	Ground Elevation (m Datum)	1.59	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					BITUMINOUS PAVING MATERIAL. [MADE GROUND]	(0.15)				
					MADE GROUND. Yellowish brown SAND with abundant subangular and subrounded fine gravel sized roadstone. Sand is fine to coarse. [MADE GROUND] [GRAVEL]	0.15 (0.25)	1.44			
0.40 - 0.60	B	2			Probably MADE GROUND. Dark brown CLAY with occasional rootlets (<1mm). [MADE GROUND] [CLAY]	0.40 (0.20)	1.18			
0.45	D	1			Probably MADE GROUND. Brown slightly sandy CLAY with occasional pockets of (<5mm x 10mm) orange brownish sand. Sand is fine to coarse. [MADE GROUND] [CLAY]	0.60 (0.25)	0.98			
0.70	D	3			Light brown and dark brown clayey SAND. Sand is fine to coarse. [ALLUVIUM] [SAND]	0.85 (0.25)	0.74			
0.90	D	4			Stiff brown slightly sandy CLAY with pockets (<5mm) of light brown sand. Sand is fine and medium. [ALLUVIUM] [CLAY]	1.10 (0.10)	0.48			
0.90 - 1.00	B	5		1	End of Inspection Pit at 1.20 m	1.20	0.38			
1.10	D	6								
1.10 - 1.20	B	7								
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m 0°

Print Date: 03/02/2023

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**AR-SCP04**	
Fugro Reference	F212561				
Coordinates (m)	E480389.27 N410389.61	Ground Elevation (m Datum)	1.28	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	07/09/2022	07/09/2022	Hand excavated			BS	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
07/09/2022	13:49	0.00			Cold
07/09/2022	14:14	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT04 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering general subsurface conditions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	07/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480389.27 N410389.61	Ground Elevation (m Datum)	1.28	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			Probably MADE GROUND. Dark brown sandy CLAY with abundant rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	(0.45)				
0.10 - 0.40	B	2				0.45	0.83			
0.50	D	3			Light brown silty SAND with rare rootlets (<1mm) and abundant black sand sized carbonaceous debris. Sand is fine. [ALLUVIUM] [SAND]	(0.41)				
0.50 - 0.80	B	4				0.86	0.42			
0.86 - 0.95	B	6			Firm greyish light brown sandy CLAY with rootlets (<1mm). Sand is fine. [ALLUVIUM] [CLAY]	(0.09)	0.33			
0.90	D	5				0.95				
0.95 - 1.20	B	8		1	Black silty SAND with frequent pockets (20mm x 30mm) of black clay. Sand is fine and medium. [ALLUVIUM] [SAND]	(0.25)				
1.20	D	7			End of Inspection Pit at 1.20 m	1.20	0.08			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480390.06 N410490.44	Ground Elevation (m Datum)	1.54	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/09/2022	06/09/2022	Hand excavated			BS/BL	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/09/2022	09:30	0.00			Overcast
06/09/2022	10:05	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT05 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering general subsurface conditions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	06/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480390.06 N410490.44	Ground Elevation (m Datum)	1.54	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30	D	2			Probably MADE GROUND. Dark brown slightly sandy CLAY with frequent rootlets (<1mm). Sand is fine. [MADE GROUND] [SAND]					
0.30 - 0.60	B	1				(0.80)				
						0.80	0.74			
0.90	D	4			Light brown mottled orange silty SAND. Sand is fine. [ALLUVIUM] [SAND]					
0.90 - 1.20	B	3		1		(0.40)				
					End of Inspection Pit at 1.20 m	1.20	0.34			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480416.83 N410587.66	Ground Elevation (m Datum)	1.40	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	13/10/2022	13/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
13/10/2022	08:37	0.00		Dry	Dry
13/10/2022	09:10	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT06 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	13/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480416.83 N410587.66	Ground Elevation (m Datum)	1.40	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details				Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike / Backfill / Installation
0.10 0.10 - 0.40	D B	1 2			MADE GROUND, dark brown clayey SAND, with occasional rootlets (<1mm) and rare subangular and subrounded fine gravel sized roadstone. Sand is fine to coarse. [MADE GROUND] [SAND] 0.00m to 0.10m; topsoil.	(0.60)			
0.70 0.70 - 0.90	D B	3 4		1	Brown clayey SAND with rare orange pockets (3mm x 5mm) of sand. Sand is fine to coarse. [ALLUVIUM] [SAND]	0.60 (0.50)	0.80		
1.10 1.10 - 1.20	D B	5 6			Light brown silty SAND with occasional black organic material (60mm x 70mm). Sand is fine and medium. [ALLUVIUM] [SAND]	1.10 (0.10) 1.20	0.30 0.20		
				2	End of Inspection Pit at 1.20 m				
				3					
				4					

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480417.41 N410688.22	Ground Elevation (m Datum)	1.19	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/09/2022	06/09/2022	Hand excavated			BS/BL	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/09/2022	11:55	0.00			Overcast, raining
06/09/2022	12:35	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT07 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	06/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	CAY / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480417.41 N410688.22	Ground Elevation (m Datum)	1.19	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.50 0.50 - 0.80	D B	1 2			MADE GROUND. Dark brown sandy CLAY with occasional subangular fine gravel sized fragments of brick and with frequent rootlets (<1mm). Sand is mainly fine and medium. [MADE GROUND] [CLAY]	(0.90)				
1.10 1.10 - 1.20	D B	3 4		1	Black clayey SAND with occasional rootlets (<1mm). Sand is fine. [ALLUVIUM] [SAND]	0.90 (0.30)	0.29			
					End of Inspection Pit at 1.20 m	1.20	-0.01			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480444.65 N410785.62	Ground Elevation (m Datum)	0.75	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	07/09/2022	07/09/2022	Hand excavated			BS	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
07/09/2022	12:48	0.00			Cold
07/09/2022	13:14	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT08 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed below 0.60m during pitting operations, probably made ground descriptions added considering general subsurface conditions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	07/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480444.65 N410785.62	Ground Elevation (m Datum)	0.75	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.40	D B	1 2			MADE GROUND. Dark brown sandy CLAY with occasional subangular fine gravel sized fragments of brick and concrete. Sand is fine. [MADE GROUND] [CLAY]	(0.60)				
0.60 0.60 - 0.90	D B	3 4			Probably MADE GROUND. Black silty SAND with occasional pockets (<15mm x 20mm) of black clay and roots (<5mm). Sand is fine and medium. [MADE GROUND] [SAND]	0.60 (0.40)	0.15			
1.00 1.00 - 1.20	D B	5 6		1	Probably MADE GROUND. Grey stained orange sandy CLAY with organic plant matter. Sand is fine and medium. [MADE GROUND] [CLAY]	1.00 (0.20)	-0.25			
					End of Inspection Pit at 1.20 m	1.20	-0.45			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP09**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480444.94 N410886.70	Ground Elevation (m Datum)	1.40	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/09/2022	06/09/2022	Hand excavated			BS/BL	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/09/2022	14:00	0.00			Overcast
06/09/2022	14:43	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT09 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering general subsurface conditions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	06/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP09**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480444.94 N410886.70	Ground Elevation (m Datum)	1.40	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30	D	1			Probably MADE GROUND. Dark brown sandy CLAY with rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]					
0.30 - 0.60	B	2				(0.75)				
0.80	D	3			Dark brown silty SAND with rootlets (<1mm) and occasional pockets of soft black clay. Sand is fine and medium. [ALLUVIUM] [SAND]	0.75	0.64			
0.80 - 1.10	B	4				(0.35)				
1.10 - 1.20	B	6		1		1.10	0.30			
1.20	D	5			Light brown mottled orange silty SAND. Sand is fine. [ALLUVIUM] [SAND]	(0.10) 1.20	0.20			
					End of Inspection Pit at 1.20 m					
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480470.24 N410984.11	Ground Elevation (m Datum)	1.30	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	09/09/2022	09/09/2022	Hand excavated			BS	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
09/09/2022	12:14	0.00			Cold
09/09/2022	12:35	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT10 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	09/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480470.24 N410984.11	Ground Elevation (m Datum)	1.30	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1		0	MADE GROUND. Dark brown sandy CLAY with frequent subangular coarse fragments of quartz, brick and concrete rubble and with abundant rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	(0.70)				
0.10 - 0.40	B	2								
0.70 - 0.90	B	4				0.70	0.60			
0.80	D	3			Black silty SAND with pockets (<20mm x 30mm) of firm black clay and occasional rootlets (<1mm). [ALLUVIUM] [SAND]	(0.20)				
0.90	D	5				0.90	0.40			
0.90 - 1.20	B	6		1	Light brown stained orange slightly gravelly silty SAND with occasional pockets (<10mm x 20mm) of soft black clay. Sand is fine and medium. Gravel is subangular and subrounded fine to coarse of quartz. [ALLUVIUM] [SAND]	(0.30)				
					End of Inspection Pit at 1.20 m	1.20	0.10			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**AR-SCP11**	
Fugro Reference	F212561				
Coordinates (m)	E480473.42 N411084.17	Ground Elevation (m Datum)	1.39	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.30	IP	06/09/2022	06/09/2022	Hand excavated			BS/BL	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/09/2022	14:54	0.00			Overcast
06/09/2022	15:50	1.30		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.30m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT11 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering general subsurface conditions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.30	Arisings	06/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW | Print Date | 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480473.42 N411084.17	Ground Elevation (m Datum)	1.39	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30	D	1			MADE GROUND. Dark brown sandy CLAY with frequent rootlets (<1mm) and occasional roots (<10mm). Sand is fine. [MADE GROUND] [CLAY]					
0.30 - 0.60	B	2				(0.74)				
0.80	D	3			Dark mottled orange brown silty SAND with occasional rootlets (<1mm). Sand is fine and medium. [ALLUVIUM] [SAND]	0.74	0.65			
0.80 - 1.00	B	4				(0.24)				
1.00	D	5		1	Light brown silty SAND with rare pockets (5-10mm) of soft black clay. Sand is fine and medium. [ALLUVIUM] [SAND]	0.98	0.41			
1.00 - 1.20	B	6				(0.32)				
					End of Inspection Pit at 1.30 m	1.30	0.09			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**AR-SCP12**	
Fugro Reference	F212561				
Coordinates (m)	E480608.38 N411147.50	Ground Elevation (m Datum)	1.35	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	07/09/2022	07/09/2022	Hand excavated			BS	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
07/09/2022	10:20	0.00			Overcast
07/09/2022	10:50	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT12 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	07/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480608.38 N411147.50	Ground Elevation (m Datum)	1.35	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.40	D B	1 2			MADE GROUND. Dark brown sandy CLAY with occasional subangular fine gravel sized fragments of bituminous pavement material and with rootlets (<1mm). Sand is mainly fine. [MADE GROUND] [CLAY]	(0.70)				
0.70 0.70 - 0.90	D B	3 4			MADE GROUND. Black silty SAND with pockets (10 x 20mm) of black clay and occasional rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [SAND]	0.70 (0.20)	0.65			
0.90 - 1.20 1.00	B D	6 5		1	Orangish brown slightly silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	0.90 (0.30)	0.45			
					End of Inspection Pit at 1.20 m	1.20	0.15			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**AR-SCP13**
	Fugro Reference	F212561			
	Coordinates (m)	E480705.86 N411171.70	Ground Elevation (m Datum)	1.26	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/09/2022	06/09/2022	Hand excavated			BS/BL	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/09/2022	15:50	0.00			Overcast
06/09/2022	16:20	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT13 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	06/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480705.86 N411171.70	Ground Elevation (m Datum)	1.26	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.00 - 0.30	B	2			MADE GROUND. Dark brown sandy CLAY with rootlets (<1mm). Sand is fine. [MADE GROUND] [CLAY]	(0.50)				
0.30	D	1								
0.50	D	3				0.50	0.76			
0.50 - 0.80	B	4			MADE GROUND. Light brown speckled orange sandy CLAY with rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	(0.30)				
0.80	D	5				0.80	0.46			
0.80 - 1.10	B	6			MADE GROUND. Black gravelly silty SAND. Sand is fine and medium. Gravel is subangular fine quartz. [MADE GROUND] [SAND]	(0.30)				
1.10 - 1.20	B	8		1		1.10	0.16			
1.20	D	7			Light brown mottled orange silty SAND with occasional pockets (10mm x 20mm) of soft black clay with rootlets (<1mm). Sand is fine and medium. [ALLUVIUM] [SAND]	(0.10)	0.06			
					End of Inspection Pit at 1.20 m	1.20				
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480807.18 N411170.16	Ground Elevation (m Datum)	1.30	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.30	IP	07/09/2022	07/09/2022	Hand excavated			BS	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
07/09/2022	09:53	0.00			Overcast
07/09/2022	10:05	1.30		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.30m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT14 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering general subsurface conditions.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.30	Arisings	07/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480807.18 N411170.16	Ground Elevation (m Datum)	1.30	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.40	D B	1 2			Probably MADE GROUND. Dark brown sandy CLAY with abundant rootlets (<1mm). Sand is fine. [MADE GROUND] [CLAY]	(0.50)				
						0.50	0.80			
0.70 0.70 - 1.00	D B	3 4		1	Light brown mottled dark brown silty SAND with rare pockets (5mm x 10mm) of soft black clay and frequent rootlets (<1mm). [ALLUVIUM] [SAND]	(0.80)				
					End of Inspection Pit at 1.30 m	1.30	0.00			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**AR-SCP15**	
Fugro Reference	F212561				
Coordinates (m)	E480904.21 N411183.54	Ground Elevation (m Datum)	1.22	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/10/2022	06/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/10/2022	09:33	0.00			Dry
06/10/2022	10:05	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT15 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	06/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP15**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480904.21 N411183.54	Ground Elevation (m Datum)	1.22	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Dark brown slightly sandy CLAY with occasional rootlets (<1mm) with rare (1 No.) brick fragments (<150mm x 100mm), Sand is fine to coarse. [MADE GROUND] [CLAY] 0.00m to 0.10m; topsoil.	(0.65)				
0.10 - 0.50	B	2								
0.65	D	3			Brown silty SAND with frequent pockets (<5mm) of clay and occasional rootlets (<1mm). Sand is fine and medium. [ALLUVIUM] [SAND]	0.65 (0.15)	0.57			
0.65 - 0.75	B	4								
0.80	D	5			Soft brown slightly sandy CLAY. Sand is fine to coarse with rare pockets of orangish brown fine to coarse sand. [ALLUVIUM] [CLAY]	0.80 (0.20)	0.42			
0.80 - 0.90	B	6								
1.00	D	7		1	Soft blackish brown slightly sandy CLAY with occasional black organic matter. Sand is fine and medium. [ALLUVIUM] [CLAY]	1.00 (0.20)	0.22			
1.00 - 1.20	B	8			End of Inspection Pit at 1.20 m	1.20	0.02			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.30 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481005.77 N411194.36	Ground Elevation (m Datum)	1.28	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.30	IP	07/09/2022	07/09/2022	Hand excavated			BS	BS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
07/09/2022	09:00	0.00			Overcast
07/09/2022	09:30	1.30		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.30m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT16 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.30	Arisings	07/09/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481005.77 N411194.36	Ground Elevation (m Datum)	1.28	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.30	B	2			MADE GROUND. Dark brown sandy CLAY with frequent angular fine to coarse gravel sized fragments of brick and concrete and with abundant rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [CLAY]	(0.40)				
0.30	D	1								
0.40 - 0.70	B	4			MADE GROUND. Dark brown sandy CLAY with frequent rootlets (<1mm). Sand is fine and medium. [MADE GROUND] [CLAY]	0.40 (0.30)	0.88			
0.70	D	3			Light brown silty SAND with pockets of firm dark brown clay and occasional rootlets (<1mm). Sand is fine and medium. [ALLUVIUM] [SAND]	0.70 (0.60)	0.58			
0.90 - 1.20	B	6		1						
1.20	D	5			End of Inspection Pit at 1.30 m	1.30	-0.02			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.35 m 0.35 m → 0°

Print Date: 03/02/2023

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**AR-SCP17**	
Fugro Reference	F212561				
Coordinates (m)	E481103.20 N411220.50	Ground Elevation (m Datum)	1.28	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	13/10/2022	13/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
13/10/2022	14:57	0.00		Dry	Dry
13/10/2022	16:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT17 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	13/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP17**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481103.20 N411220.50	Ground Elevation (m Datum)	1.28	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					BITUMINOUS PAVING MATERIAL over roadstone. [MADE GROUND] At 0.12m; 1 No. brick (15mmx 100mm).	(0.31)				
					At 0.30m; bituminous paving material.	0.31	0.97			
0.40	D	1			MADE GROUND. Brown clayey SAND with frequent subangular and subrounded fine and medium gravel sized fragments of brick and clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.14)				
0.40 - 0.50	B	2				0.45	0.83			
0.80	D	3			Stiff brown sandy CLAY. Sand is fine to coarse. [ALLUVIUM] [CLAY]					
0.80 - 1.00	B	5		1		(0.75)				
					End of Inspection Pit at 1.20 m	1.20	0.08			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**AR-SCP21**
	Fugro Reference	F212561			
	Coordinates (m)	E481718.31 N411574.56	Ground Elevation (m Datum)	2.20	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	12/10/2022	12/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
12/10/2022	08:42	0.00		Dry	Dry
12/10/2022	09:15	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, AR-CPT21 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	12/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-SCP21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481718.31 N411574.56	Ground Elevation (m Datum)	2.20	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Dark brown gravelly clayey SAND with occasional rootlets (<1mm). Sand is fine to coarse. Gravel is subangular and subrounded fine (<20mm x 50mm). [MADE GROUND] [SAND] 0.00m to 0.10m; topsoil. At 0.15m; 3 No. bricks (<100 x 200mm).	(0.45)				
0.50	D	2			Light grey silty SAND with rare pockets (<3mm x 5mm) of orange brown sand. Sand is fine. [ALLUVIUM] [SAND]	0.45 (0.25)	1.74			
0.75	D	3		1	Brown slightly gravelly silty SAND with occasional pockets (<2mm x 5mm) of clay. Sand is mainly fine and medium. Gravel is subangular and subrounded fine to coarse. [ALLUVIUM] [SAND]	0.70 (0.40)	1.50			
1.20	D	4			Brown clayey SAND with rare pockets (<4mm x 10mm) of orange and brown clay. Sand is fine and medium. [ALLUVIUM] [SAND]	1.10 (0.10) 1.20	1.10 1.00			
				2	End of Inspection Pit at 1.20 m					
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482202.78 N411650.76	Ground Elevation (m Datum)	2.23	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.80	IP	20/10/2022	20/10/2022	Hand excavated			SCU	SCU	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
20/10/2022	14:45	0.00			Rainy
20/10/2022	16:00	0.80		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.80m.
2. Inspection pit terminated early at 0.70m due to refusal in made ground.
3. Following static cone penetration test has been cancelled.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.80	Arisings	20/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSBG
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482202.78 N411650.76	Ground Elevation (m Datum)	2.23	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Grey SAND with angular to subrounded fine to coarse gravel sized concrete and slag particles. Sand is medium and coarse. [MADE GROUND] [GRAVEL]	(0.35)				
0.35 - 0.80	B	1				0.35	1.88			
0.45	D	2			MADE GROUND. Brown grey sandy CLAY with abundant angular to subrounded fine to coarse gravel sized concrete, brick and slag particles. Sand is fine to coarse. [MADE GROUND] [GRAVEL]	(0.45)				
					End of Inspection Pit at 0.80 m	0.80	1.43			
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482329.68 N411632.13	Ground Elevation (m Datum)	2.30	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.65	IP	20/10/2022	20/10/2022	Hand excavated			SCU	SCU	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
20/10/2022	10:00	0.00			Rainy
20/10/2022	11:30	0.65		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.65m.
2. Inspection pit terminated early at 0.65m due to refusal in made ground.
3. Following static cone penetration test has been cancelled.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.65	Arisings	20/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSBG
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482329.68 N411632.13	Ground Elevation (m Datum)	2.30	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Yellowish brown SAND with abundant angular to subrounded medium and coarse gravel sized concrete particles. Sand is medium and coarse. [MADE GROUND] [GRAVEL]	(0.25)				
0.25 - 0.65	B	1				0.25	2.05			
0.35	D	2			MADE GROUND. Light grey SAND with abundant angular to subrounded medium and coarse gravel sized concrete and flint particles. Sand is medium and coarse. [MADE GROUND] [GRAVEL]	(0.40)				
					End of Inspection Pit at 0.65 m	0.65	1.65			
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	stable	0.50 m 0.50 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482453.70 N411604.00	Ground Elevation (m Datum)	2.02	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	27/10/2022	27/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
27/10/2022	12:46	0.00		Dry	Dry/ overcast
27/10/2022	13:15	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, BR-CPT04 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	27/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482453.70 N411604.00	Ground Elevation (m Datum)	2.02	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Dark brown clayey SAND with rare rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND] 0.00m to 0.10m; topsoil.	(0.30)				
0.30	D	2			MADE GROUND. Brown clayey SAND with frequent subangular and subrounded fine gravel sized clinker particles. Sand is fine to coarse. [MADE GROUND] [SAND]	0.30	1.72			
0.30 - 0.60	B	3				(0.30)				
0.70	D	4			Dark brown gravelly slightly clayey SAND with pockets (20 x 30mm) of black organic material (decomposing wood). Sand is fine to coarse. Gravel is subangular and subrounded fine. [ALLUVIUM] [SAND]	0.60	1.42			
0.70 - 0.90	B	5		1		(0.60)				
					End of Inspection Pit at 1.20 m	1.20	0.82			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**BR-SCP05**	
Fugro Reference	F212561				
Coordinates (m)	E482516.32 N411776.49	Ground Elevation (m Datum)	1.72	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	20/10/2022	20/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
20/10/2022	08:22	0.00		Dry	Raining
20/10/2022	09:25	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
0.30				

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, BR-CPT05 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	20/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482516.32 N411776.49	Ground Elevation (m Datum)	1.72	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. SAND with abundant subangular and subrounded fine and medium gravel sized fragments of brick and clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.35)				
0.30	D	1			At 0.30m; water seapage.				▼	
0.30 - 0.50	B	2			MADE GROUND. Blackish brown SAND with abundant subangular and subrounded fine gravel sized fragments of brick and clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	0.35	1.37			
					At 0.35m; geo-fabric.	(0.45)				
0.80	D	3				0.80	0.92			
0.80 - 0.90	B	4			MADE GROUND. Blackish brown clayey SAND with subangular and subrounded gravel sized fragments of brick and clinker and with pockets (<20mm x 30mm) of brown clay. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.30)				
1.10	D	5		1		1.10	0.62			
					MADE GROUND. Light grey yellow sandy clayey GRAVEL. Sand is fine to coarse. Gravel is subangular and subrounded fine and medium. [MADE GROUND] [GRAVEL]	(0.10) 1.20	0.52			
					End of Inspection Pit at 1.20 m					
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482557.80 N411680.40	Ground Elevation (m Datum)	1.70	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	19/10/2022	19/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
19/10/2022	15:30	0.00			Dry
19/10/2022	16:30	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, BR-CPT06 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	19/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482557.80 N411680.40	Ground Elevation (m Datum)	1.70	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.30	D B	1 2			MADE GROUND. Greyish brown clayey SAND with abundant subangular and subrounded fine and medium gravel sized fragments of brick and clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.40)				
0.40 - 0.90 0.50	B D	4 3			MADE GROUND. Light greyish brown SAND with abundant subangular and subrounded fine and medium gravel sized fragments of clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	0.40 (0.80)	1.30			
				1	At 1.05m; 1 No. wood fragment (30mm x 200mm)					
					End of Inspection Pit at 1.20 m	1.20	0.50			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**BR-SCP07**	
Fugro Reference	F212561				
Coordinates (m)	E482462.51 N411652.94	Ground Elevation (m Datum)	1.80	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.71	IP	19/10/2022	19/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
19/10/2022	12:47	0.00			Dry
19/10/2022	13:39	0.71		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.71m.
2. Inspection pit terminated early at 0.71m due to refusal on concrete.
3. Following static cone penetration test has been cancelled.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.71	Arisings	19/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482462.51 N411652.94	Ground Elevation (m Datum)	1.80	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.50	D B	1 2			MADE GROUND. Brownish black SAND with frequent subangular and subrounded fine and medium gravel sized fragments of clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.60)				
0.70	D	3			MADE GROUND. Light brown silty SAND. [MADE GROUND] [SAND] At 0.60m; yellow electrical marker tape At 0.71m; concrete covering base of pit.	0.60 (0.11) 0.71	1.20 1.09			
				1	End of Inspection Pit at 0.71 m					
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**BR-SCP07A**	
Fugro Reference	F212561				
Coordinates (m)	E482462.51 N411652.94	Ground Elevation (m Datum)	1.80	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	19/10/2022	19/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
19/10/2022	13:46	0.00		Dry	Dry
19/10/2022	15:10	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, BR-CPT07 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	19/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA / SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BR-SCP07A**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482462.51 N411652.94	Ground Elevation (m Datum)	1.80	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.30	D B	3 1			MADE GROUND. Dark brownish black SAND with abundant subangular and subrounded fine and medium gravel sized fragments of clinker and brick. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.50)				
0.50 0.50 - 0.60	D B	4 2		1	MADE GROUND. Brown SAND with frequent subangular and subrounded fine and medium gravel sized fragments of clinker and brick. Sand is fine to coarse. [MADE GROUND] [SAND]	0.50 (0.70)	1.30			
					End of Inspection Pit at 1.20 m	1.20	0.60			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-CBT11**
	Fugro Reference	F212561			
	Coordinates (m)	E496899.40 N388556.50	Ground Elevation (m Datum)	1.86	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.50	IP	14/11/2022	14/11/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
14/11/2022	12:56	0.00			Misty/damp
14/11/2022	13:30	0.50		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to in-situ testing, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.50m and rescanned using the CAT to check for services; services were not located.
2. Inspection pit terminated early at 0.50m due to concrete covering the entire base of pit.
3. CBR testing unable to be carried out due to concrete, lightweight deflectometer used.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Arisings	14/11/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-CBT11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E496899.40 N388556.50	Ground Elevation (m Datum)	1.86	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.50	D	1		0	MADE GROUND. Turf over brown clayey SAND with frequent rootlets (<1mm) and rare roots (<200mm) and occasional subangular to rounded medium gravel sized fragments of possible chert brick and clinker. Sand is fine to coarse. [MADE GROUND] [SAND] At 0.20m; brick (200 x 100mm). At 0.41m; concrete (<200mm).	(0.50)				
					End of Inspection Pit at 0.50 m	0.50	1.36			
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.50 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW

Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-CBT12**
	Fugro Reference	F212561			
	Coordinates (m)	E482677.50 N411757.50	Ground Elevation (m Datum)	1.82	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.30	IP	14/11/2022	14/11/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
14/11/2022	12:05	0.00			Misty/damp
14/11/2022	12:30	0.30		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to in-situ testing, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.30m and rescanned using the CAT to check for services; services were not located.
2. Inspection pit terminated early at 0.30m due to compacted gravel (roadstone). Unable to carry out CBR test.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.30	Arisings	14/11/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-CBT12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482677.50 N411757.50	Ground Elevation (m Datum)	1.82	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.30	D	1			MADE GROUND. Turf over brown clayey SAND with frequent rootlets (<1mm) and occasional subangular and subrounded medium gravel sized fragments of brick clinker and yellowish brown roadstone. Sand is fine and medium. [MADE GROUND] [SAND]	(0.30)				
					End of Inspection Pit at 0.30 m	0.30	1.52			
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	stable	0.40 m 0.40 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**HR-CBT13**	
Fugro Reference	F212561				
Coordinates (m)	E482631.20 N411767.00	Ground Elevation (m Datum)	1.91	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.50	IP	14/11/2022	14/11/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
14/11/2022	11:30	0.00			Misty/damp
14/11/2022	12:00	0.50		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to in-situ testing, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.50m and rescanned using the CAT to check for services; services were not located.
2. Unable to carry out CBR test due to gravel above 20mm.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.50	Arisings	14/11/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-CBT13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482631.20 N411767.00	Ground Elevation (m Datum)	1.91	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.50	D	1			MADE GROUND. Turf over brown slightly clayey SAND with frequent rootlets (<1mm) and roots (<200mm) and occasional subangular and subrounded medium gravel sized fragments of brick and clinker. Sand is mainly fine and medium. [MADE GROUND] [SAND] At 0.20m; brick (100mm x 200mm). At 0.30m; concrete block (150mm x 100mm). At 0.35m; concrete block (200mmx 250mm).	(0.50)				
					End of Inspection Pit at 0.50 m	0.50	1.40			
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	stable	0.45 m 0.45 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-SCP01**
	Fugro Reference	F212561			
	Coordinates (m)	E483329.69 N411567.00	Ground Elevation (m Datum)	0.93	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/10/2022	06/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/10/2022	12:33	0.00		Dry	Dry
06/10/2022	12:55	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to static cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, HR-CPT01 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	06/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E483329.69 N411567.00	Ground Elevation (m Datum)	0.93	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details				Groundwater	
Depth (m)	Type	No.	Test Results	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.60	D B	1 2		Stiff slightly greyish brown sandy CLAY with frequent rootlets (<1mm). Sand is fine to coarse. [ALLUVIUM] [CLAY]	(0.80)				
0.80 0.90 - 1.10	D B	3 4		Very stiff greyish brown slightly sandy CLAY with pockets of (<5mm) orangish brown sand. Sand is fine to coarse. [ALLUVIUM] [CLAY]	0.80 (0.40)	0.13			
				End of Inspection Pit at 1.20 m	1.20	-0.27			

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.30 m 0.30 m 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**HR-SCP03**	
Fugro Reference	F212561				
Coordinates (m)	E483165.50 N411587.50	Ground Elevation (m Datum)	0.32	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	06/10/2022	06/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
06/10/2022	13:01	0.00		Dry	Dry
06/10/2022	13:33	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, HR-CPT03 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	06/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E483165.50 N411587.50	Ground Elevation (m Datum)	0.32	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 0.10 - 0.50	D B	1 2			Greyish brown slightly sandy CLAY with frequent rootlets (<1mm). Sand is fine to coarse. [ALLUVIUM] [CLAY]	(0.50)				
0.50 0.50 - 0.70	D B	3 4			Greyish brown slightly sandy CLAY. Sand is fine to coarse predominantly fine and medium. With pockets (3mm x 5mm) of orangish brown sand and occasional pockets (<2mm x 5mm) of light grey fine sand. [ALLUVIUM] [CLAY]	0.50	-0.18			
0.70 0.70 - 1.10	D B	5 6		1		(0.70)				
					End of Inspection Pit at 1.20 m	1.20	-0.88			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.30 m 0.30 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-SCP04**
	Fugro Reference	F212561			
	Coordinates (m)	E483127.94 N411569.96	Ground Elevation (m Datum)	0.62	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.70	IP	13/10/2022	13/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
13/10/2022	09:45	0.00		0.70	Dry
13/10/2022	10:30	0.70		0.70	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
0.70	0.70	10		

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.70m and rescanned using the CAT to check for services; services were not located.
2. Inspection pit terminated at depth of 0.70m due to water covering base of pit.
2. Static cone penetration test, HR-CPT04 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.70	Arisings	13/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E483127.94 N411569.96	Ground Elevation (m Datum)	0.62	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Brownish black SAND with abundant subangular and subrounded fine gravel sized fragments of clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.30)				
					MADE GROUND. Yellowish brown SAND with abundant subangular and subrounded fine and medium gravel sized fragments of roadstone. Sand is fine to coarse. [MADE GROUND] [SAND]	0.30 (0.40)	0.32			
				1	End of Inspection Pit at 0.70 m	0.70	-0.08		▼	
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-SCP05**
	Fugro Reference	F212561			
	Coordinates (m)	E483107.33 N411588.29	Ground Elevation (m Datum)	0.64	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.65	IP	12/10/2022	12/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
12/10/2022	14:43	0.00		0.60	Dry
12/10/2022	15:30	0.65		0.60	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
0.60	0.60	10		

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.65m and rescanned using the CAT to check for services; services were not located.
2. Inspection pit terminated at depth of 0.65m due to water covering base of pit.
2. Static cone penetration test, HR-CPT05 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.65	Arisings	12/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E483107.33 N411588.29	Ground Elevation (m Datum)	0.64	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Subangular and subrounded fine and medium gravel sized clinker particles. [MADE GROUND] [GRAVEL]	(0.21)				
					At 0.20m; bituminous paving material.	0.21	0.43			
					MADE GROUND. Light yellow brown SAND with abundant subangular and subrounded fine and medium gravel sized fragments of roadstone. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.44)			▼	
					End of Inspection Pit at 0.65 m	0.65	-0.01			
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-SCP06**
	Fugro Reference	F212561			
	Coordinates (m)	E483109.38 N411640.30	Ground Elevation (m Datum)	0.76	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.60	IP	13/10/2022	13/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
13/10/2022	15:55	0.00		0.60	
13/10/2022	16:30	0.60		0.60	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
0.60	0.60	10		

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.60m and rescanned using the CAT to check for services; services were not located.
2. Inspection pit terminated at depth of 0.60m due to water covering base of pit.
2. Static cone penetration test, HR-CPT06 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.60	Arisings	13/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E483109.38 N411640.30	Ground Elevation (m Datum)	0.76	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					MADE GROUND. Dark brownish black SAND over asphalt with abundant subangular and subrounded fine and medium gravel sized fragments of clinker. Sand is fine to coarse.	(0.21)				
					[MADE GROUND] [SAND]	0.21	0.55			
					At 0.20m; bituminous paving material.					
					MADE GROUND. Light yellowish brown SAND with abundant subangular and subrounded gravel sized fragments of roadstone. Sand is fine to coarse.	(0.39)				
					[MADE GROUND] [SAND]					
					End of Inspection Pit at 0.60 m	0.60	0.16			
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.45 m 0.45 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**HR-SCP07**	
Fugro Reference	F212561				
Coordinates (m)	E483010.62 N411725.72	Ground Elevation (m Datum)	1.62	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	12/10/2022	12/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
12/10/2022	11:33	0.00		Dry	Dry
12/10/2022	12:10	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. In the NE of the pit, orange brown silty SAND covering a service at 0.60m. Pit widened to 10cm to the west.
3. Static cone penetration test, HR-CPT07 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	12/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E483010.62 N411725.72	Ground Elevation (m Datum)	1.62	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Brown clayey SAND, with occasional subangular and subrounded fine to coarse gravel sized fragments of brick and possible clinker with subangular and subrounded cobble sized (100mm x 60mm) fragments of brick and concrete and with occasional rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.60)				
0.20	D	2			At 0.45m; concrete block (250mm x 300mm).					
					MADE GROUND. Brown clayey SAND with subangular and subrounded fine to coarse gravel sized fragments of clinker with pockets of dark brown clay (<10 x 20mm). Sand is fine to coarse. [MADE GROUND] [SAND]	0.60	1.02			
0.90	D	3		1		(0.60)				
					End of Inspection Pit at 1.20 m	1.20	0.42			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.60 m 0.60 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**HR-SCP08**	
Fugro Reference	F212561				
Coordinates (m)	E482965.30 N411776.58	Ground Elevation (m Datum)	1.50	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	11/10/2022	11/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
11/10/2022	14:55	0.00		Dry	Dry
11/10/2022	15:30	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, HR-CPT08 commenced through backfilled inspection pit. Results presented separately.
3. Although clear indications of made ground have not been observed during pitting operations, probably made ground descriptions added considering adjacent HR-BH01 showing made ground.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	11/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482965.30 N411776.58	Ground Elevation (m Datum)	1.50	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			Probably MADE GROUND. Greyish brown clayey SAND. Sand is fine and medium. [MADE GROUND] [SAND]	(0.10) 0.10	1.40			
					Probably MADE GROUND. Brown silty SAND with pockets (<3mm x 6mm) of clay. Sand is fine and medium. [MADE GROUND] [SAND]	(0.55)				
0.70	D	2			Probably MADE GROUND. Orange brown silty SAND with pockets (<10mm x 20mm) of clay. Sand is fine and medium. [MADE GROUND] [SAND]	0.65 (0.40)	0.85			
1.10	D	3		1	Probably MADE GROUND. Brownish orange silty SAND with rare pockets (<5mm x 10mm) of blackish brown of clay. Sand is fine and medium. [MADE GROUND] [SAND]	1.05 (0.15) 1.20	0.45 0.30			
					End of Inspection Pit at 1.20 m					
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW | Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-SCP09**
	Fugro Reference	F212561			
	Coordinates (m)	E482923.40 N411783.20	Ground Elevation (m Datum)	1.82	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	11/10/2022	11/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
11/10/2022	15:45	0.00		1.00	Dry
11/10/2022	16:30	1.20		1.00	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
1.00				

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, HR-CPT09 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	11/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP09**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482923.40 N411783.20	Ground Elevation (m Datum)	1.82	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			MADE GROUND. Brown clayey SAND. with occasional rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.30)				
0.35	D	2			Soft brown slightly sandy CLAY with rare pockets (<2mm) of black organic material. Sand is fine and medium. [ALLUVIUM] [CLAY]	0.30 (0.40)	1.52			
0.80	D	3		1	Brown silty clayey SAND with rare black organic material (<4mm), with pockets (<10mm x 3mm) of clay and with rare pockets of orange brown sand. Sand is fine to coarse. [ALLUVIUM] [SAND] At 1.00m; water seepage.	0.70 (0.50)	1.12		▼	
					End of Inspection Pit at 1.20 m	1.20	0.62			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482848.05 N411784.62	Ground Elevation (m Datum)	1.54	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	11/10/2022	11/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
11/10/2022	12:00	0.00			Dry
11/10/2022	13:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Static cone penetration test, HR-CPT10 commenced through backfilled inspection pit. Results presented separately.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	11/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSBG

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482848.05 N411784.62	Ground Elevation (m Datum)	1.54	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			Dark brown clayey SAND with occasional fragments (<2mm) of brick. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.50)				
0.50	D	2			Brown silty SAND with pockets (<3mm x 5mm) of clay. Sand is fine to coarse. [ALLUVIUM] [SAND]	0.50 (0.50)	1.04			
1.10	D	3		1	Brown silty SAND. Sand is fine and medium. [ALLUVIUM] [SAND]	1.00 (0.20)	0.54			
					End of Inspection Pit at 1.20 m	1.20	0.34			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	stable	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-SCP11**
	Fugro Reference	F212561			
	Coordinates (m)	E482817.73 N411785.84	Ground Elevation (m Datum)	1.87	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.97	IP	12/10/2022	12/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
12/10/2022	14:58	0.00			Dry
12/10/2022	15:50	0.97		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.97m.
2. Inspection pit terminated early at 0.97m due to refusal on hard strata.
3. Following cone penetration test has been cancelled.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.97	Arisings	12/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSBG

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW — Print Date: 03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482817.73 N411785.84	Ground Elevation (m Datum)	1.87	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			TOPSOIL. Brown clayey SAND with rare rootlets (<1mm) and occasional fragments (<5mm x 3mm) of brick and clinker. Sand is fine to coarse. [MADE GROUND] [SAND]	(0.10) 0.10	1.76			
0.25	D	2			MADE GROUND. Dark brown silty SAND with frequent subrounded and subangular fine gravel sized brick and clinker and rare rootlets (<1mm). Sand is fine to coarse predominantly medium and coarse. [MADE GROUND] [SAND] At 0.40m; concrete to the east wall of the pit. At 0.90m; old wire wall ties (5mm x 300mm).	(0.87)				
				1	End of Inspection Pit at 0.97 m	0.97	0.90			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	stable	0.45 m 0.45 m → 0°

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW | Print Date: 03/02/2023

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**HR-SCP12**	
Fugro Reference	F212561				
Coordinates (m)	E482704.47 N411756.70	Ground Elevation (m Datum)	1.90	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.30	IP	11/10/2022	11/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
11/10/2022	11:15	0.00		Dry	Dry
11/10/2022	11:25	0.30		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Inspection pit terminated early at 0.30m due to refusal on concrete.
3. Following cone penetration test has been cancelled.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.30	Arisings	11/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482704.47 N411756.70	Ground Elevation (m Datum)	1.90	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			TOPSOIL. Brown clayey SAND with occasional rootlets (<1mm). Sand is fine to coarse. [TOPSOIL] [SAND]	(0.10) 0.10	1.80			
					MADE GROUND. Brown clayey SAND, with occasional rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.20) 0.30	1.60			
					End of Inspection Pit at 0.30 m					
				1						
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.40 m 0.40 m → 0°

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**HR-SCP13**
	Fugro Reference	F212561			
	Coordinates (m)	E482656.95 N411760.32	Ground Elevation (m Datum)	1.83	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	11/10/2022	11/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
11/10/2022	11:20	0.00		Dry	Dry
11/10/2022	11:50	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 1.20m and rescanned using the CAT to check for services; services were not located.
2. Pit extended 15cm after concrete covering 1/3 of the pit.
3. Following cone penetration test has been cancelled.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	1.20	Arisings	11/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP13**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482656.95 N411760.32	Ground Elevation (m Datum)	1.83	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10	D	1			Brown clayey sandy TOPSOIL with occasional rootlets (<1mm). Sand is fine to coarse. [TOPSOIL] [SAND]	(0.10) 0.10	1.73			
0.35	D	2			MADE GROUND. Brown clayey SAND with occasional rootlets (<1mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.20) 0.30	1.53			
0.50	D	3			MADE GROUND. Light grey very gravelly clayey SAND with high cobble content (<70 x 80mm). Sand is fine to coarse. [MADE GROUND] [SAND]	(0.10) 0.40	1.43			
0.75	D	4			MADE GROUND. Brown gravely clayey SAND. Sand is fine to coarse. Gravel is subangular and subrounded fine to coarse. [MADE GROUND] [SAND]	(0.20) 0.60	1.23			
				1	MADE GROUND. Light grey very silty SAND with occasional pockets of brown clay (<2 x 5mm). Sand is fine and medium. [MADE GROUND] [SAND] 1.00m; concrete covering 1/3 of the pit. Pit extended.	(0.60)				
					At 1.20m; concrete.	1.20	0.63			
				2	End of Inspection Pit at 1.20 m					
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.60 m 0.60 m → 0°

Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID	
Client	SSE Generation Limited (SSE)			**HR-SCP13A**	
Fugro Reference	F212561				
Coordinates (m)	E482656.95 N411760.32	Ground Elevation (m Datum)	1.83	Sheet 1 of 1	
Hole Type	Inspection Pit			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	0.85	IP	12/10/2022	12/10/2022	Hand excavated			GW	GW	

Progress

Date (dd/mm/yyyy)	Time (hh:mm)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
12/10/2022	09:30	0.00		Dry	
12/10/2022	10:15	0.85		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not encountered during excavation.

General Remarks

1. Prior to cone penetration test, a Cable Avoidance Tool (CAT) survey was undertaken, an inspection pit was hand-dug to 0.85m and rescanned using the CAT to check for services; services were not located.
2. Inspection pit terminated at depth of 0.85m due to concrete at base of pit.
3. Inspection pit attempted at HR-SCP13.

Installation

Type	Tip Depth / Distance (m)	Response Zone Top (m)	Response Zone Base (m)	Installation Date

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.85	Arisings	12/10/2022

Notes

- Abbreviations and results data defined in 'Exploratory Location Records Keysheets'

Checked By	NHA/SBP	Elevation Datum	Ordnance Datum (Newlyn)	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/26/06/2019/TS+AW				Print Date	03/02/2023

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-SCP13A**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482656.95 N411760.32	Ground Elevation (m Datum)	1.83	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					Turf over sandy clayey TOPSOIL. Occasional rootlets (<1mm). Sand is fine to coarse. [TOPSOIL] [CLAY]	(0.10) 0.10	1.73			
					MADE GROUND. Light yellowish brown and brown clayey SAND with frequent angular fine to coarse gravel sized concrete and subangular and subrounded fine gravel sized fragments of brick and clinker. Sand is fine and medium. [MADE GROUND] [SAND]	(0.75)				
					At 0.60m; north west side of pit unidentified metal obstruction.					
					0.80m to 0.85m; Grey sandy SILT. Sand is fine and medium.	0.85	0.98			
				1	End of Inspection Pit at 0.85 m					
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'	Stable	0.50 m 0.60 m → 0°

Appendix E

Photographic Records

Appendix E Contents

E.1 Photographic Records

E.1 Photographic Records

Title	Reference
Main Site Rotary Core Photographs	Referenced by Location ID
Ash Tip Dynamic Sampling Photographs	Referenced by Location ID
Access Roads Rotary Core Photographs	Referenced by Location ID
Pre and Post Condition Photographs	Referenced by Location ID

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH01 CORE RUN: 1+2 DEPTH TOP: 14.70 (m)

DATE: 14/09/2022 BOX REF: 1 DEPTH BASE: 16.40 (m)

BASE

CR1

CR2

14.70m

15.60m

15.60m *

16.40m

* 20cm of CR1 Recovered in CR2

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH01 CORE RUN: 2+3 DEPTH TOP: 16.40 (m)

DATE: 14/09/2022 BOX REF: 2 DEPTH BASE: 18.30 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH01 CORE RUN: 4+5 DEPTH TOP: 18.30 (m)

DATE: 14/09/2022 BOX REF: 3 DEPTH BASE: 20.30 (m)

BASE

CR4 +

18.30m

(19.30m)

CR4 + AZIM + CR5

19.80m

(19.30m)

(20.30m)

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH01 CORE RUN: 5+6 DEPTH TOP: 20.30 (m)

DATE: 14/09/2022 BOX REF: 4 DEPTH BASE: 22.25 (m)

BASE

CR5

CR6

(20.30m)

21.30m

21.30m

(22.25m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH01 CORE RUN: 6+7 DEPTH TOP: 22.25 (m)

DATE: 14/09/2022 BOX REF: 5 DEPTH BASE: 24.30 (m)

BASE

+ CR6 + + CR7 +

(22.25m)

22.80m

(23.25m)

+ CR7 (26.20m) + AZU +

(23.25m)

24.30m

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH01 CORE RUN: 8 DEPTH TOP: 24.30 (m)

DATE: 14/09/2022 BOX REF: 6 DEPTH BASE: 25.30 (m)

BASE

CR8

24.30M

25.30M

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH02 CORE RUN: 1 DEPTH TOP: 15.50 (m)

DATE: 23/09/2022 BOX REF: 1 DEPTH BASE: 16.90 (m)

BASE

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH02 CORE RUN: 2 DEPTH TOP: 16.90 (m)

DATE: 23/09/2022 BOX REF: 2 DEPTH BASE: 18.40 (m)

BASE

16.90m

CR2

(17.73m)

(17.73m)

CR2

(18.33m) + AZCL+

18.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH02 CORE RUN: 3 DEPTH TOP: 18.40 (m)

DATE: 23/09/2022 BOX REF: 3 DEPTH BASE: 19.90 (m)

BASE

CR3

CR3

18.40m (19.27m)

(19.27m) 19.90m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH02 CORE RUN: 4 DEPTH TOP: 19.90 (m)

DATE: 23/09/2022 BOX REF: 4 DEPTH BASE: 21.40 (m)

BASE

CR4

19.90m (20.79m)

CR4

(20.79m) 21.40m

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH02 CORE RUN: 5 DEPTH TOP: 21.40 (m)

DATE: 23/09/2022 BOX REF: 5 DEPTH BASE: 22.90 (m)

BASE

CR5

21.40m (22.38m)

CR5

(22.38m) 22.90m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH02 CORE RUN: 6 DEPTH TOP: 22.90 (m)

DATE: 23/09/2022 BOX REF: 6 DEPTH BASE: 24.40 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH02 CORE RUN: 7 DEPTH TOP: 24.40 (m)

DATE: 23/09/2022 BOX REF: 7 DEPTH BASE: 25.05 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH03 CORE RUN: 1 & 2 DEPTH TOP: 15.20 (m)

DATE: 13/09/2022 BOX REF: 1 DEPTH BASE: 17.20 (m)

BASE

AZCL 1

CR 1

15.20m

16.20m

CR 1

16.70m

SPT AZCL 1

CR2

17.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH03 CORE RUN: 2 & 3 DEPTH TOP: 17.20 (m)

DATE: 13/09/2022 BOX REF: 2 DEPTH BASE: 19.20 (m)

BASE

CR 2

(17.20m)

18.20m

CR 3

18.20m

(19.20m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH03 CORE RUN: 3 & 4 DEPTH TOP: 19.20 (m)

DATE: 13/09/2022 BOX REF: 3 DEPTH BASE: 21.20 (m)

BASE

CR3 + HAZCL + (19.75m) CR4

19.70m

CR4

(19.20m)

(20.20m)

(20.20m)

21.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH03 CORE RUN: 5 & 6 DEPTH TOP: 21.20 (m)

DATE: 13/09/2022 BOX REF: 4 DEPTH BASE: 23.20 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH03 CORE RUN: 6 & 7 DEPTH TOP: 23.20 (m)

DATE: 13/09/2022 BOX REF: 5 DEPTH BASE: 25.00 (m)

BASE

CR 6

CR 7

(23.20m)

24.20m

24.20m

25.00m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH04 CORE RUN: 1-2 DEPTH TOP: 14.70 (m)

DATE: 20/10/2022 BOX REF: 1 DEPTH BASE: 18.00 (m)

BASE

CR1 ← 15.30m | ← AZCL → | 16.50m → CR2

14.70 (17.00m)

(17.00m) 18.00m

CR2

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

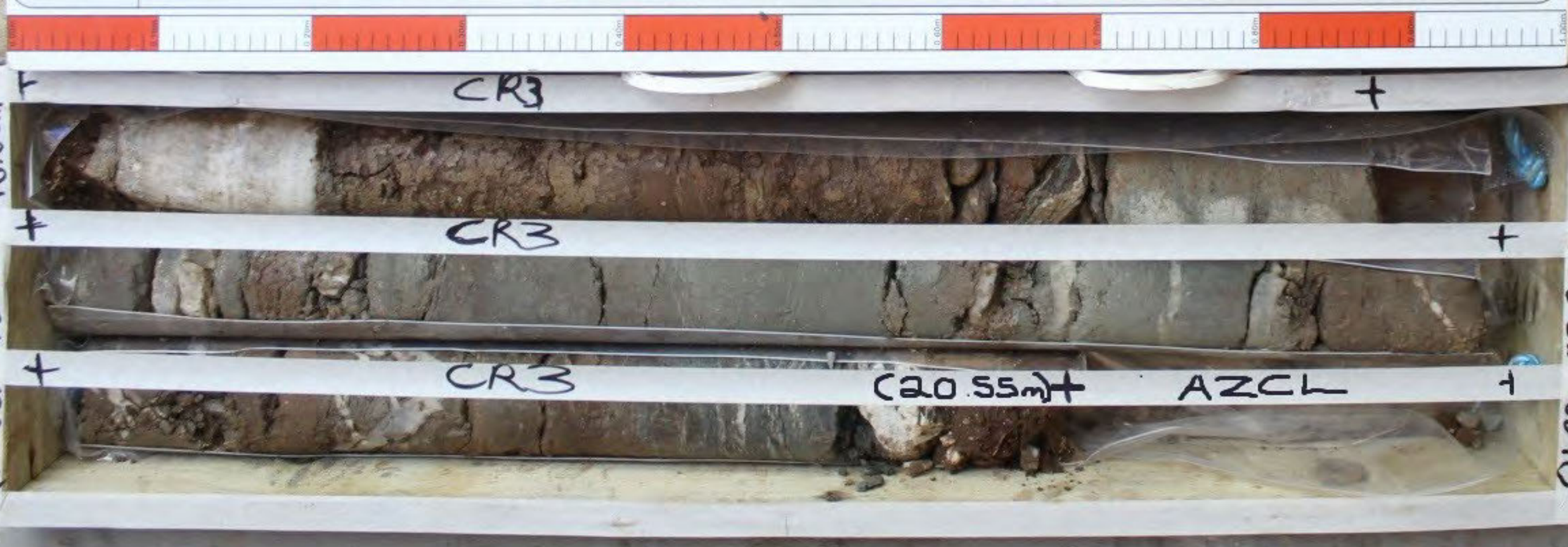
CLIENT NAME: KEADBY GENERATION LIMITED

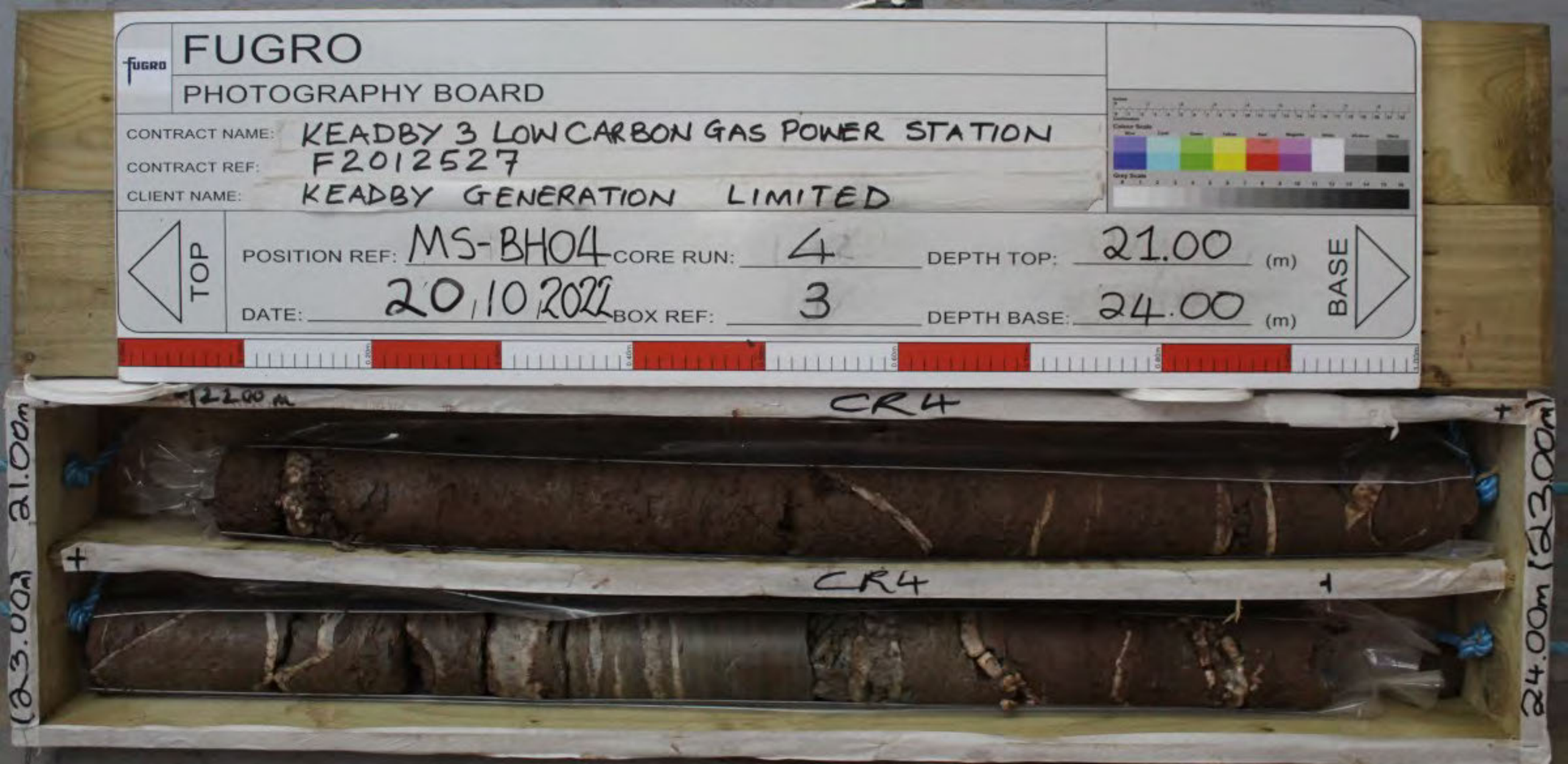
TOP

POSITION REF: MS-BH04 CORE RUN: 3 DEPTH TOP: 18.00 (m)

DATE: 19/10/2022 BOX REF: 2 DEPTH BASE: 21.00 (m)

BASE




FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH04
CORE RUN: 4
DEPTH TOP: 21.00 (m)
DATE: 20/10/2022
BOX REF: 3
DEPTH BASE: 24.00 (m)
BASE
~12.00 m
CR4
CR4
(23.00m) 21.00m
24.00m (12.00m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH04 CORE RUN: 5 DEPTH TOP: 24.00 (m)

DATE: 19/10/2022 BOX REF: 4 DEPTH BASE: 27.00 (m)

BASE

CR5 +

(24.00m) (25.00m) CR5 +

(25.00m) (26.00m) CR5 (26.70m+ AZCL +

(26.00m) 27.00m (26.00m) 25.00m

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH04 CORE RUN: 6 DEPTH TOP: 27.00 (m)

DATE: 20/10/2022 BOX REF: 5 DEPTH BASE: 30.00 (m)

BASE

CR6

CR6

CR6

(28.95m) 27.48m | 27.00m

30.00m (28.95m) 27.48m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH04 CORE RUN: 7 DEPTH TOP: 30.00 (m)

DATE: 20/10/2022 BOX REF: 6 DEPTH BASE: 31.50 (m)

BASE

CR7

CR7

30.00m (30.98m)

31.50m (30.98m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH04 CORE RUN: 8 DEPTH TOP: 31.50 (m)

DATE: 20/10/2022 BOX REF: 7 DEPTH BASE: 33.00 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH04 CORE RUN: 9 DEPTH TOP: 33.00 (m)

DATE: 20/10/2022 BOX REF: 8 DEPTH BASE: 36.00 (m)

BASE

CR9

33.00m

CR9

(35.00m) (34.00m)

CR9 (35.70m) AZCh

34.00m

35.00m

36.00m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH04 CORE RUN: 10 DEPTH TOP: 36.00 (m)

DATE: 20/10/2022 BOX REF: 9 DEPTH BASE: 37.50 (m)

BASE

CR10

CR10

CR10

(36.85m) 36.00m

37.50m (36.85m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH05 CORE RUN: 1 & 2 DEPTH TOP: 15.40 (m)

DATE: 16/09/2021 BOX REF: 1 DEPTH BASE: 17.30 (m)

BASE

CR1

CR1

CR2

(15.40M)

(16.35M)

16.80M

(16.35M)

(17.30M)

* AZCL NTS

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH05 CORE RUN: 2 & 3 DEPTH TOP: 17.30 (m)

DATE: 16/09/2022 BOX REF: 2 DEPTH BASE: 19.30 (m)

BASE

CR2

CR3

(17.30M) 18.30M

18.30M (19.30M)

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH05 CORE RUN: 3 & 4 DEPTH TOP: 19.30 (m)

DATE: 16/09/2022 BOX REF: 3 DEPTH BASE: 21.30 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH05 CORE RUN: 5 & 6 DEPTH TOP: 21.30 (m)

DATE: 16/09/2022 BOX REF: 4 DEPTH BASE 23.30 (m)

BASE

CR5

*AZCL (NTS)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH05 CORE RUN: 6 & 7 DEPTH TOP: 23.30 (m)

DATE: 16/09/2022 BOX REF: 5 DEPTH BASE: 25.30 (m)

BASE

(23.30) 24.30

CR 6

CR 7

24.30m

25.30m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH06 CORE RUN: 1 DEPTH TOP: 14.60 (m)

DATE: 15/09/2022 BOX REF: 1 DEPTH BASE 15.40 (m)

BASE

CK1

14.60m

15.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH06 CORE RUN: 2 DEPTH TOP: 15.40 (m)

DATE: 15/09/2022 BOX REF: 2 DEPTH BASE: 16.90 (m)

BASE

CR2

15.40m (16.25m)

CR2

(16.25m) 16.90m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH06 CORE RUN: 3 DEPTH TOP: 16.90 (m)

DATE: 15/09/2022 BOX REF: 3 DEPTH BASE: 18.40 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH06 CORE RUN: 4 DEPTH TOP: 18.40 (m)

DATE: 15/09/2022 BOX REF: 4 DEPTH BASE: 19.90 (m)

BASE

CR4

CR4

18.40m (19.25m)

19.25m (19.90m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

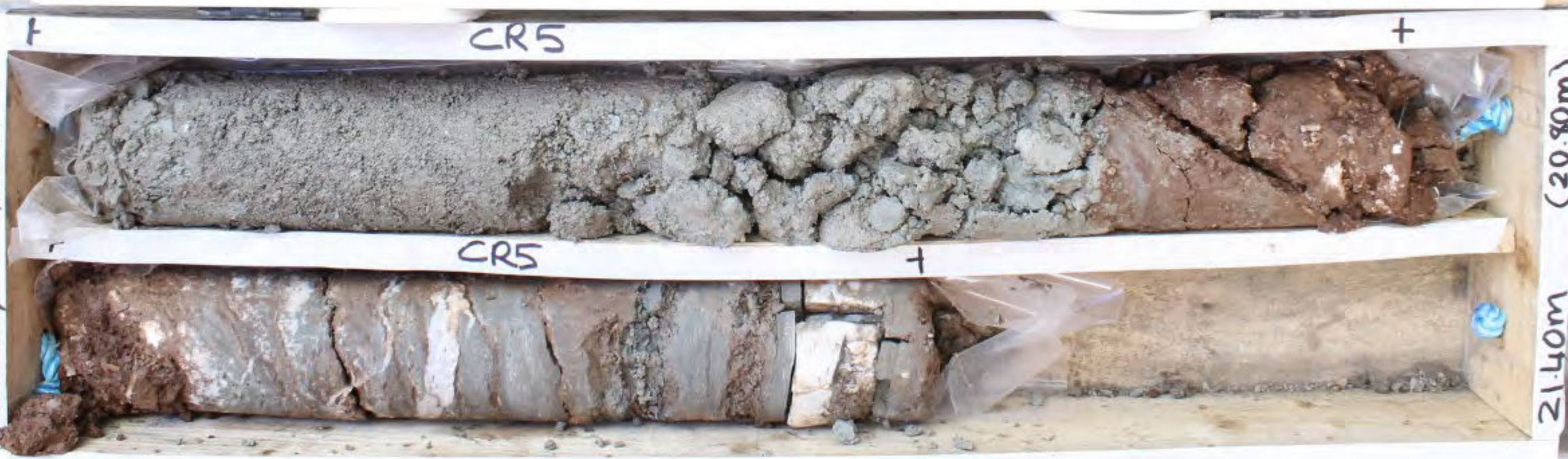
CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH06 CORE RUN: 5 DEPTH TOP: 19.90 (m)

DATE: 15/09/2022 BOX REF: 5 DEPTH BASE: 21.40 (m)

BASE



FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH06 CORE RUN: 6 DEPTH TOP: 21.40 (m)

DATE: 15/09/2022 BOX REF: 6 DEPTH BASE: 22.90 (m)

BASE

CR6

CR6

21.40m (22.20m)

(22.20m) 22.90m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH06 CORE RUN: 7 DEPTH TOP: 22.90 (m)

DATE: 15/09/2022 BOX REF: 7 DEPTH BASE: 24.40 (m)

BASE

CR7

CR7

22.90m (23.85m)

(23.85m) 24.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH06 CORE RUN: 8 DEPTH TOP: 24.40 (m)

DATE: 15/09/2022 BOX REF: 8 DEPTH BASE: 25.00 (m)

BASE

CR 8

AZCL

24.40m

25.00m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH07 CORE RUN: CR1 DEPTH TOP: 15.40 (m)

DATE: 08 /09 /2022 BOX REF: 1 DEPTH BASE: 16.40 (m)

BASE

CR1

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH07 CORE RUN: CR2 DEPTH TOP: 16.40 (m)

DATE: 08/09/2022 BOX REF: 2 DEPTH BASE: 17.90 (m)

BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH07
CORE RUN: CR3
DEPTH TOP: 17.90 (m)
DATE: 08/09/2022
BOX REF: 3
DEPTH BASE: 19.40 (m)
BASE
CR3
17.10m
(18.90m)
(18.90m)
19.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH07 CORE RUN: CR4 DEPTH TOP: 19.40 (m)

DATE: 08/09/2022 BOX REF: 4 DEPTH BASE: 20.19 (m)

BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH07
CORE RUN: CR5
DEPTH TOP: 20.19 (m)
DATE: 08/09/2022
BOX REF: 5
DEPTH BASE: 22.40 (m)
BASE
CR5
20.90m
(21.90m)
(21.90m)
22.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH07 CORE RUN: CR6 DEPTH TOP: 22.40 (m)

DATE: 08/09/2022 BOX REF: 6 DEPTH BASE: 23.90 (m)

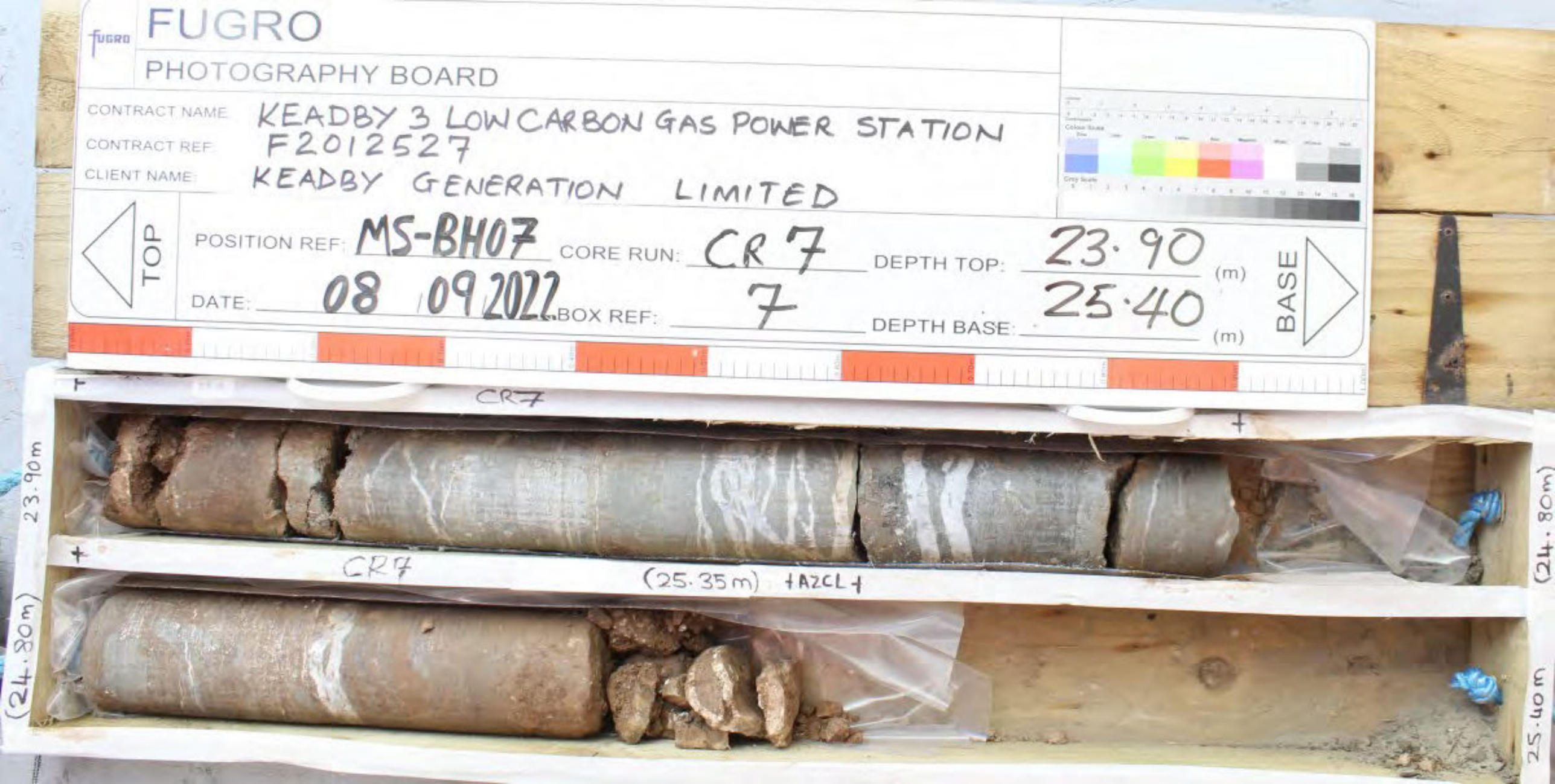
BASE

CR6

22.40m (23.35m)

CR6

(23.35m) 23.90m


FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH07
CORE RUN: CR 7
DEPTH TOP: 23.90 (m)
DATE: 08/09/2022
BOX REF: 7
DEPTH BASE: 25.40 (m)
BASE
CR7
CR7
(25.35m) +A2CL+
23.90m
(24.80m)
(24.80m)
25.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH08 CORE RUN: 1 DEPTH TOP: 15.20 (m)

DATE: 27/09/2022 BOX REF: 1 DEPTH BASE: 16.70 (m)

BASE

15.20m (16.09m)

CR 1

CR 1

(16.09m) 16.70m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH08 CORE RUN: 2 DEPTH TOP: 16.70 (m)

DATE: 27/09/2022 BOX REF: 2 DEPTH BASE: 18.20 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH08 CORE RUN: 3 DEPTH TOP: 18.20 (m)

DATE: 27/09/2022 BOX REF: 3 DEPTH BASE: 19.70 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH08 CORE RUN: 4 DEPTH TOP: 19.70 (m)

DATE: 27/09/2022 BOX REF: 4 DEPTH BASE: 21.20 (m)

BASE

CR4

CR4

19.70m (20.60m)

(20.60m) 21.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH08 CORE RUN: 5 DEPTH TOP: 21.20 (m)

DATE: 27/09/2022 BOX REF: 5 DEPTH BASE: 22.70 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH08 CORE RUN: 6 DEPTH TOP: 22.70 (m)

DATE: 27/09/2022 BOX REF: 6 DEPTH BASE: 24.20 (m)

BASE

CR6

22.70m

(23.55m)

CR6

(23.55m)

24.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH08 CORE RUN: 7 DEPTH TOP: 24.20 (m)

DATE: 27/09/2022 BOX REF: 7 DEPTH BASE: 25.20 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 1 DEPTH TOP: 15.05 (m)

DATE: 13/10/22 BOX REF: 1 DEPTH BASE: 15.80 (m)

BASE

CR 1

15.05m

15.80m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 2 DEPTH TOP: 15.80 (m)

DATE: 13/10/22 BOX REF: 2 DEPTH BASE: 17.30 (m)

BASE

CR 2

15.80m (16.80m)

(16.80m) 17.30m

CR2

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 3 DEPTH TOP: 17.30 (m)

DATE: 13/10/22 BOX REF: 3 DEPTH BASE: 18.80 (m)

BASE

CR3

17.30m (18.30m)

CR3

(18.30m) 18.80m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 4 DEPTH TOP: 18.80 (m)

DATE: 13/10/22 BOX REF: 4 DEPTH BASE: 20.30 (m)

BASE

CR 4

18.80m (19.80m)

CR4

(19.80m) 20.30m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 5 DEPTH TOP: 20.30 (m)

DATE: 13/10/22 BOX REF: 5 DEPTH BASE: 21.80 (m)

BASE

CR5

CR5

20.30m (21.15m)

(21.15m) 21.80m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 6 DEPTH TOP: 21.80 (m)

DATE: 13/10/22 BOX REF: 6 DEPTH BASE: 23.30 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 7 DEPTH TOP: 23.30 (m)

DATE: 13/10/22 BOX REF: 7 DEPTH BASE: 24.80 (m)

BASE

CR 7

23.30m (24.20m)

CR7

(24.20m) 24.80m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 8 DEPTH TOP: 24.80 (m)

DATE: 13/10/22 BOX REF: 8 DEPTH BASE: 25.30 (m)

BASE

CR 8

24.80m

25.30m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH09 CORE RUN: 9 DEPTH TOP: 25.30 (m)

DATE: 13/10/22 BOX REF: 9 DEPTH BASE: 26.80 (m)

BASE

CR9

CR9

AZCL

25.30m (26.10m)

(26.10m) 26.80m

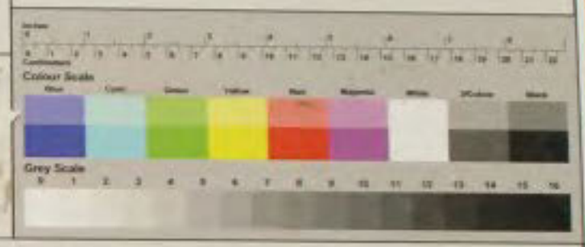
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: MS-BH09 CORE RUN: 10 DEPTH TOP: 26.80 (m)

DATE: 13/10/22 BOX REF: 10 DEPTH BASE: 28.30 (m)

BASE

CR10

26.80m (27.70m)

AZCL

(27.70m) 28.30m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH10 CORE RUN: 1 DEPTH TOP: 14.10 (m)

DATE: 25/10/2022 BOX REF: 1 DEPTH BASE: 15.00 (m)

BASE

AZCL (14.35m) + CR1

14.10m

15.00m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH10 CORE RUN: 2 DEPTH TOP: 15.00 (m)

DATE: 25/10/2022 BOX REF: 2 DEPTH BASE: 16.50 (m)

BASE

CR 2

15.00m (16.10m)

+ AZCL + (16.20m)

(16.10m) 16.50m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH10 CORE RUN: 3 DEPTH TOP: 16.50 (m)

DATE: 25/10/2022 BOX REF: 3 DEPTH BASE: 19.50 (m)

BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH10
CORE RUN: 4
DEPTH TOP: 19.50 (m)
DATE: 25/10/2022
BOX REF: 4
DEPTH BASE: 21.00 (m)
BASE
CR4
CR4
(20.50m) 19.50m
21.00m (20.50m)

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH10
CORE RUN: 5
DEPTH TOP: 21.00 (m)
DATE: 25/10/2022
BOX REF: 5
DEPTH BASE: 24.00 (m)
BASE
CR5
CR5
CR5
(22.30m)(22.15m) (21.00m)
24.00m 23.30m (22.15m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH10 CORE RUN: 6 DEPTH TOP: 24.00 (m)

DATE: 25/10/2022 BOX REF: 6 DEPTH BASE: 25.50 (m)

BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH10
CORE RUN: 7
DEPTH TOP: 25.50 (m)
DATE: 25/10/2022
BOX REF: 7
DEPTH BASE: 28.50 (m)
BASE
CR7
CR7
CR7
(28.35m)
AZCH
25.50m
(26.65m)
(27.80m)
(26.65m)
(27.80m)
28.50m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH10 CORE RUN: 8 DEPTH TOP: 28.50 (m)

DATE: 25/10/2022 BOX REF: 8 DEPTH BASE: 30.00 (m)

BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH10
CORE RUN: 9
DEPTH TOP: 30.00 (m)
DATE: 25/10/2022
BOX REF: 9
DEPTH BASE: 33.00 (m)
BASE
CR9
CR9
CR9
30.00m
(30.70m)
(31.85m)
(30.70m)
(31.85m)
33.00m

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH10
CORE RUN: 10
DEPTH TOP: 33.00 (m)
DATE: 25/10/2022
BOX REF: 10
DEPTH BASE: 34.50 (m)
BASE
CR10
CR10
33.00m (34.00m)
34.50m (34.00m)

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH10
CORE RUN: 11
DEPTH TOP: 34.50 (m)
DATE: 26/10/2022
BOX REF: 11
DEPTH BASE: 37.50 (m)
BASE
CR11
CR11
CR11
(34.50m)
(35.60m)
(36.75m)
(37.40m) + AZCL
(35.60)
(36.75m)
37.50m

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH10
CORE RUN: 12
DEPTH TOP: 37.50 (m)
DATE: 26/10/2022
BOX REF: 12
DEPTH BASE: 39.00 (m)
BASE
CR12
CR12
(37.50m)
(38.60m)
(38.60m)
39.00m

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH10
CORE RUN: 13
DEPTH TOP: 39.00 (m)
DATE: 26/10/2022
BOX REF: 13
DEPTH BASE: 40.10 (m)
BASE
CR13
(40.00m)+AZCL4
39.00m
40.10m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH11 CORE RUN: 1 DEPTH TOP: 14.75 (m)

DATE: 10/10/2022 BOX REF: 1 DEPTH BASE: 16.25 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH11 CORE RUN: 2 DEPTH TOP: 16.25 (m)

DATE: 10/10/2022 BOX REF: 2 DEPTH BASE: 17.75 (m)

BASE

CR2

CR2

(16.25m) (17.23m)

(17.23m) 17.75m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH11 CORE RUN: 3 DEPTH TOP: 17.75 (m)

DATE: 10/10/2022 BOX REF: 3 DEPTH BASE: 19.25 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH11 CORE RUN: 4 DEPTH TOP: 19.25 (m)

DATE: 10/10/2022 BOX REF: 4 DEPTH BASE: 20.75 (m)

BASE

CR4

CR4

(20.11m) 19.25m

(20.11m) 20.75m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH11 CORE RUN: 5 DEPTH TOP: 20.75 (m)

DATE: 10/10/2022 BOX REF: 5 DEPTH BASE: 22.25 (m)

BASE

CR5

CR5

20.75m (21.72m)

22.25m (21.72m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH11 CORE RUN: 6 DEPTH TOP: 22.25 (m)

DATE: 10/10/2022 BOX REF: 6 DEPTH BASE: 23.75 (m)

BASE

CR6

CR6

(23·20m) 22·25m

23·75m (23·20m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH11 CORE RUN: 7 DEPTH TOP: 23.75 (m)

DATE: 10/10/2022 BOX REF: 7 DEPTH BASE: 25.25 (m)

BASE

(23.65m) 23.75m

25.25m (23.65m)

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PROJECT NAME	KEADBY 3	DATE	12/10/2022	BOREHOLE ID	MS-BH12
PROJECT NO.	F212561	CLIENT	SSE	CORE RUN	1 + 2

ENGINEER

DEPTH FROM 14·60 m TO 16·50 m

COMMENTS

RHINO® COREBOX

0.0 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 1.5m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH12 CORE RUN: CR3 DEPTH TOP: 16.50 (m)

DATE: 12/10/22 BOX REF: CR3 DEPTH BASE: 19.50 (m)

BASE

CR3 AZ CL (NTS)

16.50 (18.30m)

CR3

(18.30m) (18.96m)

CR3

(18.96m) 19.50m (18.96m) (18.30m)

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PROJECT NAME	KEADBY 3	DATE	12/10/2022	BOREHOLE ID	MS-BH12	ENGINEER	
PROJECT NO.	F212561	CLIENT	SSE	CORE RUN	4	DEPTH FROM	19.50 m TO 21.00 m

COMMENTS

RHINO® COREBOX

0.0 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 1.5m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH12 CORE RUN: CR5 DEPTH TOP: 21.00 (m)

DATE: 12/10/22 BOX REF: CR5 DEPTH BASE: 24.00 (m)

BASE

21.00m (21.90m) CR5 (22.85m)

(21.90m) CR5 (22.85m)

(22.85m) CR5 (23.75 m) AZCL(NTS) 24.00m

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PROJECT NAME	KEADBY 3	DATE	12/10/2022	BOREHOLE ID	MS-BH12	ENGINEER	
PROJECT NO.	F212561	CLIENT	SSE	CORE RUN	6	DEPTH FROM	24·00 m TO 25·50 m

COMMENTS

RHINO® COREBOX

0.0 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 1.5m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH12 CORE RUN: 7 DEPTH TOP: 25.50 (m)

DATE: 12/10/22 BOX REF: 7 DEPTH BASE: 28.50 (m)

BASE

CR7

CR7

CR7

(28.15m)

(25.50m)

(26.35m)

(27.25m)

(28.50m)

*AZCL(NTS)

FUGRO

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PROJECT NAME	KEADBY 3	DATE	12/10/2022	BOREHOLE ID	MS-BH12	ENGINEER	
PROJECT NO.	F212561	CLIENT	SSE	CORE RUN	8	DEPTH FROM	28·50 m TO 30·00 m

COMMENTS

RHINO® COREBOX

0.0 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 1.5m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH12 CORE RUN: 9 DEPTH TOP: 30.00 (m)

DATE: 12/10/22 BOX REF: 9 DEPTH BASE: 33.00 (m)

BASE

*AZCL (NTS)

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PROJECT NAME: KEADBY 3	DATE: 12/10/2022	BOREHOLE ID: MS-BH12	ENGINEER:
PROJECT NO.: F212561	CLIENT: SSE	CORE RUN: 10	DEPTH FROM: 33.00 m TO: 34.50 m

COMMENTS

RHINO COREBOX

0.0 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 1.5m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH12 CORE RUN: 11 DEPTH TOP: 34.50 (m)

DATE: 12/10/22 BOX REF: 11 DEPTH BASE: 37.50 (m)

BASE

CR11

34.50m

(35.25m)

CR11

(35.25m)

(36.15m)

CR11

(37.10m)

(36.15m)

37.50m

* AZCL (NTS)

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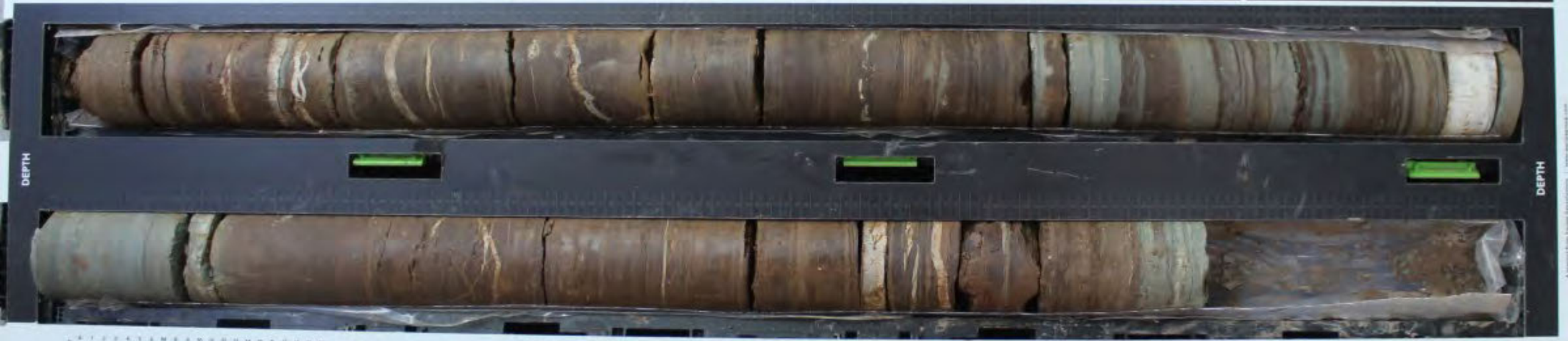
PROJECT NAME: KEADBY 3	DATE: 19/10/2022	BOREHOLE ID: MS-BH12	ENGINEER:
PROJECT NO.: F212561	CLIENT: SSE	CORE RUN: 12 + 13	DEPTH FROM: 37·50 m TO: 40·20 m



Colour Control Patches: Blue, Cyan, Green, Yellow, Red, Magenta, White, Colour, Black

COMMENTS

RHINO® COREBOX

0.0 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 1.5m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH12 CORE RUN: 14 DEPTH TOP: 40.20 (m)

DATE: 19/10/22 BOX REF: 14 DEPTH BASE: 42.00 (m)

BASE

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PROJECT NAME: KEADBY 3	DATE: 01/11/2022	BOREHOLE ID: MS-BH13	ENGINEER:
PROJECT NO.: F212561	CLIENT: SSE	CORE RUN: 4	DEPTH FROM: 14.60 m TO: 16.10 m

COMMENTS

RHINO COREBOX

0.0 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 1.5m

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 2
DEPTH TOP: 16.10 (m)
DATE: 01/11/2022
BOX REF: 2
DEPTH BASE: 17.50 (m)
BASE
CR2
CR2
(16.10m)
(17.05m)
(17.05m)
(17.50m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH13 CORE RUN: 3 DEPTH TOP: 17.50 (m)

DATE: 01/11/2022 BOX REF: 3 DEPTH BASE: 20.50 (m)

BASE

TAZCH(NB)+(18.65m) CR3 +

17.50m (19.57m)

CR3

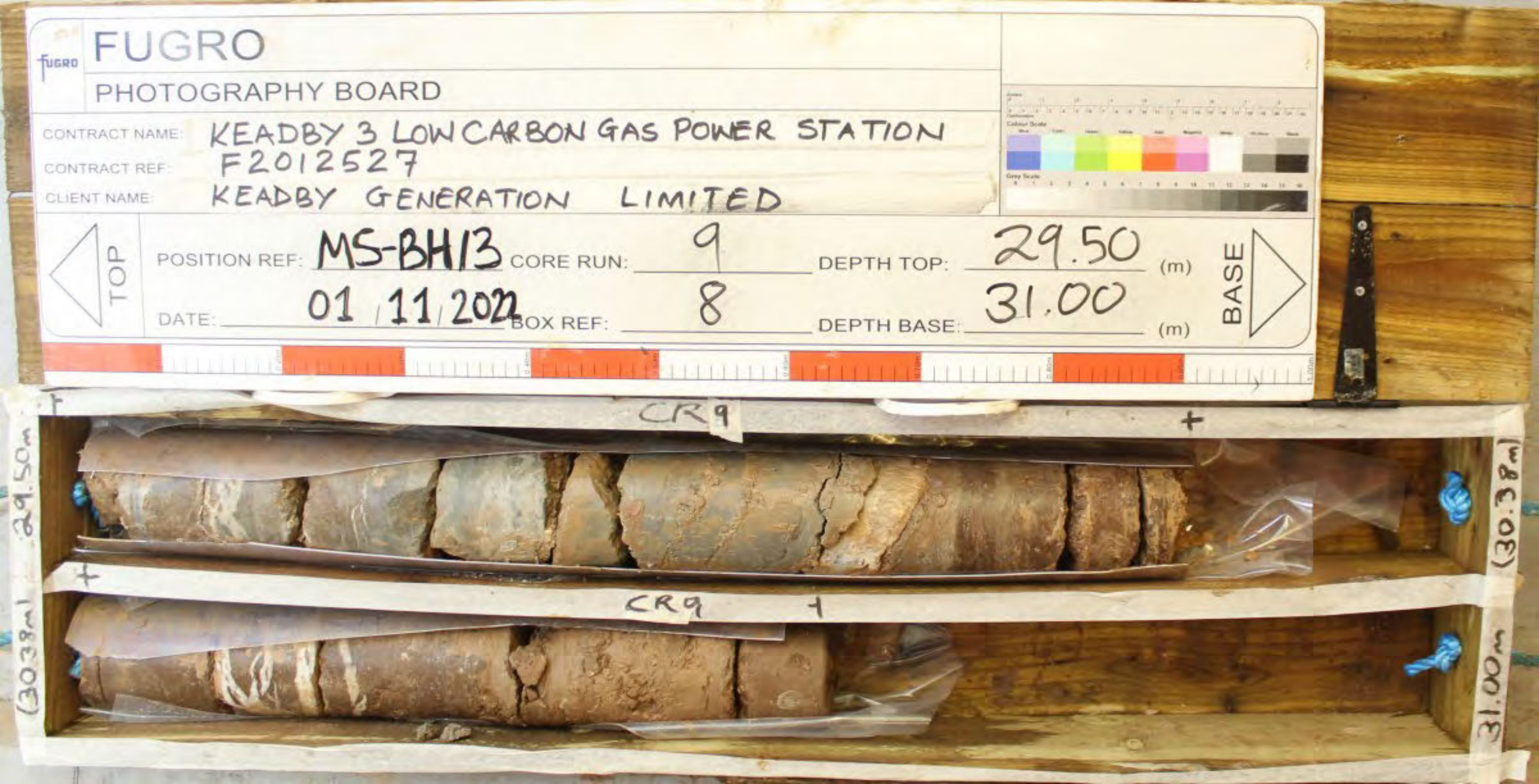
20.50m (19.57m)

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 4
DEPTH TOP: 20.50 (m)
DATE: 01/11/2022
BOX REF: 4
DEPTH BASE: 22.00 (m)
BASE
CR4
CR4
20.50m (21.45m)
22.00m (21.45m)

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 5+6
DEPTH TOP: 22.00 (m)
DATE: 01/11/2022
BOX REF: 5
DEPTH BASE: 25.00 (m)
BASE
CR5
(22.80m) + AZCH
22.00m
23.00m
CR6
+ AZCH
(24.20m) +
CR6
(23.40m)
(23.90m) 23.00m
25.00m

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 7
DEPTH TOP: 25.00 (m)
DATE: 01/11/2022
BOX REF: 6
DEPTH BASE: 26.50 (m)
BASE
CR7
CR7
25.00m
(26.00m)
(26.00m)
26.50m

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 8
DEPTH TOP: 26.50 (m)
DATE: 01/11/2022
BOX REF: 7
DEPTH BASE: 29.50 (m)
BASE
CR8
CR8
CR8
(28.50m) 26.50m
(27.50m)
(29.45m)
29.50m (28.50m)
*AZCL


FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 9
DEPTH TOP: 29.50 (m)
DATE: 01/11/2022
BOX REF: 8
DEPTH BASE: 31.00 (m)
BASE
CR9
CR9
29.50m
(30.38m)
(30.38m)
31.00m

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 10
DEPTH TOP: 31.00 (m)
DATE: 01/11/2022
BOX REF: 9
DEPTH BASE: 34.00 (m)
BASE
CR10
CR10
CR10
(33.02m) 31.00
(33.02m) (34.12m)
34.00m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH13 CORE RUN: 11 DEPTH TOP: 34.00 (m)

DATE: 01/11/2022 BOX REF: 10 DEPTH BASE: 35.50 (m)

BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 12
DEPTH TOP: 35.50 (m)
DATE: 01/11/2021
BOX REF: 11
DEPTH BASE: 38.50 (m)
BASE
FAZCL+(35.60m)
CR12
CR12
CR12
35.50m
(36.55m)
(37.50m)
(36.55m)
(37.50m)
38.50m

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH13
CORE RUN: 13
DEPTH TOP: 38.50 (m)
DATE: 01/11/2022
BOX REF: 12
DEPTH BASE: 40.00 (m)
BASE
CR13
CR13
(39.40m) 38.50m
40.00m (39.40m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH14 CORE RUN: 1 DEPTH TOP: 15.00 (m)

DATE: 13 09 2022 BOX REF: 1 DEPTH BASE: 16.50 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH14 CORE RUN: 2 DEPTH TOP: 16.50 (m)

DATE: 13/09/2022 BOX REF: 2 DEPTH BASE: 18.00 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH14 CORE RUN: 3 DEPTH TOP: 18.00 (m)

DATE: 13 09 2022 BOX REF: 3 DEPTH BASE: 19.50 (m)

BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH14
CORE RUN: 4
DEPTH TOP: 19.50 (m)
DATE: 13/09/2022
BOX REF: 4
DEPTH BASE: 21.00 (m)
BASE
CR4
CR4
(20.95m) +AZCL+
19.50M
(20.40m)
(20.40m)
21.00M

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH14
CORE RUN: 5
DEPTH TOP: 21.00 (m)
DATE: 13/09/2022
BOX REF: 5
DEPTH BASE: 22.50 (m)
BASE
CR5
CR5
21.00m (22.00m)
22.50m (22.00m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH14 CORE RUN: 6 DEPTH TOP: 22.50 (m)

DATE: 13/09/2022 BOX REF: 6 DEPTH BASE: 24.00 (m)

BASE

CR6

22.50m

(23.35m)

CR6

(23.35m)

24.00m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH14 CORE RUN: 7 DEPTH TOP: 24.00 (m)

DATE: 13/09/2022 BOX REF: 7 DEPTH BASE: 25.50 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH15 CORE RUN: 1 DEPTH TOP: 15.00 (m)

DATE: 03/10/2022 BOX REF: 1 DEPTH BASE: 15.75 (m)

BASE

15.00m

CR1

15.75m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH15 CORE RUN: 2 DEPTH TOP: 15.75 (m)

DATE: 03/10/2022 BOX REF: 2 DEPTH BASE: 17.25 (m)

BASE

CR2

CR2

15.75m (16.65m)

(16.65m) 17.25m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH15 CORE RUN: 3 DEPTH TOP: 17.25 (m)

DATE: 03/10/2022 BOX REF: 3 DEPTH BASE: 18.75 (m)

BASE

CR3

17.25m (18.15m)

CR3

(18.15m) 18.75m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH15 CORE RUN: 4 DEPTH TOP: 18.75 (m)

DATE: 03/10/2022 BOX REF: 4 DEPTH BASE: 20.25 (m)

BASE

CR4

CR4

CR4

18.75m

(19.50m)

(19.50m)

(20.25m)

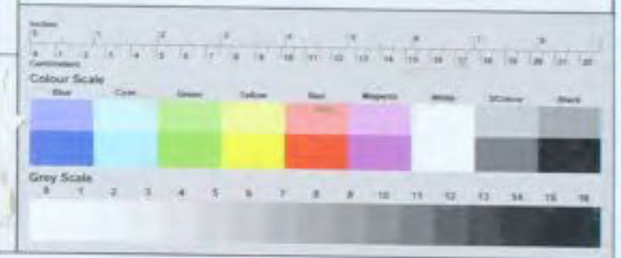
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: MS-BH15 CORE RUN: 5 DEPTH TOP: 20.25 (m)

DATE: 03/10/2022 BOX REF: 5 DEPTH BASE: 21.75 (m)

BASE

T

CR5

+

20.25m (21.25m)

+

CR5+

21.25m (21.75m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

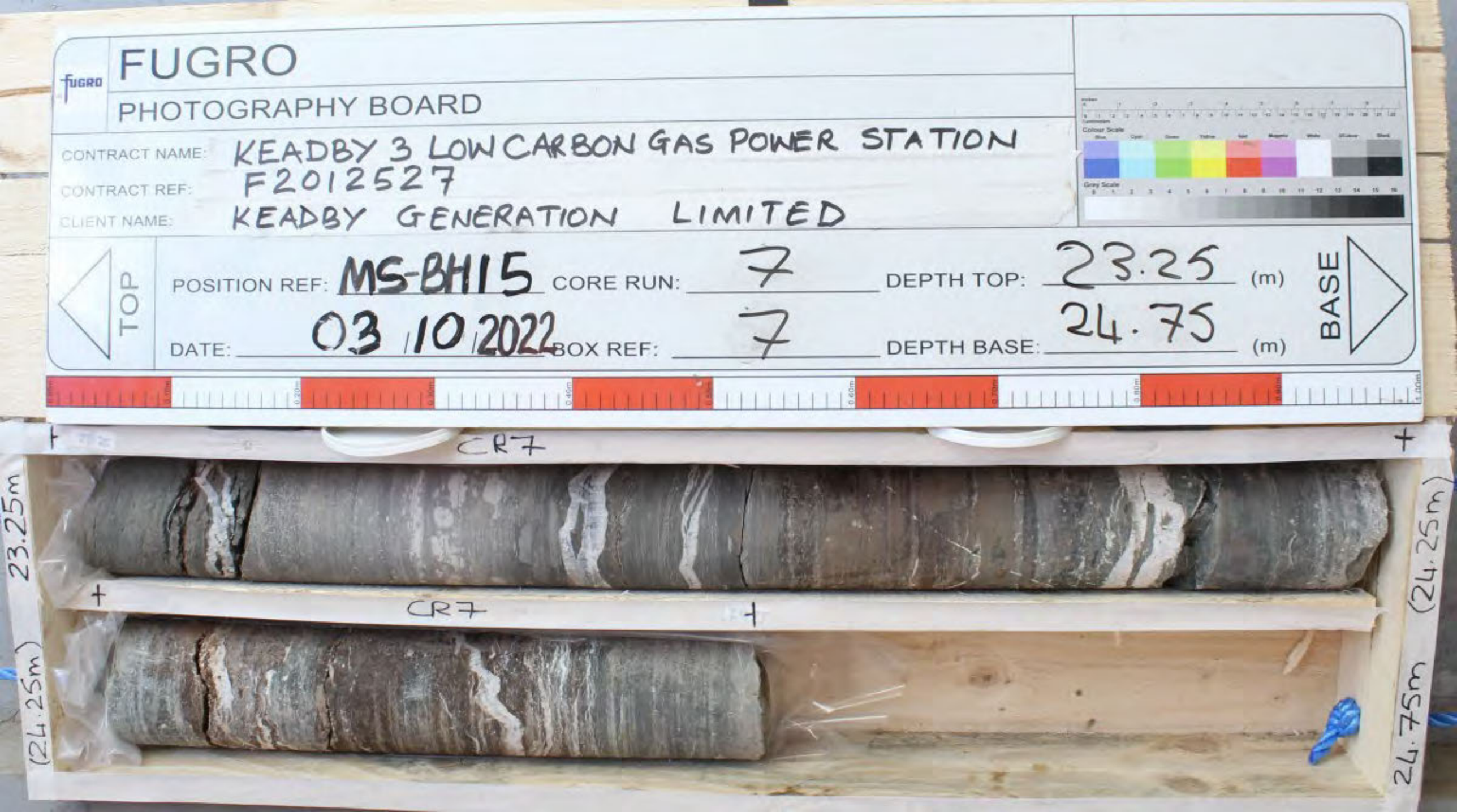
CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH15 CORE RUN: 6 DEPTH TOP: 21.75 (m)

DATE: 03/10/2022 BOX REF: 6 DEPTH BASE: 23.25 (m)

BASE


FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH15
CORE RUN: 7
DEPTH TOP: 23.25 (m)
DATE: 03/10/2022
BOX REF: 7
DEPTH BASE: 24.75 (m)
BASE
CR7
CR7
23.25m
(24.25m)
(24.25m)
24.75m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH15 CORE RUN: 8 DEPTH TOP: 24.75 (m)

DATE: 03/10/2022 BOX REF: 8 DEPTH BASE: 25.25 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH16 CORE RUN: CR1 DEPTH TOP: 15.20 (m)

DATE: 08/09/2022 BOX REF: 1 DEPTH BASE: 16.20 (m)

BASE

CR1

15.20m

16.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH16 CORE RUN: CR2 DEPTH TOP: 16.20 (m)

DATE: 08/09/2022 BOX REF: 2 DEPTH BASE: 17.65 (m)

BASE

*0.05m OF CR2 PICKED UP IN CR3

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH16 CORE RUN: CR 3 DEPTH TOP: 17.65 (m)

DATE: 08/09/2022 BOX REF: 3 DEPTH BASE: 19.20 (m)

BASE

By Hodsk

+ #17.70m CR3 +

(17.65m)

(18.95m)

+ CR3 +

(18.65m)

19.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

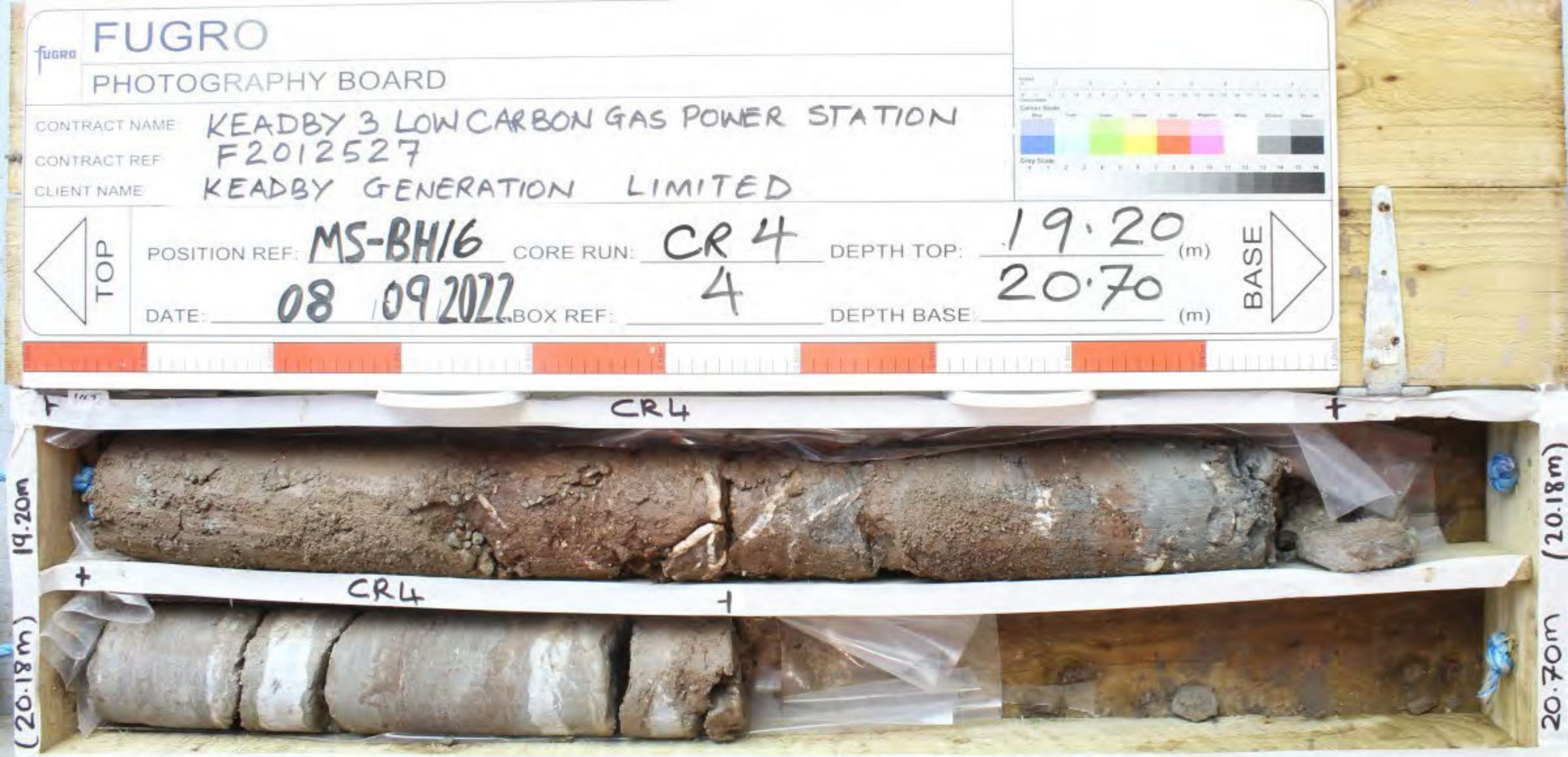
CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH16 CORE RUN: CR 4 DEPTH TOP: 19.20 (m)

DATE: 08/09/2022 BOX REF: 4 DEPTH BASE: 20.70 (m)

BASE



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PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH16 CORE RUN: CR5 DEPTH TOP: 20.70 (m)

DATE: 09/09/2022 BOX REF: 5 DEPTH BASE: 22.20 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH16 CORE RUN: CR6 DEPTH TOP: 22.20 (m)

DATE: 04/09/2022 BOX REF: 6 DEPTH BASE: 23.70 (m)

BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: MS-BH16
CORE RUN: CR7
DEPTH TOP: 23.70 (m)
DATE: 04/09/2022
BOX REF: 7
DEPTH BASE: 25.20 (m)
BASE
CR7
CR7
(24.55m) 23.70m
(24.55m)
25.20m

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PROJECT NAME	KEADBY 3	DATE	26/10/2022	BOREHOLE ID	MS-BH17	ENGINEER	
PROJECT NO.	F212561	CLIENT	SSE	CORE RUN	1+2	DEPTH FROM	14.70m TO 16.70m

14.70m

15.20m

DEPTH

(14.95m) + AZCL

15.20

16.70

DEPTH

COMMENTS

RHINO COREBOX

0.0 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 1.5m

BOX REF

DEPTH BASE

37.50 (m)

BASE

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PROJECT NAME: KEADBY 3	DATE: 26/10/2022	BOREHOLE ID: MS-BH17.	ENGINEER:
PROJECT NO.: F212561	CLIENT: SSE	CORE RUN: 3	DEPTH FROM: 16.70 m TO: 18.20 m

DEPTH BASE 37.50 (m)

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PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH17 CORE RUN: 4 DEPTH TOP: 18.20 (m)

DATE: 26/10/2022 BOX REF: 4 DEPTH BASE: 18.70 (m)

BASE

+ AZCL + (18.80m) CRH 1

18.20m

18.70m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH17 CORE RUN: 5 DEPTH TOP: 18.70 (m)

DATE: 26/10/2022 BOX REF: 5 DEPTH BASE: 20.20 (m)

BASE

CR5

CR5

18.70m (19.60m)

20.20m (19.60m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH17 CORE RUN: 6 DEPTH TOP: 20.20 (m)

DATE: 26/10/2022 BOX REF: 6 DEPTH BASE: 21.70 (m)

BASE

CR6

CR6

(21.25m) 20.20

(21.25m) 21.70

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH17 CORE RUN: 7 DEPTH TOP: 21.70 (m)

DATE: 26/10/2022 BOX REF: 7 DEPTH BASE: 23.20 (m)

BASE

CR7

CR7

(22.75m) 21.70m

23.20m (22.75m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH17 CORE RUN: 8 DEPTH TOP: 23.20 (m)

DATE: 26/10/2022 BOX REF: 8 DEPTH BASE: 24.70 (m)

BASE

CR8

CR8

(24.30m) 23.20m

24.70m (24.30m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH17 CORE RUN: 9 DEPTH TOP: 24.70 (m)

DATE: 26/10/2022 BOX REF: 9 DEPTH BASE: 25.20 (m)

BASE

24.70m

25.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 1 DEPTH TOP: 13.90 (m)

DATE: 14/10/22 BOX REF: 1 DEPTH BASE: 14.40 (m)

BASE

CR1 (14.35m) + AZCL4

13.90m

14.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 2 DEPTH TOP: 14.40 (m)

DATE: 14/10/22 BOX REF: 2 DEPTH BASE: 15.90 (m)

BASE

CR2

14.40m (15.20m)

CR2

(15.20m) 15.90m

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 3 DEPTH TOP: 15.90 (m)

DATE: 14/10/22 BOX REF: 3 DEPTH BASE: 17.40 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 4 DEPTH TOP: 17.40 (m)

DATE: 14/10/22 BOX REF: 4 DEPTH BASE: 18.90 (m)

BASE

CR4

CR4

17.40m (18.36m)

(18.36m) 18.90m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 5 DEPTH TOP: 18.90 (m)

DATE: 14/10/22 BOX REF: 5 DEPTH BASE: 20.40 (m)

BASE

CR5

CR5

18.90m (19.70m)

(19.70m) 20.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 6 DEPTH TOP: 20.40 (m)

DATE: 14/10/22 BOX REF: 6 DEPTH BASE: 21.90 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 7 DEPTH TOP: 21.90 (m)

DATE: 14/10/22 BOX REF: 7 DEPTH BASE: 23.40 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 8 DEPTH TOP: 23.40 (m)

DATE: 14/10/22 BOX REF: 8 DEPTH BASE: 24.90 (m)

BASE

CR8 (24.40m) + AZCL

23.40m (24.40m)

CR8

(24.40m) 24.90m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH18 CORE RUN: 9 DEPTH TOP: 24.90 (m)

DATE: 14/10/22 BOX REF: 9 DEPTH BASE: 25.40 (m)

BASE

CR9

24.90m

25.40m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH19 CORE RUN: 1+2 DEPTH TOP: 13.50 (m)

DATE: 16/09/2022 BOX REF: 1 DEPTH BASE: 15.50 (m)

BASE

CR1 | CR2 | (14.05) CR2

13.50M (14.45m)

14.00m

CR2

(14.41) 15.50m

XAZCL NTS

FUGRO

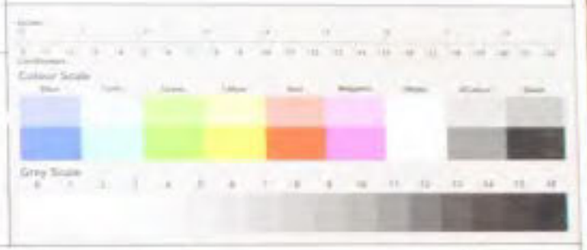
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: MS-BH19 CORE RUN: 3+4 DEPTH TOP: 15.50 (m)

DATE: 16/09/2022 BOX REF: 2 DEPTH BASE: 17.50 (m)

BASE

CR3

(15.50m)

(16.91m)

CR3

CR4

(17.40m) +AZCLAST

(16.91m)

(17.40m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH19 CORE RUN: 4+5 DEPTH TOP: 17.50 (m)

DATE: 16/09/2022 BOX REF: 3 DEPTH BASE: 19.50 (m)

BASE

CR4

CR5

17.50m

18.50m

18.50m

19.50m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH19 CORE RUN: 5+6 DEPTH TOP: 19.50 (m)

DATE: 16/09/2022 BOX REF: 4 DEPTH BASE: 21.50 (m)

BASE

CR5 CR6

(19.50m) (20.50m)

CR6

(20.50m) 21.50m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH19 CORE RUN: 7 DEPTH TOP: 21.50 (m)

DATE: 16/09/2022 BOX REF: 5 DEPTH BASE: 23.45 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH19 CORE RUN: 8 DEPTH TOP: 23.45 (m)

DATE: 16/09/2022 BOX REF: 6 DEPTH BASE: 25.00 (m)

BASE

(23.45m)

(24.40m)

CR8

#24.50m

CR9

(24.40m)

25.00m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH20 CORE RUN: 1 DEPTH TOP: 15.20 (m)

DATE: 27/09/2022 BOX REF: 1 DEPTH BASE: 15.70 (m)

BASE

CR1

15.20m

15.70m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH20 CORE RUN: 2 DEPTH TOP: 15.70 (m)

DATE: 27/09/2022 BOX REF: 2 DEPTH BASE: 17.20 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH20 CORE RUN: 3 DEPTH TOP: 17.20 (m)

DATE: 27/09/2022 BOX REF: 3 DEPTH BASE: 18.70 (m)

BASE

CR3

CR3

17.20m (18.15m)

18.70m (18.15m)

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH20 CORE RUN: 4 DEPTH TOP: 18.70 (m)

DATE: 27/09/2022 BOX REF: 4 DEPTH BASE: 20.20 (m)

BASE

CR4

CR4

18.70m (19.60m)

(19.60m) 20.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH20 CORE RUN: 5 DEPTH TOP: 20.20 (m)

DATE: 27/09/2022 BOX REF: 5 DEPTH BASE: 21.70 (m)

BASE

CR5

CR5

20.20m (21.15m)

(21.15m) 21.70m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH20 CORE RUN: 6 DEPTH TOP: 21.70 (m)

DATE: 27/09/2022 BOX REF: 6 DEPTH BASE: 23.20 (m)

BASE

CR6

21.70m (22.65m)

CR6

(22.65m) 23.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH20 CORE RUN: 7 DEPTH TOP: 23.20 (m)

DATE: 27/09/2022 BOX REF: 7 DEPTH BASE: 24.70 (m)

BASE

CR7

23.20m

(24.15m)

CR7

(24.15m)

24.70m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH20 CORE RUN: 8 DEPTH TOP: 24.70 (m)

DATE: 27/09/2022 BOX REF: 8 DEPTH BASE: 25.20 (m)

BASE

CR8 (25.15m) +AZCLH

24.70m

25.20m

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PROJECT NAME	KEADBY 3	DATE	27/09/2022	BOREHOLE ID	MS-BH21	ENGINEER	
PROJECT NO.	F212561	CLIENT	SSE	CORE RUN	1	DEPTH FROM	14.70 m TO 15.60 m

COMMENTS

RHINO COREBOX

0.0 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 1.5m

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+44 (0) 1491 820700

PROJECT NAME	KEADBY 3	DATE	27/09/2022	BOREHOLE ID	MS-BH21	ENGINEER	
PROJECT NO.	F212561	CLIENT	SSE	CORE RUN	2	DEPTH FROM	15.60m TO 17.00 m

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PROJECT NAME: KEADBY 3	DATE: 27/09/2022	BOREHOLE ID: MS-BH21	ENGINEER:
PROJECT NO.: F212561	CLIENT: SSE	CORE RUN: 3+4	DEPTH FROM: 17.00 m TO: 20.00 m

COMMENTS

RHINO® COREBOX

0.0 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 1.5m

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PROJECT NAME: KEADBY 3	DATE: 28/09/2022	BOREHOLE ID: MS-BH21	ENGINEER:
PROJECT NO.: F212561	CLIENT: SSE	CORE RUN: 5+6	DEPTH FROM: 20.00 m TO: 23.00 m

COMMENTS

RHINO COREBOX

0.0 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 1.5m

FUGRO

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PROJECT NAME: KEADBY 3	DATE: 28/09/2022	BOREHOLE ID: MS-BH21	ENGINEER:
PROJECT NO.: F212561	CLIENT: SSE	CORE RUN: 7+8	DEPTH FROM: 23.00 m TO: 25.00 m

COMMENTS

RHINO COREBOX

0.0 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 1.5m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH22 CORE RUN: 1 DEPTH TOP: 14.45 (m)

DATE: 12/10/2022 BOX REF: 1 DEPTH BASE: 15.80 (m)

BASE

CR1

CR1

14.45m (15.40m)

(15.40m) 15.80m

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PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH22 CORE RUN: 2 DEPTH TOP: 15.80 (m)

DATE: 12/10/2022 BOX REF: 2 DEPTH BASE: 17.30 (m)

BASE

CR2

15.80m (16.75m)

CR2

(16.75m) 17.30m

FUGRO

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PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH22 CORE RUN: 3 DEPTH TOP: 17.30 (m)

DATE: 12/10/2022 BOX REF: 3 DEPTH BASE: 18.80 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

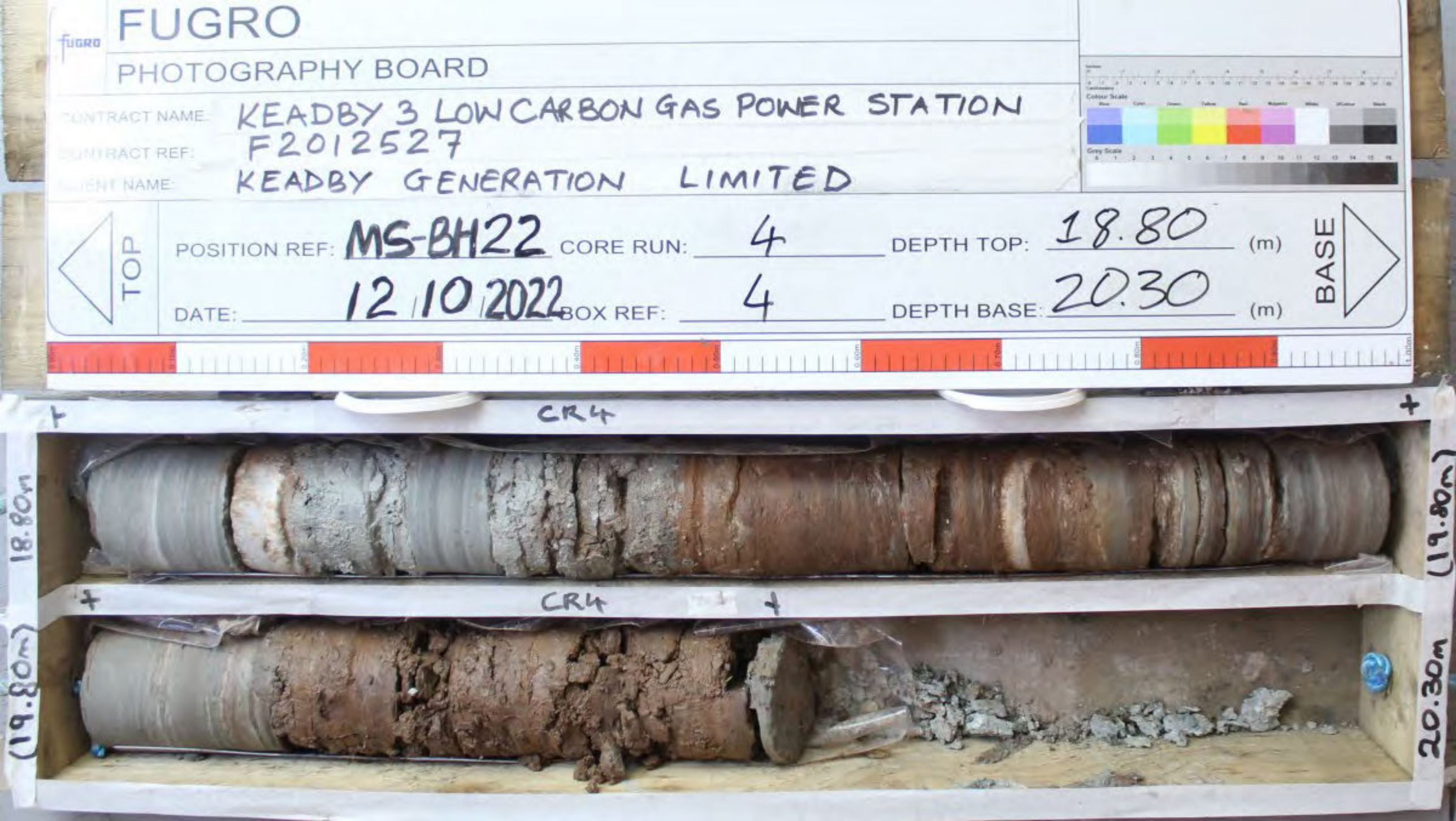
CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH22 CORE RUN: 4 DEPTH TOP: 18.80 (m)

DATE: 12/10/2022 BOX REF: 4 DEPTH BASE: 20.30 (m)

BASE



FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH22 CORE RUN: 5 DEPTH TOP: 20.30 (m)

DATE: 12/10/2022 BOX REF: 5 DEPTH BASE: 21.80 (m)

BASE

CR5

20.30m

(21.30m)

CR5

(21.30m)

21.80m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH22 CORE RUN: 6 DEPTH TOP: 21.80 (m)

DATE: 12/10/2022 BOX REF: 6 DEPTH BASE: 23.30 (m)

BASE

CR6

CR6

21.80m (22.75m)

(22.75m) 23.30m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH22 CORE RUN: 7 DEPTH TOP: 23.30 (m)

DATE: 12/10/2022 BOX REF: 7 DEPTH BASE: 24.80 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH22 CORE RUN: 8 DEPTH TOP: 24.80 (m)

DATE: 12/10/2022 BOX REF: 8 DEPTH BASE: 25.30 (m)

BASE

CR8

24.80m

25.30m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH23 CORE RUN: 1 DEPTH TOP: 14.20 (m)

DATE: 21/10/2022 BOX REF: 1 DEPTH BASE: 15.70 (m)

BASE

CR1

14.20m (15.15m)

CR1

15.70m (15.15m)

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH23 CORE RUN: 2 DEPTH TOP: 15.70 (m)

DATE: 21/10/2022 BOX REF: 2 DEPTH BASE: 17.20 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH23 CORE RUN: 3 DEPTH TOP: 17.20 (m)

DATE: 21/10/2022 BOX REF: 3 DEPTH BASE: 18.70 (m)

BASE

CR3

CR3

17.20m (18.20m)

18.20m 18.70m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH23 CORE RUN: 4 DEPTH TOP: 18.70 (m)

DATE: 21/10/2022 BOX REF: 4 DEPTH BASE: 20.20 (m)

BASE

CR4

CR4

18.70m (19.70m)

19.70m) 20.20m

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH23 CORE RUN: 5 DEPTH TOP: 20.20 (m)

DATE: 21/10/2022 BOX REF: 5 DEPTH BASE: 21.70 (m)

BASE

CR5

CR5

20.20m (20.90m)

(20.90m) (21.70m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH23 CORE RUN: 6 DEPTH TOP: 21.70 (m)

DATE: 21/10/2022 BOX REF: 6 DEPTH BASE: 23.20 (m)

BASE

CRG

CRG

21.70m (22.60m)

23.20m (22.60m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH23 CORE RUN: 7 DEPTH TOP: 23.20 (m)

DATE: 21/10/2022 BOX REF: 7 DEPTH BASE: 24.70 (m)

BASE

CR7

CR7

(24.06m) 23.20m

24.70m (24.05m)

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH23 CORE RUN: 8 DEPTH TOP: 24.70 (m)

DATE: 21/10/2022 BOX REF: 8 DEPTH BASE: 25.20 (m)

BASE

CRB

24.70m

25.20m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH24 CORE RUN: 1 DEPTH TOP: 14.20 (m)

DATE: 27/10/2022 BOX REF: 1 DEPTH BASE: 15.70 (m)

BASE

AZCL (N75) + (14.54m) CR1 +

+ CR1 +

(15.30m) 14.20m

15.70m (1.30m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH24 CORE RUN: 2 DEPTH TOP: 15.70 (m)

DATE: 27/10/2022 BOX REF: 2 DEPTH BASE: 17.20 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH24 CORE RUN: 3 DEPTH TOP: 17.20 (m)

DATE: 27/10/2022 BOX REF: 3 DEPTH BASE: 18.70 (m)

BASE

CR3

CR3

17.20m (18.15m)

18.70m (18.15m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH24 CORE RUN: 4 DEPTH TOP: 18.70 (m)

DATE: 27/10/2022 BOX REF: 4 DEPTH BASE: 20.20 (m)

BASE

CR4

CR4

(19.65m) 18.70m

20.20m (19.65m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH24 CORE RUN: 5 DEPTH TOP: 20.20 (m)

DATE: 27/10/2022 BOX REF: 5 DEPTH BASE: 21.70 (m)

BASE

CRS

CRS

(20.20m)

(21.10m)

(21.10m)

(21.70m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH24 CORE RUN: 6 DEPTH TOP: 21.70 (m)

DATE: 27/10/2022 BOX REF: 6 DEPTH BASE: 23.20 (m)

BASE

+ CR6 +

(22.5m) 21.70m

+ CR6 +

23.20m (22.5m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH24 CORE RUN: 7 DEPTH TOP: 23.20 (m)

DATE: 27/10/2022 BOX REF: 7 DEPTH BASE: 24.70 (m)

BASE

CR7

CR7

CR7

(23.20m (24.15m)

24.70m (24.15m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH24 CORE RUN: 8 DEPTH TOP: 24.70 (m)

DATE: 27/10/2022 BOX REF: 8 DEPTH BASE: 26.20 (m)

BASE

CR8

CR8

24.70m (25.62m)

26.20m (25.62m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH25 CORE RUN: 1 DEPTH TOP: 15.45 (m)

DATE: 10/10/2022 BOX REF: 1 DEPTH BASE: 16.95 (m)

BASE

CR1

CR1

(15.45m)

(16.45m)

(16.45m)

16.95m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH25 CORE RUN: 2 DEPTH TOP: 16.95 (m)

DATE: 10/10/2022 BOX REF: 2 DEPTH BASE: 18.45 (m)

BASE

CR2

CR2

(17.95m) - 16.95m

18.45m (17.95m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH25 CORE RUN: 3 DEPTH TOP: 18.45 (m)

DATE: 10/10/2022 BOX REF: 3 DEPTH BASE: 19.95 (m)

BASE

CR3

CR3 (19.85m) + AZCL 1

18.45m (19.25m)

(19.25m) 19.95m

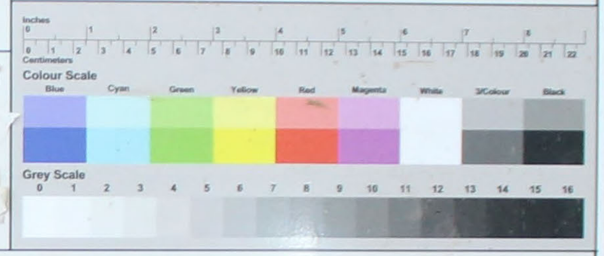
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: MS-BH25 CORE RUN: 4 DEPTH TOP: 19.95 (m)

DATE: 10/10/2022 BOX REF: 4 DEPTH BASE: 21.45 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH25 CORE RUN: 5 DEPTH TOP: 21.45 (m)

DATE: 10/10/2022 BOX REF: 5 DEPTH BASE: 22.95 (m)

BASE

CR5

CR5

21.45m (22.40m)

(22.40m) 22.95m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH25 CORE RUN: 6 DEPTH TOP: 22.95 (m)

DATE: 10/10/2022 BOX REF: 6 DEPTH BASE: 24.45 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: MS-BH25 CORE RUN: 7 DEPTH TOP: 24.45 (m)

DATE: 10/10/2022 BOX REF: 7 DEPTH BASE: 25.20 (m)

BASE

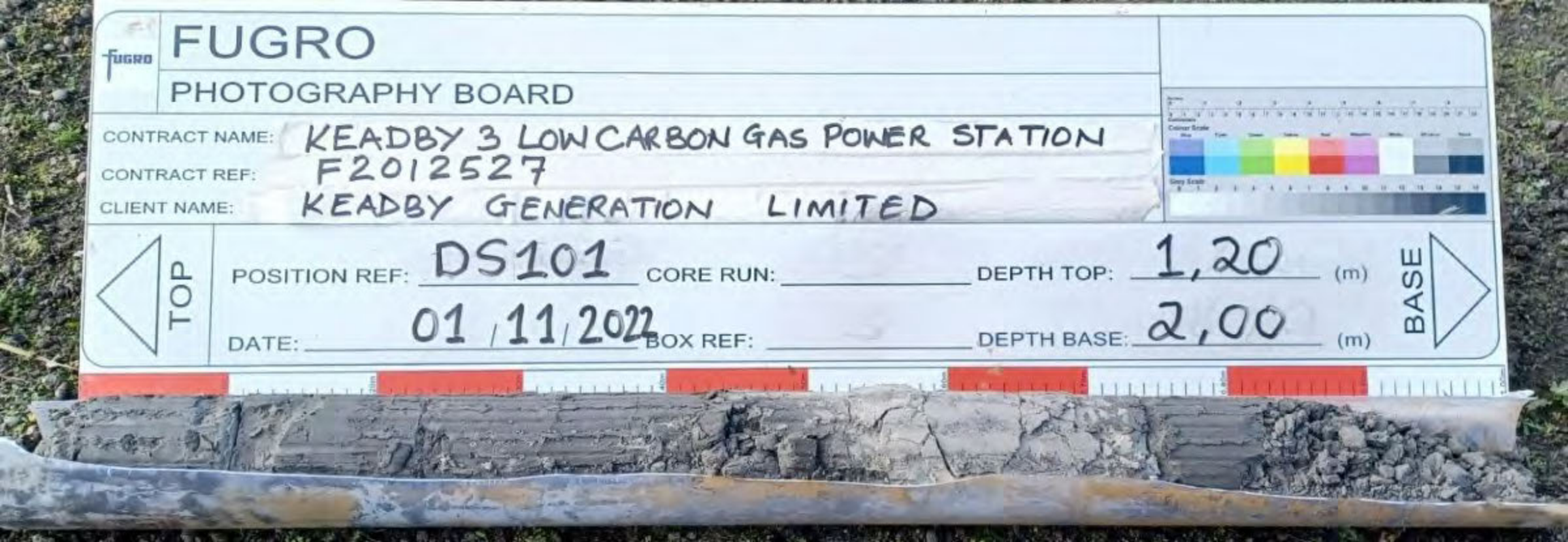
T

CR7

1

24.45m

25.20m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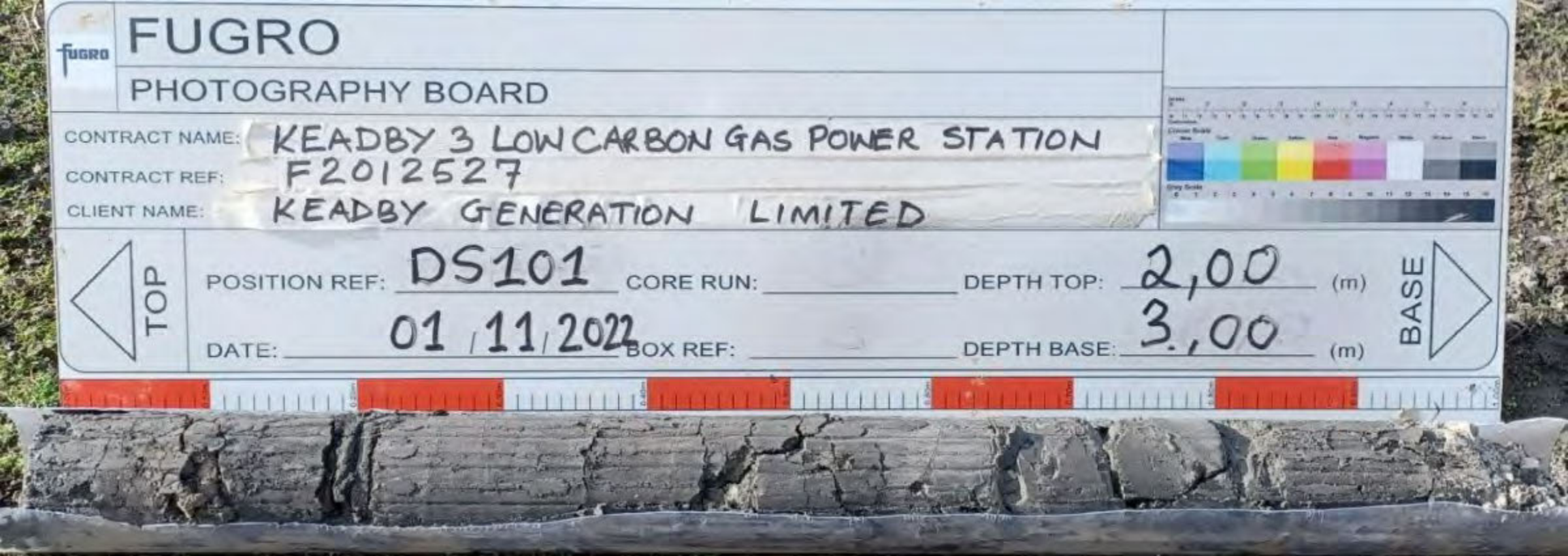
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS101
CORE RUN:
DEPTH TOP: 1,20 (m)
DATE: 01/11/2022
BOX REF:
DEPTH BASE: 2,00 (m)
BASE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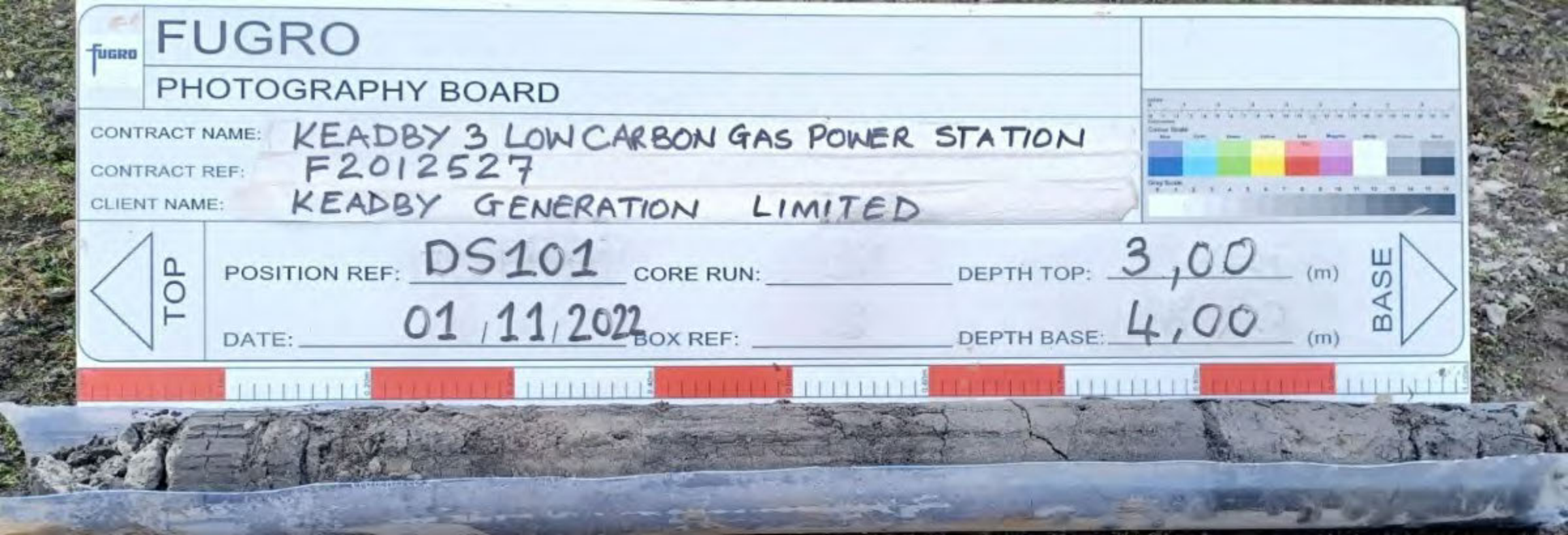
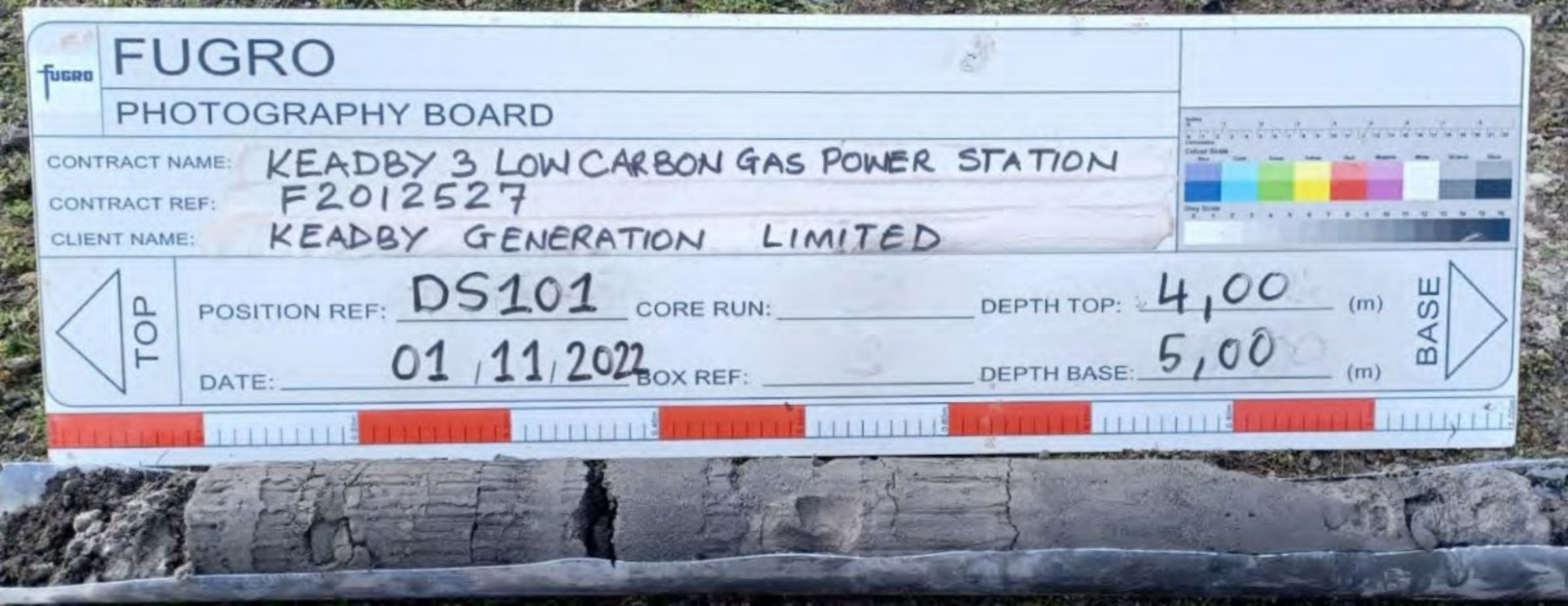
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS101
CORE RUN:
DEPTH TOP: 2,00 (m)
DATE: 01/11/2022
BOX REF:
DEPTH BASE: 3,00 (m)
BASE


FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS101
CORE RUN:
DEPTH TOP: 3,00 (m)
DATE: 01/11/2022
BOX REF:
DEPTH BASE: 4,00 (m)
BASE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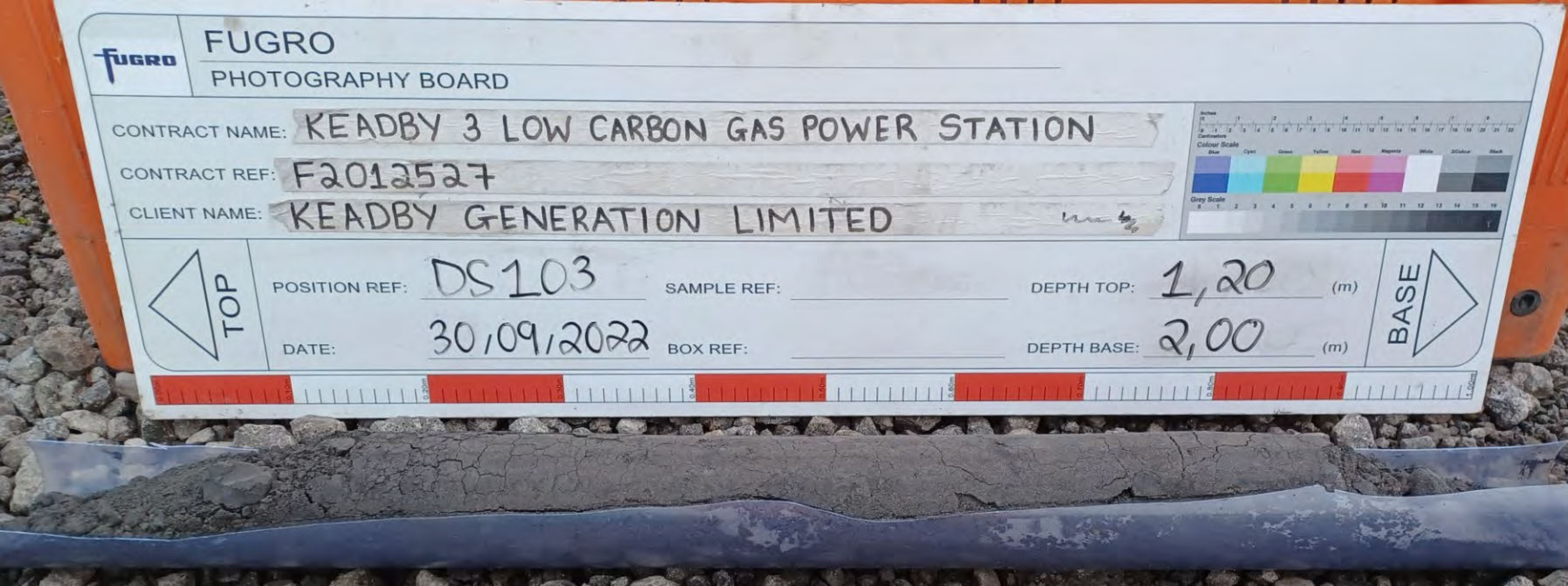
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS101
CORE RUN:
DEPTH TOP: 4,00 (m)
DATE: 01/11/2022
BOX REF:
DEPTH BASE: 5,00 (m)
BASE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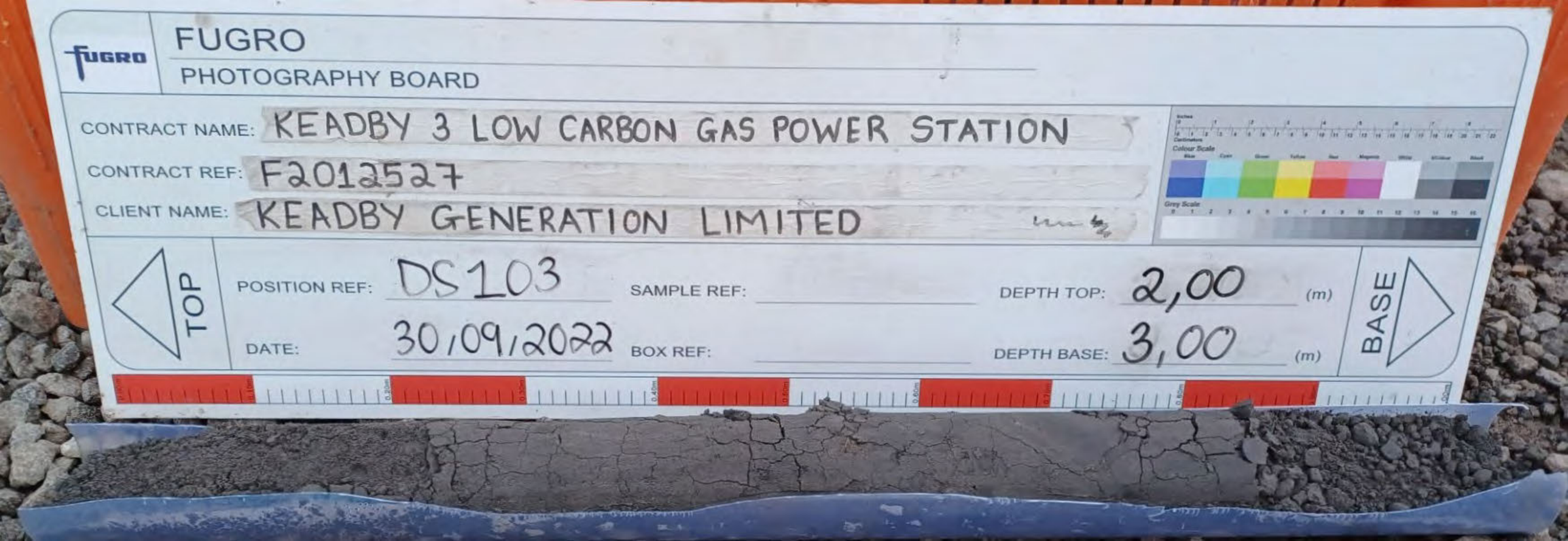
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS103
SAMPLE REF:
DEPTH TOP: 1,20 (m)
DATE: 30/09/2022
BOX REF:
DEPTH BASE: 2,00 (m)
BASE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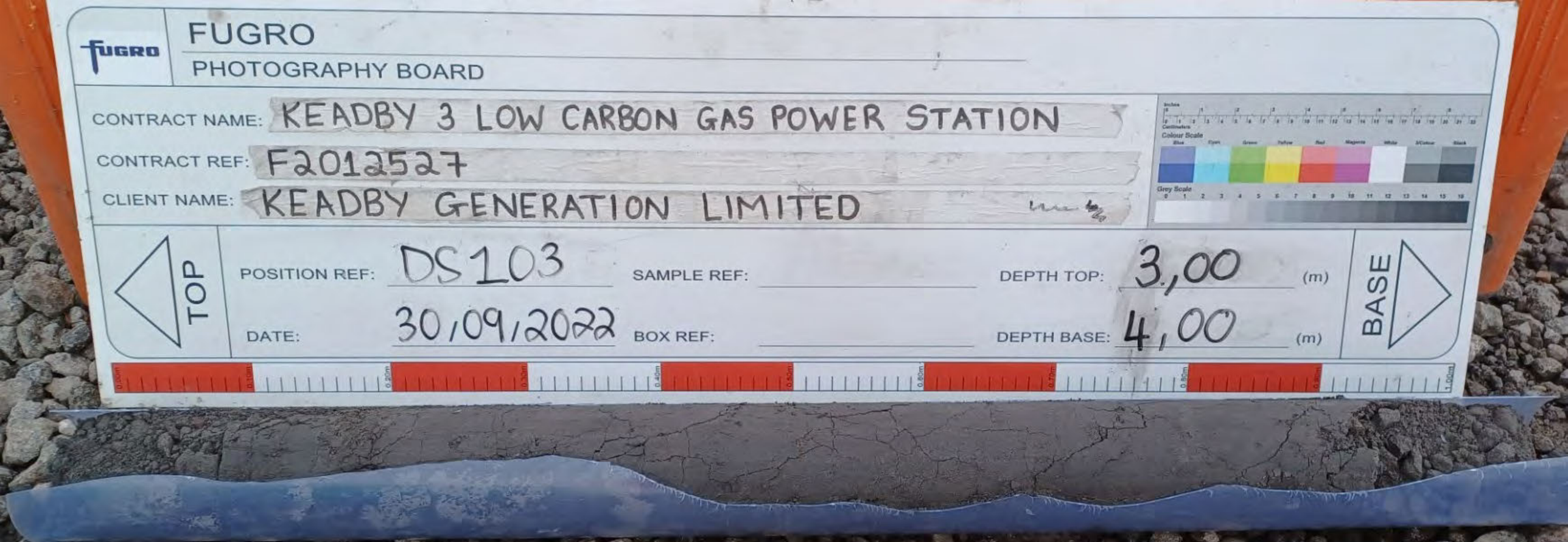
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS103
SAMPLE REF:
DEPTH TOP: 2,00 (m)
DATE: 30/09/2022
BOX REF:
DEPTH BASE: 3,00 (m)
BASE


FUGRO
FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS103
SAMPLE REF:
DEPTH TOP: 3,00 (m)
DATE: 30/09/2022
BOX REF:
DEPTH BASE: 4,00 (m)
BASE

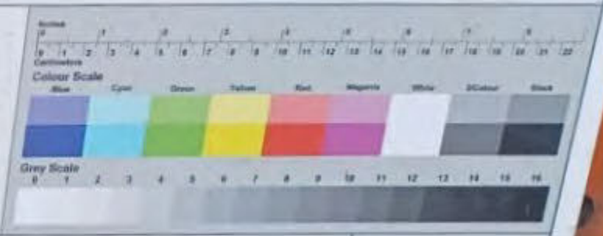
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: DS103

SAMPLE REF:

DEPTH TOP: 4,00 (m)

DATE: 30/09/2022

BOX REF:

DEPTH BASE: 5,00 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: DS105 SAMPLE REF: DEPTH TOP: 1,20 (m)

DATE: 27/09/2022 BOX REF: DEPTH BASE: 2,00 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2013527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: DS105

SAMPLE REF:

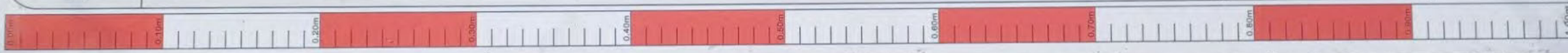
DEPTH TOP: 2,00 (m)

DATE: 27/09/2022

BOX REF:

DEPTH BASE: 3,00 (m)

BASE



FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: DS105

SAMPLE REF:

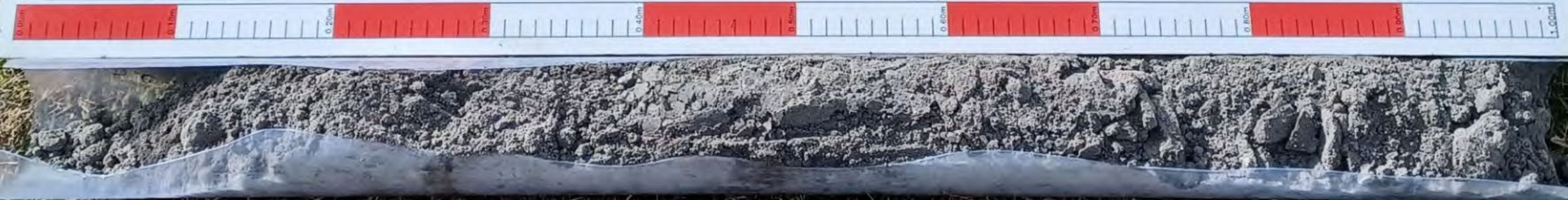
DEPTH TOP: 3,00 (m)

DATE: 27/09/2022

BOX REF:

DEPTH BASE: 4,00 (m)

BASE



FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: DS105

SAMPLE REF:

DEPTH TOP: 4,00 (m)

DATE: 27092022

BOX REF:

DEPTH BASE: 5,00 (m)

BASE

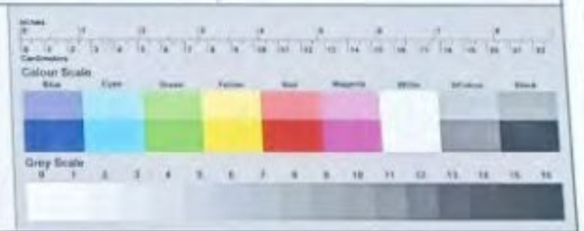
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: DS106

SAMPLE REF:

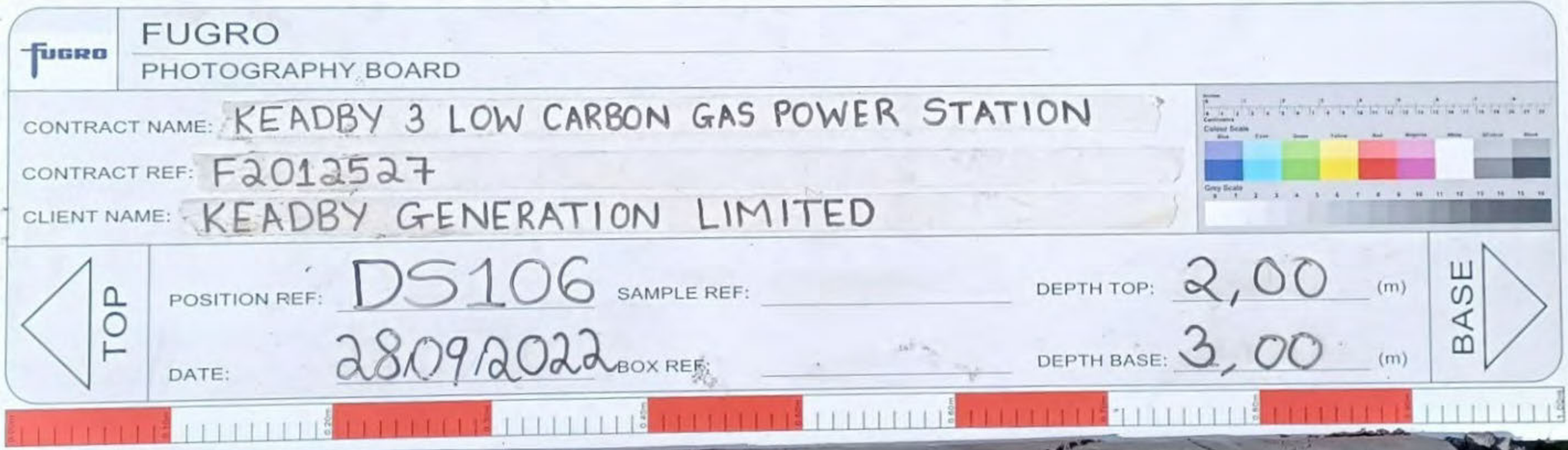
DEPTH TOP: 1,20 (m)

DATE: 28092022

BOX REF:

DEPTH BASE: 2,00 (m)

BASE


FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS106
SAMPLE REF:
DEPTH TOP: 2,00 (m)
DATE: 28092022
BOX REF:
DEPTH BASE: 3,00 (m)
BASE

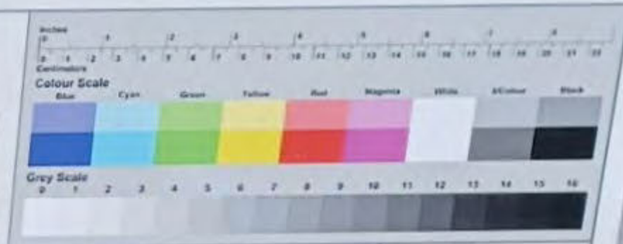
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: DS106

SAMPLE REF:

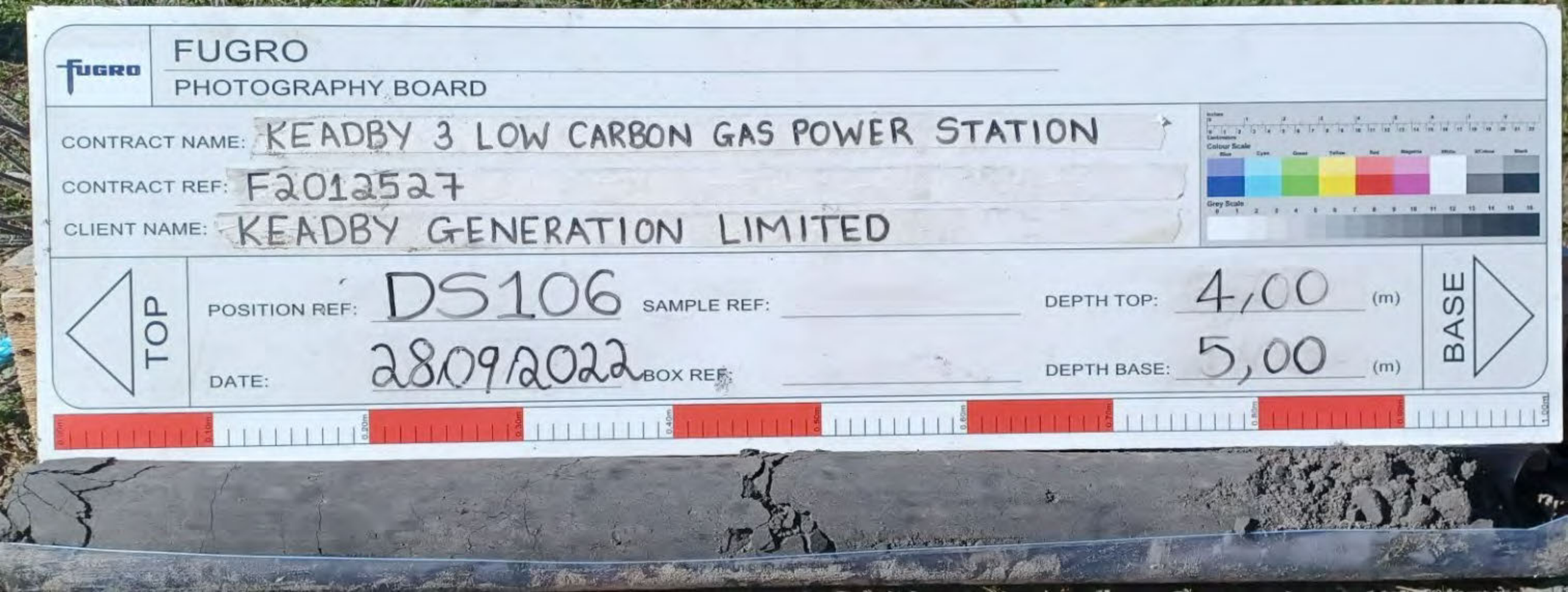
DEPTH TOP: 3,00 (m)

DATE: 28092022

BOX REF:

DEPTH BASE: 4,00 (m)

BASE


FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
Colour Scale
Grey Scale
TOP
POSITION REF: DS106
SAMPLE REF:
DEPTH TOP: 4,00 (m)
DATE: 28092022
BOX REF:
DEPTH BASE: 5,00 (m)
BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: DS107

SAMPLE REF:

DEPTH TOP: 1,20 (m)

DATE: 27/09/2022

BOX REF:

DEPTH BASE: 2,00 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: DS107

SAMPLE REF:

DEPTH TOP: 2,00 (m)

DATE: 27/09/2022

BOX REF:

DEPTH BASE: 3,00 (m)

BASE

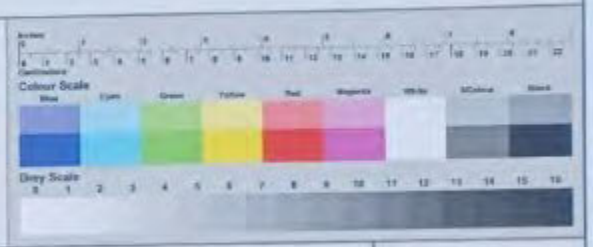
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: DS107

SAMPLE REF:

DEPTH TOP: 3.00 (m)

DATE: 27/09/2022

BOX REF:

DEPTH BASE: 4.00 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

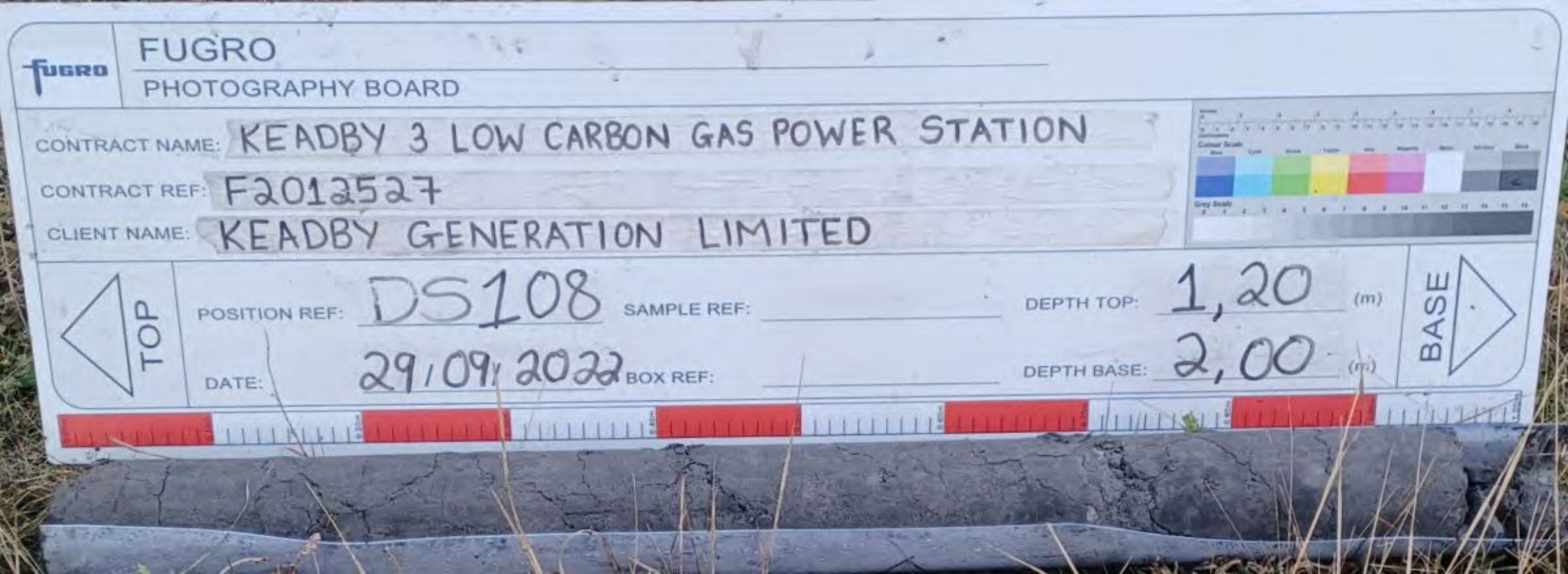
CLIENT NAME: KEADBY GENERATION LIMITED

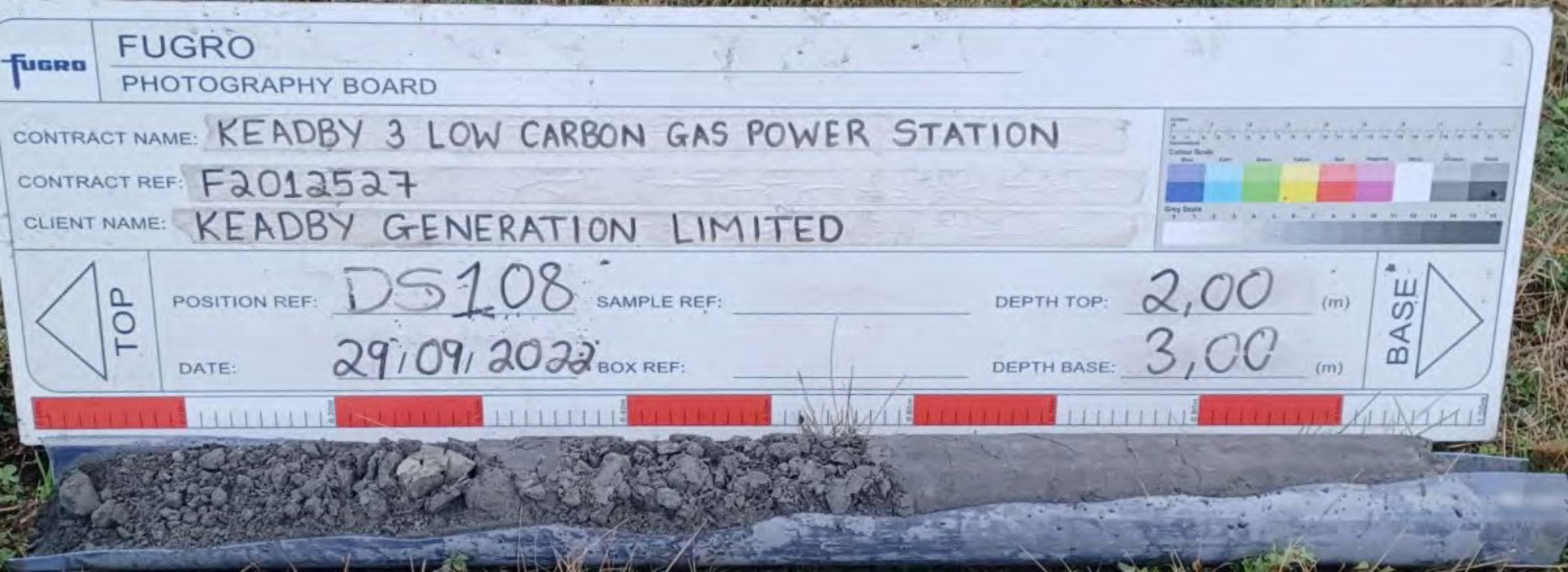
TOP

POSITION REF: DS107 SAMPLE REF: DEPTH TOP: 4,00 (m)

DATE: 27/09/2022 BOX REF: DEPTH BASE: 5,00 (m)

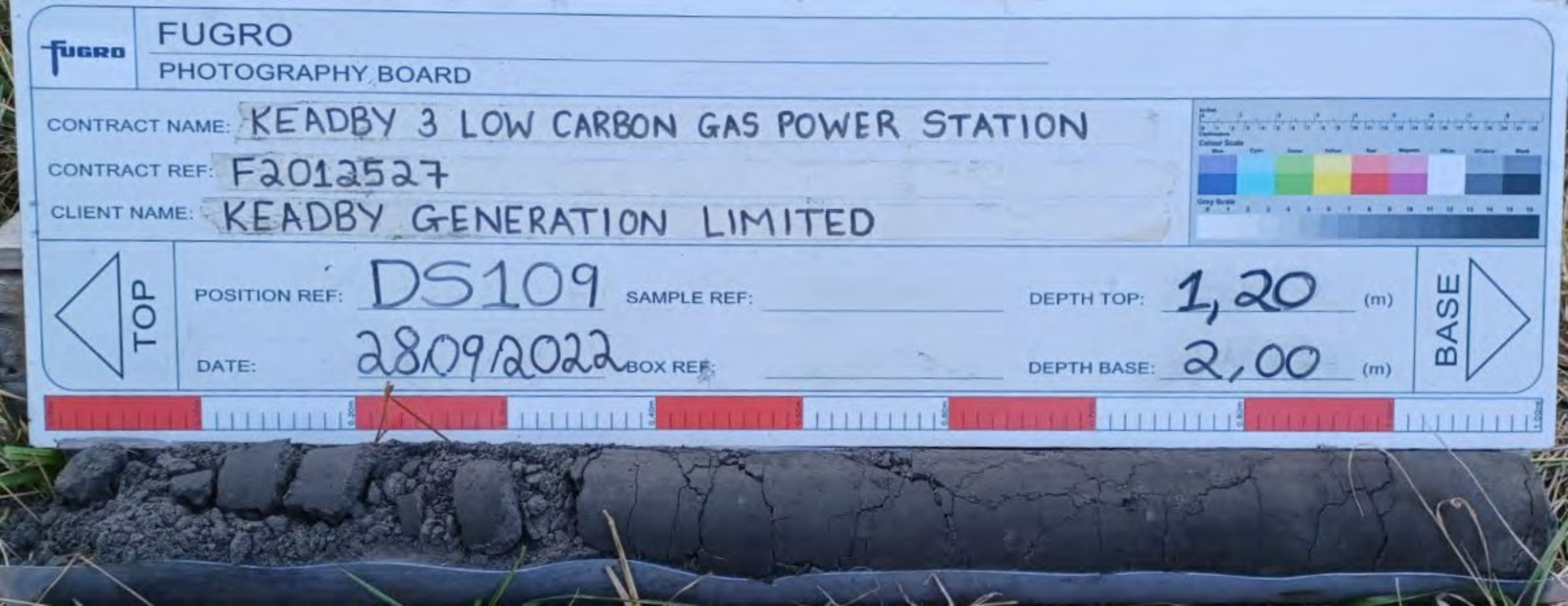
BASE


FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS108
SAMPLE REF:
DEPTH TOP: 1,20 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 2,00 (m)
BASE


FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS108
SAMPLE REF:
DEPTH TOP: 2,00 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 3,00 (m)
BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS108
SAMPLE REF:
DEPTH TOP: 3,00 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 4,00 (m)
BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS108
SAMPLE REF:
DEPTH TOP: 4,00 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 5,00 (m)
BASE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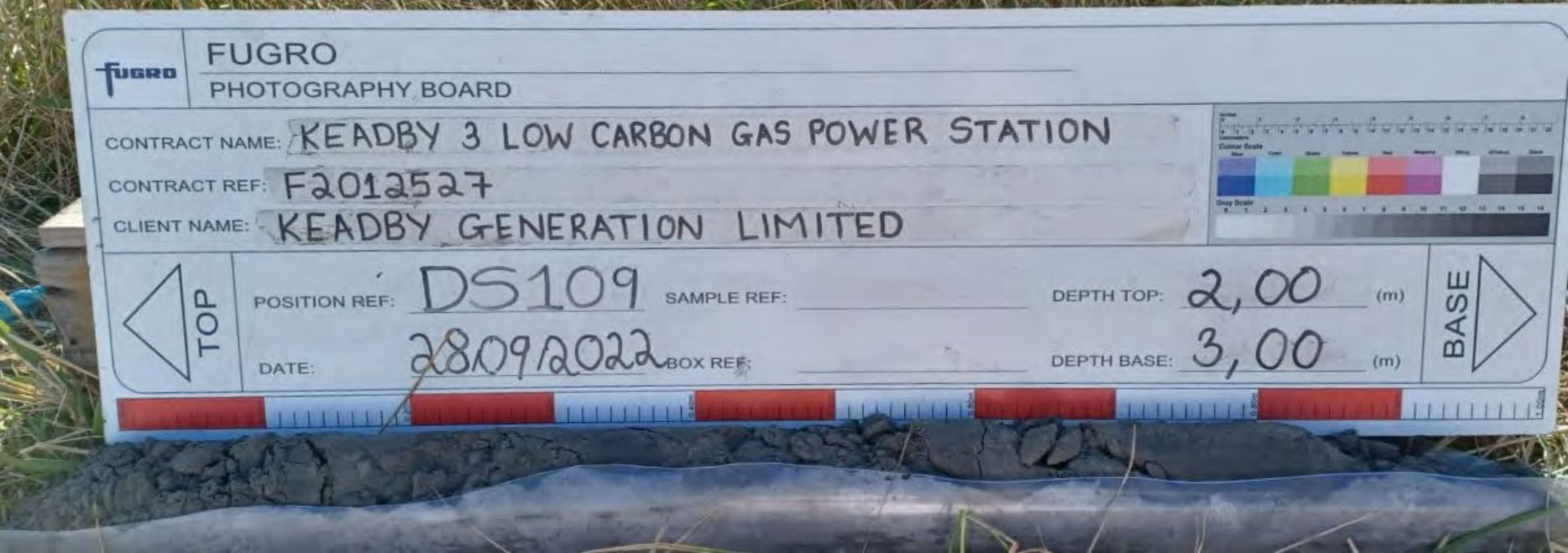
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS109
SAMPLE REF:
DEPTH TOP: 1,20 (m)
DATE: 28092022
BOX REF:
DEPTH BASE: 2,00 (m)
BASE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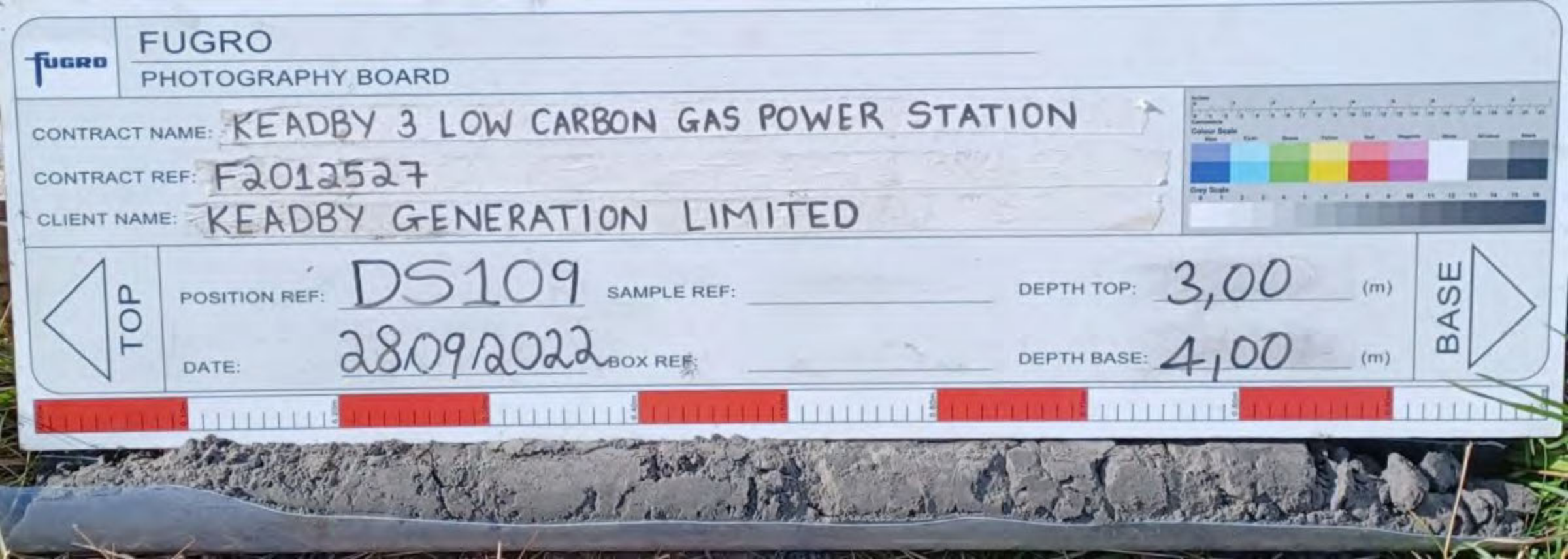
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS109
SAMPLE REF:
DEPTH TOP: 2,00 (m)
DATE: 28/09/2022
BOX REF:
DEPTH BASE: 3,00 (m)
BASE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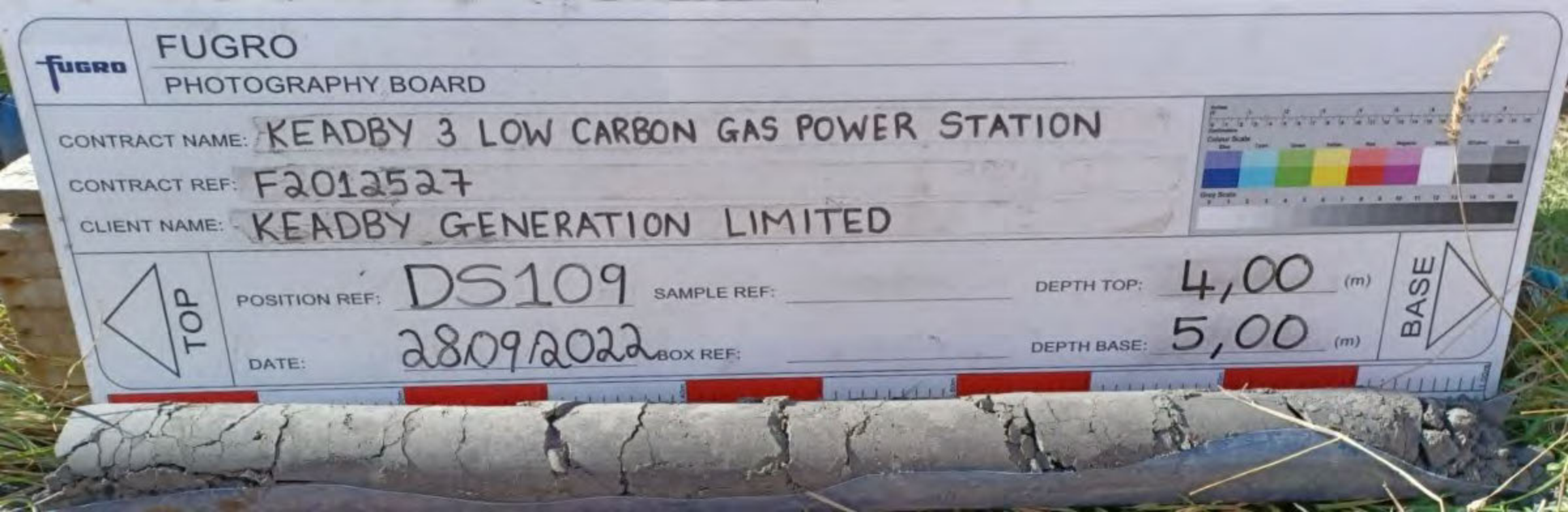
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS109
SAMPLE REF:
DEPTH TOP: 3,00 (m)
DATE: 28092022
BOX REF:
DEPTH BASE: 4,00 (m)
BASE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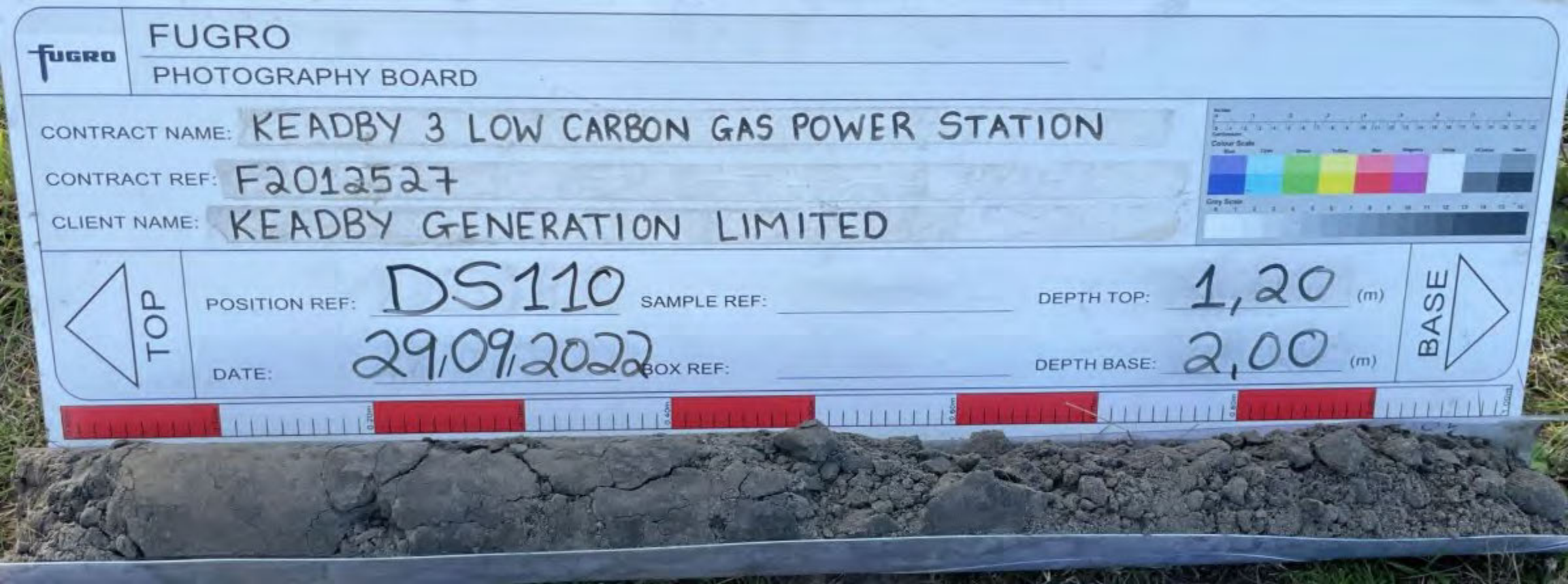
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS109
SAMPLE REF:
DEPTH TOP: 4,00 (m)
DATE: 28092022
BOX REF:
DEPTH BASE: 5,00 (m)
BASE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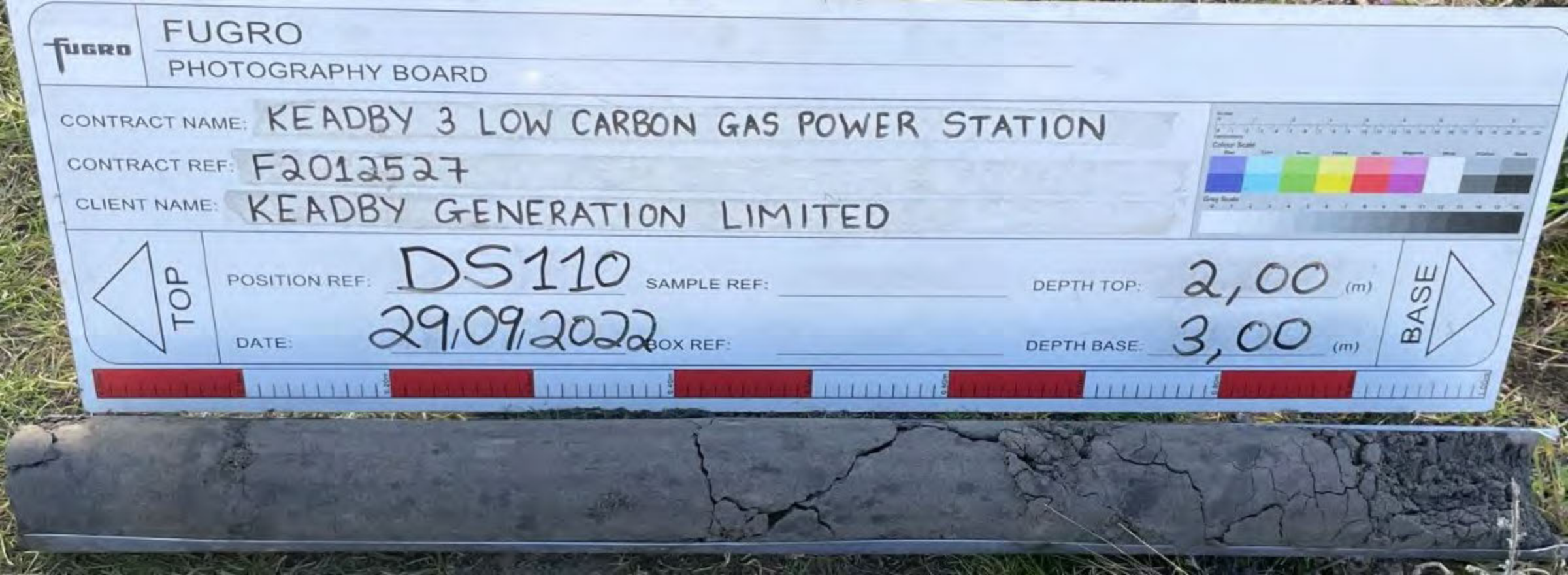
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS110
SAMPLE REF:
DEPTH TOP: 1,20 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 2,00 (m)
BASE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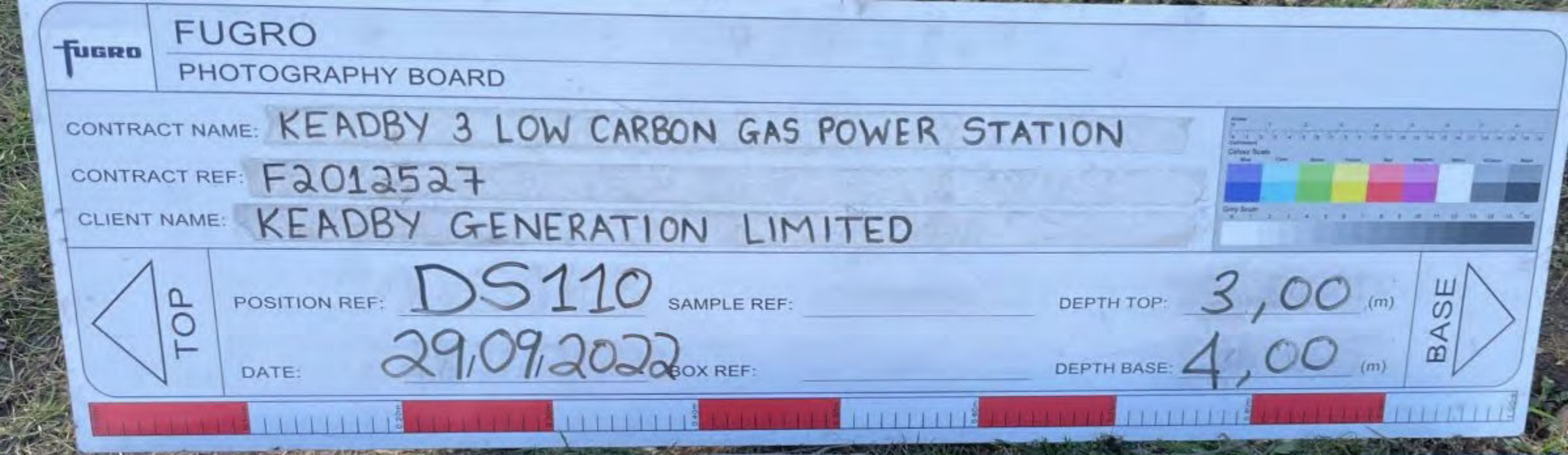
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS110
SAMPLE REF:
DEPTH TOP: 2,00 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 3,00 (m)
BASE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PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS110
SAMPLE REF:
DEPTH TOP: 3,00 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 4,00 (m)
BASE

FUGRO
FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS110
SAMPLE REF:
DEPTH TOP: 4,00 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 5,00 (m)
BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

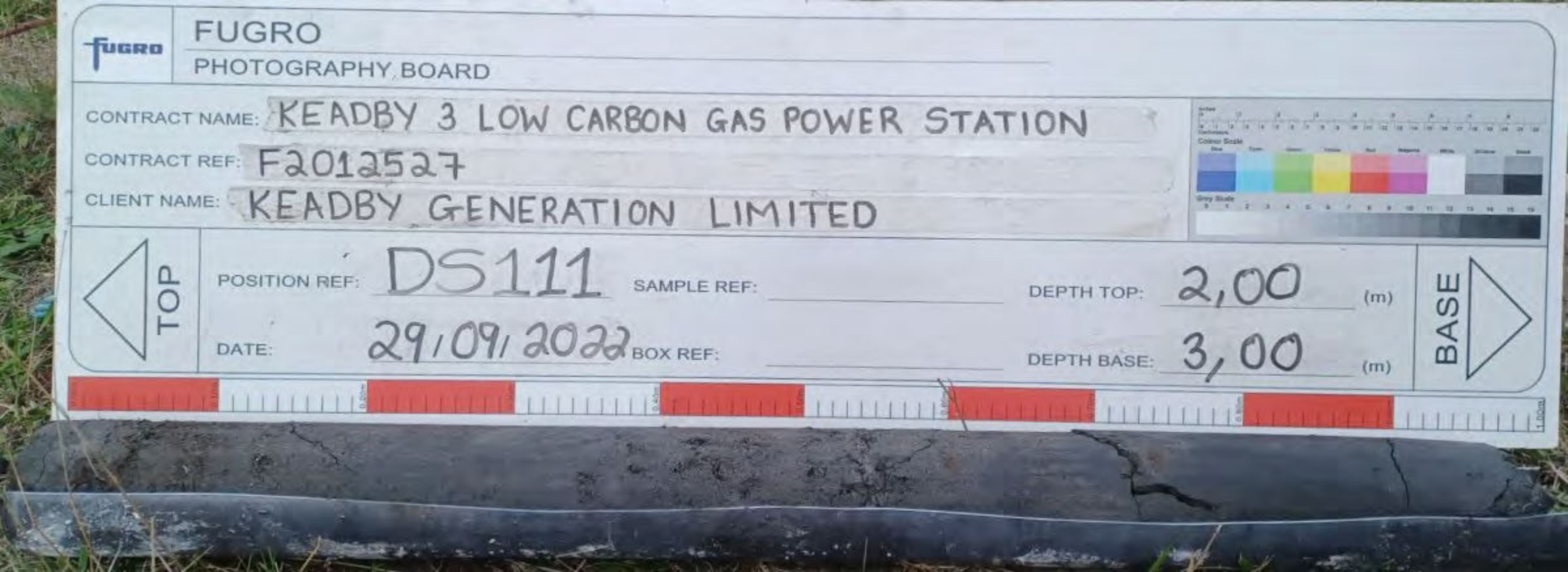
CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: DS111 SAMPLE REF: DEPTH TOP: 1,20 (m)

DATE: 29/09/2022 BOX REF: DEPTH BASE: 2,00 (m)

BASE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PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS111
SAMPLE REF:
DEPTH TOP: 2,00 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 3,00 (m)
BASE

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: DS111
SAMPLE REF:
DEPTH TOP: 3,00 (m)
DATE: 29/09/2022
BOX REF:
DEPTH BASE: 4,00 (m)
BASE

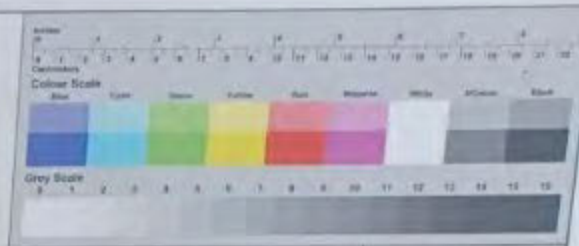
FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED



TOP

POSITION REF: DS111

SAMPLE REF:

DEPTH TOP: 4,00 (m)

DATE: 29/09/2022

BOX REF:

DEPTH BASE: 5,00 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 1 DEPTH TOP: 11.25 (m)

DATE: 18/10/22 BOX REF: 1 DEPTH BASE: 12.25 (m)

BASE

CR1

CR1

11.25m (12.10m)

12.25m (12.10m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 2 DEPTH TOP: 12.25 (m)

DATE: 18/10/22 BOX REF: 2 DEPTH BASE: 13.75 (m)

BASE

CR2

CR2

12.25m (13.10m)

13.10m) 13.75m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 3 DEPTH TOP: 13.75 (m)

DATE: 18/10/22 BOX REF: 3 DEPTH BASE: 15.25 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 4 DEPTH TOP: 15.25 (m)

DATE: 18/10/22 BOX REF: 4 DEPTH BASE: 16.10 (m)

BASE

CR4

15.25m (16.10m)

CR4

(16.10m) 16.75m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 5 DEPTH TOP: 16.75 (m)

DATE: 18/10/22 BOX REF: 5 DEPTH BASE: 18.25 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 6 DEPTH TOP: 18.25 (m)

DATE: 18/10/22 BOX REF: 6 DEPTH BASE: 19.75 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 7 DEPTH TOP: 19.75 (m)

DATE: 18/10/22 BOX REF: 7 DEPTH BASE: 21.25 (m)

BASE

CR7

19.75m (20.70m)

CR7

21.25m (20.70m)

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 8 DEPTH TOP: 21.25 (m)

DATE: 18/10/22 BOX REF: 8 DEPTH BASE: 22.75 (m)

BASE

FUGRO

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 9 DEPTH TOP: 22.75 (m)

DATE: 18/10/22 BOX REF: 9 DEPTH BASE: 24.25 (m)

BASE

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH01 CORE RUN: 10 DEPTH TOP: 24.25 (m)

DATE: 18/10/22 BOX REF: 10 DEPTH BASE: 25.00 (m)

BASE

T

CR10 (24.95m) + * +

24.25m

25.00m

* AZCL

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH02 CORE RUN: 1 DEPTH TOP: 11.10 (m)

DATE: 26/10/2022 BOX REF: 1 DEPTH BASE: 12.60 (m)

BASE

(12.93m) 11.10m

12.60m (12.03m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH02 CORE RUN: 2 DEPTH TOP: 12.60 (m)

DATE: 26/10/2022 BOX REF: 2 DEPTH BASE: 14.10 (m)

BASE

CR2

CR2

(13.42m) 12.60m

(14.10m) 13.42m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH02 CORE RUN: 3 DEPTH TOP: 14.10 (m)

DATE: 26/10/2022 BOX REF: 3 DEPTH BASE: 15.60 (m)

BASE

CR3

CR3

(14.87m) 14.10m

15.60m (14.87m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH02 CORE RUN: 4 DEPTH TOP: 15.60 (m)

DATE: 26/10/2022 BOX REF: 4 DEPTH BASE: 17.10 (m)

BASE

CR4

(16.50m) 15.60m

CR4

(305.91) 17.10m

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH02 CORE RUN: 5 DEPTH TOP: 17.10 (m)

DATE: 26/10/2022 BOX REF: 5 DEPTH BASE: 18.60 (m)

BASE

CR5

CR5

(18.00m) 17.10m

18.60m (18.00m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH02 CORE RUN: 6 DEPTH TOP: 18.60 (m)

DATE: 26/10/2022 BOX REF: 6 DEPTH BASE: 20.10 (m)

BASE

CR6

CR6

(18.60m) (19.60m)

(19.60m) (20.10m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH02 CORE RUN: 7 DEPTH TOP: 20.10 (m)

DATE: 26/10/2022 BOX REF: 7 DEPTH BASE: 21.60 (m)

BASE

CR7

CR7

20.10m (21.00m)

21.60m (21.00m)

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: AR-BH02
CORE RUN: 8
DEPTH TOP: 21.60 (m)
DATE: 26/10/2022
BOX REF: 8
DEPTH BASE: 23.10 (m)
BASE
+ AZCL + (21.75m)
CR8
+
+
CR8
+
(22.70m) 21.60m
23.10m (22.70m)

FUGRO
PHOTOGRAPHY BOARD
CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION
CONTRACT REF: F2012527
CLIENT NAME: KEADBY GENERATION LIMITED
TOP
POSITION REF: AR-BH02
CORE RUN: 9
DEPTH TOP: 23.10 (m)
DATE: 26/10/2022
BOX REF: 9
DEPTH BASE: 24.60 (m)
BASE
CR9
+CR9
(24.10m) 23.10m
24.60m (24.10m)

FUGRO

PHOTOGRAPHY BOARD

CONTRACT NAME: KEADBY 3 LOW CARBON GAS POWER STATION

CONTRACT REF: F2012527

CLIENT NAME: KEADBY GENERATION LIMITED

TOP

POSITION REF: AR-BH02 CORE RUN: 10 DEPTH TOP: 24.60 (m)

DATE: 26/10/2022 BOX REF: 10 DEPTH BASE: 25.20 (m)

BASE

T CR10 1

24.60m

25.20m

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH01**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-02	Coordinates 0.00000 0.00000
Taken by OE	Local Coordinates 482099.628, 412149.274
Remarks	Orientation (°) Ground Level [m OD] 0.54

Gaia.Forms (3.6.4066.1bc99d) - PreAndPostConditionPhotographs - PDF generated on 2022-12-01 14:33:52 by t.rowlands

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH02**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	0001-01-01	Coordinates	
Taken by		Local Coordinates	
Remarks		Orientation (°)	Ground Level [m OD]

POST CONDITION

Date Taken	2022-11-02	Coordinates	0.00000	0.00000
Taken by	BS	Local Coordinates	481913.087, 412124.528	
Remarks		Orientation (°)	Ground Level [m OD]	0.49

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH03**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-03	Coordinates 0.00000 0.00000
Taken by OE	Local Coordinates 482183.96, 412099.419
Remarks	Orientation (°) Ground Level [m OD] 0.72

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH05**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-02	Coordinates 0.00000 0.00000
Taken by BS	Local Coordinates 482034.308, 412042.059
Remarks	Orientation (°) Ground Level [m OD] 0.65

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH07**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-21	Coordinates 0.00000 0.00000
Taken by BS	Local Coordinates 481866.677, 411944.142
Remarks	Orientation (°) Ground Level [m OD] 0.62

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH09**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-02	Coordinates 0.00000 0.00000
Taken by BS	Local Coordinates 481849.517, 412052.648
Remarks	Orientation (°) Ground Level [m OD] 0.48

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH10**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-24	Coordinates 0.00000 0.00000
Taken by GW	Local Coordinates 482088.349, 412006.189
Remarks	Orientation (°) Ground Level [m OD]

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH12**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-02	Coordinates 0.00000 0.00000
Taken by BS	Local Coordinates 482090.817, 411953.305
Remarks	Orientation (°) Ground Level [m OD] 0.74

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH13**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-10-04	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	482134.93, 411937.856
Remarks		Orientation (°)	Ground Level [m OD] 0.71

POST CONDITION

Date Taken	2022-11-24	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	482134.93, 411937.856
Remarks		Orientation (°)	Ground Level [m OD] 0.71

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH17**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-24	Coordinates 0.00000 0.00000
Taken by GW	Local Coordinates 482013.339, 411922.167
Remarks	Orientation (°) Ground Level [m OD] 0.91

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Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH19**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-10-04	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481836.458, 412212.246
Remarks		Orientation (°)	Ground Level [m OD] 0.60

POST CONDITION

Date Taken	2022-11-02	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481836.458, 412212.246
Remarks		Orientation (°)	Ground Level [m OD] 0.60

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH20**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-03	Coordinates 0.00000 0.00000
Taken by BS	Local Coordinates 482212.265, 412164.547
Remarks	Orientation (°) Ground Level [m OD] 0.98

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH21**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-24	Coordinates 0.00000 0.00000
Taken by GW	Local Coordinates 482075.221, 412086.195
Remarks	Orientation (°) Ground Level [m OD] 0.81

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH23**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-09-30	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	482112.706, 411787.264
Remarks		Orientation (°)	Ground Level [m OD]

POST CONDITION

Date Taken	2022-11-24	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	482112.706, 411787.264
Remarks		Orientation (°)	Ground Level [m OD]

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**MS-BH25**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	0001-01-01	Coordinates	
Taken by		Local Coordinates	
Remarks		Orientation (°)	Ground Level [m OD]

POST CONDITION

Date Taken	2022-11-24	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	482133.826, 411653.956
Remarks		Orientation (°)	Ground Level [m OD]

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**BH101**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-02	Coordinates 0.00000 0.00000
Taken by GW	Local Coordinates 481664.445, 412164.102
Remarks	Orientation (°) Ground Level [m OD] 18.01

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**BH102**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-09-26	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481681.124, 412079.636
Remarks		Orientation (°)	Ground Level [m OD] 18.75

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481681.124, 412079.636
Remarks		Orientation (°)	Ground Level [m OD] 18.75

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**BH103**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-11-18	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481682.621, 411936.783
Remarks		Orientation (°)	Ground Level [m OD] 19.08

POST CONDITION

Date Taken	2022-11-02	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481682.621, 411936.783
Remarks		Orientation (°)	Ground Level [m OD] 19.08

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Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**BH104**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-11-18	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481281.832, 411790.021
Remarks		Orientation (°)	Ground Level [m OD] 6.52

POST CONDITION

Date Taken	2022-11-02	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481281.832, 411790.021
Remarks		Orientation (°)	Ground Level [m OD] 6.52

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**BH106**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-10-21	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481464.2, 411812
Remarks		Orientation (°)	Ground Level [m OD] 6.33

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481464.2, 411812
Remarks		Orientation (°)	Ground Level [m OD] 6.33

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS101**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-11-01	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481484.922, 411850.939
Remarks		Orientation (°)	Ground Level [m OD] 7.22

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	481484.922, 411850.939
Remarks		Orientation (°)	Ground Level [m OD] 7.22

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS103**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-09-29	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481641.198, 411899.604
Remarks		Orientation (°)	Ground Level [m OD] 18.70

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481641.198, 411899.604
Remarks		Orientation (°)	Ground Level [m OD] 18.70

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS105**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	0001-01-01	Coordinates	
Taken by		Local Coordinates	
Remarks		Orientation (°)	Ground Level [m OD]

POST CONDITION

Date Taken	2022-11-11	Coordinates	0.00000	0.00000
Taken by	BS	Local Coordinates	481499.583, 412078.894	
Remarks		Orientation (°)	Ground Level [m OD]	18.70

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS106**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken 0001-01-01	Coordinates
Taken by	Local Coordinates
Remarks	Orientation (°) Ground Level [m OD]

POST CONDITION

Date Taken 2022-11-03	Coordinates 0.00000 0.00000
Taken by BS	Local Coordinates 481481.091, 411979.009
Remarks	Orientation (°) Ground Level [m OD] 18.43

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS107**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-09-27	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481506.258, 412145.26
Remarks		Orientation (°)	Ground Level [m OD]

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481506.258, 412145.26
Remarks		Orientation (°)	Ground Level [m OD]

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS108**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-09-29	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481509.079, 411906.873
Remarks		Orientation (°)	Ground Level [m OD] 17.78

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481509.079, 411906.873
Remarks		Orientation (°)	Ground Level [m OD] 17.78

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS109**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-09-09	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481283.119, 412224.884
Remarks		Orientation (°)	Ground Level [m OD] 18.30

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481283.119, 412224.884
Remarks		Orientation (°)	Ground Level [m OD] 18.30

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS110**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-09-28	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481148.082, 412166.116
Remarks		Orientation (°)	Ground Level [m OD] 9.53

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481148.082, 412166.116
Remarks		Orientation (°)	Ground Level [m OD] 9.53

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**DS111**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-11-18	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481075.00, 411944.383
Remarks		Orientation (°)	Ground Level [m OD] 5.22

POST CONDITION

Date Taken	2022-11-03	Coordinates	0.00000 0.00000
Taken by	BS	Local Coordinates	481075.00, 411944.383
Remarks		Orientation (°)	Ground Level [m OD] 5.22

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**AR-BH01**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-11-18	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	480333.23, 410052.38
Remarks		Orientation (°)	Ground Level [m OD] 2.32

POST CONDITION

Date Taken	2022-11-02	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	480333.23, 410052.38
Remarks		Orientation (°)	Ground Level [m OD] 2.32

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**AR-BH02**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-11-18	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	480353.217, 410091.559
Remarks		Orientation (°)	Ground Level [m OD] 1.40

POST CONDITION

Date Taken	2022-11-24	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	480353.217, 410091.559
Remarks		Orientation (°)	Ground Level [m OD] 1.40

Contract Name	Keadby 3 Low Carbon Gas Power Station
Contract No	F212561
Client	Keadby Generation Limited
Location ID	**HR-BH01**

Pre & Post Condition Photographs

PRE CONDITION

Date Taken	2022-10-26	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	482965.303, 411776.582
Remarks		Orientation (°)	Ground Level [m OD] 1.50

POST CONDITION

Date Taken	2022-11-24	Coordinates	0.00000 0.00000
Taken by	GW	Local Coordinates	482965.303, 411776.582
Remarks		Orientation (°)	Ground Level [m OD] 1.50

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Appendix F

Field Test Results

Appendix F Contents

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- F.1.1 In Situ Test Equipment Calibration Reports
- F.1.2 In Situ Test Results

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- F.2.1 Dynamic Probe Test Schedule
- F.2.2 Dynamic Probe Test Results

F.3 Plate Bearing Tests
- F.3.1 Plate Bearing Test Schedule
- F.3.2 Plate Bearing Test Results

F.4 Light Weight Deflectometer Tests
- F.4.1 Light Weight Deflectometer Test Schedule
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F.5 Water Permeability Tests in a Borehole
- F.5.1 Variable Head Permeability Test Results

F.1 In Situ Test Results

F.1.1 In Situ Test Equipment Calibration Reports

Title	Reference
Photoionisation Detector Test Equipment;	Referenced by Equipment ID
Standard Penetration Test Equipment;	Referenced by Equipment ID
Borehole Vane Test Equipment;	Referenced by Equipment ID

CERTIFICATE OF CALIBRATION

Phocheck Tiger

CALIBRATION CERTIFICATE NO: 73381

ISSUED BY: SHAWCITY LIMITED
DATE: 7.4.22

APPROVED SIGNATORY: [redacted]

NAME: [redacted]

CUSTOMER: Fugro GeoServices Limited
INSTRUMENT: PhoCheck Tiger
SERIAL NUMBER: T-117404

CALIBRATION METHOD: CM03
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO336087-8	100 ppm	100 ppm
Isobutylene	WO324037-1	1000 ppm	1000 ppm

COMMENTS:
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of *k* =2.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is ±2 %
The results indicate that the instrument conforms to the applicable parts of the published specification.

Tel: 01793 780622
www.shawcity.co.uk
Instrument House, 91-92 Shrivenham Hundred Business Park
Watchfield, Oxfordshire, SN6 8TY
Fax: 01793 784466
service@shawcity.co.uk

CERTIFICATE OF CALIBRATION

Phocheck Tiger

CALIBRATION CERTIFICATE NO: 73680

ISSUED BY: SHAWCITY LIMITED
DATE: 16.5.22

APPROVED SIGNATORY: [redacted]

NAME: [redacted]

CUSTOMER: Fugro GeoServices Limited
INSTRUMENT: PhoCheck Tiger
SERIAL NUMBER: T-117408

CALIBRATION METHOD: CM03
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO344441-2	100 ppm	100 ppm
Isobutylene	WO324037-1	1000 ppm	1000 ppm

COMMENTS:
The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of *k* =2.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is ±2 %
The results indicate that the instrument conforms to the applicable parts of the published specification.

Tel: 01793 780622
www.shawcity.co.uk
Instrument House, 91-92 Shrivenham Hundred Business Park
Watchfield, Oxfordshire, SN6 8TY
Fax: 01793 784466
service@shawcity.co.uk

Southern Testing
Environmental & Geotechnical

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Associated Drilling Services
Hara
Dainton
Newton Abbot
Devon
TQ12 5TZ

SPT Hammer Ref:	ADS MID2
Test Date:	22/03/2022
Report Date:	14/04/2022
File Name:	ADS MID2.spt
Test Operator:	LJS

Instrumented Rod Data

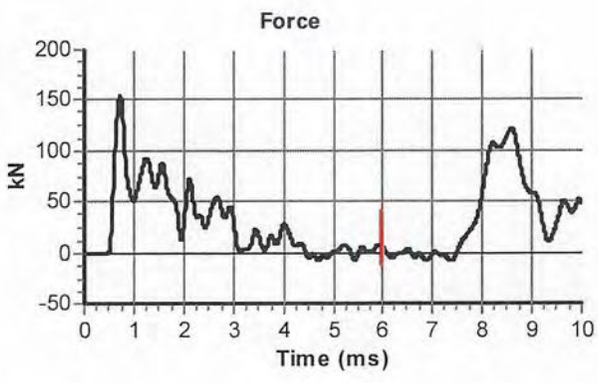
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	64786
Accelerometer No.2:	64789

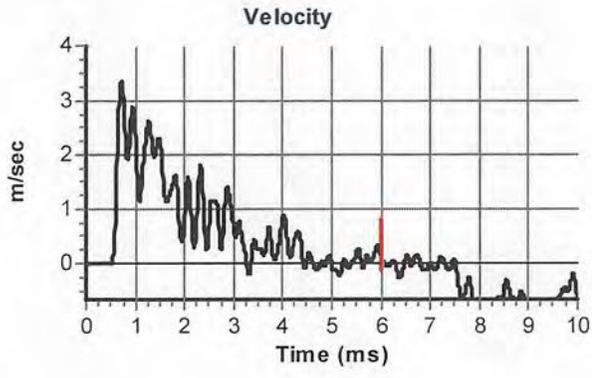
SPT Hammer Information

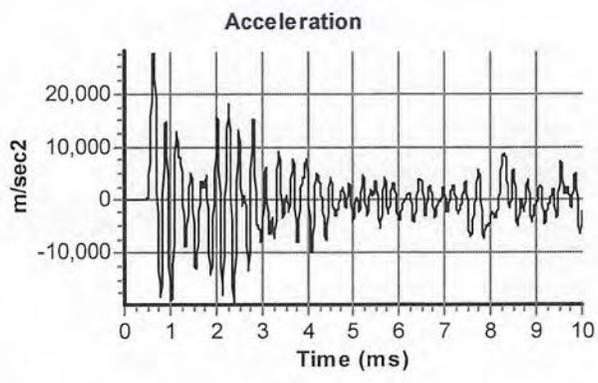
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	15.0

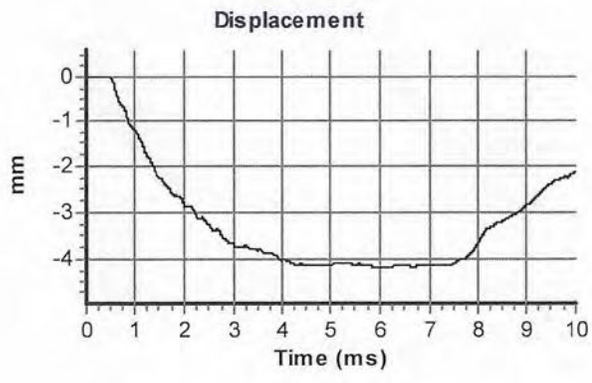
Comments / Location

SPT HAMMER 2 MID









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	301

Energy Ratio E_r (%): **64**

Signed: Luke Sansom
Title: Director

The recommended calibration interval is 12 months

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Allied Exploration & Geotechnics Ltd.

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

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref:	EQU056
Test Date:	18/01/2022
Report Date:	18/01/2022
File Name:	EQU056.spt
Test Operator:	BP

Instrumented Rod Data

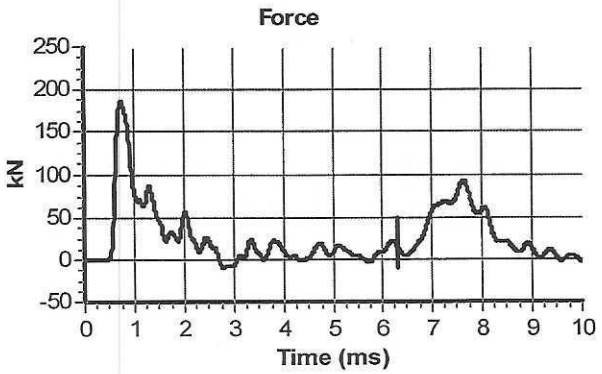
Diameter d_r (mm):	67
Wall Thickness t_r (mm):	8.6
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	65939
Accelerometer No.2:	66286

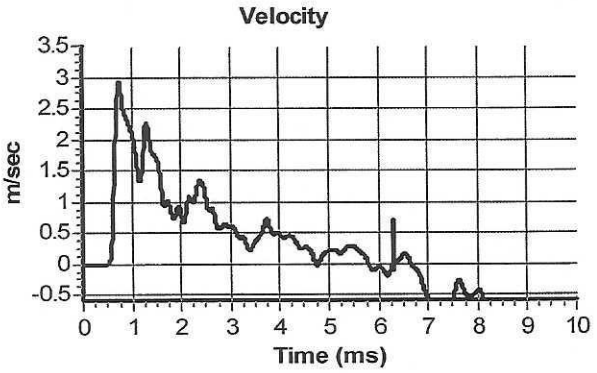
SPT Hammer Information

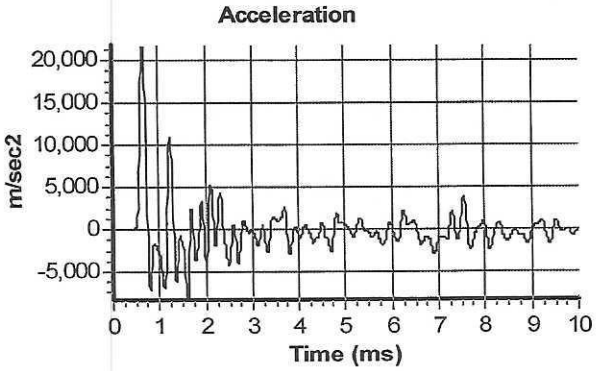
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.1

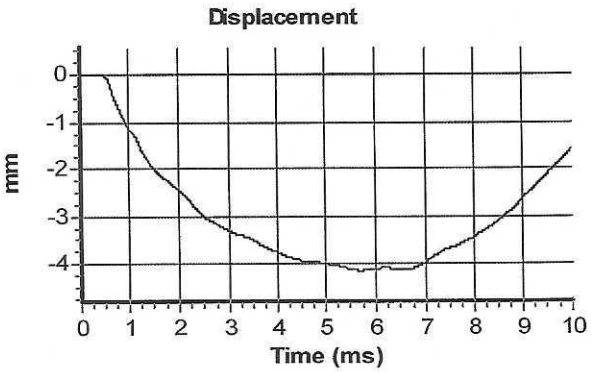
Comments / Location

Mass and drop supplied by client









Calculations

Area of Rod A (mm2):	1578
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	247

Energy Ratio E_r (%): **52**

[redacted]

Signed: Brian Proctor

Title: Senior Technician

The recommended calibration interval is 12 months

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Allied Exploration & Geotechnics Ltd.

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

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref:	EQU061
Test Date:	13/08/2021
Report Date:	13/08/2021
File Name:	EQU061.spt
Test Operator:	BP

Instrumented Rod Data

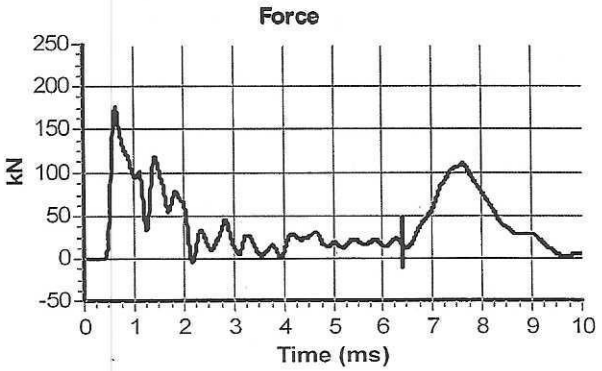
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.8
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	5991
Accelerometer No.2:	5990

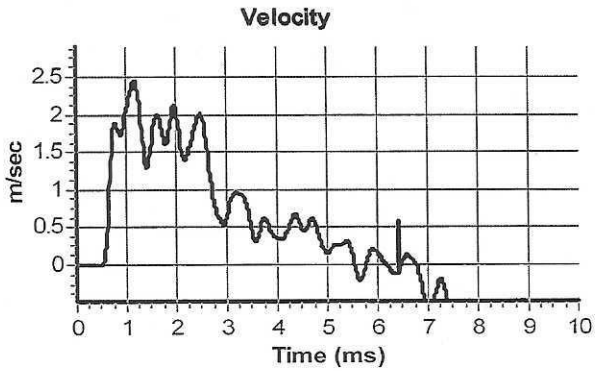
SPT Hammer Information

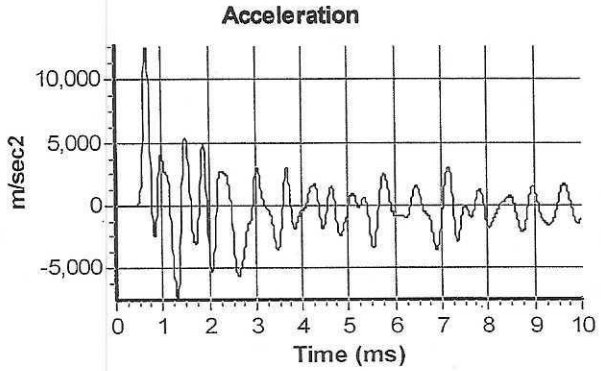
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.1

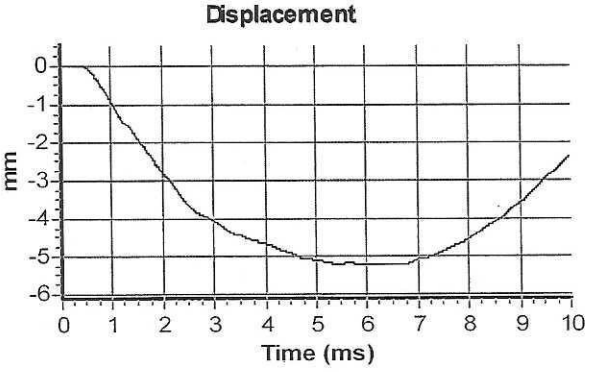
Comments / Location

Mass and drop supplied by client









Calculations

Area of Rod A (mm2):	1008
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	285

Energy Ratio E_r (%): **60**

[redacted]

Signed: Brian Proctor

Title: Senior Technician

The recommended calibration interval is 12 months

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Allied Exploration & Geotechnics Ltd.

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

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref:	TQ4
Test Date:	17/12/2021
Report Date:	17/12/2021
File Name:	TQ4.spt
Test Operator:	BP

Instrumented Rod Data

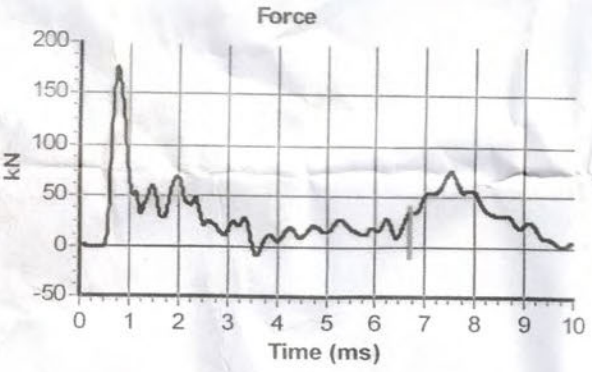
Diameter d_r (mm):	67
Wall Thickness t_r (mm):	8.6
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	65939
Accelerometer No.2:	66286

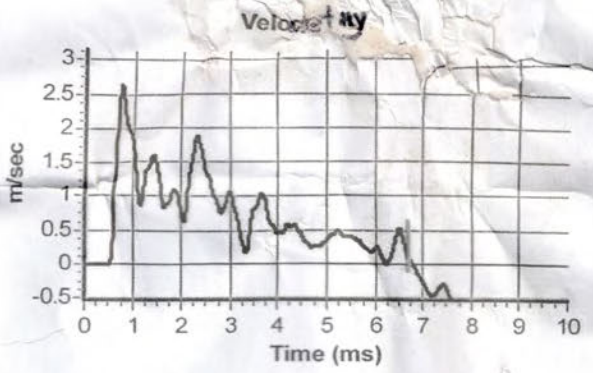
SPT Hammer Information

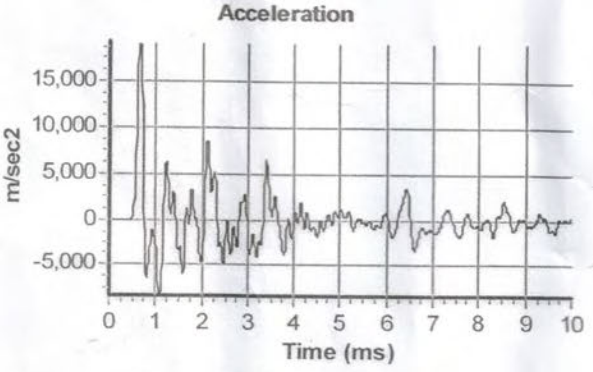
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.1

Comments / Location

Mass and drop supplied by client







Calculations

Area of Rod A (mm2):	1578
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	237

Energy Ratio E_r (%): **50**

[redacted]

Signed: Brian Proctor

Title: Senior Technician

The recommended calibration interval is 12 months

Southern Testing
Environmental & Geotechnical

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Associated Drilling Services
Hara
Dainton
Newton Abbot
Devon
TQ12 5TZ

SPT Hammer Ref:	ADS MID1
Test Date:	22/03/2022
Report Date:	14/04/2022
File Name:	ADS MID1.spt
Test Operator:	LJS

Instrumented Rod Data

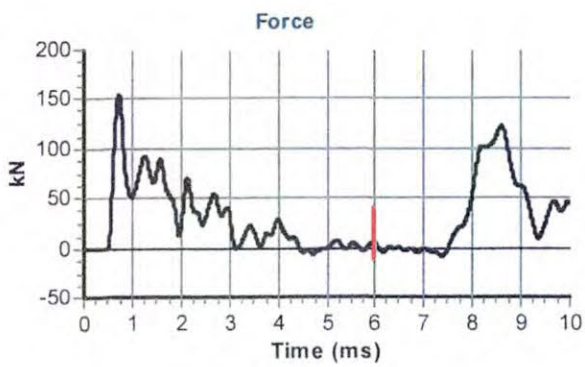
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.0
Assumed Modulus E_a (GPa):	200
Accelerometer No.1:	64786
Accelerometer No.2:	64789

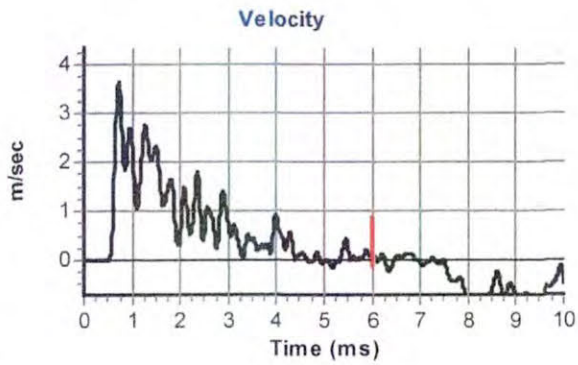
SPT Hammer Information

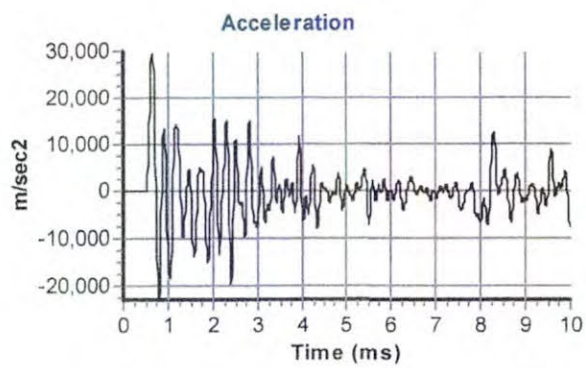
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	15.0

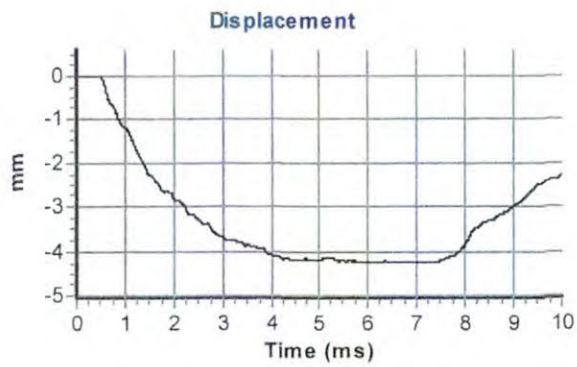
Comments / Location

SPT HAMMER 1 MID









Calculations

Area of Rod A (mm2):	905
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	297

Energy Ratio E_r (%): **63**

Signed: Luke Sansom
Title: Director

The recommended calibration interval is 12 months

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F.1.2 In Situ Test Results

Title	Reference
Main Site Summary Sheets of In Situ Test Results	Referenced by Location ID
Ash Tip Summary Sheets of In Situ Test Results	Referenced by Location ID
Access Roads Summary Sheets of In Situ Test Results	Referenced by Location ID

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482099.63 N412149.27	Ground Elevation (m Datum)	0.54	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=11 (1,1/3,2,3,3)	450	TQ4	50	1.20	
2.00	S		N=1 (1,0/0,1,0,0)	450	TQ4	50	2.00	
3.00	S		N=3 (1,0/0,1,1,1)	450	TQ4	50	3.00	
4.00	S		N=2 (1,0/1,0,1,0)	450	TQ4	50	4.00	
5.00	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	5.00	
6.00	S		N=4 (1,0/1,0,1,2)	450	TQ4	50	6.00	
7.50	S		N=6 (1,1/2,1,2,1)	450	TQ4	50	7.50	
9.00	S		N=6 (1,0/1,2,1,2)	450	TQ4	50	9.00	
10.50	S		N=6 (1,1/1,1,2,2)	450	TQ4	50	10.50	
12.00	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	12.00	
13.50	S		N=40 (5,7/8,9,9,14)	450	TQ4	50	13.50	
14.50	S		50 (25 for 80mm/50 for 20mm)	100	TQ4	50	14.50	

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.35	< 0.1 ppm
0.55	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH02**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481913.09 N412124.53	Ground Elevation (m Datum)	0.49	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=6 (1,1/1,1,2,2)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=5 (1,0/1,1,1,2)	450	ADS MID2	65	3.00	1.50
4.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	4.00	3.00
5.00	S	0	N=7 (1,1/1,2,2,2)	450	ADS MID2	65	5.00	4.00
6.00	S	0	N=9 (1,1/2,2,2,3)	450	ADS MID2	65	6.00	3.50
7.50	S	0	N=10 (1,2/2,3,3,2)	450	ADS MID2	65	7.50	3.00
9.00	S	0	N=10 (2,2/3,3,2,2)	450	ADS MID2	65	9.00	4.00
10.50	S	0	N=9 (1,2/2,2,2,3)	450	ADS MID2	65	10.50	5.00
12.00	S	0	N=9 (1,2/2,3,2,2)	450	ADS MID2	65	12.00	6.00
13.50	S	0	N=9 (1,2/2,2,2,3)	450	ADS MID2	65	13.50	5.00
15.00	S	0	N=20 (5,5/5,5,5,5)	450	ADS MID2	65	15.00	7.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)
0.50	HVane	116.00	32.00
0.50	HVane	120.00	42.00
0.50	HVane	100.00	43.00

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.45	0.1 ppm
0.85	< 0.1 ppm
1.20	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH03**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482183.96 N412099.42	Ground Elevation (m Datum)	0.72	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=4 (0,1/1,1,1,1)	450	TQ4	50	1.20	Dry
2.00	S	0	N=10 (1,2/2,3,2,3)	450	TQ4	50	1.90	Dry
3.00	S	0	N=1 (0,0/0,1,0,0)	450	TQ4	50	2.90	Dry
4.00	S	0	N=1 (0,0/1,0,0,0)	450	TQ4	50	3.90	3.80
5.00	S	0	N=5 (1,0/1,1,2,1)	450	TQ4	50	4.90	3.90
7.50	S	0	N=20 (3,4/4,5,5,6)	450	TQ4	50	7.40	4.00
9.00	S	0	N=24 (2,4/4,5,7,8)	450	TQ4	50	8.90	4.80
10.50	S	0	N=20 (2,3/4,4,6,6)	450	TQ4	50	10.40	4.80
12.00	S	0	N=16 (3,3/4,4,4,4)	450	TQ4	50	11.90	4.70
13.50	S	0	N=19 (2,3/4,4,5,6)	450	TQ4	50	13.40	4.80
15.00	S	0	50 (9,12/50 for 170mm)	430	TQ4	50	14.90	0.60
16.70	S	0	N=50 (25 for 130mm/50 for 100mm)	230	ADSR07	66	15.00	0.00
18.20	C	0	N=50 (25 for 120mm/50 for 80mm)	200	ADSR07	66	15.00	0.00
19.70	C	0	N=50 (25 for 90mm/50 for 60mm)	150	ADSR07	66	15.00	0.00
21.20	C	0	N=50 (25 for 75mm/50 for 30mm)	105	ADSR07	66	15.00	0.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.30	< 0.1 ppm
0.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH04**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481845.73 N412127.48	Ground Elevation (m Datum)	0.33	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=11 (1,1/2,3,2,4)	450	TQ4	50		
2.00	S	0	N=7 (1,0/1,2,2,2)	450	TQ4	50	1.90	1.00
3.00	S	0	N=2 (0,1/0,0,1,1)	450	TQ4	50	2.90	1.10
4.00	S	0	N=6 (0,0/1,2,1,2)	450	TQ4	50	3.90	2.40
5.00	S	0	N=8 (1,1/1,2,2,3)	450	TQ4	50	4.90	3.00
6.00	S	0	N=6 (1,1/2,1,2,1)	450	TQ4	50	5.90	3.10
7.50	S	0	N=13 (1,2/3,3,3,4)	450	TQ4	50	7.40	3.00
9.00	S	0	N=13 (1,1/3,2,3,5)	450	TQ4	50	8.90	3.70
10.50	S	0	N=15 (2,2/3,4,4,4)	450	TQ4	50	10.40	3.90
12.00	S	0	N=12 (1,2/3,3,3,3)	450	TQ4	50	11.90	4.80
13.00	S	0	N=10 (1,2/1,3,2,4)	450	TQ4	50	12.90	3.90
14.50	S	0	N=50 (12,13/50 for 50mm)	200	TQ4	50	14.40	3.90

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH05**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482034.31 N412042.06	Ground Elevation (m Datum)	0.65	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=8 (1,2/1,2,2,3)	450	TQ4	50	1.20	Dry
2.00	S		N=3 (0,1/0,0,1,2)	450	TQ4	50	1.90	1.40
3.00	S		N=4 (0,0/1,1,1,1)	450	TQ4	50	2.90	2.70
4.00	S		N=7 (1,0/1,2,2,2)	450	TQ4	50	3.90	2.90
5.00	S		N=10 (1,1/2,3,2,3)	450	TQ4	50	4.90	3.60
6.00	S		N=9 (1,1/1,2,3,3)	450	TQ4	50	5.90	3.90
7.50	S		N=9 (1,0/1,2,3,3)	450	TQ4	50	7.40	3.70
9.00	S		N=12 (1,2/2,3,3,4)	450	TQ4	50	8.90	3.40
10.50	S		N=13 (2,1/2,3,4,4)	450	TQ4	50	10.40	3.90
12.00	S		N=12 (1,2/3,2,3,4)	450	TQ4	50	11.90	3.90
13.50	S		N=16 (3,4/4,4,4,4)	450	TQ4	50	15.40	3.40
15.00	S		50 (7,9/50 for 225mm)	375	TQ4	50	14.90	3.60

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH06**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481905.41 N412027.74	Ground Elevation (m Datum)	0.44	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=12 (1,3/3,4,3,2)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=7 (1,2/2,2,1,2)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=10 (2,2/2,3,3,2)	450	ADS MID2	65	3.00	1.50
4.00	S	0	N=11 (2,2/2,3,3,3)	450	ADS MID2	65	4.00	3.00
5.00	S	0	N=10 (1,2/2,2,3,3)	450	ADS MID2	65	5.00	3.00
6.00	S	0	N=5 (1,1/1,1,1,2)	450	ADS MID2	65	6.00	5.00
7.50	S	0	N=4 (1,1/1,0,1,2)	450	ADS MID2	65	7.50	4.00
9.00	S	0	N=6 (1,1/1,1,2,2)	450	ADS MID2	65	9.00	5.00
10.50	S	0	N=4 (1,0/1,1,1,1)	450	ADS MID2	65	10.50	5.00
12.00	S	0	N=3 (1,1/1,0,1,1)	450	ADS MID2	65	12.00	4.00
13.50	S	0	N=13 (2,3/3,3,3,4)	450	ADS MID2	65	13.50	5.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)
0.40	HVane	112.00	38.00
0.40	HVane	120.00	42.00
0.40	HVane	114.00	38.00

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
0.90	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH07**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481866.68 N411944.14	Ground Elevation (m Datum)	0.62	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=33 (3,7/7,8,9,9)	450	TQ4	50		Dry
2.00	S		N=21 (3,4/5,5,5,6)	450	TQ4	50	1.90	Dry
3.00	S		N=4 (0,0/1,1,1,1)	450	TQ4	50	2.90	2.80
4.00	S		N=6 (0,1/1,1,2,2)	450	TQ4	50	3.90	2.90
5.00	S		N=9 (1,2/2,2,3,2)	450	TQ4	50	4.90	3.10
6.00	S		N=17 (2,3/3,4,5,5)	450	TQ4	50	5.90	4.00
7.50	S		N=20 (3,2/3,4,5,8)	450	TQ4	50	7.40	4.10
9.00	S		N=21 (3,3/4,5,6,6)	450	TQ4	50	8.90	4.80
10.50	S		N=24 (3,4/4,7,6,7)	450	TQ4	50	10.40	4.10
12.00	S		N=21 (3,4/3,4,6,8)	450	TQ4	50	11.90	4.70
13.50	S		50 (9,10/50 for 150mm)	300	TQ4	50	13.40	5.10
15.00	S		50 (25 for 20mm/50 for 80mm)	100	TQ4	50	14.90	4.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.20	< 0.1 ppm
0.50	< 0.1 ppm
1.00	0.7 ppm
1.90	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH08**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482120.22 N411896.84	Ground Elevation (m Datum)	0.80	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=12 (1,3/3,3,3,3)	450	EQU056	56	1.20	Dry
2.00	S	0	N=11 (1,1/2,2,3,4)	450	EQU056	56	2.00	1.50
3.00	S	0	N=13 (1,1/1,3,4,5)	450	EQU056	56	3.00	1.40
4.00	S	0	N=21 (2,3/4,5,5,7)	450	EQU056	56	4.00	2.00
5.00	S	0	N=14 (2,2/2,3,4,5)	450	EQU056	56	5.00	3.00
6.50	S	0	N=23 (3,5/5,5,6,7)	450	EQU056	56	6.50	4.40
8.00	S	0	N=14 (1,2/3,3,4,4)	450	EQU056	56	8.00	4.50
9.50	S	0	N=9 (1,1/1,2,3,3)	450	EQU056	56	9.50	5.00
11.00	S	0	N=7 (1,1/1,2,2,2)	450	EQU056	56	11.00	5.80
12.50	S	0	N=10 (1,2/2,3,2,3)	450	EQU056	56	12.50	7.10
14.00	S	0	N=100 (25 for 120mm/100 for 225mm)	345	EQU056	56	14.00	8.00
14.35	S	0	N=100 (25 for 100mm/100 for 150mm)	250	EQU056	56	14.35	8.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.50	< 0.1 ppm
0.90	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH09**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481849.52 N412052.65	Ground Elevation (m Datum)	0.48	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=8 (1,1/2,2,2,2)	450	TQ4	50		Dry
2.00	S		N=6 (1,0/1,2,1,2)	450	TQ4	50	1.90	Dy
3.00	S		N=6 (0,1/0,1,2,3)	450	TQ4	50	2.90	1.00
4.00	S		N=7 (0,0/1,2,2,2)	450	TQ4	50	3.90	1.00
5.00	S		N=4 (0,0/1,0,1,2)	450	TQ4	50	4.90	2.30
6.00	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	5.90	3.40
7.50	S		N=8 (1,2/2,1,2,3)	450	TQ4	50	7.40	3.30
9.00	S		N=12 (1,1/2,3,3,4)	450	TQ4	50	8.90	3.10
10.50	S		N=11 (2,2/2,3,3,3)	450	TQ4	50	10.40	3.10
12.00	S		N=14 (1,2/3,3,4,4)	450	TQ4	50	11.90	3.60
13.50	S		N=14 (1,3/3,4,3,4)	450	TQ4	50	13.40	3.60
14.50	S		50 (12,13/50 for 150mm)	300	TQ4	50	14.40	4.80

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH10**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482088.35 N412006.19	Ground Elevation (m Datum)	0.71	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=11 (1,2/2,3,3,3)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=6 (1,0/1,1,2,2)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=6 (1,1/1,1,2,2)	450	ADS MID2	65	3.00	2.00
4.00	S	0	N=6 (1,1/1,2,2,1)	450	ADS MID2	65	4.00	2.00
5.00	S	0	N=4 (1,2/1,1,1,1)	450	ADS MID2	65	5.00	3.00
6.00	S	0	N=8 (1,2/2,2,2,2)	450	ADS MID2	65	6.00	4.00
7.50	S	0	N=11 (7,1/2,3,3,3)	450	ADS MID2	65	7.50	4.00
9.00	S	0	N=10 (1,2/2,2,3,3)	450	ADS MID2	65	9.00	5.00
10.50	S	0	N=10 (2,2/2,2,3,3)	450	ADS MID2	65	10.50	4.00
12.00	S	0	N=12 (2,2/3,3,3,3)	450	ADS MID2	65	12.00	5.00
13.50	S	0	N=25 (2,3/3,4,8,10)	450	ADS MID2	65	13.50	4.00
14.10	S	0	N=50 (7,11/50 for 95mm)	245	ADS MID2	65	14.00	4.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.45	< 0.1 ppm
0.85	< 0.1 ppm
1.10	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH11**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482101.50 N412007.46	Ground Elevation (m Datum)	0.74	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=11 (2,2/3,3,3,2)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=5 (1,0/1,1,1,2)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	3.00	1.00
4.00	S	0	N=2 (1,0/1,0,1,0)	450	ADS MID2	65	4.00	3.00
5.00	S	0	N=7 (1,1/1,2,2,2)	450	ADS MID2	65	5.00	3.00
6.00	S	0	N=10 (1,2/3,3,2,2)	450	ADS MID2	65	6.00	2.00
7.50	S	0	N=7 (1,0/1,2,2,2)	450	ADS MID2	65	7.50	3.00
9.00	S	0	N=6 (1,1/2,1,1,2)	450	ADS MID2	65	9.00	3.00
10.50	S	0	N=10 (1,2/2,2,3,3)	450	ADS MID2	65	10.50	5.00
12.00	S	0	N=13 (2,3/3,3,4,3)	450	ADS MID2	65	12.00	5.00
13.50	S	0	N=20 (2,3/4,4,5,7)	450	ADS MID2	65	13.50	7.00
14.20	S	0	N=50 (6,9/20,30,0,0)	450	ADS MID2	65	14.20	5.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.45	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH12**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482090.82 N411953.30	Ground Elevation (m Datum)	0.74	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=10 (2,4/3,2,2,3)	450	EQU061	60	0.00	Dry
2.20	S	0	N=4 (2,1/0,1,1,2)	450	EQU061	60	2.20	1.00
3.20	S	0	N=7 (2,2/1,2,2,2)	450	EQU061	60	3.20	1.00
4.20	S	0	N=3 (1,0/1,0,1,1)	450	EQU061	60	4.20	2.00
14.80	S	0	N=52 (10,10/52 for 230mm)	380	EQU061	60	14.60	2.50

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**MS-BH13**
	Fugro Reference	F212561			
	Coordinates (m)	E482134.93 N411937.86	Ground Elevation (m Datum)	0.71	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=22 (7,7/6,7,5,4)	450	EQU061	60	0.00	Dry
2.20	S	0	N=6 (3 for 0mm/1,2,2,1)	300	EQU061	60	2.20	1.00
3.20	S	0	N=4 (1,1/1,1,1,1)	450	EQU061	60	3.20	1.00
4.20	S	0	N=6 (1,1/2,1,1,2)	450	EQU061	60	4.20	1.00
5.20	S	0	N=5 (1,2/2,1,1,1)	450	EQU061	60	5.20	1.00
6.20	S	0	N=5 (1,2/1,2,1,1)	450	EQU061	60	6.20	2.00
14.00	S	0	N=50 (10,10/50 for 150mm)	300	EQU061	60	14.00	5.00
14.50	S	0	N=52 (12,16/52 for 80mm)	230	EQU061	60	14.50	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH14**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481948.16 N411984.28	Ground Elevation (m Datum)	0.81	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=10 (1,2/2,2,3,3)	450	ADS MID1	63	1.20	Dry
2.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID1	63	2.00	1.00
3.00	S	0	N=3 (1,0/1,0,1,1)	450	ADS MID1	63	3.00	1.00
4.00	S	0	N=2 (1,1/0,1,0,1)	450	ADS MID1	63	4.00	1.50
5.00	S	0	N=4 (1,0/1,1,1,1)	450	ADS MID1	63	5.00	2.00
6.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID1	63	6.00	3.00
7.50	S	0	N=11 (2,2/2,3,3,3)	450	ADS MID1	63	7.50	3.50
9.00	S	0	N=4 (1,0/1,1,1,1)	450	ADS MID1	63	9.00	2.50
10.50	S	0	N=8 (1,1/1,2,2,3)	450	ADS MID1	63	10.50	2.00
12.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID1	63	12.00	2.00
13.50	S	0	N=30 (1,2/4,6,8,12)	450	ADS MID1	63	13.50	3.00
15.00	S	0	N=50 (25 for 80mm/50 for 90mm)	170	ADS MID1	63	15.00	5.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.15	< 0.1 ppm
0.45	< 0.1 ppm
0.80	< 0.1 ppm
1.20	0.1 ppm
1.80	0.1 ppm
2.80	0.3 ppm
3.80	0.7 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH15**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482017.81 N411980.09	Ground Elevation (m Datum)	0.76	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=6 (1,1/2,1,1,2)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=4 (1,0/1,1,1,1)	450	ADS MID2	65	3.00	1.50
4.00	S	0	N=3 (1,0/1,1,0,1)	450	ADS MID2	65	4.00	3.00
5.00	S	0	N=8 (1,2/2,2,2,2)	450	ADS MID2	65	5.00	3.00
6.00	S	0	N=8 (2,3/3,2,2,1)	450	ADS MID2	65	6.00	4.00
7.50	S	0	N=9 (2,2/3,2,2,2)	450	ADS MID2	65	7.50	5.00
9.00	S	0	N=12 (1,2/3,3,3,3)	450	ADS MID2	65	9.00	4.00
10.50	S	0	N=11 (2,2/2,3,3,3)	450	ADS MID2	65	10.50	5.00
12.00	S	0	N=13 (2,2/3,4,3,3)	450	ADS MID2	65	12.00	6.00
13.50	S	0	N=14 (2,2/3,4,4,3)	450	ADS MID2	65	13.50	7.00
15.00	S	0	N=50 (25 for 105mm/50 for 120mm)	225	ADS MID2	65	14.80	6.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
0.85	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH16**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481944.89 N411927.05	Ground Elevation (m Datum)	0.57	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=10 (1,3/2,2,3,3)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=4 (1,0/1,1,1,1)	450	ADS MID2	65	3.00	2.00
4.00	S	0	N=8 (1,2/2,3,2,1)	450	ADS MID2	65	4.00	3.50
5.00	S	0	N=4 (1,0/1,1,1,1)	450	ADS MID2	65	5.00	2.00
6.00	S	0	N=2 (1,1/0,1,0,1)	450	ADS MID2	65	6.00	3.00
7.50	S	0	N=7 (1,1/1,2,2,2)	450	ADS MID2	65	7.50	2.00
9.00	S	0	N=11 (1,2/2,3,3,3)	450	ADS MID2	65	9.00	4.00
10.50	S	0	N=13 (2,3/3,3,3,4)	450	ADS MID2	65	10.50	3.00
12.00	S	0	N=11 (2,2/2,3,3,3)	450	ADS MID2	65	12.00	3.50
13.50	S	0	N=13 (1,1/2,3,4,4)	450	ADS MID2	65	13.50	4.00
15.00	S	0	N=50 (25 for 85mm/50 for 155mm)	240	ADS MID2	65	15.00	5.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.45	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm
1.40	< 0.1 ppm
1.90	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH17**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482013.34 N411922.17	Ground Elevation (m Datum)	0.91	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=27 (2,3/5,8,8,6)	450	EQU061	60	0.00	Dry
2.20	S	0	N=21 (1,2/4,6,6,5)	450	EQU061	60	2.20	2.00
3.20	S	0	N=6 (1,0/1,0,2,3)	450	EQU061	60	3.20	2.00
4.20	S	0	N=4 (1,0/0,1,2,1)	450	EQU061	60	4.20	2.00
5.20	S	0	N=5 (1,0/2,1,0,2)	450	EQU061	60	5.20	Dry
7.20	S	0	N=5 (1,0/0,2,2,1)	450	EQU061	60	7.20	4.00
14.90	S	0	50 (6,8/50 for 160mm)	310	EQU061	60	14.90	10.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.80	< 0.1 ppm
2.80	0.1 ppm
3.80	< 0.1 ppm
4.70	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH18**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481841.08 N412232.23	Ground Elevation (m Datum)	0.68	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=17 (6,5/4,5,4,4)	450	EQU061	60	0.00	Dry
2.20	S	0	N=4 (1,2/0,1,1,2)	450	EQU061	60	2.20	0.00
3.20	S	0	N=8 (1,2/3,2,1,2)	450	EQU061	60	3.20	1.00
4.20	S	0	N=21 (4,4/5,6,4,6)	450	EQU061	60	4.20	1.00
5.20	S	0	N=12 (1,2/1,3,4,4)	450	EQU061	60	5.20	3.00
12.60	S	0	N=82 (1,3/7,17,17,41)	450	EQU061	60	12.60	5.00
13.80	S	0	N=100 (28 for 75mm/100 for 75mm)	150	EQU061	60	13.80	5.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.40	0.1 ppm
0.70	< 0.1 ppm
1.00	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH19**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481836.46 N412212.25	Ground Elevation (m Datum)	0.60	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=8 (1,1/1,2,2,3)	450	TQ4	50		
2.00	S		N=9 (1,0/1,2,2,4)	450	TQ4	50	1.90	1.00
3.00	S		N=10 (1,1/2,3,2,3)	450	TQ4	50	2.90	1.10
4.00	S		N=6 (0,1/0,1,2,3)	450	TQ4	50	3.90	1.00
5.00	S		N=3 (0,1/0,1,1,1)	450	TQ4	50	4.90	3.10
6.00	S		N=10 (1,1/2,3,2,3)	450	TQ4	50	5.90	3.40
7.50	S		N=11 (2,1/2,2,3,4)	450	TQ4	50	7.40	3.60
9.00	S		N=12 (1,3/2,3,3,4)	450	TQ4	50	8.90	3.30
10.50	S		N=16 (2,3/4,3,4,5)	450	TQ4	50	10.40	3.10
12.00	S		N=17 (1,2/3,5,4,5)	450	TQ4	50	11.90	3.90
13.50	S		50 (10,10/50 for 100mm)	385	TQ4	50	13.40	4.80

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH20**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482212.26 N412164.55	Ground Elevation (m Datum)	0.98	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=8 (1,1/1,2,3,2)	450	TQ4	50	0.00	Dry
2.00	S		N=3 (0,0/1,0,1,1)	450	TQ4	50	1.90	1.00
3.00	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	2.90	2.10
4.00	S		N=2 (0,1/0,0,1,1)	450	TQ4	50	3.90	2.80
5.00	S		N=8 (1,1/1,2,2,3)	450	TQ4	50	4.90	3.00
6.00	S		N=4 (0,1/0,1,2,1)	450	TQ4	50	5.90	3.10
7.50	S		N=9 (1,1/2,2,2,3)	450	TQ4	50	7.40	3.00
9.00	S		N=14 (2,3/3,4,3,4)	450	TQ4	50	8.90	4.00
10.50	S		N=16 (2,3/4,4,4,4)	450	TQ4	50	10.40	4.00
12.00	S		N=15 (2,3/3,4,4,4)	450	TQ4	50	11.90	4.30
13.50	S		N=16 (1,2/3,4,4,5)	450	TQ4	50	13.40	4.10
15.00	S		50 (9,16/50 for 250mm)	400	TQ4	50	14.10	4.60

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH21**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482075.22 N412086.20	Ground Elevation (m Datum)	0.81	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=6 (1,1/1,2,1,2)	450	TQ4	50		
2.00	S		N=4 (1,0/1,1,1,1)	450	TQ4	50	1.90	0.90
3.00	S		N=8 (1,1/2,2,2,2)	450	TQ4	50	2.90	1.00
4.00	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	3.90	3.10
5.00	S		N=2 (0,0/1,0,1,0)	450	TQ4	50	4.90	3.00
6.00	S		N=7 (1,1/1,2,2,2)	450	TQ4	50	5.90	3.40
7.50	S		N=7 (1,2/1,2,2,2)	450	TQ4	50	7.40	3.30
9.00	S		N=10 (1,2/2,3,2,3)	450	TQ4	50	8.90	3.60
10.50	S		N=11 (2,2/2,2,3,4)	450	TQ4	50	10.40	3.90
12.00	S		N=11 (1,2/2,3,3,3)	450	TQ4	50	11.90	3.95
13.50	S		N=15 (2,2/3,4,4,4)	450	TQ4	50	13.40	3.80
14.50	S		N=50 (10,15/50 for 50mm)	200	TQ4	50	14.40	4.10

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
0.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH22**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482058.24 N411811.08	Ground Elevation (m Datum)	1.02	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=8 (1,2/2,2,2,2)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=3 (1,0/1,1,0,1)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=1 (1,0/0,0,0,1)	450	ADS MID2	65	3.00	2.80
4.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	4.00	3.00
5.00	S	0	N=11 (2,3/4,3,2,2)	450	ADS MID2	65	5.00	2.00
6.00	S	0	N=8 (2,2/2,2,2,2)	450	ADS MID2	65	6.00	3.00
7.50	S	0	N=14 (2,3/4,4,3,3)	450	ADS MID2	65	7.50	4.00
9.00	S	0	N=1 (1,0/0,0,0,1)	450	ADS MID2	65	9.00	3.00
10.50	S	0	N=2 (1,0/1,0,1,0)	450	ADS MID2	65	10.50	5.00
12.00	S	0	N=4 (1,2/1,1,1,1)	450	ADS MID2	65	12.00	6.00
13.50	S	0	N=2 (1,1/0,1,0,1)	450	ADS MID2	65	13.50	10.00
14.50	S	0	N=50 (6,7/50 for 200mm)	350	ADS MID2	65	14.30	10.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.75	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH23**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482112.71 N411787.26	Ground Elevation (m Datum)	0.98	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=8 (2,2/2,2,2,2)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=4 (1,0/1,1,1,1)	450	ADS MID2	65	3.00	1.50
4.00	S	0	N=5 (1,1/1,2,1,1)	450	ADS MID2	65	4.00	2.00
5.00	S	0	N=2 (1,1/1,0,1,0)	450	ADS MID2	65	5.00	3.00
6.00	S	0	N=5 (1,2/2,1,1,1)	450	ADS MID2	65	6.00	3.00
7.50	S	0	N=7 (1,1/2,2,1,2)	450	ADS MID2	65	7.50	4.00
9.00	S	0	N=7 (2,2/1,2,2,2)	450	ADS MID2	65	9.00	4.00
10.50	S	0	N=12 (2,2/2,3,3,4)	450	ADS MID2	65	10.50	5.00
12.00	S	0	N=11 (1,2/3,3,2,3)	450	ADS MID2	65	12.00	6.00
13.50	S	0	N=14 (2,3/3,4,3,4)	450	ADS MID2	65	13.50	10.00
14.20	S	0	N=50 (6,8/50 for 240mm)	390	ADS MID2	65	14.20	8.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH24**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482063.92 N411766.34	Ground Elevation (m Datum)	0.98	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=8 (1,1/1,2,2,3)	450	ADS MID2	65	1.20	Dry
2.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=1 (1,0/0,1,0,0)	450	ADS MID2	65	3.00	2.00
4.00	S	0	N=11 (2,4/3,3,3,2)	450	ADS MID2	65	4.00	2.00
5.00	S	0	N=5 (2,3/2,1,1,1)	450	ADS MID2	65	3.00	5.00
6.00	S	0	N=8 (2,2/2,2,2,2)	450	ADS MID2	65	6.00	4.00
7.50	S	0	N=5 (1,0/1,1,1,2)	450	ADS MID2	65	7.50	3.00
9.00	S	0	N=7 (2,2/1,2,2,2)	450	ADS MID2	65	9.00	5.00
10.50	S	0	N=13 (2,2/3,3,3,4)	450	ADS MID2	65	10.50	6.00
12.00	S	0	N=13 (2,2/3,3,4,3)	450	ADS MID2	65	12.00	7.00
13.50	S	0	N=17 (3,3/4,4,4,5)	450	ADS MID2	65	13.50	8.00
14.70	S	0	50 (25 for 120mm/50 for 65mm)	185	ADS MID2	65	14.20	9.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.40	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH25**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482133.83 N411653.96	Ground Elevation (m Datum)	2.30	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=50 (7,9/50 for 170mm)	320	ADS MID2	65	1.20	Dry
2.00	S	0	N=5 (1,1/1,1,1,2)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=6 (1,2/2,2,1,1)	450	ADS MID2	65	3.00	1.00
4.00	S	0	N=3 (1,1/0,1,1,1)	450	ADS MID2	65	4.00	1.50
5.00	S	0	N=8 (1,1/2,2,2,2)	450	ADS MID2	65	5.00	2.00
6.00	S	0	N=6 (1,1/1,2,2,1)	450	ADS MID2	65	6.00	3.00
7.50	S	0	N=7 (1,2/2,1,2,2)	450	ADS MID2	65	7.50	3.00
9.00	S	0	N=4 (1,1/1,1,1,1)	450	ADS MID2	65	9.00	2.00
10.50	S	0	N=13 (2,2/2,3,4,4)	450	ADS MID2	65	9.00	5.00
12.00	S	0	N=19 (1,2/3,5,5,6)	450	ADS MID2	65	12.00	6.00
13.50	S	0	N=20 (2,4/4,4,5,7)	450	ADS MID2	65	13.50	7.00
15.00	S	0	N=52 (7,11/52 for 275mm)	425	ADS MID2	65	14.80	8.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.75	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	0.6 ppm
4.50	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH26**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482027.90 N411979.70	Ground Elevation (m Datum)	0.68	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
6.00	S	0	N=9 (2,2/2,2,2,3)	450	EQU061	60	6.00	5.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **MS-BH27**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482117.30 N412008.50	Ground Elevation (m Datum)	0.85	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
7.00	S	0	N=16 (6,4/8,4,2,2)	450	EQU061	60	7.00	4.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum)	18.01	Sheet 1 of 2
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	0.00	Dry
2.00	S		N=5 (1,1/1,1,1,2)	450	TQ4	50	1.90	Dry
3.00	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	2.90	Dry
4.00	S		N=6 (1,2/1,2,1,2)	450	TQ4	50	3.90	Dry
5.00	S		N=7 (2,2/1,2,2,2)	450	TQ4	50	4.40	Dry
6.00	S		N=7 (1,1/1,2,2,2)	450	TQ4	50	5.90	Dry
7.50	S		N=7 (1,2/2,2,1,2)	450	TQ4	50	6.90	Dry
9.00	S		N=8 (2,2/2,2,2,2)	450	TQ4	50	8.90	Dry
10.50	S		N=10 (2,1/2,3,2,3)	450	TQ4	50	10.40	Dry
12.00	S		N=12 (2,2/3,3,3,3)	450	TQ4	50	11.90	Dry
13.50	S		N=11 (1,2/3,2,3,3)	450	TQ4	50	13.40	Dry
15.00	S		N=9 (2,2/2,2,2,3)	450	TQ4	50	14.90	Dry
16.50	S		N=12 (1,2/3,3,3,3)	450	TQ4	50	16.40	Dry
18.00	S		N=13 (2,3/3,3,4,3)	450	TQ4	50	15.90	Damp
19.50	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	19.40	17.00
21.00	S		N=6 (1,0/1,2,1,2)	450	TQ4	50	20.90	16.90
22.50	S		N=4 (0,0/1,0,1,2)	450	TQ4	50	22.40	17.10
24.00	S		N=3 (0,1/0,1,0,2)	450	TQ4	50	23.90	17.00
25.50	S		N=10 (2,2/2,3,2,3)	450	TQ4	50	25.40	
27.00	S		N=11 (1,2/2,3,3,3)	450	TQ4	50	26.90	
28.50	S		N=13 (2,2/3,3,4,3)	450	TQ4	50	28.40	
30.00	S		N=15 (1,3/4,3,4,4)	450	TQ4	50	29.90	

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.20	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm
1.80	< 0.1 ppm
2.80	< 0.1 ppm
3.80	< 0.1 ppm
4.80	< 0.1 ppm
5.80	< 0.1 ppm
6.80	< 0.1 ppm
7.80	< 0.1 ppm
8.80	< 0.1 ppm
9.80	< 0.1 ppm
10.80	< 0.1 ppm
11.80	0.1 ppm
12.80	< 0.1 ppm
13.80	< 0.1 ppm
14.80	< 0.1 ppm
15.80	< 0.1 ppm
16.80	< 0.1 ppm
17.80	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.44 N412164.10	Ground Elevation (m Datum)	18.01	Sheet 2 of 2
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
18.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH102**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481681.12 N412079.64	Ground Elevation (m Datum)	18.75	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S		N=7 (1,1/1,2,1,3)	450	TQ4	50	0.00	Dry
2.00	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	1.90	Dry
3.00	S		N=7 (1,1/2,1,2,2)	450	TQ4	50	2.90	Dry
4.00	S		N=8 (1,2/2,2,2,2)	450	TQ4	50	3.90	Dry
5.00	S		N=9 (1,2/2,2,2,3)	450	TQ4	50	4.90	Dry
6.00	S		N=8 (1,1/2,2,2,2)	450	TQ4	50	5.90	Dry
7.00	S		N=11 (1,2/2,3,3,3)	450	TQ4	50	6.90	Dry
9.00	S		N=8 (1,2/1,2,3,2)	450	TQ4	50	8.90	Dry
10.50	S		N=11 (1,2/2,2,3,4)	450	TQ4	50	10.40	Dry
12.00	S		N=12 (1,2/3,3,3,3)	450	TQ4	50	11.90	Dry
13.50	S		N=9 (1,1/2,2,2,3)	450	TQ4	50	13.40	Dry
15.00	S		N=11 (2,2/3,2,3,3)	450	TQ4	50	14.90	Dry
16.50	S		N=11 (2,3/2,3,3,3)	450	TQ4	50	16.40	Dry
18.00	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	17.90	Damp
19.50	S		N=4 (1,1/1,1,1,1)	450	TQ4	50	19.40	18.40
21.00	S		N=6 (1,1/1,2,1,2)	450	TQ4	50	20.90	19.10
22.50	S		N=6 (1,2/1,2,1,2)	450	TQ4	50	22.40	19.00
24.00	S		N=11 (1,2/3,2,3,3)	450	TQ4	50	23.90	19.10
25.50	S		N=11 (2,1/2,3,3,3)	450	TQ4	50	25.40	19.40
27.00	S		N=12 (1,1/2,3,3,4)	450	TQ4	50	26.90	19.80
28.50	S		N=10 (1,2/2,2,2,4)	450	TQ4	50	28.40	19.80

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm
1.80	< 0.1 ppm
2.80	< 0.1 ppm
3.80	< 0.1 ppm
4.80	< 0.1 ppm
5.80	< 0.1 ppm
7.80	< 0.1 ppm
8.80	< 0.1 ppm
9.80	< 0.1 ppm
10.80	< 0.1 ppm
11.80	< 0.1 ppm
12.80	< 0.1 ppm
13.80	< 0.1 ppm
14.80	< 0.1 ppm
15.80	< 0.1 ppm
16.80	< 0.1 ppm
18.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum)	19.08	Sheet 1 of 2
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	1	N=9 (1,1/2,2,2,3)	450	TQ4	50	0.00	Dry
2.00	S	1	N=8 (2,1/2,2,2,2)	450	TQ4	50	1.90	Dry
3.00	S	1	N=11 (1,2/3,2,3,3)	450	TQ4	50	2.90	Dry
4.00	S	1	N=11 (1,1/2,3,3,3)	450	TQ4	50	3.90	Dry
5.00	S	1	N=10 (1,3/2,3,2,3)	450	TQ4	50	4.90	Dry
6.00	S	1	N=10 (1,1/1,2,4,3)	450	TQ4	50	5.90	Dry
7.50	S	1	N=8 (2,2/2,2,2,2)	450	TQ4	50	7.40	Dry
9.00	S	1	N=13 (1,2/3,3,4,3)	450	TQ4	50	8.90	Dry
10.50	S	1	N=13 (2,2/2,3,4,4)	450	TQ4	50	10.40	Dry
12.00	S	1	N=10 (1,2/3,2,2,3)	450	TQ4	50	11.90	Dry
13.50	S	1	N=10 (1,1/1,2,4,3)	450	TQ4	50	13.40	Dry
15.00	S	1	N=11 (3,2/2,2,3,4)	450	TQ4	50	14.90	Dry
16.50	S	1	N=11 (1,2/3,2,3,3)	450	TQ4	50	16.40	Dry
18.00	S	1	N=4 (1,1/1,1,1,1)	450	TQ4	50	17.90	Dry
19.50	S	1	N=4 (1,1/1,1,1,1)	450	TQ4	50	19.40	18.60
21.00	S	1	N=3 (1,0/1,0,1,1)	450	TQ4	50	20.90	18.70
22.50	S	1	N=6 (1,1/1,2,1,2)	450	TQ4	50	22.40	19.90
24.00	S	1	N=12 (1,2/3,3,3,3)	450	TQ4	50	23.90	18.40
25.50	S	1	N=12 (1,1/2,3,3,4)	450	TQ4	50	25.40	
27.00	S	1	N=11 (2,2/2,2,3,4)	450	TQ4	50	26.90	18.40
28.50	S	1	N=13 (1,2/3,3,3,4)	450	TQ4	50	28.40	18.40

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)
1.20	0.00

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.20	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm
1.80	< 0.1 ppm
2.80	< 0.1 ppm
3.80	< 0.1 ppm
4.80	< 0.1 ppm
5.80	< 0.1 ppm
6.80	0.1 ppm
7.80	0.2 ppm
8.80	< 0.1 ppm
9.80	< 0.1 ppm
10.80	< 0.1 ppm
11.80	< 0.1 ppm
12.80	< 0.1 ppm
13.80	< 0.1 ppm
14.80	< 0.1 ppm
15.80	< 0.1 ppm
16.80	< 0.1 ppm
17.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Ground Elevation (m Datum)	19.08	Sheet 2 of 2
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
18.80	0.2 ppm
20.00	0.3 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH104**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481281.83 N411790.02	Ground Elevation (m Datum)	6.52	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=4 (1,1/1,1,1,1)	450	TQ4	50	0.00	Dry
2.00	S	0	N=5 (1,1/1,1,2,1)	450	TQ4	50	1.90	Dry
3.00	S	0	N=6 (1,1/2,1,2,1)	450	TQ4	50	2.90	Dry
4.00	S	0	N=4 (1,1/1,1,1,1)	450	TQ4	50	3.90	Dry
5.00	S	0	N=5 (1,2/1,2,1,1)	450	TQ4	50	4.90	Damp
6.00	S	0	N=4 (1,0/1,1,1,1)	450	TQ4	50	5.90	Damp
7.50	S	0	N=2 (0,0/1,0,1,0)	450	TQ4	50	7.40	6.60
9.00	S	1	N=6 (1,1/1,2,1,2)	450	TQ4	50	8.90	6.70
10.50	S	0	N=9 (1,2/2,2,2,3)	450	TQ4	50	10.40	6.90
12.00	S	0	N=10 (1,2/3,2,2,3)	450	TQ4	50	11.90	6.40
13.50	S	0	N=10 (1,2/2,2,3,3)	450	TQ4	50	13.40	
15.00	S	0	50 (4,7/50 for 150mm)	300	TQ4	50	14.90	
15.70	S	0	25 (50 for 50mm/25 for 50mm)	235	TQ4	50	15.50	

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	< 0.1 ppm
1.20	< 0.1 ppm
1.90	< 0.1 ppm
2.80	0.1 ppm
3.80	< 0.1 ppm
4.80	< 0.1 ppm
5.80	< 0.1 ppm
6.80	< 0.1 ppm
7.80	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH105**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481276.19 N411918.22	Ground Elevation (m Datum)	14.48	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	1	N=4 (1,1/1,1,1,1)	450	TQ4	50	0.00	Dry
2.00	S	1	N=5 (1,1/1,1,2,1)	450	TQ4	50	1.90	Dry
3.00	S	1	N=6 (1,2/1,1,2,2)	450	TQ4	50	2.90	Dry
4.00	S	1	N=7 (1,1/2,1,2,2)	450	TQ4	50	3.90	Dry
5.00	S	1	N=10 (1,2/3,2,2,3)	450	TQ4	50	4.90	Dry
6.00	S	1	N=50 (25 for 0mm/50 for 0mm)	0	TQ4	50	6.00	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.50	< 0.1 ppm
1.00	0.1 ppm
1.20	< 0.1 ppm
1.80	0.1 ppm
2.80	0.1 ppm
3.80	0.1 ppm
4.80	0.1 ppm
5.80	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **BH106**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481464.20 N411812.00	Ground Elevation (m Datum)	6.33	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=8 (1,2/3,2,1,2)	450	EQU061	60	0.00	Dry
2.20	S	0	N=5 (2,3/2,1,1,1)	450	EQU061	60	2.20	Dry
3.20	S	0	N=7 (1,2/1,3,2,1)	450	EQU061	60	3.20	Dry
4.20	S	1	N=6 (1,150/2,1,2,1)	450	EQU061	60	4.20	Dry
11.20	S	0	N=11 (2,2/2,3,3,3)	450	EQU061	60	11.20	8.00
12.20	S	0	N=11 (2,2/2,3,3,3)	450	EQU061	60	12.20	8.00
14.20	S	0	N=78 (2,5/10,15,26,27)	450	EQU061	60	14.20	8.00
15.20	S	0	N=100 (5,11/100 for 230mm)	380	EQU061	60	14.35	8.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.40	0.1 ppm
0.90	0.1 ppm
1.20	< 0.1 ppm
1.80	< 0.1 ppm
2.80	0.1 ppm
3.80	< 0.1 ppm
4.30	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481484.92 N411850.94	Ground Elevation (m Datum)	7.22	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	0.1 ppm
0.70	< 0.1 ppm
0.90	0.1 ppm
1.20	0.1 ppm
1.65	0.1 ppm
2.50	0.1 ppm
3.50	0.1 ppm
4.50	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481641.20 N411899.60	Ground Elevation (m Datum)	18.70	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS105**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481499.58 N412078.89	Ground Elevation (m Datum)	18.70	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.00	0.1 ppm
2.50	0.1 ppm
3.00	< 0.1 ppm
3.50	< 0.1 ppm
4.00	0.1 ppm
4.50	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS106**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481481.09 N411979.01	Ground Elevation (m Datum)	18.43	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS107**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481506.26 N412145.26	Ground Elevation (m Datum)	18.72	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.80	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS108**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481509.08 N411906.87	Ground Elevation (m Datum)	17.78	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS109**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481283.12 N412224.88	Ground Elevation (m Datum)	18.30	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.40	< 0.1 ppm
0.70	0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS110**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481148.08 N412166.12	Ground Elevation (m Datum)	9.53	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	0.1 ppm
0.40	0.1 ppm
0.70	0.1 ppm
1.20	0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.50	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **DS111**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481075.00 N411944.38	Ground Elevation (m Datum)	5.22	Sheet 1 of 1
	Hole Type	Dynamic (Windowless) Sampler			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.40	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm
1.50	< 0.1 ppm
2.50	< 0.1 ppm
3.50	< 0.1 ppm
4.00	0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **AR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E480333.23 N410052.38	Ground Elevation (m Datum)	2.32	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=2 (1,0/1,0,0,1)	450	ADS MID2	65	1.20	1.00
2.00	S	0	N=3 (1,0/1,0,1,1)	450	ADS MID2	65	2.00	1.00
3.00	S	0	N=2 (1,1/0,1,0,1)	450	ADS MID2	65	3.00	1.50
4.00	S	0	N=8 (1,2/2,2,2,2)	450	ADS MID2	65	4.00	3.50
5.00	S	0	N=9 (1,2/2,2,2,3)	450	ADS MID2	65	5.00	3.00
6.00	S	0	N=12 (2,2/3,3,3,3)	450	ADS MID2	65	6.00	4.00
7.50	S	0	N=8 (1,2/2,2,2,2)	450	ADS MID2	65	7.50	5.00
9.00	S	0	N=3 (1,1/0,1,1,1)	450	ADS MID2	65	9.00	6.00
10.50	S	0	N=25 (2,3/5,6,6,8)	450	ADS MID2	65	10.50	6.00
11.20	S	0	N=50 (25 for 25mm/50 for 20mm)	45	ADS MID2	65	11.20	7.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.45	0.1 ppm
0.80	0.1 ppm
1.20	0.2 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID
	Client	SSE Generation Limited (SSE)			**AR-BH02**
	Fugro Reference	F212561			
	Coordinates (m)	E480353.22 N410091.56	Ground Elevation (m Datum)	1.40	Sheet 1 of 1
	Hole Type	Cable Percussion and Rotary Coring			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=6 (1,1/1,2,1,2)	450	EQU061	60	0.00	Dry
2.20	S	0	N=4 (1,2/0,1,2,1)	450	EQU061	60	2.20	0.00
3.20	S	0	N=9 (1,2/2,3,2,2)	450	EQU061	60	3.20	1.00
4.20	S	0	N=8 (1,2/1,3,2,2)	450	EQU061	60	4.20	1.00
5.20	S	0	N=6 (1,3/1,2,1,2)	450	EQU061	60	5.20	1.00
10.60	S	0	N=81 (7,7/10,15,20,36)	450	EQU061	60	10.60	2.50
11.05	S	0	N=100 (25 for 75mm/100 for 60mm)	135	EQU061	60	11.05	2.50

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.30	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power Station Project – Ground Investigation			Location ID **HR-BH01**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E482965.30 N411776.58	Ground Elevation (m Datum)	1.50	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.20	S	0	N=4 (1,0/1,1,1,1)	450	EQU061	60	0.00	Dry
2.20	S	0	N=6 (1,2/1,1,2,2)	450	EQU061	60	2.20	Dry
3.20	S	0	N=8 (2,2/2,2,2,2)	450	EQU061	60	3.20	Dry
4.20	S	0	N=7 (2,1/2,2,1,2)	450	EQU061	60	4.20	2.00
5.20	S	0	N=19 (3,4/4,5,4,6)	450	EQU061	60	5.20	3.00
13.60	S	0	N=55 (7,10/10,12,15,18)	450	EQU061	60	13.60	6.00
14.60	S	0	N=100 (10,12/100 for 240mm)	390	EQU061	60	14.60	6.00

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.10	< 0.1 ppm
0.70	< 0.1 ppm
1.20	< 0.1 ppm

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

F.2 Dynamic Probe Tests

F.2.1 Dynamic Probe Test Schedule

Table F.1: Schedule of Dynamic Probe Tests

Location	Subarea	Easting [m E]	Northing [m N]	Ground Level [m OD]	Remarks
HR-CBT19	Main Site	482040.31	411672.96	1.87	
AR-CBT20	Access Roads	481689.40	411569.95	2.93	
AR-CBT21		481704.32	411573.67	2.99	
AR-CBT22		481729.56	411581.09	3.13	
AR-CBT101		480341.24	410137.97	1.58	
AR-CBT102		480355.30	410242.78	1.51	
HR-CBT05		483102.50	411617.50	0.64	
HR-CBT09		482863.90	411782.60	1.54	

F.2.2 Dynamic Probe Test Results

Title	Reference
Dynamic Probe Test Results	Referenced by Location ID

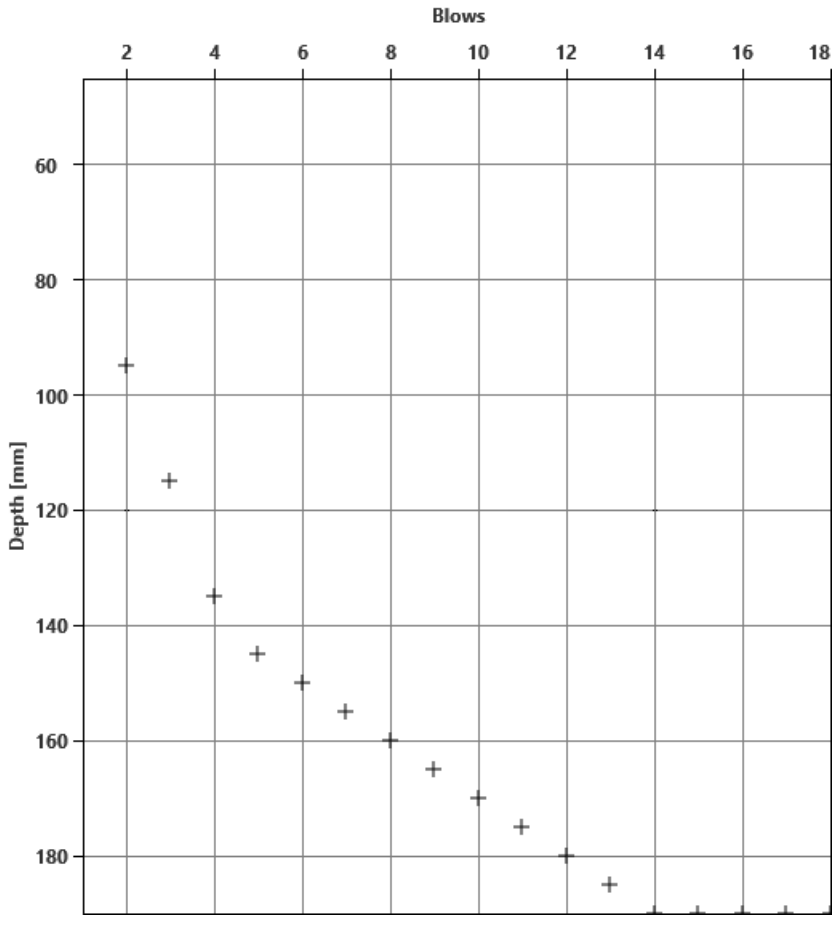
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Tuesday 2022-10-18
Operator	TT
Unit System	metric

LOCATION DETAILS	
Location	**AR-CBT20**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	None
Surface Type	Unpaved
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

RESULTS

No of Blows	Depth [mm]
1	45
1	95
1	115
1	135
1	145
1	150
1	155
1	160
1	165
1	170
1	175
1	180
1	185
1	190
1	190
1	190
1	190
1	190

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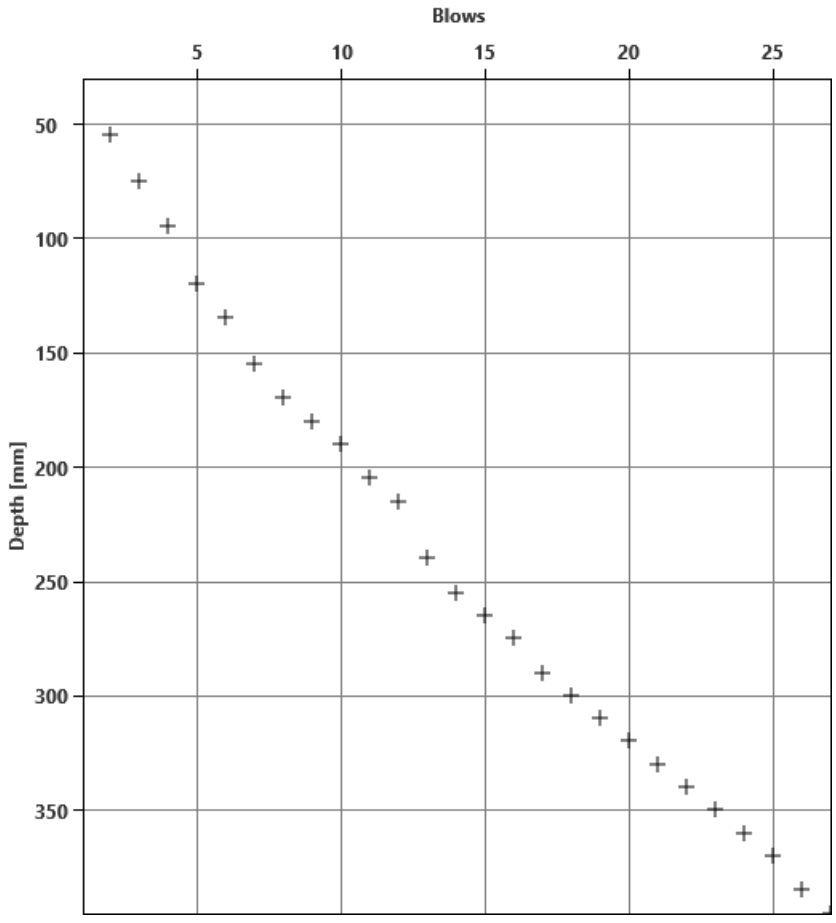
Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Tuesday 2022-10-18
Operator	SCU
Unit System	metric

Dynamic Cone Penetrometer Test

LOCATION DETAILS	
Location	**AR-CBT21**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	None
Surface Type	Unpaved
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

RESULTS

No of Blows	Depth [mm]
1	30
1	55
1	75
1	95
1	120
1	135
1	155
1	170
1	180
1	190
1	205
1	215
1	240
1	255
1	265
1	275
1	290
1	300
1	310
1	320
1	330
1	340
1	350
1	360
1	370
1	385
1	395

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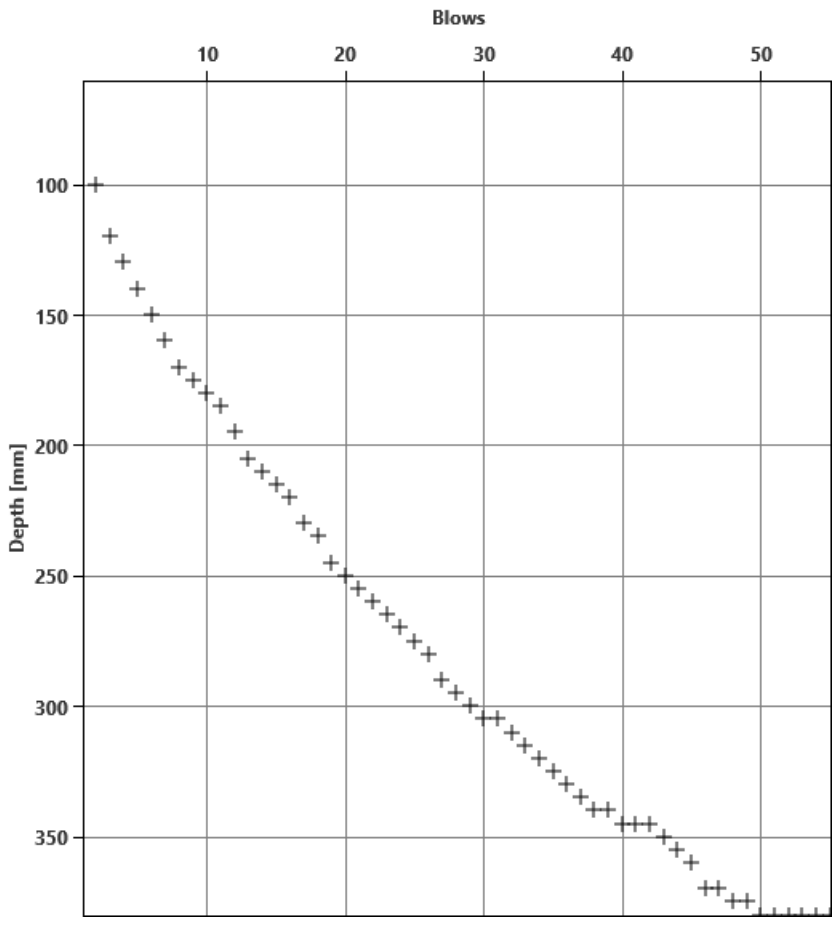
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Tuesday 2022-10-18
Operator	TT/SCU
Unit System	metric

LOCATION DETAILS	
Location	**AR-CBT22**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	None
Surface Type	Unpaved
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

RESULTS

No of Blows	Depth [mm]
1	60
1	100
1	120
1	130
1	140
1	150
1	160
1	170
1	175
1	180
1	185
1	195
1	205
1	210
1	215
1	220
1	230
1	235
1	245
1	250
1	255
1	260
1	265
1	270
1	275
1	280
1	290
1	295
1	300
1	305
1	305
1	310
1	315
1	320
1	325
1	330
1	335
1	340
1	340
1	345
1	345
1	345
1	350
1	355
1	360
1	370
1	370
1	375
1	375
1	380
1	380
1	380
1	380
1	380
1	380

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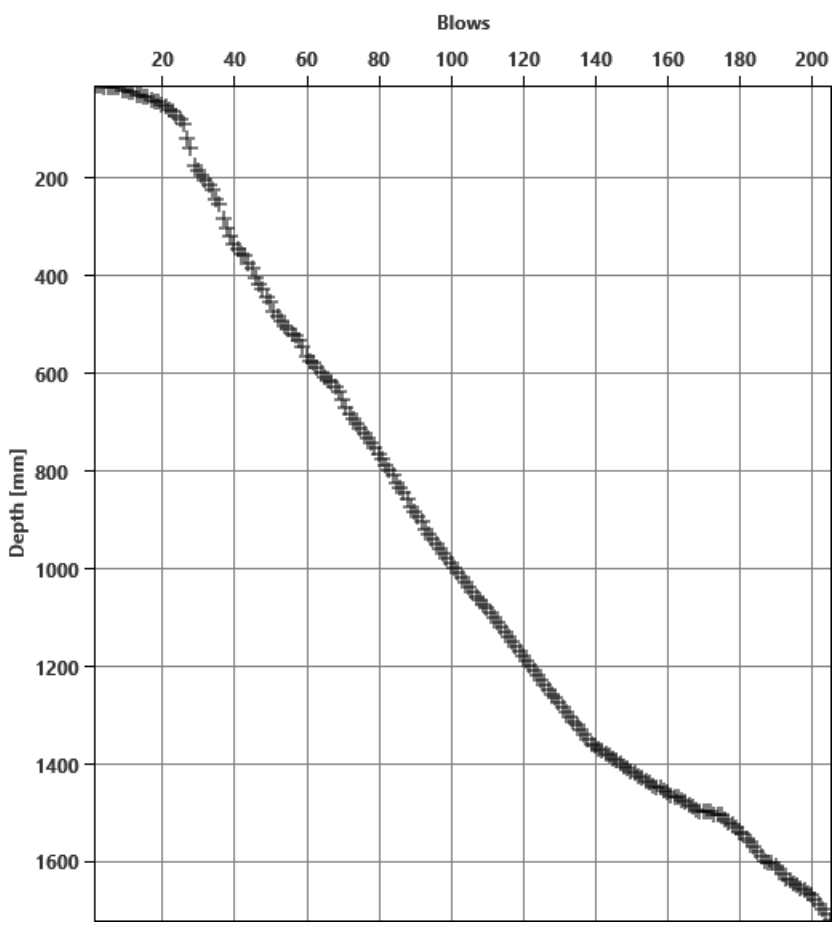
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/GL
Unit System	metric

LOCATION DETAILS	
Location	**AR-CBT101**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Other
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

Test started 0.30 mbgl under tarmac.

RESULTS	
No of Blows	Depth [mm]
1	10
1	10
1	10
1	15
1	15
1	15
1	15
1	15
1	20
1	20
1	25
1	25
1	30
1	30
1	35
1	35
1	40
1	45
1	45
1	50
1	55
1	60
1	65
1	75
1	80
1	90
1	120
1	140
1	175
1	185
1	195
1	205
1	215
1	225
1	245
1	255
1	285
1	305
1	320
1	335
1	345
1	355
1	360
1	375
1	385
1	405
1	420
1	430
1	445
1	455
1	475
1	485
1	495
1	505
1	510
1	520
1	525

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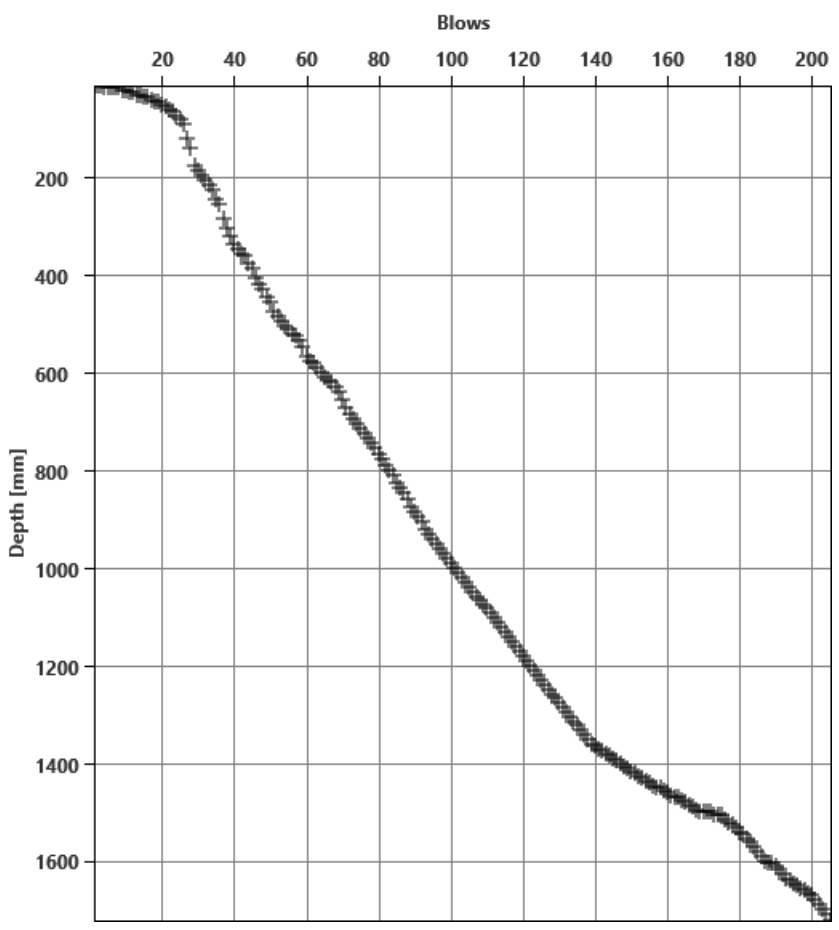
Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/GL
Unit System	metric

Dynamic Cone Penetrometer Test

LOCATION DETAILS	
Location	**AR-CBT101**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Other
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

Test started 0.30 mbgl under tarmac.

RESULTS

No of Blows	Depth [mm]
1	535
1	545
1	565
1	575
1	580
1	590
1	600
1	610
1	615
1	620
1	630
1	640
1	655
1	670
1	685
1	695
1	705
1	715
1	725
1	735
1	745
1	755
1	765
1	775
1	790
1	800
1	810
1	825
1	835
1	845
1	860
1	875
1	885
1	895
1	905
1	920
1	930
1	940
1	950
1	960
1	970
1	980
1	990
1	1000
1	1010
1	1020
1	1030
1	1040
1	1050
1	1060
1	1065
1	1075
1	1080
1	1090
1	1100
1	1110
1	1120

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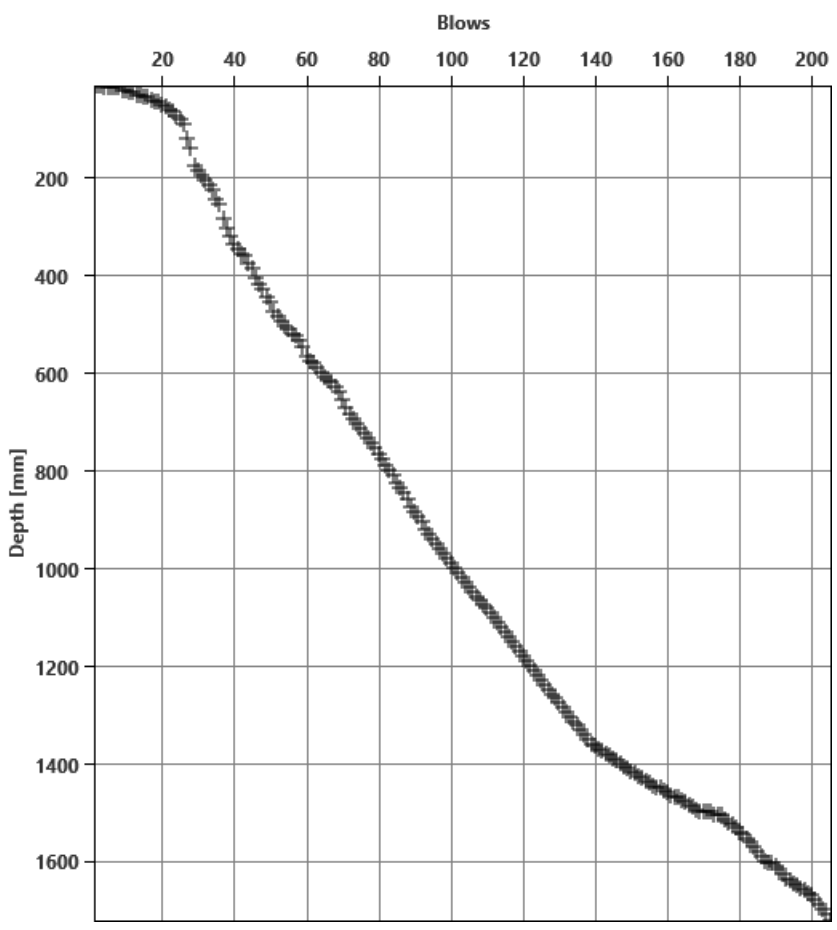
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/GL
Unit System	metric

LOCATION DETAILS	
Location	**AR-CBT101**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Other
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

Test started 0.30 mbgl under tarmac.

RESULTS	
No of Blows	Depth [mm]
1	1130
1	1140
1	1150
1	1160
1	1170
1	1180
1	1190
1	1200
1	1210
1	1220
1	1230
1	1240
1	1250
1	1260
1	1265
1	1275
1	1285
1	1295
1	1305
1	1315
1	1320
1	1330
1	1340
1	1350
1	1360
1	1365
1	1370
1	1375
1	1380
1	1385
1	1390
1	1395
1	1400
1	1405
1	1410
1	1415
1	1420
1	1425
1	1430
1	1435
1	1440
1	1445
1	1450
1	1450
1	1455
1	1460
1	1465
1	1470
1	1470
1	1475
1	1480
1	1485
1	1490
1	1495
1	1500
1	1500
1	1500

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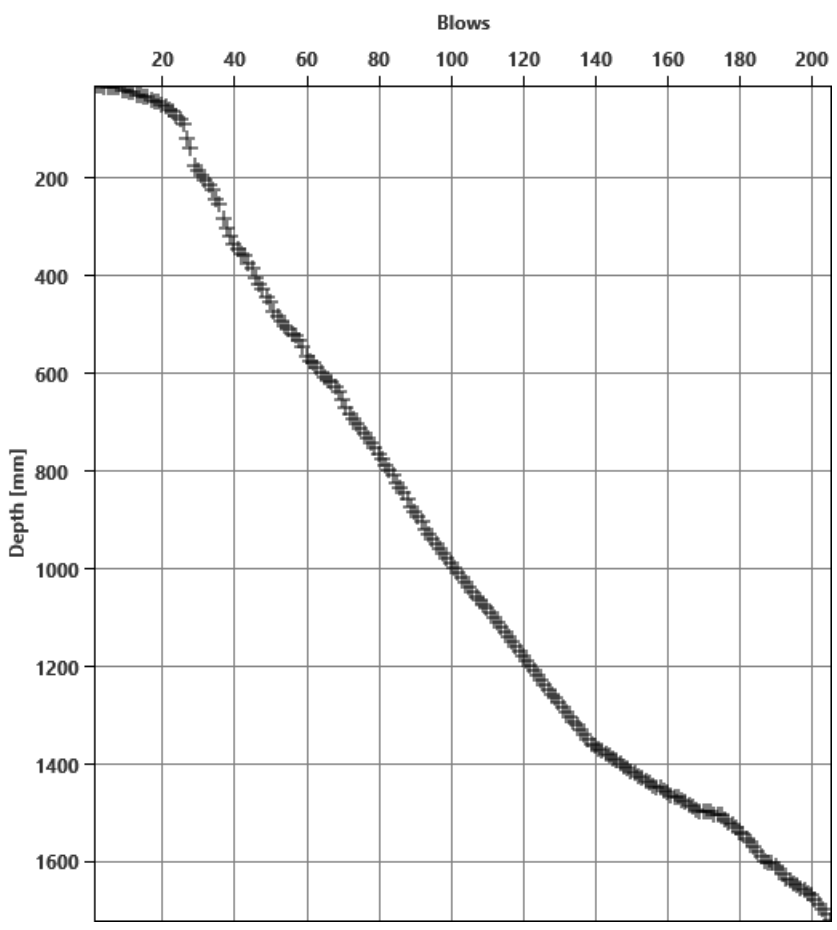
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/GL
Unit System	metric

LOCATION DETAILS	
Location	**AR-CBT101**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Other
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

Test started 0.30 mbgl under tarmac.

RESULTS

No of Blows	Depth [mm]
1	1500
1	1505
1	1505
1	1505
1	1515
1	1520
1	1525
1	1530
1	1540
1	1545
1	1555
1	1560
1	1570
1	1580
1	1590
1	1600
1	1605
1	1605
1	1610
1	1615
1	1625
1	1635
1	1640
1	1645
1	1650
1	1655
1	1660
1	1665
1	1670
1	1680
1	1690
1	1700
1	1710
1	1720

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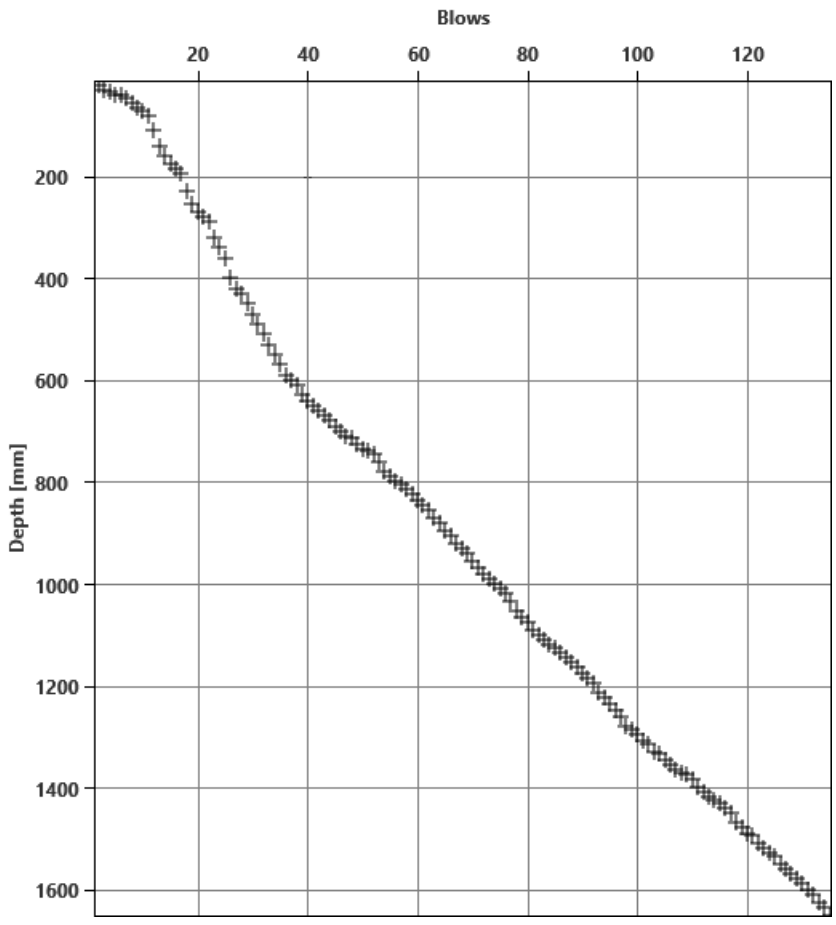
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/TR
Unit System	metric

LOCATION DETAILS	
Location	**AR-CBT102**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Other
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

Test started 0.30 mbgl under tarmac.

RESULTS	
No of Blows	Depth [mm]
1	10
1	20
1	30
1	35
1	40
1	40
1	45
1	55
1	65
1	70
1	80
1	110
1	140
1	160
1	175
1	185
1	195
1	230
1	255
1	270
1	280
1	290
1	320
1	340
1	360
1	400
1	420
1	430
1	450
1	470
1	490
1	510
1	530
1	550
1	570
1	590
1	600
1	610
1	630
1	640
1	650
1	660
1	670
1	680
1	690
1	700
1	710
1	715
1	725
1	735
1	740
1	745
1	760
1	780
1	790
1	800
1	805

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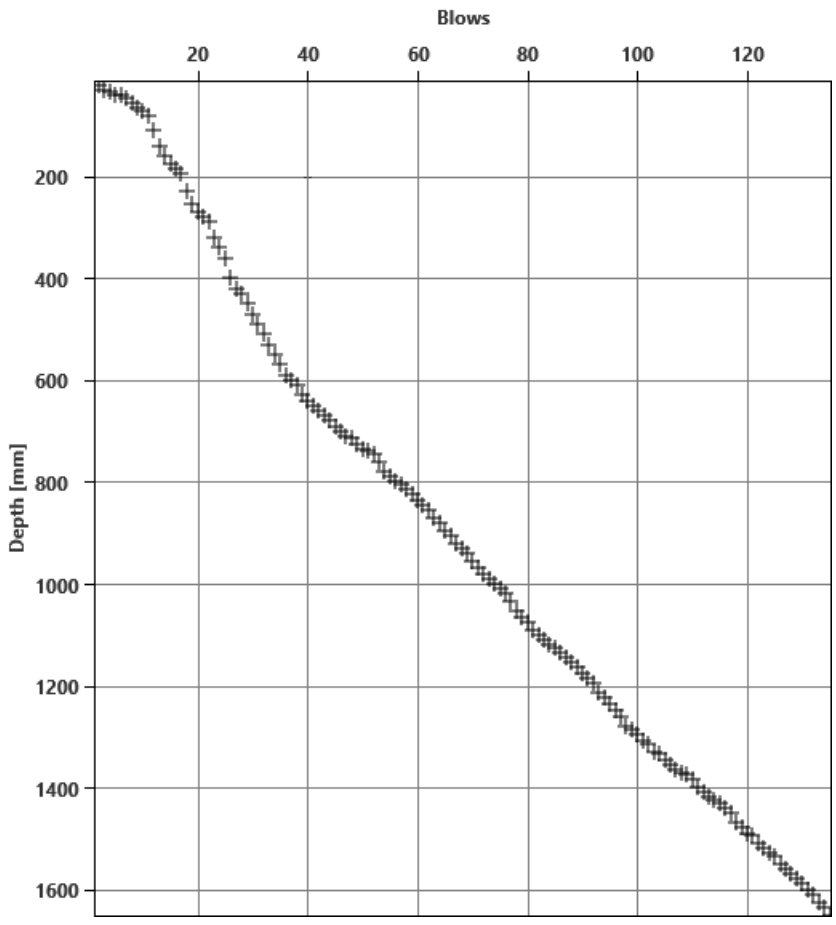
Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/TR
Unit System	metric

Dynamic Cone Penetrometer Test

LOCATION DETAILS	
Location	**AR-CBT102**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Other
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

Test started 0.30 mbgl under tarmac.

RESULTS	
No of Blows	Depth [mm]
1	815
1	825
1	835
1	845
1	855
1	870
1	880
1	895
1	905
1	920
1	930
1	940
1	955
1	970
1	980
1	990
1	1000
1	1010
1	1020
1	1035
1	1055
1	1065
1	1075
1	1090
1	1100
1	1110
1	1120
1	1125
1	1135
1	1145
1	1155
1	1165
1	1175
1	1185
1	1195
1	1215
1	1225
1	1235
1	1250
1	1260
1	1280
1	1285
1	1295
1	1310
1	1315
1	1330
1	1335
1	1345
1	1355
1	1365
1	1370
1	1375
1	1385
1	1400
1	1410
1	1420
1	1425

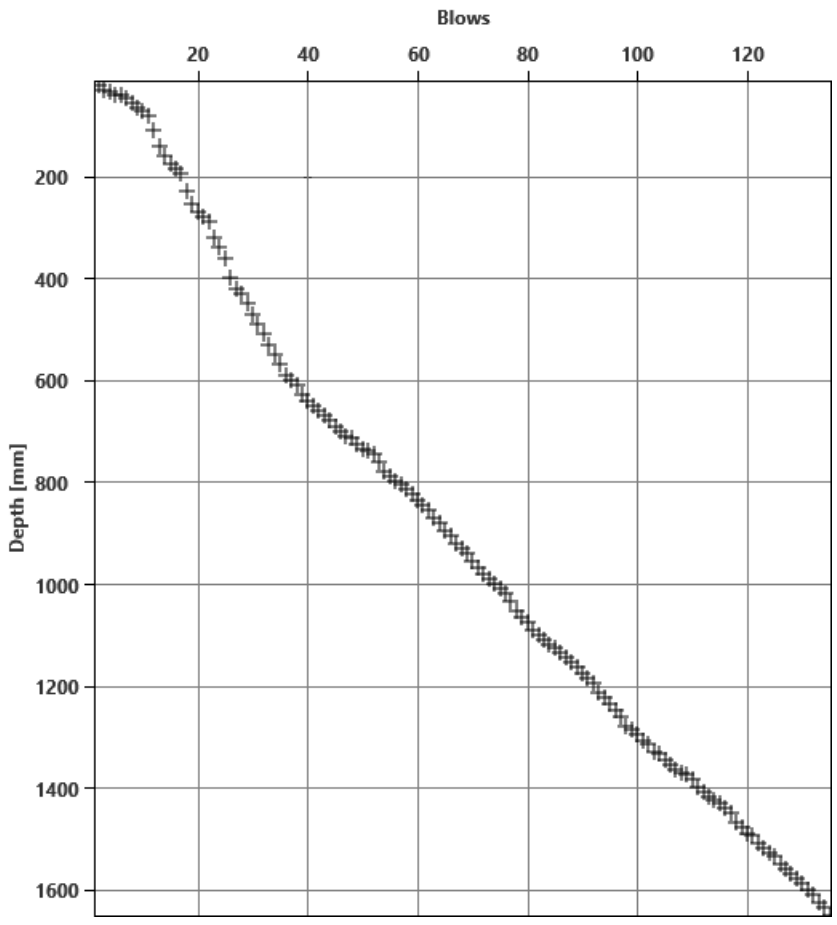
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/TR
Unit System	metric

LOCATION DETAILS	
Location	**AR-CBT102**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Other
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

Test started 0.30 mbgl under tarmac.

RESULTS	
No of Blows	Depth [mm]
1	1430
1	1440
1	1450
1	1470
1	1480
1	1490
1	1495
1	1510
1	1520
1	1530
1	1535
1	1550
1	1560
1	1570
1	1580
1	1590
1	1600
1	1610
1	1625
1	1635
1	1650

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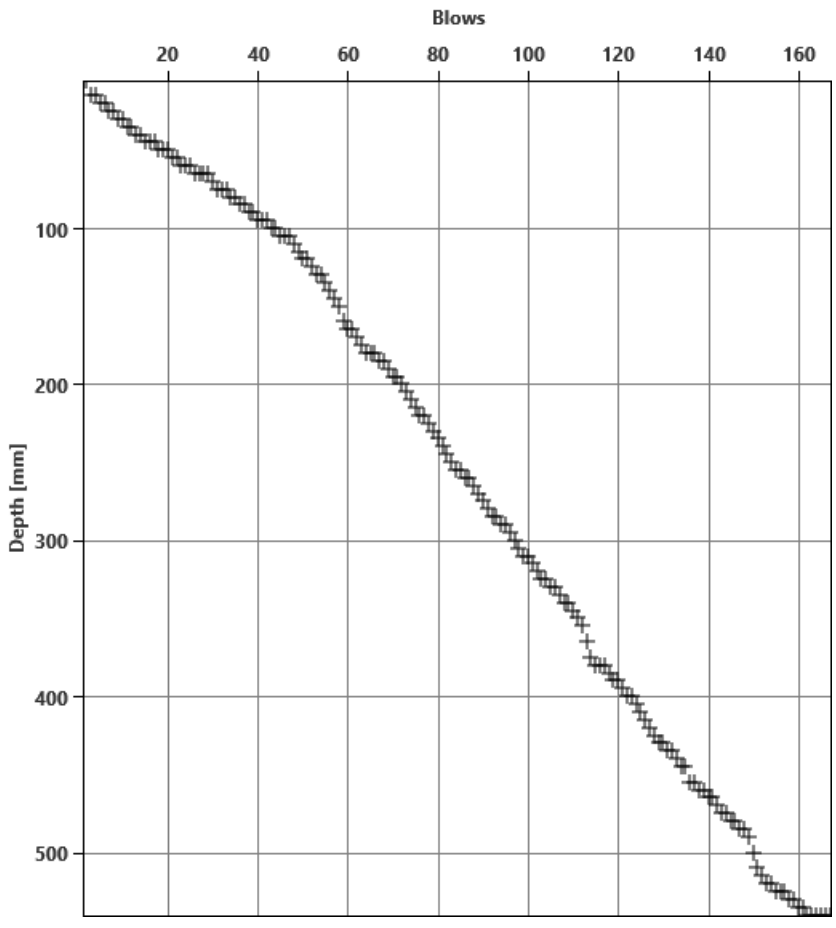
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/GW
Unit System	metric

LOCATION DETAILS	
Location	**HR-CBT05**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Unpaved
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

RESULTS	
No of Blows	Depth [mm]
1	5
1	5
1	15
1	15
1	20
1	20
1	25
1	25
1	30
1	30
1	35
1	35
1	40
1	40
1	45
1	45
1	45
1	50
1	50
1	50
1	55
1	55
1	60
1	60
1	60
1	65
1	65
1	65
1	65
1	70
1	75
1	75
1	75
1	80
1	80
1	85
1	85
1	90
1	90
1	95
1	95
1	95
1	100
1	100
1	105
1	105
1	105
1	110
1	115
1	120
1	120
1	125
1	130
1	130
1	135
1	140
1	145

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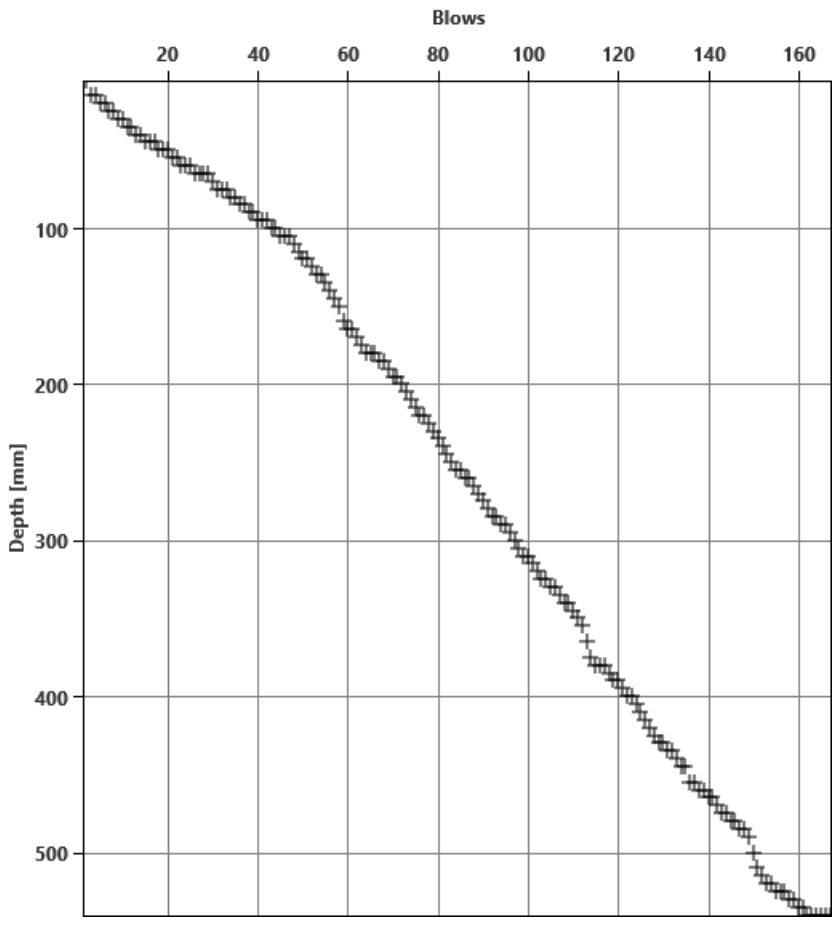
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/GW
Unit System	metric

LOCATION DETAILS	
Location	**HR-CBT05**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Unpaved
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

RESULTS

No of Blows	Depth [mm]
1	150
1	160
1	165
1	165
1	170
1	175
1	180
1	180
1	180
1	185
1	185
1	190
1	195
1	195
1	200
1	205
1	210
1	215
1	220
1	220
1	225
1	230
1	235
1	240
1	245
1	250
1	255
1	255
1	260
1	260
1	265
1	270
1	275
1	280
1	285
1	285
1	290
1	290
1	295
1	300
1	305
1	310
1	310
1	315
1	320
1	325
1	325
1	330
1	330
1	335
1	340
1	340
1	345
1	350
1	355
1	365
1	375

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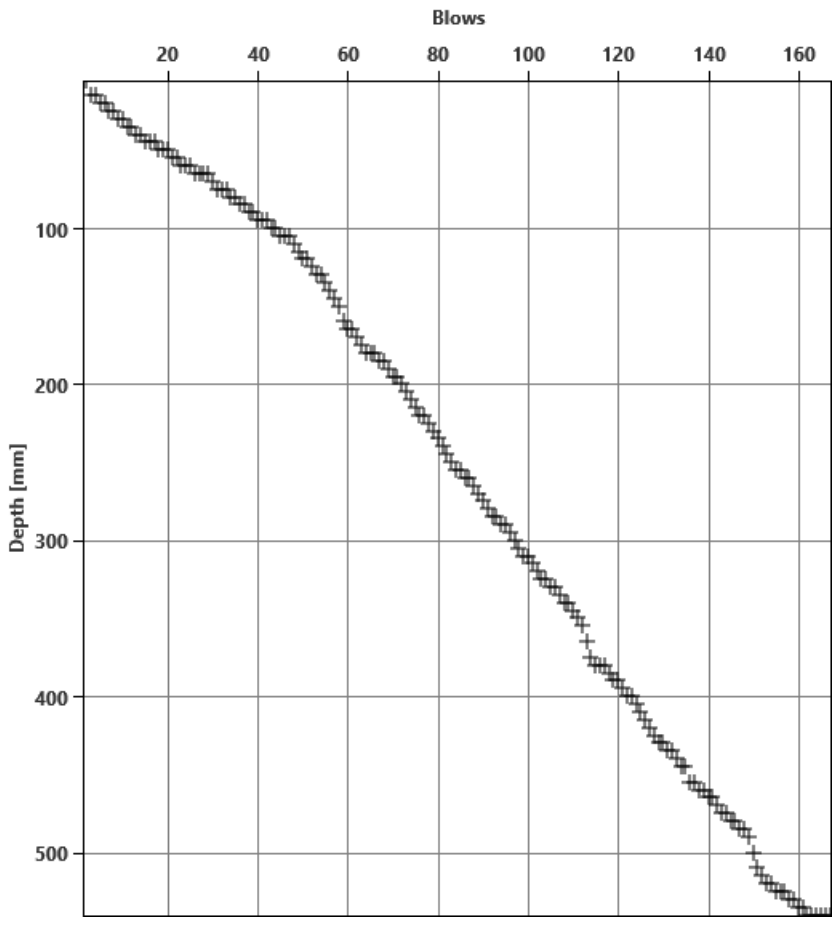
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/GW
Unit System	metric

LOCATION DETAILS	
Location	**HR-CBT05**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Unpaved
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

RESULTS	
No of Blows	Depth [mm]
1	380
1	380
1	380
1	385
1	390
1	390
1	395
1	400
1	400
1	405
1	410
1	415
1	420
1	425
1	430
1	430
1	435
1	435
1	440
1	445
1	445
1	455
1	455
1	460
1	460
1	465
1	465
1	470
1	475
1	475
1	480
1	480
1	485
1	485
1	490
1	500
1	510
1	515
1	520
1	520
1	525
1	525
1	525
1	530
1	530
1	535
1	535
1	540
1	540
1	540
1	540
1	540
1	540

Gaia.Forms (3.6.4062.7e63a8) - DynamicConePenetrometerTest - PDF generated on 2022-11-07 15:18:33 by s.ulgen

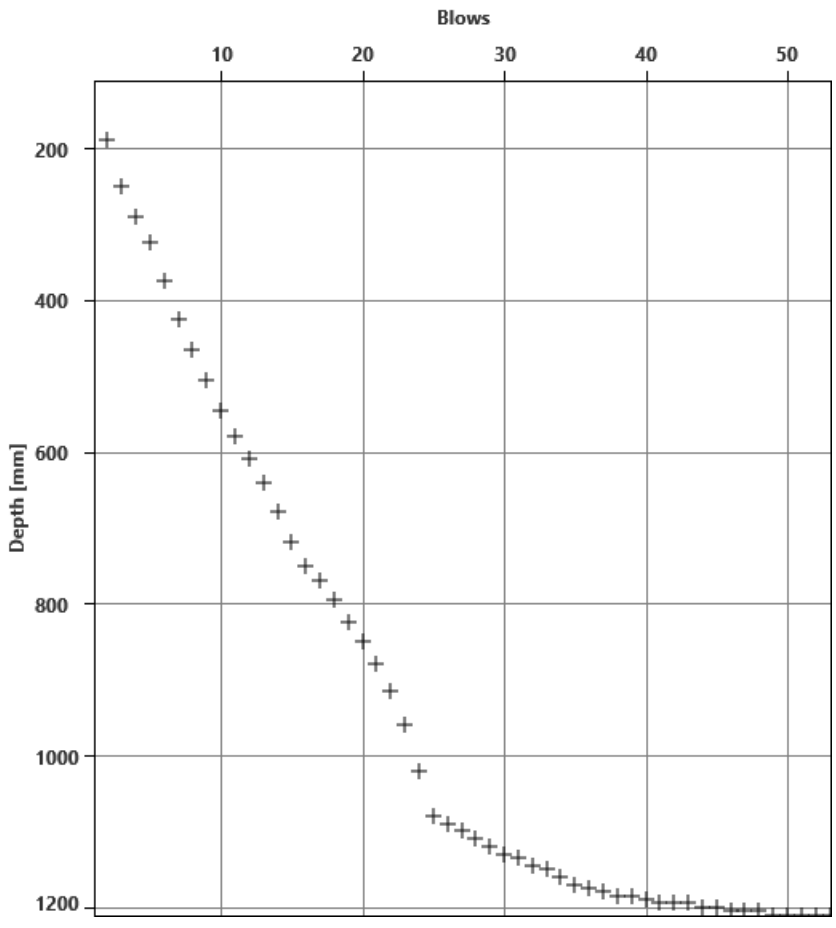
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Thursday 2022-11-03
Operator	SCU/GW
Unit System	metric

LOCATION DETAILS	
Location	**HR-CBT09**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	
Surface Type	Unpaved
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

RESULTS	
No of Blows	Depth [mm]
1	110
1	190
1	250
1	290
1	325
1	375
1	425
1	465
1	505
1	545
1	580
1	610
1	640
1	680
1	720
1	750
1	770
1	795
1	825
1	850
1	880
1	915
1	960
1	1020
1	1080
1	1090
1	1100
1	1110
1	1120
1	1130
1	1135
1	1145
1	1150
1	1160
1	1170
1	1175
1	1180
1	1185
1	1185
1	1190
1	1195
1	1195
1	1195
1	1200
1	1200
1	1205
1	1205
1	1205
1	1210
1	1210
1	1210
1	1210
1	1210

Gaia.Forms (3.6.4062.7e63a8) - DynamicConePenetrometerTest - PDF generated on 2022-11-07 15:19:11 by s.ulgen

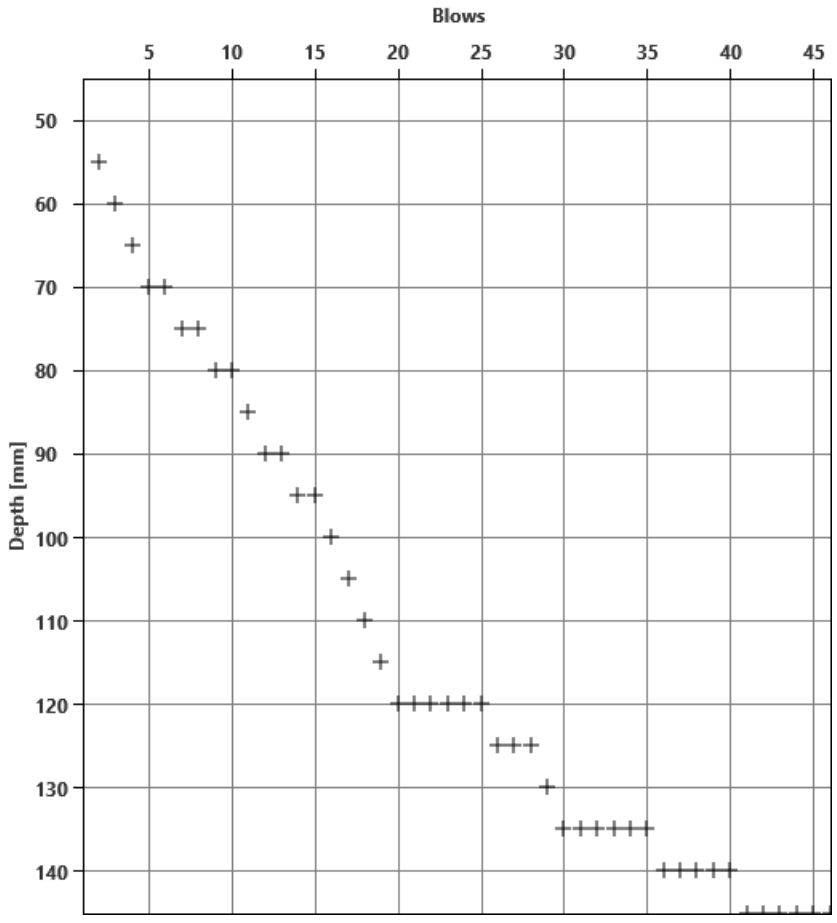
Dynamic Cone Penetrometer Test

Project Name	Keadby 3 Low Carbon Gas Power Station
Project No	F212561
Test Date	Tuesday 2022-10-18
Operator	SCU/TT
Unit System	metric

LOCATION DETAILS	
Location	**HR-CBT19**
Chainage [km]	
Lane No	
Offset [m]	
Direction	

TEST DETAILS	
Cone Angle	60°
Zero Error [mm]	0
Layers Removed	None
Surface Type	Unpaved
Surface Condition	
Strength Coefficient (if condition unknown)	
Surface Thickness (if removed) [mm]	
Base Type (if removed)	
Base Thickness (if removed) [mm]	
Strength Coefficient of Base (if removed)	

GRAPH



REMARKS

RESULTS

No of Blows	Depth [mm]
1	45
1	55
1	60
1	65
1	70
1	70
1	75
1	75
1	80
1	80
1	85
1	90
1	90
1	95
1	95
1	100
1	105
1	110
1	115
1	120
1	120
1	120
1	120
1	120
1	120
1	120
1	125
1	125
1	125
1	130
1	135
1	135
1	135
1	135
1	135
1	135
1	140
1	140
1	140
1	140
1	140
1	145
1	145
1	145
1	145
1	145
1	145

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F.3 Plate Bearing Tests

F.3.1 Plate Bearing Test Schedule

Table F.2: Schedule of Plate Bearing Tests

Location	Subarea	Easting [m E]	Northing [m N]	Ground Level [m OD]	Remarks
AR-CBT01	Access Roads	480341.24	410137.97	1.58	
AR-CBT02		480355.3	410242.78	1.51	
AR-CBT03		480383.00	410353.31	1.28	
AR-CBT04		480382.96	410440.76	1.54	
AR-CBT05		480410.00	410538.09	1.43	
AR-CBT06		480410.60	410638.86	1.65	
AR-CBT07		480437.67	410736.19	1.02	
AR-CBT08		480438.09	410837.06	1.16	
AR-CBT09		480464.98	410940.03	1.31	
AR-CBT10		480465.76	411035.09	1.44	
AR-CBT11		480559.03	411141.49	1.27	
AR-CBT12		480656.59	411165.94	1.30	
AR-CBT13		480757.50	411164.15	1.29	
AR-CBT14		480855.07	411190.10	1.30	
AR-CBT15		480958.27	411189.69	1.44	
AR-CBT16		481053.898	411215.486	1.33	

F.3.2 Plate Bearing Test Results

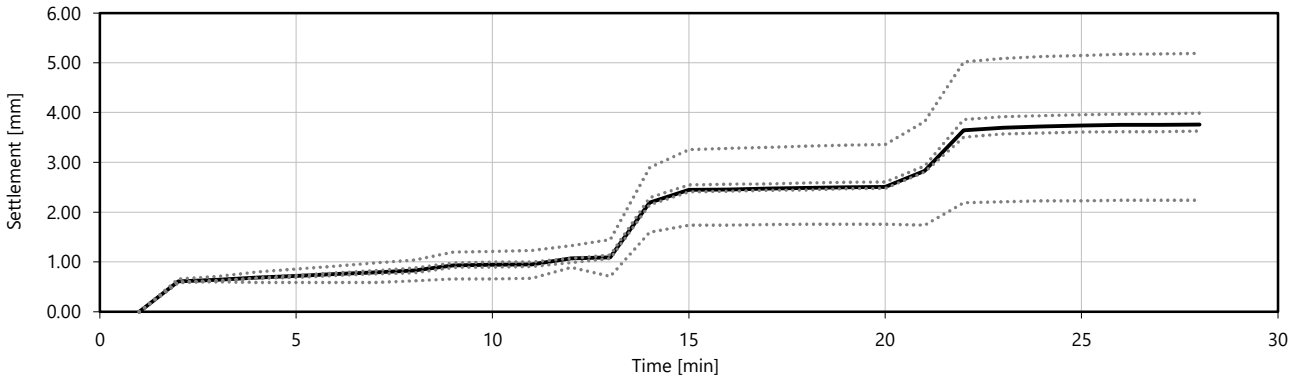
Title	Reference
Plate Bearing Test Results	Referenced by Location ID

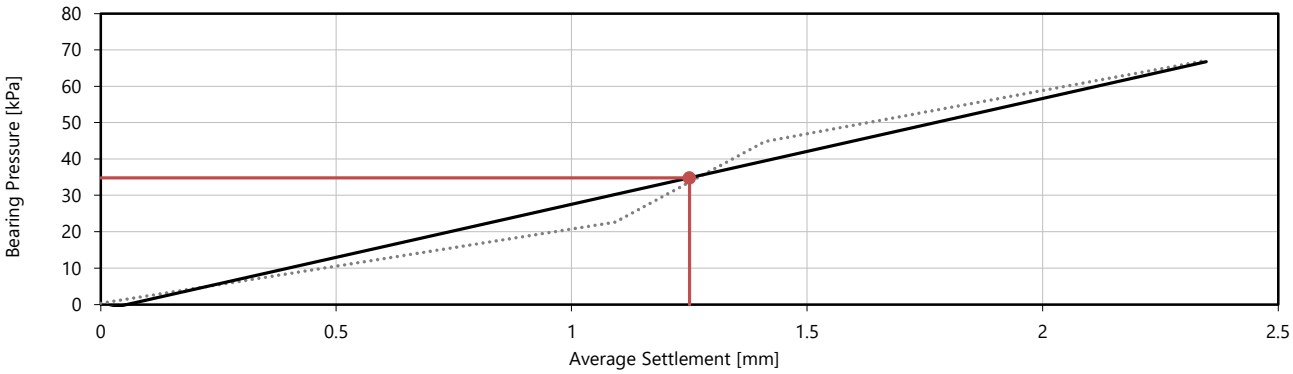
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT01
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	02/11/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Windy cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	15:32	15:53	16:00			
End Time [hh:mm]	15:52	15:59	16:07			
Average Incremental Deformation [mm]	1.09	0.32	2.03			
Average Cumulative Deformation [mm]	1.09	1.41	2.35			
Applied Stress [kPa]	25	45	65			
Test Results						
Maximum Applied Stress [kPa]	65					
Maximum Deformation [mm]	2.35					
Applied Stress at 1.25mm Plate Penetration [kPa]	34.828					
Plate Conversion Factor	0.629					
k762	17528					
CBR [%]	1.38					

Issue Date	17/11/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	16/11/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

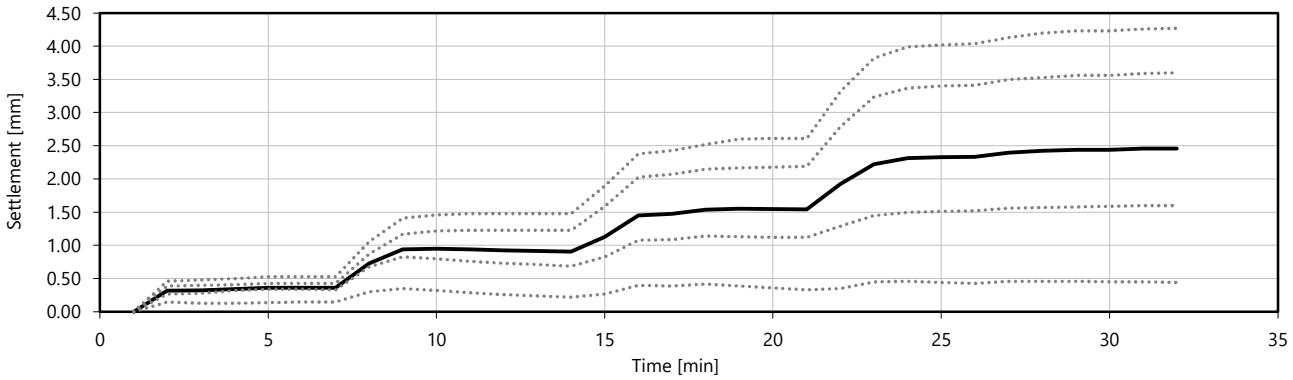
Testing was performed by Fugro GeoServices Ltd on-site at the project named above. Results relate only to the location tested, having been authorised by persons qualified to do so. Opinions and interpretations are outside the scope of this certificate.

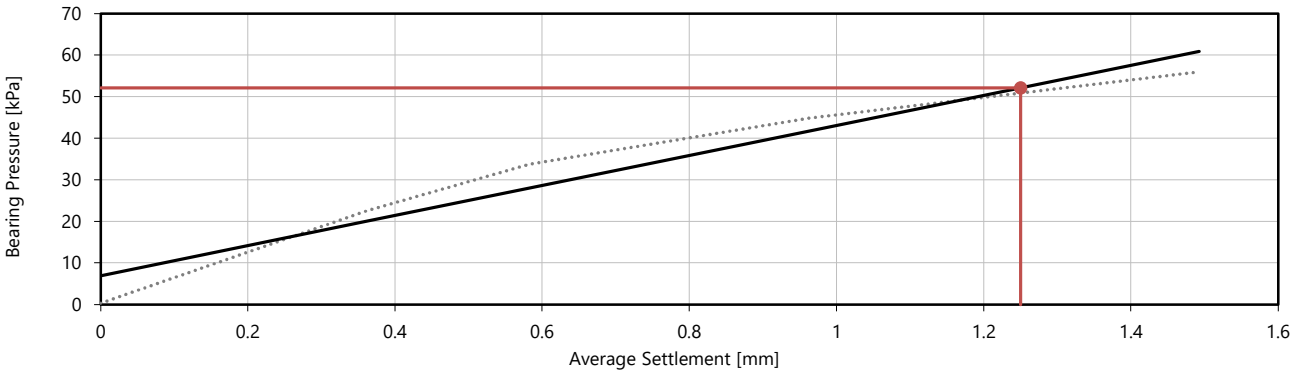
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT02
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	02/11/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Windy cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**	**4**		
Start Time [hh:mm]	14:05	14:12	14:19	14:26		
End Time [hh:mm]	14:11	14:18	14:25	14:36		
Average Incremental Deformation [mm]	0.36	0.22	0.74	0.75		
Average Cumulative Deformation [mm]	0.36	0.58	0.96	1.49		
Applied Stress [kPa]	25	35	45	55		
Test Results						
Maximum Applied Stress [kPa]	55					
Maximum Deformation [mm]	1.49					
Applied Stress at 1.25mm Plate Penetration [kPa]	52.101					
Plate Conversion Factor	0.629					
k762	26221					
CBR [%]	2.77					

Issue Date	17/11/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	16/11/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

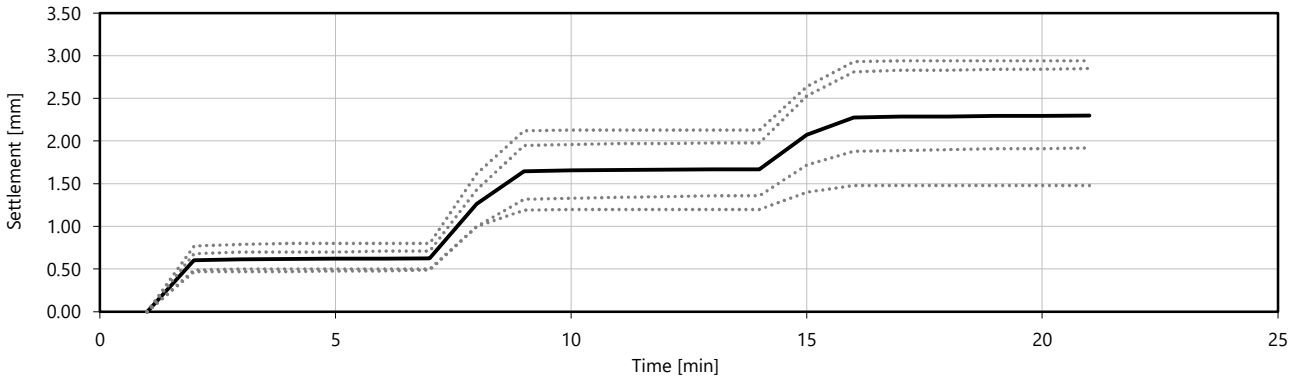
Testing was performed by Fugro GeoServices Ltd on-site at the project named above. Results relate only to the location tested, having been authorised by persons qualified to do so. Opinions and interpretations are outside the scope of this certificate.

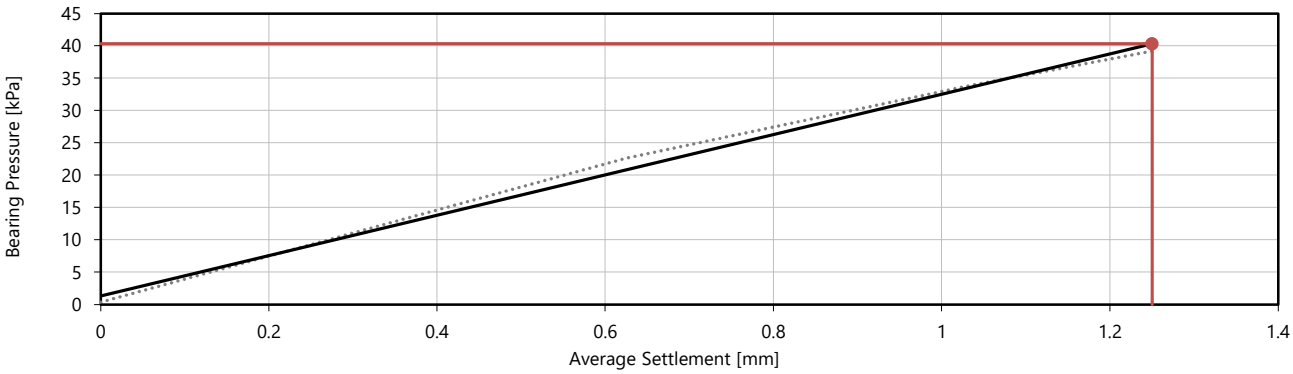
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT03
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	27/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	13:44	13:51	13:58			
End Time [hh:mm]	13:50	13:57	14:04			
Average Incremental Deformation [mm]	0.63	0.41	0.85			
Average Cumulative Deformation [mm]	0.63	1.03	1.26			
Applied Stress [kPa]	25	35	40			
Test Results						
Maximum Applied Stress [kPa]	40					
Maximum Deformation [mm]	1.26					
Applied Stress at 1.25mm Plate Penetration [kPa]	40.312					
Plate Conversion Factor	0.629					
k762	20288					
CBR [%]	1.78					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	27/10/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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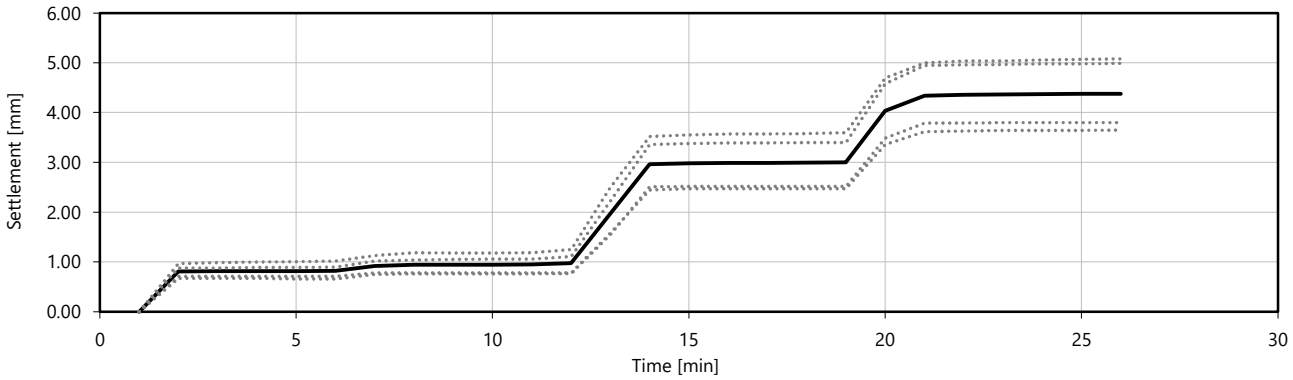
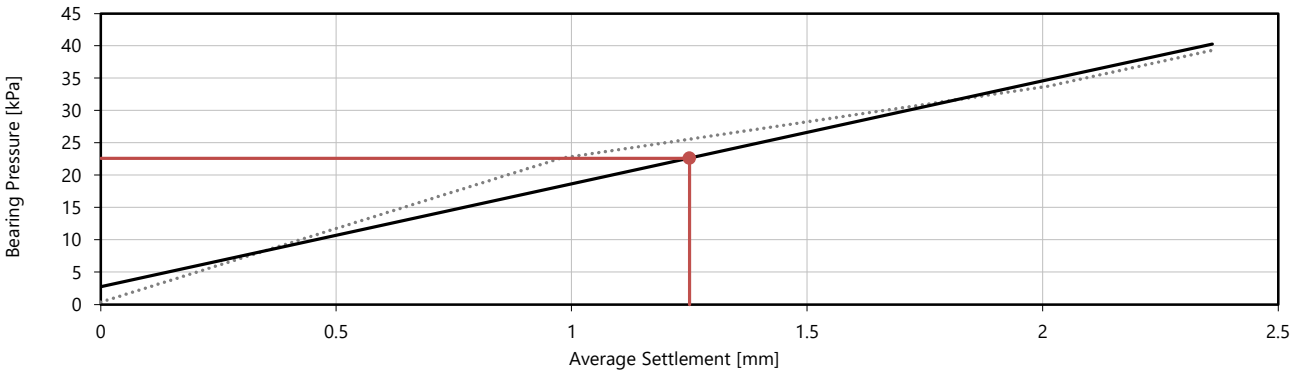
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT04
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	27/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	15:10	15:26	15:33			
End Time [hh:mm]	15:25	15:32	15:39			
Average Incremental Deformation [mm]	0.98	1.04	1.33			
Average Cumulative Deformation [mm]	0.98	2.01	2.36			
Applied Stress [kPa]	25	35	40			
Test Results						
Maximum Applied Stress [kPa]	40					
Maximum Deformation [mm]	2.36					
Applied Stress at 1.25mm Plate Penetration [kPa]	22.627					
Plate Conversion Factor	0.629					
k762	11387					
CBR [%]	0.65					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	27/10/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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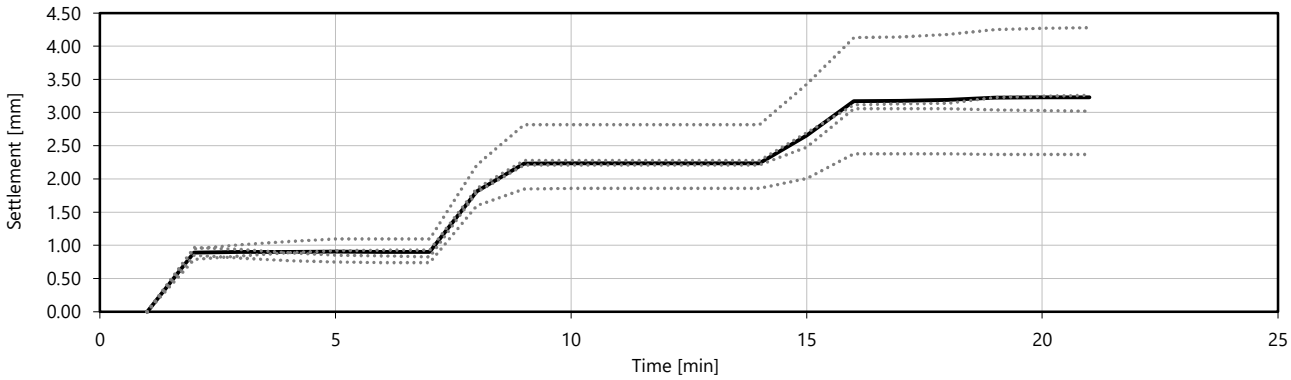
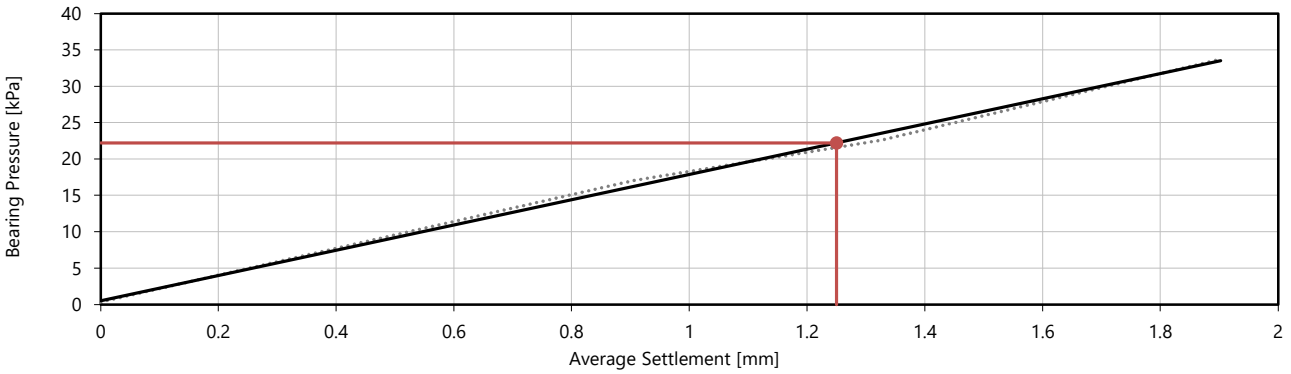
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT05
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	27/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	16:25	16:32	16:39			
End Time [hh:mm]	16:31	16:38	16:45			
Average Incremental Deformation [mm]	0.91	0.42	1.48			
Average Cumulative Deformation [mm]	0.91	1.33	1.90			
Applied Stress [kPa]	15	25	35			
Test Results						
Maximum Applied Stress [kPa]	35					
Maximum Deformation [mm]	1.90					
Applied Stress at 1.25mm Plate Penetration [kPa]	22.195					
Plate Conversion Factor	0.629					
k762	11170					
CBR [%]	0.63					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	27/10/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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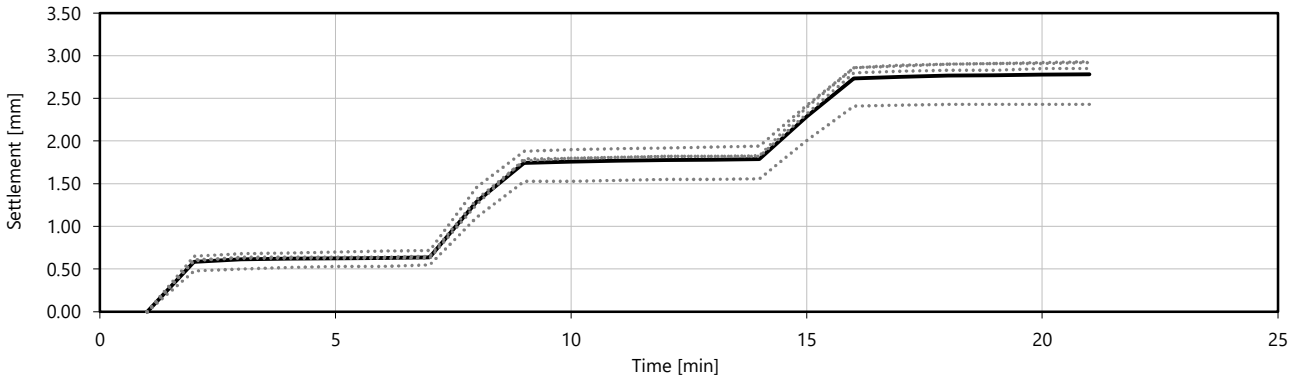
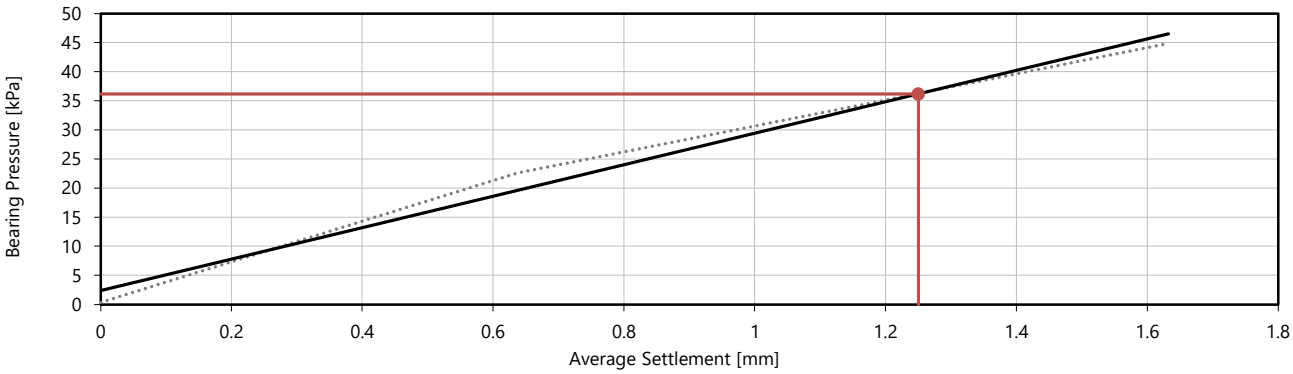
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT06
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	02/11/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Windy partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	09:23	09:29	09:36			
End Time [hh:mm]	09:29	09:35	09:42			
Average Incremental Deformation [mm]	0.64	0.50	1.13			
Average Cumulative Deformation [mm]	0.64	1.14	1.63			
Applied Stress [kPa]	25	35	45			
Test Results						
Maximum Applied Stress [kPa]	45					
Maximum Deformation [mm]	1.63					
Applied Stress at 1.25mm Plate Penetration [kPa]	36.165					
Plate Conversion Factor	0.629					
k762	18201					
CBR [%]	1.47					

Issue Date	17/11/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	16/11/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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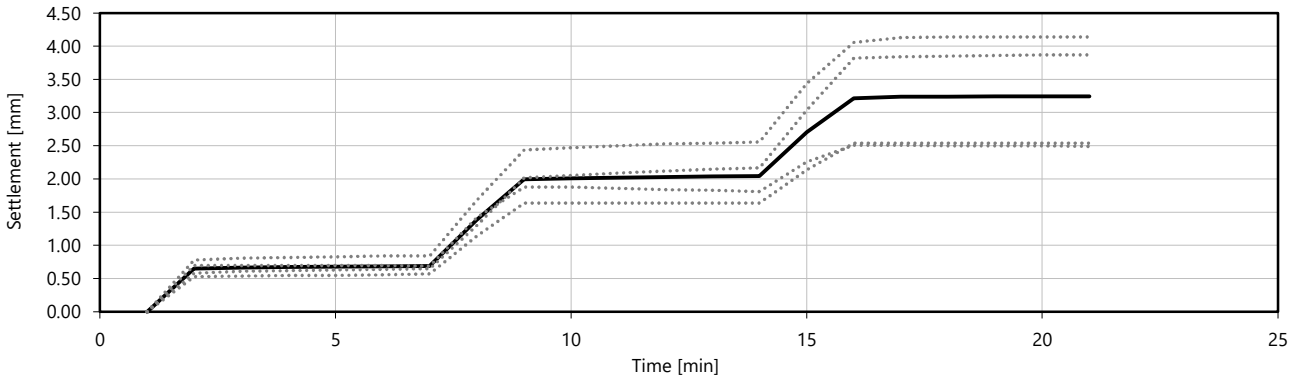
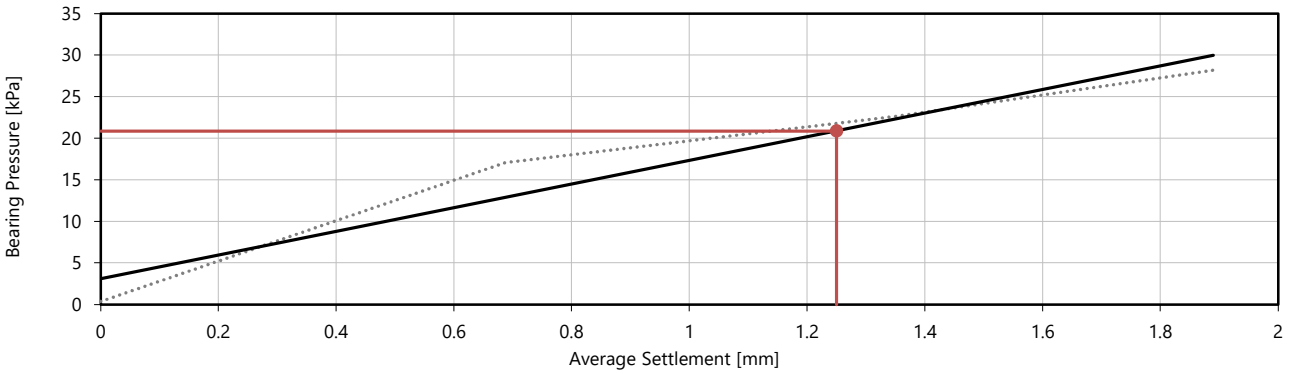
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT07
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	28/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Windy cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	09:57	10:05	10:12			
End Time [hh:mm]	10:03	10:11	10:18			
Average Incremental Deformation [mm]	0.69	0.66	1.23			
Average Cumulative Deformation [mm]	0.69	1.35	1.89			
Applied Stress [kPa]	15	25	30			
Test Results						
Maximum Applied Stress [kPa]	30					
Maximum Deformation [mm]	1.89					
Applied Stress at 1.25mm Plate Penetration [kPa]	20.878					
Plate Conversion Factor	0.629					
k762	10508					
CBR [%]	0.57					

Issue Date	17/11/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	16/11/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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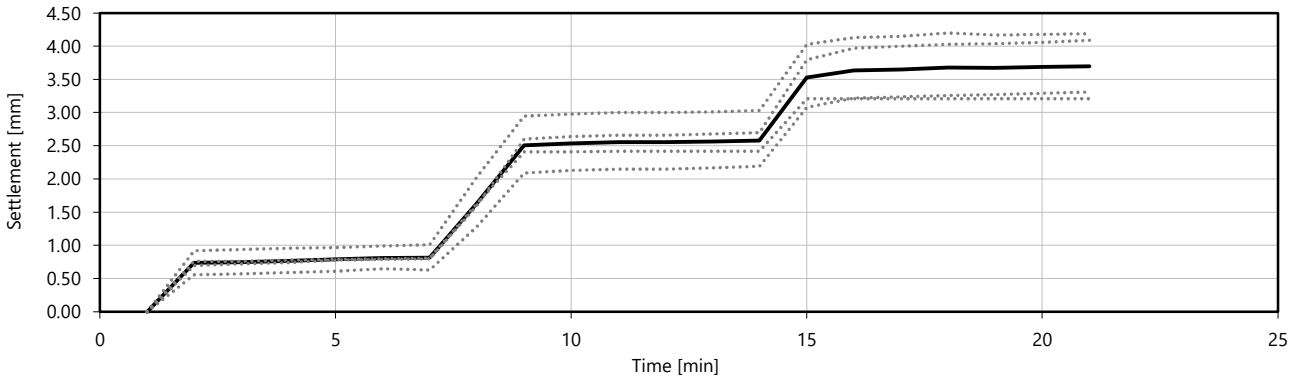
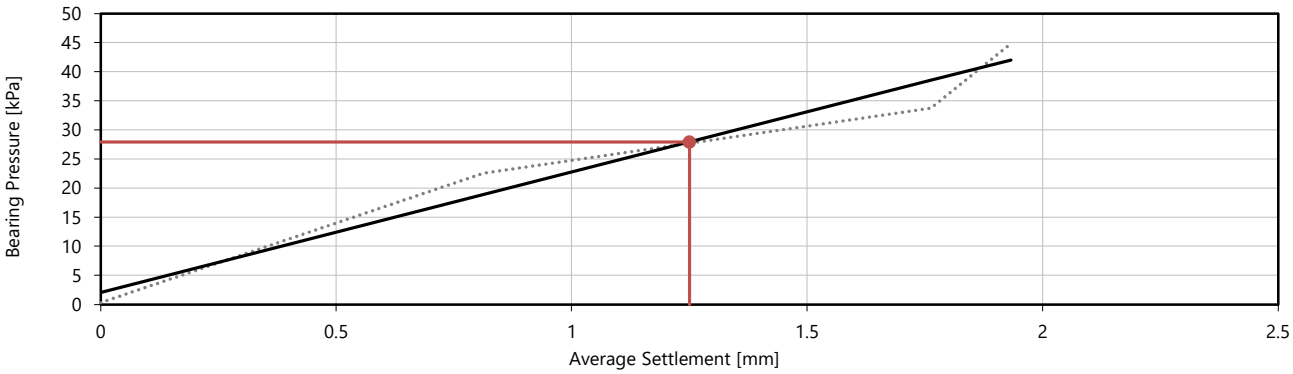
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT08
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	02/11/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Windy partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	10:24	10:32	10:39			
End Time [hh:mm]	10:30	10:38	10:45			
Average Incremental Deformation [mm]	0.81	0.95	0.98			
Average Cumulative Deformation [mm]	0.81	1.76	1.93			
Applied Stress [kPa]	25	35	45			
Test Results						
Maximum Applied Stress [kPa]	45					
Maximum Deformation [mm]	1.93					
Applied Stress at 1.25mm Plate Penetration [kPa]	27.916					
Plate Conversion Factor	0.629					
k762	14049					
CBR [%]	0.94					

Issue Date	17/11/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	16/11/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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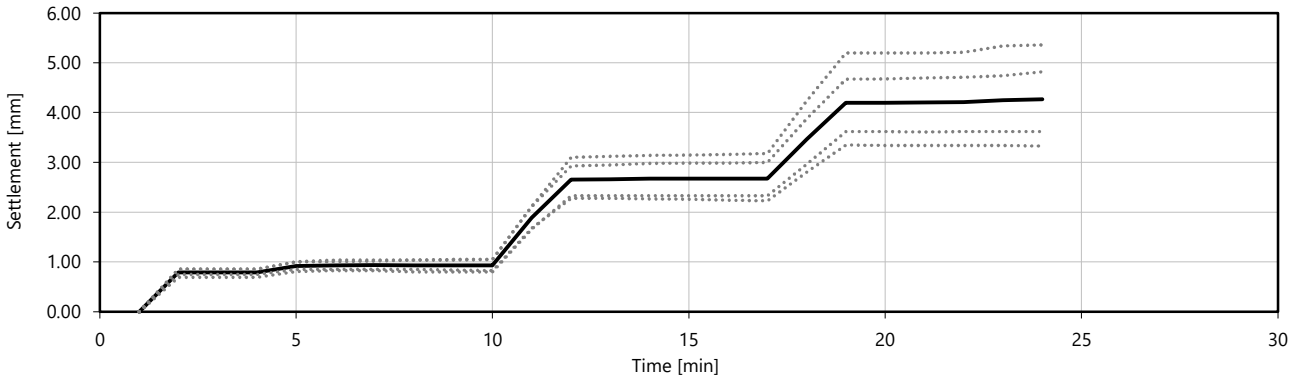
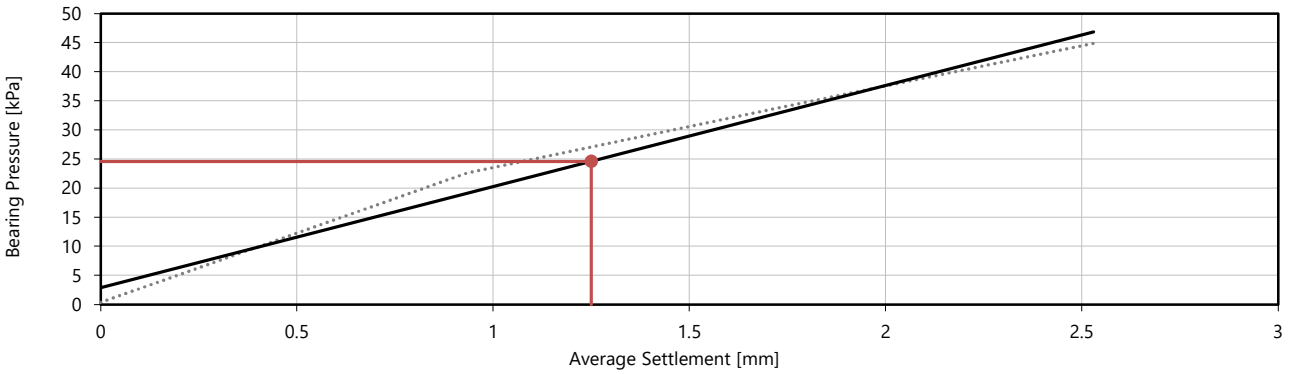
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT09
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	01/11/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Windy cloudy, light rain					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	15:18	15:28	15:35			
End Time [hh:mm]	15:27	15:34	15:41			
Average Incremental Deformation [mm]	0.94	0.79	1.74			
Average Cumulative Deformation [mm]	0.94	1.72	2.53			
Applied Stress [kPa]	25	35	45			
Test Results						
Maximum Applied Stress [kPa]	45					
Maximum Deformation [mm]	2.53					
Applied Stress at 1.25mm Plate Penetration [kPa]	24.594					
Plate Conversion Factor	0.629					
k762	12378					
CBR [%]	0.75					

Issue Date	17/11/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	16/11/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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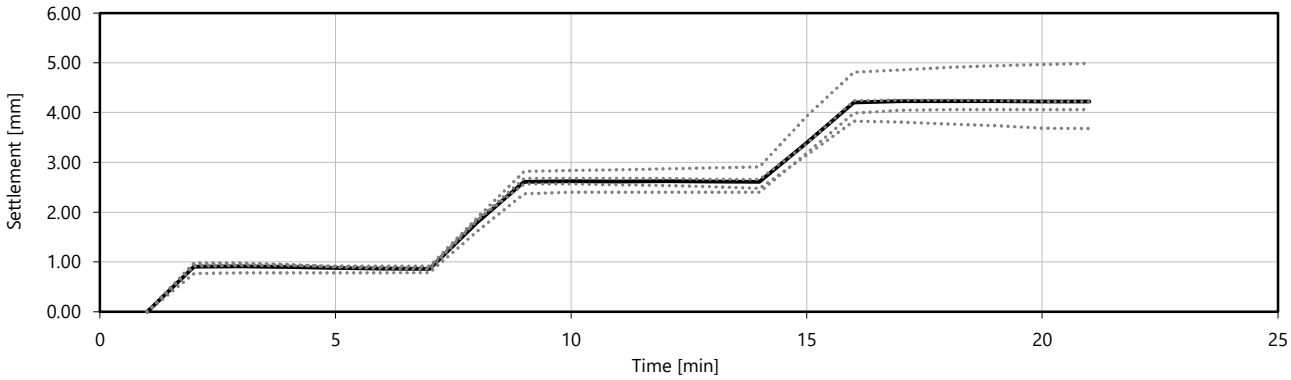
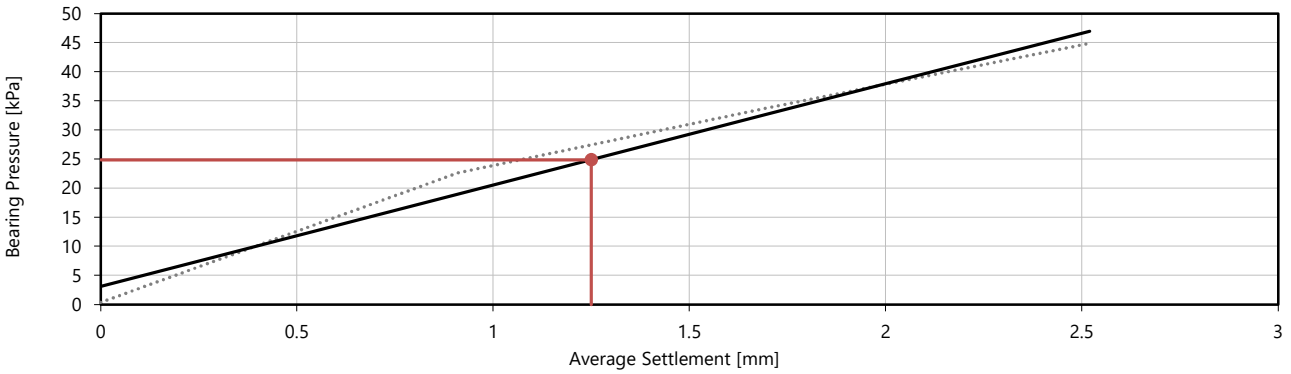
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT10
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	01/11/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Windy cloudy, heavy rain					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	16:39	16:45	16:52			
End Time [hh:mm]	16:45	16:51	16:58			
Average Incremental Deformation [mm]	0.91	0.79	1.74			
Average Cumulative Deformation [mm]	0.91	1.70	2.52			
Applied Stress [kPa]	25	35	45			
Test Results						
Maximum Applied Stress [kPa]	45					
Maximum Deformation [mm]	2.52					
Applied Stress at 1.25mm Plate Penetration [kPa]	24.864					
Plate Conversion Factor	0.629					
k762	12514					
CBR [%]	0.77					

Issue Date	17/11/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	16/11/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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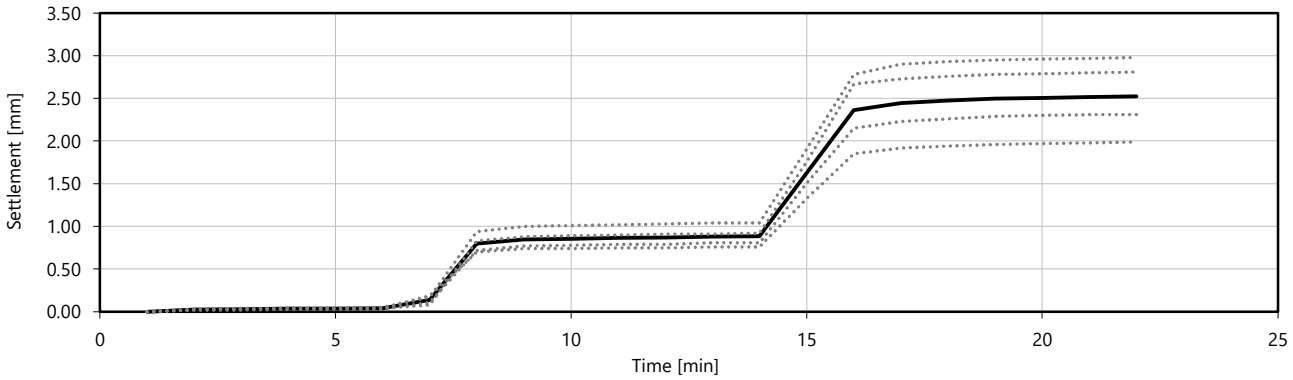
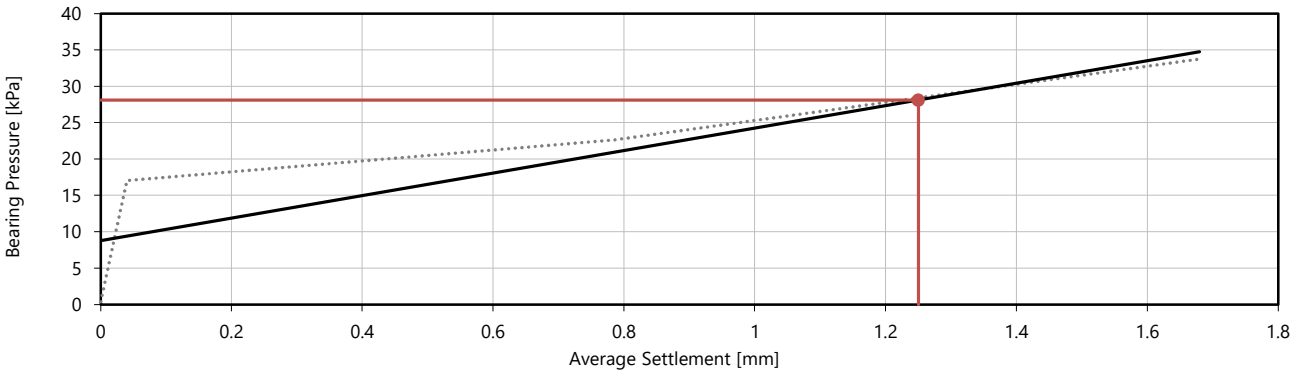
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT11
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	26/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Clear sky, cool with light breeze					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	12:22	12:28	12:36			
End Time [hh:mm]	12:27	12:35	12:43			
Average Incremental Deformation [mm]	0.04	0.75	0.94			
Average Cumulative Deformation [mm]	0.04	0.79	1.68			
Applied Stress [kPa]	15	25	35			
Test Results						
Maximum Applied Stress [kPa]	35					
Maximum Deformation [mm]	1.68					
Applied Stress at 1.25mm Plate Penetration [kPa]	28.095					
Plate Conversion Factor	0.629					
k762	14139					
CBR [%]	0.95					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	26/10/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

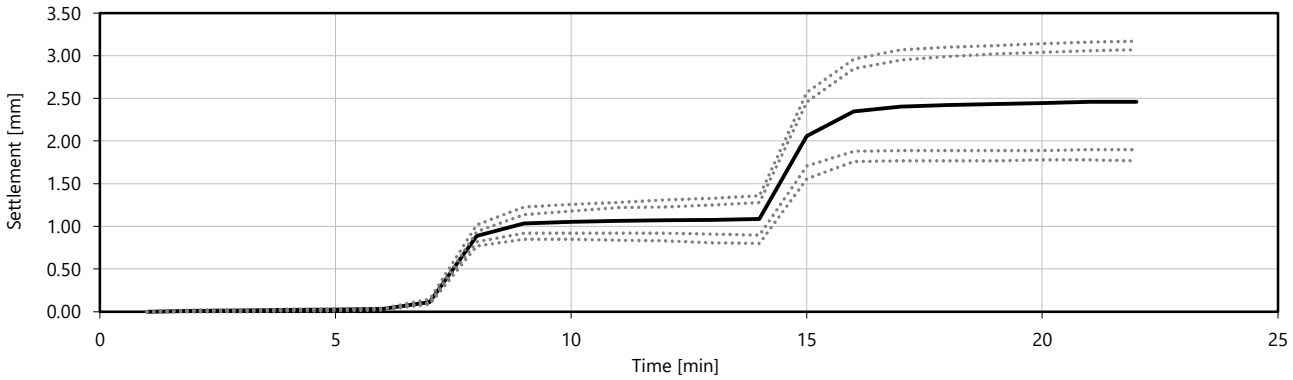
Testing was performed by Fugro GeoServices Ltd on-site at the project named above. Results relate only to the location tested, having been authorised by persons qualified to do so. Opinions and interpretations are outside the scope of this certificate.

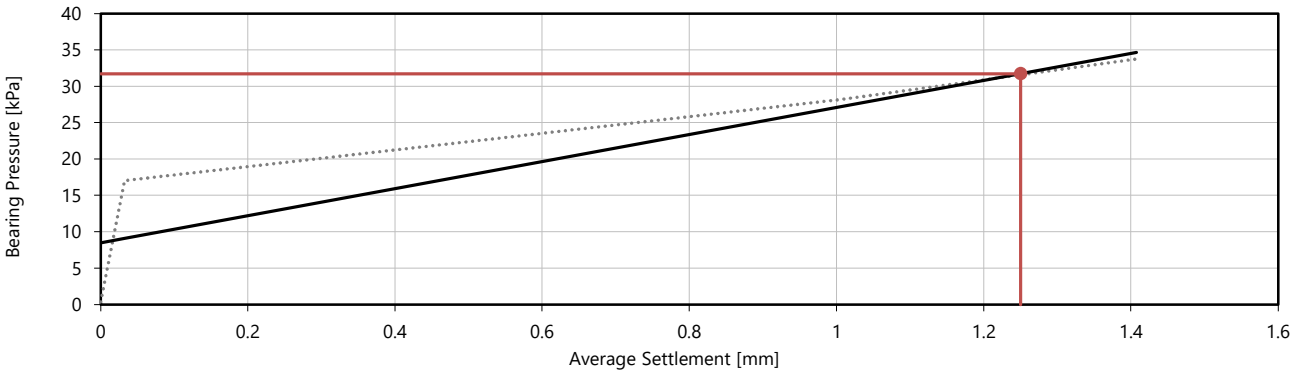
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT12
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	26/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	10:57	11:03	11:10			
End Time [hh:mm]	11:02	11:10	11:17			
Average Incremental Deformation [mm]	0.03	0.97	0.44			
Average Cumulative Deformation [mm]	0.03	1.01	1.41			
Applied Stress [kPa]	15	30	35			
Test Results						
Maximum Applied Stress [kPa]	35					
Maximum Deformation [mm]	1.41					
Applied Stress at 1.25mm Plate Penetration [kPa]	31.734					
Plate Conversion Factor	0.629					
k762	15971					
CBR [%]	1.17					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	27/10/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

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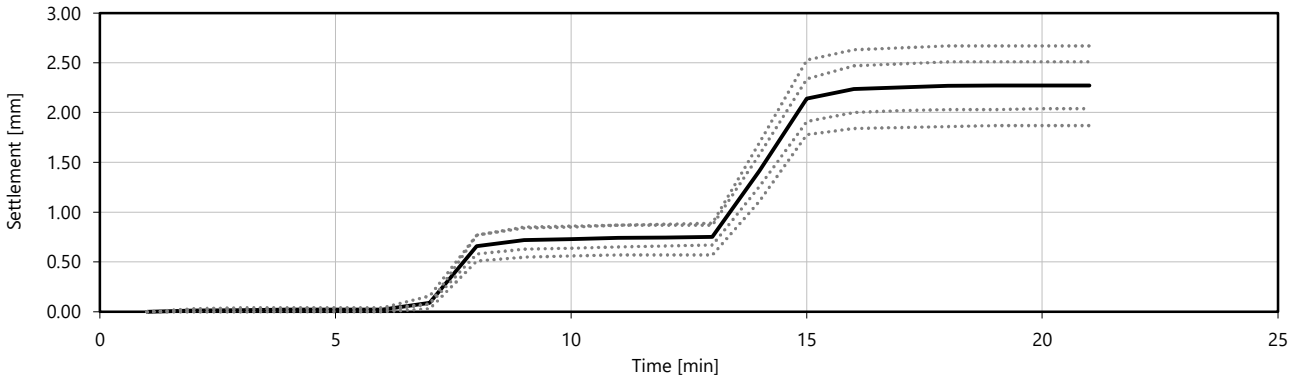
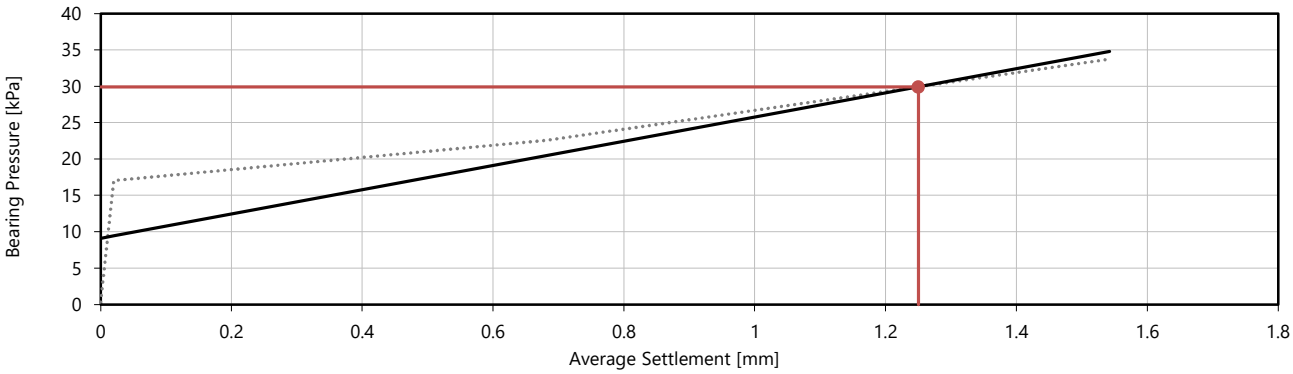
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT13
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.40
Soil Description	Sandy CLAY	Date of Test	26/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	15:47	15:53	16:00			
End Time [hh:mm]	15:52	15:59	16:07			
Average Incremental Deformation [mm]	0.02	0.66	0.88			
Average Cumulative Deformation [mm]	0.02	0.68	1.54			
Applied Stress [kPa]	15	25	35			
Test Results						
Maximum Applied Stress [kPa]	35					
Maximum Deformation [mm]	1.54					
Applied Stress at 1.25mm Plate Penetration [kPa]	29.912					
Plate Conversion Factor	0.629					
k762	15054					
CBR [%]	1.06					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	27/10/2022
Remarks					

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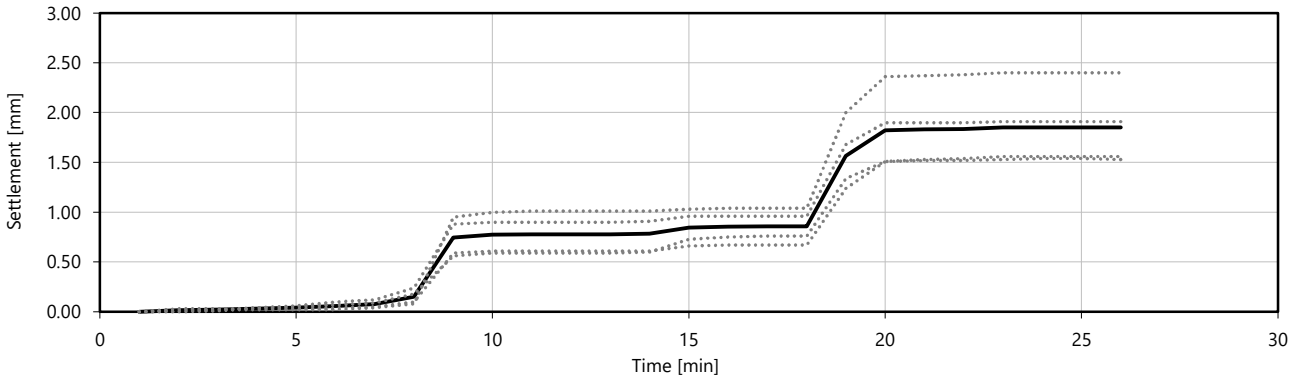
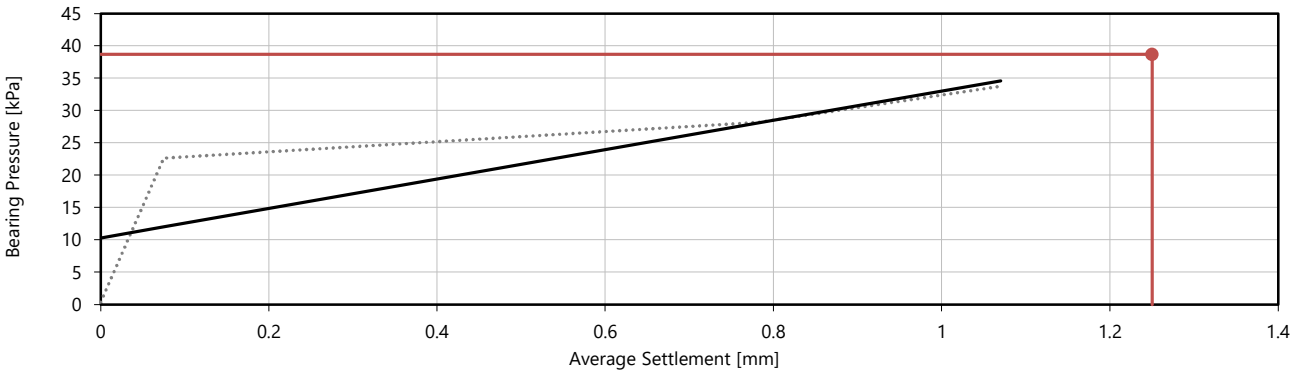
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT14
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	25/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	16:20	16:32	16:45			
End Time [hh:mm]	16:26	16:42	16:52			
Average Incremental Deformation [mm]	0.08	0.71	0.36			
Average Cumulative Deformation [mm]	0.08	0.78	1.07			
Applied Stress [kPa]	25	30	35			
Test Results						
Maximum Applied Stress [kPa]	35					
Maximum Deformation [mm]	1.07					
Applied Stress at 1.25mm Plate Penetration [kPa]	38.682					
Plate Conversion Factor	0.629					
k762	19468					
CBR [%]	1.65					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	26/10/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

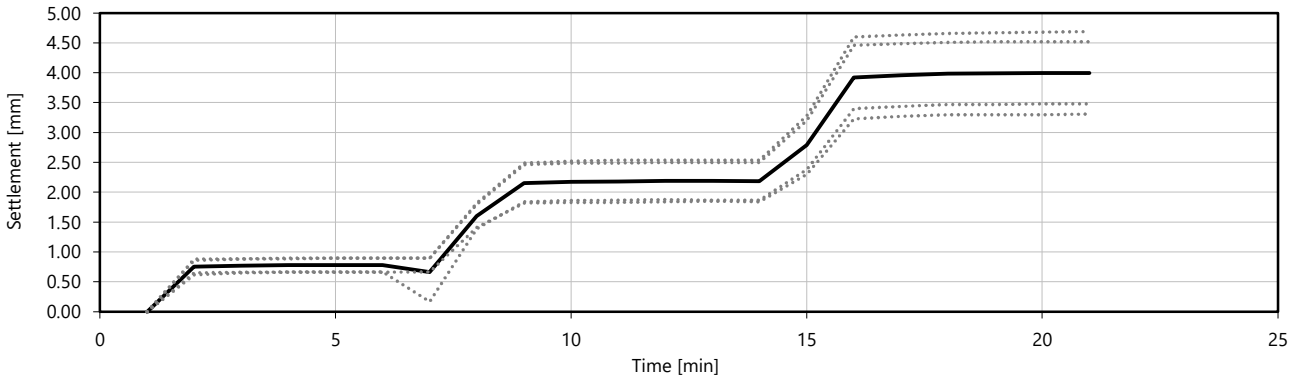
Testing was performed by Fugro GeoServices Ltd on-site at the project named above. Results relate only to the location tested, having been authorised by persons qualified to do so. Opinions and interpretations are outside the scope of this certificate.

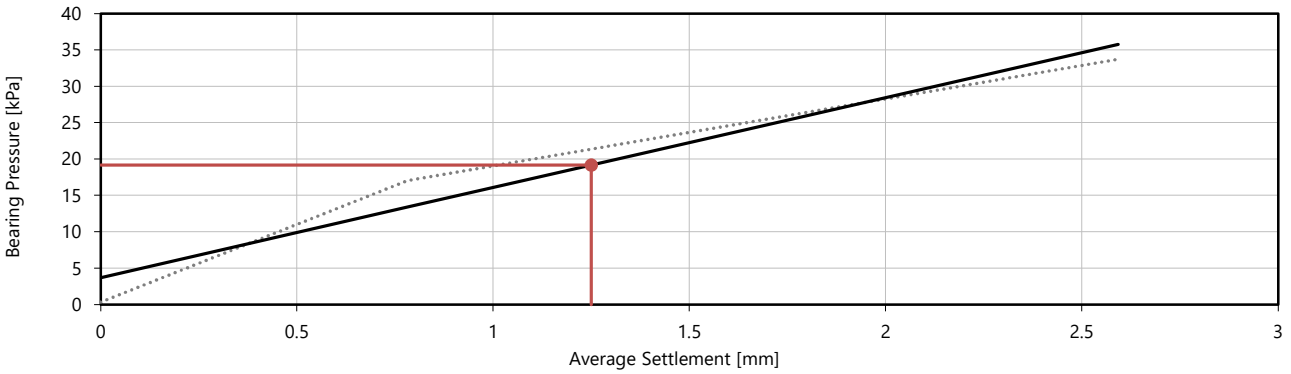
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT15
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	25/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Partially cloudy					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**			
Start Time [hh:mm]	12:56	13:06	13:15			
End Time [hh:mm]	13:02	13:12	13:21			
Average Incremental Deformation [mm]	0.78	0.60	1.99			
Average Cumulative Deformation [mm]	0.78	1.38	2.59			
Applied Stress [kPa]	15	25	35			
Test Results						
Maximum Applied Stress [kPa]	35					
Maximum Deformation [mm]	2.59					
Applied Stress at 1.25mm Plate Penetration [kPa]	19.163					
Plate Conversion Factor	0.629					
k762	9644					
CBR [%]	0.49					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	26/10/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

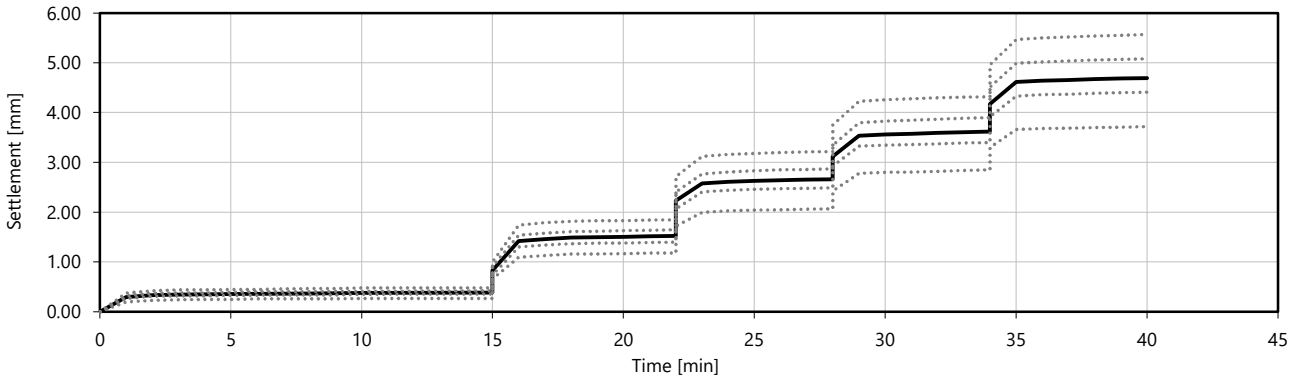
Testing was performed by Fugro GeoServices Ltd on-site at the project named above. Results relate only to the location tested, having been authorised by persons qualified to do so. Opinions and interpretations are outside the scope of this certificate.

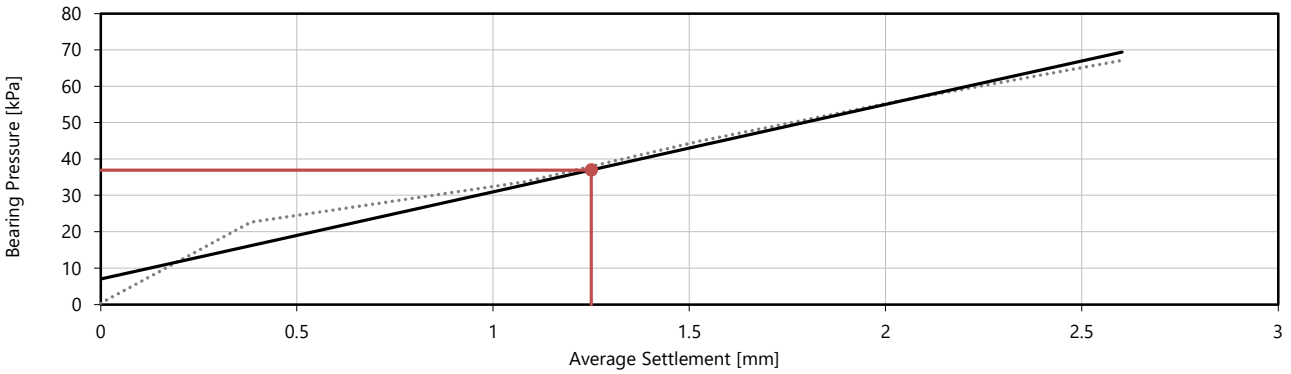
LABORATORY TEST CERTIFICATE

Determination of In-Situ CBR by Incremental Loading Plate Bearing Test

BS 1377-9:1990 Clause 4.1 & National Highways IAN 73/06 Revision 1 2009 (Withdrawn)

Project Reference	F212561	Location ID	AR CBT16
Project Name	Keadby 3 Low Carbon Gas Power Station	Test Depth [mbgl]	0.20
Soil Description	Sandy CLAY	Date of Test	25/10/2022





Initial Test Conditions						
Reaction Load	JCB 3CX					
Weather Conditions	Clear sky, cool with light breeze					
Plate Diameter [mm]	455					
In-situ Water Content [%]						
In-situ Bulk Density [Mg/m³]						
In-situ Dry Density [Mg/m³]						
Incremental Loading Stage Data	**1**	**2**	**3**	**4**	**5**	
Start Time [hh:mm]	10:07	10:30	10:41	10:49	11:04	
End Time [hh:mm]	10:22	10:37	10:47	10:55	11:10	
Average Incremental Deformation [mm]	0.38	0.70	0.83	1.21	1.40	
Average Cumulative Deformation [mm]	0.38	1.08	1.53	2.04	2.60	
Applied Stress [kPa]	25	35	45	55	65	
Test Results						
Maximum Applied Stress [kPa]	65					
Maximum Deformation [mm]	2.60					
Applied Stress at 1.25mm Plate Penetration [kPa]	36.965					
Plate Conversion Factor	0.629					
k762	18604					
CBR [%]	1.53					

Issue Date	31/10/2022	Certificate Reference	Issue 1	Authorised By	I Nicholson
Client	Keadby Generation Limited			Authorised Date	26/10/2022
Remarks					

Fugro GeoServices Ltd. Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB

Testing was performed by Fugro GeoServices Ltd on-site at the project named above. Results relate only to the location tested, having been authorised by persons qualified to do so. Opinions and interpretations are outside the scope of this certificate.

F.4 Light Weight Deflectometer Tests

F.4.1 Light Weight Deflectometer Test Schedule

Table F.3: Schedule of Light Weight Deflectometer Tests

Location	Subarea	Easting [m E]	Northing [m N]	Ground Level [m OD]	Remarks
BR-CBT01	Main Site	482155.50	411647.00	482155.50	
BR-CBT02		482223.00	411643.30	482223.00	
BR-CBT03	Access Roads	482419.00	411643.70	482419.00	
BR-CBT04		482508.50	411744.70	482508.50	
BR-CBT05		482575.80	411745/00	482575.80	
HR-CBT11		496899.40	388556.50	496899.40	
HR-CBT12		482677.50	411757.50	482677.50	
HR-CBT13		482631.20	411767.00	482631.20	

F.4.2 Light Weight Deflectometer Test Results

Title	Reference
Light Weight Deflectometer Test Results	Referenced by Location ID

Laboratory Report	DNR/121404A	Contract Sample No	DN5183/1A
Report Date	15/11/2022	ETS Contract No	DN5183/1A

Construction Testing Solutions

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Dunscroft | Doncaster | DN7 4JU
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W | www.constructiontesting.co.uk

Fugro Geoservices
Fugro Geoservices Limited
Armstrong Huse, Unit 43
Number One Industrial Estate
Medomsley Road
Consett
Site: DH8 6TW

Date Sampled/Tested	14/11/2022
Material Supplier	As Dug
Material Source	As Dug
Sampling Plan	CTS Procedure
Date Completed	14/11/2022
Tested By:	GC
Equipment Used	Not Stated

TEST REPORT

Determination of Surface Modulus by Light Weight Deflector (Prima)

Tested in accordance with IAN 73/06 CL.895

Values of Stiffness reported are the average reading in each location

Test Location	Material Type	Surface Stiffness Modulus (MPa)	% CBR*
BR CTB 02	Type 1	2041.0	**1680.8**
BR CTB 01	Type 1	188.5	**40.6**
BR CTB 05	Type 1/6F	163.9	**32.7**

*Poisson's ratio value of 0.3 used in calculation

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Results relate only to the samples tested.

Authorised Signatory

[redacted]

Comments:

** END OF REPORT **

Laboratory Report	DNR/121404B	Contract Sample No	DN5183/1B
Report Date	15/11/2022	ETS Contract No	DN5183/1B

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Fugro Geoservices
Fugro Geoservices Limited
Armstrong Huse, Unit 43
Number One Industrial Estate
Medomsley Road
Consett
Site: DH8 6TW

Date Sampled/Tested	14/11/2022
Material Supplier	As Dug
Material Source	As Dug
Sampling Plan	CTS Procedure
Date Completed	14/11/2022
Tested By:	GC
Equipment Used	Not Stated

TEST REPORT

Determination of Surface Modulus by Light Weight Deflector (Prima)

Tested in accordance with IAN 73/06 CL.895

Values of Stiffness reported are the average reading in each location

Test Location	Material Type	Surface Stiffness Modulus (MPa)	% CBR*
BR CTB 03	6F/ Recycled Stone	143.8	**26.6**

*Poisson's ratio value of 0.3 used in calculation

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Laboratory Report	DNR/121404C	Contract Sample No	DN5183/1C
Report Date	15/11/2022	ETS Contract No	DN5183/1C

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Fugro Geoservices Limited
Armstrong Huse, Unit 43
Number One Industrial Estate
Medomsley Road
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Site: DH8 6TW

Date Sampled/Tested	14/11/2022
Material Supplier	As Dug
Material Source	As Dug
Sampling Plan	CTS Procedure
Date Completed	14/11/2022
Tested By:	GC
Equipment Used	Not Stated

TEST REPORT

Determination of Surface Modulus by Light Weight Deflector (Prima)

Tested in accordance with IAN 73/06 CL.895

Values of Stiffness reported are the average reading in each location

Test Location	Material Type	Surface Stiffness Modulus (MPa)	% CBR*
BR CTB 04	Tarmac Planning	301.0	**84.5**

*Poisson's ratio value of 0.3 used in calculation

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** END OF REPORT **

Laboratory Report	DNR/121405A	Contract Sample No	DN5183/2A
Report Date	15/11/2022	ETS Contract No	DN5183/2A

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Armstrong Huse, Unit 43
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Site: DH8 6TW

Date Sampled/Tested	14/11/2022
Material Supplier	As Dug
Material Source	As Dug
Sampling Plan	CTS Procedure
Date Completed	14/11/2022
Tested By:	GC
Equipment Used	Not Stated

TEST REPORT

Determination of Surface Modulus by Light Weight Deflector (Prima)

Tested in accordance with IAN 73/06 CL.895

Values of Stiffness reported are the average reading in each location

Test Location	Material Type	Surface Stiffness Modulus (MPa)	% CBR*
HR CBT 12	Type 1/Limestone	116.2	**19.1**

*Poisson's ratio value of 0.3 used in calculation

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Laboratory Report	DNR/121405B	Contract Sample No	DN5183/2B
Report Date	15/11/2022	ETS Contract No	DN5183/2B

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Site: DH8 6TW

Date Sampled/Tested	14/11/2022
Material Supplier	As Dug
Material Source	As Dug
Sampling Plan	CTS Procedure
Date Completed	14/11/2022
Tested By:	GC
Equipment Used	Not Stated

TEST REPORT

Determination of Surface Modulus by Light Weight Deflector (Prima)

Tested in accordance with IAN 73/06 CL.895

Values of Stiffness reported are the average reading in each location

Test Location	Material Type	Surface Stiffness Modulus (MPa)	% CBR*
HR CBT 13	Brown Clay Frequent Stone	181.0	**38.2**

*Poisson's ratio value of 0.3 used in calculation

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Authorised Signatory

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** END OF REPORT **

Laboratory Report	DNR/121405C	Contract Sample No	DN5183/2C
Report Date	15/11/2022	ETS Contract No	DN5183/2C

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Number One Industrial Estate
Medomsley Road
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Site: DH8 6TW

Date Sampled/Tested	14/11/2022
Material Supplier	As Dug
Material Source	As Dug
Sampling Plan	CTS Procedure
Date Completed	14/11/2022
Tested By:	GC
Equipment Used	Not Stated

TEST REPORT

Determination of Surface Modulus by Light Weight Deflector (Prima)

Tested in accordance with IAN 73/06 CL.895

Values of Stiffness reported are the average reading in each location

Test Location	Material Type	Surface Stiffness Modulus (MPa)	% CBR*
HR CBT 11	Concrete	176.5	**36.7**

*Poisson's ratio value of 0.3 used in calculation

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Results relate only to the samples tested.

Authorised Signatory

[redacted]

Comments:

** END OF REPORT **

F.5 Water Permeability Tests in a Borehole

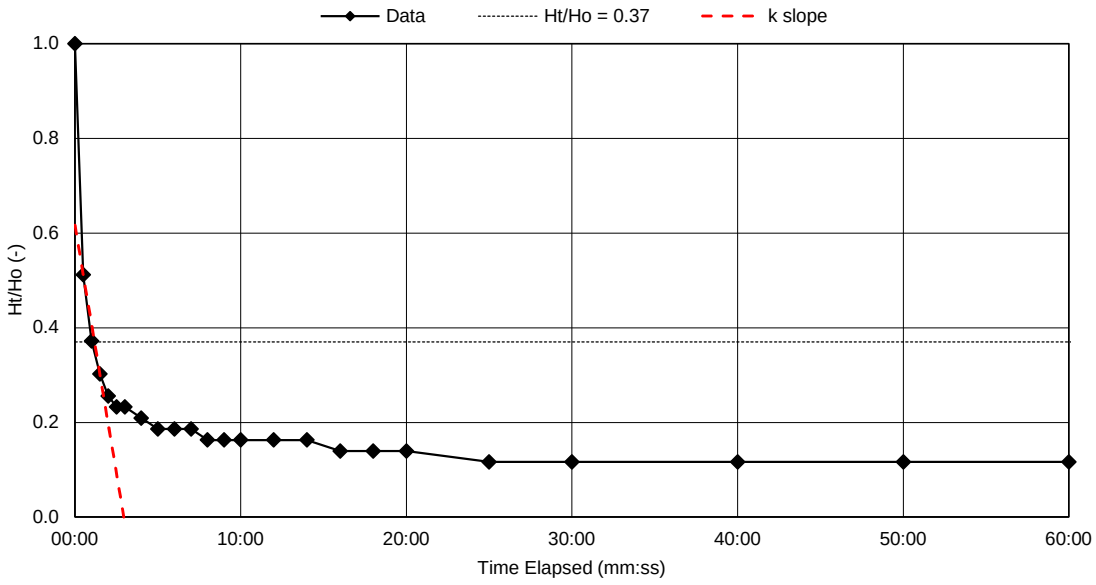
F.5.1 Variable Head Permeability Test Results

Title	Reference
Variable Head Permeability Test Results	Referenced by Location ID

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power			Location ID
	Client	SSE Generation Limited (SSE)			**MS-BH12**
	Fugro Reference	F212561			
	Coordinates (m)	E482090.82 N411953.31	Elevation (m Datum)	0.74	Sheet 1 of 1
	Hole Type	CP+RC			Status: Final

Variable Head Permeability Test Record

Test Date	11/9/2022	Test No.	1	Test Depth (m)	5.00 to 8.00



Coefficient of Permeability (k) (m/s)			
Time Elapsed (mm:ss)	Water Level (m BGL)	Ht (m)	Ht/Ho (-)
00:00	1.41	0.43	1.000
00:30	1.20	0.22	0.512
01:00	1.14	0.16	0.372
01:30	1.11	0.13	0.302
02:00	1.09	0.11	0.256
02:30	1.08	0.10	0.233
03:00	1.08	0.10	0.233
04:00	1.07	0.09	0.209
05:00	1.06	0.08	0.186
06:00	1.06	0.08	0.186
07:00	1.06	0.08	0.186
08:00	1.05	0.07	0.163
09:00	1.05	0.07	0.163
10:00	1.05	0.07	0.163
12:00	1.05	0.07	0.163
14:00	1.05	0.07	0.163
16:00	1.04	0.06	0.140
18:00	1.04	0.06	0.140
20:00	1.04	0.06	0.140
25:00	1.03	0.05	0.116
30:00	1.03	0.05	0.116
40:00	1.03	0.05	0.116
50:00	1.03	0.05	0.116
60:00	1.03	0.05	0.116

Geology
silty SAND

4.38 x 10 $^{-5}$		
Analytical Method		Al-Dhahir and Morgernstern (1969)
Test Type		Rising Head in Standpipe
Depth of Test Section	Top of Test Section (m BGL)	5.00
	Base of Test Section (m BGL)	8.00
Measurement Point (MP, m BGL)		Top of Standpipe 0.67
Measured Standing Water Level (m BGL)		0.98
Water Level (m BGL)	Start of Test	1.41
	End of Test	1.03
Internal Diameter of Casing (mm)		50
Hole Diameter (mm)		200
Response Zone Length (m)		3.00
Cross Sectional Area of Test Section (m²)		0.0314
Shape Factor (Al-Dhahir and Morgernstern, 1969)		6.29

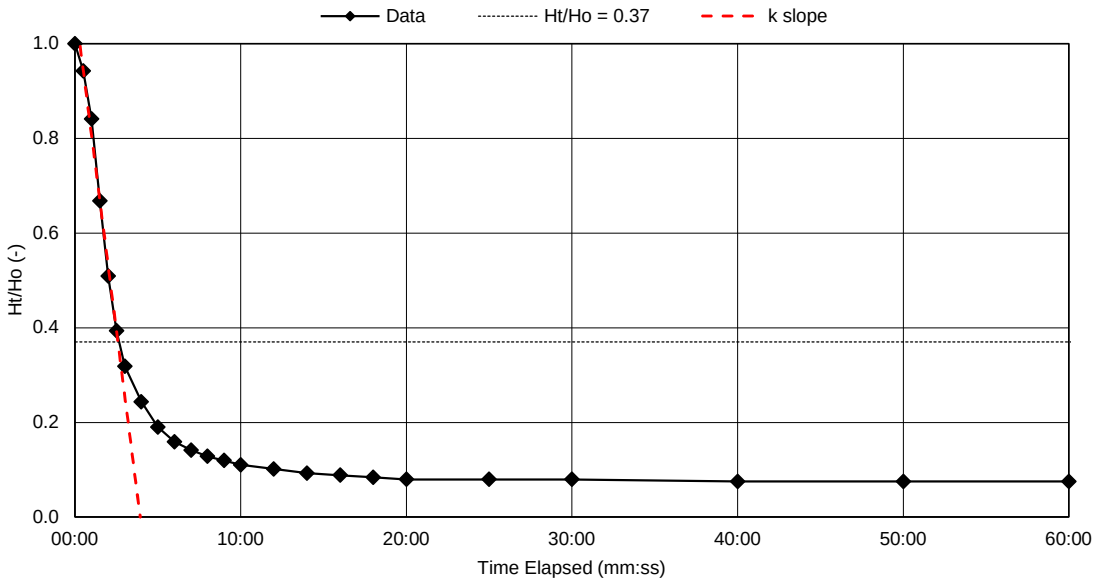
Remarks

Notes
- Equations used to process data defined on 'Notes on Permeability Testing Methods'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power			Location ID
	Client	SSE Generation Limited (SSE)			**MS-BH17**
	Fugro Reference	F212561			
	Coordinates (m)	E482013.34 N411922.17	Elevation (m Datum)	0.91	Sheet 1 of 1
	Hole Type	CP+RC			Status: Final

Variable Head Permeability Test Record

Test Date	11/8/2022	Test No.	1	Test Depth (m)	3.00 to 6.00



Coefficient of Permeability (k) (m/s)

4.40 x 10 $^{-5}$

Time Elapsed (mm:ss)	Water Level (m BGL)	Ht (m)	Ht/Ho (-)
00:00	3.47	2.26	1.000
00:30	3.34	2.13	0.942
01:00	3.11	1.90	0.841
01:30	2.72	1.51	0.668
02:00	2.36	1.15	0.509
02:30	2.10	0.89	0.394
03:00	1.93	0.72	0.319
04:00	1.76	0.55	0.243
05:00	1.64	0.43	0.190
06:00	1.57	0.36	0.159
07:00	1.53	0.32	0.142
08:00	1.50	0.29	0.128
09:00	1.48	0.27	0.119
10:00	1.46	0.25	0.111
12:00	1.44	0.23	0.102
14:00	1.42	0.21	0.093
16:00	1.41	0.20	0.088
18:00	1.40	0.19	0.084
20:00	1.39	0.18	0.080
25:00	1.39	0.18	0.080
30:00	1.39	0.18	0.080
40:00	1.38	0.17	0.075
50:00	1.38	0.17	0.075
60:00	1.38	0.17	0.075

Analytical Method		Al-Dhahir and Morgernstern (1969)
Test Type		Rising Head in Standpipe
Depth of Test Section	Top of Test Section (m BGL)	3.00
	Base of Test Section (m BGL)	6.00
Measurement Point (MP, m BGL)		Top of Standpipe 0.76
Assumed Standing Water Level (m BGL)		1.21
Water Level (m BGL)	Start of Test	3.47
	End of Test	1.38
Internal Diameter of Casing (mm)		50
Hole Diameter (mm)		200
Response Zone Length (m)		3.00
Cross Sectional Area of Test Section (m²)		0.0314
Shape Factor (Al-Dhahir and Morgernstern, 1969)		6.29

Geology
silty SAND

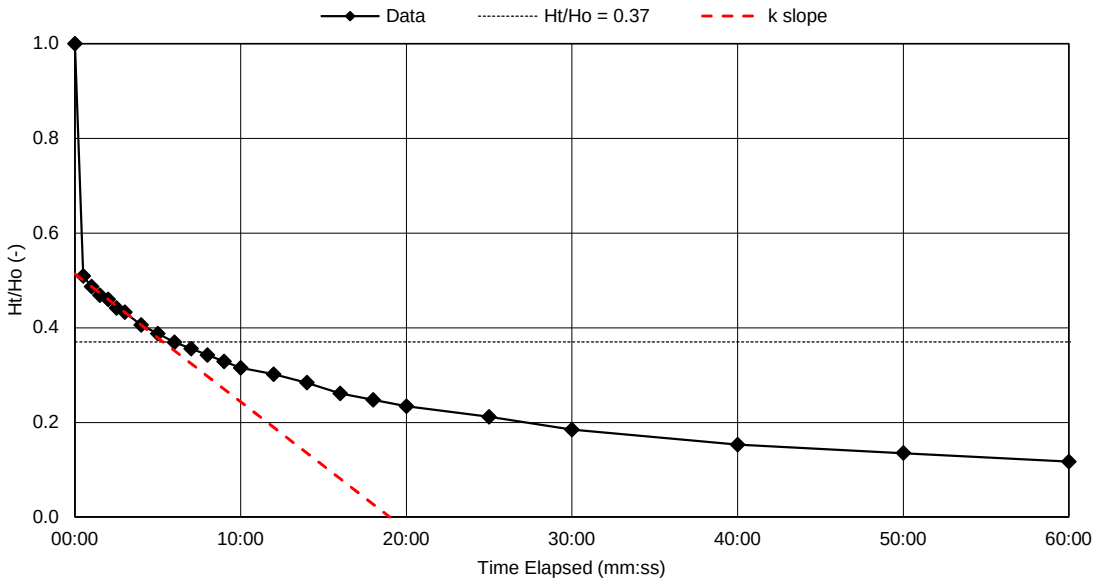
Remarks

Notes
- Equations used to process data defined on 'Notes on Permeability Testing Methods'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power			Location ID **BH101**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481664.45 N412164.10	Elevation (m Datum)	18.01	Sheet 1 of 1
	Hole Type	CP			Status: Final

Variable Head Permeability Test Record

Test Date	10/27/2022	Test No.	1	Test Depth (m)	18.00 to 21.00



Coefficient of Permeability (k) (m/s)

7.39 x 10 $^{-6}$

Time Elapsed (mm:ss)	Water Level (m BGL)	Ht (m)	Ht/Ho (-)
00:00	18.48	2.22	1.000
00:30	17.39	1.13	0.509
01:00	17.34	1.08	0.486
01:30	17.30	1.04	0.468
02:00	17.28	1.02	0.459
02:30	17.24	0.98	0.441
03:00	17.22	0.96	0.432
04:00	17.16	0.90	0.405
05:00	17.12	0.86	0.387
06:00	17.08	0.82	0.369
07:00	17.05	0.79	0.356
08:00	17.02	0.76	0.342
09:00	16.99	0.73	0.329
10:00	16.96	0.70	0.315
12:00	16.93	0.67	0.302
14:00	16.89	0.63	0.284
16:00	16.84	0.58	0.261
18:00	16.81	0.55	0.248
20:00	16.78	0.52	0.234
25:00	16.73	0.47	0.212
30:00	16.67	0.41	0.185
40:00	16.60	0.34	0.153
50:00	16.56	0.30	0.135
60:00	16.52	0.26	0.117

Analytical Method		Al-Dhahir and Morgernstern (1969)
Test Type		Rising Head in Standpipe
Depth of Test Section	Top of Test Section (m BGL)	18.00
	Base of Test Section (m BGL)	21.00
Measurement Point (MP, m BGL)		Top of Standpipe 0.65
Measured Standing Water Level (m BGL)		16.26
Water Level (m BGL)	Start of Test	18.48
	End of Test	16.52
Internal Diameter of Casing (mm)		50
Hole Diameter (mm)		250
Response Zone Length (m)		3.00
Cross Sectional Area of Test Section (m²)		0.0491
Shape Factor (Al-Dhahir and Morgernstern, 1969)		6.73

Geology
silty SAND & sandy CLAY

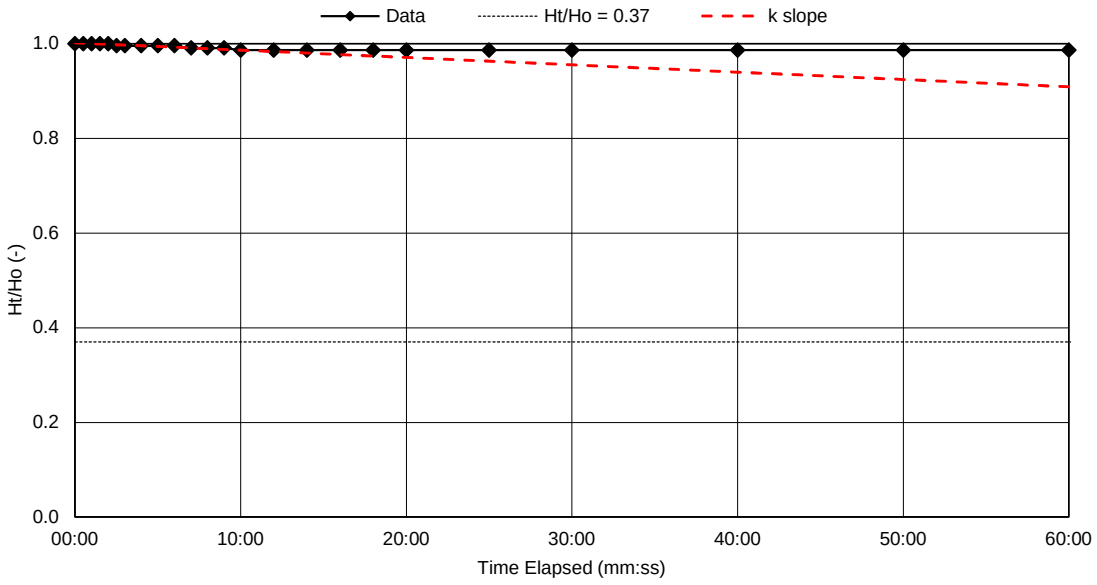
Remarks

Notes
- Equations used to process data defined on 'Notes on Permeability Testing Methods'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power			Location ID **BH102**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481681.12 N412079.64	Elevation (m Datum)	18.75	Sheet 1 of 1
	Hole Type	CP			Status: Final

Variable Head Permeability Test Record

Test Date	10/26/2022	Test No.	1	Test Depth (m)	18.00 to 30.00



Coefficient of Permeability (k) (m/s)

4.54 x 10^{-8}

Time Elapsed (mm:ss)	Water Level (m BGL)	Ht (m)	Ht/Ho (-)
00:00	19.09	2.15	1.000
00:30	19.09	2.15	1.000
01:00	19.09	2.15	1.000
01:30	19.09	2.15	1.000
02:00	19.09	2.15	1.000
02:30	19.08	2.14	0.995
03:00	19.08	2.14	0.995
04:00	19.08	2.14	0.995
05:00	19.08	2.14	0.995
06:00	19.08	2.14	0.995
07:00	19.07	2.13	0.991
08:00	19.07	2.13	0.991
09:00	19.07	2.13	0.991
10:00	19.06	2.12	0.986
12:00	19.06	2.12	0.986
14:00	19.06	2.12	0.986
16:00	19.06	2.12	0.986
18:00	19.06	2.12	0.986
20:00	19.06	2.12	0.986
25:00	19.06	2.12	0.986
30:00	19.06	2.12	0.986
40:00	19.06	2.12	0.986
50:00	19.06	2.12	0.986
60:00	19.06	2.12	0.986

Analytical Method		Al-Dhahir and Morgernstern (1969)
Test Type		Rising Head in Standpipe
Depth of Test Section	Top of Test Section (m BGL)	18.00
	Base of Test Section (m BGL)	30.00
Measurement Point (MP, m BGL)		Top of Standpipe: 0.72
Measured Standing Water Level (m BGL)		16.94
Water Level (m BGL)	Start of Test	19.09
	End of Test	19.06
Internal Diameter of Casing (mm)		50
Hole Diameter (mm)		200
Response Zone Length (m)		12.00
Cross Sectional Area of Test Section (m²)		0.0314
Shape Factor (Al-Dhahir and Morgernstern, 1969)		18.00

Geology
silty SAND

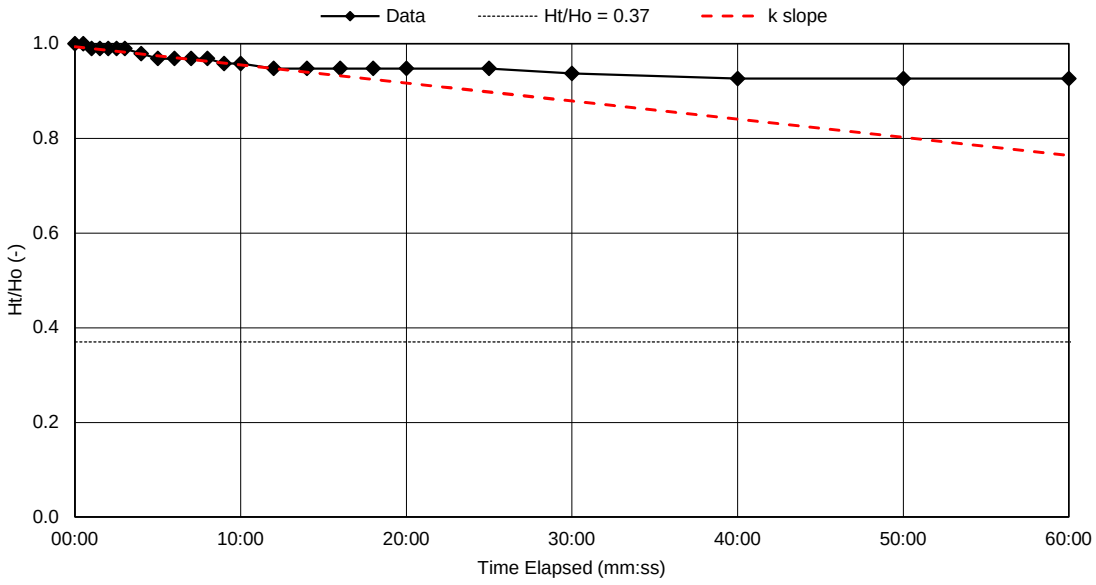
Remarks

Notes
- Equations used to process data defined on 'Notes on Permeability Testing Methods'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power			Location ID **BH103**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481682.62 N411936.78	Elevation (m Datum)	19.08	Sheet 1 of 1
	Hole Type	CP			Status: Final

Variable Head Permeability Test Record

Test Date	10/26/2022	Test No.	1	Test Depth (m)	18.00 to 30.00



Coefficient of Permeability (k) (m/s): 1.15 x 10^{-7}

Time Elapsed (mm:ss)	Water Level (m BGL)	Ht (m)	Ht/Ho (-)
00:00	18.86	0.95	1.000
00:30	18.86	0.95	1.000
01:00	18.85	0.94	0.989
01:30	18.85	0.94	0.989
02:00	18.85	0.94	0.989
02:30	18.85	0.94	0.989
03:00	18.85	0.94	0.989
04:00	18.84	0.93	0.979
05:00	18.83	0.92	0.968
06:00	18.83	0.92	0.968
07:00	18.83	0.92	0.968
08:00	18.83	0.92	0.968
09:00	18.82	0.91	0.958
10:00	18.82	0.91	0.958
12:00	18.81	0.90	0.947
14:00	18.81	0.90	0.947
16:00	18.81	0.90	0.947
18:00	18.81	0.90	0.947
20:00	18.81	0.90	0.947
25:00	18.81	0.90	0.947
30:00	18.80	0.89	0.937
40:00	18.79	0.88	0.926
50:00	18.79	0.88	0.926
60:00	18.79	0.88	0.926

Analytical Method		Al-Dhahir and Morgernstern (1969)
Test Type		Rising Head in Standpipe
Depth of Test Section	Top of Test Section (m BGL)	18.00
	Base of Test Section (m BGL)	30.00
Measurement Point (MP, m BGL)		Top of Standpipe: 0.73
Measured Standing Water Level (m BGL)		17.91
Water Level (m BGL)	Start of Test	18.86
	End of Test	18.79
Internal Diameter of Casing (mm)		50
Hole Diameter (mm)		200
Response Zone Length (m)		12.00
Cross Sectional Area of Test Section (m²)		0.0314
Shape Factor (Al-Dhahir and Morgernstern, 1969)		18.00

Geology
silty SAND

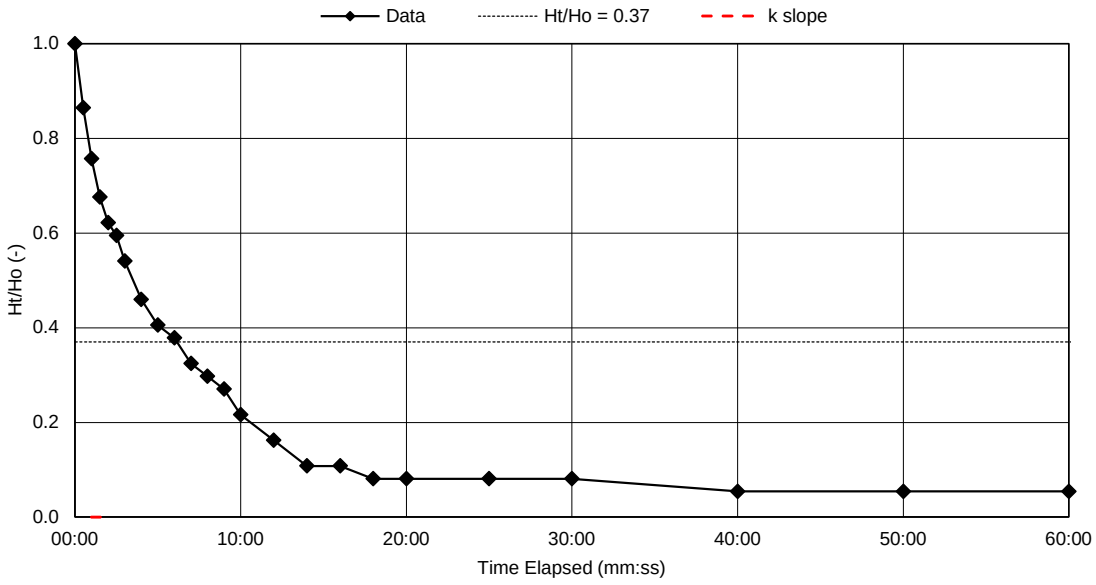
Remarks
Hole diameter is 250mm to 19.00m

Notes
- Equations used to process data defined on 'Notes on Permeability Testing Methods'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power			Location ID **BH104**
	Client	SSE Generation Limited (SSE)			
	Fugro Reference	F212561			
	Coordinates (m)	E481281.83 N411790.02	Elevation (m Datum)	6.52	Sheet 1 of 1
	Hole Type	CP			Status: Final

Variable Head Permeability Test Record

Test Date	10/27/2022	Test No.	1	Test Depth (m)	4.50 to 9.00



Coefficient of Permeability (k) (m/s)

#DIV/0! #### #DIV/0!

Time Elapsed (mm:ss)	Water Level (m BGL)	Ht (m)	Ht/Ho (-)
00:00	6.94	0.37	1.000
00:30	6.89	0.32	0.865
01:00	6.85	0.28	0.757
01:30	6.82	0.25	0.676
02:00	6.80	0.23	0.622
02:30	6.79	0.22	0.595
03:00	6.77	0.20	0.541
04:00	6.74	0.17	0.459
05:00	6.72	0.15	0.405
06:00	6.71	0.14	0.378
07:00	6.69	0.12	0.324
08:00	6.68	0.11	0.297
09:00	6.67	0.10	0.270
10:00	6.65	0.08	0.216
12:00	6.63	0.06	0.162
14:00	6.61	0.04	0.108
16:00	6.61	0.04	0.108
18:00	6.60	0.03	0.081
20:00	6.60	0.03	0.081
25:00	6.60	0.03	0.081
30:00	6.60	0.03	0.081
40:00	6.59	0.02	0.054
50:00	6.59	0.02	0.054
60:00	6.59	0.02	0.054

Analytical Method		Al-Dhahir and Morgernstern (1969)
Test Type		Rising Head in Standpipe
Depth of Test Section	Top of Test Section (m BGL)	4.50
	Base of Test Section (m BGL)	9.00
Measurement Point (MP, m BGL)		Top of Standpipe 0.55
Measured Standing Water Level (m BGL)		6.57
Water Level (m BGL)	Start of Test	6.94
	End of Test	6.59
Internal Diameter of Casing (mm)		50
Hole Diameter (mm)		250
Response Zone Length (m)		4.50
Cross Sectional Area of Test Section (m²)		0.0491
Shape Factor (Al-Dhahir and Morgernstern, 1969)		8.97

Geology
silty SAND

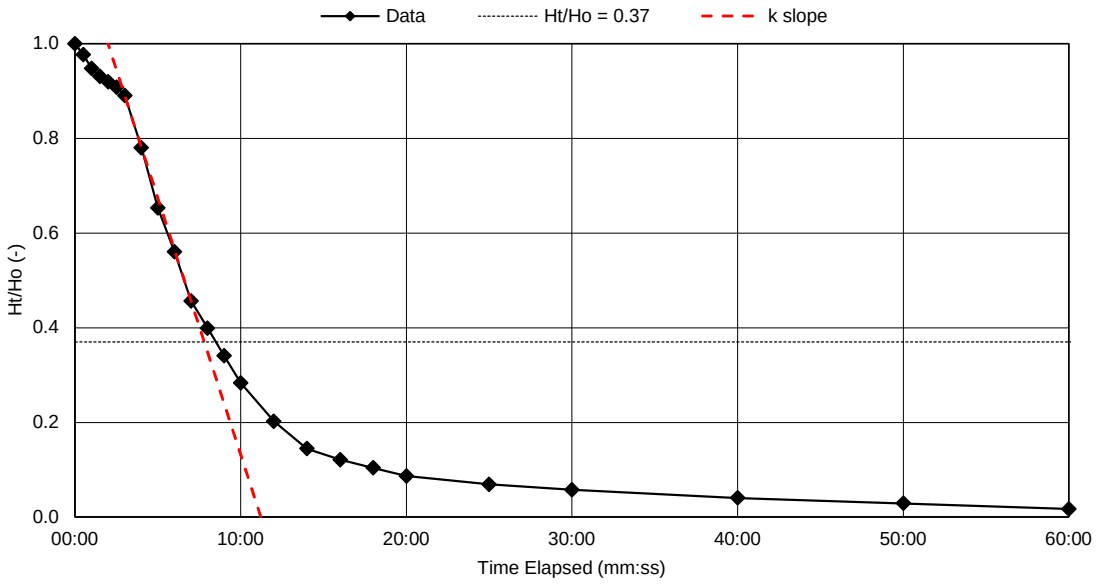
Remarks
Ground water level within response zone.
Data provided for information purposes only.
Hole diameter is 200mm from 7.50m to 9.00m

Notes
- Equations used to process data defined on 'Notes on Permeability Testing Methods'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power			Location ID
	Client	SSE Generation Limited (SSE)			**AR-BH01**
	Fugro Reference	F212561			
	Coordinates (m)	E480333.23 N410052.38	Elevation (m Datum)	2.32	Sheet 1 of 1
	Hole Type	CP+RC			Status: Final

Variable Head Permeability Test Record

Test Date	11/9/2022	Test No.	1	Test Depth (m)	7.00 to 10.00



Coefficient of Permeability (k) (m/s): 1.39 x 10^{-5}

Time Elapsed (mm:ss)	Water Level (m BGL)	Ht (m)	Ht/Ho (-)
00:00	3.97	1.73	1.000
00:30	3.93	1.69	0.977
01:00	3.88	1.64	0.948
01:30	3.85	1.61	0.931
02:00	3.83	1.59	0.919
02:30	3.81	1.57	0.908
03:00	3.78	1.54	0.890
04:00	3.59	1.35	0.780
05:00	3.37	1.13	0.653
06:00	3.21	0.97	0.561
07:00	3.03	0.79	0.457
08:00	2.93	0.69	0.399
09:00	2.83	0.59	0.341
10:00	2.73	0.49	0.283
12:00	2.59	0.35	0.202
14:00	2.49	0.25	0.145
16:00	2.45	0.21	0.121
18:00	2.42	0.18	0.104
20:00	2.39	0.15	0.087
25:00	2.36	0.12	0.069
30:00	2.34	0.10	0.058
40:00	2.31	0.07	0.040
50:00	2.29	0.05	0.029
60:00	2.27	0.03	0.017

Analytical Method		Al-Dhahir and Morgernstern (1969)
Test Type		Rising Head in Standpipe
Depth of Test Section	Top of Test Section (m BGL)	7.00
	Base of Test Section (m BGL)	10.00
Measurement Point (MP, m BGL)		Top of Standpipe 0.53
Measured Standing Water Level (m BGL)		2.24
Water Level (m BGL)	Start of Test	3.97
	End of Test	2.27
Internal Diameter of Casing (mm)		50
Hole Diameter (mm)		200
Response Zone Length (m)		3.00
Cross Sectional Area of Test Section (m²)		0.0314
Shape Factor (Al-Dhahir and Morgernstern, 1969)		6.29

Geology
slightly gravelly silty SAND

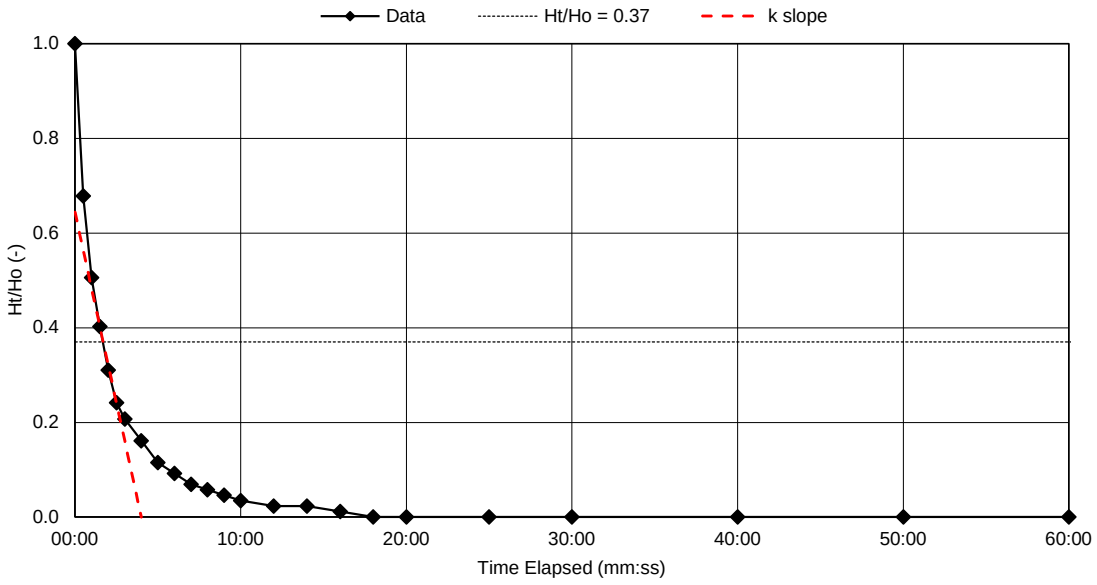
Remarks

Notes
- Equations used to process data defined on 'Notes on Permeability Testing Methods'

FUGRO	Contract Name	Keadby 3 Low Carbon Gas Power			Location ID
	Client	SSE Generation Limited (SSE)			**HR-BH01**
	Fugro Reference	F212561			
	Coordinates (m)	E482965.30 N411776.58	Elevation (m Datum)	1.50	Sheet 1 of 1
	Hole Type	CP			Status: Final

Variable Head Permeability Test Record

Test Date	11/9/2022	Test No.	1	Test Depth (m)	2.00 to 5.00



Coefficient of Permeability (k) (m/s)

Time Elapsed (mm:ss)	Water Level (m BGL)	Ht (m)	Ht/Ho (-)
00:00	2.47	0.87	1.000
00:30	2.19	0.59	0.678
01:00	2.04	0.44	0.506
01:30	1.95	0.35	0.402
02:00	1.87	0.27	0.310
02:30	1.81	0.21	0.241
03:00	1.78	0.18	0.207
04:00	1.74	0.14	0.161
05:00	1.70	0.10	0.115
06:00	1.68	0.08	0.092
07:00	1.66	0.06	0.069
08:00	1.65	0.05	0.057
09:00	1.64	0.04	0.046
10:00	1.63	0.03	0.034
12:00	1.62	0.02	0.023
14:00	1.62	0.02	0.023
16:00	1.61	0.01	0.011
18:00	1.60	0.00	0.000
20:00	1.60	0.00	0.000
25:00	1.60	0.00	0.000
30:00	1.60	0.00	0.000
40:00	1.60	0.00	0.000
50:00	1.60	0.00	0.000
60:00	1.60	0.00	0.000

Geology
silty SAND

4.25 x 10 $^{-5}$		
Analytical Method		Al-Dhahir and Morgernstern (1969)
Test Type		Rising Head in Standpipe
Depth of Test Section	Top of Test Section (m BGL)	2.00
	Base of Test Section (m BGL)	5.00
Measurement Point (MP, m BGL)		Top of Standpipe 0.65
Measured Standing Water Level (m BGL)		1.60
Water Level (m BGL)	Start of Test	2.47
	End of Test	1.60
Internal Diameter of Casing (mm)		50
Hole Diameter (mm)		200
Response Zone Length (m)		3.00
Cross Sectional Area of Test Section (m²)		0.0314
Shape Factor (Al-Dhahir and Morgernstern, 1969)		6.29

Remarks

Notes
- Equations used to process data defined on 'Notes on Permeability Testing Methods'

Appendix G

Cone Penetration Tests

Appendix G Contents

G.1 Guidance Notes
G.1.1 Guidance Notes on Cone Penetration Tests
G.2 Schedule of Cone Penetration Tests
G.3 Accreditation and Calibration Reports
G.4 Cone Penetration Test Results

G.1 Guidance Notes

Title	Reference
Guidance Notes on Cone Penetration Tests	G.1.1
g. Piezocone Penetrometer	G.1.1.1
h. Operation and Calibration of the Cone	G.1.1.2
i. Presentation of Results	G.1.1.3
j. Introduction to Basic Interpretation of Cone Penetration Tests	G.1.1.4
k. Seismic Cone Penetration Testing	G.1.1.5
l. Calculations Used in CPT Derived Engineering Parameters	G.1.1.6
m. Abbreviations and Symbols	G.1.1.7
n. Fugro CPT Rig Types	G.1.1.8

G.1.1 Guidance Notes on Cone Penetration Tests

G.1.1.1 Piezocone Penetrometer

Piezocone penetration tests (CPTU) use an electrical measuring instrument to record in situ readings of cone resistance (q_c), sleeve friction (f_s) and pore-water pressure (PWP). The piezocone measures the transient pore pressure generated during penetration, which can be indicative and may be significant for some low permeability soils. A piezocone can also carry out pore-water pressure (u) dissipation testing at required intervals if penetration is temporarily ceased. These measurements then permit the estimation of the in situ coefficient of horizontal consolidation (c_h).

Commonly used piezocone penetrometers have 1,000 mm^2 and 1,500 mm^2 cone base areas and a single filter location. The filter location is either in the face of the cone or in the cylindrical extension above the base of the cone (i.e., cone shoulder). The cone and the friction sleeve consist of high-quality steel that is resistant to corrosion and abrasion. The filter consists of a porous plastic element. The sensors for the cone and friction sleeve comprise load cell type measuring transducers arranged in series. This arrangement permits a strong and stiff penetrometer design.

Penetrometer stiffness provides resistance to bending and relative movements of the various components, and hence increases the in situ accuracy. The pore pressure sensor is of the piezo-resistive type, requiring a very small volume change for the specified measuring range. The configuration of the filter, the internal connections and the pressure sensor facilitate practical and efficient saturation. Figure F.2 presents the layout of a typical piezocone with the filters located in the face (u_1) and at the cone shoulder (u_2).

Figure G.1: Piezocone Instrument with the Filter Locations

G.1.1.2 Operation and Calibration of the Cone

The cone end resistance and local side friction are registered by calibrated load cells in the cone. The cone penetrometer load cells and pressure transducers are regularly calibrated against load and pressure transducers which are themselves calibrated by an independent authority. The cone calibration certificates for the cones used at this site are presented in Appendix 0.

The pore-water pressure is recorded by means of a calibrated pressure transducer located in the piezocone tip. To ensure pore-water pressure measurements are not affected by the presence of air in the measuring transducer, a de-airing procedure is carried out prior to each test. This consists of injecting silicon oil (or a suitable miscible and viscous fluid) into the measuring parts of the cone and by using a pore pressure filter which has been saturated in silicon oil under vacuum. As a final precaution, a rubber sheath is placed over the filter to prevent the risk of de-saturation before the cone enters the soil.

The rate of penetration during all tests is kept constant at approximately 20 mm/s. The signals from the measuring devices are transmitted by an umbilical cable through hollow push rods to a laptop computer. During the test, the computer displays instantaneous and continuous graphical records on its screen of cone end resistance, local side friction, and pore-water pressure, and these are plotted out after the test. The data are recorded at 20 mm depth intervals and this facility provides for automatic computer-controlled processing and plotting of cone end resistance, local side friction and friction ratio with pore-water pressure.

G.1.1.3 Presentation of Results

Typically for piezocone results two plots as described below are presented:

- The first plot (Figure F.3) contains the basic data obtained during the test, i.e. cone end resistance, cone sleeve friction, the friction ratio and the pore-water pressure.
- The second plot (Figure F.4) contains parameters derived from the basic data, i.e. net cone resistance (q_n), excess pore-water pressure ratio (B_q) and friction ratio (R_f). The second plot also includes the interpretation of the estimated soil type. The estimated soil type can be either automatically produced by our in-house software or manually assessed.

Net cone resistance (q_n) is defined as total cone resistance (q_t) minus the total overburden pressure relative to ground level (σ_{vo}). Total cone resistance (q_t) is the measured cone resistance corrected for the effects of cone shape and pore-water pressure distribution around the cone tip. The formulae used to calculate q_t and q_n are given below:

$$q_t = q_c + (1 - \alpha) \cdot (u_0 + \beta \Delta u)$$

Equation G.1

and

$$q_n = q_t - \sigma_{v0}$$

Equation G.2

Excess pore-water pressure ratio (Bq) is the ratio of the measured excess pore-water pressure to the net cone resistance defined as:

$$B_q = \left(\frac{\Delta u}{q_n}\right)$$

Equation G.3

Where:

B_q = the excess pore-water pressure ratio

Δu = the change in pore-water pressure

q_n = the net cone resistance [kPa]

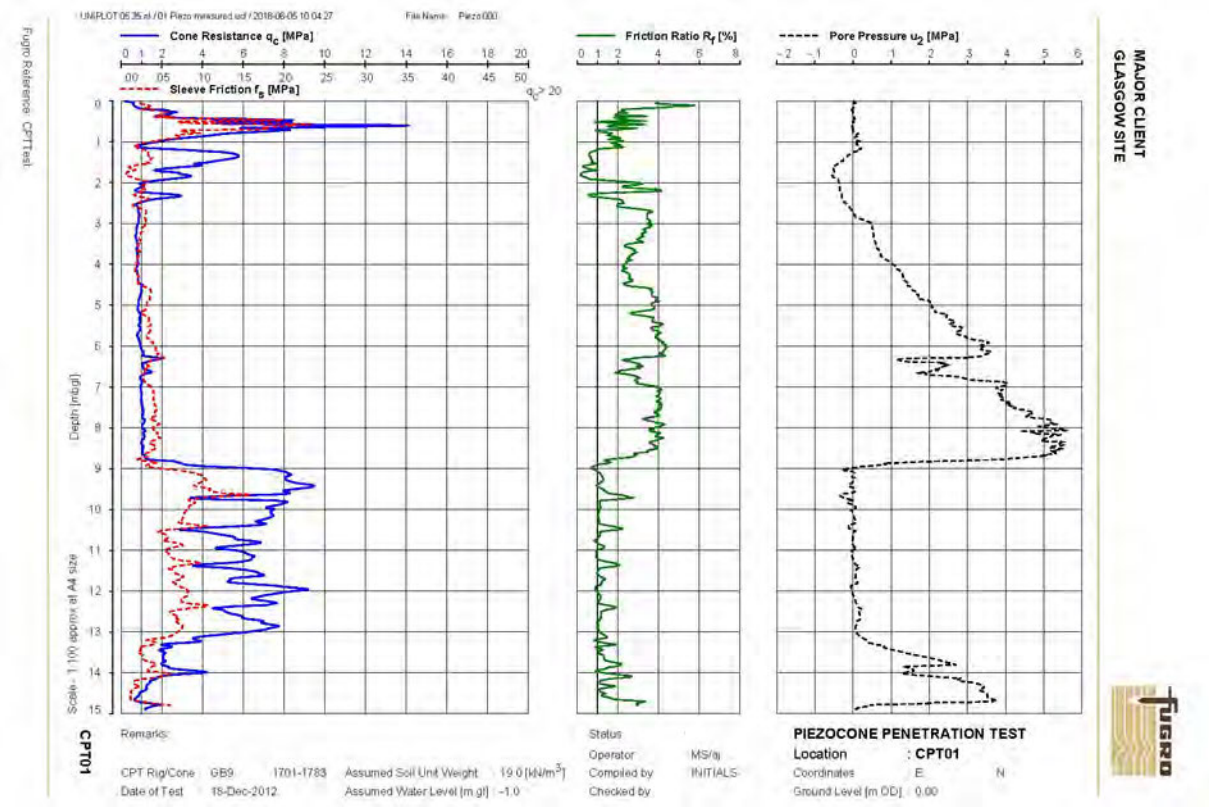


Figure G.2: Typical Piezocone Test Plot – Measured Data

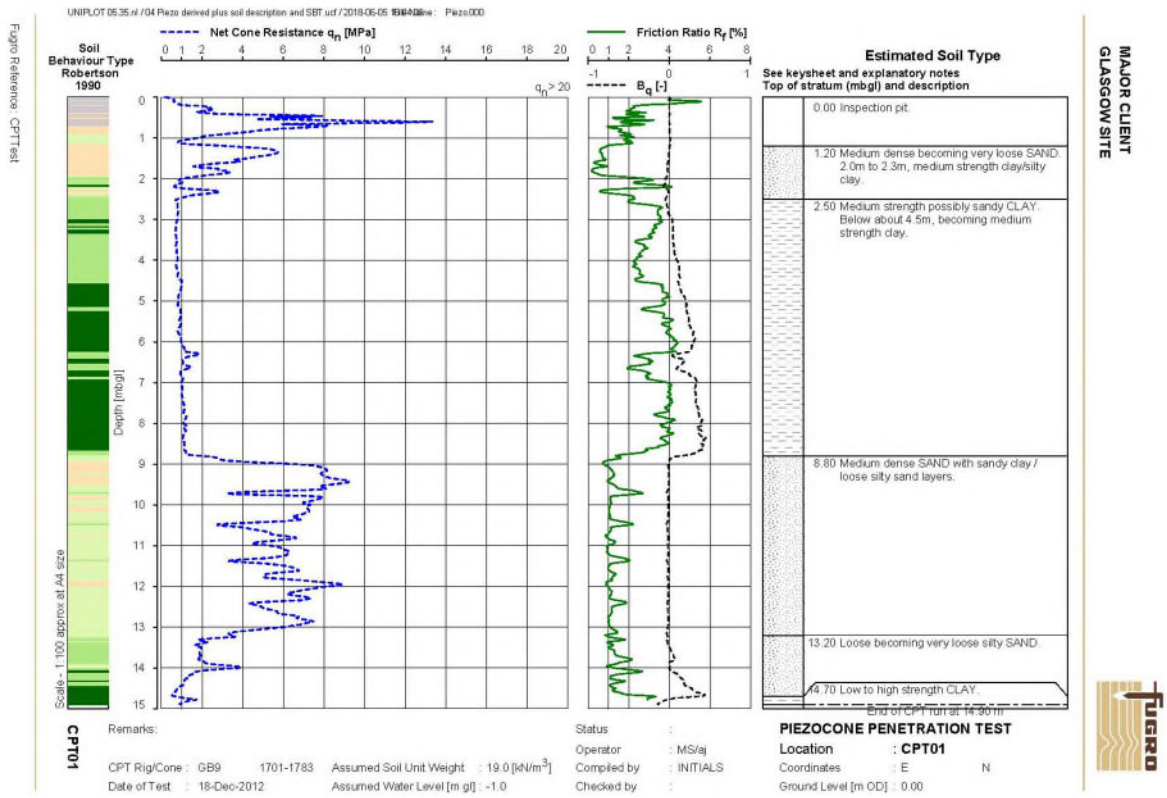


Figure G.3: Typical Piezocone Test Plot – Derived Data with Estimated Soil Type

G.1.1.4 Introduction to Basic Interpretation of Cone Penetration Tests

Automatic Interpretation of the Soil Behaviour Type (SBT):

Robertson et al. (2015) devised a Soil Behaviour Type (SBT) chart in 1986 relating cone resistance (q_c) and friction ratio (R_f) to make reasonable soil type predictions. In 1990 a revised chart was proposed using normalised cone resistance (Q_t) and normalised friction ratio (F_r), which takes into consideration in situ vertical stress effects; requiring knowledge of water depth, pore-water pressure and soil density.

In 2009, the normalised chart was revised further to consider increasing density, OCR, age and cementation for granular soils and stress history and soil sensitivity in cohesive soils. This chart plots normalised cone resistance (Q_{tn}) adjusted for a stress exponent (n) which varies with soil type and stress level. In 2010, Robertson revised the non-normalised (1986) chart to reduce the number of zones to match those in the normalised chart.

The 2009 and 2010 SBT charts and the colour schemes used to identify the zones are given in Figure F.5 and Table F.4, respectively.

The normalised cone resistance and friction ratio can be combined into one SBT Index (I_c), devised by Robertson.

$$I_c = \sqrt{[(3.47 - \log Q_{tn})^2 + (1.22 + \log F_r)^2]}$$

Equation G.4

Where:

I_c = the normalised Soil Behaviour Type Index

Q_{tn} = the normalised cone resistance (dimensionless)

F_r = the normalised friction ratio

For non-normalised data the SBT Index (I_{SBT}) the following equation should be used:

$$I_{SBT} = \sqrt{\left[(3.47 - log(q_c/P_a))^2 + \left(log\, R_f + 1.22\right)^2\right]}$$

Equation G.5

Where:

I_{SBT} = the non-normalised Soil Behaviour Type index

q_c = the cone resistance [kPa]

P_a = the atmospheric pressure, assumed to be 100 kPa

R_f = the friction ratio [%]

The corresponding SBT Index I_c and I_{SBT} are presented in Table F.4 except where not applicable (SBT zones 1, 8 and 9).

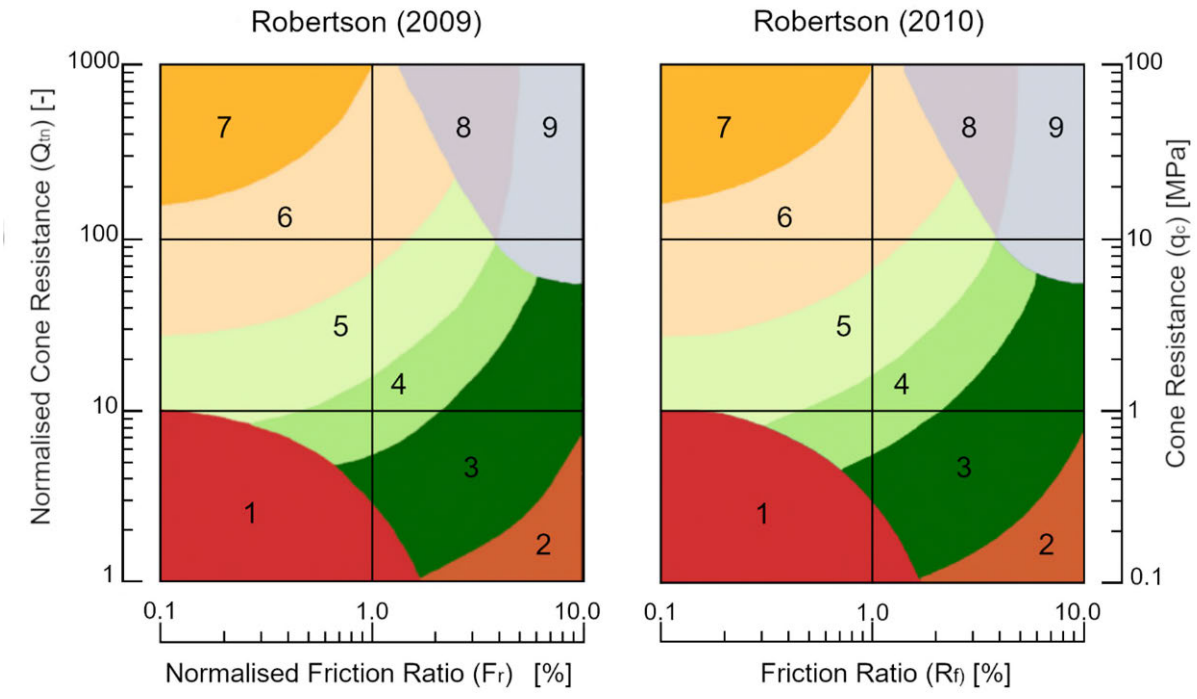


Figure G.4: Robertson SBT Charts for Normalised (2009) and Non-normalised (2010) CPT Data

Table G.1: SBT Zones for Soil Classification with Soil Behaviour Index (I_c)

Soil Behaviour Type	SBT Zone	SBT Index I_c
Sensitive, fine grained	1	N/A
Organic soils – clay	2	> 3.6
Clays – silty clay to clay	3	2.95 – 3.60
Silt mixtures – clayey silt to silty clay	4	2.60 – 2.95
Sand mixtures – silty sand to sandy silt	5	2.05 – 2.60
Sands – clean sand to silty sand	6	1.31 – 2.05
Gravelly sand to dense sand	7	< 1.31
Very stiff sand to clayey sand *	8	N/A
Very stiff, fine grained *	9	N/A

Notes:
* - Heavily overconsolidated or cemented
N/A – Soil Behaviour Type Index not applicable to SBT Zones 1, 8 and 9

Manual Interpretation of Estimated Soil Behaviour Type:

Where a manual assessment of the estimated soil behaviour type has been made, a comparison of CPT data and the SBT has been made alongside appropriate geotechnical borehole records.

A typical soil layer will be described with a strength or density, the principal soil type and details of any interlayers or interbeds that may differ from the main soil layer description.

The strength terms and densities used in the interpretations are based on the cone resistance (q_c) for a friction cone, or net cone resistance (q_n) for a piezocone. The undrained strength terms used are presented in Table F.5 and density index terms are presented in Table F.6.

Table G.2: Undrained Shear Strength Terms

Strength Term	Undrained Shear Strength Value * [kPa]	Cone Resistance or Net Cone Resistance Value † [MPa]
Extremely Low	< 10	< 0.2
Very Low	20	0.4
Low	40	0.7
Medium	75	1.3
High	150	2.4
Very High	300	4.5
Extremely High	> 300	> 4.5

Notes:
* - Taken from Table 6 in BS EN ISO 14688-2:2018
† - Using the calculation of Rad and Lunne (1988) with Nk values ranging from 20 to 15 (increasing in strength)

Table G.3: Density Index Terms relating to Cone Resistance, Angle of Shearing and Equivalent SPT N_{60}-values

Density Index Term	Cone Resistance (q_c) [MPa]	Density Index Value [%] †	Effective Angle of Shearing Resistance ϕ' [degrees] related to q_c value *	SPT N_{60}-value Normalised related to I_D term and value †
Very Loose	< 2.5	0 – 15	29 – 32	< 3
Loose	2.5 – 5	15 – 35	32 – 35	3 – 8
Medium Dense	5 – 10	35 – 65	35 – 37	8 – 25
Dense	10 – 20	65 – 85	37 – 40	25 – 42
Very Dense	> 20	85 – 100	40 – 42	42 – 58

Notes:
* Taken from Table D.1 in EN 1997-2:2007 Annex D
† - Taken from Table F.1 in EN 1997-2:2007 Annex F

The interpretations are determined by the general behaviour of the soil in relation to the cone. In all cases a site-specific correlation between CPT results and soil type should be used with in situ inspection and laboratory testing of the soils to confirm and prove the correlations and interpretations.

The results of the CPT should not be considered entirely reliable in all soil types. Sensitive soils with a friction ratio less than about 3 % and a cone resistance of less than about 1 MPa, and organic soils with a friction ratio of greater than about 6 % may be affected by pore pressures around the tip and against the friction sleeve. These effects may be reduced by measuring pore pressures using the piezocone. It should be recognised that in some conditions the piezocone results may be unreliable due to de-saturation. Over-consolidated clay soils or weathered weak rocks as well as consolidated or cemented clayey sands should also be treated with caution. The CPT interpretations are for normally occurring soil types. They will not apply to non-siliceous soils, such as calcareous or carbonaceous materials and they will be affected by semi saturated or gas containing materials. The SBT system is not a soil classification system and the zone boundaries are gradational. Independent studies have shown the normalised SBT system typically to be at least 80% reliable when compared with samples.

Caution should be exercised when using CPT results to derive parameters for design purposes. Such determinations test only a small volume of soil and the permeability value of the soil mass may be significantly different from the values derived from these tests.

The CPT friction cones used by Fugro are type TE1 and the piezocones are type TE2. The friction cones may be used for Application Classes 2 to 4 and the piezocones for applications 1 to 3. The perceived applicability of the CPT and CPTU for direct design requirements and are presented in Table G.4 (Robertson, 2015).

Table G.4: Perceived Applicability of CPT for Deriving Direct Design Requirements

Type of Soil	Pile Design	Bearing Capacity	Settlement	Compaction Control	Liquefaction
Sand	1 – 2	1 – 2	2 – 3	1 – 2	1 – 2
Clay	1 – 2	1 – 2	2 – 3	3 – 4	1 – 2
Intermediate soils	1 – 2	2 – 3	2 – 4	2 – 3	1– 2

Notes:
Applicability / Reliability Rating:
1 = High;
2 = High to Moderate;
3 = Moderate;
4 = Moderate to Low;
5 = Low

For the calculation of the various parameters, assumed values of the water level; the coefficient of earth pressure (K_0) and the soil unit weight are used as specified in the main text of this report and on the plots themselves. The estimated soil descriptions have not been amended for the specific results of any parameter classifications that may have been undertaken.

The perceived applicability of the CPT and CPTU for deriving soil parameters are presented in Table G.5 (Robertson, 2015).

Table G.5: Perceived Applicability of CPT for Deriving Soil Parameters

	Soil Type Applicability/Reliability Rating	
	Sand	Clay
Density Index [I_D]	2 – 3	NA
In Situ Stress Ratio [K_0]	5	2
Over Consolidation Ratio [OCR]	5	1
Sensitivity [Sens]	NA	2
Undrained Shear Strength [c_u]	NA	1 – 2
Friction Angle [ϕ']	2 – 3	4
Young's and Shear Moduli [E , G $*$]	2 – 3	2 – 4
Compressibility [M]	2 – 3	2 – 3
Small Strain Shear Moduli [G_0*]	2 – 3	2 – 4
Coefficient of Consolidation [c_h]	3 – 4	2 – 3
Permeability [k_h]	3 – 4	2 – 3

Notes:
Applicability/Reliability Rating:
1 = High;
2 = High to Moderate;
3 = Moderate;
4 = Moderate to Low;
5 = Low;
NA = Not applicable.
* - Improves with CPTU data

G.1.1.5 Seismic Cone Penetration Testing

The Seismic Cone Penetration Tests employed geophysical methods and therefore most of the findings presented here are the result of the measurement and interpretation of acoustic signals. As such any results derived from the geophysical investigation should be taken in the context of and in reference to the complete ground investigation. Reasonable skill and care was taken to ensure that the results are accurate and reliable, including reference where appropriate to published data from this and/or other sites. However, as with other indirect methods there is a possibility of localised inconsistencies and inaccuracies within the results.

The principle of seismic techniques is that when a stress is applied to an elastic medium, conditions are created for the associated strains to propagate as compressive or transverse elastic waves in that material. By initiating an elastic wave at a point and measuring the time to its arrival at a second point, it is possible to determine subsurface seismic velocity variations.

Where ground conditions allow, one or two triaxial geophones can be mounted to a CPT cone penetrometer and pushed into the ground to allow direct measurement of seismic signals. Shear (S-) wave seismic energy is generated at the surface at a fixed distance from the cone penetrometer. By varying the location (depth) of the receiver geophone(s), and measuring the arrival times, it is then possible to estimate a vertical S-wave velocity profile of the subsurface.

The surface source comprises a sledge hammer and shear beam. The sledge hammer is used to generate shear–waves (S-waves) in the ground by striking the shear beam horizontally. It should be noted that the S-wave generated during this investigation is horizontally polarised and vertically propagating.

It is generally not possible to measure P-waves using the seismic cone technique.

The term 'horizontally polarised' describes a decomlocation of the shear wave motion. A real seismic source will produce both SV and SH motions unless the source polarisation angle (defined as the angle between the SV vector and the resultant of the SV and SH vectors) is zero to produce purely SV motion or $\pi/2$ radians to produce purely SH motion.

In practice, the source produces a component of shear wave energy that can be considered orthogonal to the primary polarisation direction i.e. no seismic source can produce particle motion that is restricted to solely vertical or horizontal planes. In addition, receiving geophones are unlikely to have measurement axes precisely co-planar with the dominant polarisation directions and could measure a degree of off-axis particle motion. However, a combination of source and receiver polarisation can effectively isolate shear energy in the required plane.

Determination of travel time for incident S-wave energy at each depth location can be used to estimate velocity, either as an average from ground surface to depth or as an interval velocity between two fixed offset receivers.

The seismic source is actuated in two opposing directions (left and right) to produce shear wave arrivals with first break particle motions in opposing directions.

Each measurement is acquired by stacking (summing) consecutive shot records to improve the signal to noise ratio. Data are continuously reviewed as acquisition progresses and parameter can be adjusted as appropriate by the operator. Where shot records are considered to have a poor signal to noise ratio, additional records can be acquired to aid interpretation.

Data are saved digitally in SEG2 file format to enable office based post-processing.

SCPT data are then subject to office based post-processing and analysis to identify S-wave energy.

Individual shot records are opened in SeisImager Pickwin software (v3.2.0.1) and an initial assessment of channel/geometry header information is carried out. Shot records from 'left' and 'right' source activations are then overlain so that incident shear wave energy can be identified by characteristic shear wave polarisation.

Figure G.5 below presents an example of a typical overlay of the 'left' and 'right' shot records with the receivers located at 1.5 m BGL. The incident S-wave energy may be recognised by the polarity reversal at approximately 22 ms.

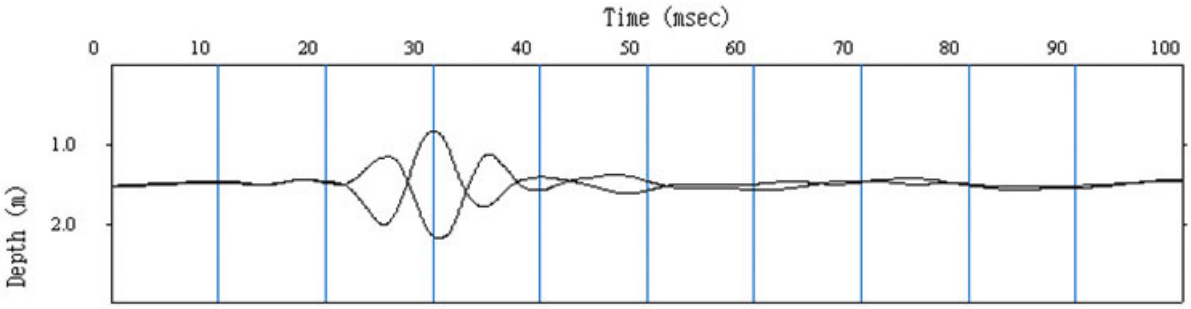


Figure G.5: 'Left' and 'Right' Shot Overlay Showing Polarised Shear Waves

Determination of interval S-wave velocities can be made by 'picking' the arrival time of the incident Swave energy at the upper geophone and comparing with the arrival time from the same source activation as measured on the lower geophone 0.5 m below. A direct raypath length to each record depth may be calculated along with interval distances between successive record depths. Differences between first arrival times may then be used to determine the velocity.

Where first arrivals of S-wave energy cannot be readily identified, it is also feasible to pick peaks or troughs from both wave forms (maintaining a consistent phase pick for each receiver). This procedure can mitigate errors often associated with picking first arrivals where unwanted background noise is present in the data.

This procedure is considered a standard method of determining interval velocities; however, it requires that signal characteristics of both signals are similar (so that the same phase may be picked) from each receiver. Where source signature between receivers is not consistent (due to, for example, changes in ground material, variations in mechanical coupling, equipment performance related issues, etc.) it is not always possible to determine accurate interval velocities in this manner.

Measurements of interval velocities (from low frequency signals typical in seismic cone shot records) over relatively short distances are prone to errors induced as a function of picking resolution (i.e. a time pick error could be a high percentage of the absolute travel time between receivers).

Where signal characteristics are not sufficient to enable confident recognition of incident energy following the protocols outlined above the data are rejected and no velocity is calculated.

Where calculated interval velocities differ significantly from those expected for the local geology or are significantly higher or lower than values calculated in the immediate vicinity, a particular interval velocity may be discounted and not included for presentation.

An indicative time pick error is estimated visually for each trace. A maximum and minimum interval velocity is then calculated based upon these errors. These are plotted as error bars on the graphs of Swave velocity versus depth.

Direct raypath distances are a function of receiver depth and surface source offset. The surface source offset is measured on site which allows calculation of direct raypath distances. Where appropriate direct raypath distances are converted into actual depths relative to ground level and annotated on graphs presented in this report.

Generally, the effect of surface source offset will be greater at shallow test depths and appropriate geometrical corrections as described above are necessary to ensure correct velocity determination.

Dynamic shear modulus can then be calculated using the equation below.

$$G_{vh} = \rho_B . V_{svh}{}^2$$

Equation G.6

Where:

G_{vh} = the Shear Modulus

V_{svh} = Vertically propagating, horizontally polarised shear velocity

ρ_B = the Bulk Density

G.1.1.6 Calculations Used in CPT Derived Engineering Parameters

Density Index

$$I_D(dry) = \frac{1}{0.0296} \cdot ln\left[q_c \Big/ 2.494 \cdot \left[\frac{\sigma'_{v0} \cdot \left[\frac{1 + 2 \cdot K_0}{3} \right]}{100} \right]^{0.46} \right]$$

Equation G.7 Jamiolkowski (2003)

$$I_D(sat) = \left\{ \frac{-1.87 + 2.32 \ln \frac{1000 q_c}{(100\sigma'_{v0})^{0.5}}}{100} + 1 \right\} I_D(dry)$$

Equation G.8 Jamiolkowski (2003)

Where:

$I_D(dry)$ = the estimated density index [%] in the dry condition

$I_D(sat)$ = the estimated density index [%] in the saturated condition

q_c = the measured cone end resistance [MPa]

σ'_{v0} = the effective overburden pressure [kPa]

K_0 = the coefficient of earth pressure

Undrained Shear Strength

$$c_u = (1000 q_n)/N_k \qquad or \qquad c_u = (1000 q_c - \sigma_{v0})/N_c$$

Equation G.9: Rad and Lunne (1988) and Battaglio et al. (1986)

Where:

c_u = the inferred undrained shear strength [kPa]

q_c = the measured cone resistance [MPa]

q_n = the net cone resistance [MPa]

$N_k or\ N_c$ = an empirical factor relating cone resistance to undrained shear strength

σ_{v0} = the total overburden pressure [kPa]

Equivalent SPT N_{60}-value

$$N_{60} = \frac{q_t / P_a}{10^{(1.1268 - 0.2817 I_c)}}$$

Equation G.10: Robertson et al. (2015)

Where: *N*

N_{60} = the equivalent SPT *N*-value for an energy ratio of 60 %

q_t = the corrected cone resistance

P_a = the atmospheric pressure, assumed to be 100 [kPa]

I_c = the soil behaviour type index

Effective Angle of Shearing Resistance

$$\phi' = 17.6 + 11 \log\left(\frac{10 q_t}{(\sigma'_{v0}/100)^{0.5}}\right)$$

Equation G.11: Mayne (2007)

Where:

ϕ' = the effective angle of shearing resistance

q_t = the corrected cone resistance [MPa]

σ'_{v0} = the effective vertical stress [kPa]

Constrained Modulus

$$M = 8.25(q_t - (\sigma_{vo}/1000)\ or\ 8.25 q_n$$

Equation G.12: Kulhawy and Mayne (1990)

Where:

M = the constrained modulus

q_t = the corrected cone end resistance [MPa]

σ_{v0} = the total overburden pressure [kPa]

q_n = the net cone resistance

Volume of Compressibility

$$M = \frac{1}{m_v}$$

Equation G.13

Where:

M = the Constrained Modulus

m_v = the Volume of Compressibility

Small Strain Shear Modulus

For cohesive materials:

$$G_{max} = 0.00287(1000q_c)^{1.335}$$

Equation G.14: Mayne and Rix (1993)

For granular materials:

$$G_{max} = 1.634(1000q_c)^{0.25}.(\sigma'_{v0})^{0.375}$$

Equation G.15: Rix and Stokoe (1991)

Where:

G_{max} = the maximum small strain shear modulus [MPa]

q_c = the measured cone resistance [MPa]

σ'_{v0} = the effective vertical stress [kPa]

Coefficient of Horizontal Consolidation

$$c_h = \frac{T^*(r^2\sqrt{I_r})}{t}$$

Equation G.16: Teh and Houlsby (1991)

Where:

c_h = the coefficient of horizontal consolidation

T^* = the modified time factor

r = the radius of the probe

I_r = the rigidity index, assumed to be 100

t = the actual time

Coefficient of Horizontal Permeability

$$k_h = \frac{c_h.\ \gamma_w}{M}$$

Equation G.17: Lunne et al. (1997)

Where:

k_h = the coefficient of permeability in the horizontal direction

c_h = the coefficient of consolidation in horizontal direction

M = the constrained modulus (calculated as 8.25q_n from Kulhawy and Mayne (1990))

y_w = the unit weight of water assumed at 10kN/m3

G.1.1.7 Abbreviations and Symbols

Table G.6: Abbreviations

Symbols	Term or Definition
AGS	Association of Geotechnical and Geoenvironmental Specialists
CPT	Cone penetration test
CPTU	Cone penetration test with measured pore-water pressure
SCPT	Seismic cone penetration test
ROST	Rapid optical screening tool
LIF	Laser induced fluorescence
MIP	Membrane interface probe
SBT	Soil behaviour type
SPT	Standard penetration test
SPT *N*-value	Number of standard penetration test blows for 300 mm penetration.
SPT N_{60}-value	Equivalent SPT *N*-value for energy ratio of 60%
UXO	Unexploded ordnance
MOSTAP	Monster Steek Apparaat Sample
BH	Borehole
PWP	Pore-water pressure

Table G.7: Symbols

Symbol	Unit	Term or Definition
Standard Cone Measurements and Factors – Friction and Piezocone		
q_c	[MPa]	Measured cone end resistance
q_t	[MPa]	Total cone end resistance corrected for PWP effects
q_n	[MPa]	Net cone end resistance
f_s	[MPa]	Sleeve friction
R_f	[%]	Friction ratio – sleeve friction to cone end resistance ratio
Bq	[-]	Excess pore-water pressure ratio
α	[-]	Cone shaft to face area ratio; 0.58 for 15 cm^2 cones, 0.75 for 10 cm^2 cones
β	[-]	Value of excess PWP cone ratio; 0.8 for face (u_1) and 1.0 for shoulder (u_2)
u_0	[MPa]	Theoretical hydrostatic PWP relative to ground level acting at the cone elevation
u_1	[MPa]	The measured PWP relative to ground level acting at the cone face
u_2	[MPa]	The measured PWP relative to ground level acting at the cone shoulder
Δu	[MPa]	The PWP in excess of hydrostatic pore-water pressure
I_c / I_{SBT}	[-]	Soil behaviour type index (normalised/non-normalised)
Normalised Parameters for Overburden Pressure		
Q_t	[-]	Normalised cone resistance
F_r	[-]	Normalised friction ratio
SBT_N	[-]	Normalised soil behaviour type

Symbol	Unit	Term or Definition
Strength and Various Parameters		
I_D	[%]	Density index – equivalent to relative density D_r
ϕ'	[degrees]	Effective angle of shearing resistance
c_u	[kPa]	Undrained shear strength
N_k *or* N_c		Bearing capacity factors; normally taken as 15 to 20 with values from 4 to > 30
$G_{\max}$	[-]	Maximum small strain shear modulus
E	[-]	Young's modulus
OCR	[-]	Overconsolidation ratio
Pressure		
σ_{v0}	[kPa]	The total overburden pressure relative to ground level
P_a	[kPa]	Atmospheric pressure taken as 100 kPa
σ'_{v0}	[kPa]	The effective overburden pressure
K_0	[-]	The coefficient of earth pressure
Consolidation and Permeability		
c_h	[m^2/s]	Coefficient of consolidation in the horizontal direction
γ_w	[kN/m^3]	Unit weight of water
γ	[kN/m^3]	Unit weight of soil
u_t	[MPa]	Pore-water pressure at time, t
u_i	[MPa]	Initial pore-water pressure at $t = 0$
T^*	[-]	Modified time factor (from Teh and Houlsby)
t	[s]	Actual elapsed time
r	[m]	Radius of probe
Ir	[-]	Rigidity index (assumed to be 100)
k_h	[m/s]	Coefficient of permeability in the horizontal direction
Compression		
m_h	[m^2/MN]	Coefficient of volume compressibility in the horizontal direction
m_v	[m^2/MN]	Coefficient of volume compressibility in the vertical direction
α_M	[-]	factor generally taken between 5 and 7.5 (normally 6)
M	[MPa]	Constrained Modulus

G.1.1.8 Fugro CPT Rig Types

Depending on ground and site conditions different vehicles can be provided to perform cone penetration testing.

- Heavy Truck – The standard six-wheel CPT truck for hard soil sites.
- CPT Track Truck – A truck with a set of crawler tracks located between the front and rear road wheels. Hydraulic lowering of the crawler tracks reduces the ground bearing

pressure making the truck suitable for sites where the near-surface soils exhibit low shear strength.

- Put Down Heavy Crawler – Suitable for soft and normal sites where the surface soils have a low shear strength
- Wide Track Crawler – Suitable for soft and normal sites where the surface soils have a low shear strength
- Mini Crawler – Suitable for use on sites where near-surface soils exhibit low shear strength and areas of limited access such as alongside rail tracks and flood embankments or inside buildings
- Marine / Rail Demountable Rigs – For use in nearshore or offshore environments

The technical specifications of the different vehicles available are provided in Table G.8.

Table G.8: Technical Specifications of Different Truck / Crawler Types

Rig Type: (Truck ID)	Heavy Truck (GB7, GB9, GB17)	Track-Truck (EU-115)	Heavy Crawler (GB2)	Wide Track Crawler (GB5)	Mini Crawler (GB3)
Length	8.00 m	8.70 m	6.10 m	5.30 m	2.40 m
Width:	2.60 m	2.55 m	2.50 m	2.69 m	1.15 m
Height (travelling):	3.60 m	3.70 m	3.05 m	3.25 m	1.50 m
Height (operating):	4.90 m	4.60 m	4.09 m	4.49 m	3.80 m
Weight:	20 tonnes	19 tonnes	19 tonnes	15 tonnes	1 tonne
Force:	Own weight	Own weight	Own weight	Own weight	Anchors
Maximum capacity pressure:	200 kN	200 kN	200 kN	150 kN	150 kN

G.2 Schedule of Cone Penetration Tests

Test ID	Easting [mE]	Northing [mN]	Ground Level [mOD]	Base Depth [m BGL]	Start Date	Cone Number	Cone Area [cm2]	Fugro Rig Reference	Operator	Remarks
AR-CPT01	480334.31	410094.4	1.81	11.6	18-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	MS	
AR-CPT02	480347.81	410189.59	1.3	11.3	18-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	MS	
AR-CPT03	480362.27	410292.25	1.59	10.4	18-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	MS	
AR-CPT04	480389.27	410389.61	1.28	7.4	3-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	MS	
AR-CPT05	480390.06	410490.44	1.54	7.9	30-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
AR-CPT06	480416.83	410587.66	1.4	13	13-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
AR-CPT07	480417.41	410688.22	1.19	13.6	30-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
AR-CPT08	480444.65	410785.62	0.75	13.6	3-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	MS	
AR-CPT09	480444.94	410886.7	1.4	14.1	30-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
AR-CPT10	480470.24	410984.11	1.3	14.3	3-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	MS	
AR-CPT11	480473.42	411084.17	1.39	14.6	30-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
AR-CPT12	480608.39	411147.51	1.35	14.6	5-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
AR-CPT13	480705.86	411171.71	1.26	14.5	5-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
AR-CPT14	480807.18	411170.16	1.3	14.5	5-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
AR-CPT15	480904.21	411183.54	1.22	14.7	6-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
AR-CPT16	481005.77	411194.36	1.28	14.1	5-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
AR-CPT17	481103.2	411220.5	1.28	12.6	17-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	MS	
AR-CPT21	481718.31	411574.56	2.2	1.5	13-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
BR-CPT01	482095.2	411651.8	2.34	1.2	27-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
BR-CPT04	482453.7	411604	2.02	15.9	27-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	

Test ID	Easting [mE]	Northing [mN]	Ground Level [mOD]	Base Depth [m BGL]	Start Date	Cone Number	Cone Area [cm2]	Fugro Rig Reference	Operator	Remarks
BR-CPT05	482516.32	411776.49	1.72	16.1	25-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
BR-CPT06	482557.8	411680.4	1.7	16.3	25-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
BR-CPT07	482462.51	411652.94	1.8	1.1	25-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
HR-CPT01	483329.69	411567	0.93	11.9	6-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
HR-CPT03	483165.5	411587.5	0.32	13.8	7-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
HR-CPT04	483127.94	411569.96	0.62	14	26-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
HR-CPT05	483107.33	411588.29	0.64	16	26-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
HR-CPT06	483109.39	411640.3	0.76	15.6	26-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
HR-CPT07	483010.62	411725.72	1.62	2.1	25-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
HR-CPT08	482965.3	411776.58	1.5	15.8	20-Oct-22	CP15-CF75PB7 1701-3056	15	EU-115	MS,HG	
HR-CPT09	482923.4	411783.2	1.82	15.4	20-Oct-22	CP15-CF75PB7 1701-3056	15	GB17	MS,HG	
HR-CPT10	482848.05	411784.62	1.54	15.7	20-Oct-22	CP15-CF75PB7 1701-3056	15	GB17	MS,HG	
HR-CPT20	482040.79	411650.29	1.42	15.7	24-Oct-22	CP15-CF75PB7 1701-3056	15	EU-115	HG,MS	
MS-CPT01	481841.71	412130.8	0.29	15	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT02	481917.79	412126.69	0.4	16.1	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT03	482030.81	412128.35	0.21	16.4	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT04	482130.74	412122.98	0.52	14.7	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT05	481829.72	412089.45	0.33	15.9	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT06	481918.67	412089.67	0.7	17	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT07	482070.93	412089.33	0.68	14.4	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT08	482128.44	412073.17	0.65	16.2	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT09	481825.75	412039.48	0.51	14.8	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	

Test ID	Easting [mE]	Northing [mN]	Ground Level [mOD]	Base Depth [m BGL]	Start Date	Cone Number	Cone Area [cm2]	Fugro Rig Reference	Operator	Remarks
MS-CPT10	481910.37	412029	0.36	14.9	28-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT11	482031.79	412038.38	0.62	15.7	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-SCPT12	482117.3	412008.5	0.85	14.5	4-Oct-22	CP15-CF100PB7SN2 1701-3469	15	GB17	HG,MS	
MS-CPM12	482118.3	412008.5	0.85	12.7	11-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
MS-CPT13	481823.05	411989.59	0.73	14.5	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT14	481942.85	411983.42	0.81	16.1	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-SCPT15	482093.25	411955.82	0.69	15.2	19-Oct-22	CP15-CF100PB7SN2 1701-3469	15	GB17	HG,MS,KH	
MS-CPT16	481861.56	411943.34	0.53	13.8	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT17	481939.92	411927.62	0.66	16.7	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-SCPT18	482135.21	411946.57	0.6	14.8	6-Oct-22	CP15-CF100PB7SN2 1701-3469	15	GB17	HG,MS	
MS-CPM18	482134.2	411946.6	0.6	12.6	12-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
MS-CPT19	481817.5	411889.77	0.53	13.3	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT20	481917.71	411884.14	0.75	15.3	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT21	482014.44	411918.06	1.07	15.6	4-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
MS-CPT22	482118.34	411891.47	0.9	15	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT23	482054.12	411813.03	0.98	15.5	12-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
MS-CPT24	482114.48	411823.43	0.91	15.2	5-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
MS-CPT25	482195.67	411821.3	0.98	15.6	5-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
MS-CPT26	482010.17	411729.07	1.22	15.7	14-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	
MS-CPT29	482102.6	411634.78	0.4	1.2	27-Oct-22	CP15-CF75PB7SN2 1701-3474	15	EU-115	HG,MS	
MS-CPT31	481841.29	412213.69	0.5	13.8	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT32	481933.75	412183.97	0.27	14.4	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	

Test ID	Easting [mE]	Northing [mN]	Ground Level [mOD]	Base Depth [m BGL]	Start Date	Cone Number	Cone Area [cm2]	Fugro Rig Reference	Operator	Remarks
MS-CPT33	482033.72	412178.42	0.37	16.9	30-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT34	482103.39	412152.65	0.35	15.1	30-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT35	482011.77	411979.34	0.78	15.1	29-Sep-22	CP15-CF75PB7SN2 1701-3474	15	GB17	NF	
MS-CPT36	482110.55	411781.98	0.92	14.8	5-Oct-22	CP15-CF75PB7SN2 1701-3474	15	GB17	HG,MS	

G.3 Accreditation and Calibration Reports

Title	Reference
UKAS Testing Schedule	Testing Laboratory Number 0925
Cone Calibration Reports	Referenced by Cone ID

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

0925

Accredited to ISO/IEC 17025:2017

Fugro Geoservices Limited

Issue No: 013 **Issue date:** 12 February 2020

Fugro House
Hithercroft Road
Wallingford
Oxfordshire
OX10 9RB

Contact: Dave Thomas
Tel: [redacted]
E-Mail: [redacted]**@fugro.com**
Website: www.fugro.com

Testing performed by the Organisation at the locations specified below

Locations covered by the organisation and their relevant activities

Site activities performed away from the locations listed above:

Location details	Activity	Location code
Ground Investigation Sites	Cone penetration testing including UXO detection	B

0925
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Fugro Geoservices Limited

Issue No: 013 **Issue date:** 12 February 2020

Testing performed by the Organisation at the locations specified

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOILS for civil engineering purposes	Penetration resistance using the fixed 60° cone and friction sleeve (static cone penetration test CPT)	BS 1377- 9:1990 and Eurocode 7, Geotechnical Design, Clause 4.3 Continuous measurement using a penetrometer tip with electrical sensors for cone and sleeve resistance and inclination. BS EN ISO 22476-1:2012	B
	Penetration resistance using the fixed 60° cone and friction sleeve (static cone penetration test CPT)	BS 1377- 9:1990 and Eurocode 7, Geotechnical Design, Clause 4.3, Continuous measurement using a penetrometer tip with electrical sensors for cone and sleeve resistance, inclination and piezometric pressure. BS EN ISO 22476-1:2012	B
	UXO detection for clearance of site investigations and piling using a tri-axial magnetometer	Cone Penetration Testing Procedures Manual.Continuous measurement using a magnetometer housed in a penetrometer with electrical sensors for cone and sleeve resistance, inclination and piezometric pressure.	B
END			

CALIBRATION CERTIFICATE

Applicant	**Fugro GeoServices Ltd.**
	Fugro House, Hithercroft Road
	OX10 9RB, Wallingford
	United Kingdom

Instrument	**Magnetometer Probe**
Manufacturer	Fugro
Type	MP15-M0SO2-P1E1M4-V7
Serial Number	1713-0100

CALIBRATION RvA K 167

Certificate Number
FCN22025607

Calibration method The instrument was calibrated according to Fugro procedures using a comparison technique against a reference standard.

Environmental Conditions	
Temperature during calibration	20.5 ± 3 °C
Atmospheric pressure during calibration	1000 ± 100 mbar

Result The calibration result is shown on the next page(s).

Uncertainty The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which provides a confidence level of approximately 95%. The standard uncertainty has been determined in accordance with EA-4/02.

Traceability The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA (Raad voor Accreditatie).

Calibration date 17-mrt-2022

Calibrate before 17-mrt-2023

Calibrated Sensor	Manufacturer / Type	Calibrated Range	Maximum Rating	Procedure
Slope x [Inclination]	ADXL	-10 to 10 Deg	-20 to 20 Deg	FEBV.CAL.PRO.005
Slope y [Inclination]	ADXL	-10 to 10 Deg	-20 to 20 Deg	FEBV.CAL.PRO.005

Nootdorp, 18-mrt-2022

Ruud Schrijvers
Deputy Manager Transducer Workshop

This certificate is issued provided that neither Fugro nor the Raad voor Accreditatie assumes any liability.

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SLOPE X CALIBRATION RESULT [INCLINATION]

Instrument	
Manufacturer	Fugro
Type	MP15-M0SO2-P1E1M4-V7
Serial Number	1713-0100
Electronics	248
Node Type	7006
Hardware Version	2.00
Software Version	1.04

Reference	
Manufacturer	Hoek-O-Mat
Serial Number	2109-0001
Uncertainty	0.6 [Deg]

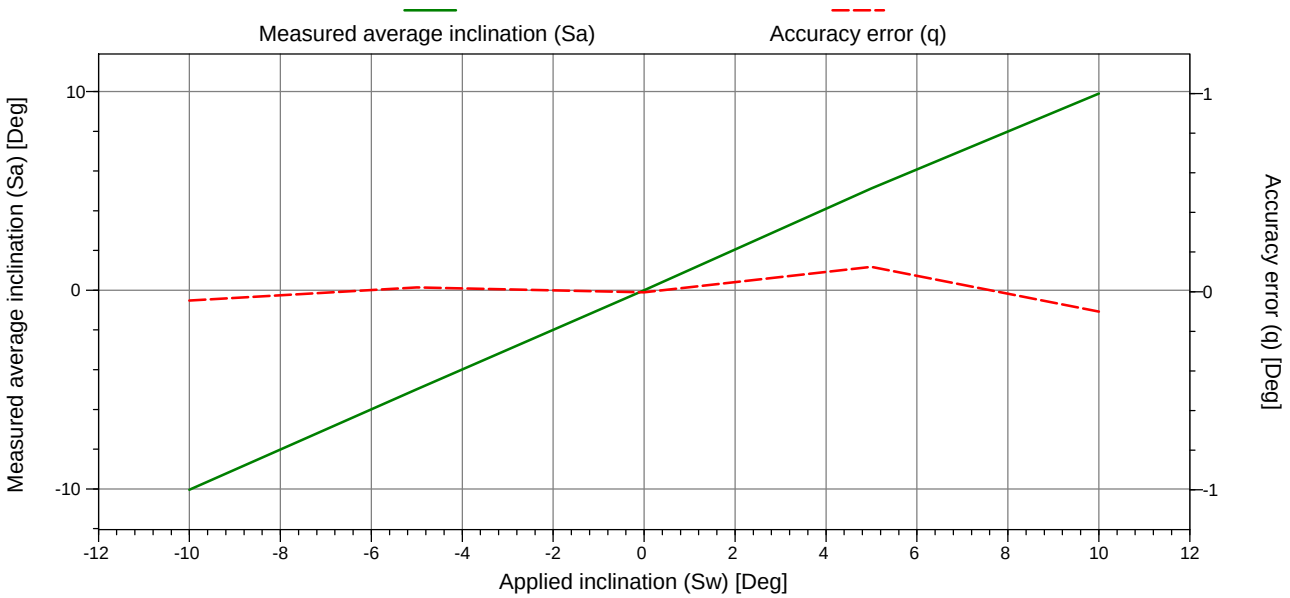
Calibration Details	
Calibration Date	17 mrt 2022 09:04:15
Procedure	FEBV.CAL.PRO.005
Software Version	3.4.1.50595

CALIBRATION RvA K 167

Certificate Number FCN22025607

Sensor	
Channel	Slope x [Inclination]
Manufacturer / Type	ADXL
Calibrated Range	-10 to 10 Deg
Maximum Rating	-20 to 20 Deg

Characteristics	Unit	Value
Max accuracy error (q)	[Deg]	0.1
Max repeatability error (b)	[Deg]	0.1
Zero load error (Sc0)	[Deg]	0.1
Zero load offset (S0)	[Deg]	-0.1
Resolution	[Deg]	2.51E-05
Noise RMS	[Deg]	0.0



Applied inclination (Sw) [Deg]	Measured inclination 1 (Sa,1) [Deg]	Measured inclination 2 (Sa,2) [Deg]	Measured inclination 3 (Sa,3) [Deg]	Measured average inclination (Sa) [Deg]	Accuracy error (q) [Deg]	Repeatability error (b) [Deg]	Expanded Uncertainty (U) [Deg]
-10.0	-10.0	-10.0	-10.1	-10.0	0.0	0.1	0.7
-5.0	-5.0	-5.0	-5.0	-5.0	0.0	0.0	0.7
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
5.0	5.1	5.1	5.1	5.1	0.1	0.0	0.7
10.0	9.9	9.9	9.9	9.9	-0.1	0.0	0.7

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SLOPE Y CALIBRATION RESULT [INCLINATION]

Instrument	
Manufacturer	Fugro
Type	MP15-M0SO2-P1E1M4-V7
Serial Number	1713-0100
Electronics	248
Node Type	7006
Hardware Version	2.00
Software Version	1.04

Reference	
Manufacturer	Hoek-O-Mat
Serial Number	2109-0001
Uncertainty	0.6 [Deg]

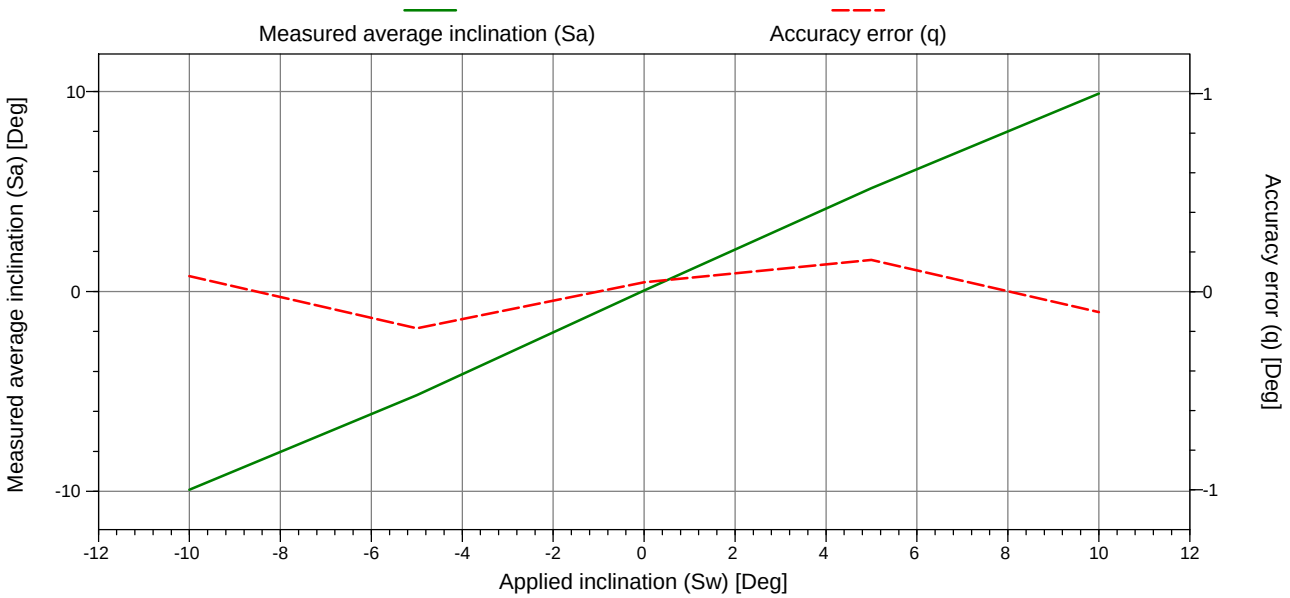
Calibration Details	
Calibration Date	17 mrt 2022 09:04:15
Procedure	FEBV.CAL.PRO.005
Software Version	3.4.1.50595

CALIBRATION RvA K 167

Certificate Number FCN22025607

Sensor	
Channel	Slope y [Inclination]
Manufacturer / Type	ADXL
Calibrated Range	-10 to 10 Deg
Maximum Rating	-20 to 20 Deg

Characteristics	Unit	Value
Max accuracy error (q)	[Deg]	0.2
Max repeatability error (b)	[Deg]	0.1
Zero load error (Sc0)	[Deg]	0.0
Zero load offset (S0)	[Deg]	0.0
Resolution	[Deg]	2.53E-05
Noise RMS	[Deg]	0.0



Applied inclination (Sw) [Deg]	Measured inclination 1 (Sa,1) [Deg]	Measured inclination 2 (Sa,2) [Deg]	Measured inclination 3 (Sa,3) [Deg]	Measured average inclination (Sa) [Deg]	Accuracy error (q) [Deg]	Repeatability error (b) [Deg]	Expanded Uncertainty (U) [Deg]
-10.0	-9.9	-9.9	-9.9	-9.9	0.1	0.0	0.7
-5.0	-5.2	-5.2	-5.2	-5.2	-0.2	0.0	0.7
0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.7
5.0	5.1	5.2	5.2	5.2	0.2	0.1	0.7
10.0	9.9	9.9	9.9	9.9	-0.1	0.0	0.7

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CALIBRATION
RvA K 167

Certificate Number
FCN22025607

Symbols and Definitions (general)

b	Repeatability error, defined as the maximum difference between the measurements of the instrument at the applied value.
Noise RMS	Signal noise, defined as the quadratic mean when the sensor is not subjected to load.
q	Accuracy error, defined as the difference between the average indicated value by the instrument and the applied value.
Resolution	Smallest change in a quantity being measured that causes a perceptible change in the corresponding indication.
U	The stated uncertainty is that of the average indicated quantity, and includes the entire calibration method, including the reference and calibrated sensor, but excludes the difference between average indicated value by the instrument and the applied value.

Symbols and Definitions (quantity specific: Q may be substituted for S, as appropriate)

Q0	Zero load offset, instrument output where the specified measured quantity value is zero.
Qa	Average indicated quantity value by the instrument.
Qa,x	Quantity value indicated by the instrument at measurement x.
Qc0	Zero load error, defined as the difference between the average indicated value by the instrument before and after the load cycle has been applied.
Qw	Applied reference quantity value.

Quantities

S	Inclination

References

European Co-operation For Accreditation, 2013. *Evaluation of the uncertainty of measurement in calibration.* European Co-operation For Accreditation, Publication; EA-4/02 M:2013.

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TYPICAL DIMENSIONS

Instrument	
Manufacturer	Fugro
Type	MP15-M0SO2-P1E1M4-V7
Serial Number	1713-0100

Appendix Applicable to Certificate Number FCN22025607

Typical Dimensions	
Cross-sectional projected area of the cone	0.0015 m²
Diameter of the cylindrical part of the cone	43.85 mm
Cone - magneto distance	312 mm
Cone - magneto+spacer distance	312 mm

CALIBRATION CERTIFICATE

Applicant	**Fugro GeoServices Ltd.**
	Fugro House, Hithercroft Road
	OX10 9RB, Wallingford
	United Kingdom

CALIBRATION
RvA K 167

Certificate Number
FCN22025710

Instrument	**Cone Penetrometer**
Manufacturer	Fugro
Type	CP15-CF75PB7-P1E1M4-V2
Serial Number	1701-3056

Calibration method The instrument was calibrated according to Fugro procedures using a comparison technique against a reference standard.

Environmental Conditions	
Temperature during calibration	20.5 ± 3 °C
Atmospheric pressure during calibration	1000 ± 100 mbar

Result The condition of the cone penetrometer meets the requirements of ISO 22476-1:2012 Section 4.1 through 4.7. The calibration results are reported on the next page(s).

The calibration results indicate that the cone penetrometer meets the requirements for use in Application Class 1 as defined in ISO 22476-1:2012 Section 5.2.

Uncertainty The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which provides a confidence level of approximately 95%. The standard uncertainty has been determined in accordance with EA-4/02.

Traceability The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA (Raad voor Accreditatie).

Calibration date 29-mrt-2022

Calibrate before 29-mrt-2023

Calibrated Sensor	Manufacturer / Type	Calibrated Range	Maximum Rating	Procedure
Cone [Force]	Fugro Loadcell	0 to 75 kN	0 to 150 kN	FEBV.CAL.PRO.003
Cone+Fric. [Force]	Fugro Loadcell	0 to 75 kN	0 to 150 kN	FEBV.CAL.PRO.003
Pore 2 [Pressure]	Kistler 4043A50V0408	0 to 7 MPa	0 to 10.5 MPa	FEBV.CAL.PRO.004

	Before adjustment		After adjustment		Drift	
Calibrated Sensor	Sensitivity	Zero Load	Sensitivity	Zero Load	Sensitivity	Zero Load
Cone [Force]	16.3 µV/V/kN	45.7 µV/V	16.3 µV/V/kN	48.3 µV/V	-0.02 %	0.21 %
Cone+Fric. [Force]	16.5 µV/V/kN	66.3 µV/V	16.5 µV/V/kN	63.3 µV/V	0.00 %	-0.24 %
Pore 2 [Pressure]	5.48 mV/V/MPa	-691 µV/V	5.48 mV/V/MPa	-678 µV/V	0.05 %	0.03 %

Nootdorp, 30-mrt-2022

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Ruud Schrijvers
Deputy Manager Transducer Workshop

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CONE CALIBRATION RESULT [FORCE]

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7-P1E1M4-V2
Serial Number	1701-3056
Electronics	6756
Node Type	7001
Hardware Version	4.00
Software Version	7.11

Reference	
Manufacturer	Zwick/Roell
Serial Number	6034-0003
Uncertainty	0.003•Fw+0.015 [kN]

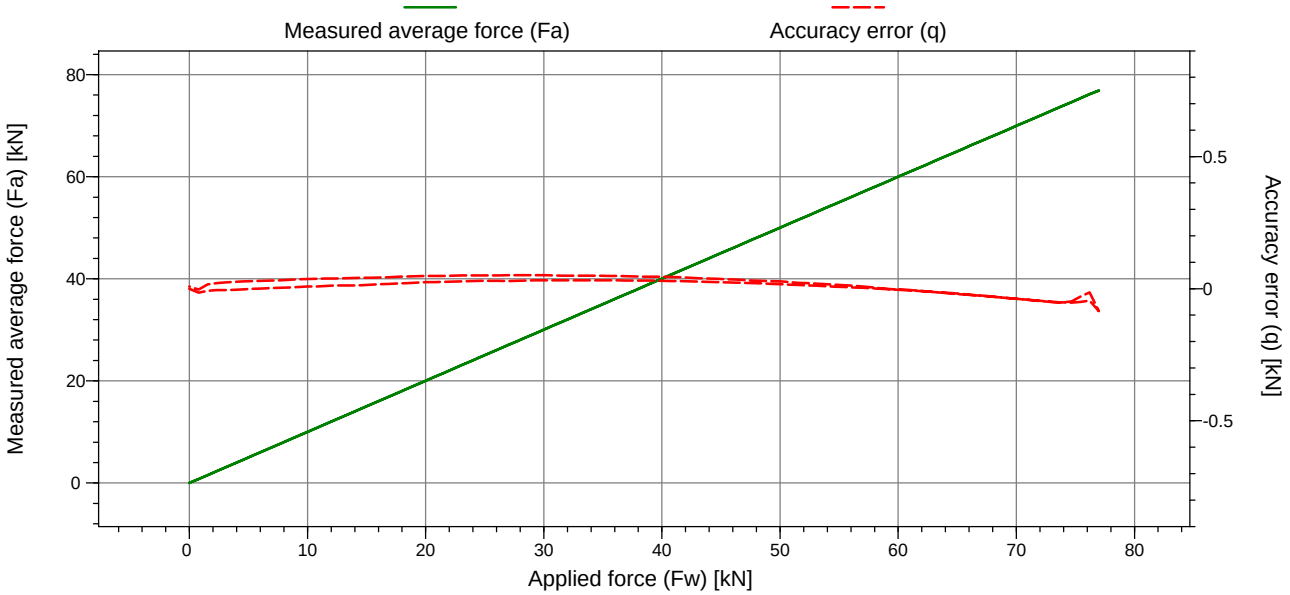
Calibration Details	
Calibration Date	29 mrt 2022 09:04:17
Procedure	FEBV.CAL.PRO.003
Software Version	3.4.1.50595

CALIBRATION RvA K 167

Certificate Number FCN22025710

Sensor	
Channel	Cone [Force]
Manufacturer / Type	Fugro Loadcell
Calibrated Range	0 to 75 kN
Maximum Rating	0 to 150 kN

Characteristics	Unit	Value
Max accuracy error (q)	[kN]	0.051
Max repeatability error (b)	[kN]	0.014
Max reversibility error (v)	[kN]	0.027
Zero load error (Fc0)	[kN]	0.008
Zero load offset (F0)	[kN]	-0.004
Resolution	[kN]	5.71E-05
Noise RMS	[kN]	0.001



Applied force (Fw) [kN]	Measured force 1 (Fa,1) [kN]	Measured force 2 (Fa,2) [kN]	Measured force 3 (Fa,3) [kN]	Measured average force (Fa) [kN]	Accuracy error (q) [kN]	Repeatability error (b) [kN]	Reversibility error (v) [kN]	Expanded Uncertainty (U) [kN]
0.000	-0.001	0.001	0.000	0.000	0.000	0.002		0.019
15.000	15.015	15.015	15.013	15.014	0.014	0.002	0.027	0.070
30.000	30.033	30.032	30.031	30.032	0.032	0.002	0.019	0.110
45.000	45.027	45.024	45.022	45.024	0.024	0.006	0.012	0.155
60.000	59.998	59.994	59.995	59.995	-0.005	0.004	0.001	0.200
75.000	74.962	74.951	74.965	74.960	-0.040	0.014		0.247
60.000	59.997	59.997	59.996	59.997	-0.003	0.001	0.001	0.200
45.000	45.040	45.038	45.032	45.037	0.037	0.008	0.012	0.155
30.000	30.054	30.051	30.048	30.051	0.051	0.005	0.019	0.111
15.000	15.044	15.040	15.040	15.041	0.041	0.003	0.027	0.070
0.000	0.007	0.008	0.009	0.008	0.008	0.002		0.019

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CONE+FRIC. CALIBRATION RESULT [FORCE]

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7-P1E1M4-V2
Serial Number	1701-3056
Electronics	6756
Node Type	7001
Hardware Version	4.00
Software Version	7.11

Reference	
Manufacturer	Zwick/Roell
Serial Number	6034-0003
Uncertainty	0.003•Fw+0.015 [kN]

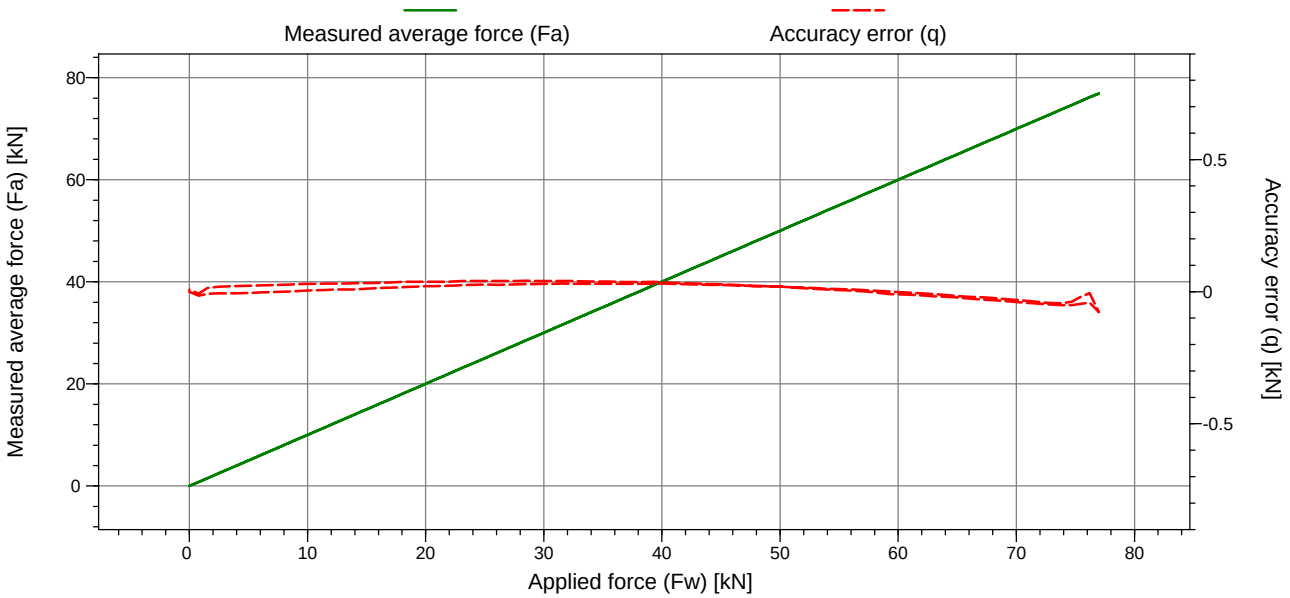
Calibration Details	
Calibration Date	29 mrt 2022 09:04:17
Procedure	FEBV.CAL.PRO.003
Software Version	3.4.1.50595

CALIBRATION RvA K 167

Certificate Number FCN22025710

Sensor	
Channel	Cone+Fric. [Force]
Manufacturer / Type	Fugro Loadcell
Calibrated Range	0 to 75 kN
Maximum Rating	0 to 150 kN

Characteristics	Unit	Value
Max accuracy error (q)	[kN]	0.041
Max repeatability error (b)	[kN]	0.018
Max reversibility error (v)	[kN]	0.022
Zero load error (Fc0)	[kN]	0.007
Zero load offset (F0)	[kN]	-0.007
Resolution	[kN]	5.66E-05
Noise RMS	[kN]	0.001
Tip-Sleeve Interaction %	[%]	0.025



Applied force (Fw) [kN]	Measured force 1 (Fa,1) [kN]	Measured force 2 (Fa,2) [kN]	Measured force 3 (Fa,3) [kN]	Measured average force (Fa) [kN]	Accuracy error (q) [kN]	Repeatability error (b) [kN]	Reversibility error (v) [kN]	Expanded Uncertainty (U) [kN]
0.000	-0.001	0.001	0.000	0.000	0.000	0.002		0.018
15.000	15.007	15.013	15.013	15.011	0.011	0.006	0.022	0.068
30.000	30.025	30.030	30.033	30.029	0.029	0.008	0.011	0.109
45.000	45.022	45.026	45.027	45.025	0.025	0.005	0.003	0.154
60.000	59.994	59.999	60.003	59.999	-0.001	0.009	-0.009	0.201
75.000	74.964	74.963	74.981	74.969	-0.031	0.018		0.247
60.000	59.983	59.992	59.995	59.990	-0.010	0.011	-0.009	0.201
45.000	45.025	45.032	45.027	45.028	0.028	0.007	0.003	0.154
30.000	30.038	30.042	30.042	30.041	0.041	0.004	0.011	0.109
15.000	15.030	15.034	15.035	15.033	0.033	0.005	0.022	0.068
0.000	0.006	0.008	0.008	0.007	0.007	0.003		0.018

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PORE 2 CALIBRATION RESULT [PRESSURE]

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7-P1E1M4-V2
Serial Number	1701-3056
Electronics	6756
Node Type	7001
Hardware Version	4.00
Software Version	7.11

Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•Pw+0.002 [MPa]

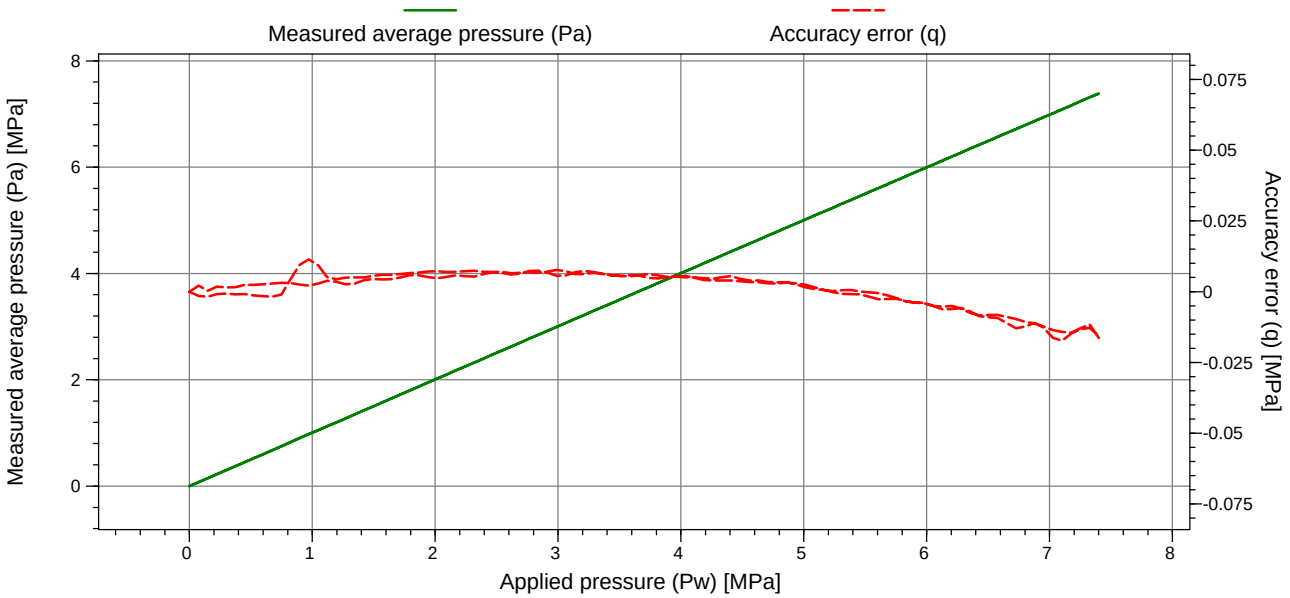
Calibration Details	
Calibration Date	29 mrt 2022 09:21:13
Procedure	FEBV.CAL.PRO.004
Software Version	3.4.1.50595

CALIBRATION RvA K 167

Certificate Number FCN22025710

Sensor	
Channel	Pore 2 [Pressure]
Manufacturer / Type	Kistler 4043A50V0408
Calibrated Range	0 to 7 MPa
Maximum Rating	0 to 10.5 MPa

Characteristics	Unit	Value
Max accuracy error (q)	[MPa]	0.013
Max repeatability error (b)	[MPa]	0.005
Max reversibility error (v)	[MPa]	0.002
Zero load error (Pc0)	[MPa]	0.000
Zero load offset (P0)	[MPa]	-0.001
Resolution	[MPa]	2.72E-06
Noise RMS	[MPa]	0.000



Applied pressure (Pw) [MPa]	Measured pressure 1 (Pa,1) [MPa]	Measured pressure 2 (Pa,2) [MPa]	Measured pressure 3 (Pa,3) [MPa]	Measured average pressure (Pa) [MPa]	Accuracy error (q) [MPa]	Repeatability error (b) [MPa]	Reversibility error (v) [MPa]	Expanded Uncertainty (U) [MPa]
0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.002
1.400	1.404	1.404	1.403	1.404	0.004	0.002	0.001	0.004
2.800	2.807	2.809	2.806	2.807	0.007	0.002	-0.001	0.005
4.200	4.204	4.204	4.207	4.205	0.005	0.003	-0.001	0.006
5.600	5.597	5.602	5.600	5.600	0.000	0.005	-0.002	0.010
7.000	6.986	6.987	6.988	6.987	-0.013	0.002		0.006
5.600	5.598	5.597	5.597	5.597	-0.003	0.001	-0.002	0.006
4.200	4.204	4.204	4.204	4.204	0.004	0.000	-0.001	0.005
2.800	2.806	2.806	2.808	2.807	0.007	0.003	-0.001	0.005
1.400	1.405	1.405	1.406	1.405	0.005	0.001	0.001	0.004
0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.002

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CALIBRATION
RvA K 167

Certificate Number
FCN22025710

Symbols and Definitions (general)

b	Repeatability error, defined as the maximum difference between the measurements of the instrument at the applied value.
Noise RMS	Signal noise, defined as the quadratic mean when the sensor is not subjected to load.
q	Accuracy error, defined as the difference between the average indicated value by the instrument and the applied value.
Resolution	Smallest change in a quantity being measured that causes a perceptible change in the corresponding indication.
U	The stated uncertainty is that of the average indicated quantity, and includes the entire calibration method, including the reference and calibrated sensor, but excludes the difference between average indicated value by the instrument and the applied value.
v	Reversibility error, defined as the difference between the average indicated value by the instrument at a certain applied value when it was increased and when it was decreased.

Symbols and Definitions (quantity specific: Q may be substituted for F or P, as appropriate)

Q0	Zero load offset, instrument output where the specified measured quantity value is zero.
Qa	Average indicated quantity value by the instrument.
Qa,x	Quantity value indicated by the instrument at measurement x.
Qc0	Zero load error, defined as the difference between the average indicated value by the instrument before and after the load cycle has been applied.
Qw	Applied reference quantity value.

Quantities

F	Force
P	Pressure

References

International Organization for Standardization, 2012. *ISO 22476-1:2012 Geotechnical investigation and testing, Field testing, Electrical cone and piezocone penetration test.* Geneva: ISO.

European Co-operation For Accreditation, 2013. *Evaluation of the uncertainty of measurement in calibration.* European Co-operation For Accreditation, Publication; EA-4/02 M:2013.

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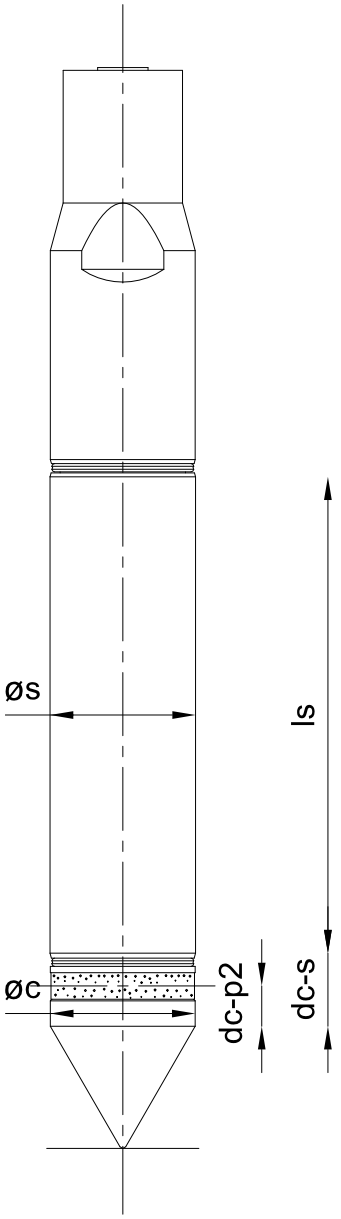
TYPICAL DIMENSIONS

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7-P1E1M4-V2
Serial Number	1701-3056

Appendix Applicable to Certificate Number FCN22025710



Typical Dimensions		
Ac	Cross-sectional projected area of the cone	0.0015 m²
As	Surface area of the friction sleeve	0.02 m²
af	Cone net area ratio	0.58
scf	Friction sleeve net area ratio	0.01392
øc	Diameter of the cylindrical part of the cone	43.85 mm
øs	Diameter of the friction sleeve	44.1 mm
ls	Length of the friction sleeve	143.6 mm
dc-s	Cone - friction sleeve distance	16 mm
dc-p2	Cone - pore 2 distance	6.9 mm

Diagram is not to scale

CONE NET AREA RATIO RESULT

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7-P1E1M4-V2
Serial Number	1701-3056
Electronics	6756
Node Type	7001
Hardware Version	4.00
Software Version	7.11

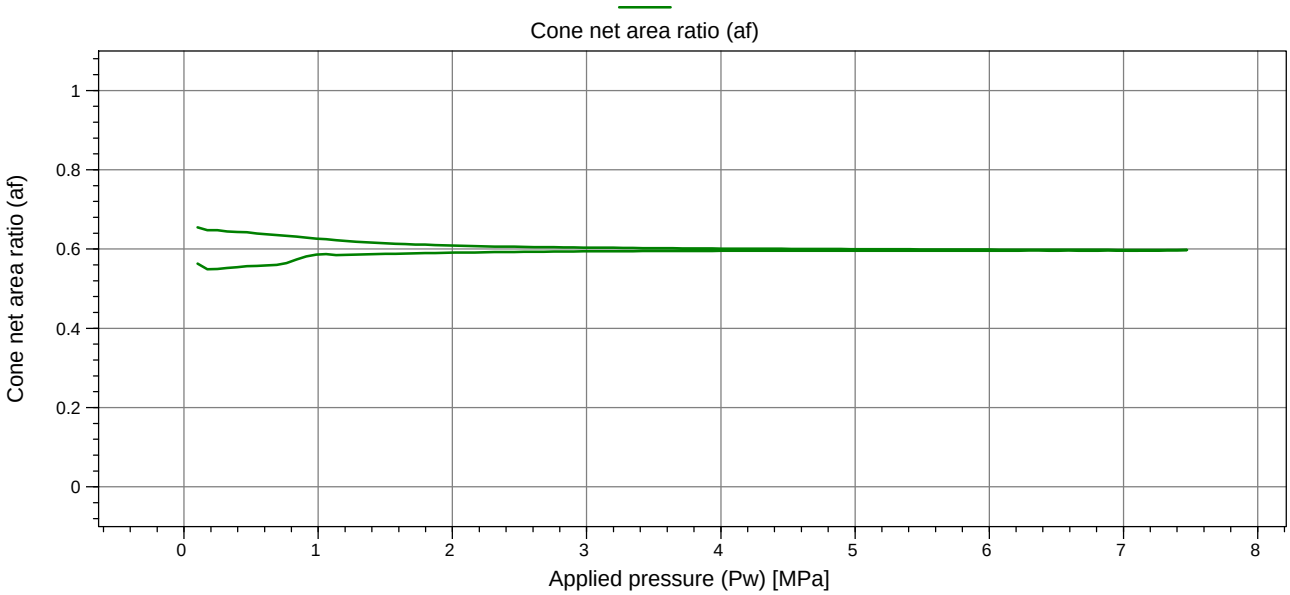
Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•Pw+0.002 [MPa]

Measurement Details	
Measurement Date	29 mrt 2022 09:21:14
Procedure	FEBV.CAL.PRO.003
Software Version	3.4.1.50595

Appendix Applicable to Certificate Number FCN22025710

Characteristics	Unit	Value
Cone net area ratio (af)	[-]	0.60

The cone net area ratio presented above is determined at the maximum applied pressure during the measurement.



Applied pressure (Pw) [MPa]	Measured cone net area ratio 1 (af,1)	Measured cone net area ratio 2 (af,2)	Measured cone net area ratio 3 (af,3)	Measured average cone net area ratio (af)
1.400	0.617	0.617	0.616	0.616
2.800	0.604	0.605	0.604	0.604
4.200	0.601	0.601	0.601	0.601
5.600	0.599	0.599	0.599	0.599
7.000	0.598	0.598	0.598	0.598
5.600	0.596	0.596	0.596	0.596
4.200	0.596	0.595	0.595	0.595
2.800	0.593	0.593	0.594	0.593
1.400	0.586	0.587	0.587	0.587

FRICTION SLEEVE NET AREA RATIO RESULT

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7-P1E1M4-V2
Serial Number	1701-3056
Electronics	6756
Node Type	7001
Hardware Version	4.00
Software Version	7.11

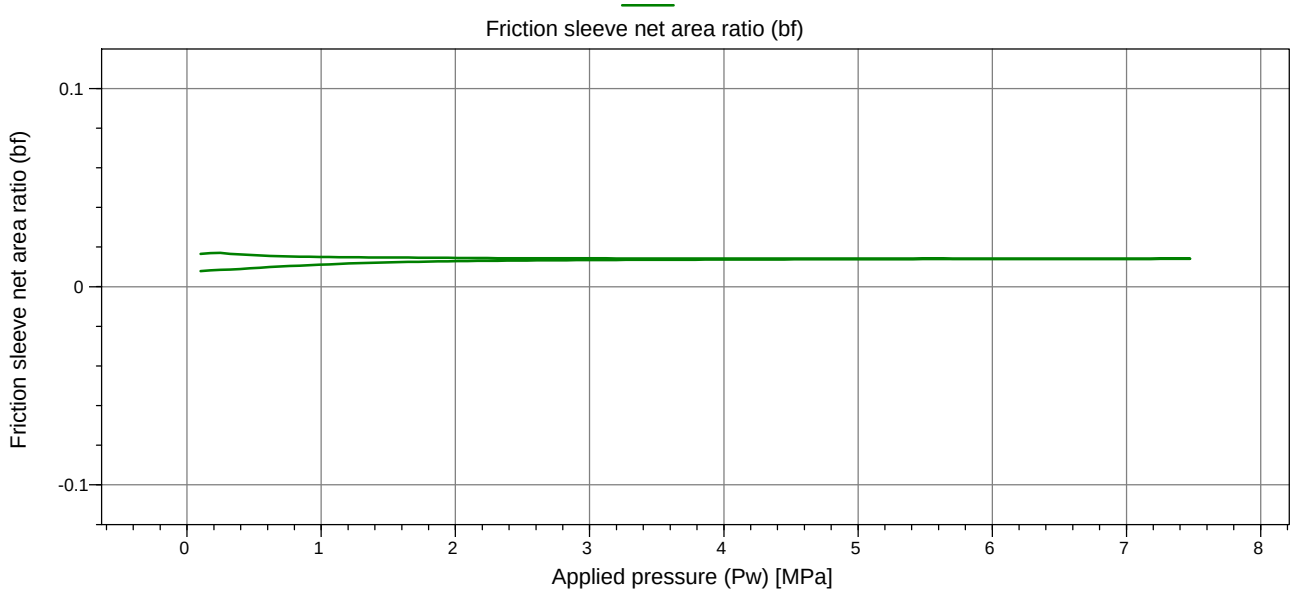
Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•Pw+0.002 [MPa]

Measurement Details	
Measurement Date	29 mrt 2022 09:21:14
Procedure	FEBV.CAL.PRO.003
Software Version	3.4.1.50595

Appendix Applicable to Certificate Number FCN22025710

Characteristics	Unit	Value
Friction sleeve net area ratio (bf)	[-]	0.01404

The friction sleeve net area ratio presented above is determined at the maximum applied pressure during the measurement.



Applied pressure (Pw) [MPa]	Measured friction sleeve net area ratio (bf) 1 (bf,1)	Measured friction sleeve net area ratio (bf) 2 (bf,2)	Measured friction sleeve net area ratio (bf) 3 (bf,3)	Measured average Friction sleeve net area ratio (bf)
1.400	0.012	0.012	0.012	0.012
2.800	0.013	0.013	0.013	0.013
4.200	0.014	0.014	0.014	0.014
5.600	0.014	0.014	0.014	0.014
7.000	0.014	0.014	0.014	0.014
5.600	0.014	0.014	0.014	0.014
4.200	0.014	0.014	0.014	0.014
2.800	0.014	0.014	0.014	0.014
1.400	0.015	0.015	0.015	0.015

Appendix Applicable to Certificate Number FCN22025710

Symbols and Definitions (general)

af	Cone net area ratio, defined as the factor between the applied pressure to the instrument and the indicated cone resistance.
af,x	Measured cone net area ratio at measurement x.
bf	Friction sleeve net area ratio, defined as the factor between the applied pressure to the instrument and the indicated sleeve friction.
bf,x	The measured friction sleeve net area ratio at measurement x.

Symbols and Definitions (quantity specific: Q may be substituted for P, as appropriate)

Qw	Applied reference quantity value.

Quantities

P	Pressure

Calibration Certificate

Applicant	Fugro GeoServices Ltd.
	Fugro House, Hithercroft Road
	OX10 9RB, Wallingford
	United Kingdom

Instrument	Cone Penetrometer
Manufacturer	Fugro
Type	CP15-CF75PB7SN2-P1E1M4-V5
Serial Number	1701-3474

Certificate Number
FCN22026163

Calibration method The instrument was calibrated according to Fugro procedures using a comparison technique against a reference standard.

Environmental Conditions	
Temperature during calibration	20.5 ± 3 °C
Atmospheric pressure during calibration	1000 ± 100 mbar

Result The condition of the cone penetrometer meets the requirements of ISO 22476-1:2012 Section 4.1 through 4.7. The calibration results are reported on the next page(s).

The calibration results indicate that the cone penetrometer meets the requirements for use in Application Class 1 as defined in ISO 22476-1:2012 Section 5.2.

Uncertainty The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which provides a confidence level of approximately 95%. The standard uncertainty has been determined in accordance with EA-4/02.

Traceability The measurements have been executed using standards for which the traceability to (inter)national standards has been demonstrated towards the RvA (Raad voor Accreditatie).

Calibration date 18-May-2022

Calibrate before 18-May-2023

Calibrated Sensor	Manufacturer / Type	Calibrated Range	Maximum Rating	Procedure
Cone [Force]	Fugro Loadcell	0 to 75 kN	0 to 150 kN	EUAF-FNLM-CAL-PR-003
Cone+Fric. [Force]	Fugro Loadcell	0 to 75 kN	0 to 150 kN	EUAF-FNLM-CAL-PR-003
Pore 2 [Pressure]	Kistler 4043A50V0408	0 to 7 MPa	0 to 10.5 MPa	EUAF-FNLM-CAL-PR-004
Slope [Inclination]	ADXL	0 to 15 Deg	0 to 20 Deg	EUAF-FNLM-CAL-PR-005

Nootdorp, 20-May-2022

Gerry Sinjorgo
Manager Transducer Workshop

This certificate is issued provided that neither Fugro nor the Raad voor Accreditatie assumes any liability.

The Raad voor Accreditatie is one of the signatories of the Multilateral Agreement of the European Cooperation for Accreditation (EA) for the mutual recognition of calibration certificates.

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Cone Calibration Result [Force]

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7SN2-P1 E1M4-V5
Serial Number	1701-3474
Electronics	7587
Node Type	7001
Hardware Version	5.01
Software Version	7.11

Sensor	
Channel	Cone [Force]
Manufacturer	Fugro Loadcell
Calibrated Range	0 to 75 kN
Maximum Rating	0 to 150 kN

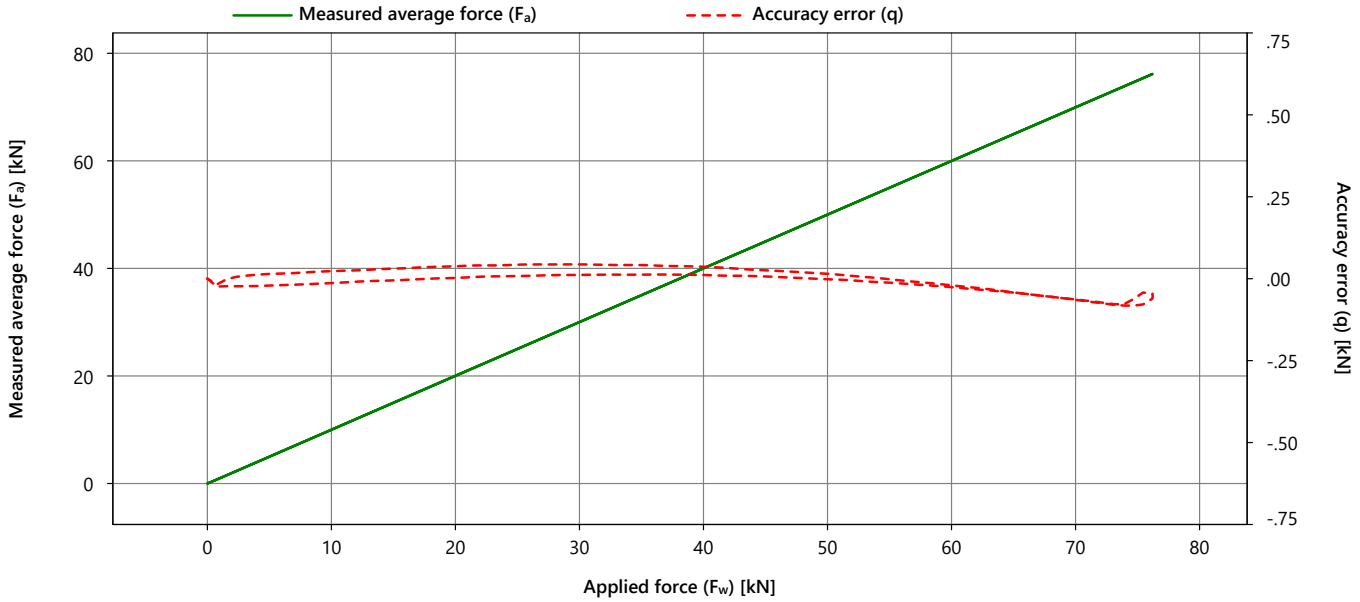
Reference	
Manufacturer	Zwick/Roell
Serial Number	6034-0003
Uncertainty	0.003•F_w+0.015 [kN]

Calibration Details	
Calibration Date	18 May 2022 08:28:15
Procedure	EUAF-FNLM-CAL-PR-003
Software Version	3.5.0.51261

CALIBRATION RvA K 167

Certificate Number FCN22026163

Characteristics	Unit	Value
Max accuracy error (q)	[kN]	0.054
Max repeatability error (b)	[kN]	0.014
Max reversibility error (v)	[kN]	0.036
Zero load error (F_{c0})	[kN]	0.001
Zero load offset (F_0)	[kN]	0.010
Resolution	[kN]	5.67E-05
Noise RMS	[kN]	0.001



Applied force (F_w)	Measured force 1 ($F_{a,1}$)	Measured force 2 ($F_{a,2}$)	Measured force 3 ($F_{a,3}$)	Measured average force (F_a)	Accuracy error (q)	Repeatability error (b)	Reversibility error (v)	Expanded Uncertainty (U)
[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.000	0.004	-0.001	-0.002	0.000	0.000	0.006		0.017
15.000	14.988	14.998	14.998	14.995	-0.005	0.010	0.036	0.079
30.000	30.006	30.015	30.014	30.012	0.012	0.009	0.032	0.115
45.000	45.001	45.010	45.010	45.007	0.007	0.009	0.019	0.156
60.000	59.967	59.978	59.978	59.974	-0.026	0.011	0.006	0.200
75.000	74.947	74.953	74.939	74.946	-0.054	0.014		0.247
60.000	59.973	59.984	59.982	59.980	-0.020	0.011	0.006	0.200
45.000	45.020	45.028	45.028	45.026	0.026	0.008	0.019	0.156
30.000	30.040	30.045	30.045	30.044	0.044	0.005	0.032	0.114
15.000	15.030	15.032	15.031	15.031	0.031	0.002	0.036	0.078
0.000	0.001	0.000	0.000	0.001	0.001	0.001		0.015

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Cone+Fric. Calibration Result [Force]

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7SN2-P1 E1M4-V5
Serial Number	1701-3474
Electronics	7587
Node Type	7001
Hardware Version	5.01
Software Version	7.11

Sensor	
Channel	Cone+Fric. [Force]
Manufacturer	Fugro Loadcell
Calibrated Range	0 to 75 kN
Maximum Rating	0 to 150 kN

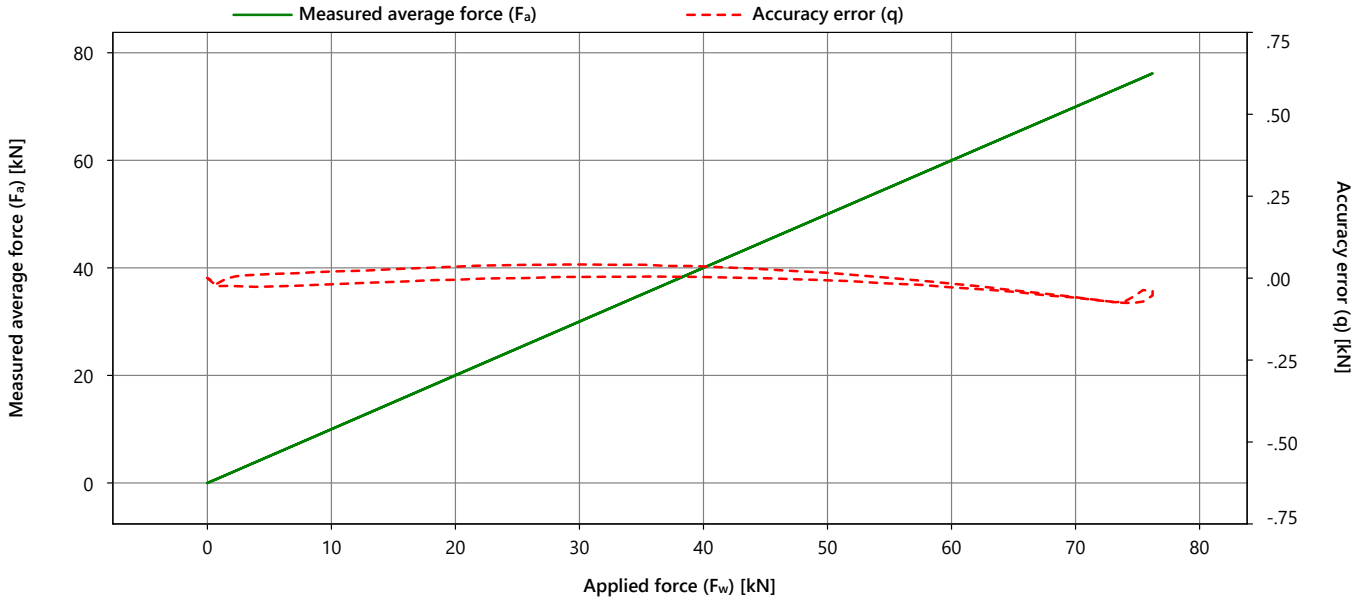
Reference	
Manufacturer	Zwick/Roell
Serial Number	6034-0003
Uncertainty	0.003•F_w+0.015 [kN]

Calibration Details	
Calibration Date	18 May 2022 08:28:15
Procedure	EUAF-FNLM-CAL-PR-003
Software Version	3.5.0.51261

CALIBRATION RvA K 167

Certificate Number FCN22026163

Characteristics	Unit	Value
Max accuracy error (q)	[kN]	0.048
Max repeatability error (b)	[kN]	0.022
Max reversibility error (v)	[kN]	0.039
Zero load error (F_{c0})	[kN]	0.001
Zero load offset (F_0)	[kN]	0.006
Resolution	[kN]	5.65E-05
Noise RMS	[kN]	0.001
Tip-Sleeve Interaction %	[%]	0.024



Applied force (F_w)	Measured force 1 ($F_{a,1}$)	Measured force 2 ($F_{a,2}$)	Measured force 3 ($F_{a,3}$)	Measured average force (F_a)	Accuracy error (q)	Repeatability error (b)	Reversibility error (v)	Expanded Uncertainty (U)
[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.000	0.003	-0.001	-0.002	0.000	0.000	0.005		0.017
15.000	14.976	14.995	14.995	14.989	-0.011	0.020	0.039	0.085
30.000	29.992	30.010	30.009	30.004	0.004	0.018	0.038	0.119
45.000	44.986	45.005	45.008	45.000	0.000	0.021	0.027	0.159
60.000	59.958	59.978	59.980	59.972	-0.028	0.022	0.011	0.202
75.000	74.945	74.962	74.949	74.952	-0.048	0.017		0.247
60.000	59.970	59.990	59.990	59.983	-0.017	0.020	0.011	0.202
45.000	45.017	45.032	45.033	45.027	0.027	0.016	0.027	0.158
30.000	30.032	30.047	30.047	30.042	0.042	0.014	0.038	0.118
15.000	15.022	15.031	15.030	15.027	0.027	0.009	0.039	0.082
0.000	0.001	0.000	0.001	0.001	0.001	0.000		0.015

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Pore 2 Calibration Result [Pressure]

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7SN2-P1 E1M4-V5
Serial Number	1701-3474
Electronics	7587
Node Type	7001
Hardware Version	5.01
Software Version	7.11

Sensor	
Channel	Pore 2 [Pressure]
Manufacturer	Kistler 4043A50V0408
Calibrated Range	0 to 7 MPa
Maximum Rating	0 to 10.5 MPa

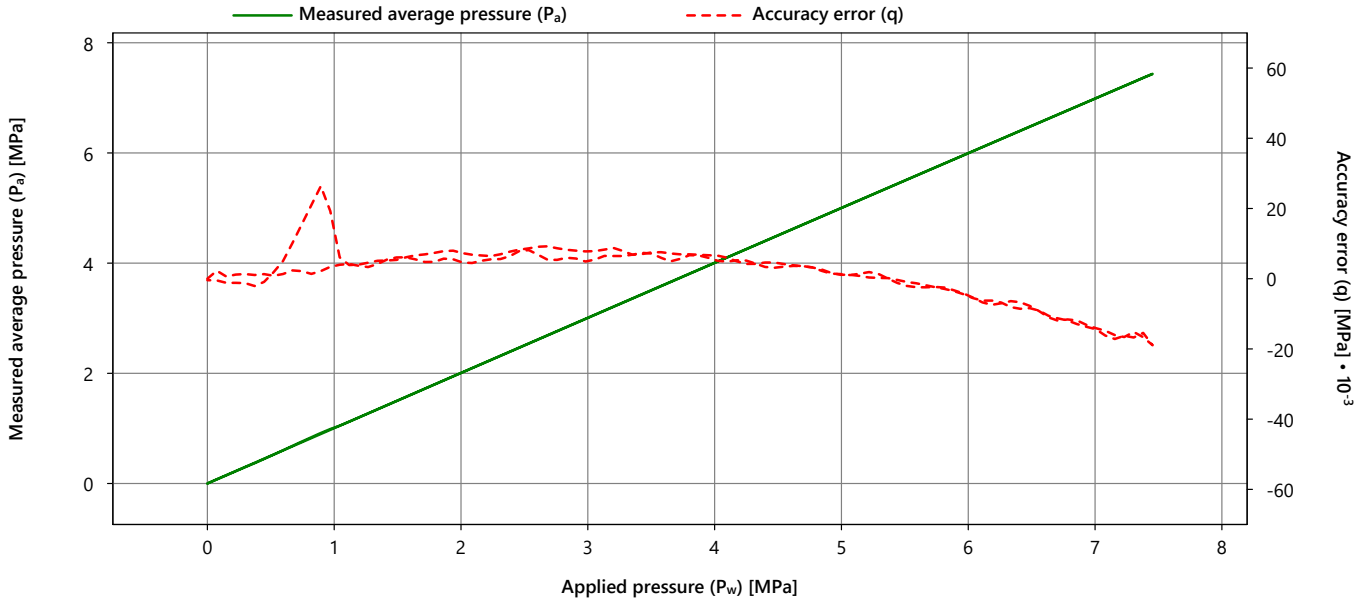
Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•P_w+0.002 [MPa]

Calibration Details	
Calibration Date	18 May 2022 10:17:52
Procedure	EUAF-FNLM-CAL-PR-004
Software Version	3.5.0.51261

CALIBRATION RvA K 167

Certificate Number FCN22026163

Characteristics	Unit	Value
Max accuracy error (q)	[MPa]	0.014
Max repeatability error (b)	[MPa]	0.003
Max reversibility error (v)	[MPa]	0.003
Zero load error (P_{c0})	[MPa]	0.000
Zero load offset (P_0)	[MPa]	0.001
Resolution	[MPa]	2.69E-06
Noise RMS	[MPa]	0.000



Applied pressure (P_w)	Measured pressure 1 ($P_{a,1}$)	Measured pressure 2 ($P_{a,2}$)	Measured pressure 3 ($P_{a,3}$)	Measured average pressure (P_a)	Accuracy error (q)	Repeatability error (b)	Reversibility error (v)	Expanded Uncertainty (U)
[MPa]	[MPa]	[MPa]	[MPa]	[MPa]	[MPa]	[MPa]	[MPa]	[MPa]
0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.003
1.400	1.406	1.405	1.404	1.405	0.005	0.002	0.000	0.004
2.800	2.806	2.805	2.806	2.806	0.006	0.001	0.003	0.006
4.200	4.205	4.207	4.205	4.205	0.005	0.002	-0.001	0.005
5.600	5.596	5.597	5.599	5.598	-0.002	0.003	0.001	0.007
7.000	6.985	6.986	6.987	6.986	-0.014	0.002		0.006
5.600	5.598	5.598	5.600	5.599	-0.001	0.002	0.001	0.006
4.200	4.204	4.206	4.204	4.205	0.005	0.002	-0.001	0.005
2.800	2.809	2.809	2.808	2.808	0.008	0.001	0.003	0.006
1.400	1.404	1.406	1.406	1.405	0.005	0.002	0.000	0.004
0.000	-0.001	0.000	0.000	0.000	0.000	0.000		0.003

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Slope Calibration Result [Inclination]

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7SN2-P1 E1M4-V5
Serial Number	1701-3474
Electronics	7587
Node Type	7001
Hardware Version	5.01
Software Version	7.11

Sensor	
Channel	Slope [Inclination]
Manufacturer	ADXL
Calibrated Range	0 to 15 Deg
Maximum Rating	0 to 20 Deg

Reference	
Manufacturer	Hoek-O-Mat
Serial Number	2109-0002
Uncertainty	0.6 [Deg]

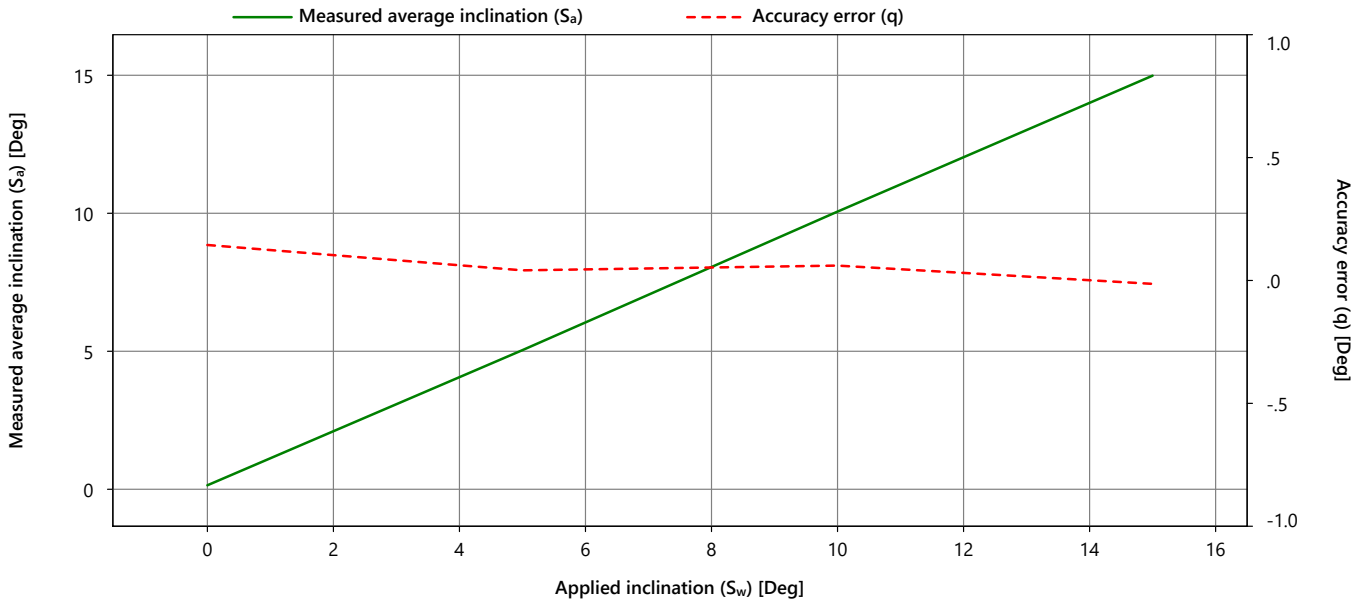
Calibration Details	
Calibration Date	18 May 2022 08:31:37
Procedure	EUAF-FNLM-CAL-PR-005
Software Version	3.5.0.51261

RvA CALIBRATION K 167

Certificate Number FCN22026163

Characteristics	Unit	Value
Max accuracy error (q)	[Deg]	0.1
Max repeatability error (b)	[Deg]	0.2
Zero load error (S_{c0})	[Deg]	0.0
Zero load offset (S_0)	[Deg]	0.1
Resolution	[Deg]	1.33E-05
Noise RMS	[Deg]	0.0

Inclination is defined as the angular deviation of the cone penetrometer from the vertical.



Applied inclination (S_w)	Measured inclination 1 ($S_{a,1}$)	Measured inclination 2 ($S_{a,2}$)	Measured inclination 3 ($S_{a,3}$)	Measured average inclination (S_a)	Accuracy error (q)	Repeatability error (b)	Expanded Uncertainty (U)
[Deg]	[Deg]	[Deg]	[Deg]	[Deg]	[Deg]	[Deg]	[Deg]
0.0	0.1	0.2	0.1	0.1	0.1	0.2	0.7
5.0	5.0	5.1	5.0	5.0	0.0	0.1	0.7
10.0	10.1	10.0	10.0	10.1	0.1	0.1	0.7
15.0	15.0	14.9	15.0	15.0	0.0	0.1	0.7

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Symbols, Definitions and References

Certificate Number
FCN22026163

Symbols and Definitions (general)

b	Repeatability error, defined as the maximum difference between the measurements of the instrument at the applied value.
Noise RMS	Signal noise, defined as the quadratic mean when the sensor is not subjected to load.
q	Accuracy error, defined as the difference between the average indicated value by the instrument and the applied value.
Resolution	Smallest change in a quantity being measured that causes a perceptible change in the corresponding indication.
U	The stated uncertainty is that of the average indicated quantity, and includes the entire calibration method, including the reference and calibrated sensor, but excludes the difference between average indicated value by the instrument and the applied value.
v	Reversibility error, defined as the difference between the average indicated value by the instrument at a certain applied value when it was increased and when it was decreased.

Symbols and Definitions (quantity specific: Q may be substituted for F, P or S, as appropriate)

Q_0	Zero load offset, instrument output where the specified measured quantity value is zero.
Q_a	Average indicated quantity value by the instrument.
$Q_{a,x}$	Quantity value indicated by the instrument at measurement x.
Q_{c0}	Zero load error, defined as the difference between the average indicated value by the instrument before and after the load cycle has been applied.
Q_w	Applied reference quantity value.

Quantities

F	Force
P	Pressure
S	Inclination

References

International Organization for Standardization, 2012. *ISO 22476-1:2012 Geotechnical investigation and testing, Field testing, Electrical cone and piezocone penetration test.* Geneva: ISO.

European Co-operation For Accreditation, 2013. *Evaluation of the uncertainty of measurement in calibration.* European Co-operation For Accreditation, Publication; EA-4/02 M:2013.

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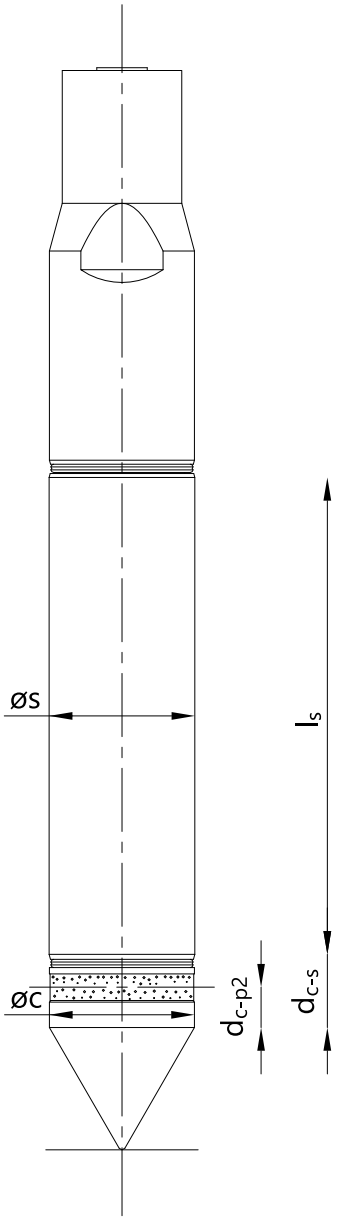
Typical Dimensions

Instrument

Manufacturer	Fugro
Type	CP15-CF75PB7SN2-P1E1M4-V5
Serial Number	1701-3474

Appendix Applicable to Certificate Number FCN22026163



Typical Dimensions

A_c	Cross-sectional projected area of the cone	0.0015 m^2
A_s	Surface area of the friction sleeve	0.02 m^2
af	Cone net area ratio	0.58
bf	Friction sleeve net area ratio	0.01392
øc	Diameter of the cylindrical part of the cone	43.85 mm
øs	Diameter of the friction sleeve	44.1 mm
l_s	Length of the friction sleeve	143.6 mm
d_{c-s}	Cone - friction sleeve distance	16 mm
d_{c-p2}	Cone - pore 2 distance	6.9 mm

Diagram is not to scale

Cone Net Area Ratio Result

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7SN2-P1 E1M4-V5
Serial Number	1701-3474
Electronics	7587
Node Type	7001
Hardware Version	5.01
Software Version	7.11

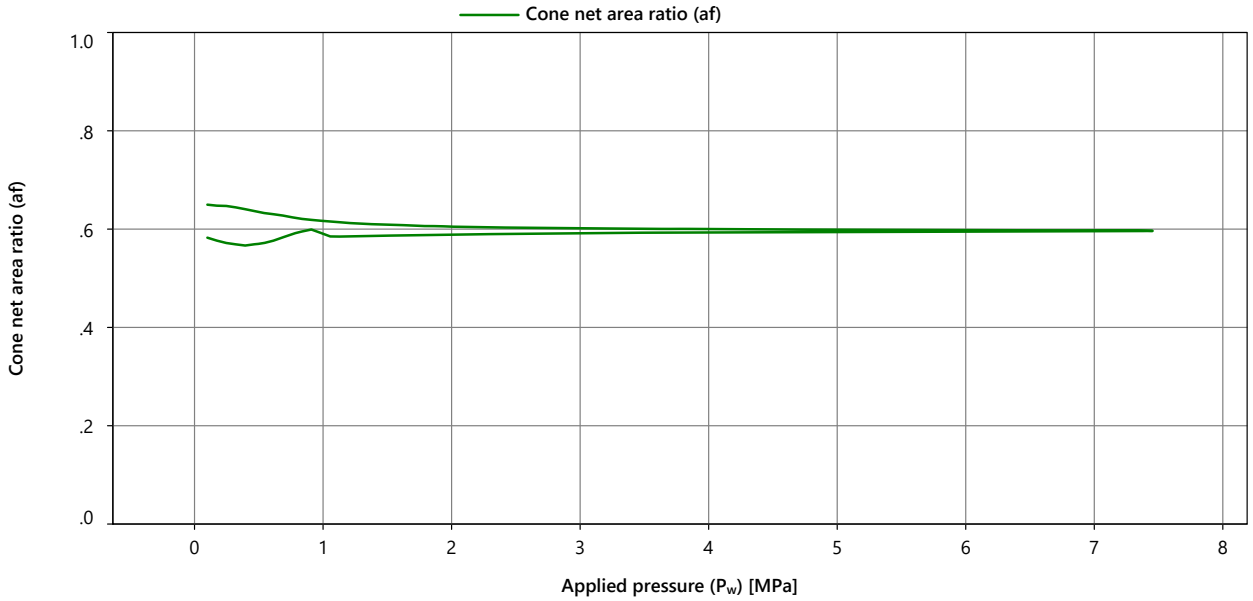
Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•P_w+0.002 [MPa]

Measurement Details	
Measurement Date	18 May 2022 10:17:53
Procedure	EUAF-FNLM-CAL-PR-003
Software Version	3.5.0.51261

Appendix Applicable to Certificate Number FCN22026163

Characteristics	Unit	Value
Cone net area ratio (af)	[-]	0.60

The cone net area ratio presented above is determined at the maximum applied pressure during the measurement.



Applied pressure (P_w) [MPa]	Measured cone net area ratio 1 (af,1)	Measured cone net area ratio 2 (af,2)	Measured cone net area ratio 3 (af,3)	Measured average cone net area ratio (af)
1.400	0.610	0.610	0.610	0.610
2.800	0.602	0.602	0.602	0.602
4.200	0.600	0.600	0.600	0.600
5.600	0.598	0.598	0.598	0.598
7.000	0.597	0.597	0.597	0.597
5.600	0.595	0.595	0.595	0.595
4.200	0.593	0.593	0.593	0.593
2.800	0.591	0.592	0.591	0.591
1.400	0.585	0.587	0.587	0.586

Friction Sleeve Net Area Ratio Result

Instrument	
Manufacturer	Fugro
Type	CP15-CF75PB7SN2-P1 E1M4-V5
Serial Number	1701-3474
Electronics	7587
Node Type	7001
Hardware Version	5.01
Software Version	7.11

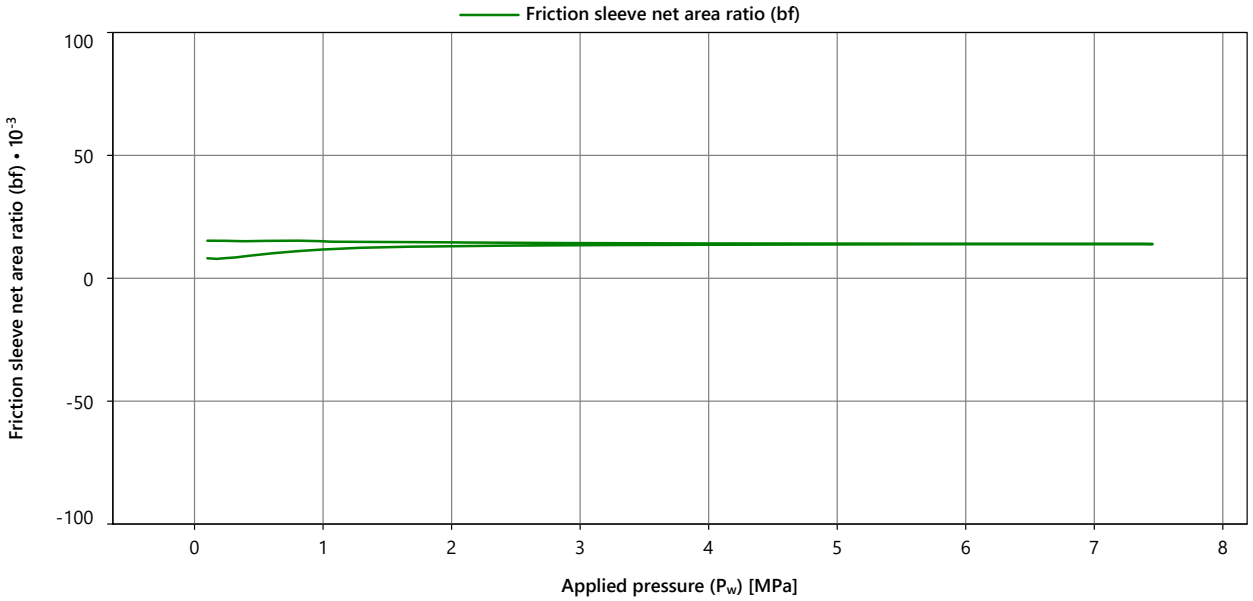
Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•P_w+0.002 [MPa]

Measurement Details	
Measurement Date	18 May 2022 10:17:53
Procedure	EUAF-FNLM-CAL-PR-003
Software Version	3.5.0.51261

Appendix Applicable to Certificate Number FCN22026163

Characteristics	Unit	Value
Friction sleeve net area ratio (bf)	[-]	0.01391

The friction sleeve net area ratio presented above is determined at the maximum applied pressure during the measurement.



Applied pressure (P_w) [MPa]	Measured friction sleeve net area ratio (bf) 1 (bf,1)	Measured friction sleeve net area ratio (bf) 2 (bf,2)	Measured friction sleeve net area ratio (bf) 3 (bf,3)	Measured average Friction sleeve net area ratio (bf)
1.400	0.013	0.013	0.013	0.013
2.800	0.013	0.013	0.013	0.013
4.200	0.014	0.014	0.014	0.014
5.600	0.014	0.014	0.014	0.014
7.000	0.014	0.014	0.014	0.014
5.600	0.014	0.014	0.014	0.014
4.200	0.014	0.014	0.014	0.014
2.800	0.014	0.014	0.014	0.014
1.400	0.015	0.015	0.015	0.015

Symbols and Definitions

Appendix Applicable to Certificate Number FCN22026163

Symbols and Definitions (general)	
af	Cone net area ratio, defined as the factor between the applied pressure to the instrument and the indicated cone resistance.
af,x	Measured cone net area ratio at measurement x.
bf	Friction sleeve net area ratio, defined as the factor between the applied pressure to the instrument and the indicated sleeve friction.
bf,x	The measured friction sleeve net area ratio at measurement x.

Symbols and Definitions (quantity specific: Q may be substituted for P, as appropriate)	
Q_w	Applied reference quantity value.

Quantities	
P	Pressure

Calibration Certificate

Applicant	Fugro Netherlands Marine B.V.
	Prismastraat 4 2631 RT, Nootdorp The Netherlands

Certificate Number
FCN22027318

Instrument	Cone Penetrometer
Manufacturer	Fugro
Type	CP15-CF100PB7SN2-P1E1M4-V1
Serial Number	1701-3469

Calibration method The instrument was calibrated according to Fugro procedures using a comparison technique against a reference standard.

Environmental Conditions	
Temperature during calibration	20.5 ± 3 °C
Atmospheric pressure during calibration	1000 ± 100 mbar

Result The condition of the cone penetrometer meets the requirements of ISO 22476-1:2012 Section 4.1 through 4.7. The calibration results are reported on the next page(s).

The calibration results indicate that the cone penetrometer meets the requirements for use in Application Class 1 as defined in ISO 22476-1:2012 Section 5.2.

Uncertainty The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which provides a confidence level of approximately 95%. The standard uncertainty has been determined in accordance with EA-4/02.

Traceability Fugro reference standards are periodically recertified and are traceable to the International System of Units (SI). Fugro's calibration system meets or exceeds the requirements of ISO 9001:2008, ISO 10012:2003 and ISO/IEC 17025:2017.

Calibration date 30-Aug-2022

Calibrate before 28-Feb-2023

Calibrated Sensor	Manufacturer / Type	Calibrated Range	Maximum Rating	Procedure
Cone [Force]	Fugro Loadcell	0 to 100 kN	0 to 100 kN	EUAF-FNLM- CAL-PR-003
Cone+Fric. [Force]	Fugro Loadcell	0 to 100 kN	0 to 100 kN	EUAF-FNLM- CAL-PR-003
Pore 2 [Pressure]	Kistler 4043A50V0408	0 to 7 MPa	0 to 10.5 MPa	EUAF-FNLM- CAL-PR-004
Slope [Inclination]	ADXL	0 to 15 Deg	0 to 20 Deg	EUAF-FNLM- CAL-PR-005

Nootdorp, 31-Aug-2022

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Ruud Schrijvers
Deputy Manager Transducer Workshop

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Cone Calibration Result [Force]

Instrument	
Manufacturer	Fugro
Type	CP15-CF100PB7SN2-P1 E1M4-V1
Serial Number	1701-3469
Electronics	8655
Node Type	7001
Hardware Version	5.01
Software Version	7.11

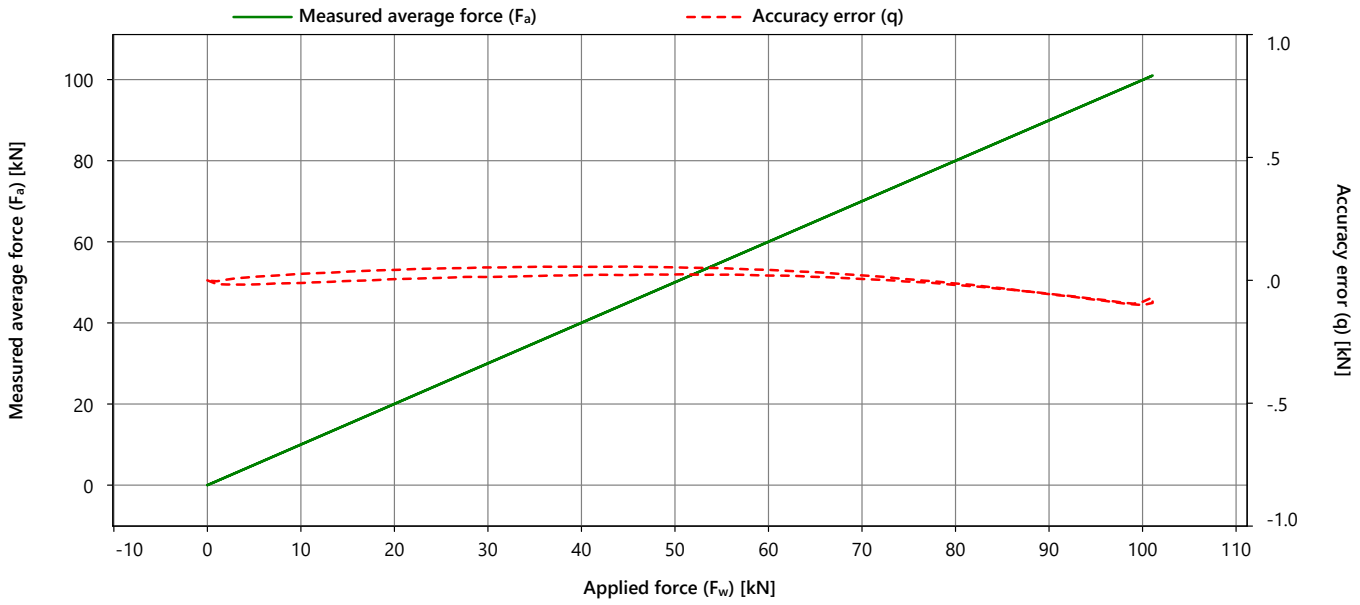
Reference	
Manufacturer	Zwick/Roell
Serial Number	6034-0003
Uncertainty	0.003•F_W+0.015 [kN]

Calibration Details	
Calibration Date	30 Aug 2022 14:06:28
Procedure	EUAF-FNLM- CAL-PR-003
Software Version	3.6.0.51740

Certificate Number
FCN22027318

Sensor	
Channel	Cone [Force]
Manufacturer	Fugro Loadcell
Calibrated Range	0 to 100 kN
Maximum Rating	0 to 100 kN

Characteristics	Unit	Value
Max accuracy error (q)	[kN]	0.087
Max repeatability error (b)	[kN]	0.085
Max reversibility error (v)	[kN]	0.037
Zero load error (F_{c0})	[kN]	0.001
Zero load offset (F_0)	[kN]	-0.018
Resolution	[kN]	5.67E-05
Noise RMS	[kN]	0.001



Applied force (F_W)	Measured force 1 ($F_{a,1}$)	Measured force 2 ($F_{a,2}$)	Measured force 3 ($F_{a,3}$)	Measured average force (F_a)	Accuracy error (q)	Repeatability error (b)	Reversibility error (v)	Expanded Uncertainty (U)
[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.000	0.000	0.001	0.000	0.000	0.000	0.001		0.016
20.000	20.021	20.007	19.988	20.005	0.005	0.033	0.037	0.100
40.000	40.050	40.023	39.990	40.021	0.021	0.060	0.034	0.162
60.000	60.053	60.023	59.982	60.019	0.019	0.071	0.023	0.219
80.000	80.016	79.984	79.943	79.981	-0.019	0.073	0.006	0.276
100.000	99.954	99.915	99.868	99.913	-0.087	0.085		0.338
80.000	80.023	79.989	79.949	79.987	-0.013	0.074	0.006	0.276
60.000	60.078	60.043	60.007	60.043	0.043	0.071	0.023	0.219
40.000	40.086	40.056	40.024	40.055	0.055	0.062	0.034	0.163
20.000	20.059	20.043	20.025	20.042	0.042	0.035	0.037	0.100
0.000	0.001	-0.002	-0.003	-0.001	-0.001	0.004		0.016

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Cone+Fric. Calibration Result [Force]

Instrument	
Manufacturer	Fugro
Type	CP15-CF100PB7SN2-P1 E1M4-V1
Serial Number	1701-3469
Electronics	8655
Node Type	7001
Hardware Version	5.01
Software Version	7.11

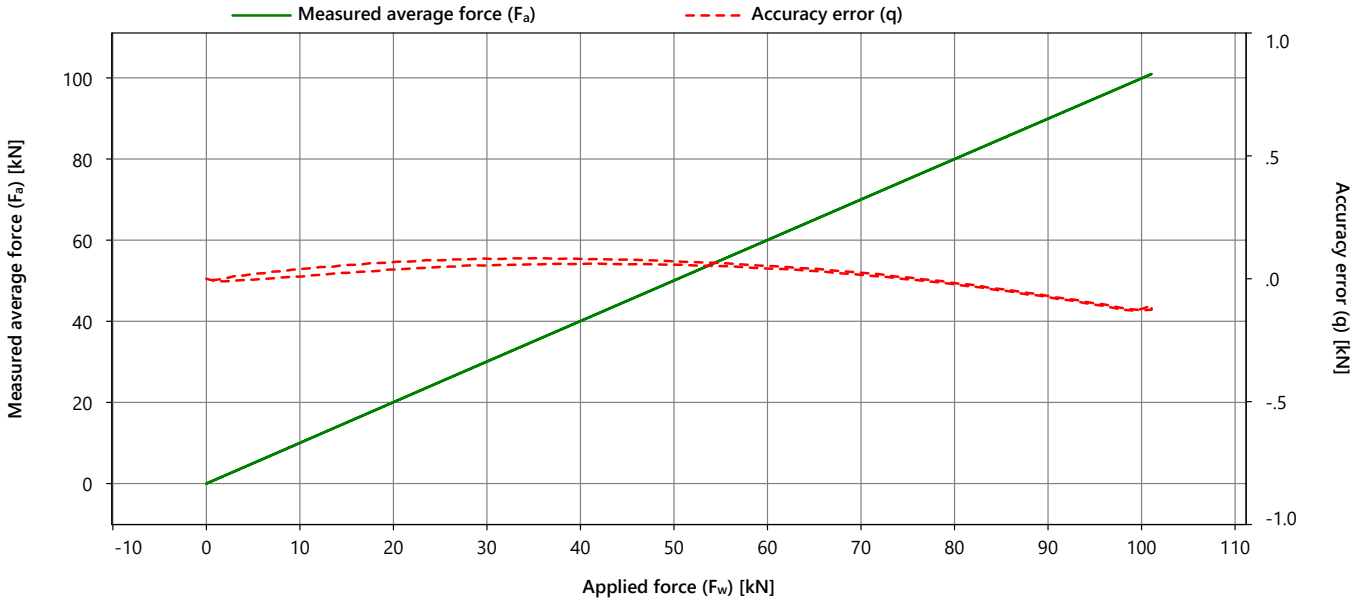
Reference	
Manufacturer	Zwick/Roell
Serial Number	6034-0003
Uncertainty	0.003•F_w+0.015 [kN]

Calibration Details	
Calibration Date	30 Aug 2022 14:06:28
Procedure	EUAF-FNLM- CAL-PR-003
Software Version	3.6.0.51740

Certificate Number
FCN22027318

Sensor	
Channel	Cone+Fric. [Force]
Manufacturer	Fugro Loadcell
Calibrated Range	0 to 100 kN
Maximum Rating	0 to 100 kN

Characteristics	Unit	Value
Max accuracy error (q)	[kN]	0.123
Max repeatability error (b)	[kN]	0.011
Max reversibility error (v)	[kN]	0.030
Zero load error (F_{c0})	[kN]	0.004
Zero load offset (F_0)	[kN]	-0.030
Resolution	[kN]	5.66E-05
Noise RMS	[kN]	0.002
Tip-Sleeve Interaction %	[%]	0.058



Applied force (F_w)	Measured force 1 ($F_{a,1}$)	Measured force 2 ($F_{a,2}$)	Measured force 3 ($F_{a,3}$)	Measured average force (F_a)	Accuracy error (q)	Repeatability error (b)	Reversibility error (v)	Expanded Uncertainty (U)
[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
0.000	-0.001	0.001	0.000	0.000	0.000	0.003		0.017
20.000	20.032	20.041	20.041	20.038	0.038	0.009	0.030	0.086
40.000	40.056	40.062	40.063	40.060	0.060	0.007	0.020	0.141
60.000	60.037	60.045	60.042	60.041	0.041	0.008	0.011	0.201
80.000	79.977	79.979	79.976	79.977	-0.023	0.003	0.004	0.262
100.000	99.881	99.879	99.870	99.877	-0.123	0.011		0.323
80.000	79.979	79.980	79.986	79.982	-0.018	0.007	0.004	0.262
60.000	60.052	60.052	60.053	60.052	0.052	0.001	0.011	0.200
40.000	40.082	40.081	40.079	40.081	0.081	0.003	0.020	0.141
20.000	20.065	20.069	20.071	20.068	0.068	0.005	0.030	0.085
0.000	-0.003	-0.003	-0.005	-0.004	-0.004	0.002		0.017

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Pore 2 Calibration Result [Pressure]

Instrument	
Manufacturer	Fugro
Type	CP15-CF100PB7SN2-P1 E1M4-V1
Serial Number	1701-3469
Electronics	8655
Node Type	7001
Hardware Version	5.01
Software Version	7.11

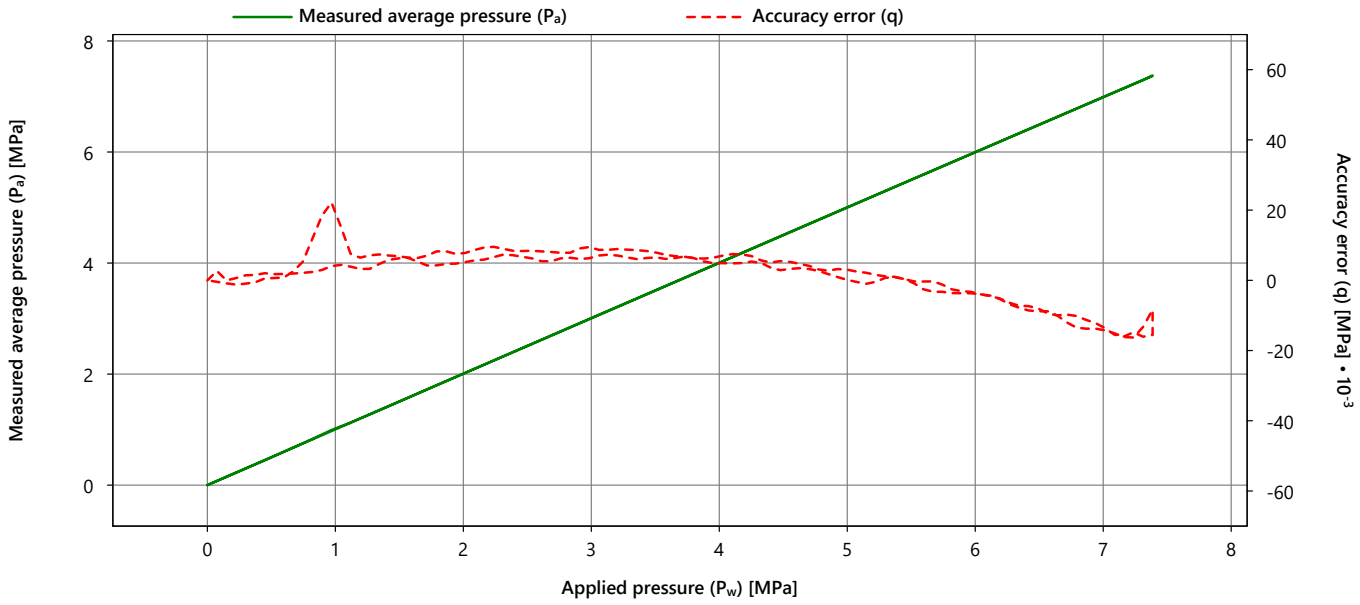
Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•P_w+0.002 [MPa]

Calibration Details	
Calibration Date	30 Aug 2022 14:22:39
Procedure	EUAF-FNLM- CAL-PR-004
Software Version	3.6.0.51740

Certificate Number
FCN22027318

Sensor	
Channel	Pore 2 [Pressure]
Manufacturer	Kistler 4043A50V0408
Calibrated Range	0 to 7 MPa
Maximum Rating	0 to 10.5 MPa

Characteristics	Unit	Value
Max accuracy error (q)	[MPa]	0.014
Max repeatability error (b)	[MPa]	0.003
Max reversibility error (v)	[MPa]	0.002
Zero load error (P_{c0})	[MPa]	0.000
Zero load offset (P_0)	[MPa]	-0.003
Resolution	[MPa]	2.7E-06
Noise RMS	[MPa]	0.000



Applied pressure (P_w)	Measured pressure 1 ($P_{a,1}$)	Measured pressure 2 ($P_{a,2}$)	Measured pressure 3 ($P_{a,3}$)	Measured average pressure (P_a)	Accuracy error (q)	Repeatability error (b)	Reversibility error (v)	Expanded Uncertainty (U)
[MPa]	[MPa]	[MPa]	[MPa]	[MPa]	[MPa]	[MPa]	[MPa]	[MPa]
0.000	0.000	0.000	0.000	0.000	0.000	0.001		0.003
1.400	1.406	1.405	1.406	1.406	0.006	0.001	0.002	0.004
2.800	2.808	2.807	2.805	2.807	0.007	0.002	0.001	0.005
4.200	4.205	4.204	4.206	4.205	0.005	0.003	0.002	0.006
5.600	5.598	5.597	5.597	5.597	-0.003	0.002	0.002	0.006
7.000	6.987	6.987	6.984	6.986	-0.014	0.003		0.007
5.600	5.599	5.599	5.600	5.600	0.000	0.001	0.002	0.006
4.200	4.206	4.207	4.209	4.207	0.007	0.002	0.002	0.006
2.800	2.808	2.808	2.808	2.808	0.008	0.000	0.001	0.004
1.400	1.407	1.407	1.408	1.407	0.007	0.001	0.002	0.004
0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.003

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Slope Calibration Result [Inclination]

Instrument	
Manufacturer	Fugro
Type	CP15-CF100PB7SN2-P1 E1M4-V1
Serial Number	1701-3469
Electronics	8655
Node Type	7001
Hardware Version	5.01
Software Version	7.11

Reference	
Manufacturer	Hoek-O-Mat
Serial Number	2109-0002
Uncertainty	0.6 [Deg]

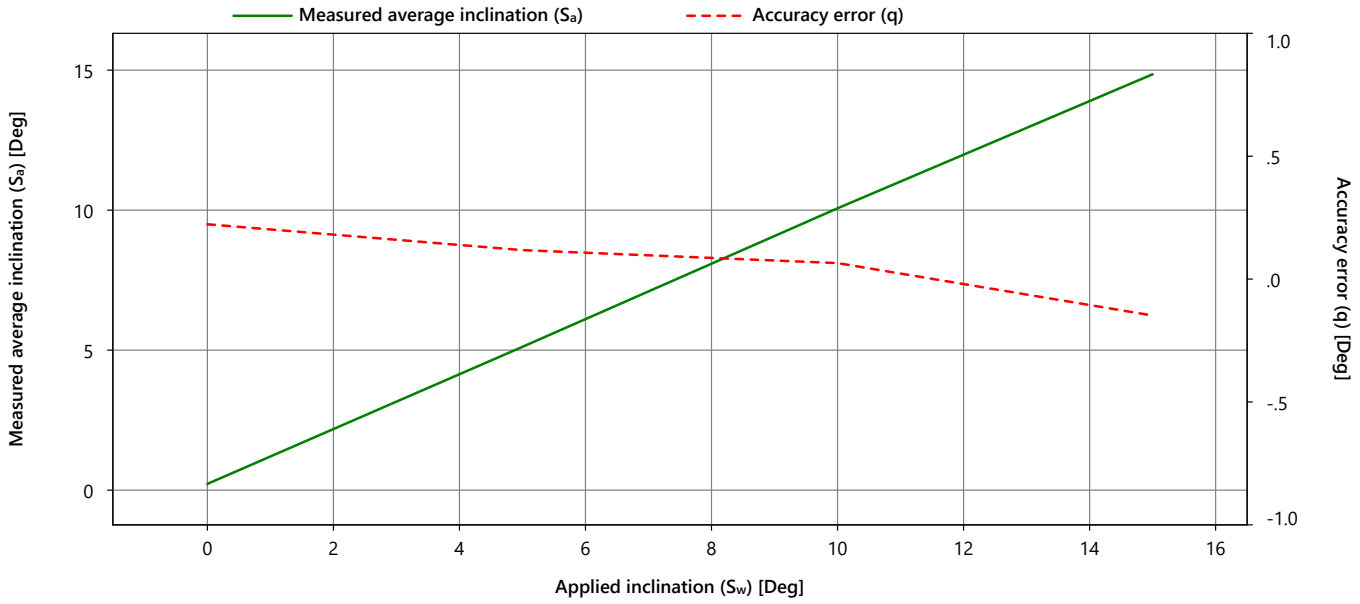
Calibration Details	
Calibration Date	30 Aug 2022 14:10:25
Procedure	EUAF-FNLM- CAL-PR-005
Software Version	3.6.0.51740

Certificate Number
FCN22027318

Sensor	
Channel	Slope [Inclination]
Manufacturer	ADXL
Calibrated Range	0 to 15 Deg
Maximum Rating	0 to 20 Deg

Characteristics	Unit	Value
Max accuracy error (q)	[Deg]	0.2
Max repeatability error (b)	[Deg]	0.1
Zero load error (S_{c0})	[Deg]	0.0
Zero load offset (S_0)	[Deg]	0.2
Resolution	[Deg]	1.27E-05
Noise RMS	[Deg]	0.0

Inclination is defined as the angular deviation of the cone penetrometer from the vertical.



Applied inclination (S_w)	Measured inclination 1 ($S_{a,1}$)	Measured inclination 2 ($S_{a,2}$)	Measured inclination 3 ($S_{a,3}$)	Measured average inclination (S_a)	Accuracy error (q)	Repeatability error (b)	Expanded Uncertainty (U)
[Deg]	[Deg]	[Deg]	[Deg]	[Deg]	[Deg]	[Deg]	[Deg]
0.0	0.2	0.3	0.2	0.2	0.2	0.1	0.7
5.0	5.1	5.1	5.2	5.1	0.1	0.1	0.7
10.0	10.0	10.1	10.1	10.1	0.1	0.1	0.7
15.0	14.8	14.9	14.9	14.9	-0.1	0.1	0.7

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Symbols, Definitions and References

Certificate Number
FCN22027318

Symbols and Definitions (general)

b	Repeatability error, defined as the maximum difference between the measurements of the instrument at the applied value.
Noise RMS	Signal noise, defined as the quadratic mean when the sensor is not subjected to load.
q	Accuracy error, defined as the difference between the average indicated value by the instrument and the applied value.
Resolution	Smallest change in a quantity being measured that causes a perceptible change in the corresponding indication.
U	The stated uncertainty is that of the average indicated quantity, and includes the entire calibration method, including the reference and calibrated sensor, but excludes the difference between average indicated value by the instrument and the applied value.
v	Reversibility error, defined as the difference between the average indicated value by the instrument at a certain applied value when it was increased and when it was decreased.

Symbols and Definitions (quantity specific: Q may be substituted for F, P or S, as appropriate)

Q_0	Zero load offset, instrument output where the specified measured quantity value is zero.
Q_a	Average indicated quantity value by the instrument.
$Q_{a,x}$	Quantity value indicated by the instrument at measurement x.
Q_{c0}	Zero load error, defined as the difference between the average indicated value by the instrument before and after the load cycle has been applied.
Q_w	Applied reference quantity value.

Quantities

F	Force
P	Pressure
S	Inclination

References

International Organization for Standardization, 2012. *ISO 22476-1:2012 Geotechnical investigation and testing, Field testing, Electrical cone and piezocone penetration test.* Geneva: ISO.

European Co-operation For Accreditation, 2013. *Evaluation of the uncertainty of measurement in calibration.* European Co-operation For Accreditation, Publication; EA-4/02 M:2013.

International Organization for Standardization, 2005. *ISO 17025:2005 General requirements for the competence of testing and calibration laboratories.* Geneva: ISO.

International Organization for Standardization, 2003. *ISO 10012:2003 Measurement management systems - requirements for measurement processes and measuring equipment.* Geneva: ISO.

International Organization for Standardization, 2008. *ISO 9001:2008 Quality management systems - Requirements.* Geneva: ISO.

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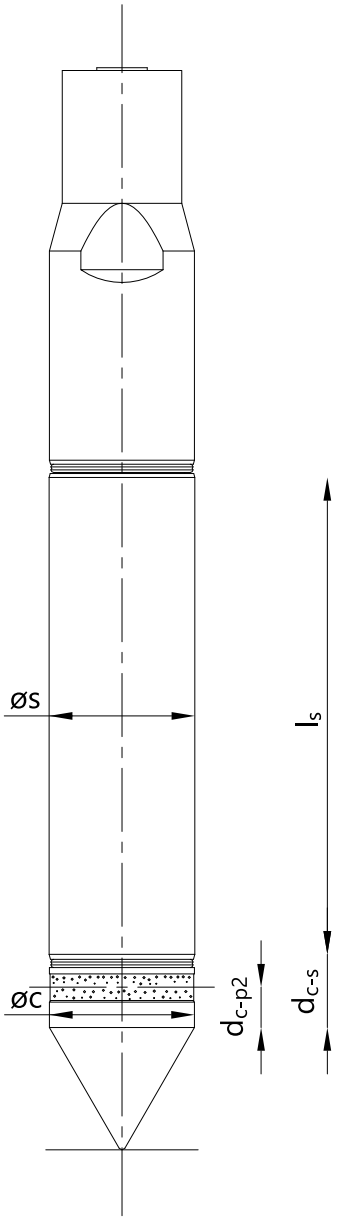
Typical Dimensions

Instrument

Manufacturer	Fugro
Type	CP15-CF100PB7SN2-P1E1M4-V1
Serial Number	1701-3469

Appendix Applicable to Certificate Number FCN22027318



Typical Dimensions

A_c	Cross-sectional projected area of the cone	0.0015 m^2
A_s	Surface area of the friction sleeve	0.02 m^2
af	Cone net area ratio	0.58
bf	Friction sleeve net area ratio	0.01392
øc	Diameter of the cylindrical part of the cone	43.85 mm
øs	Diameter of the friction sleeve	44.1 mm
l_s	Length of the friction sleeve	143.6 mm
d_{c-s}	Cone - friction sleeve distance	16 mm
d_{c-p2}	Cone - pore 2 distance	6.9 mm

Diagram is not to scale

Cone Net Area Ratio Result

Instrument	
Manufacturer	Fugro
Type	CP15-CF100PB7SN2-P1 E1M4-V1
Serial Number	1701-3469
Electronics	8655
Node Type	7001
Hardware Version	5.01
Software Version	7.11

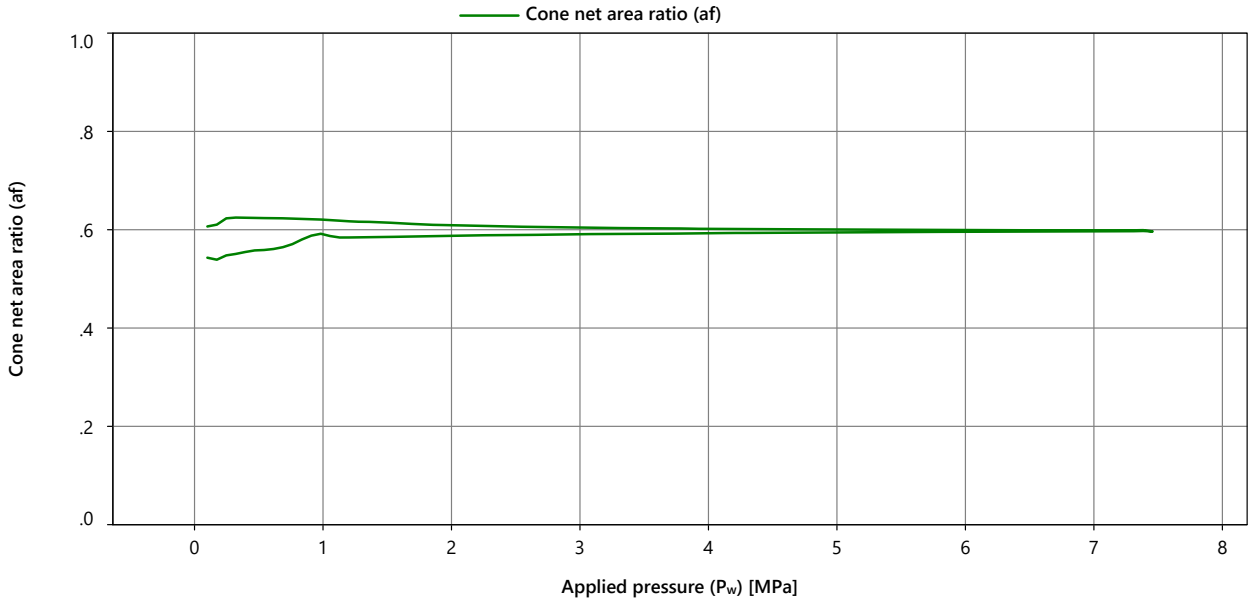
Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•P_w+0.002 [MPa]

Measurement Details	
Measurement Date	30 Aug 2022 14:22:39
Procedure	EUAF-FNLM- CAL-PR-003
Software Version	3.6.0.51740

Appendix Applicable to Certificate Number FCN22027318

Characteristics	Unit	Value
Cone net area ratio (af)	[-]	0.60

The cone net area ratio presented above is determined at the maximum applied pressure during the measurement.



Applied pressure (P_w) [MPa]	Measured cone net area ratio 1 (af,1)	Measured cone net area ratio 2 (af,2)	Measured cone net area ratio 3 (af,3)	Measured average cone net area ratio (af)
1.400	0.616	0.615	0.615	0.615
2.800	0.605	0.605	0.605	0.605
4.200	0.602	0.601	0.602	0.602
5.600	0.600	0.600	0.600	0.600
7.000	0.599	0.599	0.598	0.599
5.600	0.595	0.595	0.595	0.595
4.200	0.593	0.593	0.594	0.593
2.800	0.590	0.590	0.590	0.590
1.400	0.585	0.585	0.586	0.585

Friction Sleeve Net Area Ratio Result

Instrument	
Manufacturer	Fugro
Type	CP15-CF100PB7SN2-P1 E1M4-V1
Serial Number	1701-3469
Electronics	8655
Node Type	7001
Hardware Version	5.01
Software Version	7.11

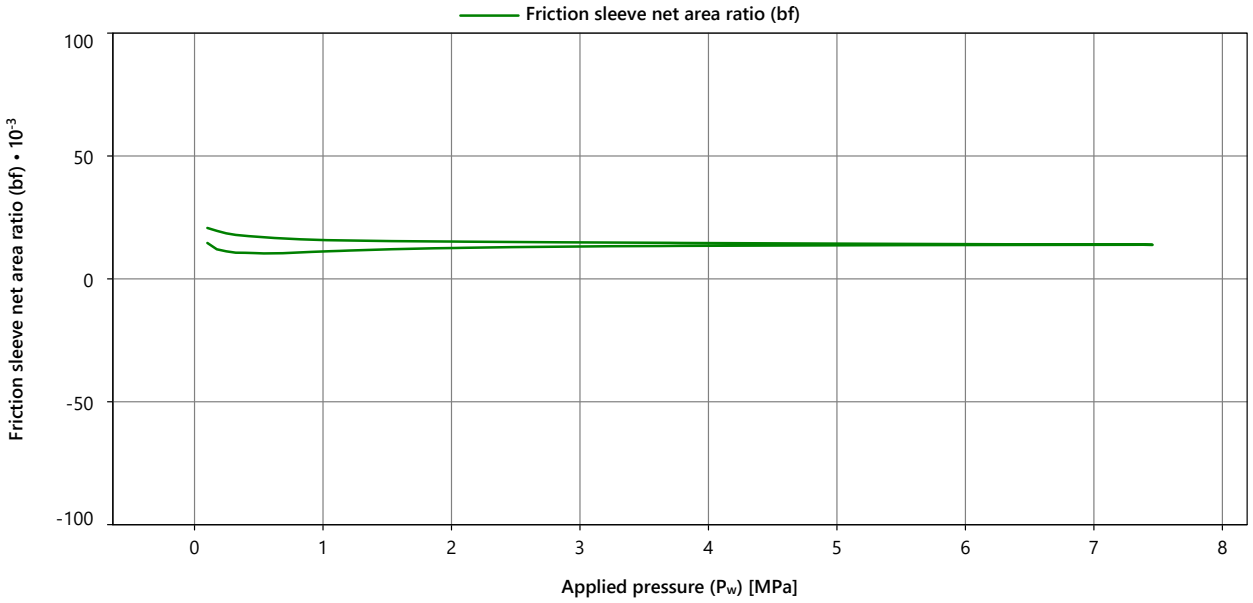
Reference	
Manufacturer	Keller PA-33X
Serial Number	3257-0002
Uncertainty	0.0005•P_w+0.002 [MPa]

Measurement Details	
Measurement Date	30 Aug 2022 14:22:39
Procedure	EUAF-FNLM- CAL-PR-003
Software Version	3.6.0.51740

Appendix Applicable to Certificate Number FCN22027318

Characteristics	Unit	Value
Friction sleeve net area ratio (bf)	[-]	0.01384

The friction sleeve net area ratio presented above is determined at the maximum applied pressure during the measurement.



Applied pressure (P_w) [MPa]	Measured friction sleeve net area ratio (bf) 1 (bf,1)	Measured friction sleeve net area ratio (bf) 2 (bf,2)	Measured friction sleeve net area ratio (bf) 3 (bf,3)	Measured average Friction sleeve net area ratio (bf)
1.400	0.012	0.012	0.012	0.012
2.800	0.013	0.013	0.013	0.013
4.200	0.014	0.014	0.014	0.014
5.600	0.014	0.014	0.014	0.014
7.000	0.014	0.014	0.014	0.014
5.600	0.014	0.014	0.014	0.014
4.200	0.015	0.015	0.015	0.015
2.800	0.015	0.015	0.015	0.015
1.400	0.015	0.015	0.015	0.015

Symbols and Definitions

Appendix Applicable to Certificate Number FCN22027318

Symbols and Definitions (general)	
af	Cone net area ratio, defined as the factor between the applied pressure to the instrument and the indicated cone resistance.
af,x	Measured cone net area ratio at measurement x.
bf	Friction sleeve net area ratio, defined as the factor between the applied pressure to the instrument and the indicated sleeve friction.
bf,x	The measured friction sleeve net area ratio at measurement x.

Symbols and Definitions (quantity specific: Q may be substituted for P, as appropriate)	
Q_w	Applied reference quantity value.

Quantities	
P	Pressure

Calibration Certificate

Applicant	Fugro Netherlands Marine B.V. Prismastraat 4 2631 RT, Nootdorp The Netherlands

Certificate Number
FCN22027319

Instrument	Seismic Penetrometer
Manufacturer	Fugro
Type	SP15-G0-P1E2M4-V2
Serial Number	1734-0061

Calibration method The instrument was calibrated according to Fugro procedures using a comparison technique against a reference standard.

Environmental Conditions	
Temperature during calibration	20.5 ± 3 °C
Atmospheric pressure during calibration	1000 ± 100 mbar

Result The calibration result is shown on the next page(s).

Traceability Fugro reference standards are periodically recertified and are traceable to the International System of Units (SI). Fugro's calibration system meets or exceeds the requirements of ISO 9001:2008, ISO 10012:2003 and ISO/IEC 17025:2017.

Calibration date 30-Aug-2022

Calibrate before 28-Feb-2023

Calibrated Sensor	Manufacturer / Type	Calibrated Range	Maximum Rating	Procedure

Nootdorp, 31-Aug-2022

This certificate is issued provided that Fugro assumes no liability.

Ruud Schrijvers
Deputy Manager Transducer Workshop

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Typical Dimensions

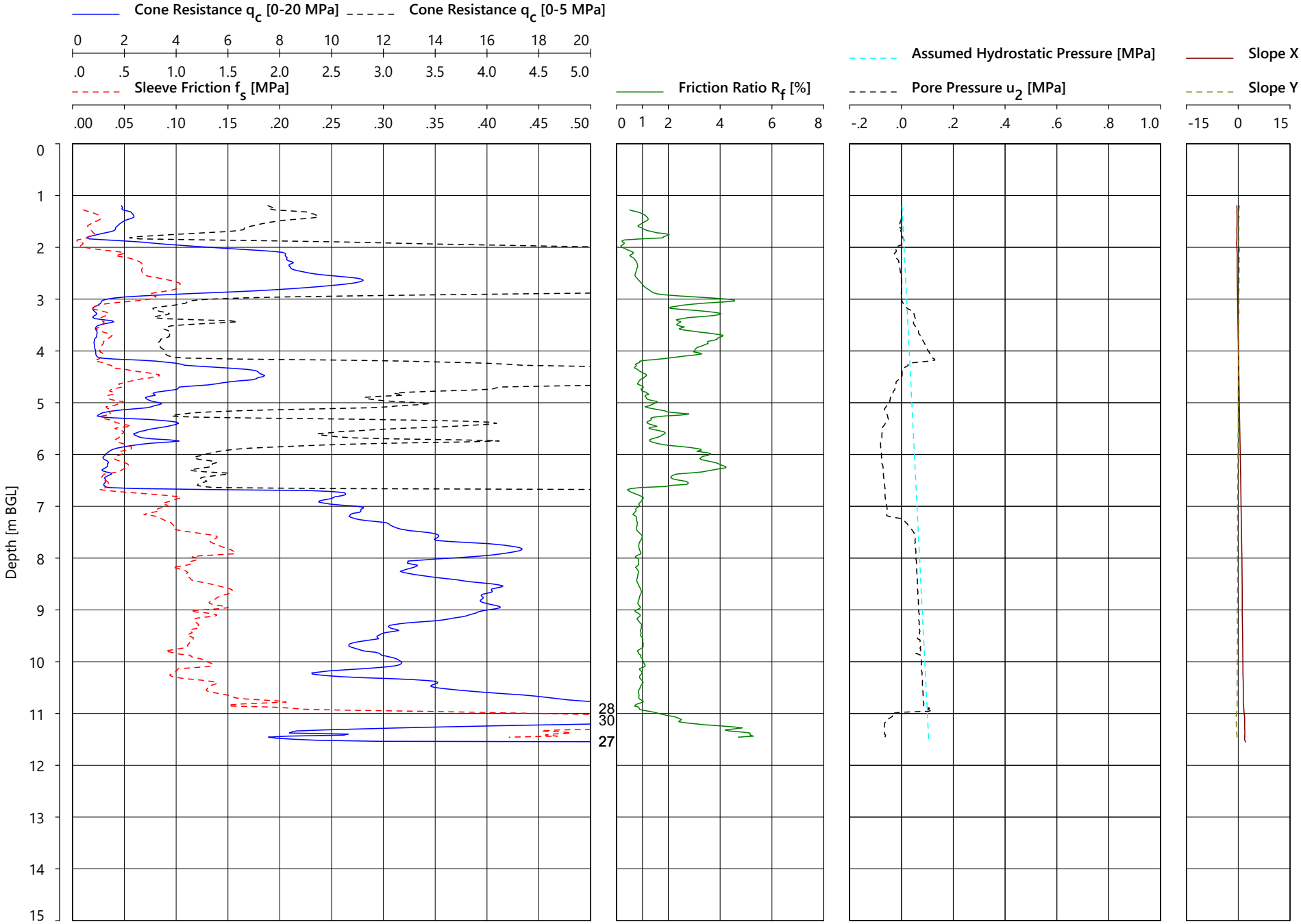
Instrument	
Manufacturer	Fugro
Type	SP15-G0-P1E2M4-V2
Serial Number	1734-0061

Appendix Applicable to Certificate Number FCN22027319

Typical Dimensions	
Cross-sectional projected area of the cone	0.0015 m^2
Diameter of the cylindrical part of the cone	43.85 mm
Cone - seismic distance	271 mm
Seismic array spacing	0.5 m

G.4 Cone Penetration Test Results

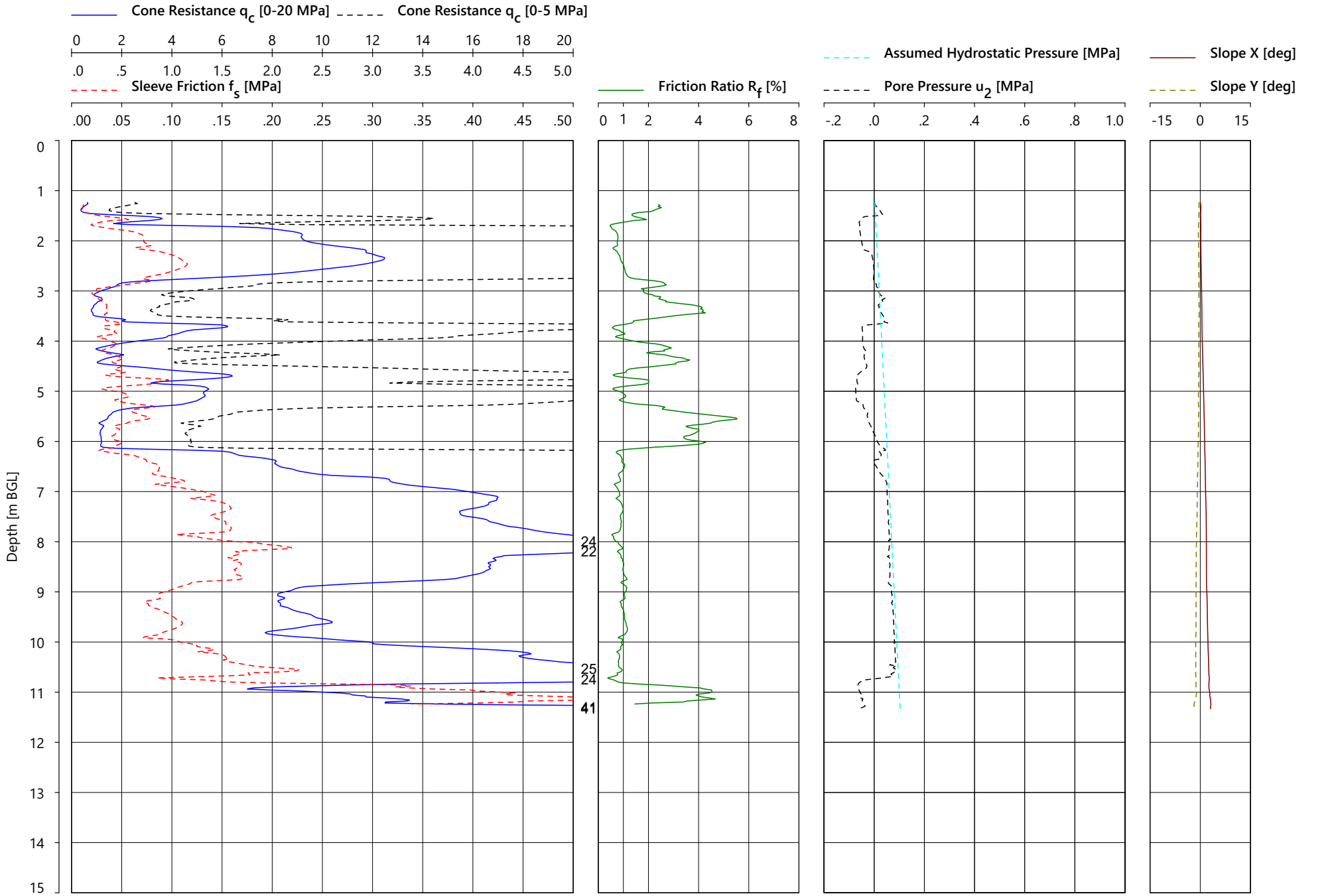
Title	Reference
Plot 1: Measured Data	Referenced by Location ID
Plot 2: Derived Data	Referenced by Location ID
Plot 3: Derived Parameters	Referenced by Location ID
Seismic Test Results	Referenced by Location ID



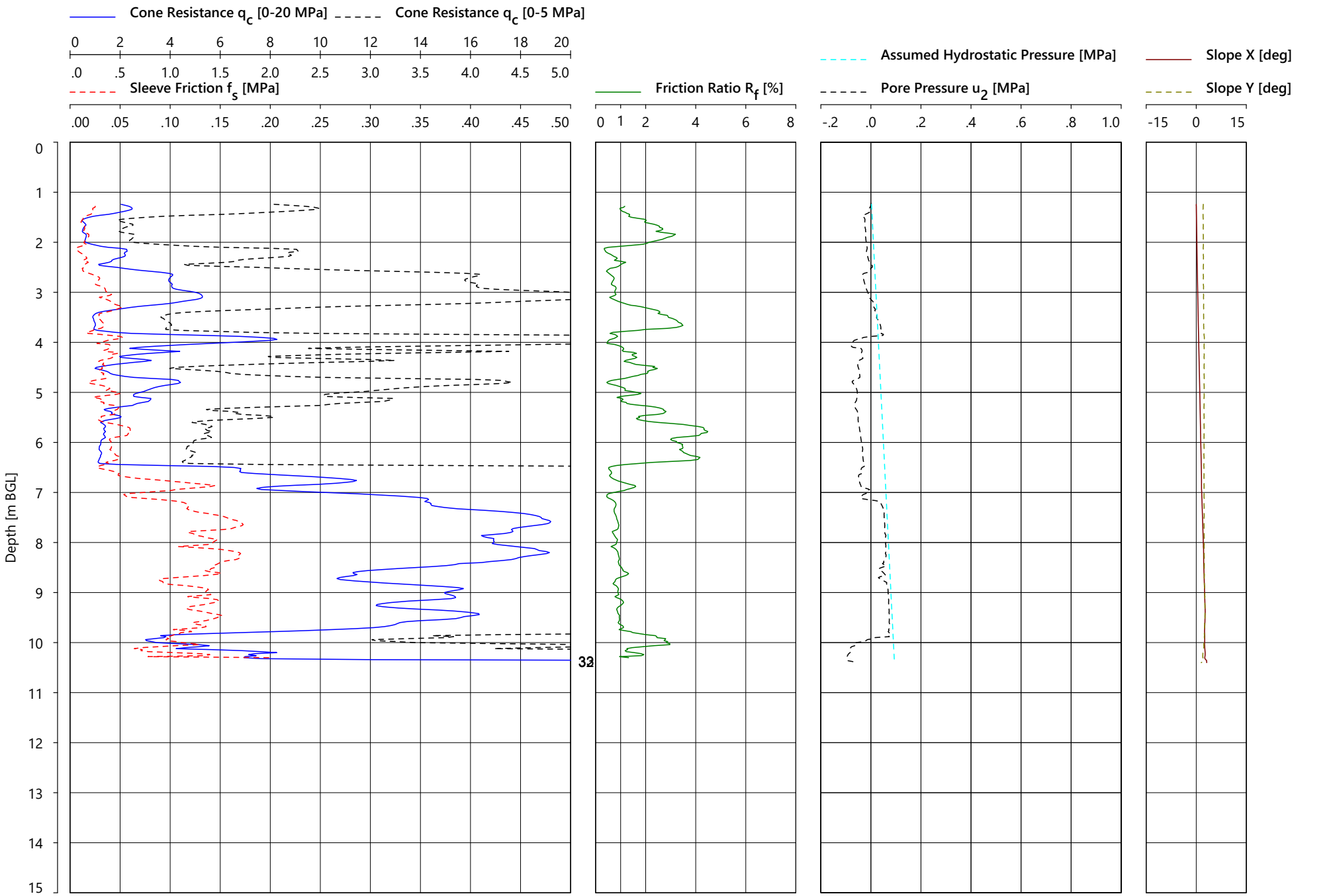
Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	18-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT01
Coordinates : **E** 480334.31 **N** 410094.40 **Ground Level [m OD] :** +1.81
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

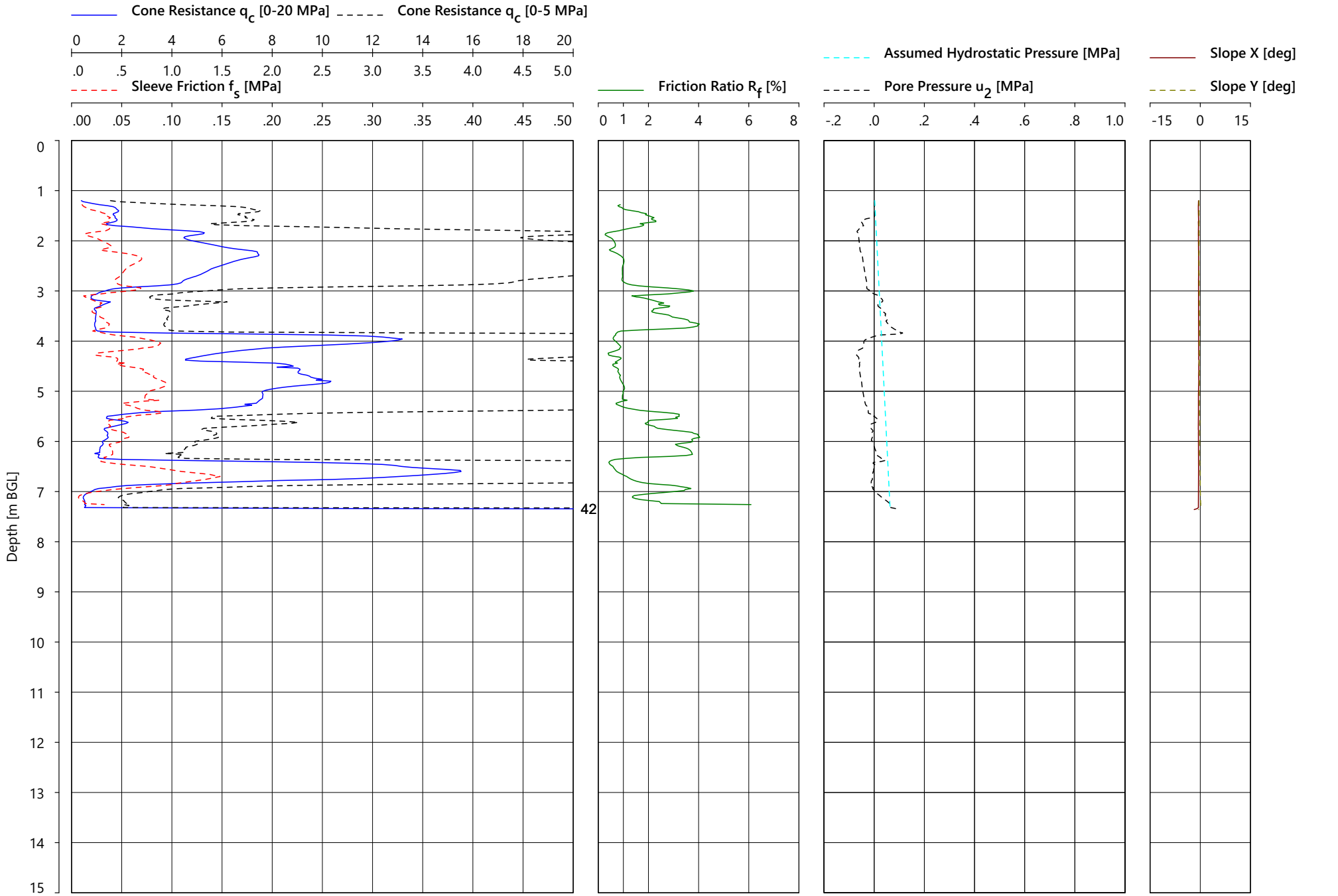
FUGRO



Piezocone Measured Data		**Stop Criterion :**	end depth reached	**Location :**	**AR-CPT02**
CPT Truck ID :	GB17	**Application Class / Type :**	Class 2 / TE2	**Operator :**	MS	**Coordinates :**	**E** 480347.81 **N** 410189.59 **Ground Level [m OD] :** +1.30
CPT Cone :	1701-3474	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Compiled by :**	LCH	**Project :**	212562
Date of Test :	18-Oct-2022	**Assumed Water Level [m gl] :**	-1.0	**Checked by :**	KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
						Client :	SSE Generation Limited (SSE)



Piezocone Measured Data						Location :	AR-CPT03		
CPT Truck ID :	GB17	Stop Criterion :	end depth reached	Operator :	MS	Coordinates :	E 480362.27	N 410292.25	Ground Level [m OD] : +1.59
CPT Cone :	1701-3474	Application Class / Type :	Class 2 / TE2	Compiled by :	LCH	Project :	212562		
Date of Test :	18-Oct-2022	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Checked by :	KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI			
		Assumed Water Level [m gl] :	-1.0			Client :	SSE Generation Limited (SSE)		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	03-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT04
Coordinates : **E** 480389.27 **N** 410389.61 **Ground Level [m OD] :** +1.28
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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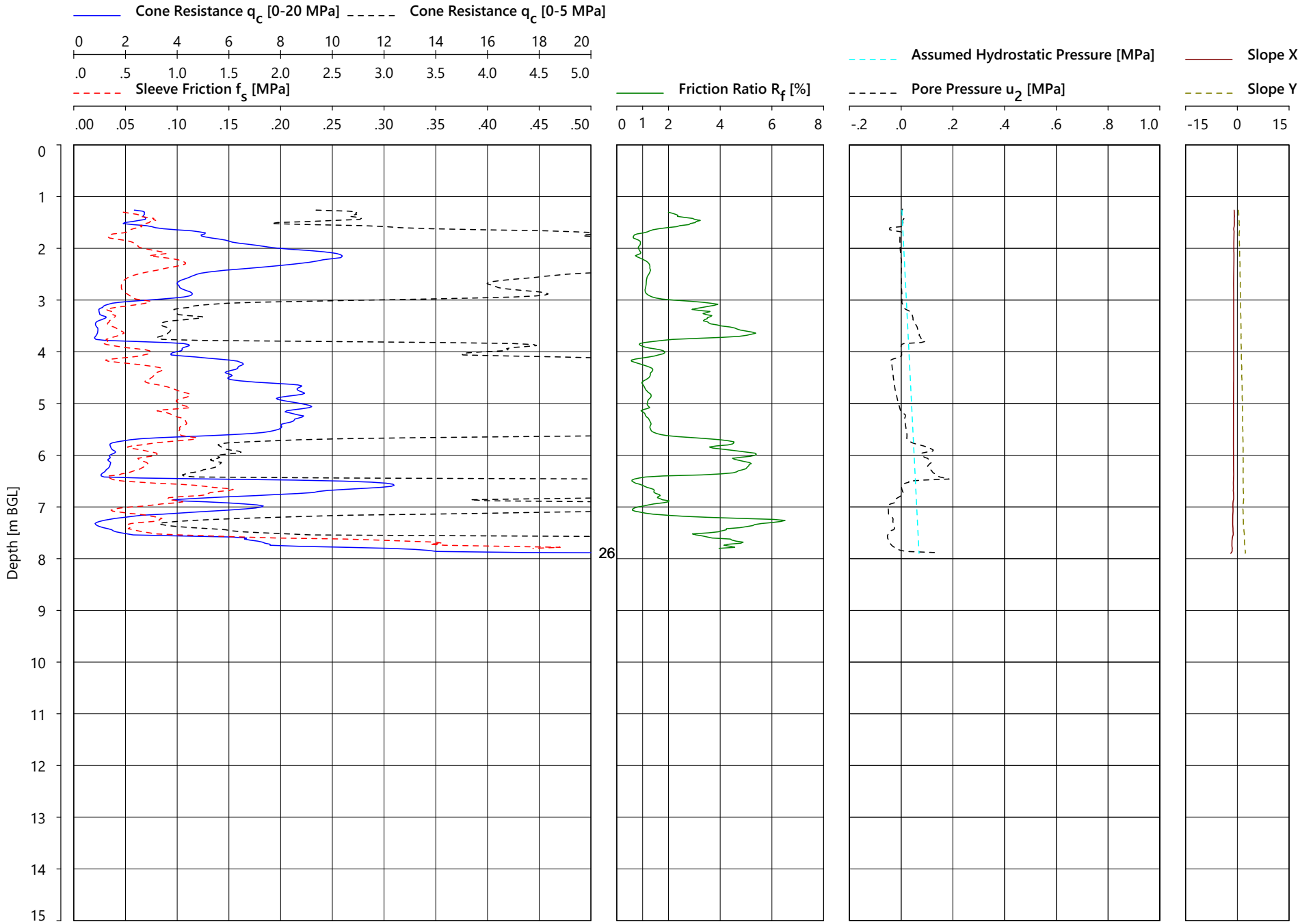

Piezocone Measured Data				**Location :**	**AR-CPT05**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 480390.06 **N** 410490.44 **Ground Level [m OD] :** +1.54
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Operator :**	NF
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Compiled by :**	LCH
		Assumed Water Level [m gl] :	-1.0	**Checked by :**	KES
				Project :	212562
					F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
				Client :	SSE Generation Limited (SSE)

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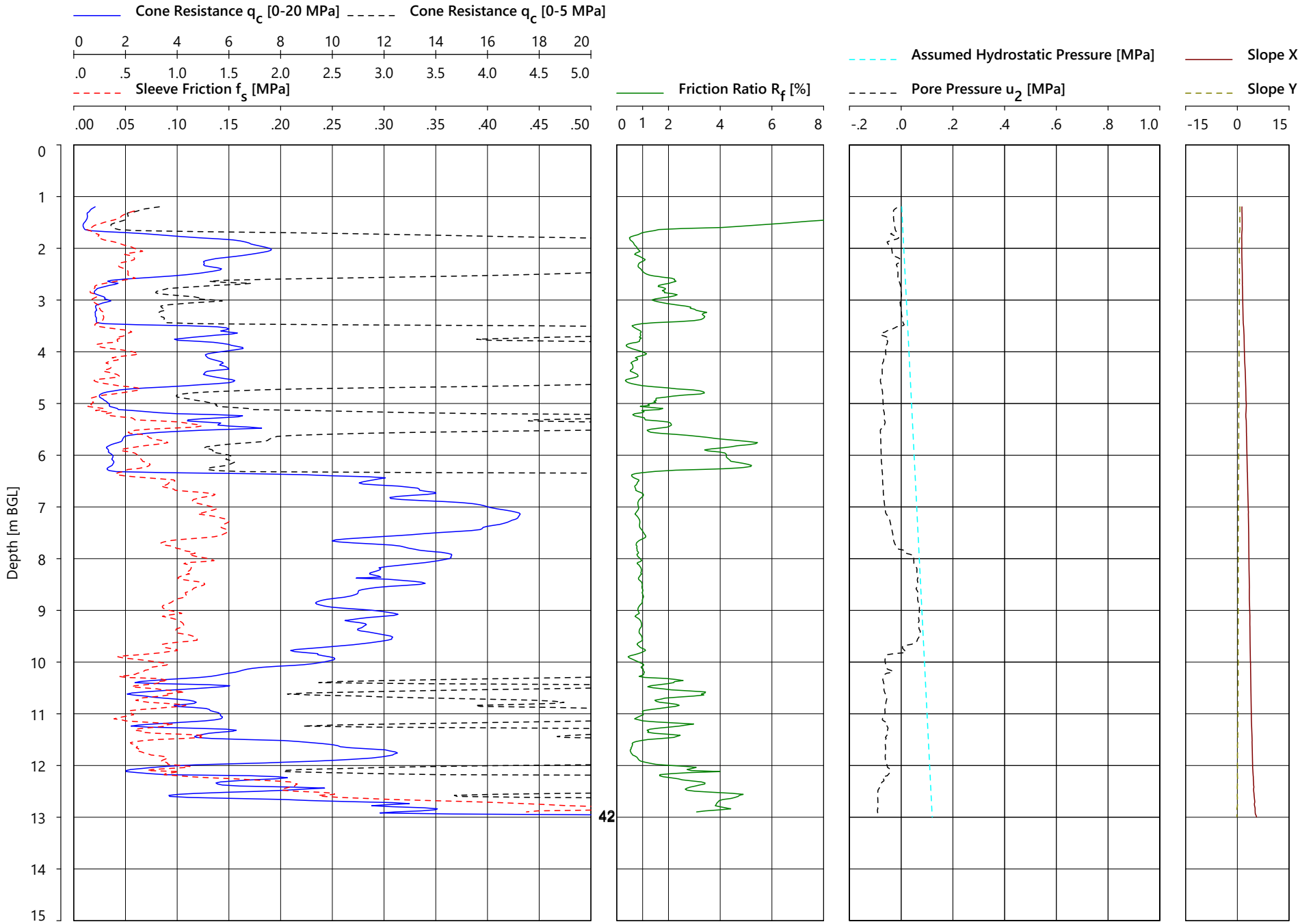
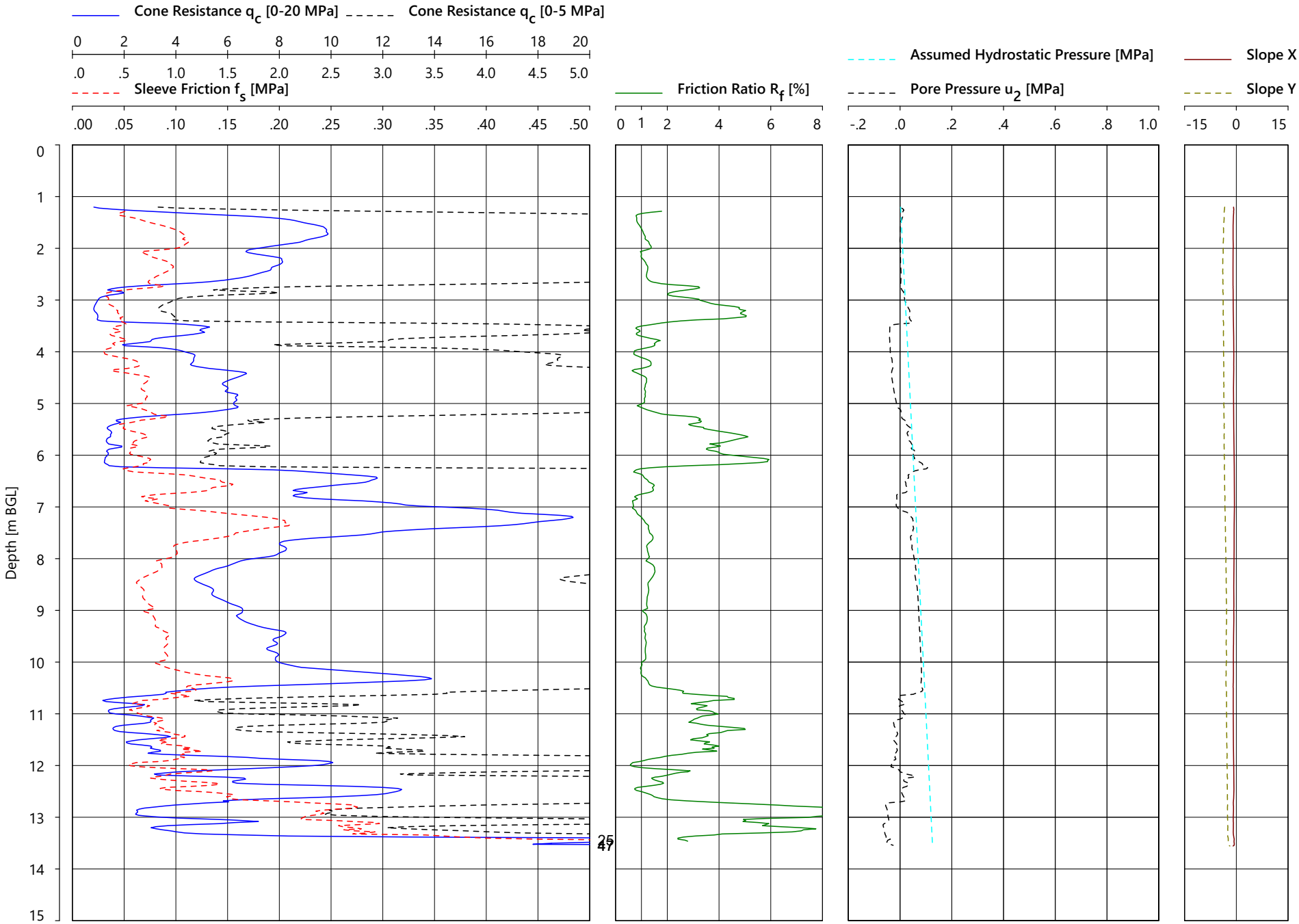


Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	13-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT06
Coordinates : **E** 480416.83 **N** 410587.66 **Ground Level [m OD] :** +1.40
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT07
Coordinates : E 480417.41 N 410688.22 **Ground Level [m OD] :** +1.19
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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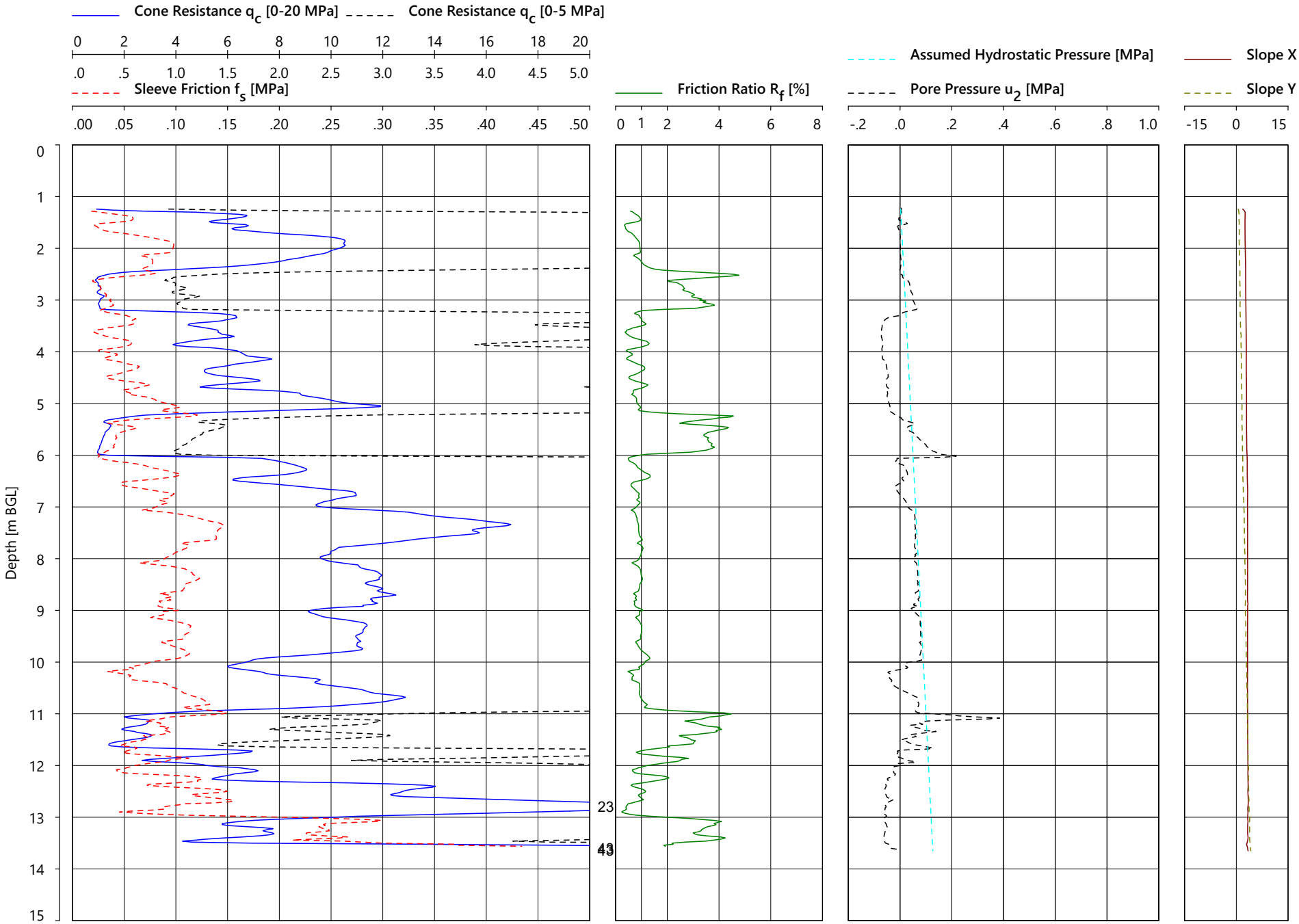
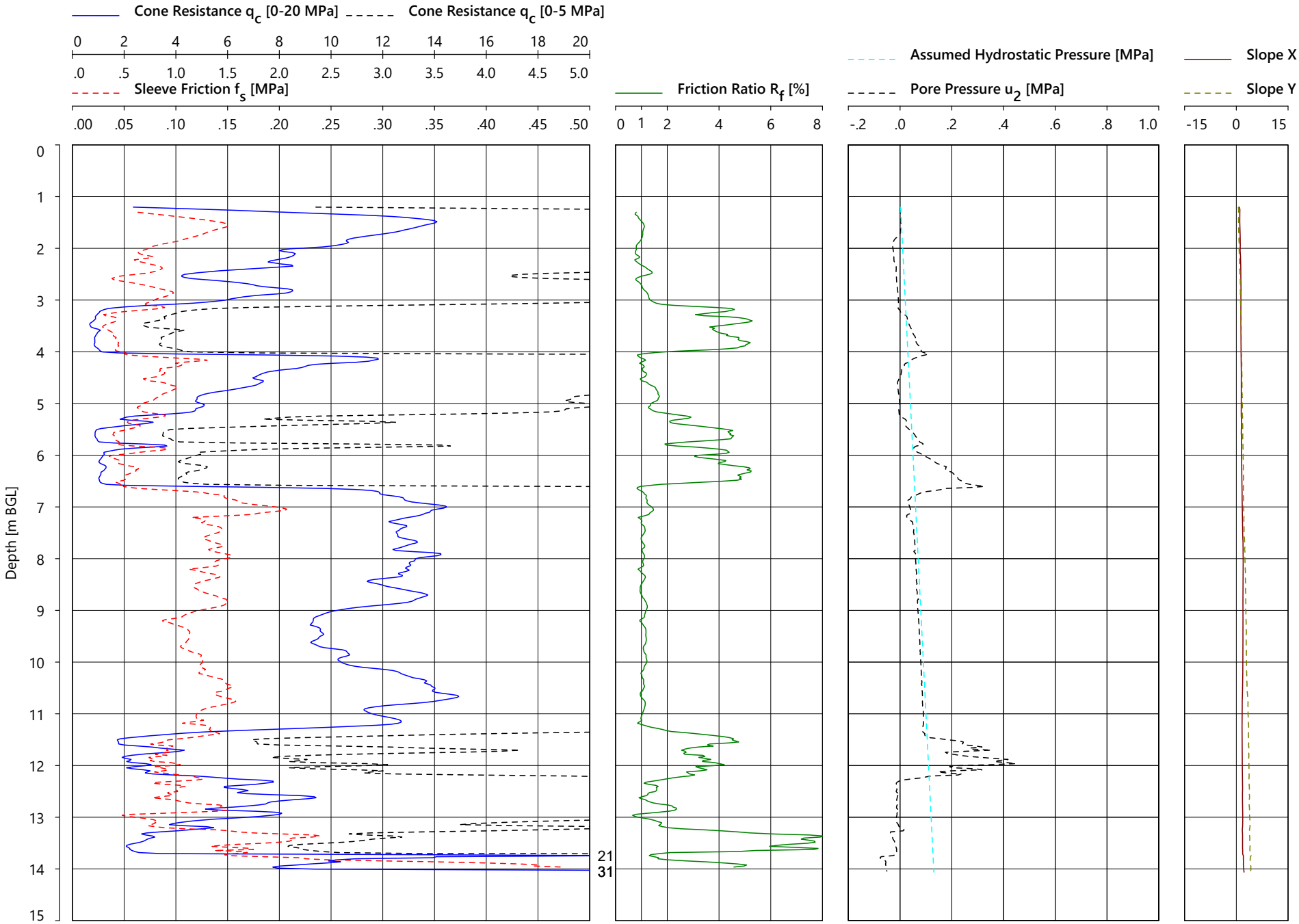


Piezocone Measured Data						Location :	AR-CPT08		
		Stop Criterion :	cone value			Coordinates :	E 480444.65	N 410785.62	Ground Level [m OD] : +0.75
CPT Truck ID :	GB17	Application Class / Type :	Class 2 / TE2	Operator :	MS	Project :	212562		
CPT Cone :	1701-3474	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Compiled by :	LCH	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI			
Date of Test :	03-Oct-2022	Assumed Water Level [m gl] :	-1.0	Checked by :	KES	Client :	SSE Generation Limited (SSE)		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT09
Coordinates : E 480444.94 N 410886.70 **Ground Level [m OD] :** +1.40
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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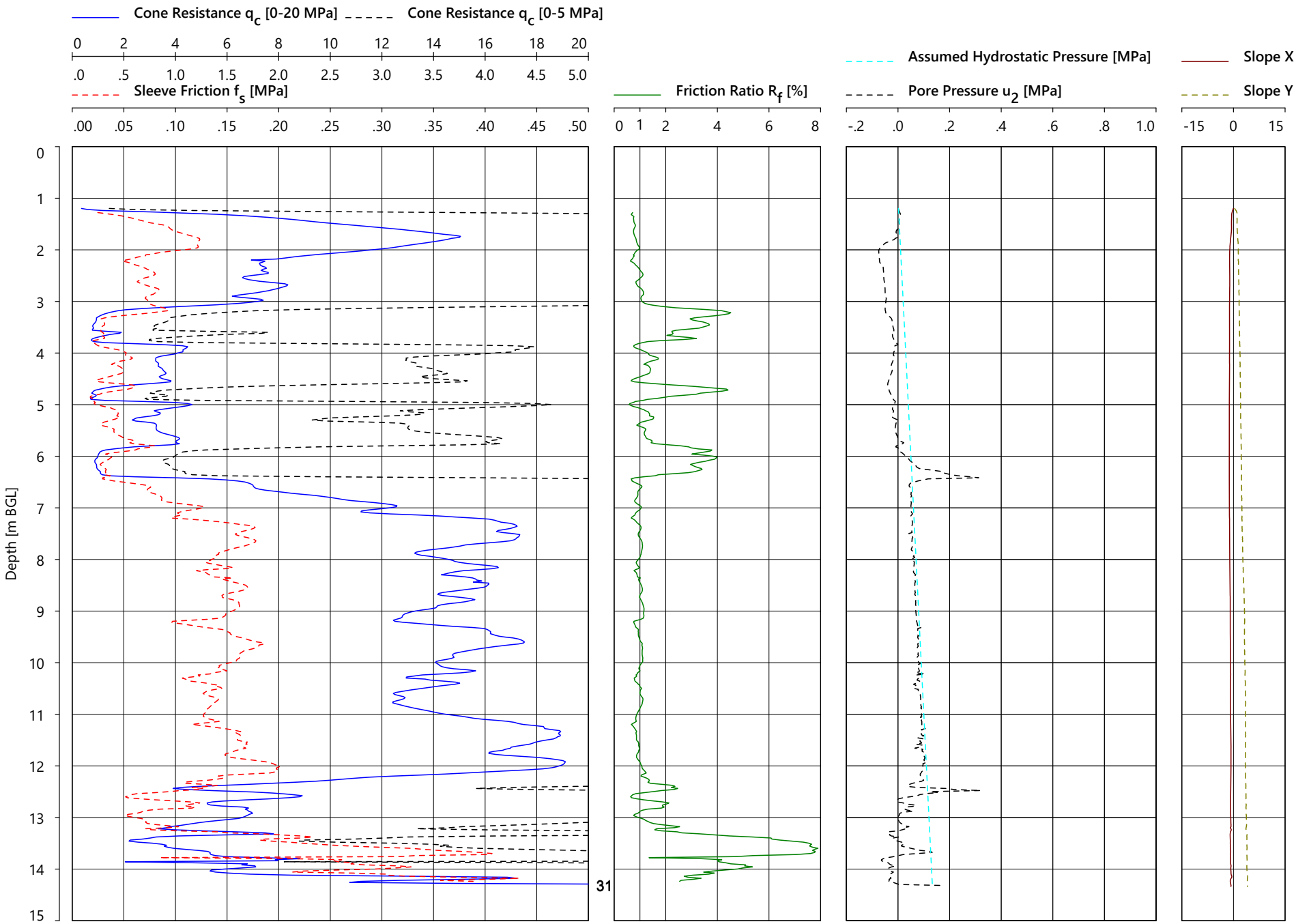
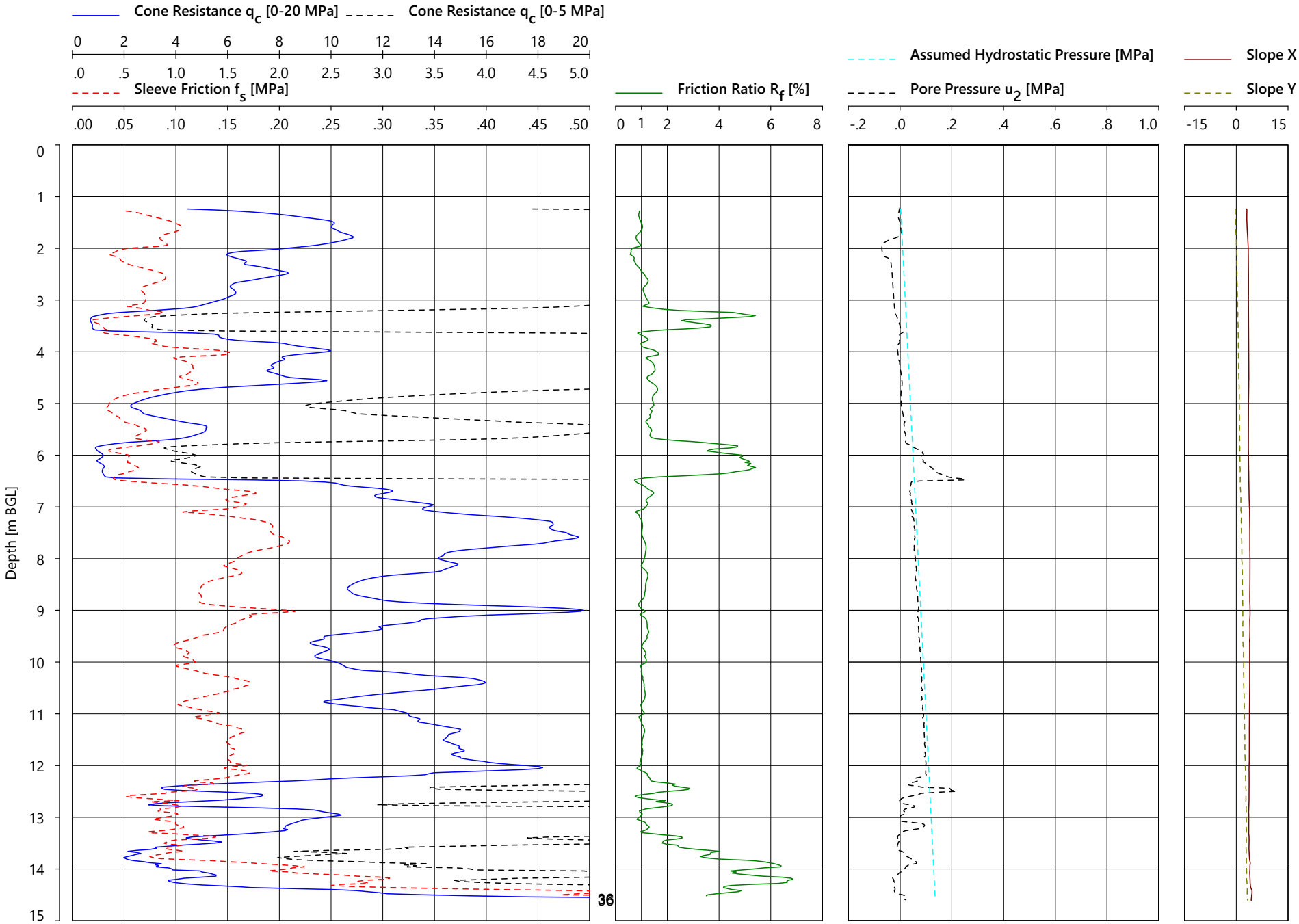
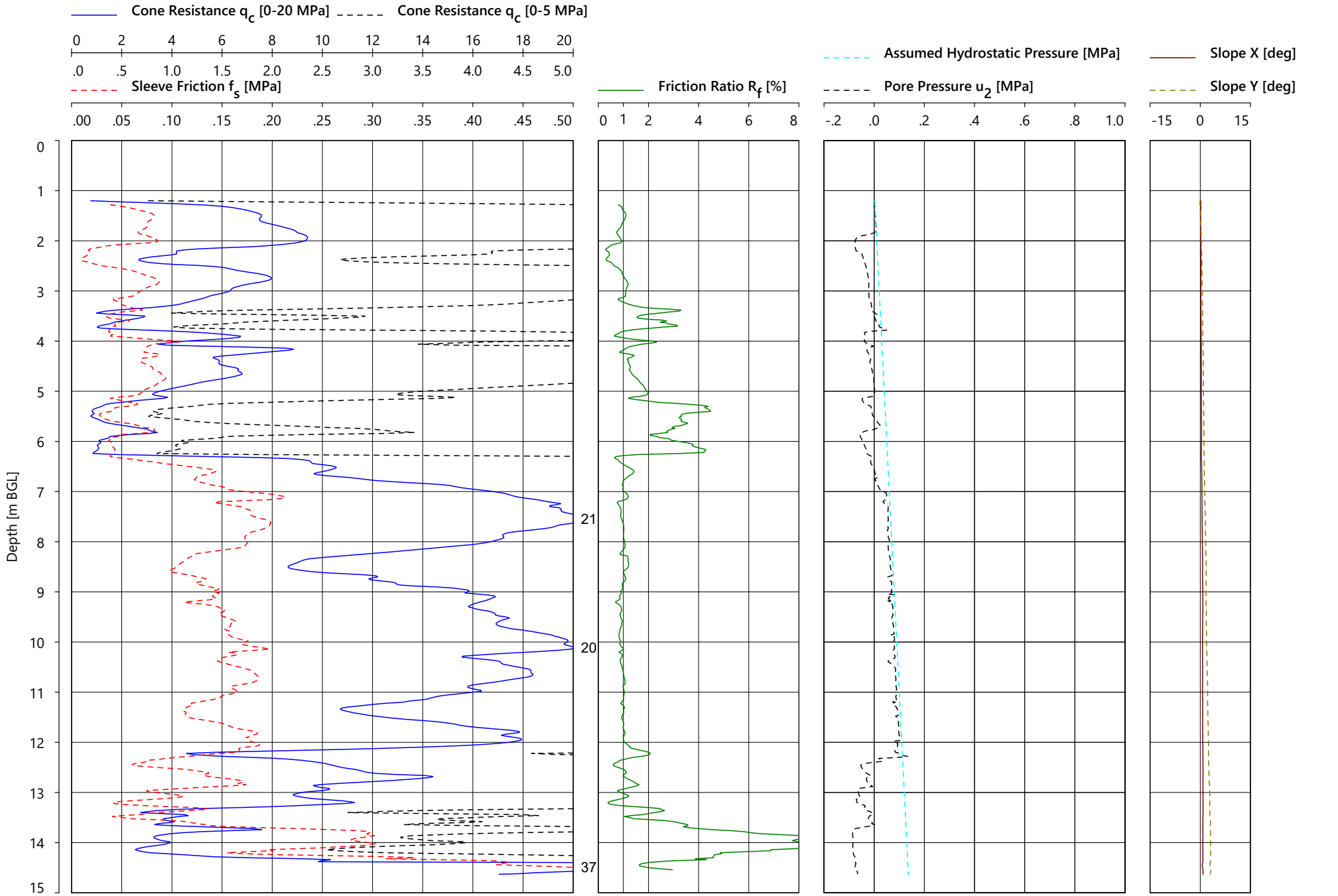


Piezocone Measured Data				**Location :**	**AR-CPT10**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 480470.24 **N** 410984.11 **Ground Level [m OD] :** +1.30
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	03-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	MS		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data				**Location :**	**AR-CPT11**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 480473.42 **N** 411084.17 **Ground Level [m OD] :** +1.39
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT12
Coordinates : E 480608.39 N 411147.51 **Ground Level [m OD] :** +1.35
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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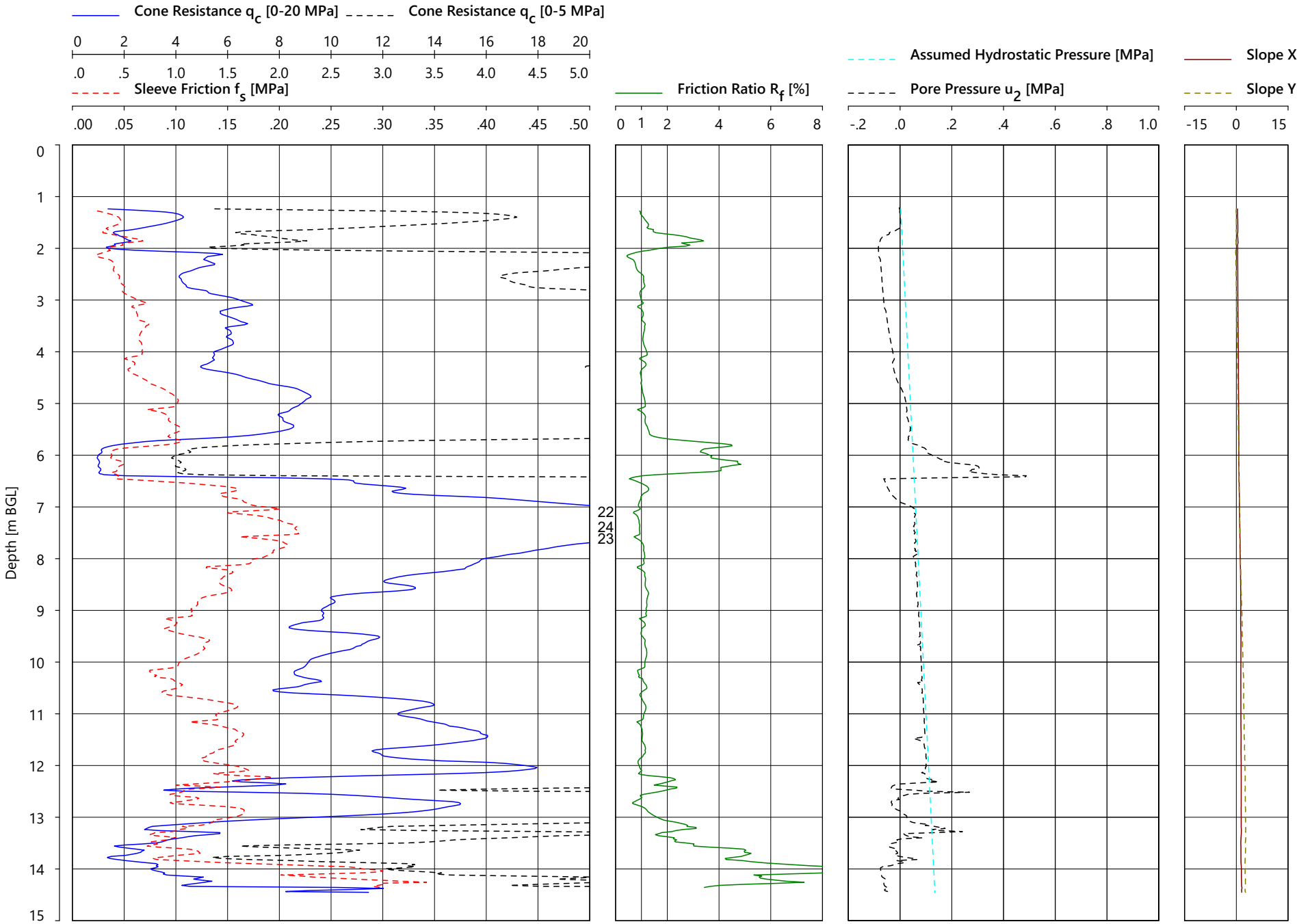

Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT13
Coordinates : **E** 480705.86 **N** 411171.71 **Ground Level [m OD] :** +1.26
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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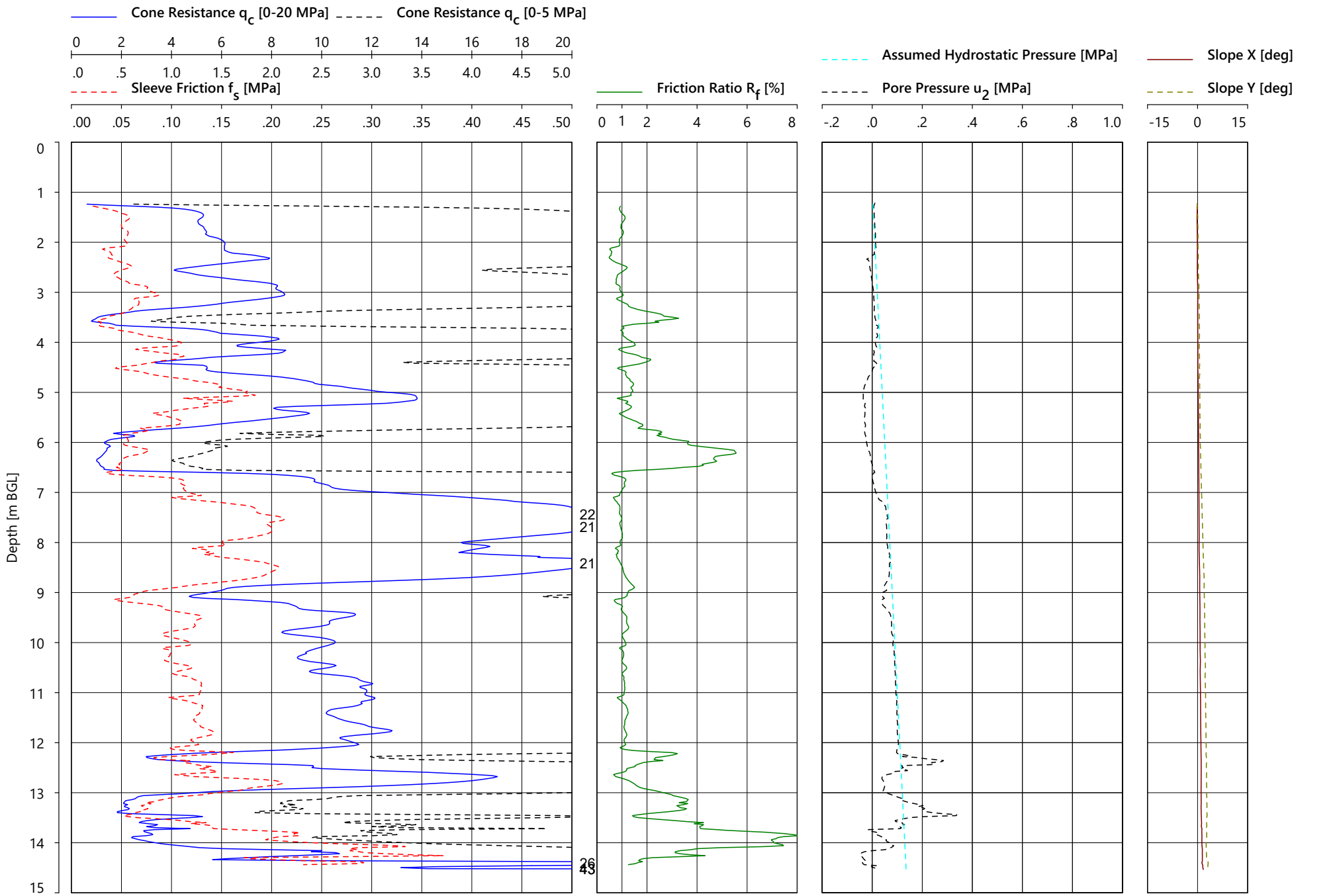

Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT14
Coordinates : **E** 480807.18 **N** 411170.16 **Ground Level [m OD] :** +1.30
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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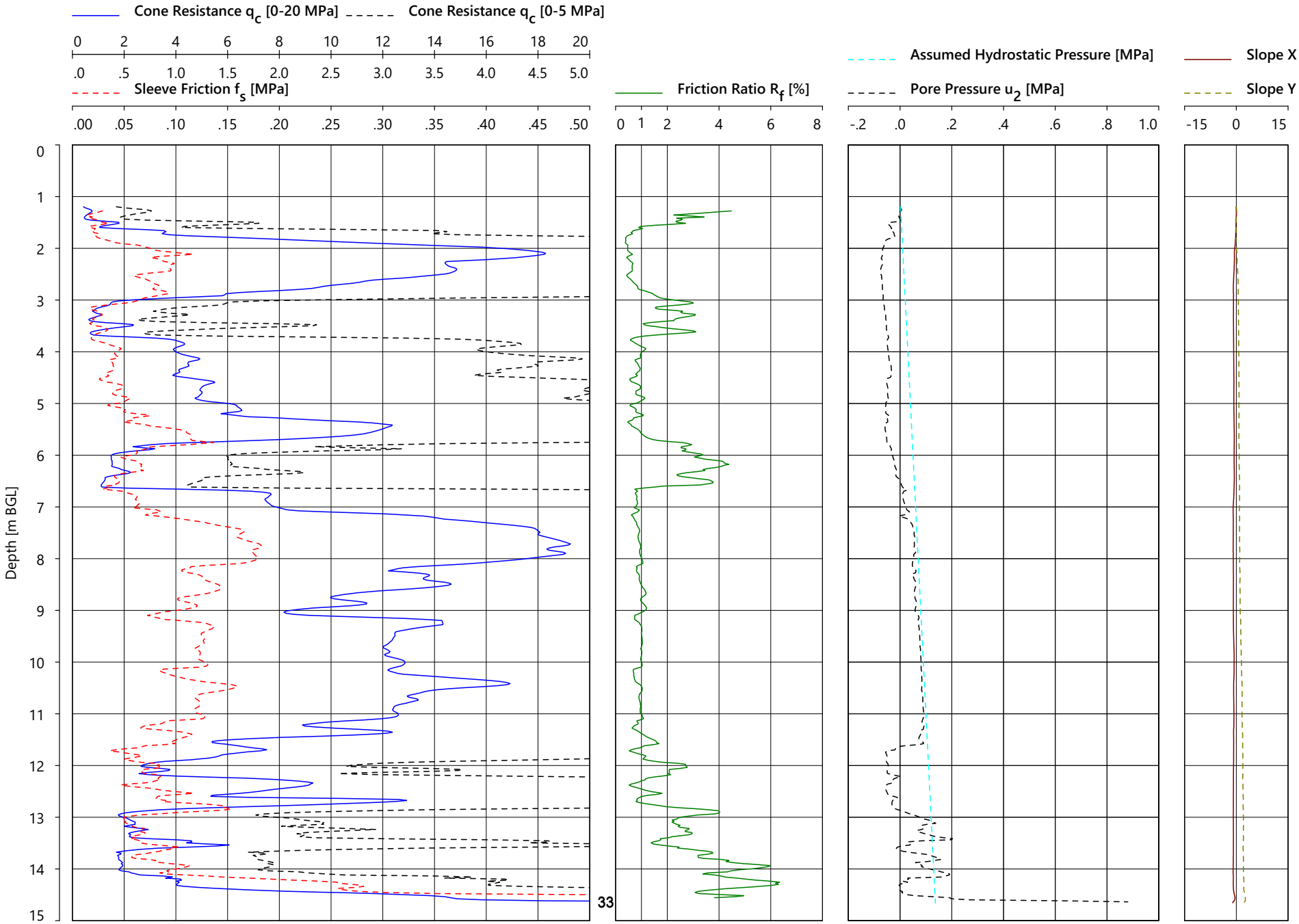
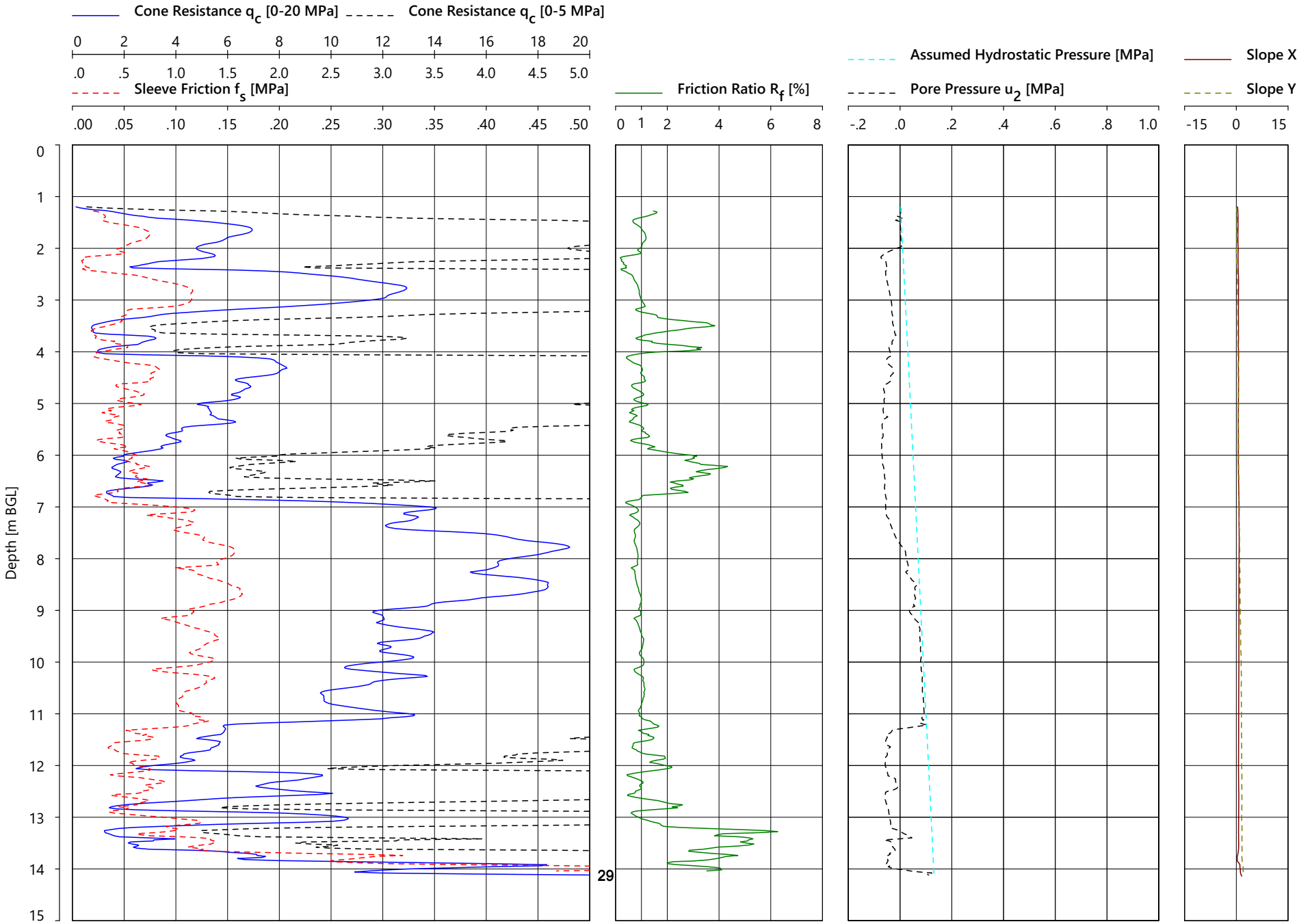
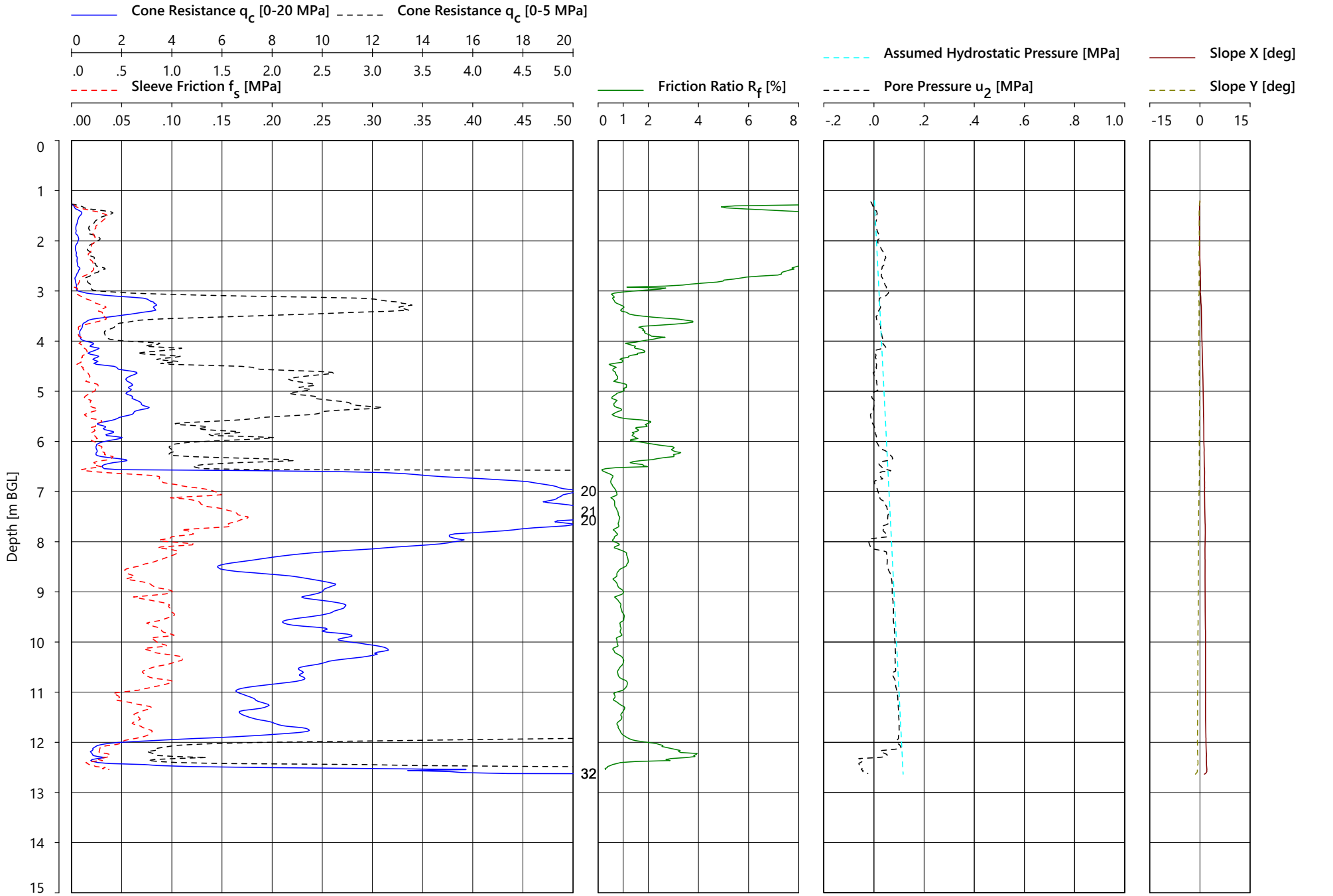


Piezocone Measured Data				**Location :**	**AR-CPT15**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 480904.21 **N** 411183.54 **Ground Level [m OD] :** +1.22
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	06-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		

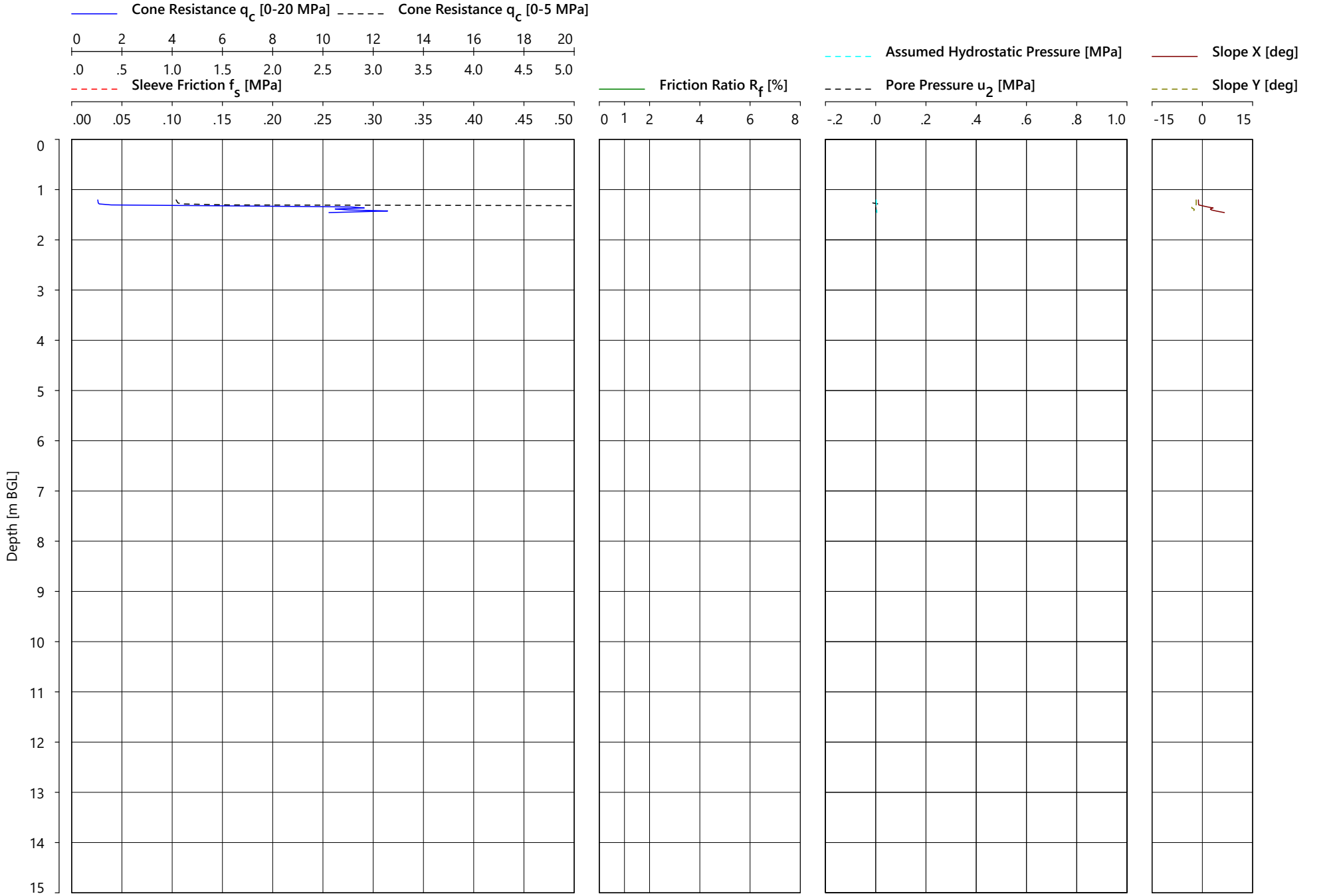


Piezocone Measured Data				**Location :**	**AR-CPT16**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481005.77 **N** 411194.36 **Ground Level [m OD] :** +1.28
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		

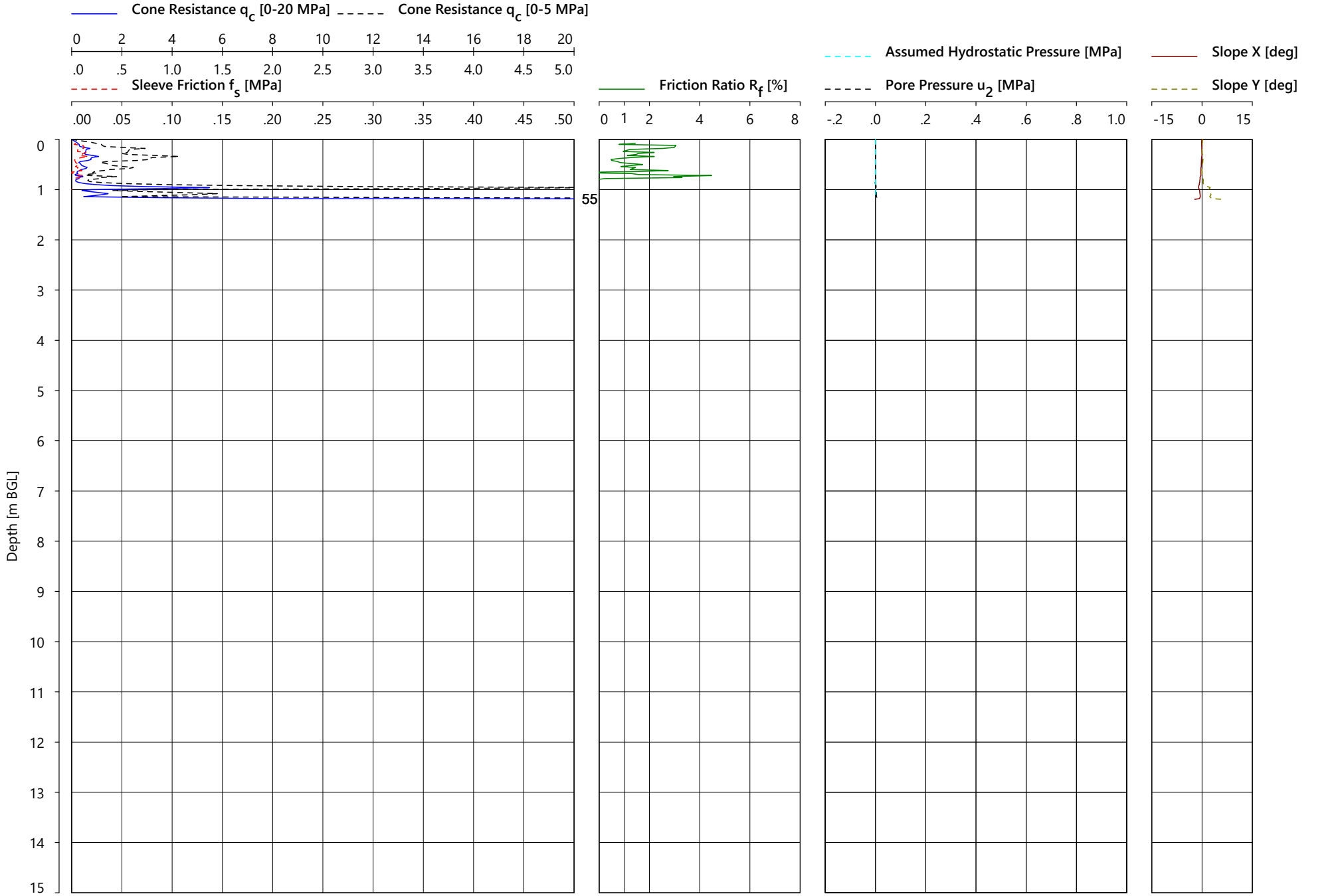


Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	17-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

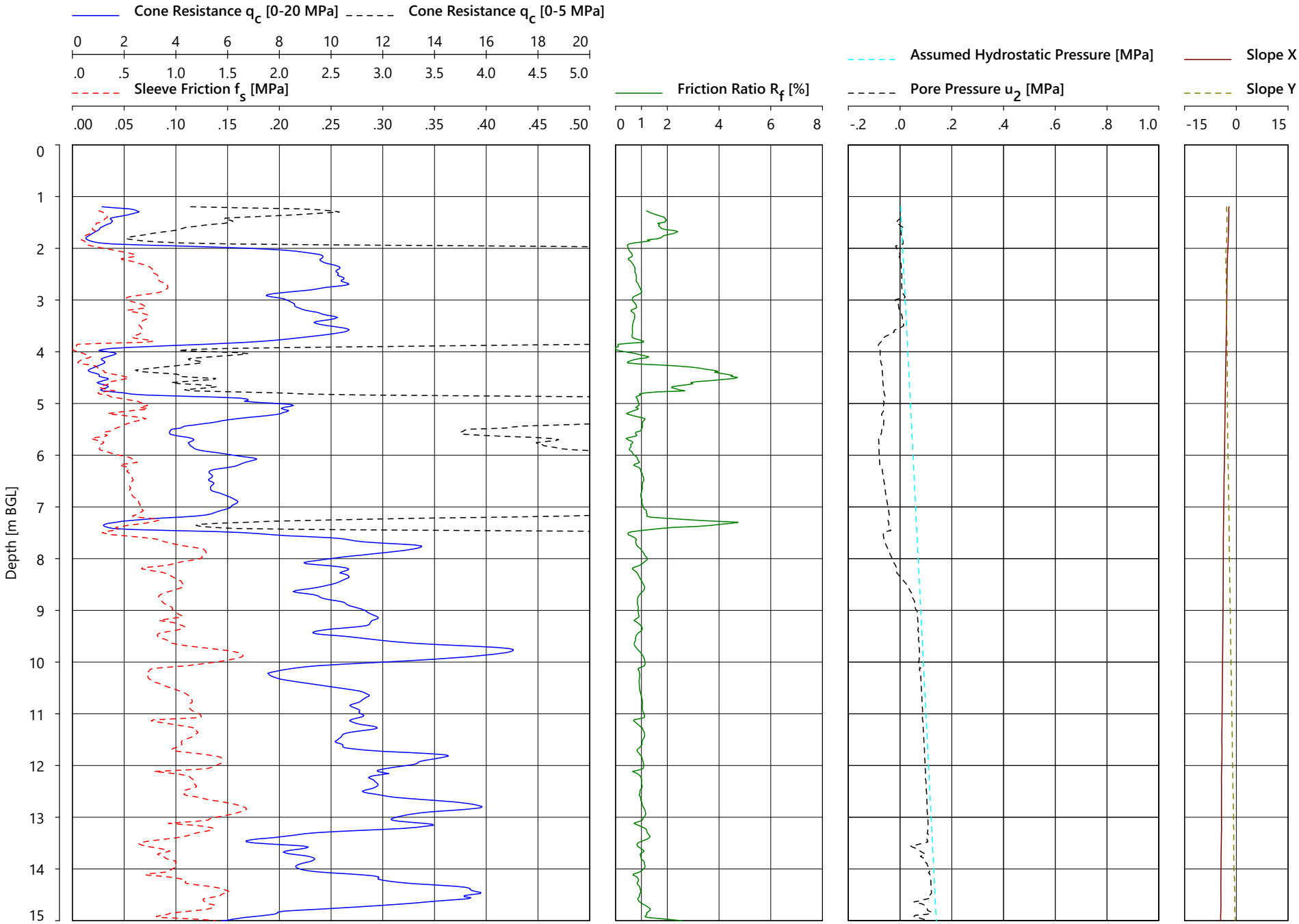
Location : AR-CPT17
Coordinates : **E** 481103.20 **N** 411220.50 **Ground Level [m OD] :** +1.28
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Measured Data			**Location :** AR-CPT21
CPT Truck ID : GB17	**Stop Criterion :** max. inclination value		**Coordinates :** **E** 481704.32 **N** 411573.67 **Ground Level [m OD] :** +2.99
CPT Cone : 1701-3474	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Project :** 212562
Date of Test : 13-Oct-2022	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
	Assumed Water Level [m gl] : -1.0	**Checked by :** KES	**Client :** SSE Generation Limited (SSE)



Piezocone Measured Data				Location :	BR-CPT01		
		Stop Criterion : max. penetration force		Coordinates :	E 482095.20	N 411651.80	Ground Level [m OD] : +2.34
CPT Truck ID : EU-115		Application Class / Type : Class 2 / TE2	Operator : HG,MS	Project :	212562		
CPT Cone : 1701-3474		Assumed Soil Unit Weight : 19.0 [kN/m^3]	Compiled by : LCH	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI			
Date of Test : 27-Oct-2022		Assumed Water Level [m gl] : -1.0	Checked by : KES	Client :	SSE Generation Limited (SSE)		



Piezocone Measured Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	27-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **BR-CPT04**
Coordinates : **E** 482453.70 **N** 411604.00 **Ground Level [m OD] :** +2.02
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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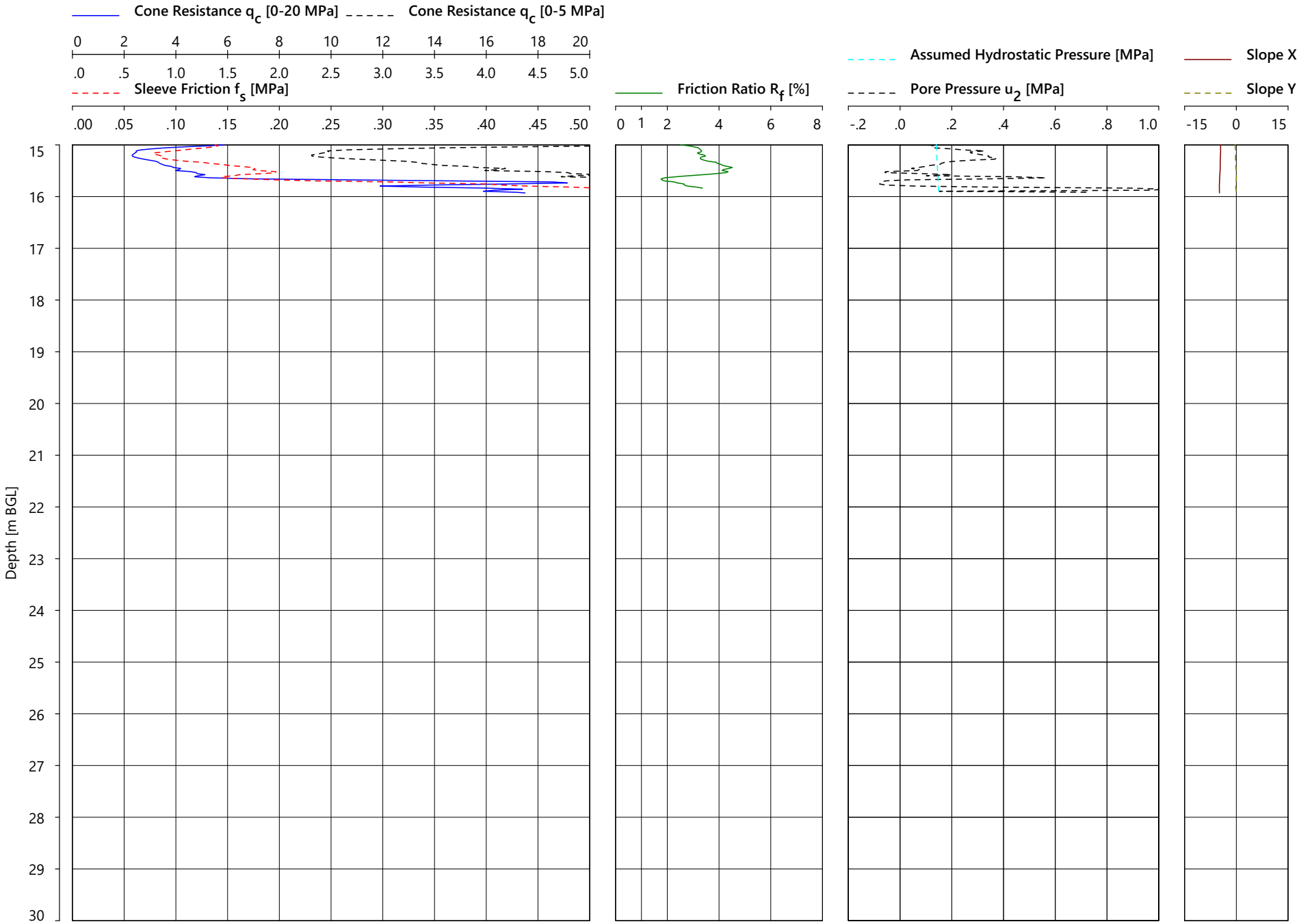

Piezocone Measured Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	27-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **BR-CPT04**
Coordinates : **E** 482453.70 **N** 411604.00 **Ground Level [m OD] :** +2.02
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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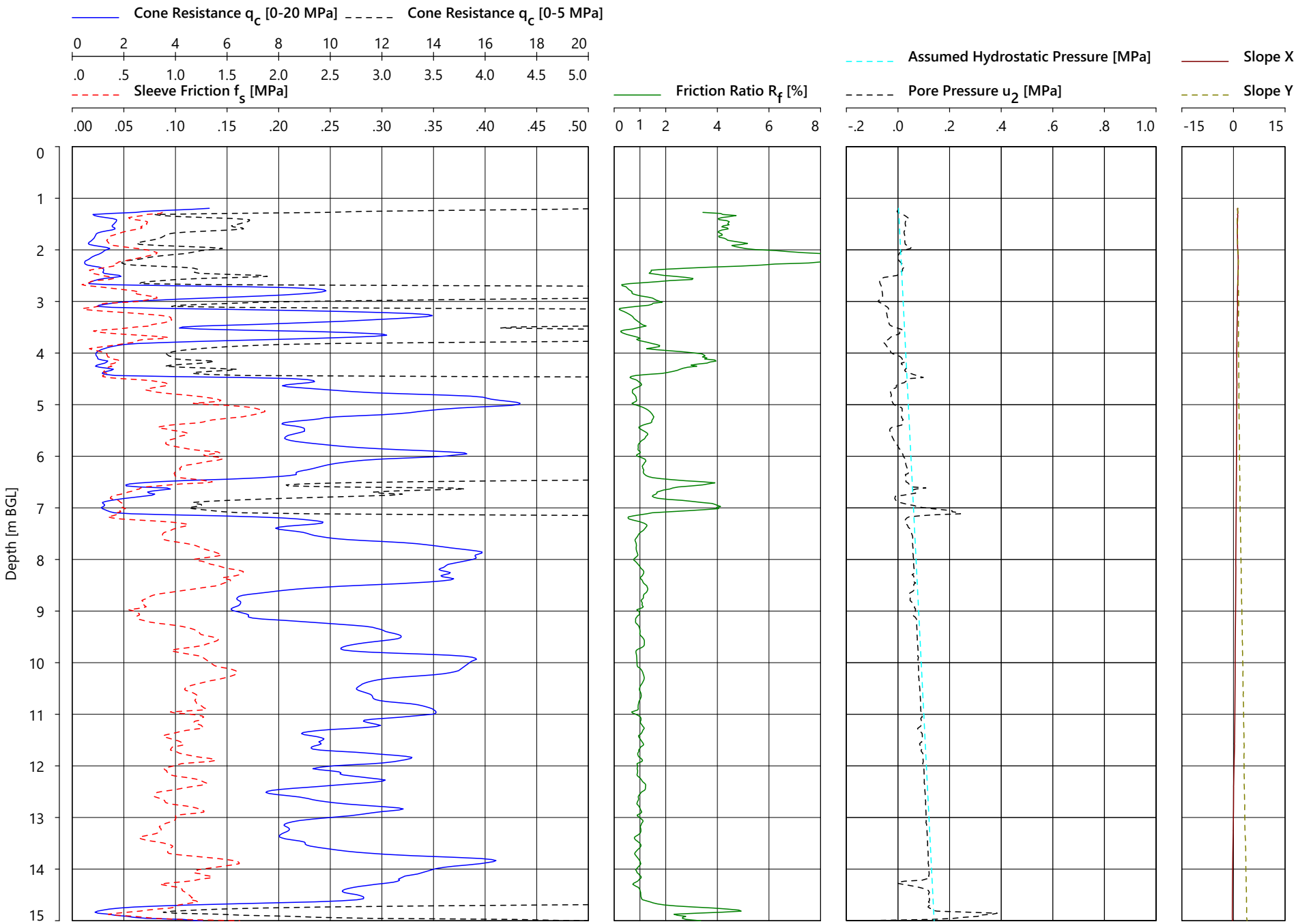
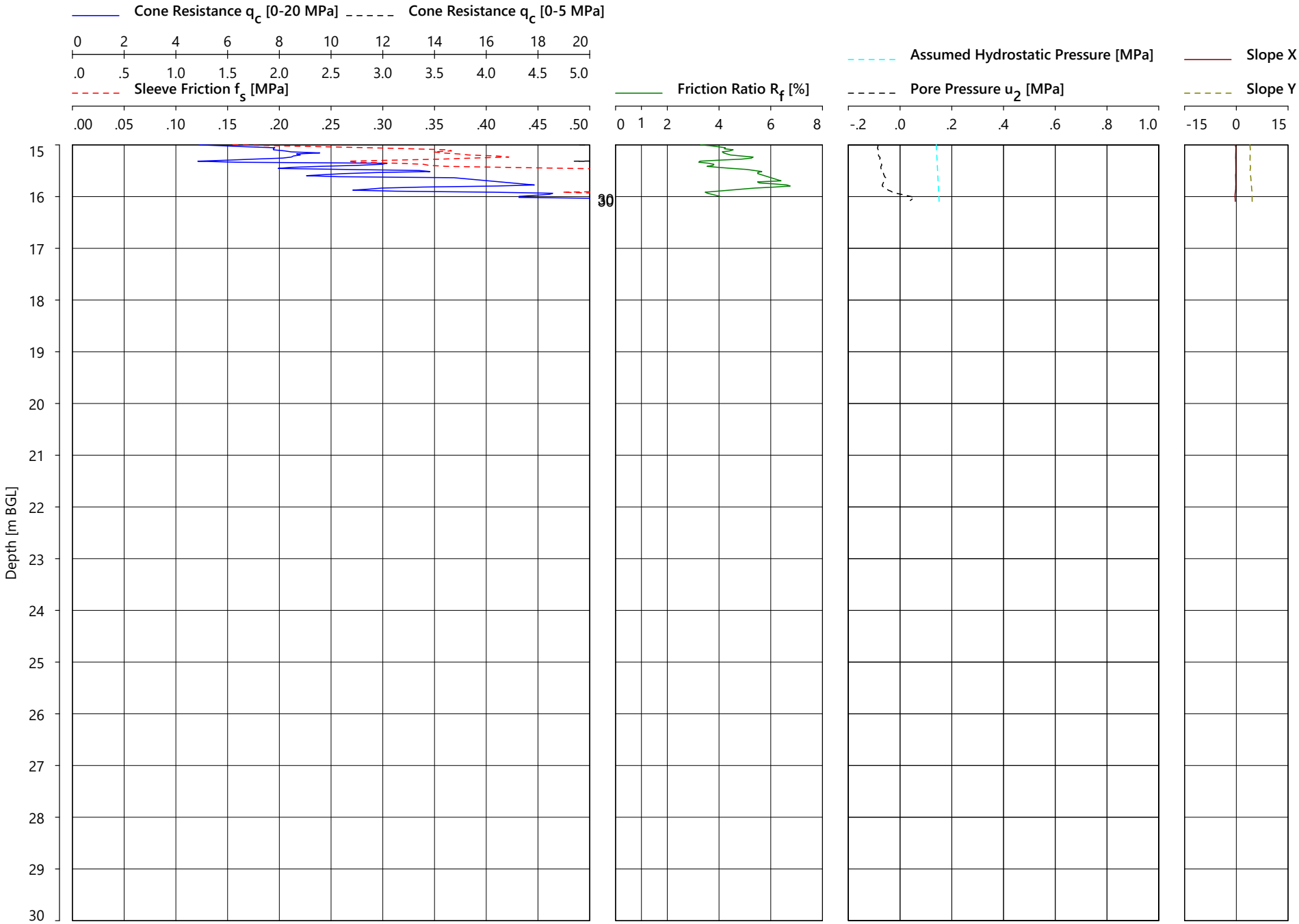
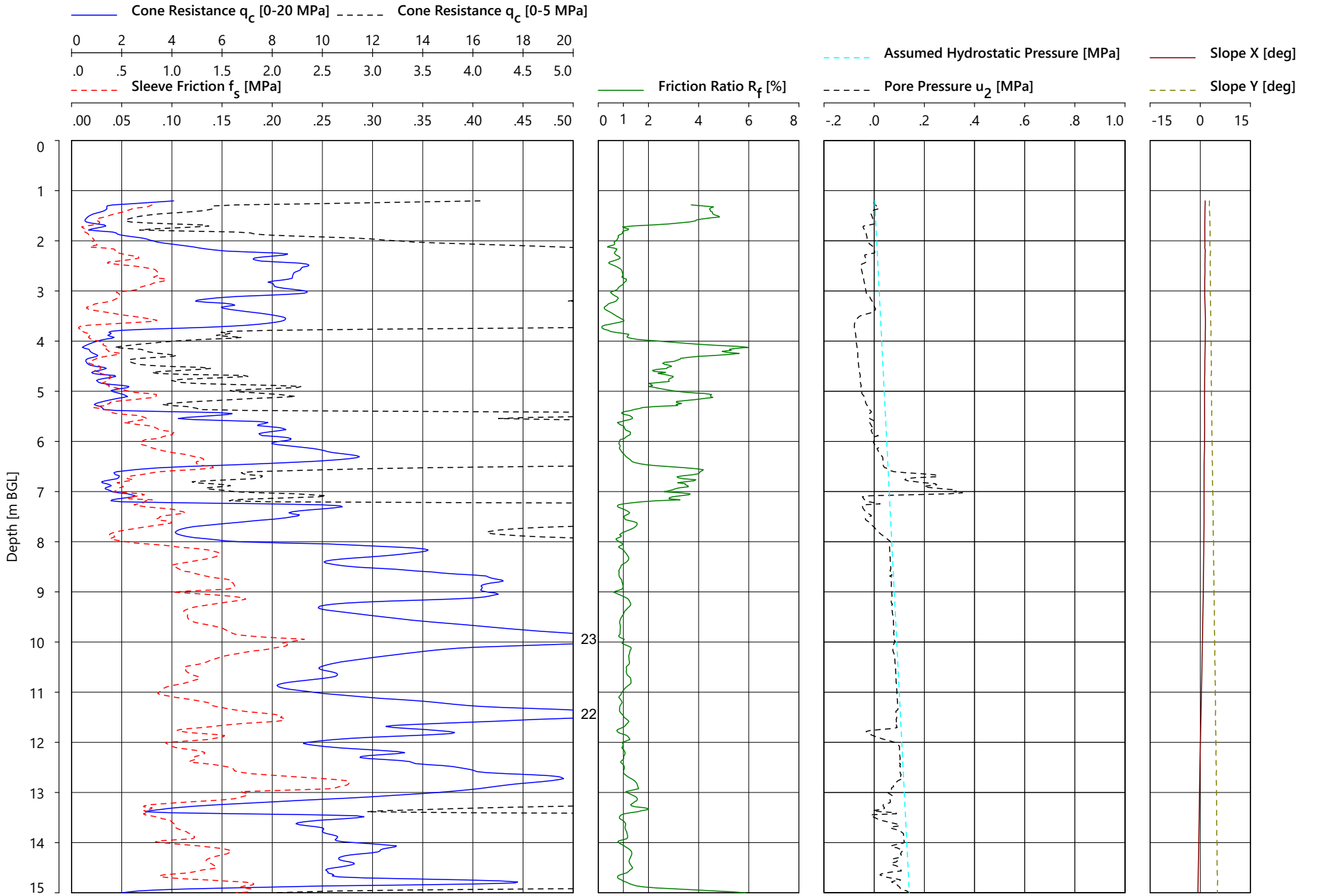


Piezocone Measured Data				**Location :**	**BR-CPT05**
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Coordinates :**	**E** 482516.32 **N** 411776.49 **Ground Level [m OD] :** +1.72
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	25-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		

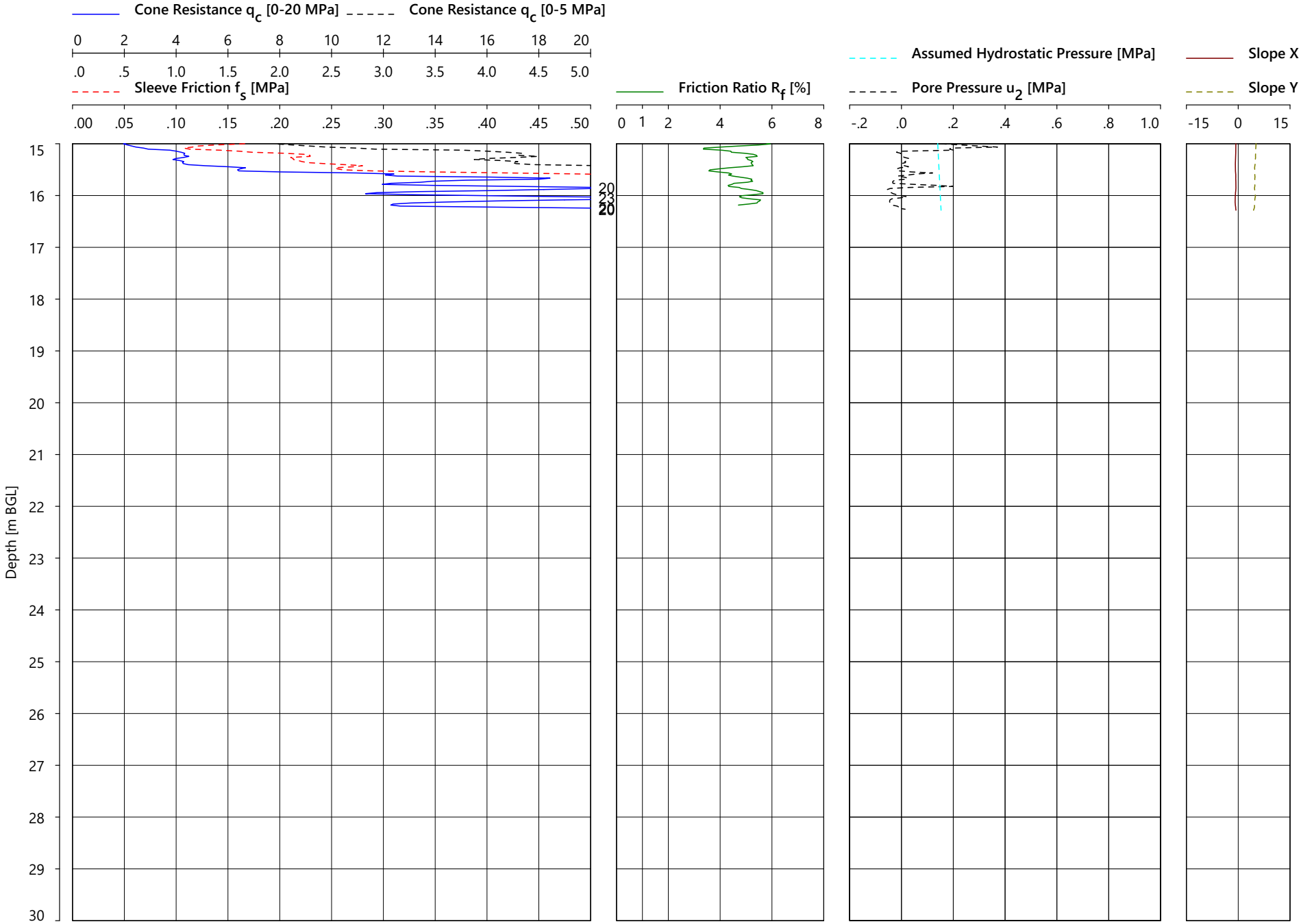


Piezocone Measured Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	25-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **BR-CPT05**
Coordinates : **E** 482516.32 **N** 411776.49 **Ground Level [m OD] :** +1.72
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

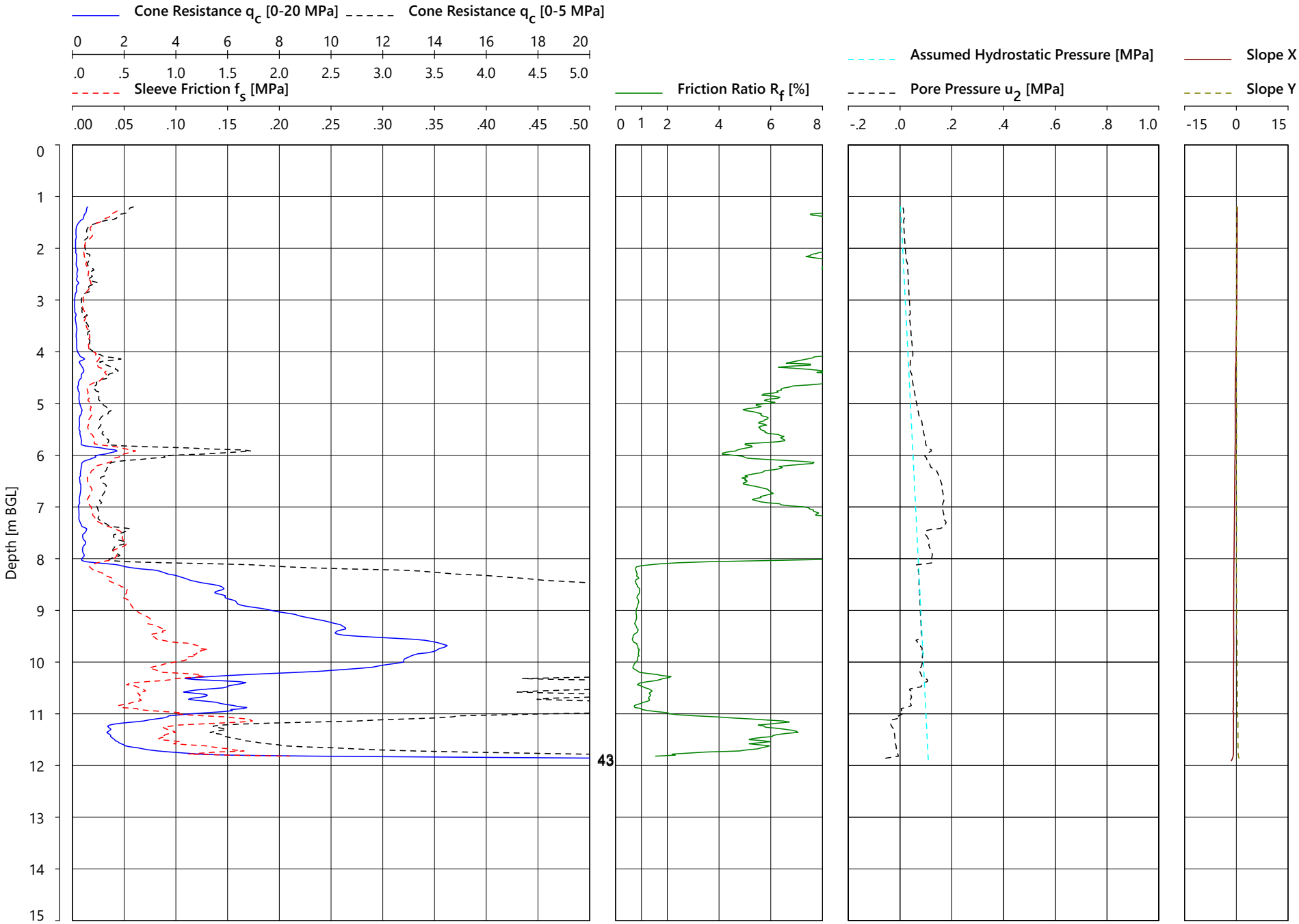


Piezocone Measured Data				**Location :**	**BR-CPT06**
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Coordinates :**	**E** 482557.80 **N** 411680.40 **Ground Level [m OD] :** +1.70
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	25-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data				**Location :**	**BR-CPT06**
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Coordinates :**	**E** 482557.80 **N** 411680.40 **Ground Level [m OD] :** +1.70
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	25-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		

Piezocone Measured Data	**Stop Criterion :** max. penetration force		**Location :** **BR-CPT07**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482462.51 **N** 411652.94 **Ground Level [m OD] :** +1.80
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 25-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	06-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT01
Coordinates : **E** 483329.69 **N** 411567.00 **Ground Level [m OD] :** +0.93
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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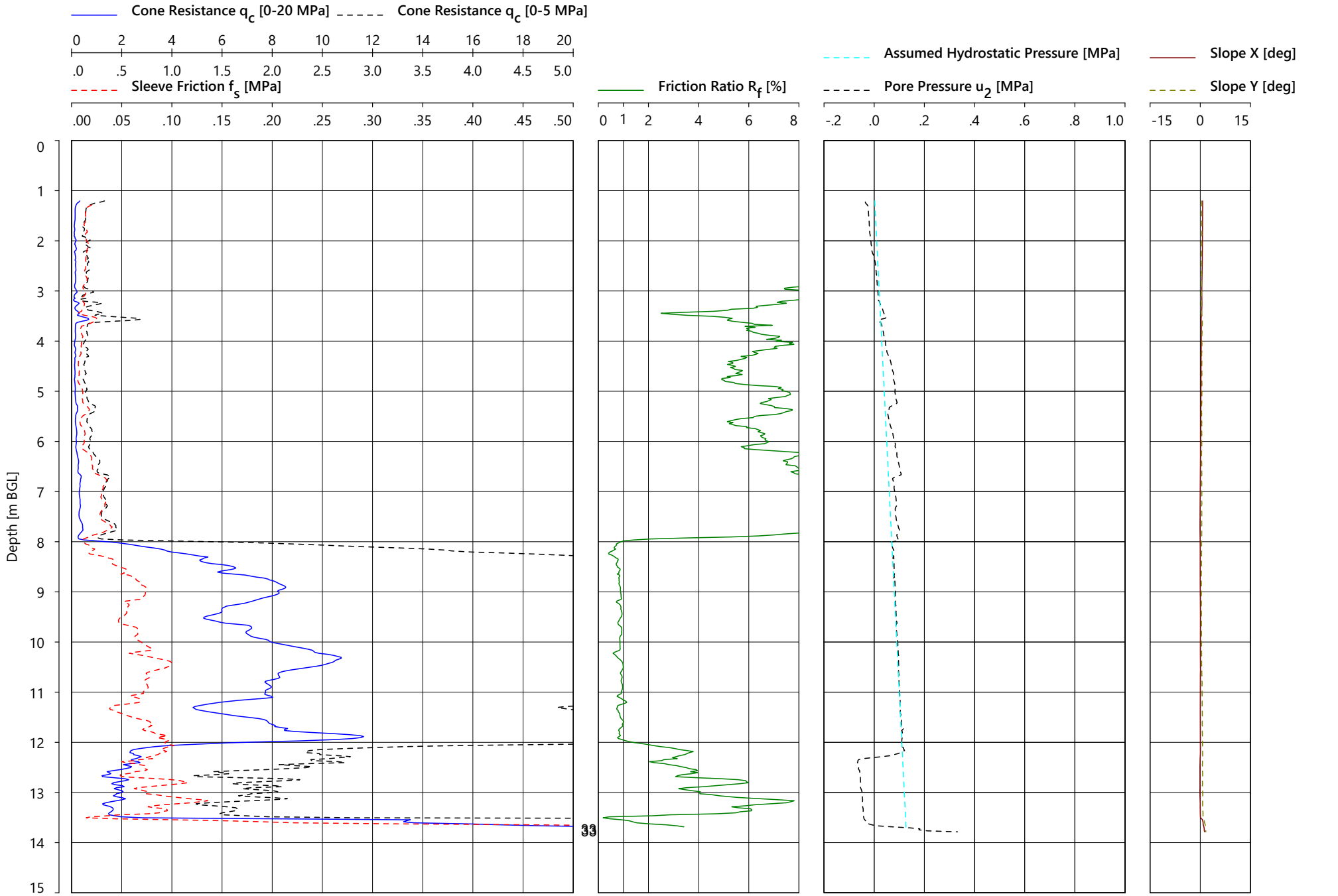
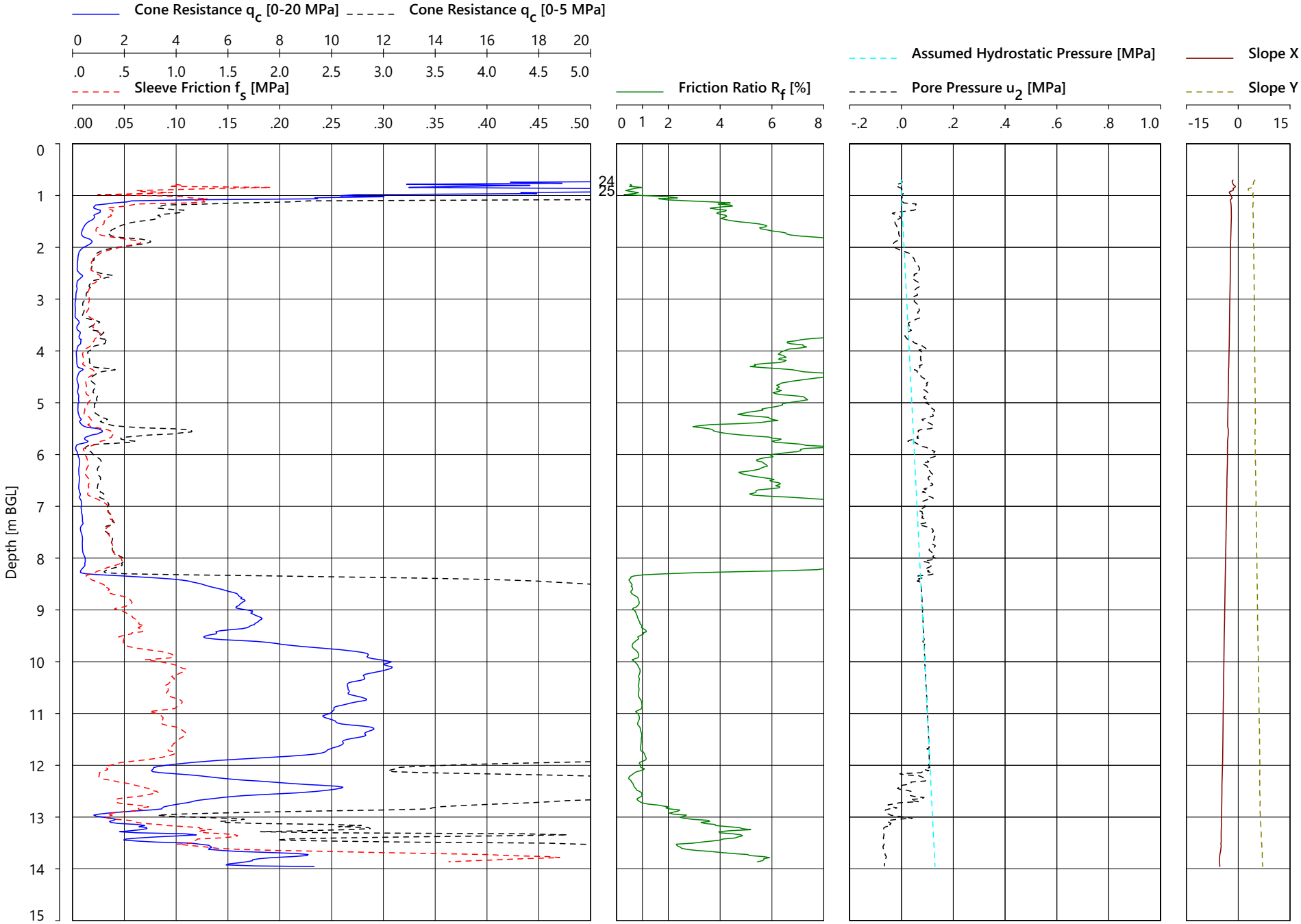
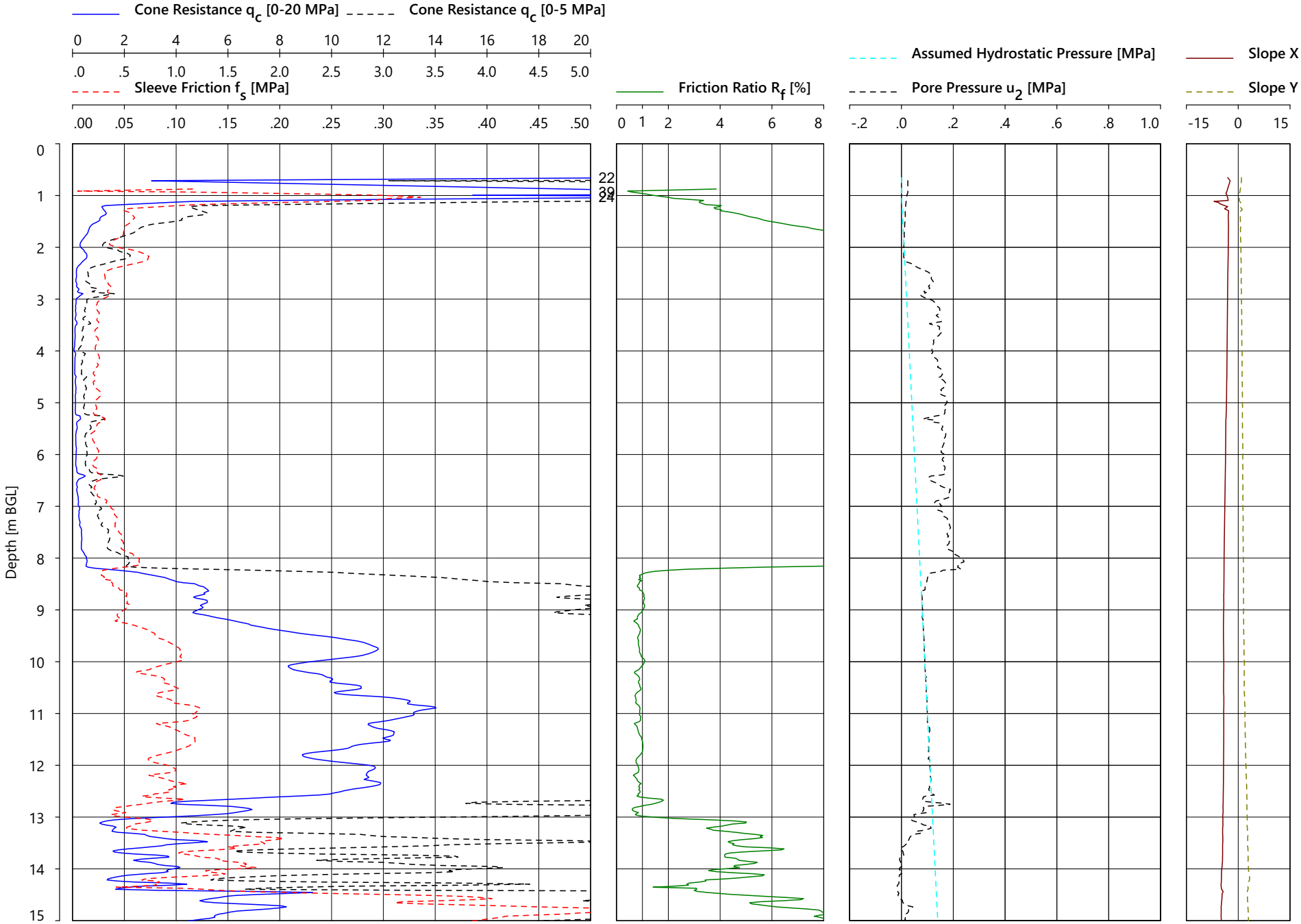


Piezocone Measured Data			
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2
Date of Test :	07-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]
		Assumed Water Level [m gl] :	-1.0
		Operator :	HG,MS
		Compiled by :	LCH
		Checked by :	KES

Location : **HR-CPT03**
Coordinates : **E** 483165.50 **N** 411587.50 **Ground Level [m OD] :** +0.32
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Measured Data				**Location :**	**HR-CPT04**
CPT Truck ID :	EU-115	**Stop Criterion :**	danger of buckling	**Coordinates :**	**E** 483127.94 **N** 411569.96 **Ground Level [m OD] :** +0.62
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Operator :**	HG,MS	**Project :**	212562
Date of Test :	26-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Compiled by :**	LCH	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
		Assumed Water Level [m gl] :	-1.0	**Checked by :**	KES	**Client :**	SSE Generation Limited (SSE)



Piezocone Measured Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	danger of buckling	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	26-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **HR-CPT05**
Coordinates : **E** 483107.33 **N** 411588.29 **Ground Level [m OD] :** +0.64
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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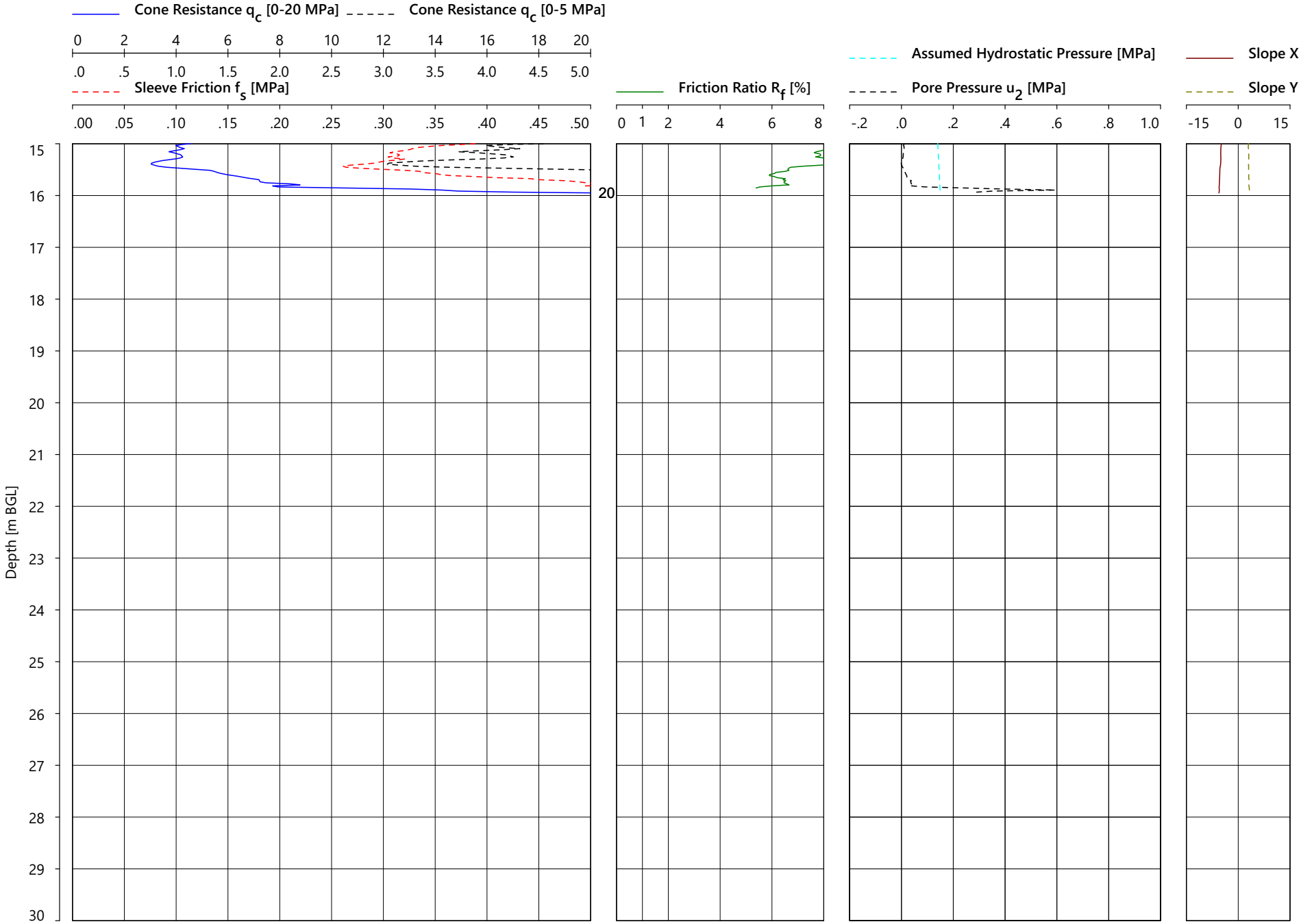

Piezocone Measured Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	danger of buckling	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	26-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **HR-CPT05**
Coordinates : **E** 483107.33 **N** 411588.29 **Ground Level [m OD] :** +0.64
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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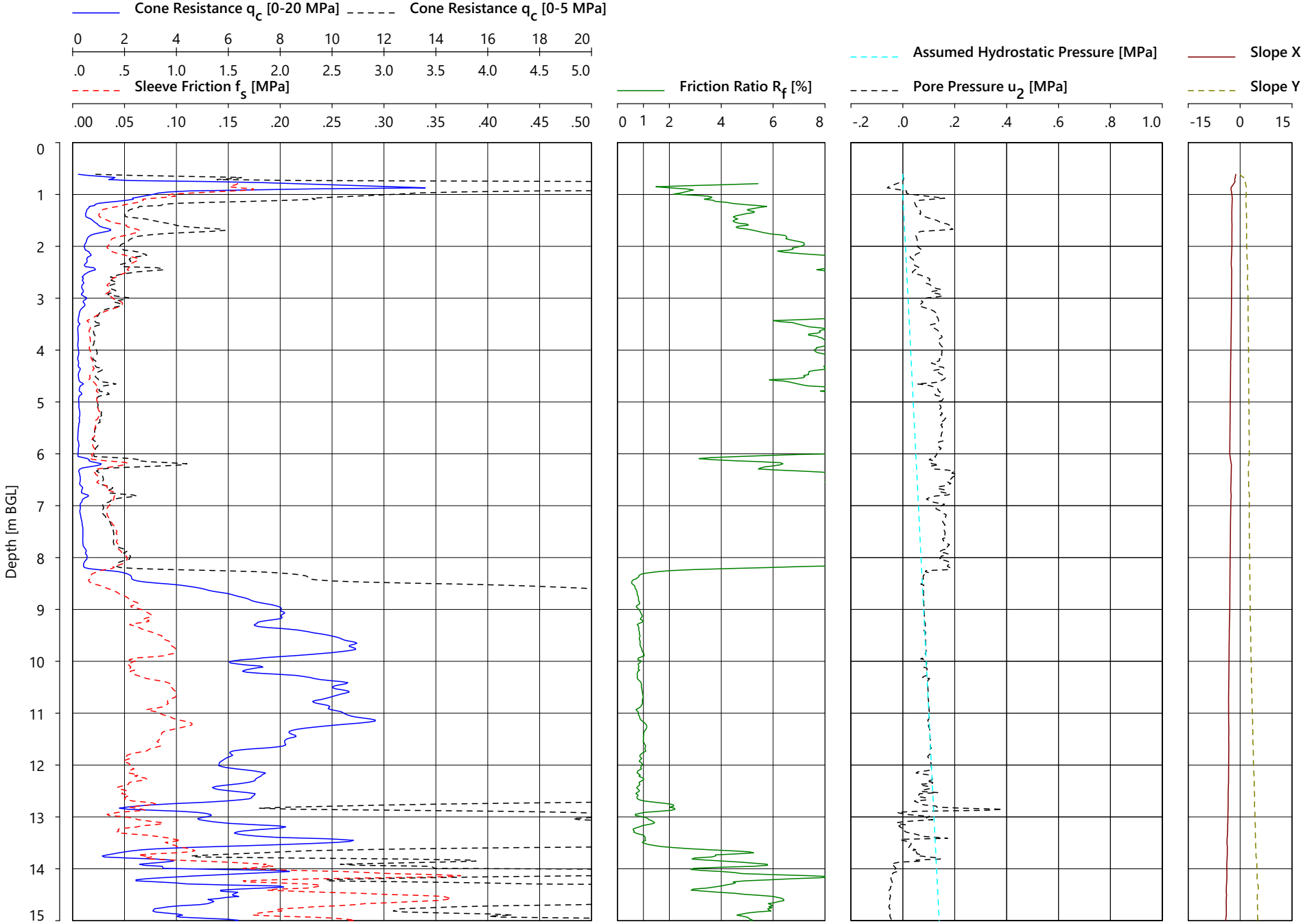
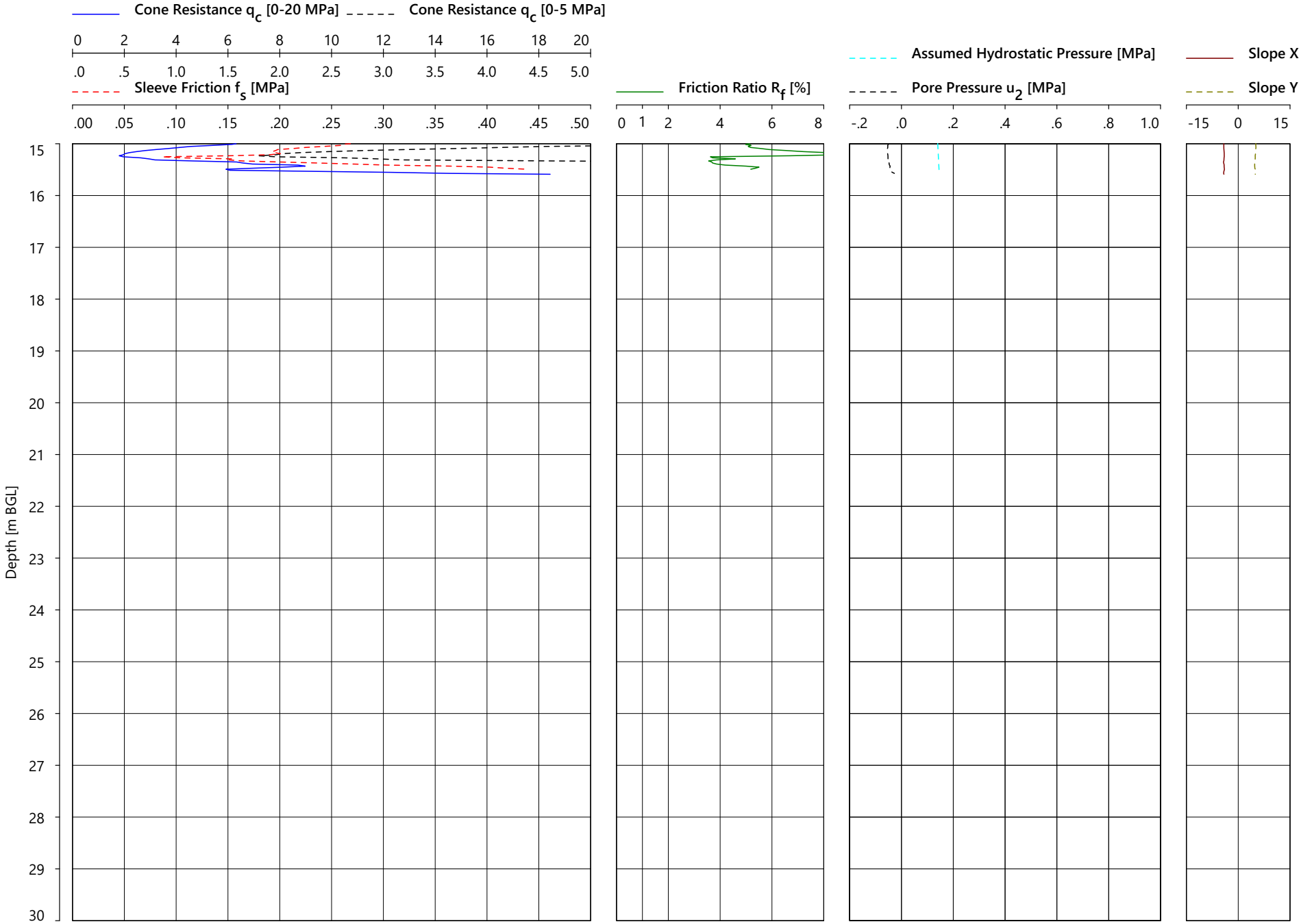


Piezocone Measured Data				**Location :**	**HR-CPT06**
CPT Truck ID :	EU-115	**Stop Criterion :**	danger of buckling	**Coordinates :**	**E** 483109.39 **N** 411640.30 **Ground Level [m OD] :** +0.76
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	26-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	danger of buckling	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	26-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **HR-CPT06**
Coordinates : **E** 483109.39 **N** 411640.30 **Ground Level [m OD] :** +0.76
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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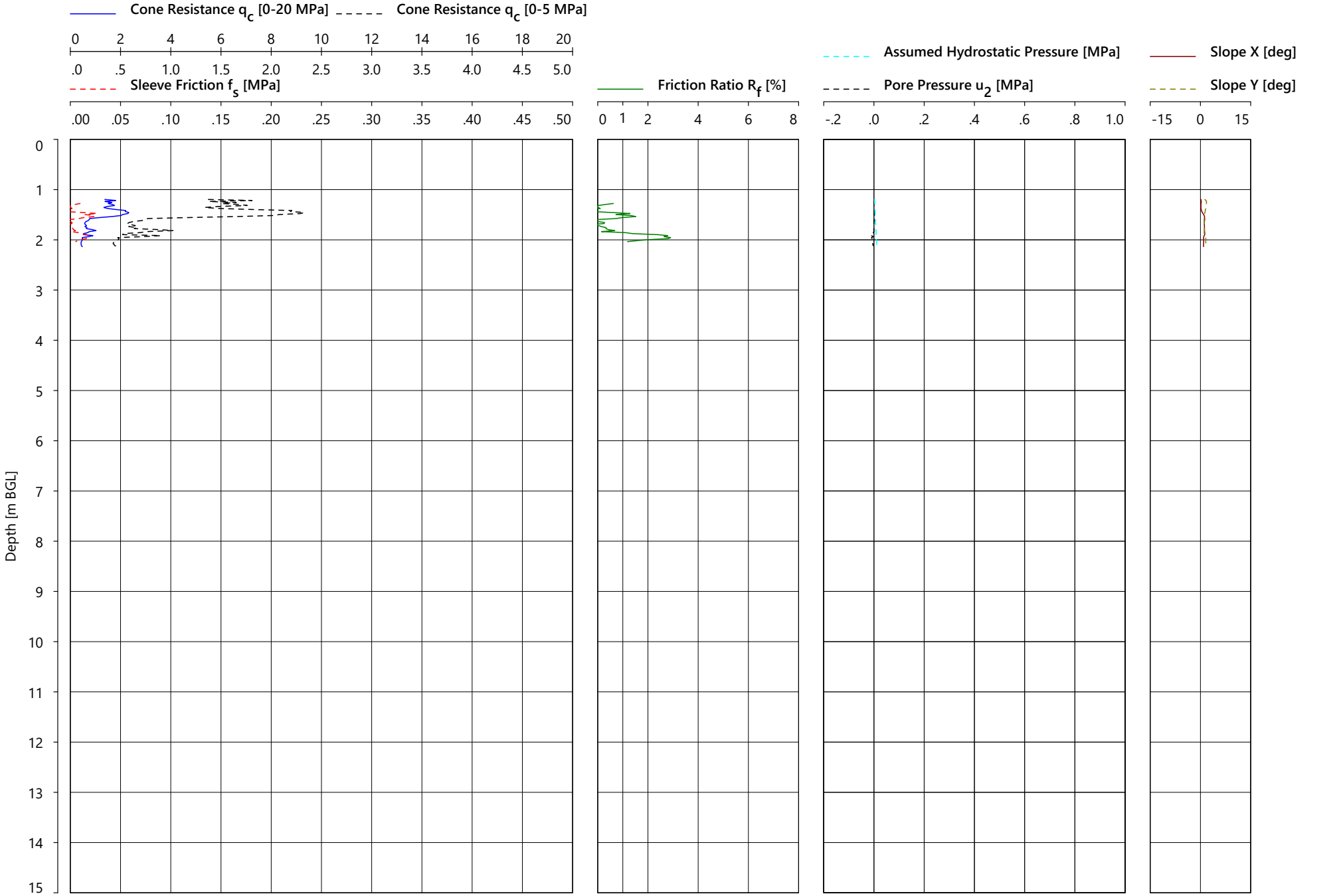
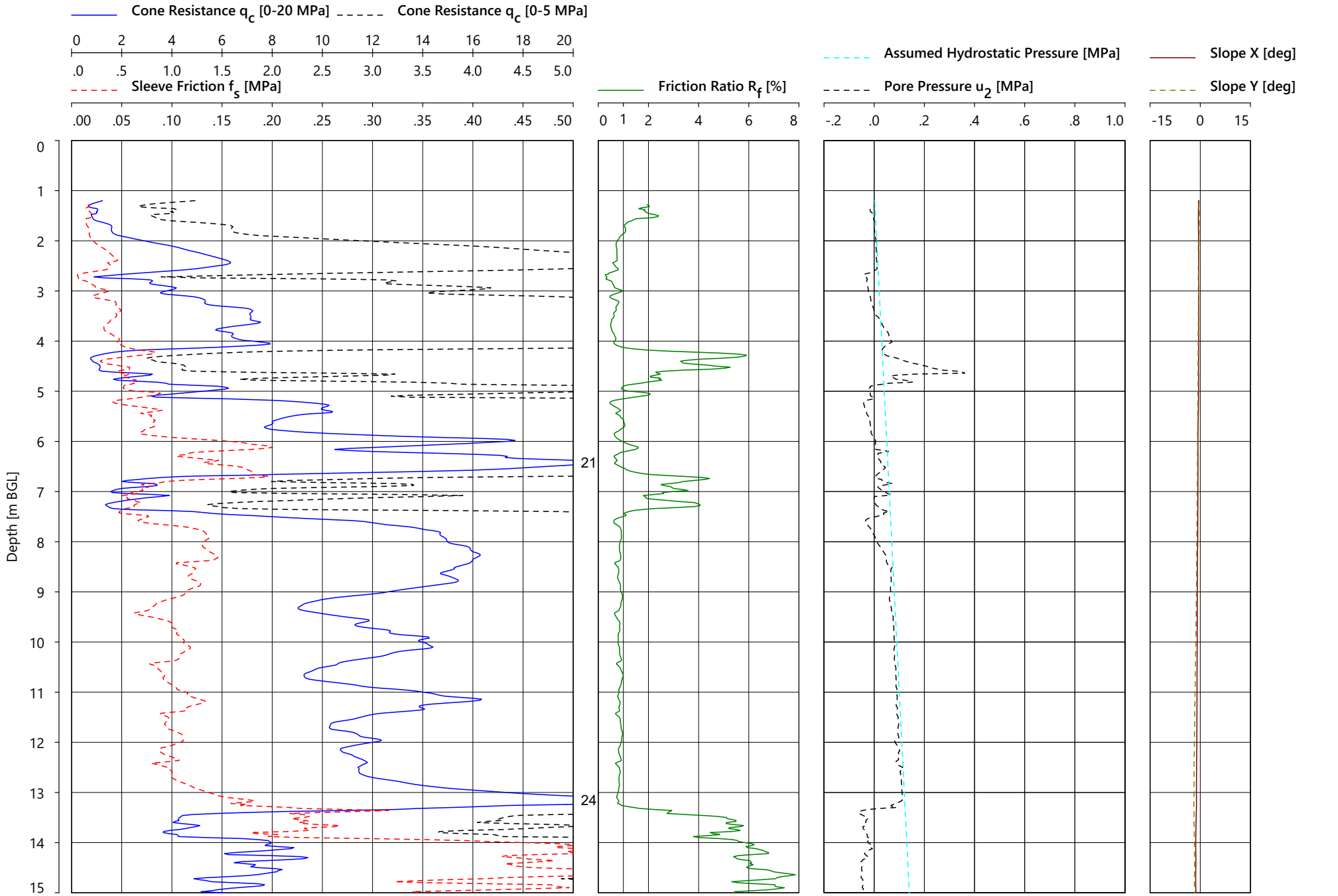


Piezocone Measured Data	**Stop Criterion :** max. penetration force		**Location :** HR-CPT07
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 483010.62 **N** 411725.72 **Ground Level [m OD] :** +1.62
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 25-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Piezocone Measured Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	MS,HG
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	20-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT08
Coordinates : **E** 482965.30 **N** 411776.58 **Ground Level [m OD] :** +1.50
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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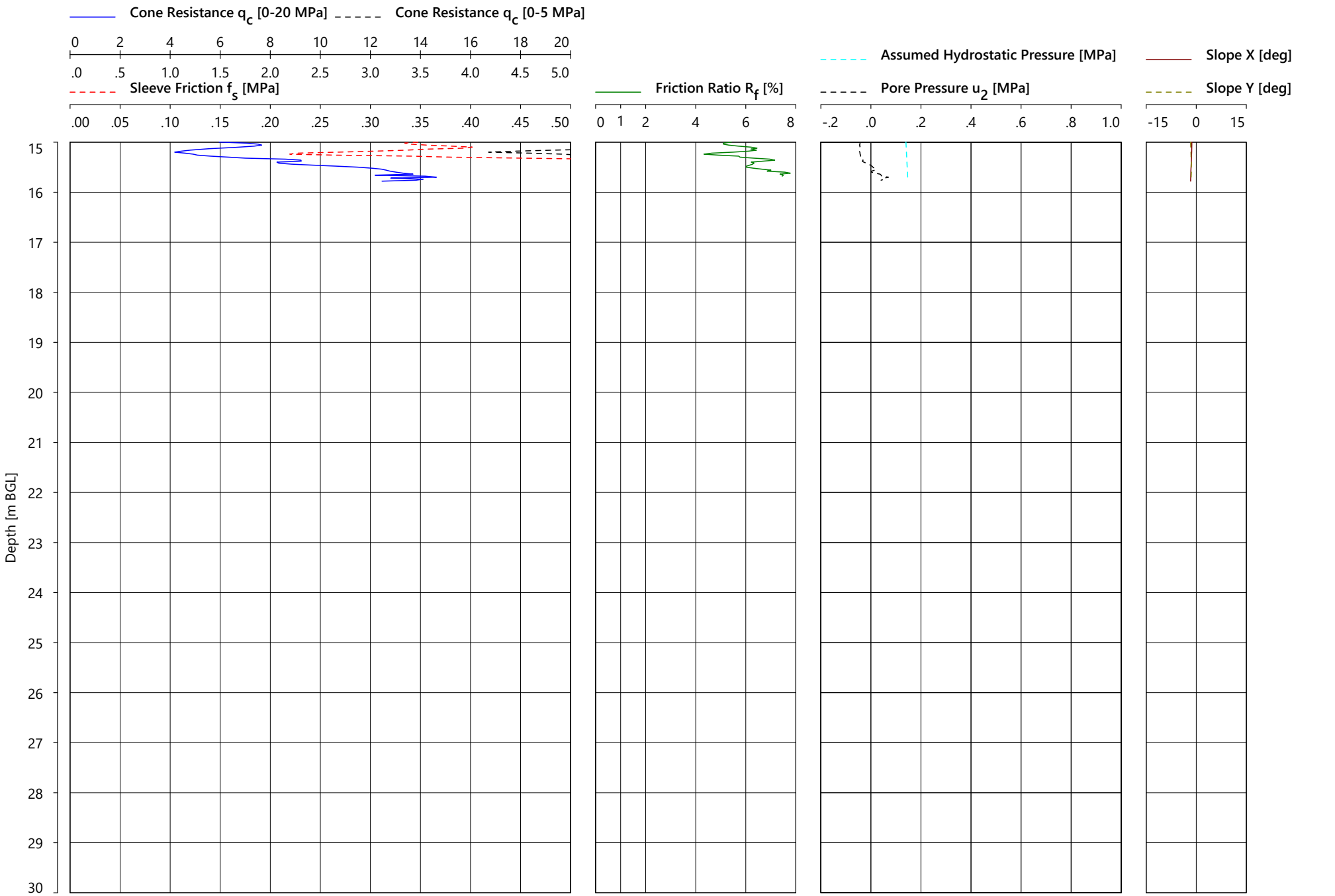
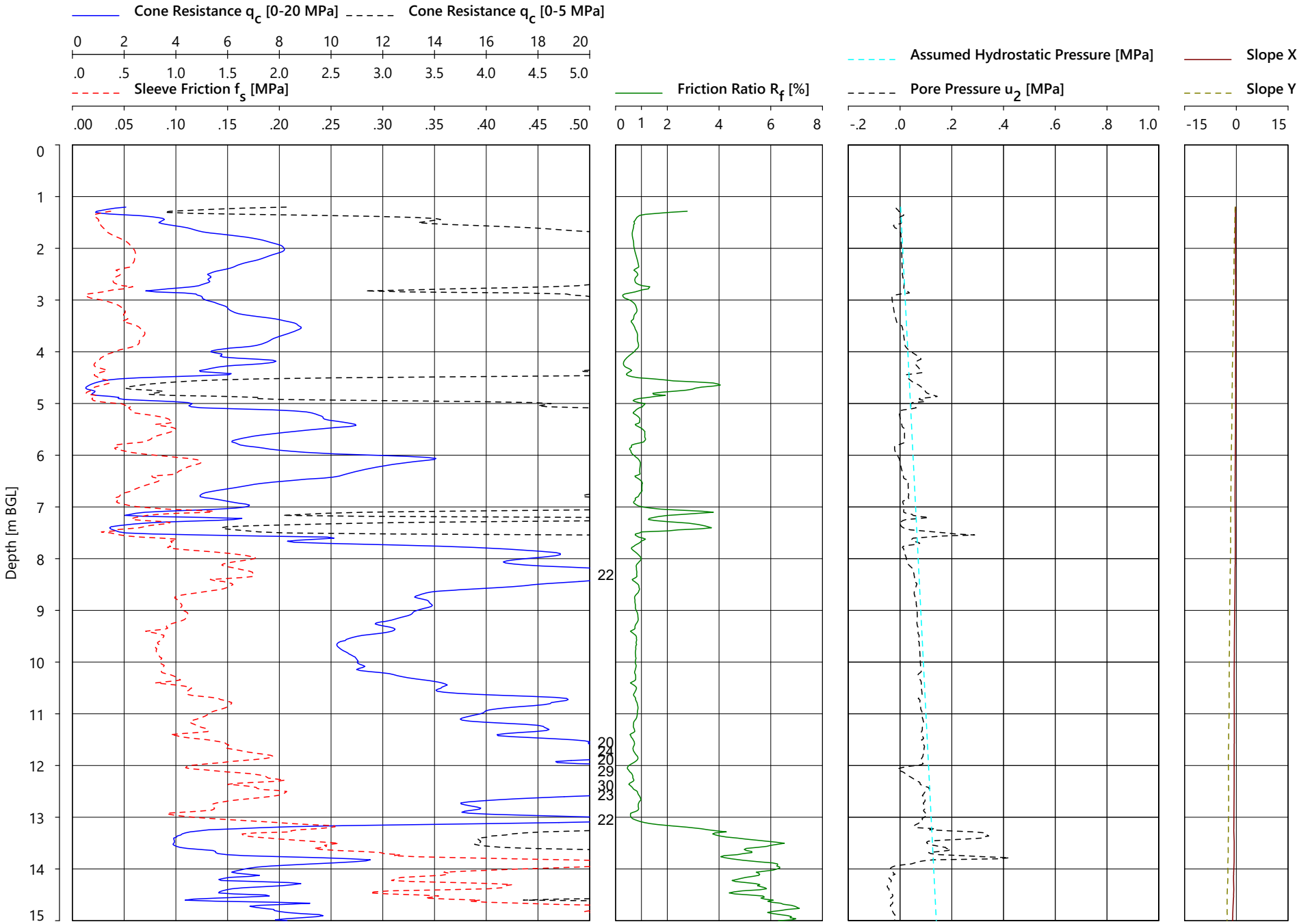


Piezocone Measured Data				Location : HR-CPT08	
	Stop Criterion : max. penetration force			Coordinates : E 482965.30 N 411776.58	Ground Level [m OD] : +1.50
CPT Truck ID : EU-115	Application Class / Type : Class 2 / TE2	Operator : MS,HG		Project : 212562	
CPT Cone : 1701-3056	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Compiled by : LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
Date of Test : 20-Oct-2022	Assumed Water Level [m gl] : -1.0	Checked by : KES		Client : SSE Generation Limited (SSE)	



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	MS,HG
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	20-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT09
Coordinates : E 482923.40 N 411783.20 **Ground Level [m OD] :** +1.82
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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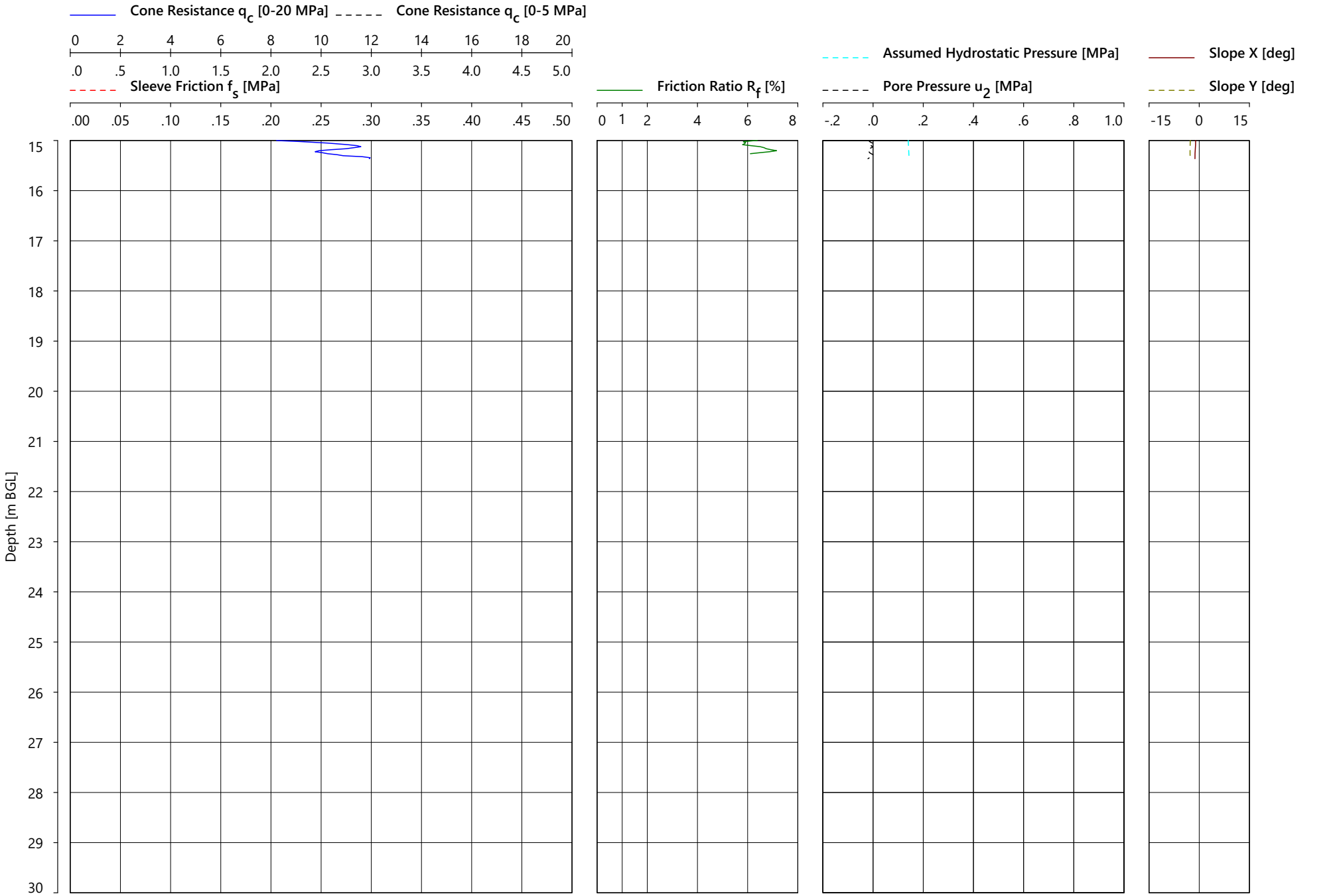
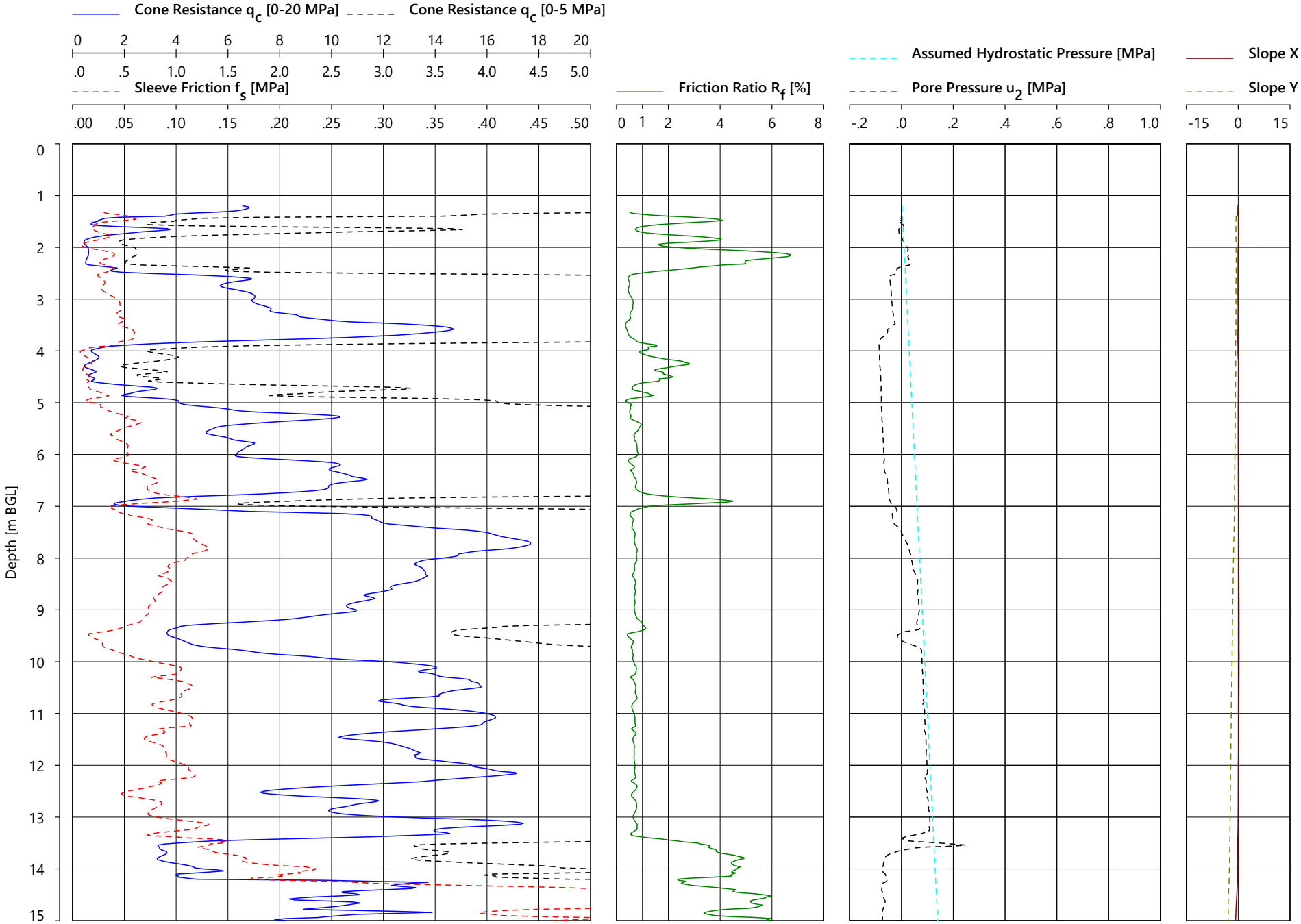


Piezocone Measured Data				Location : HR-CPT09	
CPT Truck ID : GB17	Stop Criterion : max. penetration force	Operator : MS,HG	Coordinates : E 482923.40 N 411783.20	Ground Level [m OD] : +1.82	
CPT Cone : 1701-3056	Application Class / Type : Class 2 / TE2	Compiled by : LCH	Project : 212562		
Date of Test : 20-Oct-2022	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Checked by : KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
	Assumed Water Level [m gl] : -1.0		Client : SSE Generation Limited (SSE)		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	MS,HG
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	20-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **HR-CPT10**
Coordinates : **E** 482848.05 **N** 411784.62 **Ground Level [m OD] :** +1.54
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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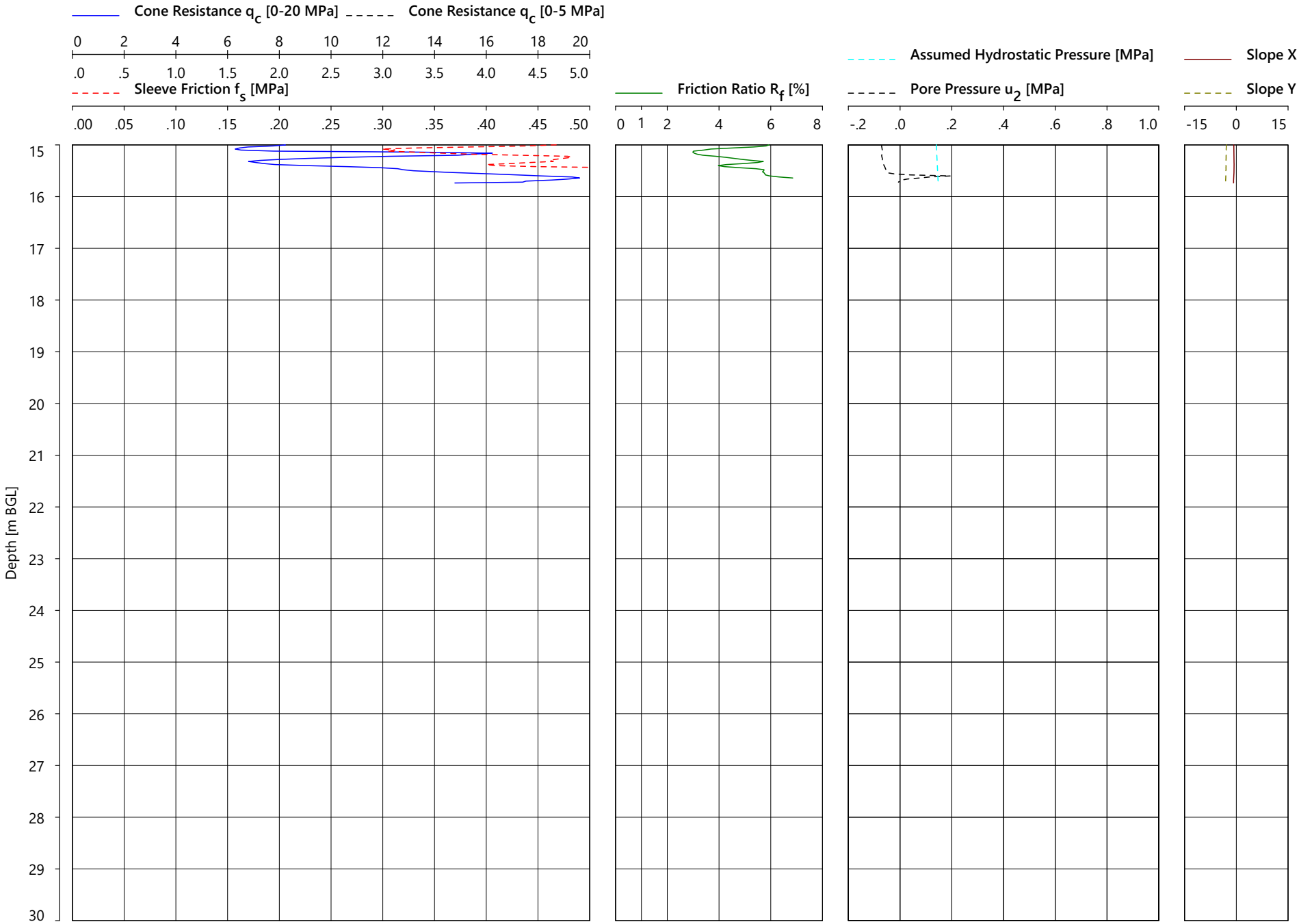
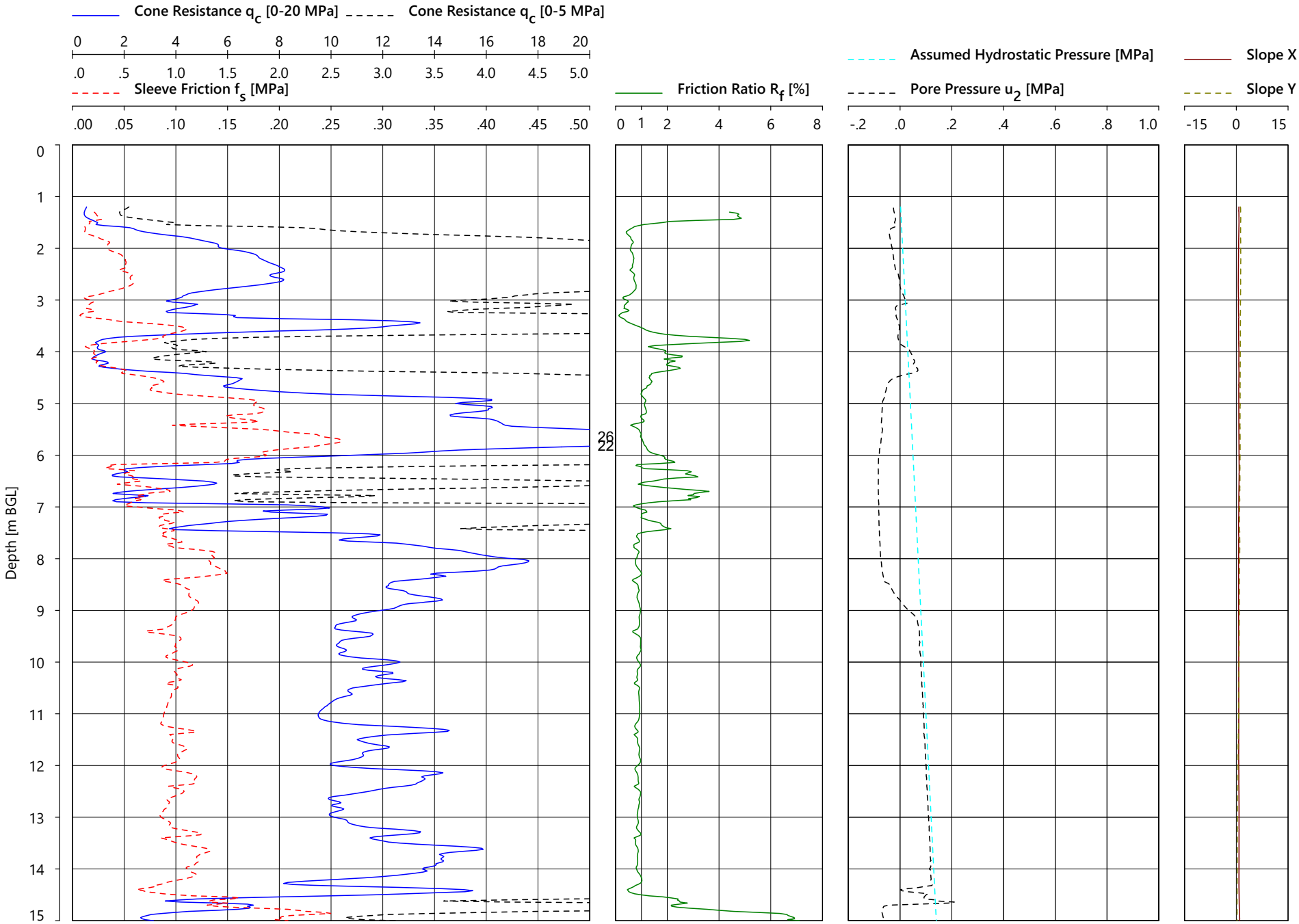
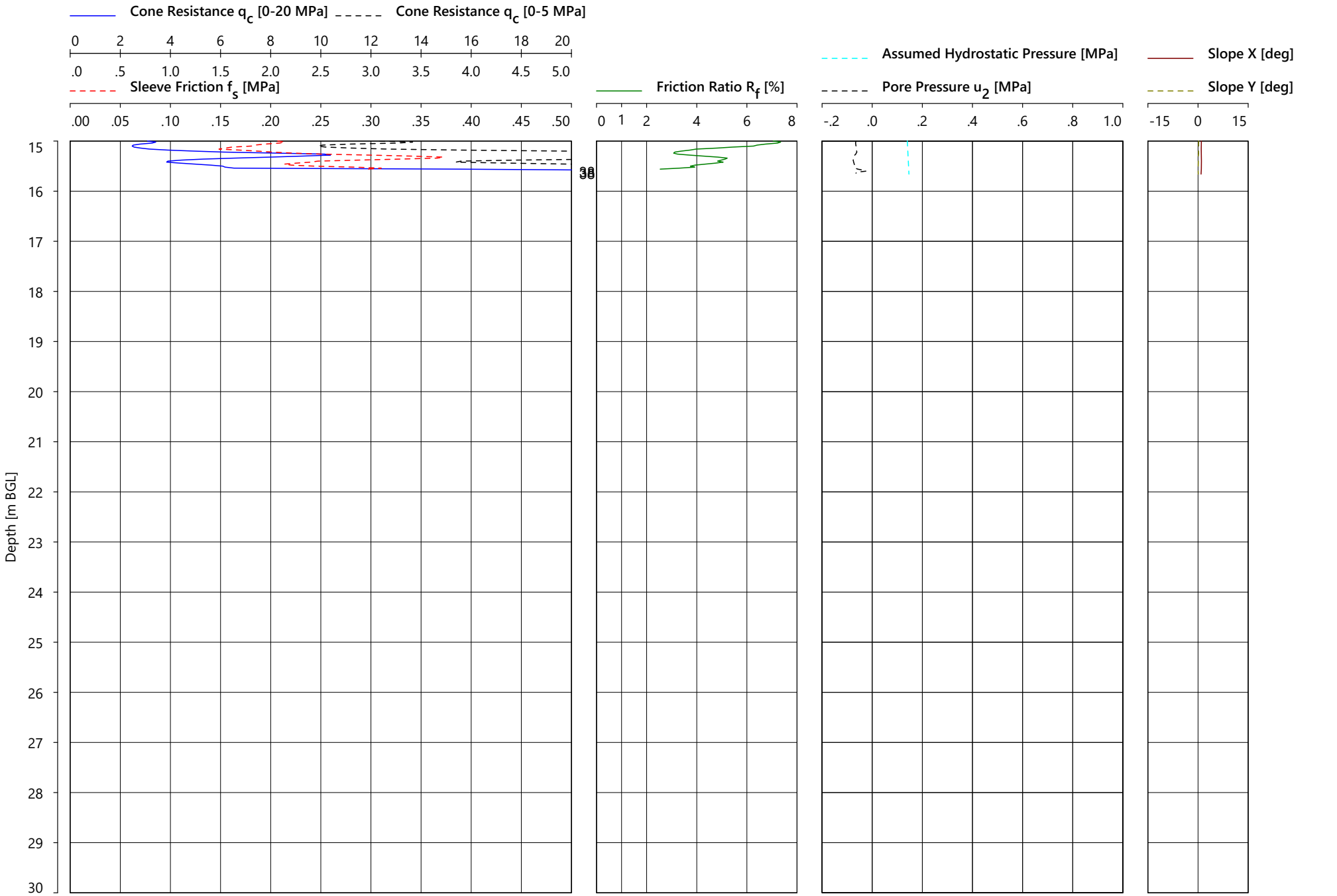


Piezocone Measured Data	**Stop Criterion :** max. penetration force		**Location :** HR-CPT10
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS,HG	**Coordinates :** **E** 482848.05 **N** 411784.62 **Ground Level [m OD] :** +1.54
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 20-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)

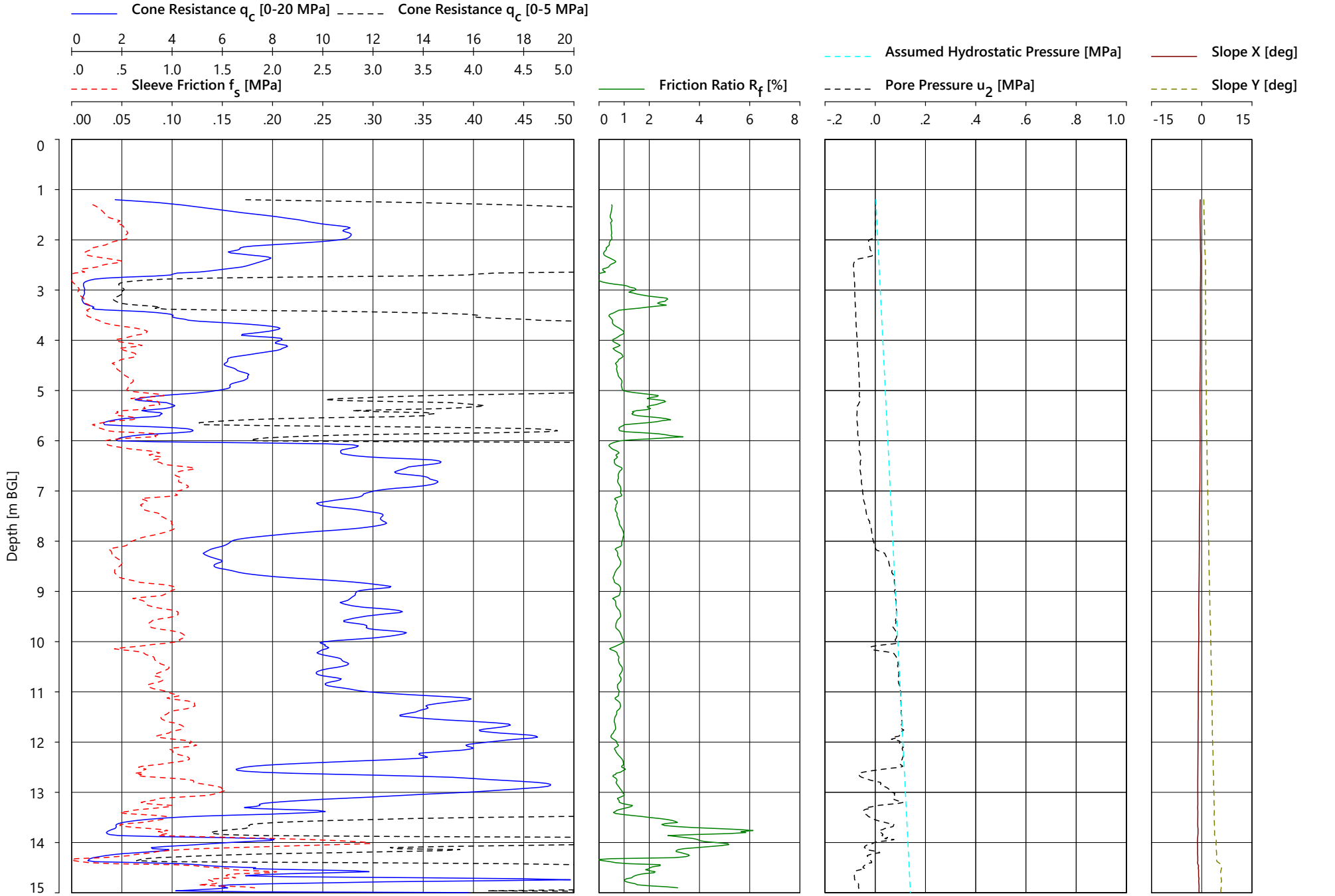


Piezocone Measured Data			
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2
Date of Test :	24-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]
		Assumed Water Level [m gl] :	-1.0
		Operator :	HG,MS
		Compiled by :	LCH
		Checked by :	KES

Location : **HR-CPT20**
Coordinates : **E** 482040.79 **N** 411650.29 **Ground Level [m OD] :** +1.42
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Measured Data				Location : HR-CPT20	
CPT Truck ID : EU-115	Stop Criterion : max. penetration force	Operator : HG,MS	Coordinates : E 482040.79 N 411650.29	Ground Level [m OD] : +1.42
CPT Cone : 1701-3056	Application Class / Type : Class 2 / TE2	Compiled by : LCH	Project : 212562	
Date of Test : 24-Oct-2022	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Checked by : KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
	Assumed Water Level [m gl] : -1.0		Client : SSE Generation Limited (SSE)	



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT01
Coordinates : **E** 481841.71 **N** 412130.80 **Ground Level [m OD] :** +0.29
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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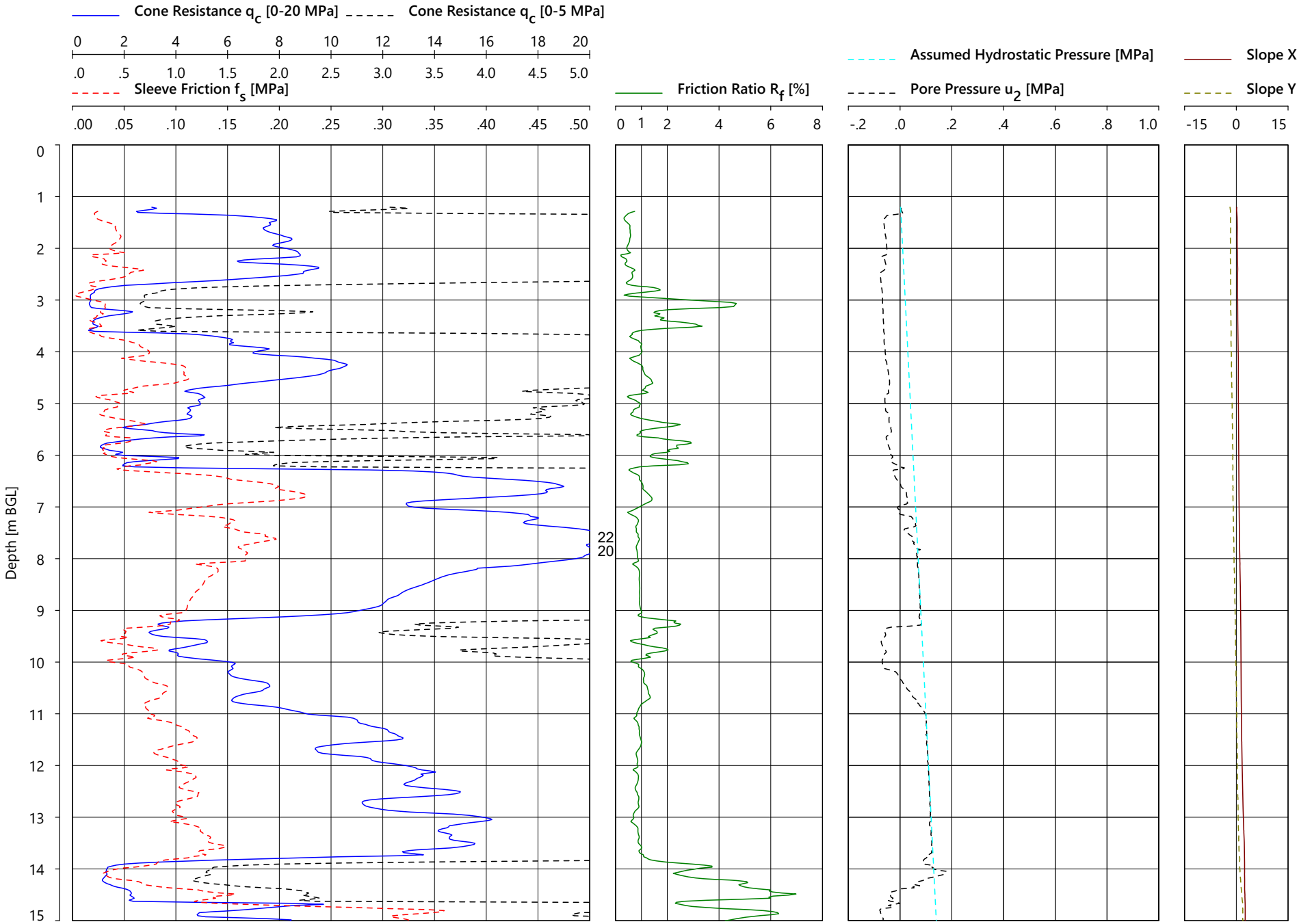
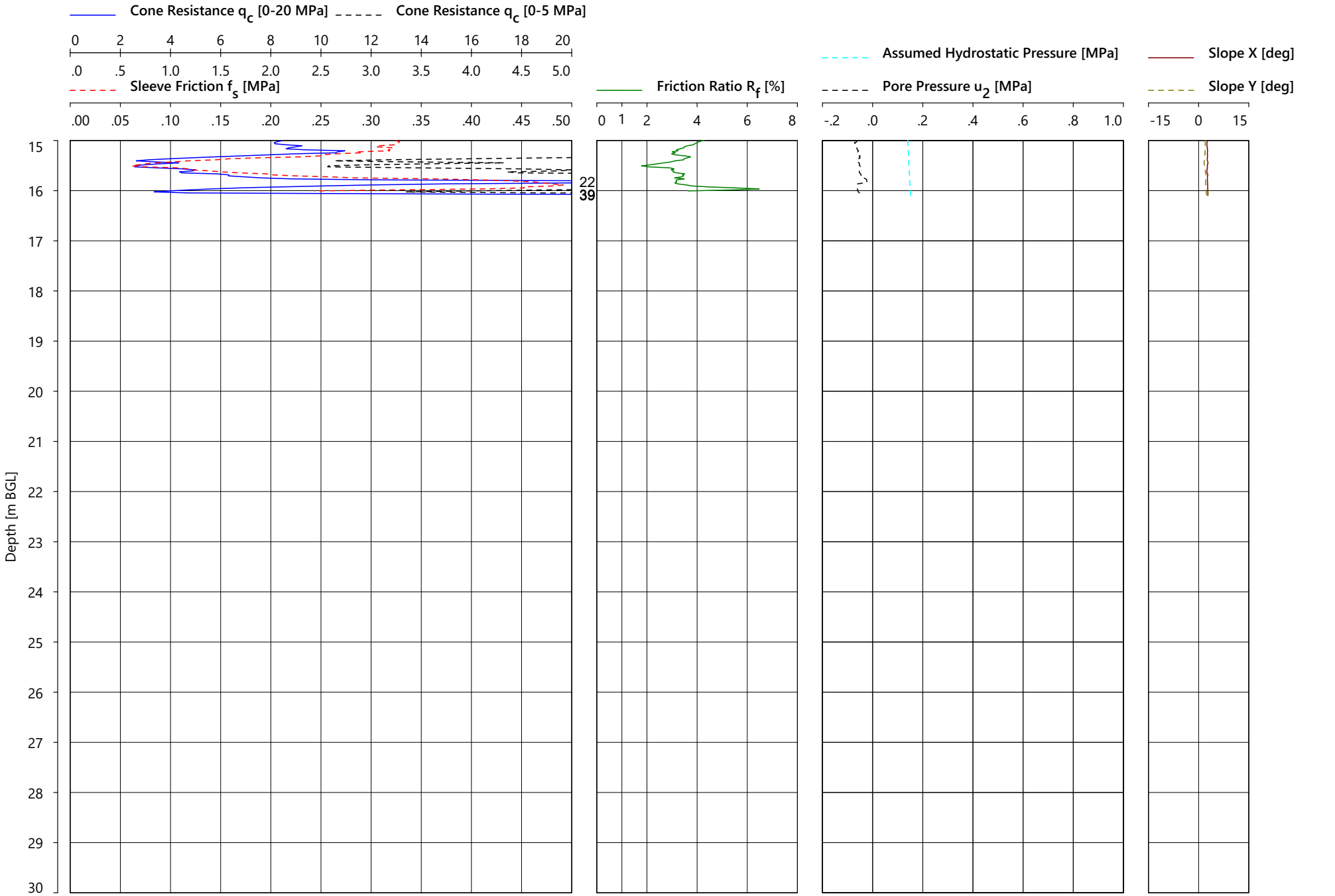
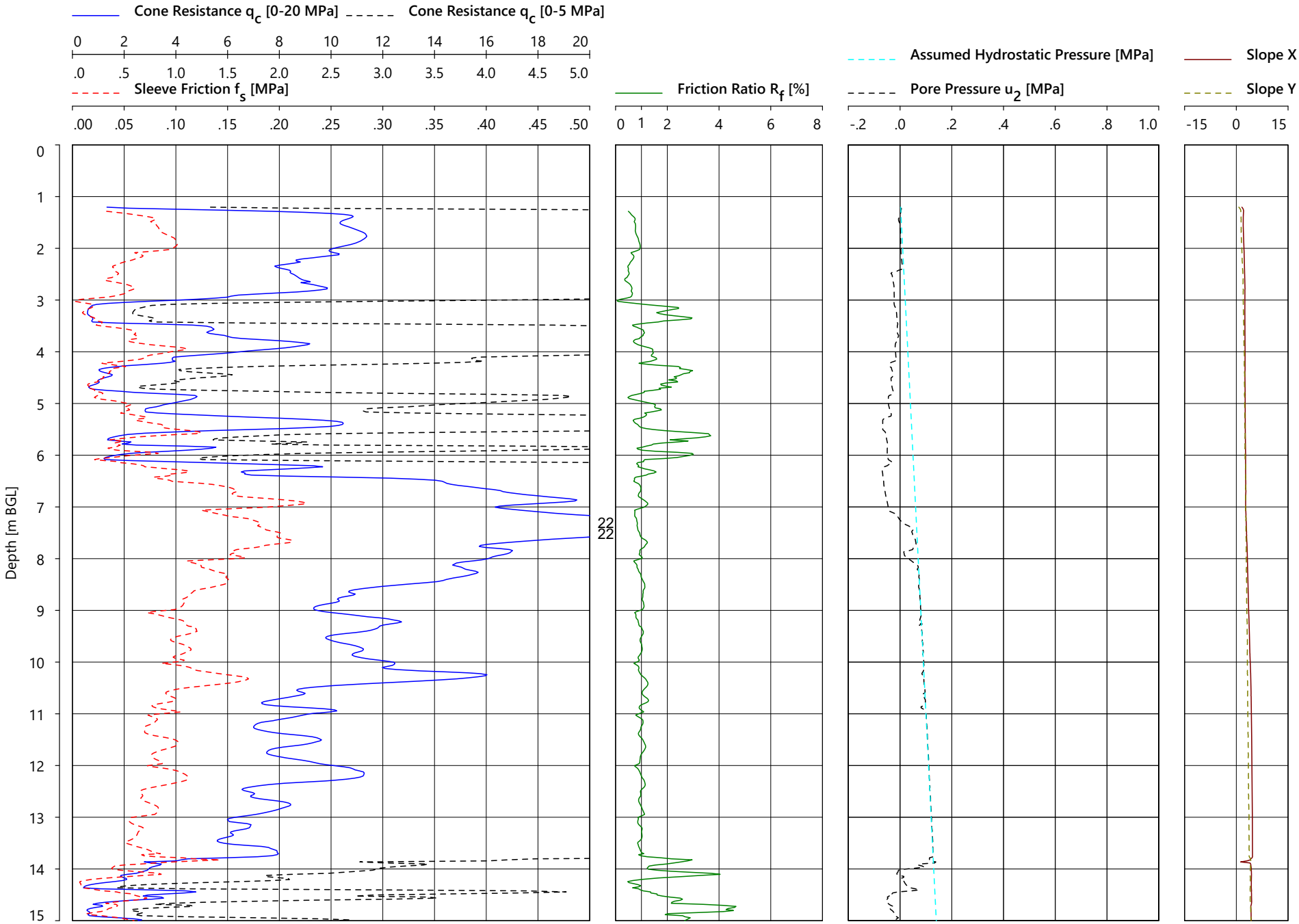


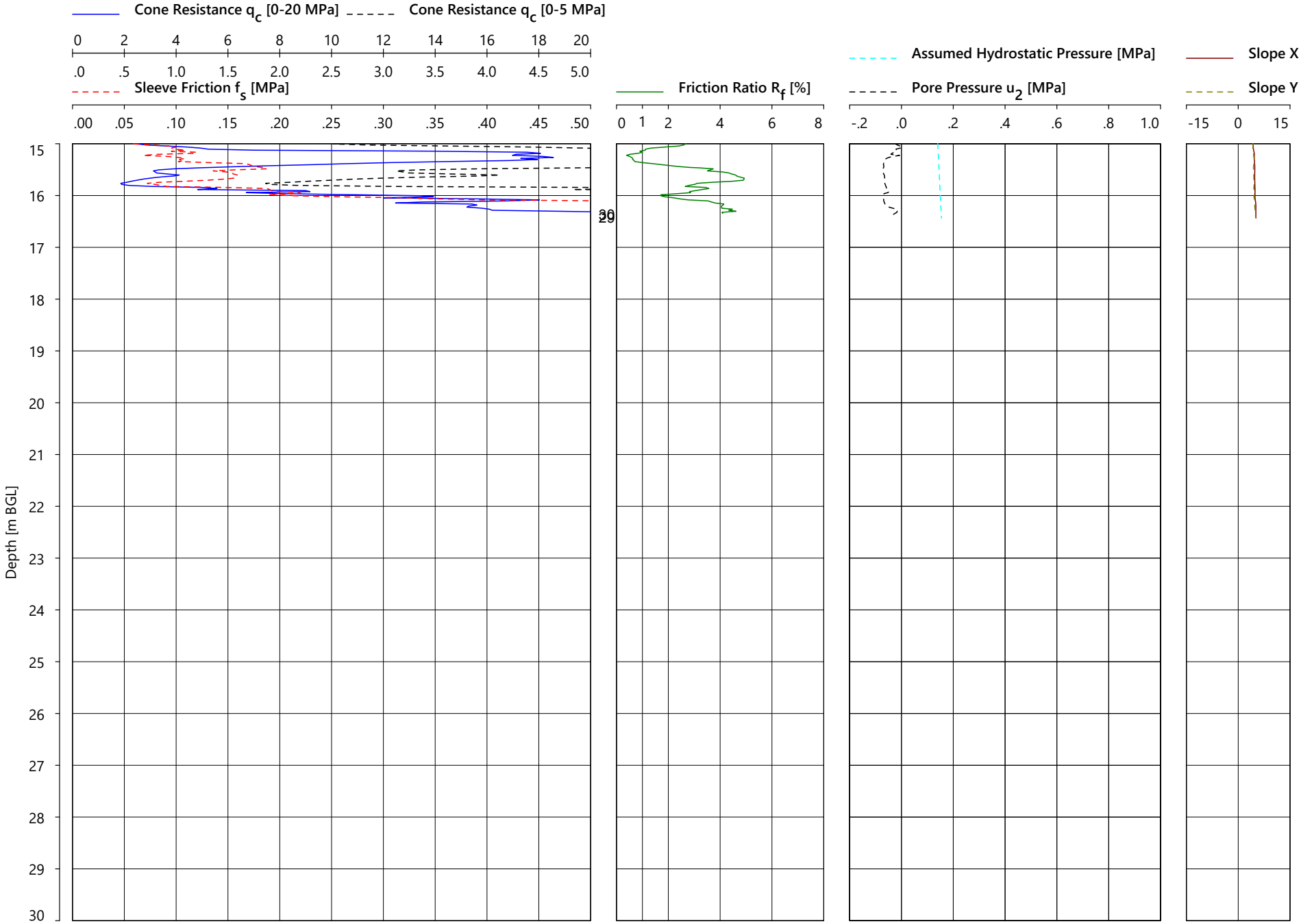
Piezocone Measured Data				**Location :**	**MS-CPT02**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481917.79 **N** 412126.69 **Ground Level [m OD] :** +0.40
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



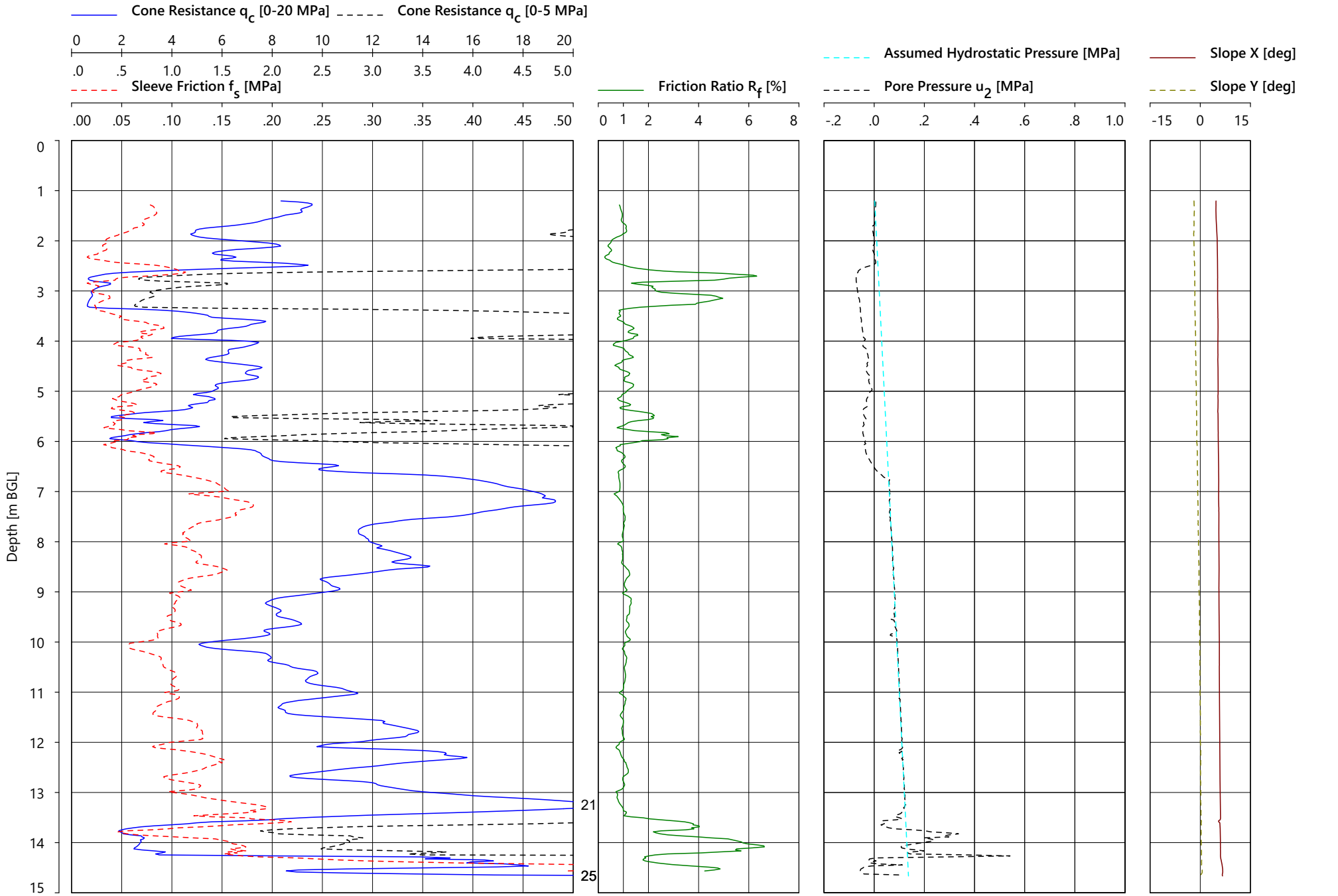
Piezocone Measured Data			**Location :** MS-CPT02
CPT Truck ID : GB17	**Stop Criterion :** end depth reached		**Coordinates :** **E** 481917.79 **N** 412126.69 **Ground Level [m OD] :** +0.40
CPT Cone : 1701-3474	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
	Assumed Water Level [m gl] : -1.0	**Checked by :** KES	**Client :** SSE Generation Limited (SSE)



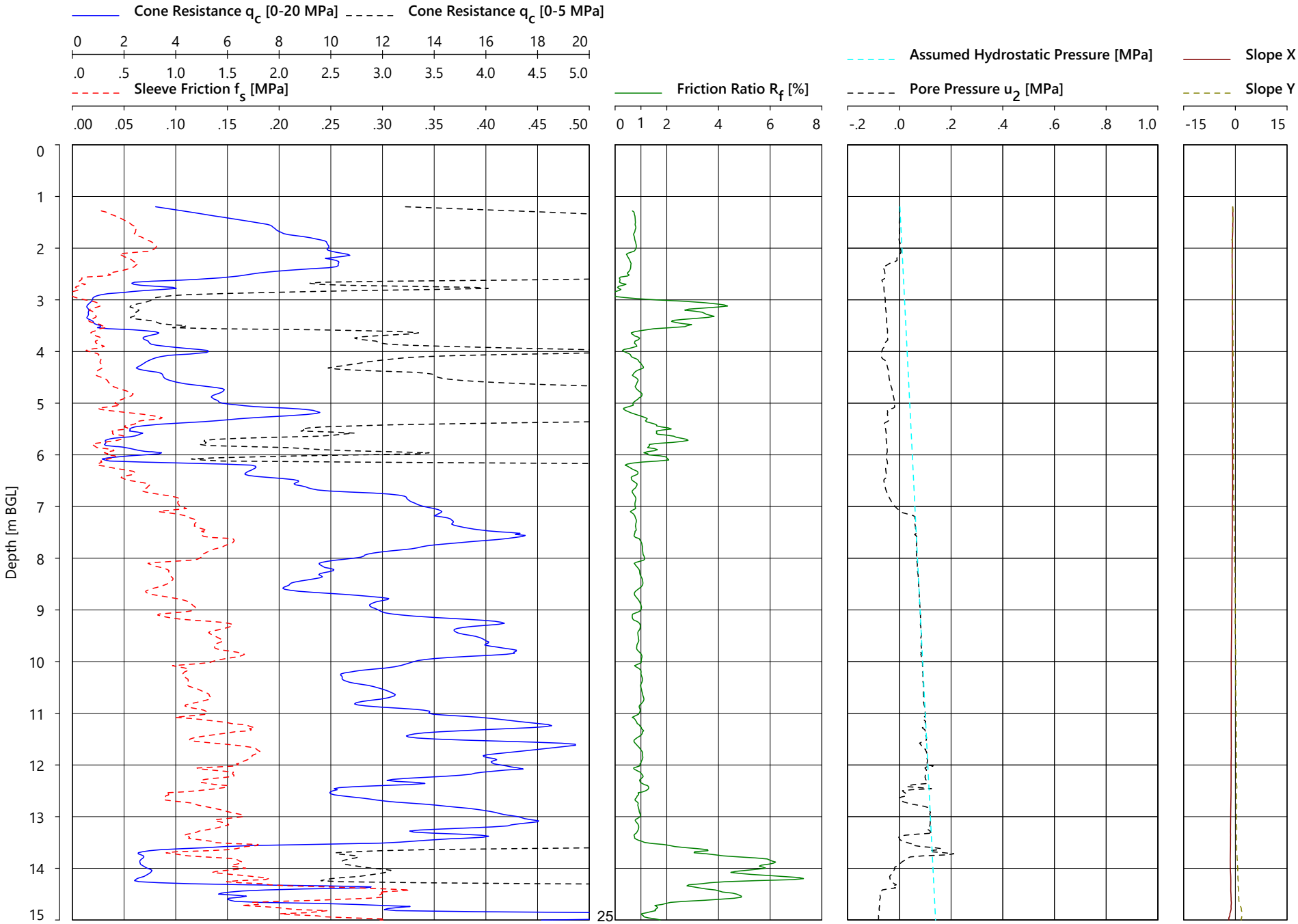
Piezocone Measured Data				**Location :**	**MS-CPT03**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482030.81 **N** 412128.35 **Ground Level [m OD] :** +0.21
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data				**Location :**	**MS-CPT03**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482030.81 **N** 412128.35 **Ground Level [m OD] :** +0.21
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data				**Location :**	**MS-CPT04**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482130.74 **N** 412122.98 **Ground Level [m OD] :** +0.52
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data			
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]
		Assumed Water Level [m gl] :	-1.0
Operator :	NF		
Compiled by :	LCH		
Checked by :	KES		

Location : MS-CPT05
Coordinates : **E** 481829.72 **N** 412089.45 **Ground Level [m OD] :** +0.33
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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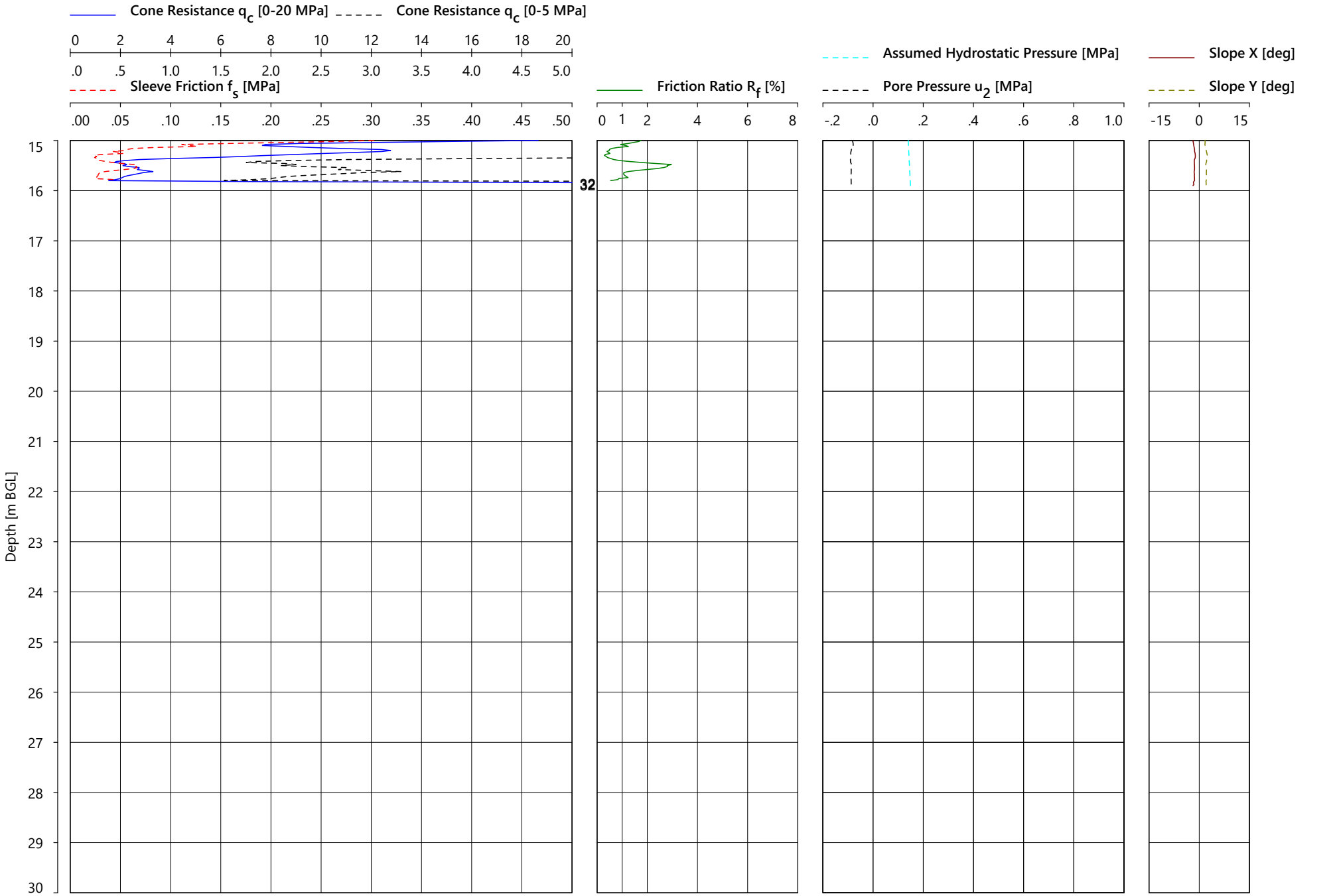

Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT05
Coordinates : **E** 481829.72 **N** 412089.45 **Ground Level [m OD] :** +0.33
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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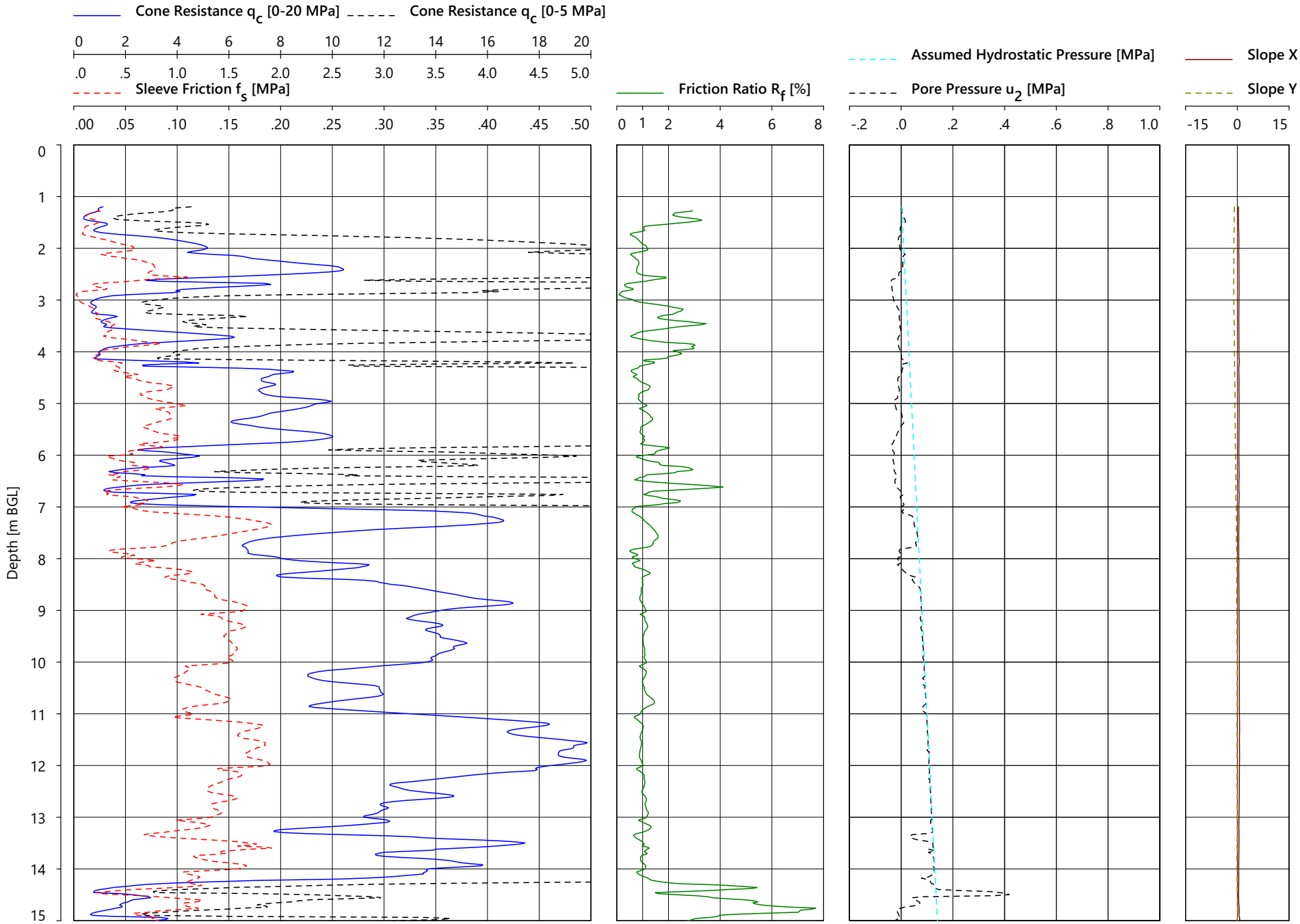
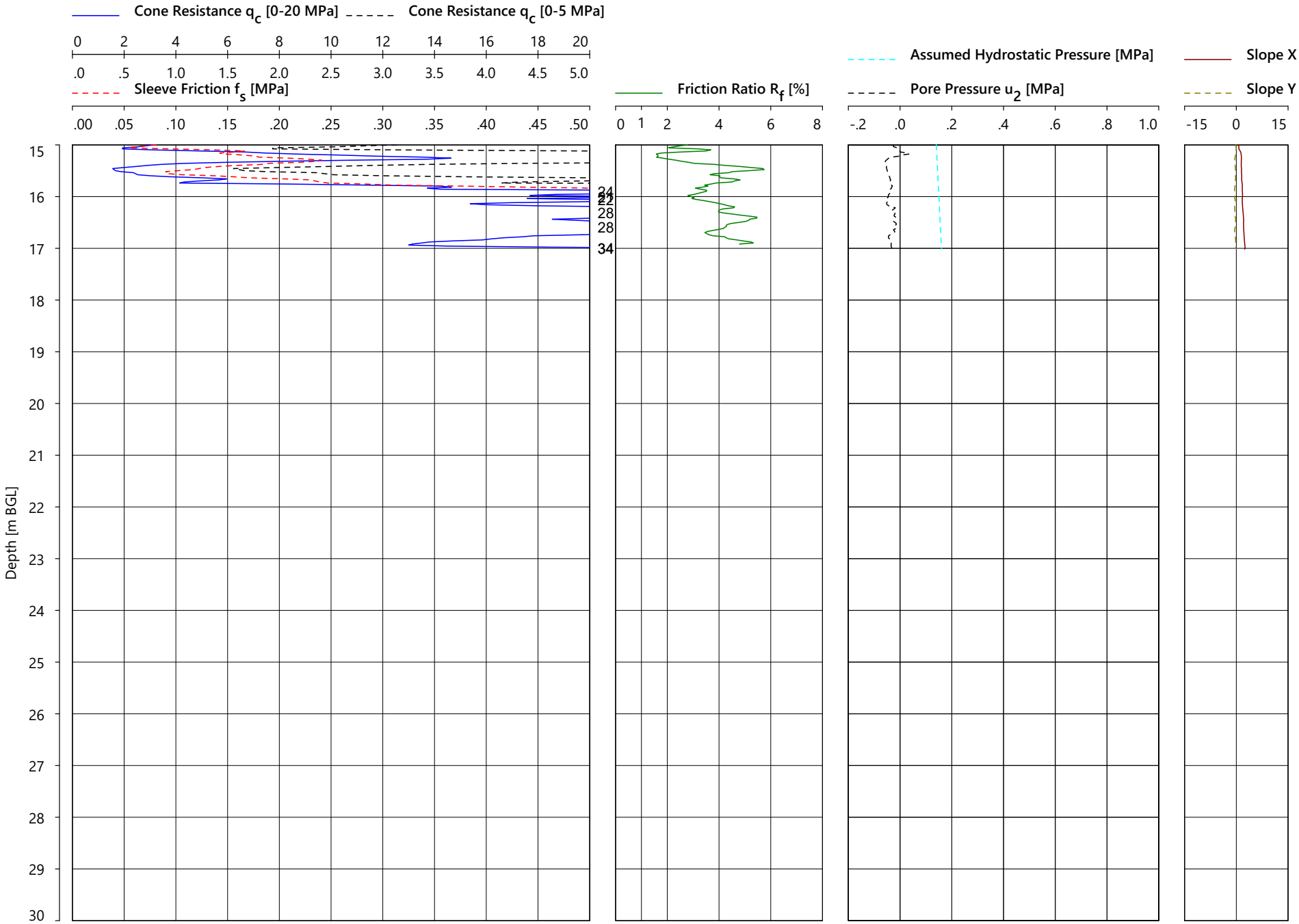


Piezocone Measured Data				**Location :**	**MS-CPT06**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481918.67 **N** 412089.67 **Ground Level [m OD] :** +0.70
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT06
Coordinates : **E** 481918.67 **N** 412089.67 **Ground Level [m OD] :** +0.70
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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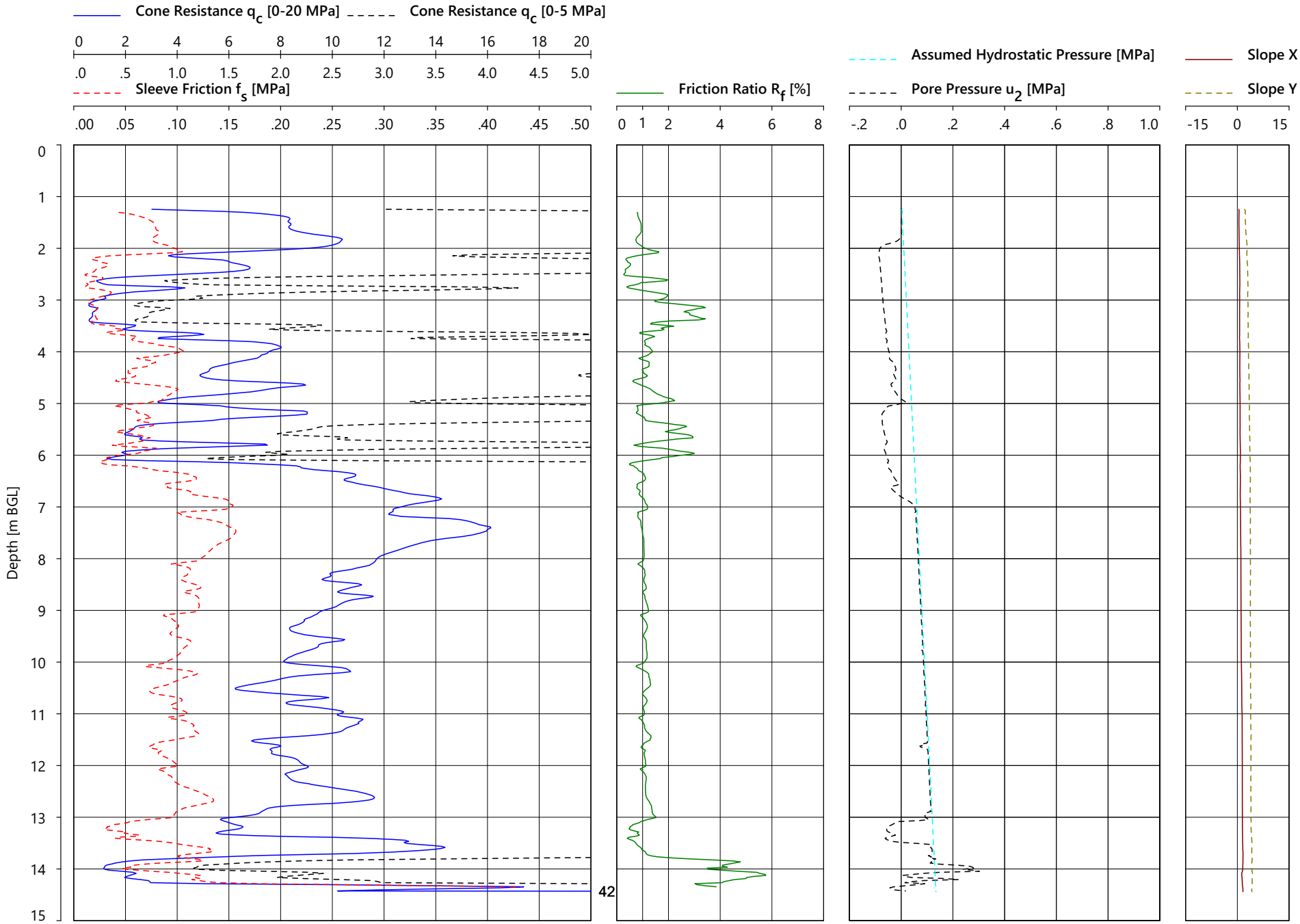
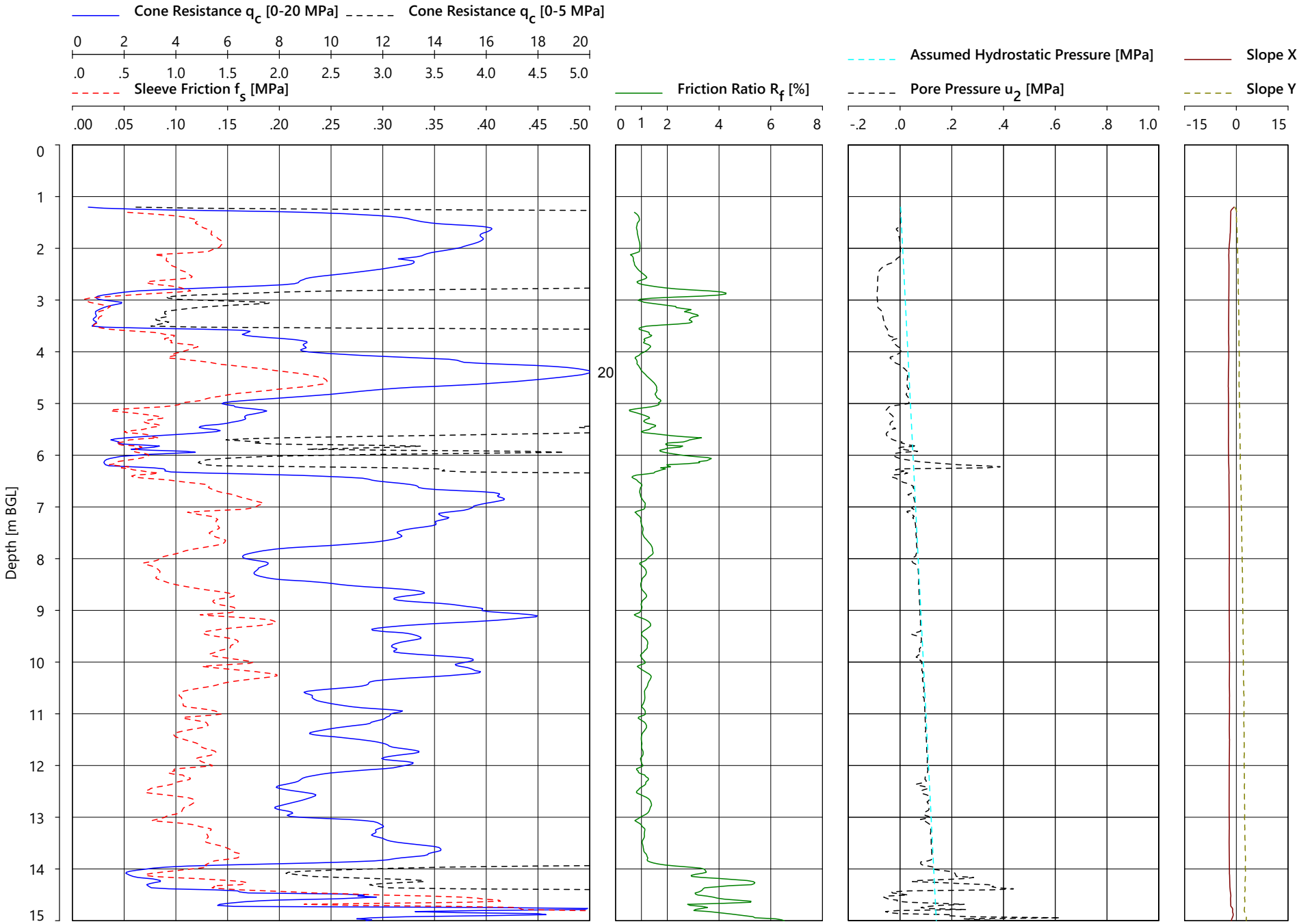
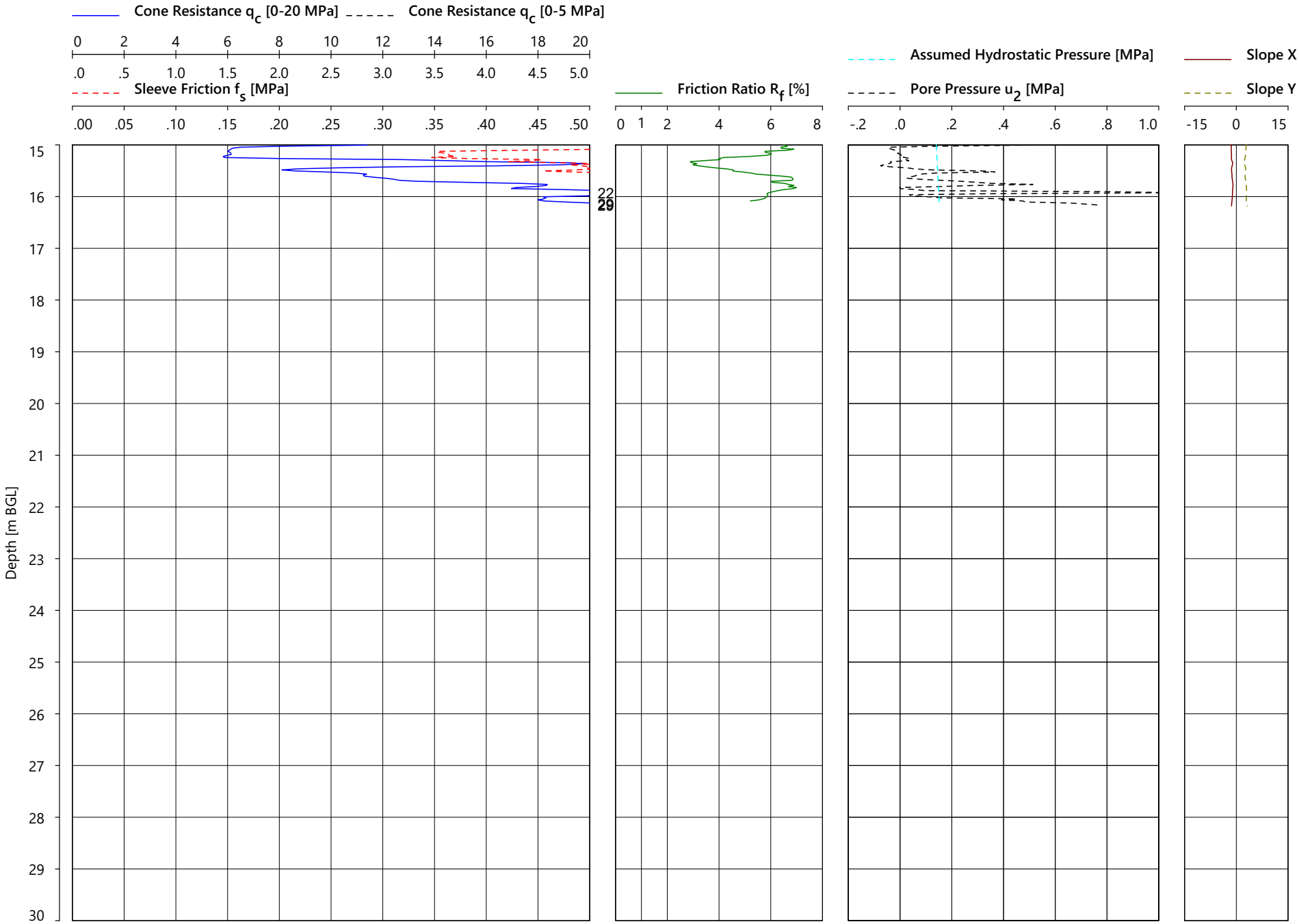


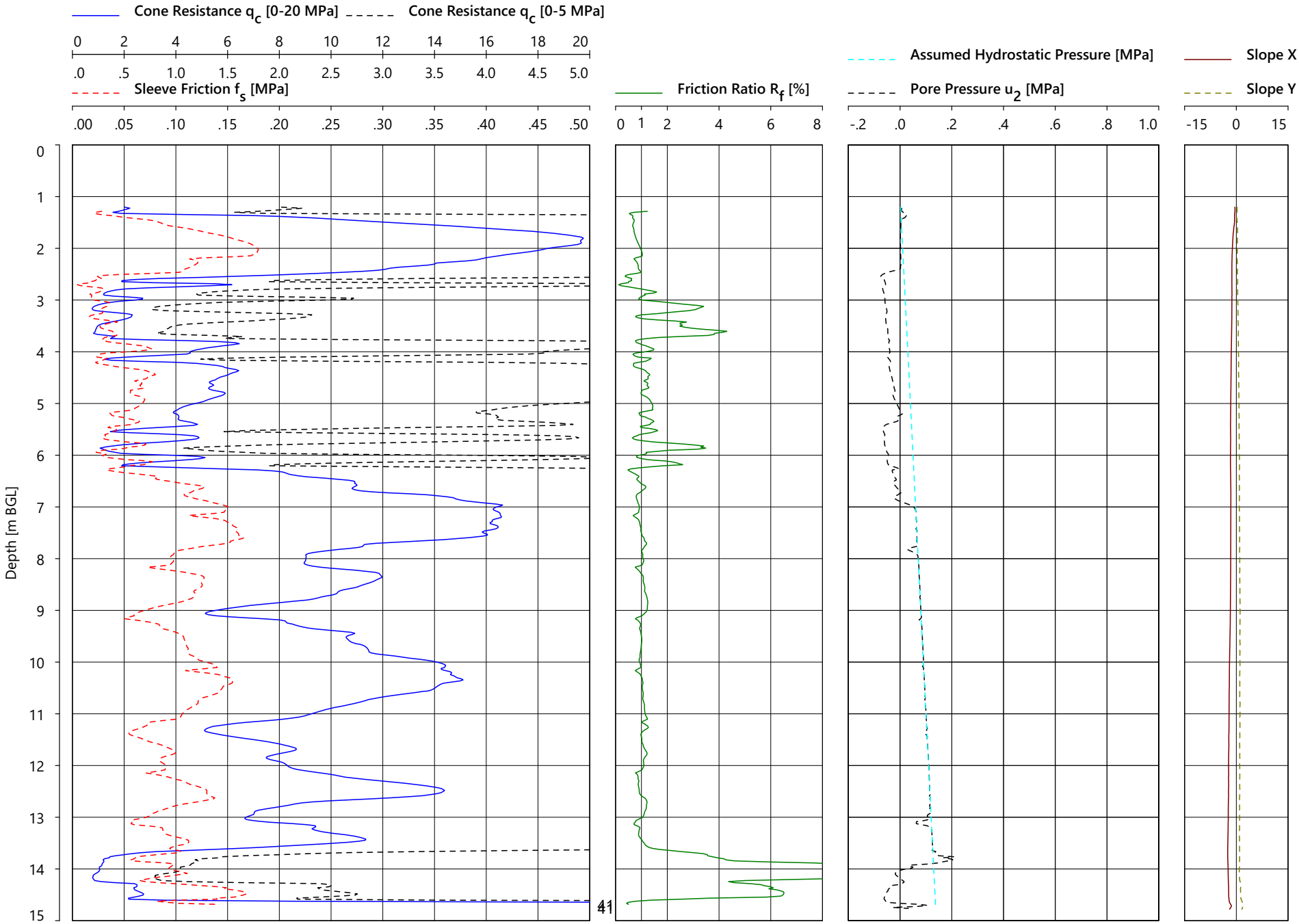
Piezocone Measured Data				**Location :**	**MS-CPT07**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482070.93 **N** 412089.33 **Ground Level [m OD] :** +0.68
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



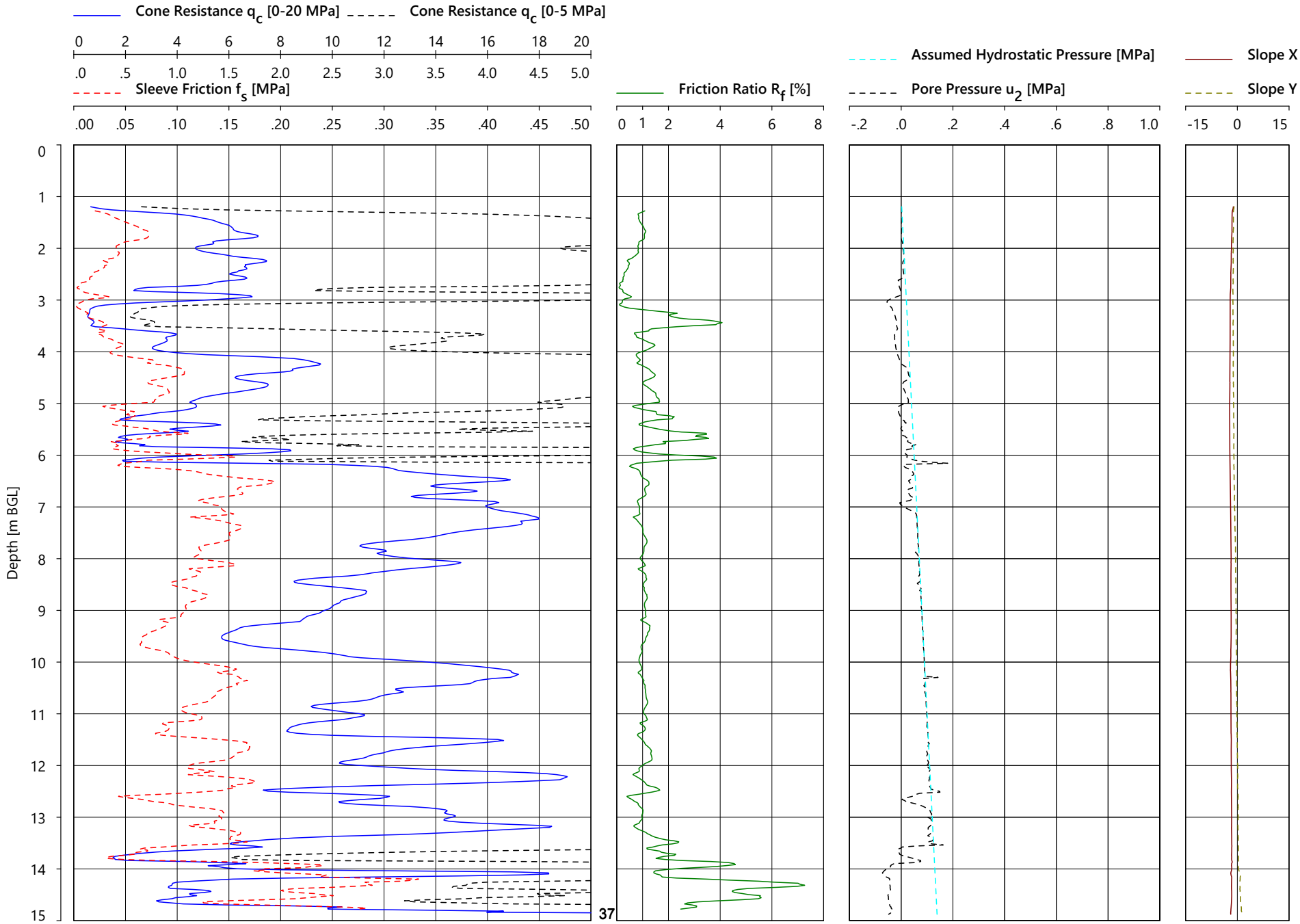
Piezocone Measured Data				**Location :**	**MS-CPT08**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482128.44 **N** 412073.17 **Ground Level [m OD] :** +0.65
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Operator :**	NF	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Compiled by :**	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Checked by :**	KES	**Client :**	SSE Generation Limited (SSE)



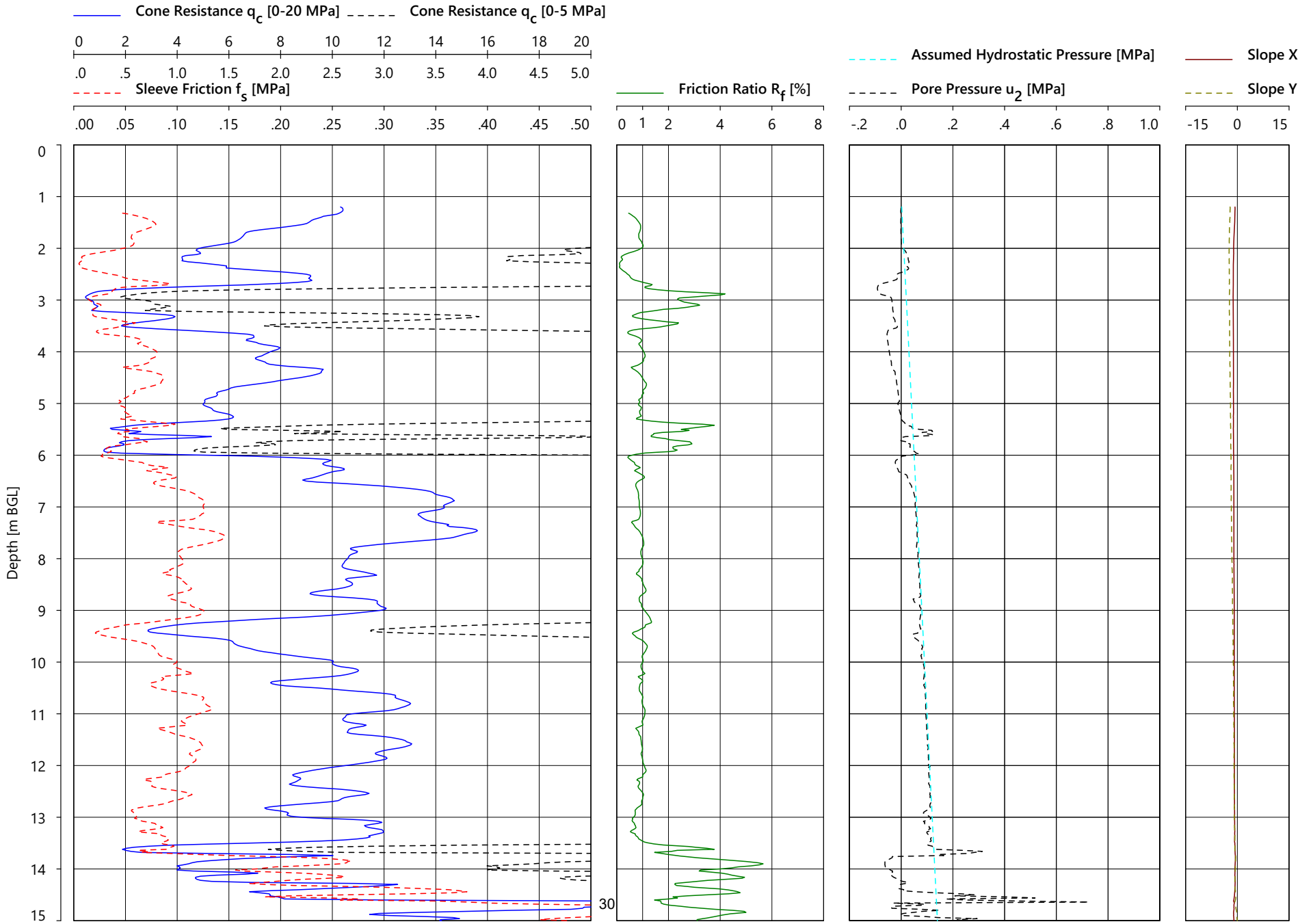
Piezocone Measured Data					
CPT Truck ID : GB17	**Stop Criterion :** end depth reached		**Location :** MS-CPT08		
CPT Cone : 1701-3474	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** E 482128.44 N 412073.17		**Ground Level [m OD] :** +0.65
Date of Test : 28-Sep-2022	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562		
	Assumed Water Level [m gl] : -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
			Client : SSE Generation Limited (SSE)		



Piezocone Measured Data				**Location :**	**MS-CPT09**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481825.75 **N** 412039.48 **Ground Level [m OD] :** +0.51
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Operator :**	NF	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Compiled by :**	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Checked by :**	KES	**Client :**	SSE Generation Limited (SSE)



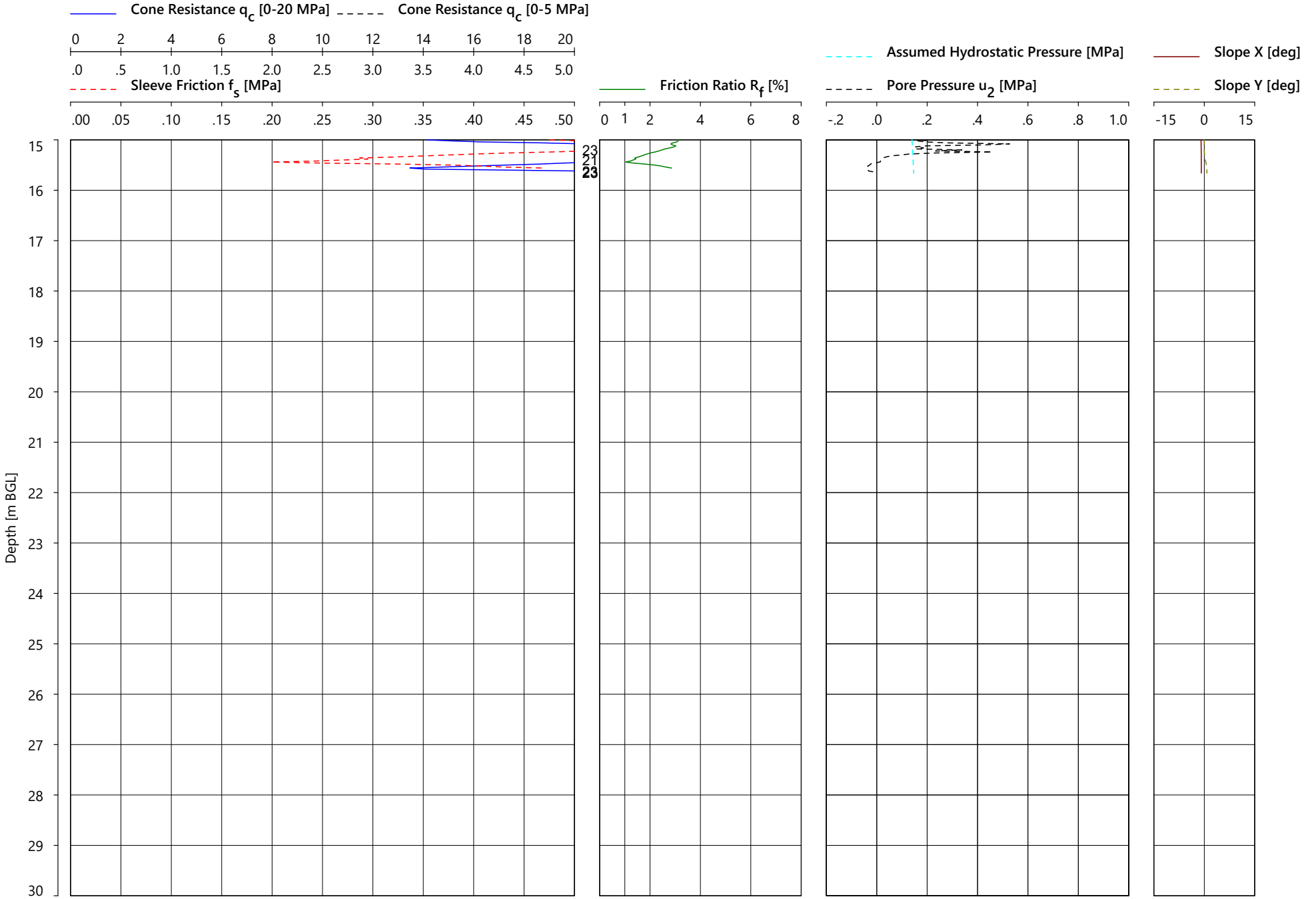
Piezocone Measured Data				**Location :**	**MS-CPT10**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481910.37 **N** 412029.00 **Ground Level [m OD] :** +0.36
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



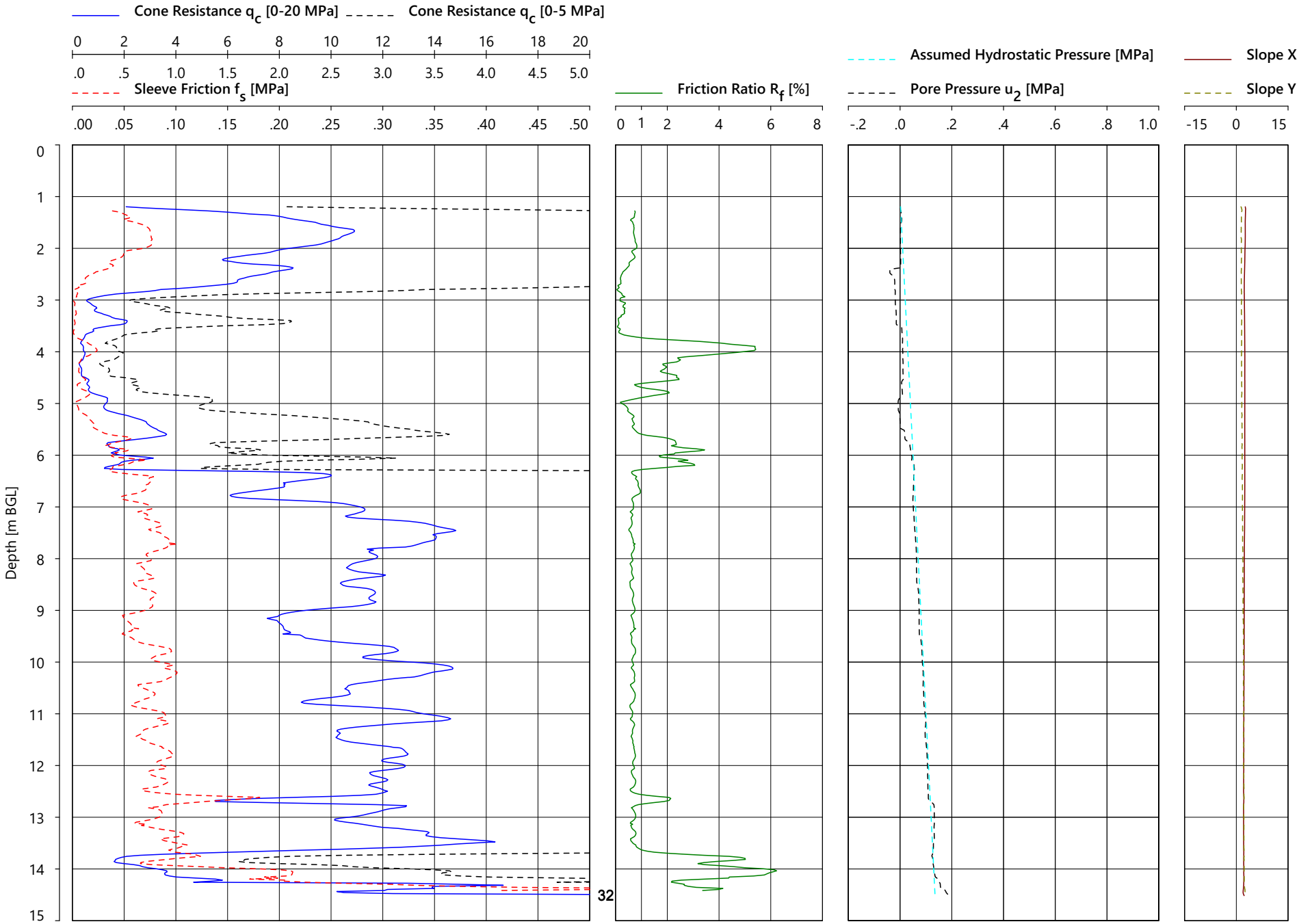
Piezocone Measured Data			
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]
		Assumed Water Level [m gl] :	-1.0
Operator :	NF		
Compiled by :	LCH		
Checked by :	KES		

Location : **MS-CPT11**
Coordinates : **E** 482031.79 **N** 412038.38 **Ground Level [m OD] :** +0.62
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Measured Data				**Location :**	**MS-CPT11**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482031.79 **N** 412038.38 **Ground Level [m OD] :** +0.62
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Operator :**	NF	**Project :**	212562
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Compiled by :**	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Checked by :**	KES	**Client :**	SSE Generation Limited (SSE)



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS
CPT Cone :	1701-3469	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	04-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-SCPT12
Coordinates : **E** 482117.30 **N** 412008.50 **Ground Level [m OD] :** +0.85
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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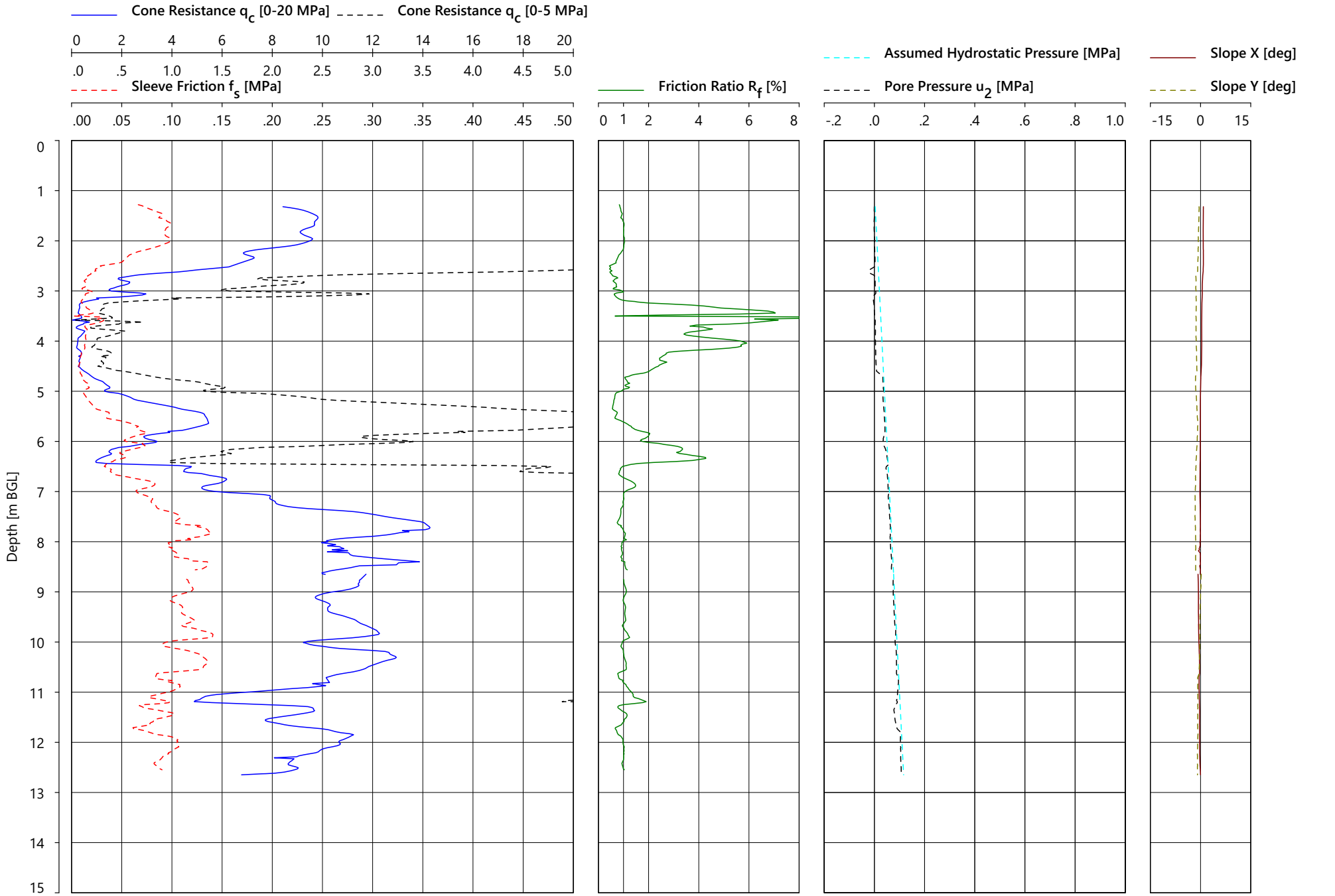

Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	other	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	10-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPM12
Coordinates : **E** 482118.30 **N** 412008.50 **Ground Level [m OD] :** +0.85
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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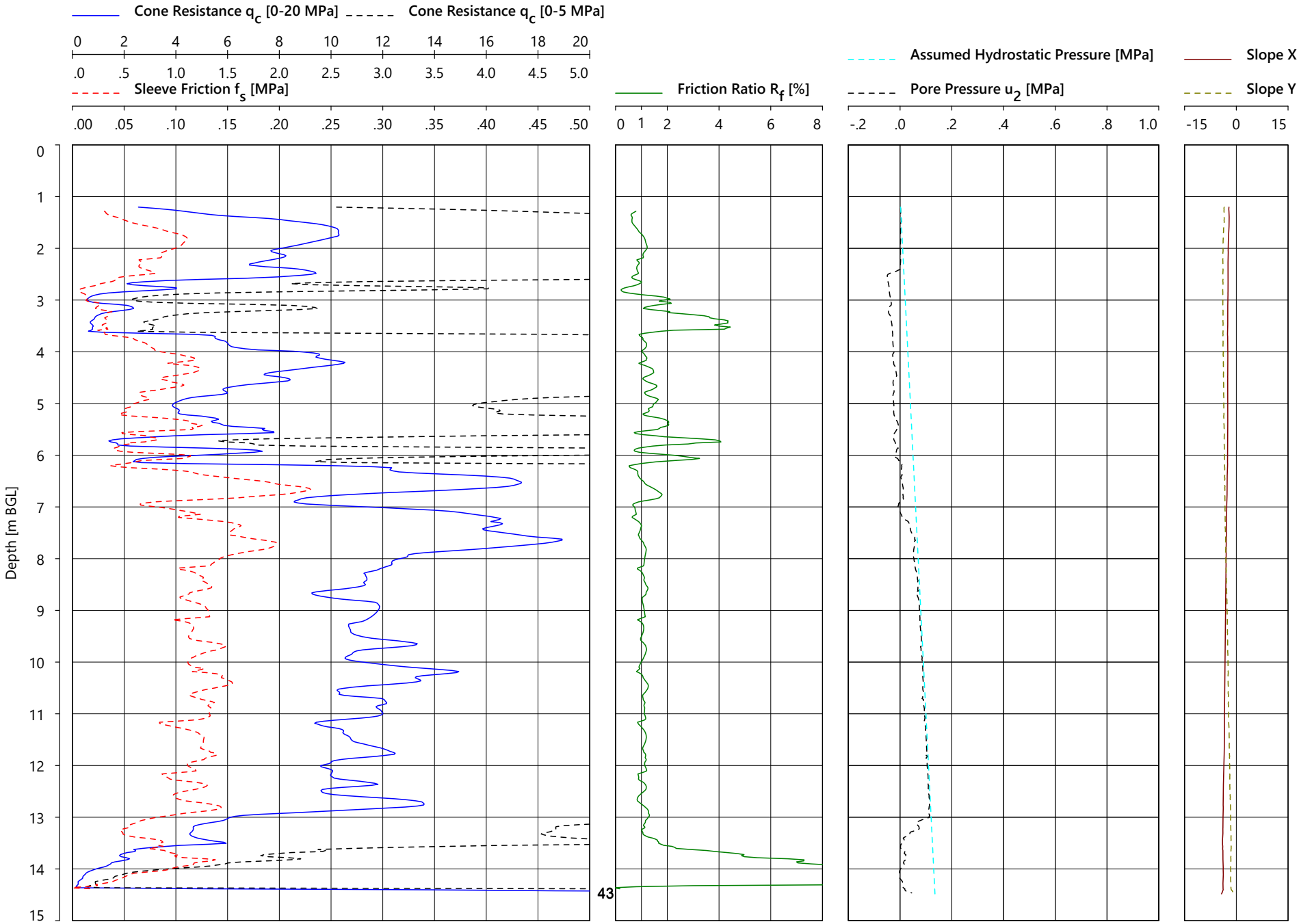
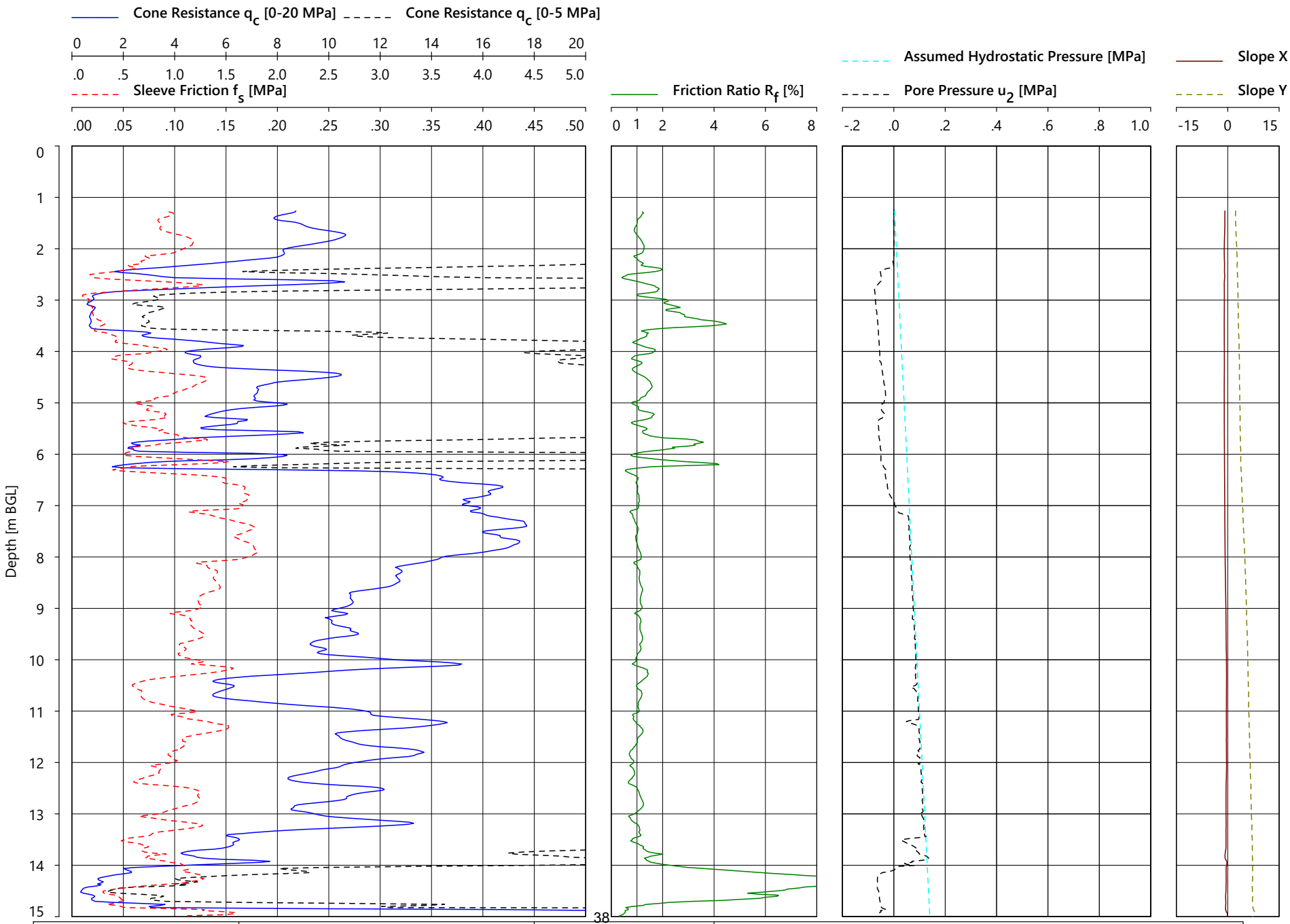


Piezocone Measured Data				**Location :**	**MS-CPT13**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481823.05 **N** 411989.59 **Ground Level [m OD] :** +0.73
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	Stop Criterion :	end depth reached	Operator :	NF
CPT Cone :	1701-3474	Application Class / Type :	Class 2 / TE2	Compiled by :	LCH
Date of Test :	29-Sep-2022	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Checked by :	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT14
Coordinates : E 481942.85 N 411983.42 **Ground Level [m OD] :** +0.81
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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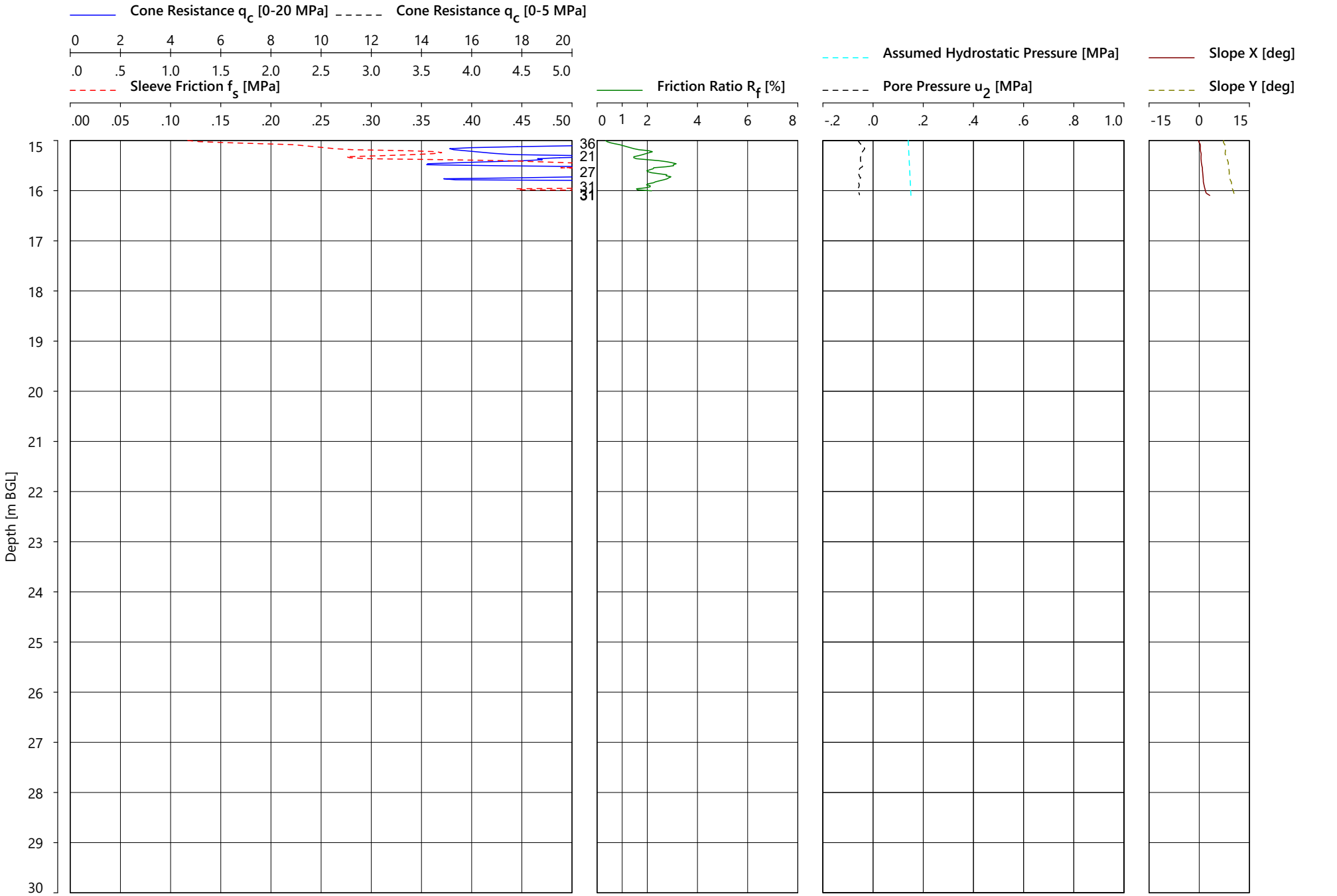

Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT14
Coordinates : **E** 481942.85 **N** 411983.42 **Ground Level [m OD] :** +0.81
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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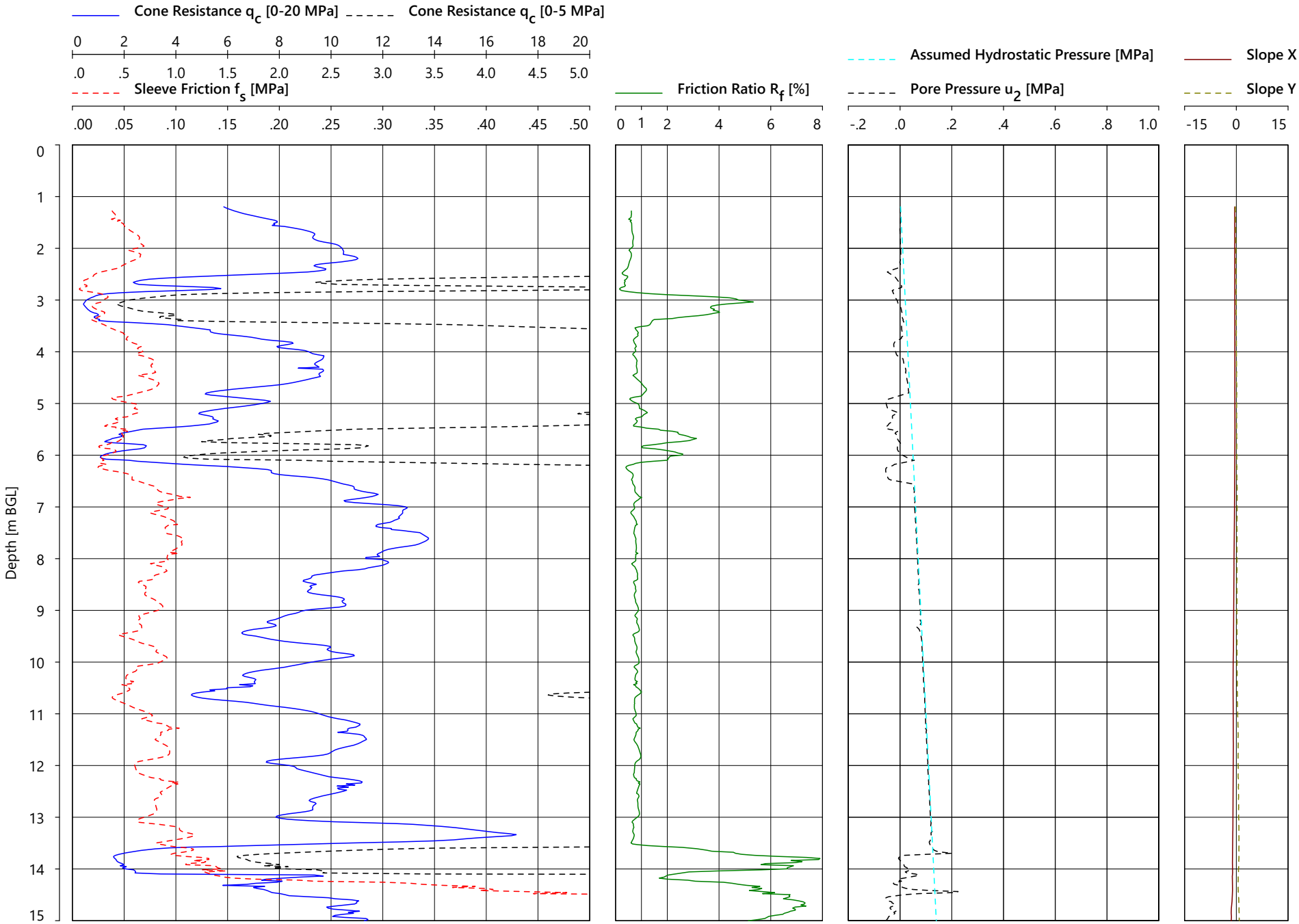
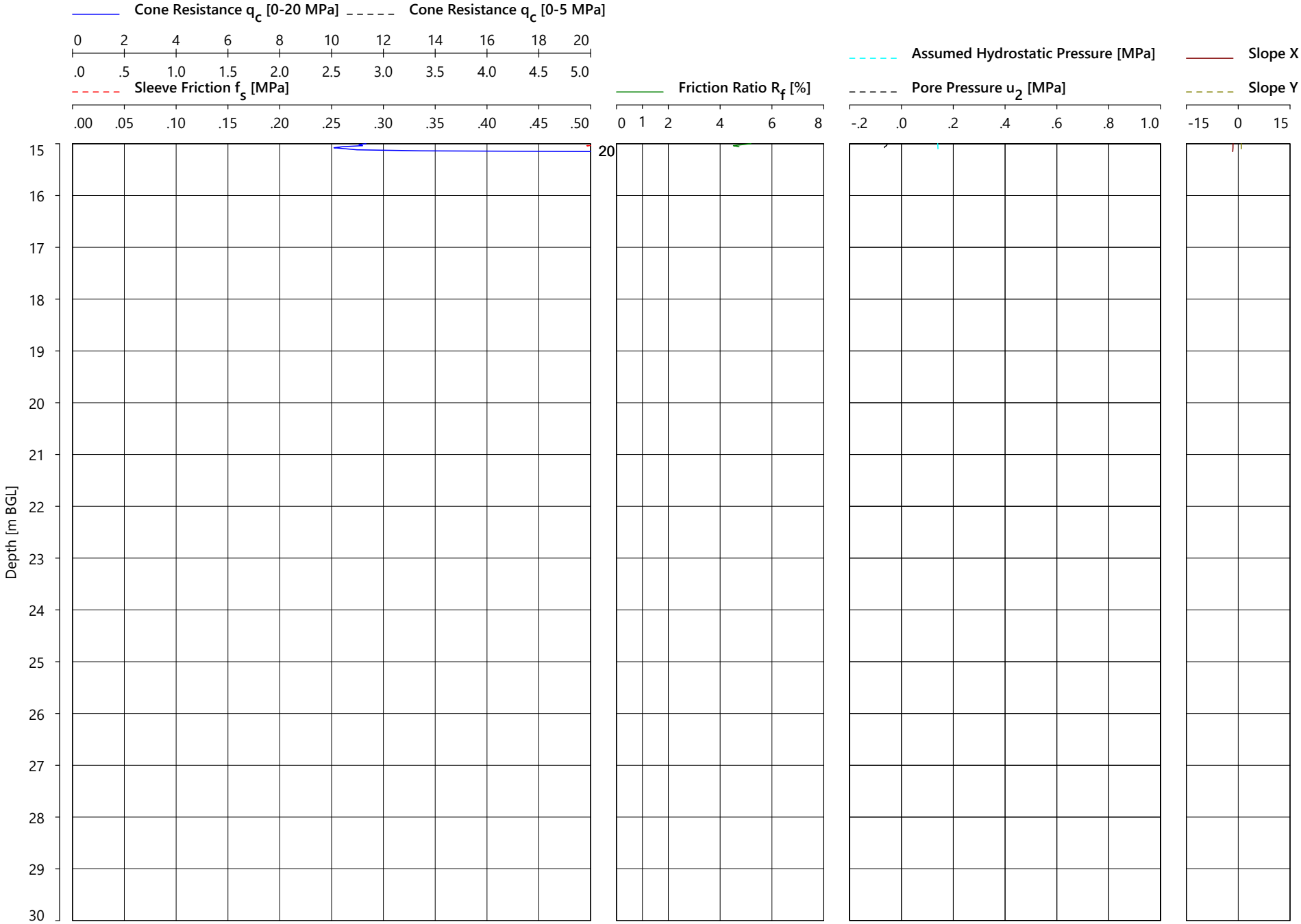
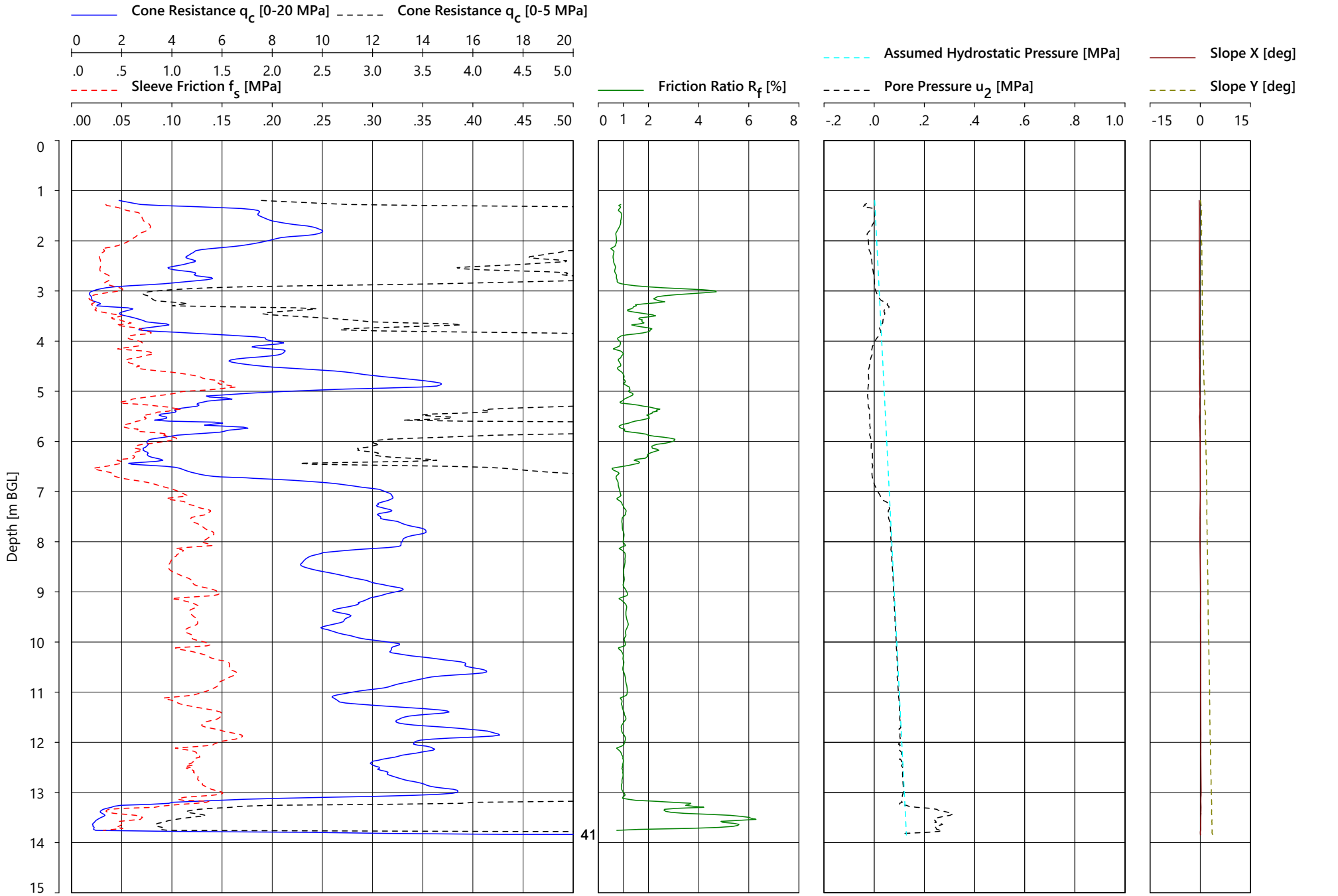


Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS,KH
CPT Cone :	1701-3469	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	19-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

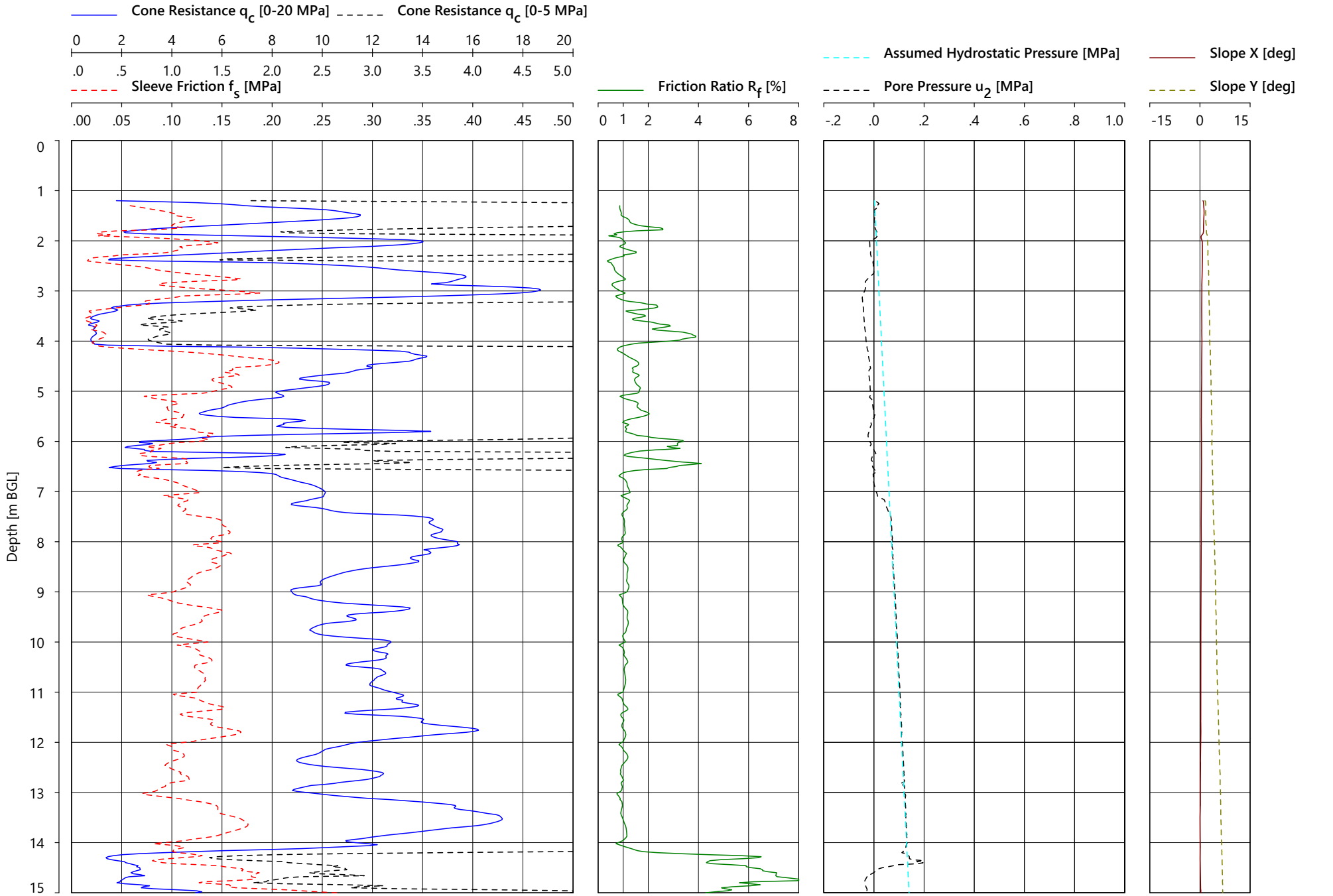
Location : MS-SCPT15
Coordinates : **E** 482093.25 **N** 411955.82 **Ground Level [m OD] :** +0.69
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



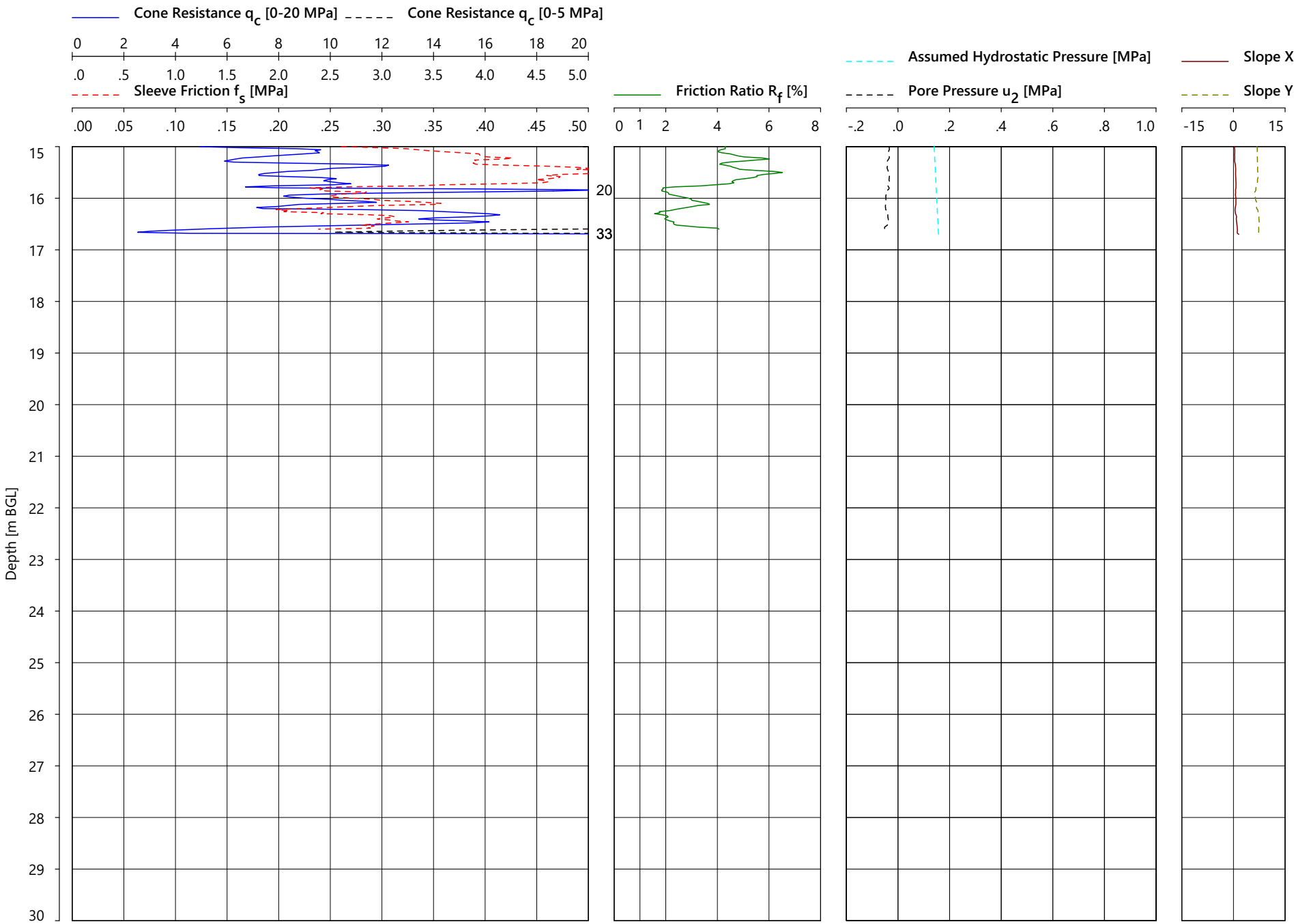
Piezocone Measured Data			
CPT Truck ID : GB17	**Stop Criterion :** max. penetration force		**Location :** MS-SCPT15
CPT Cone : 1701-3469	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS,KH	**Coordinates :** **E** 482093.25 **N** 411955.82 **Ground Level [m OD] :** +0.69
Date of Test : 19-Oct-2022	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
	Assumed Water Level [m gl] : -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Piezocone Measured Data				**Location :**	**MS-CPT16**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481861.56 **N** 411943.34 **Ground Level [m OD] :** +0.53
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Operator :**	NF	**Project :**	212562
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Compiled by :**	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Checked by :**	KES	**Client :**	SSE Generation Limited (SSE)



Piezocone Measured Data				**Location :**	**MS-CPT17**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481939.92 **N** 411927.62 **Ground Level [m OD] :** +0.66
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT17
Coordinates : **E** 481939.92 **N** 411927.62 **Ground Level [m OD] :** +0.66
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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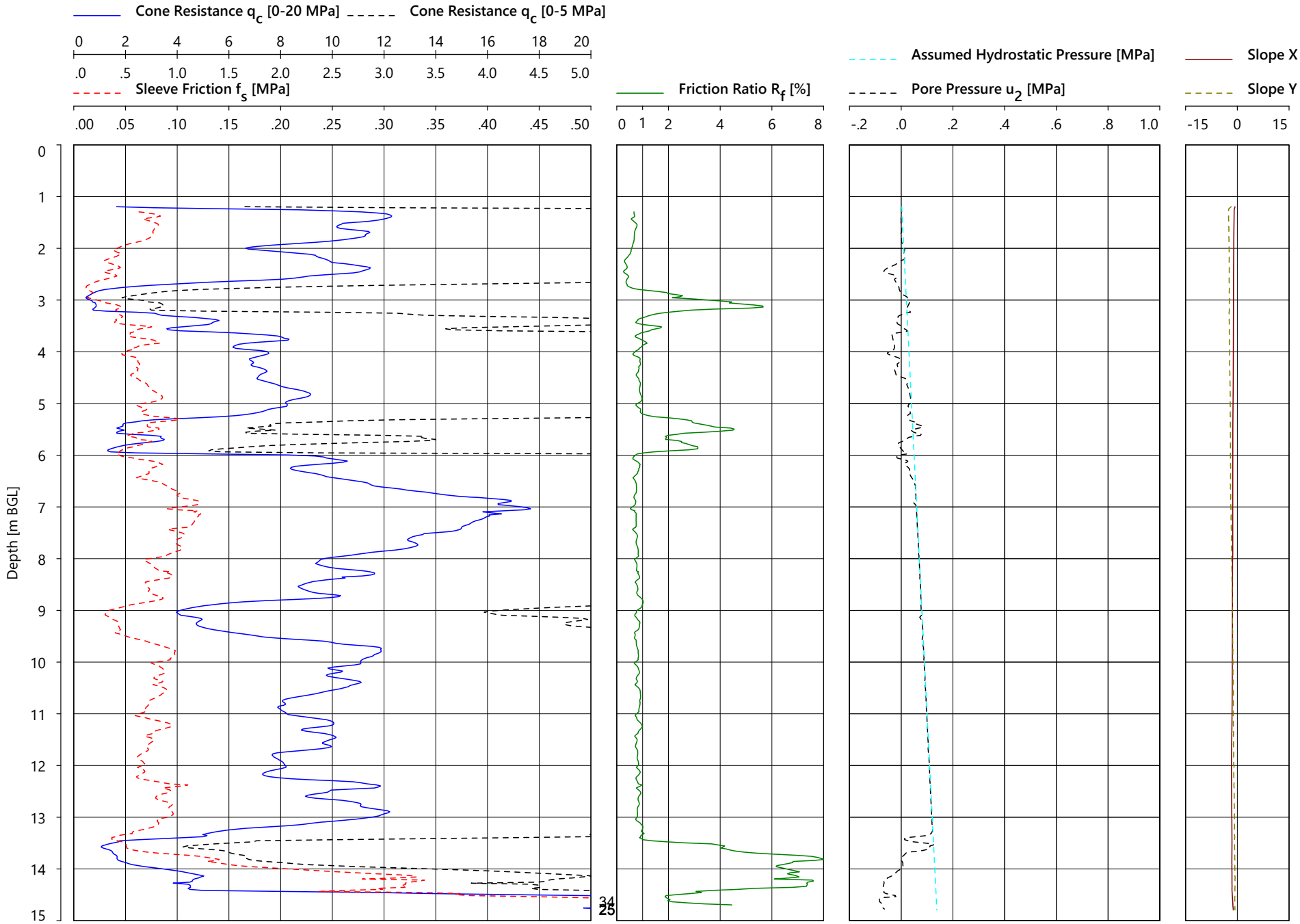

Piezocone Measured Data		**Stop Criterion :**	end depth reached		**Location :** MS-SCPT18
CPT Truck ID :	GB17	**Application Class / Type :**	Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482135.21 **N** 411946.57 **Ground Level [m OD] :** +0.60
CPT Cone :	1701-3469	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test :	06-Oct-2022	**Assumed Water Level [m gl] :**	-1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
					Client : SSE Generation Limited (SSE)

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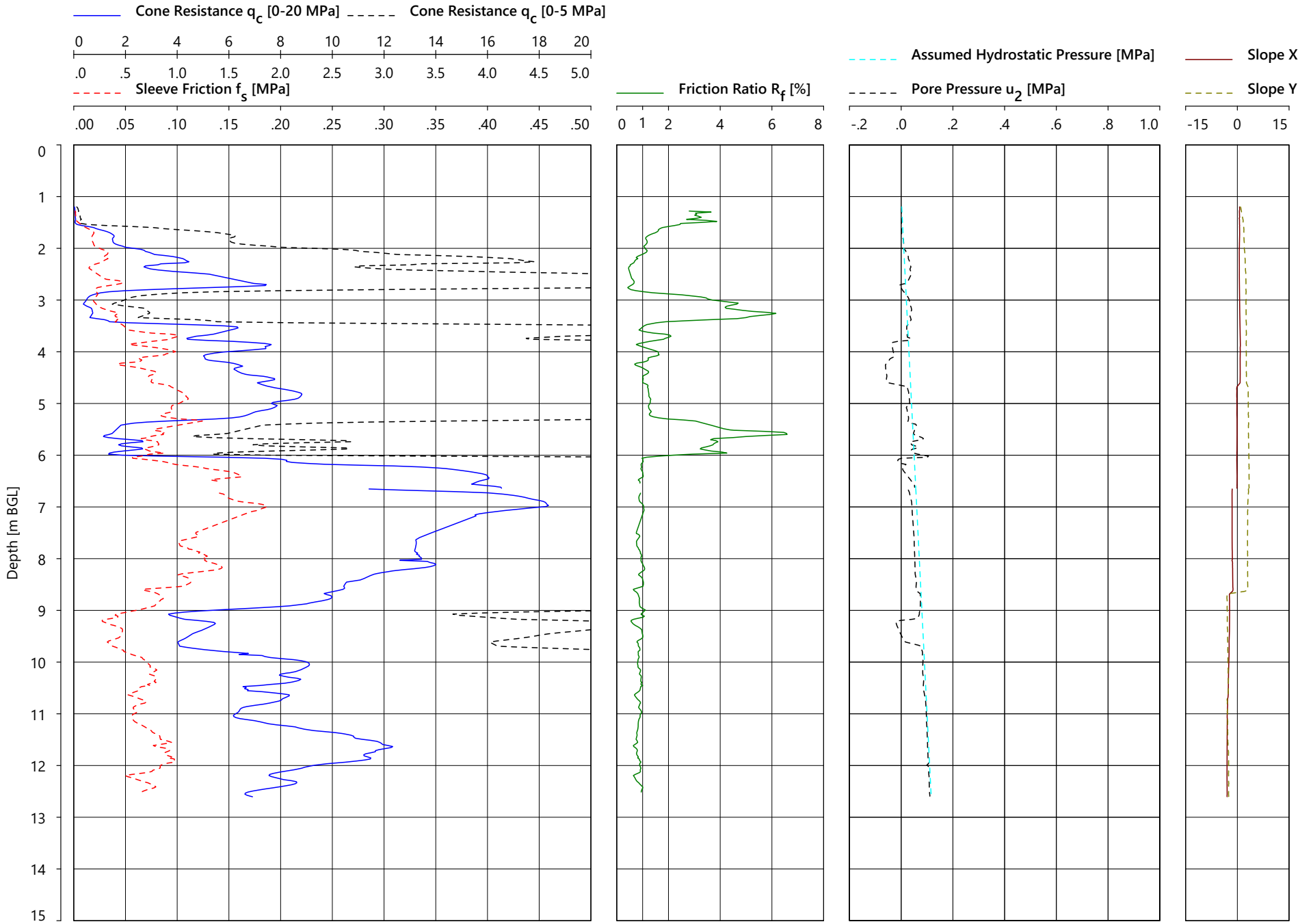

Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	other	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	11-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **MS-CPM18**
Coordinates : **E** 482134.20 **N** 411946.60 **Ground Level [m OD] :** +0.60
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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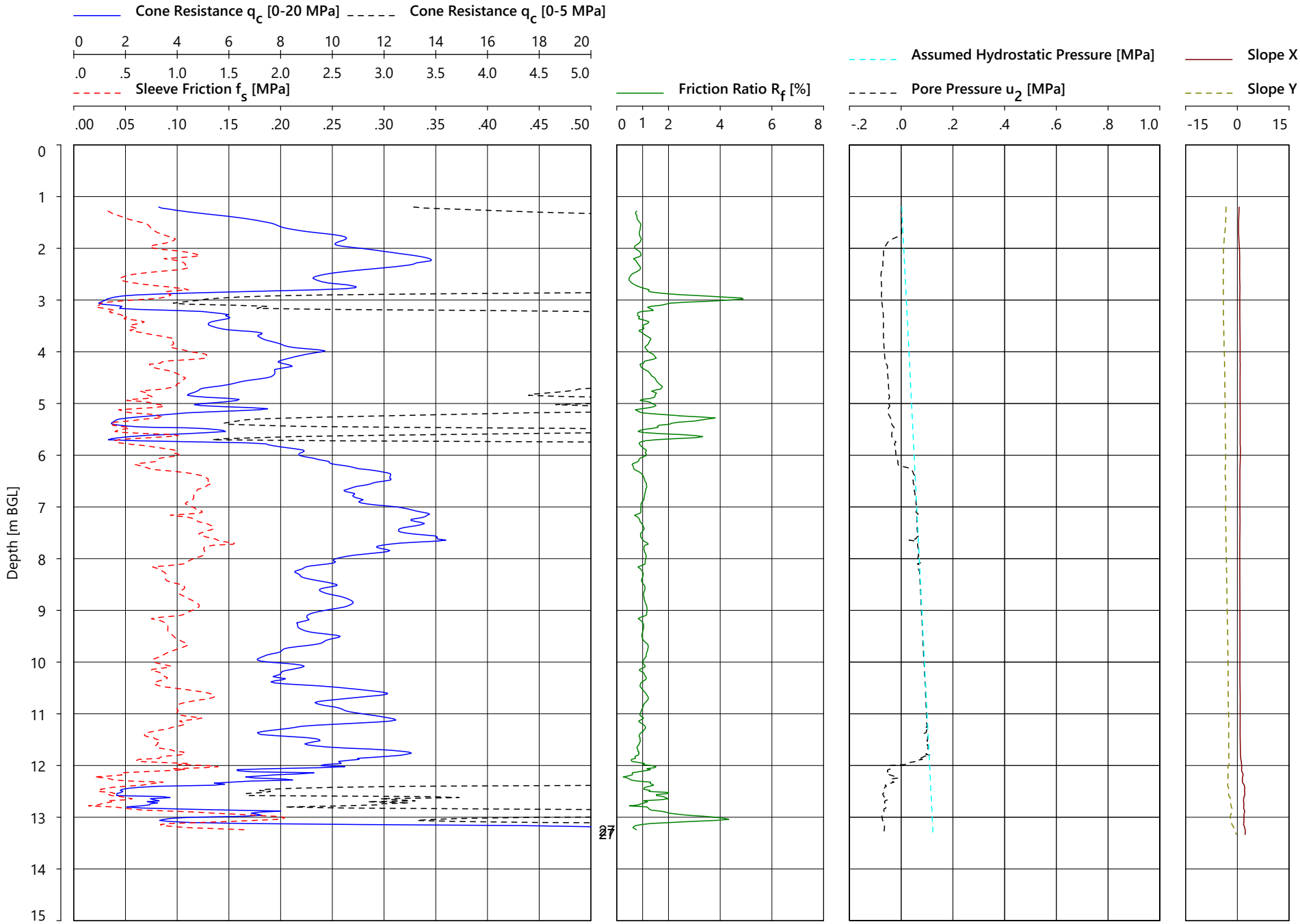
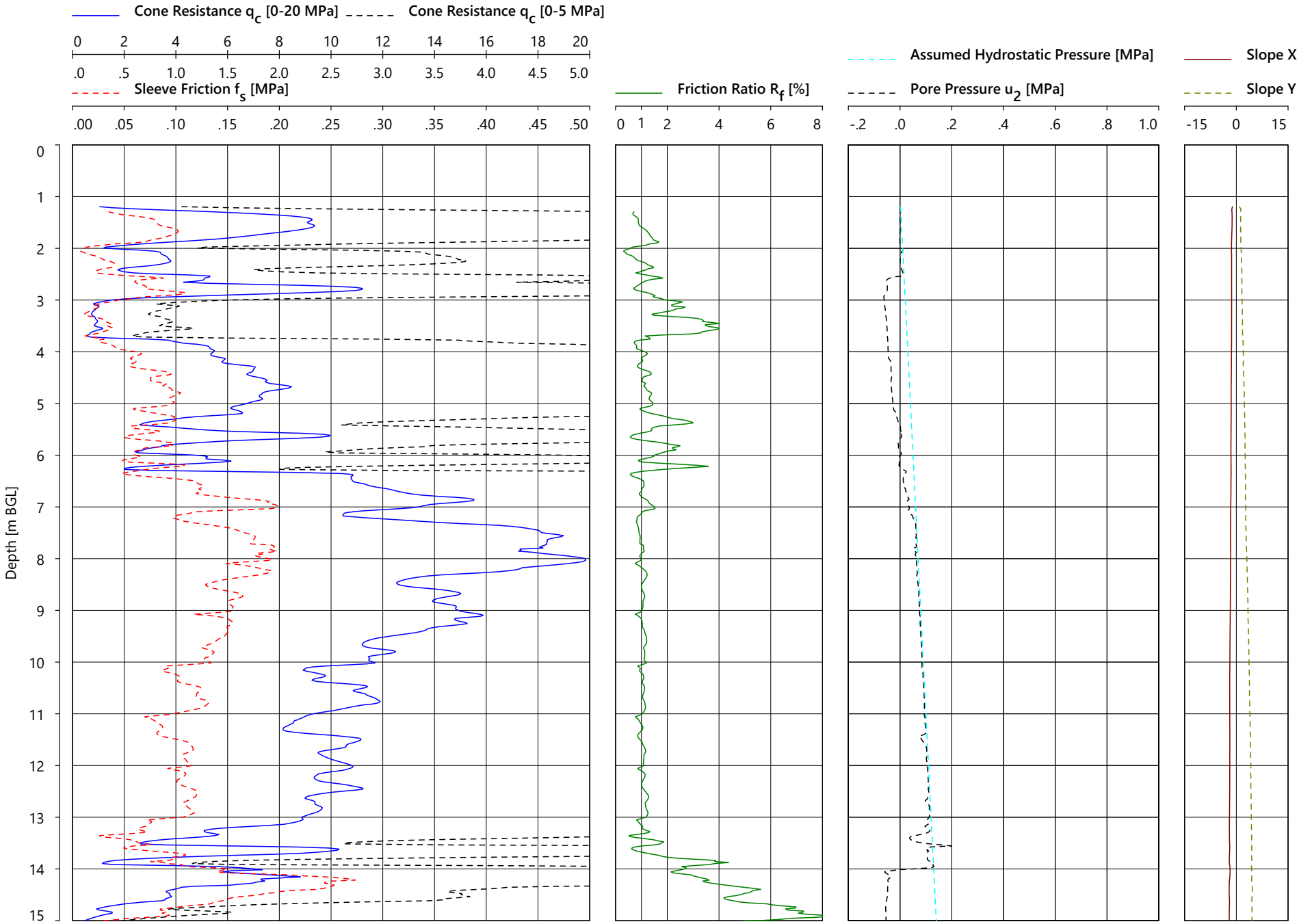
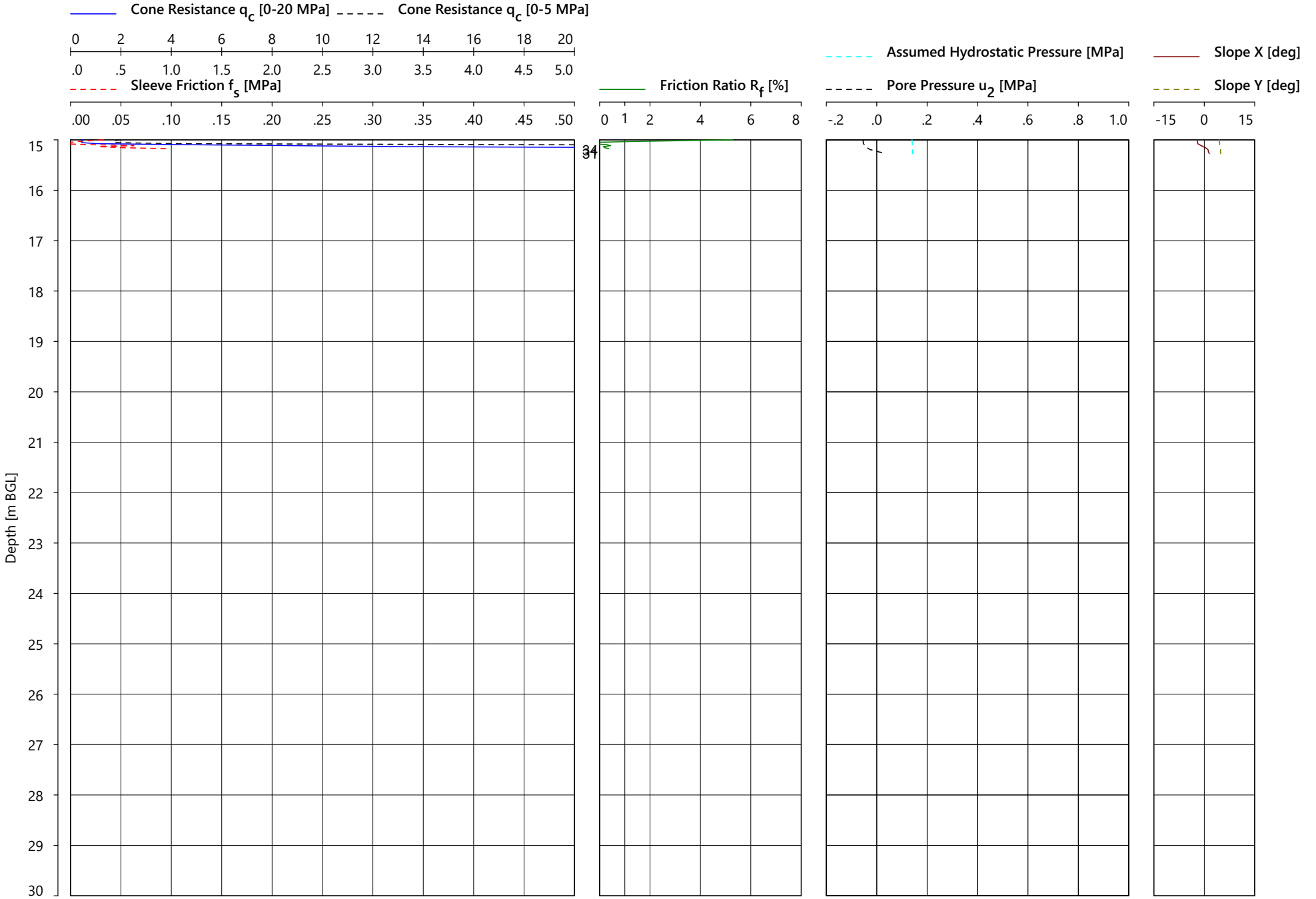


Piezocone Measured Data				**Location :**	**MS-CPT19**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481817.50 **N** 411889.77 **Ground Level [m OD] :** +0.53
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data				**Location :**	**MS-CPT20**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481917.71 **N** 411884.14 **Ground Level [m OD] :** +0.75
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT20
Coordinates : **E** 481917.71 **N** 411884.14 **Ground Level [m OD] :** +0.75
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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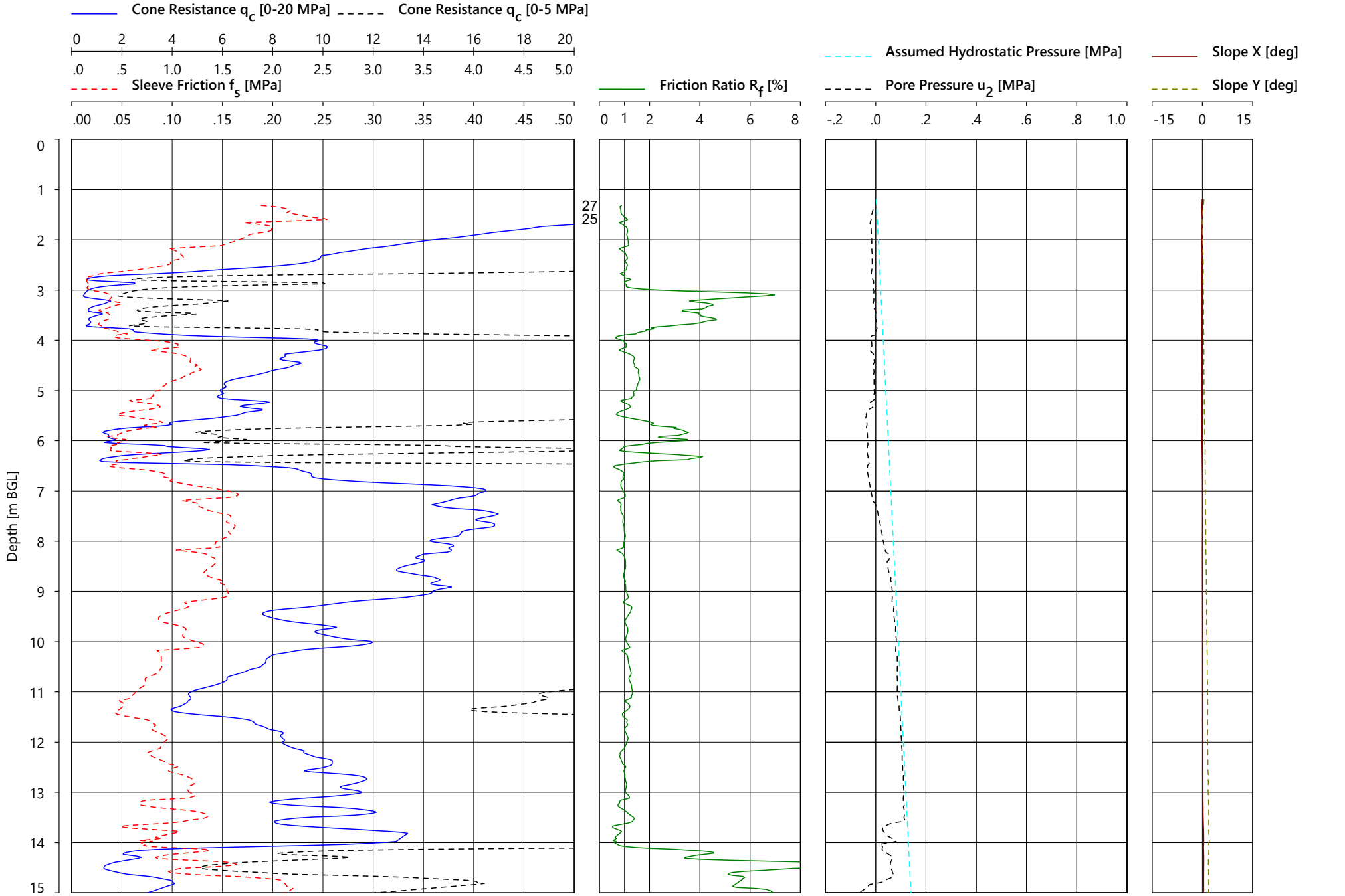
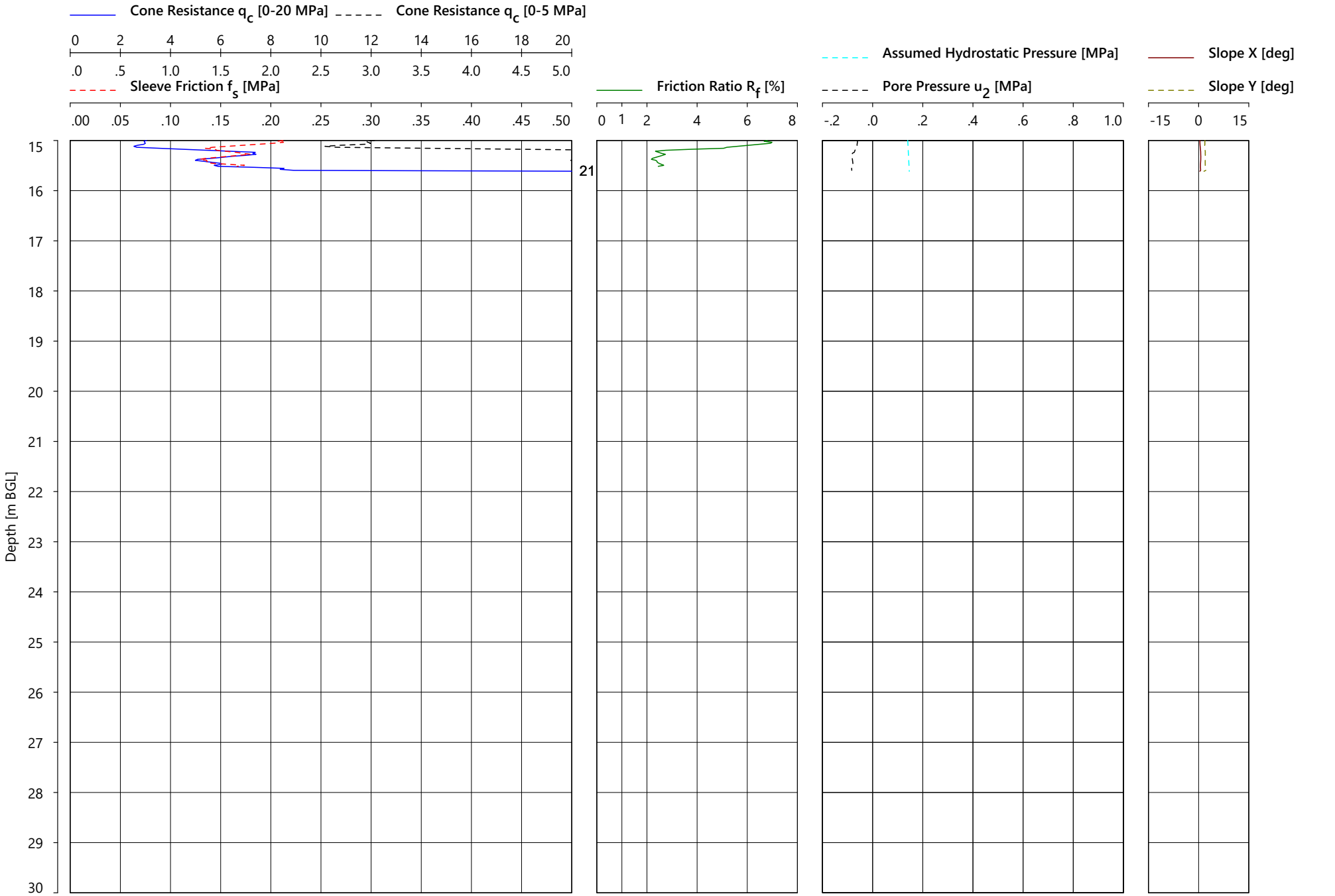


Piezocone Measured Data				**Location :**	**MS-CPT21**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482014.44 **N** 411918.06 **Ground Level [m OD] :** +1.07
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	04-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	04-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT21
Coordinates : **E** 482014.44 **N** 411918.06 **Ground Level [m OD] :** +1.07
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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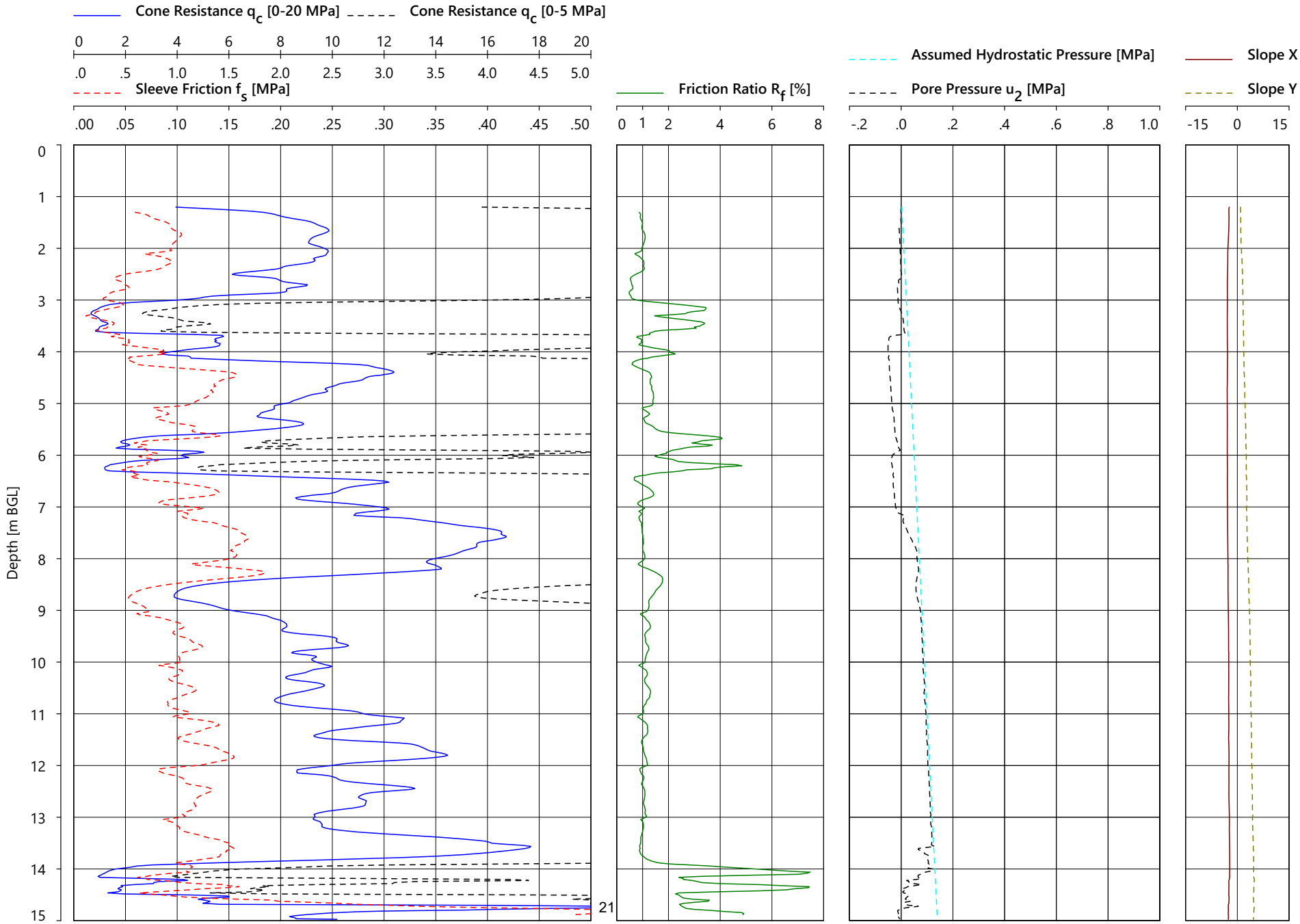
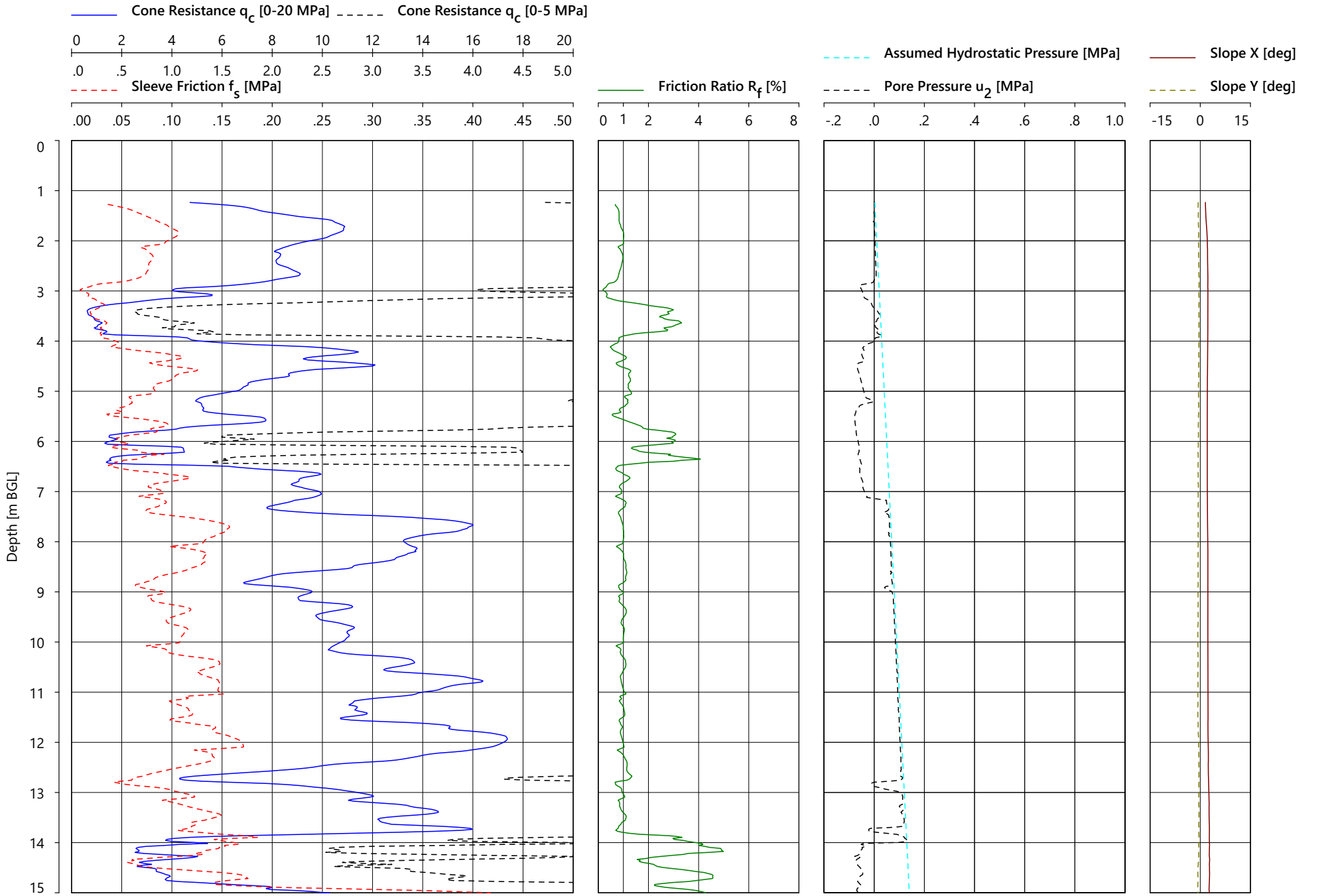


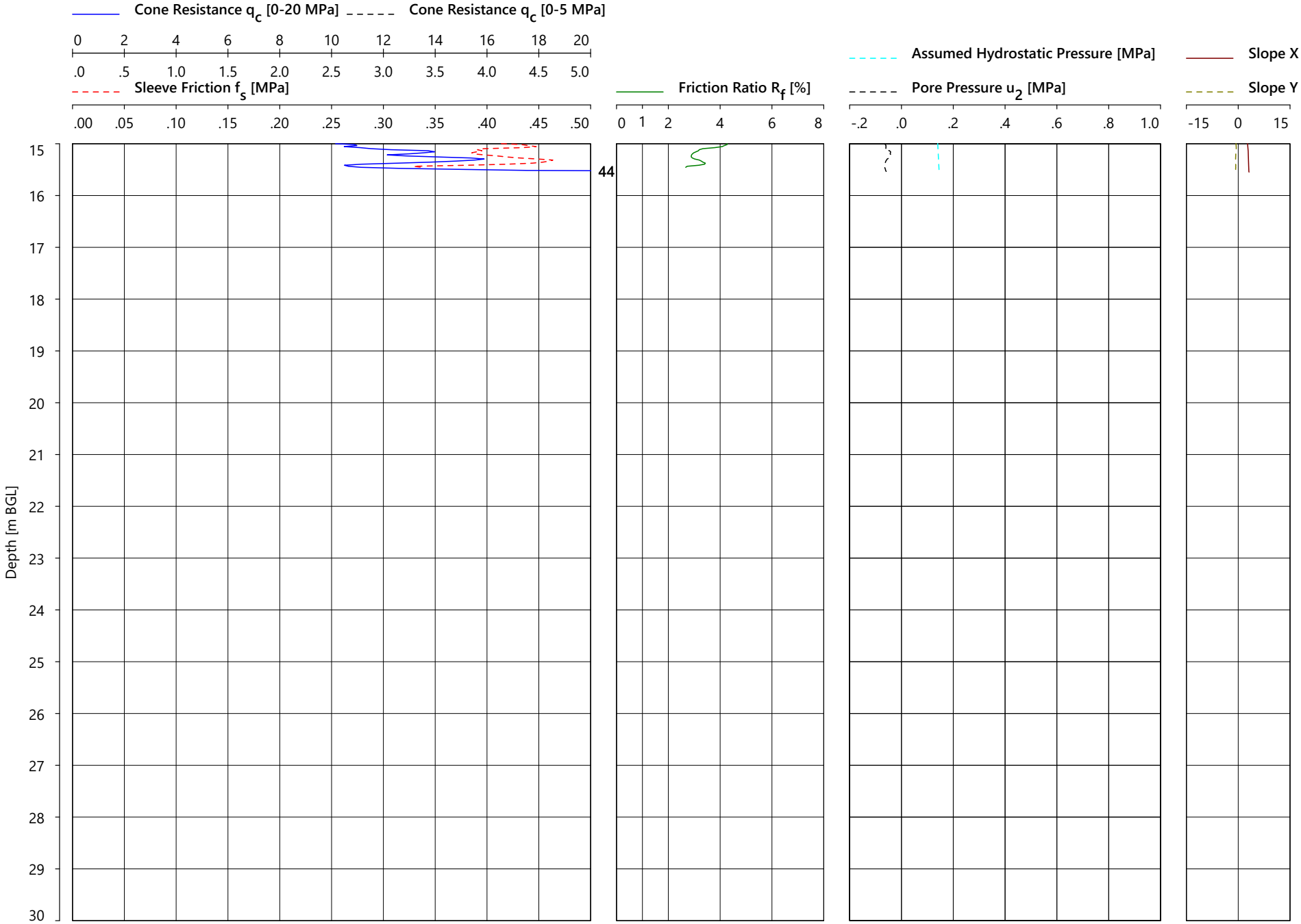
Piezocone Measured Data			
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]
		Assumed Water Level [m gl] :	-1.0
Operator :	NF		
Compiled by :	LCH		
Checked by :	KES		

Location : MS-CPT22
Coordinates : E 482118.34 N 411891.47 **Ground Level [m OD] :** +0.90
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

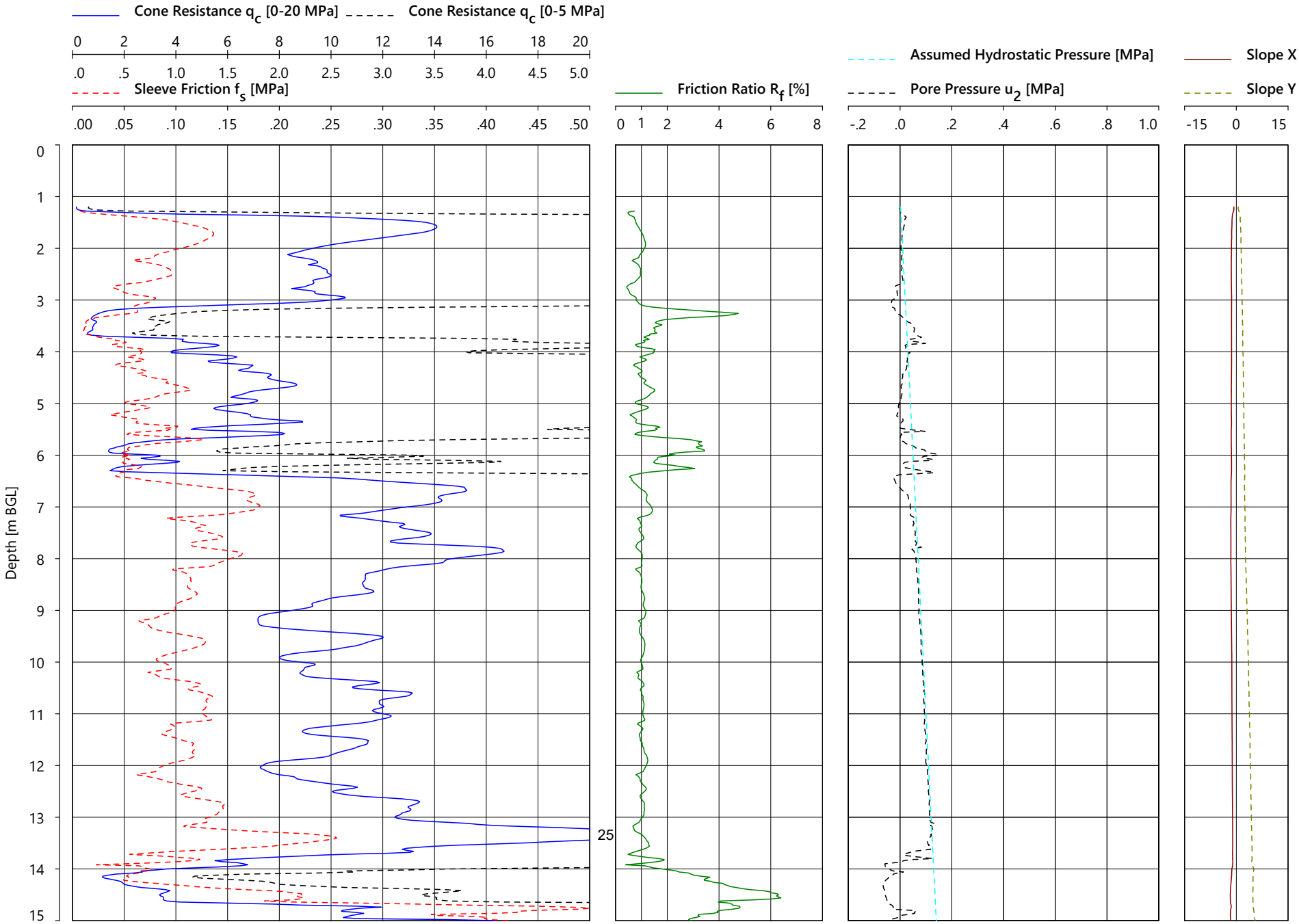


Piezocone Measured Data			
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2
Date of Test :	12-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]
		Assumed Water Level [m gl] :	-1.0
Operator :	HG,MS		
Compiled by :	LCH		
Checked by :	KES		

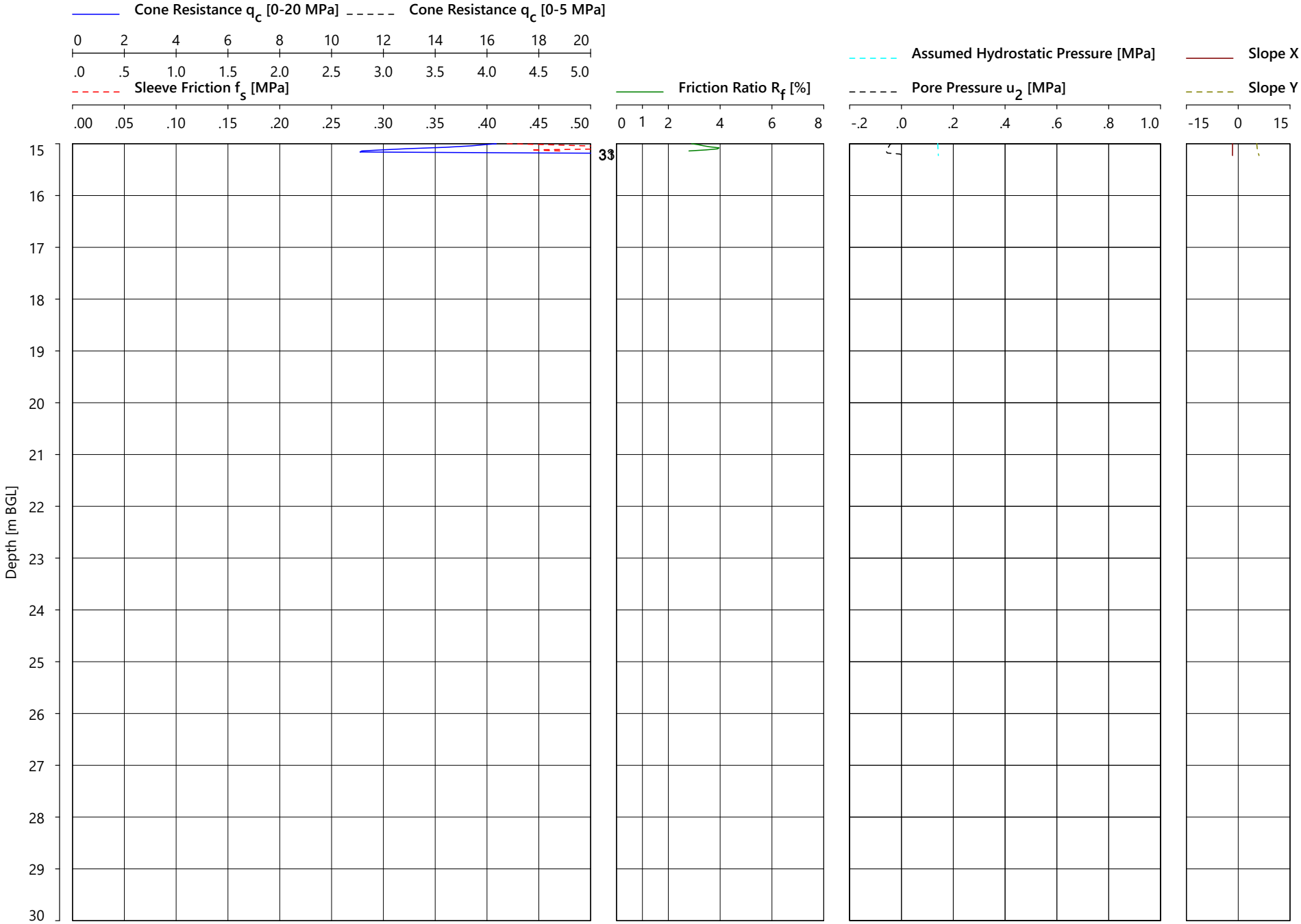
Location : MS-CPT23
Coordinates : **E** 482054.12 **N** 411813.03 **Ground Level [m OD] :** +0.98
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Measured Data			**Location :** MS-CPT23
CPT Truck ID : GB17	**Stop Criterion :** end depth reached		**Coordinates :** **E** 482054.12 **N** 411813.03 **Ground Level [m OD] :** +0.98
CPT Cone : 1701-3474	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Project :** 212562
Date of Test : 12-Oct-2022	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
	Assumed Water Level [m gl] : -1.0	**Checked by :** KES	**Client :** SSE Generation Limited (SSE)



Piezocone Measured Data				**Location :**	**MS-CPT24**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482114.48 **N** 411823.43 **Ground Level [m OD] :** +0.91
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT24
Coordinates : **E** 482114.48 **N** 411823.43 **Ground Level [m OD] :** +0.91
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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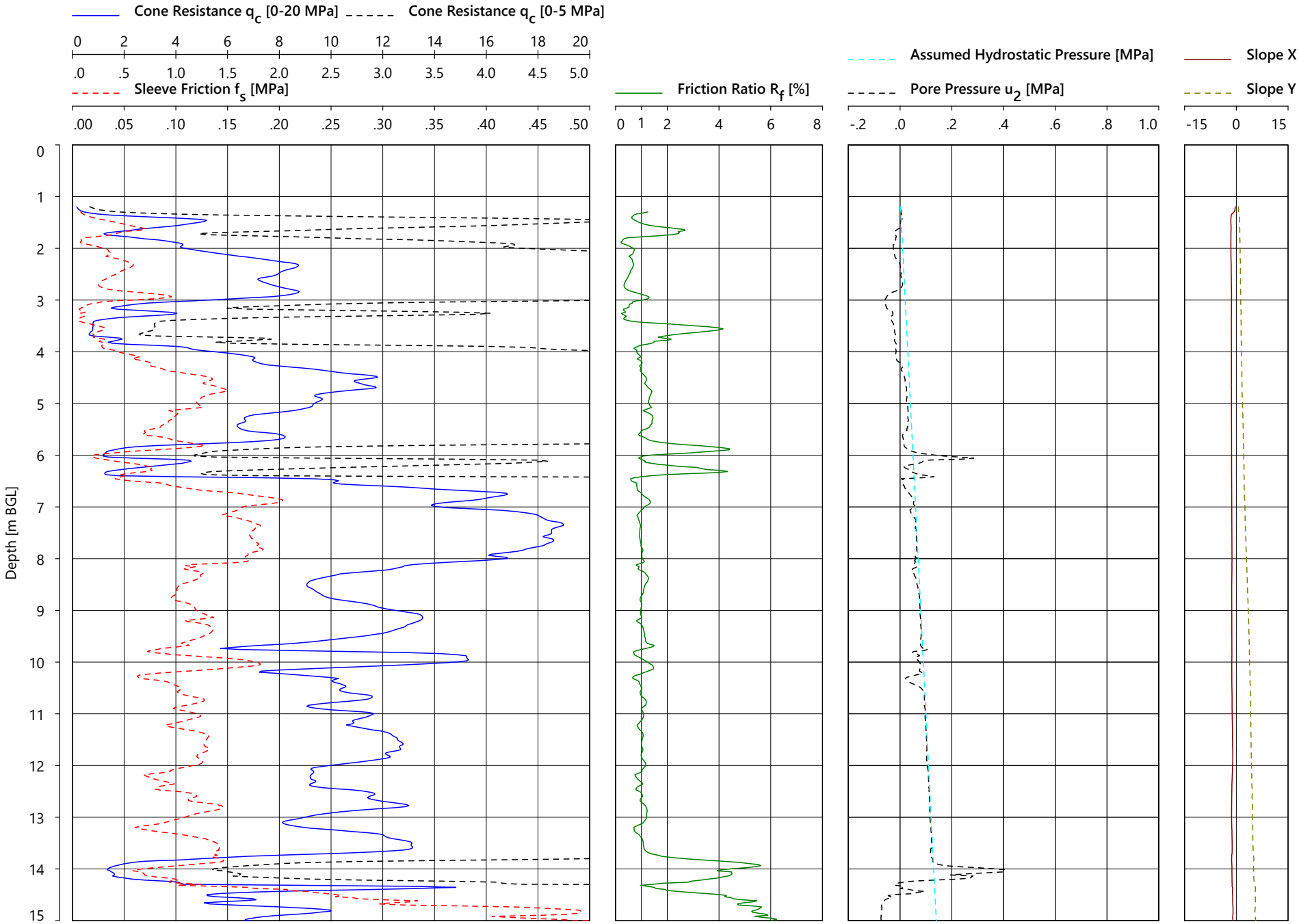
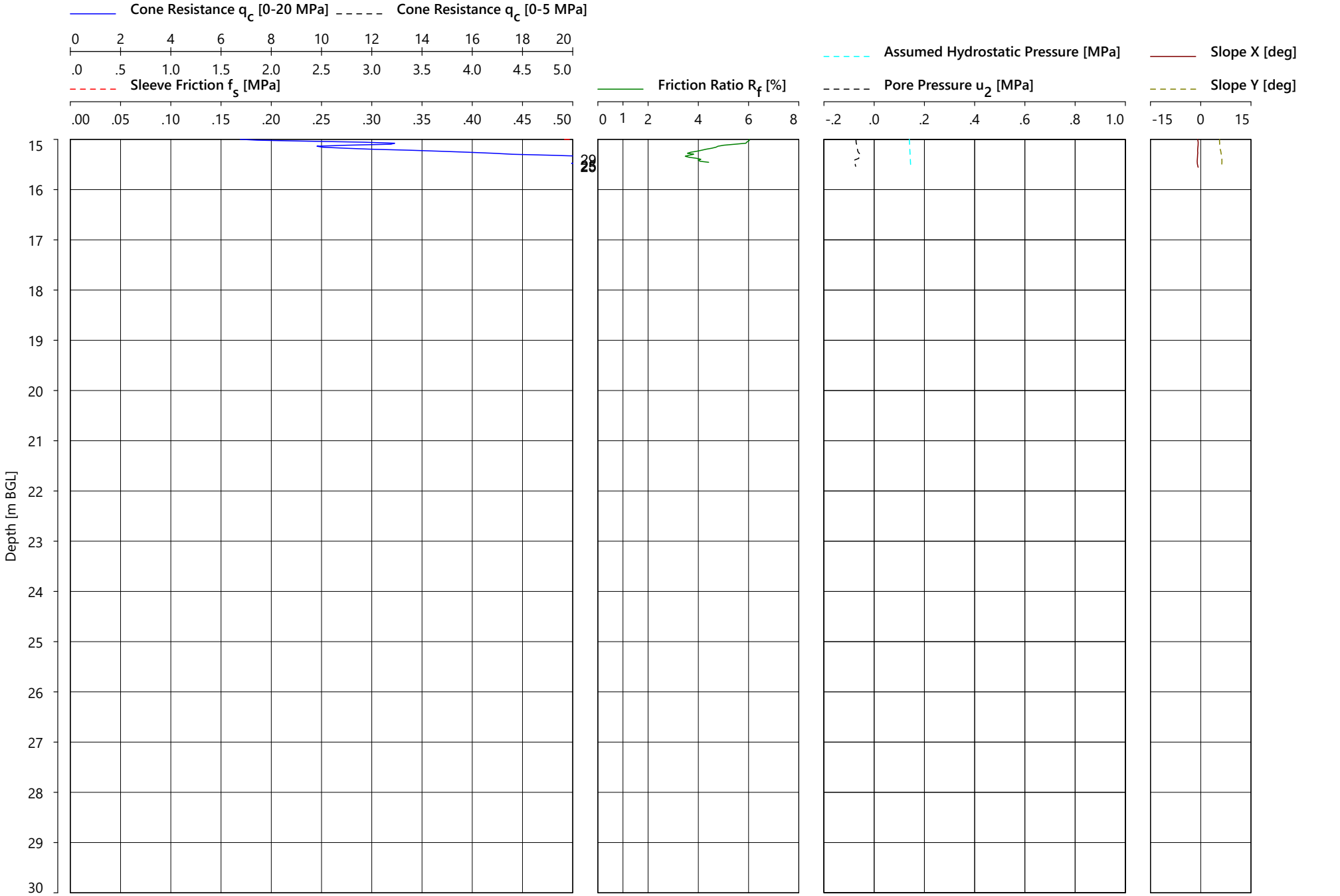
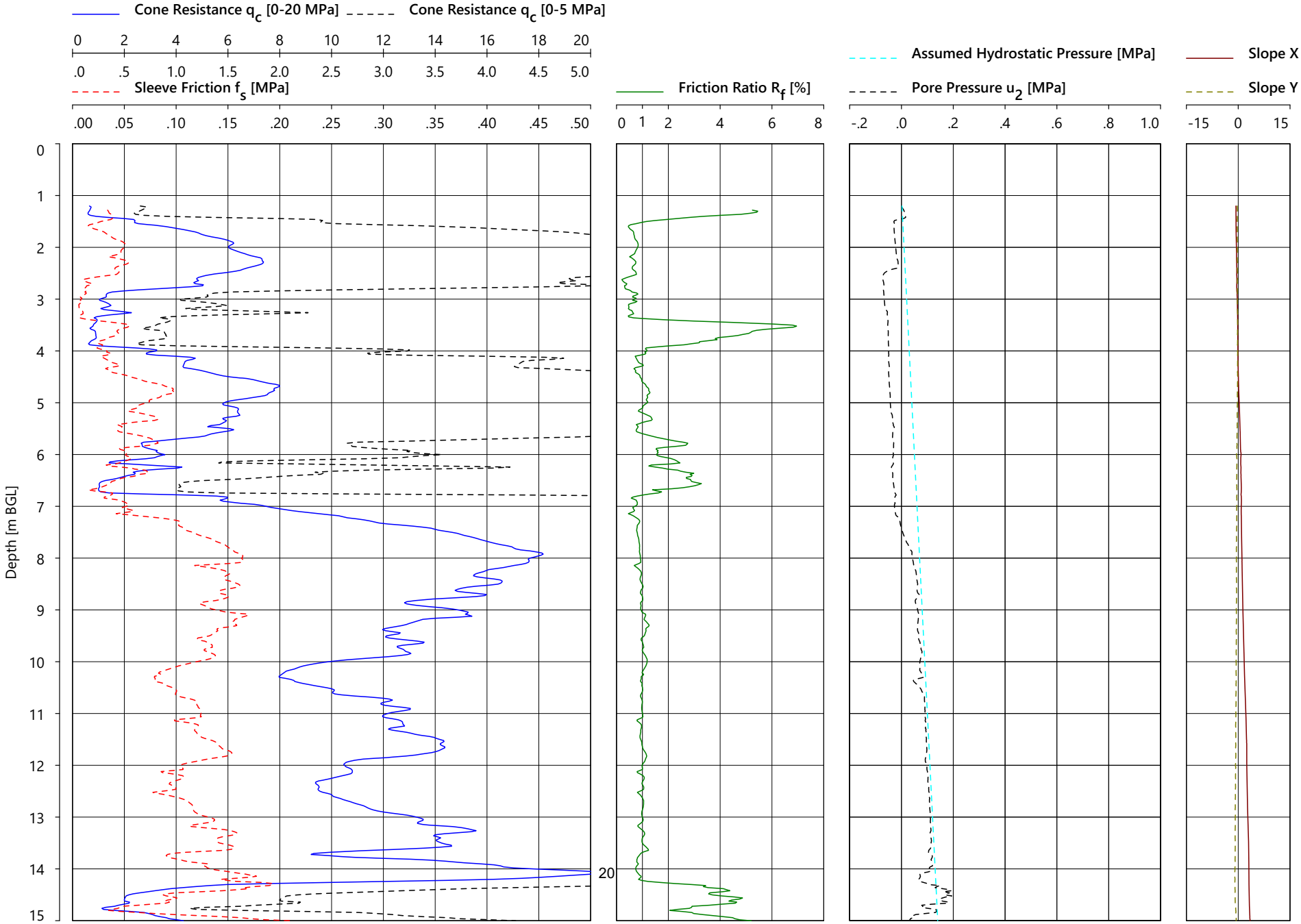


Piezocone Measured Data				**Location :**	**MS-CPT25**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482195.67 **N** 411821.30 **Ground Level [m OD] :** +0.98
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data				Location : MS-CPT25
CPT Truck ID : GB17	Stop Criterion : end depth reached	Operator : HG,MS	Coordinates : E 482195.67 N 411821.30	Ground Level [m OD] : +0.98
CPT Cone : 1701-3474	Application Class / Type : Class 2 / TE2	Compiled by : LCH	Project : 212562	
Date of Test : 05-Oct-2022	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Checked by : KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
	Assumed Water Level [m gl] : -1.0		Client : SSE Generation Limited (SSE)	



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	14-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT26
Coordinates : **E** 482010.17 **N** 411729.07 **Ground Level [m OD] :** +1.22
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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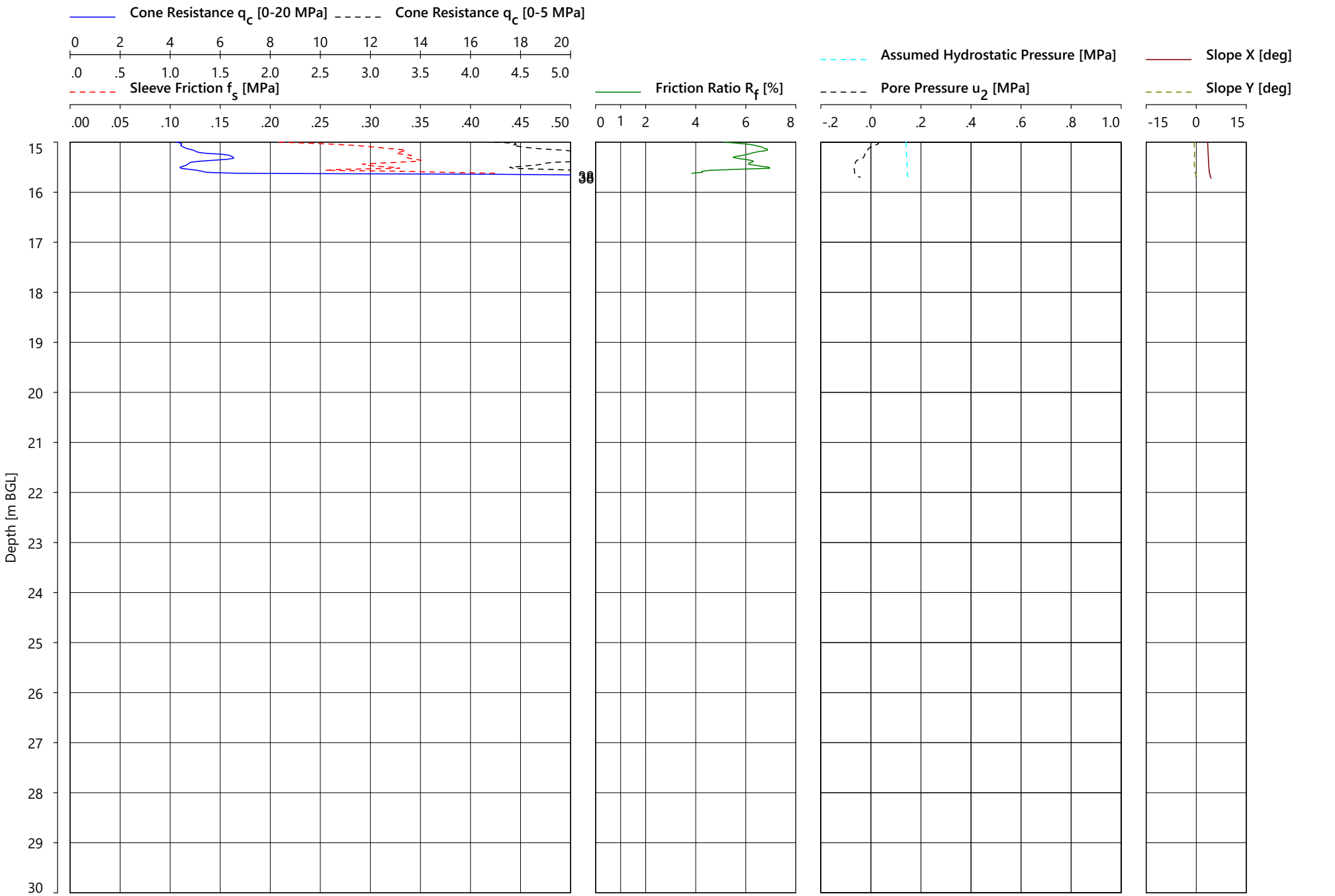
GEOVISUAL 3.8.1 / 01 measured.ucf / 2022-12-05 09:58:03



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	14-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT26
Coordinates : **E** 482010.17 **N** 411729.07 **Ground Level [m OD] :** +1.22
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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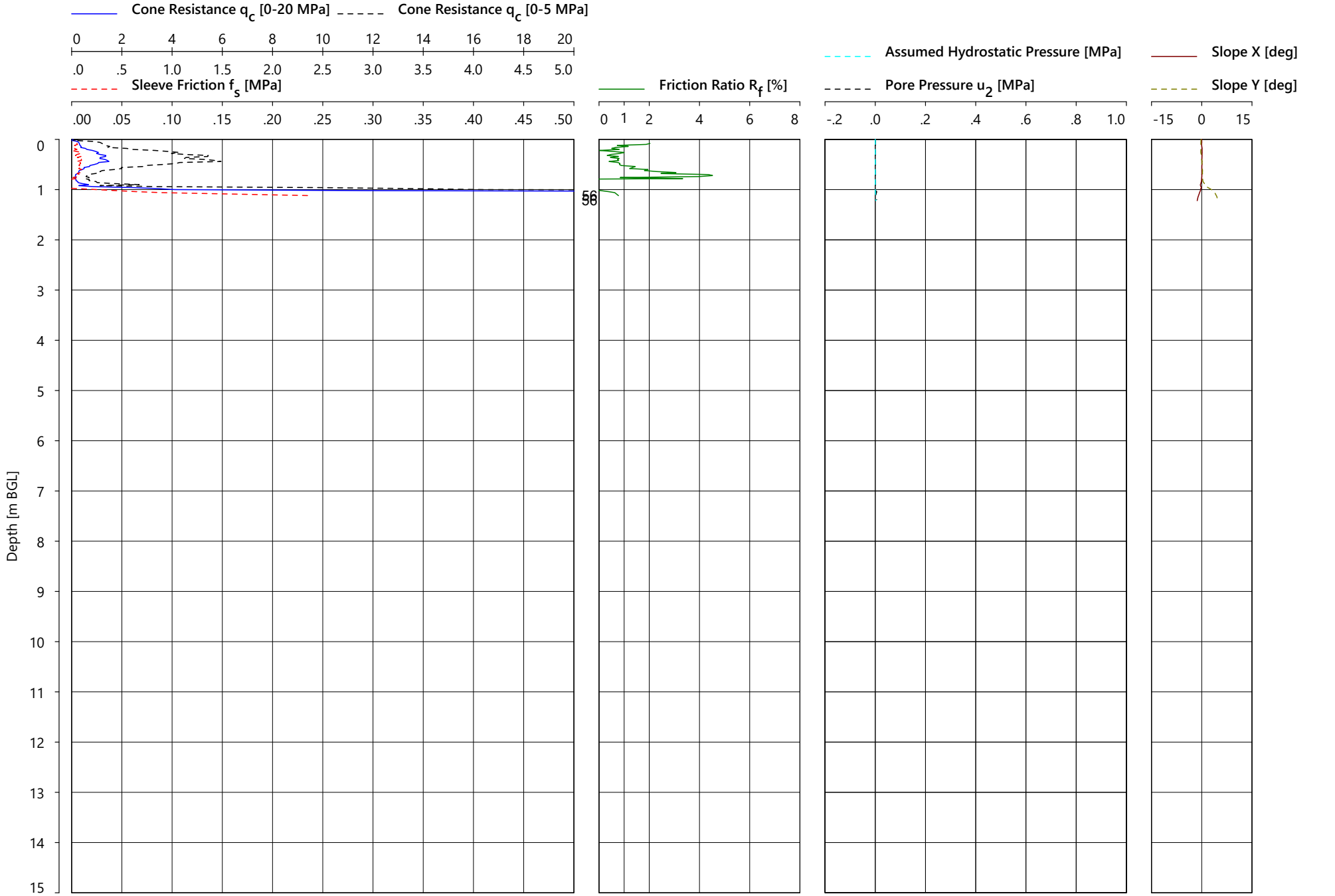
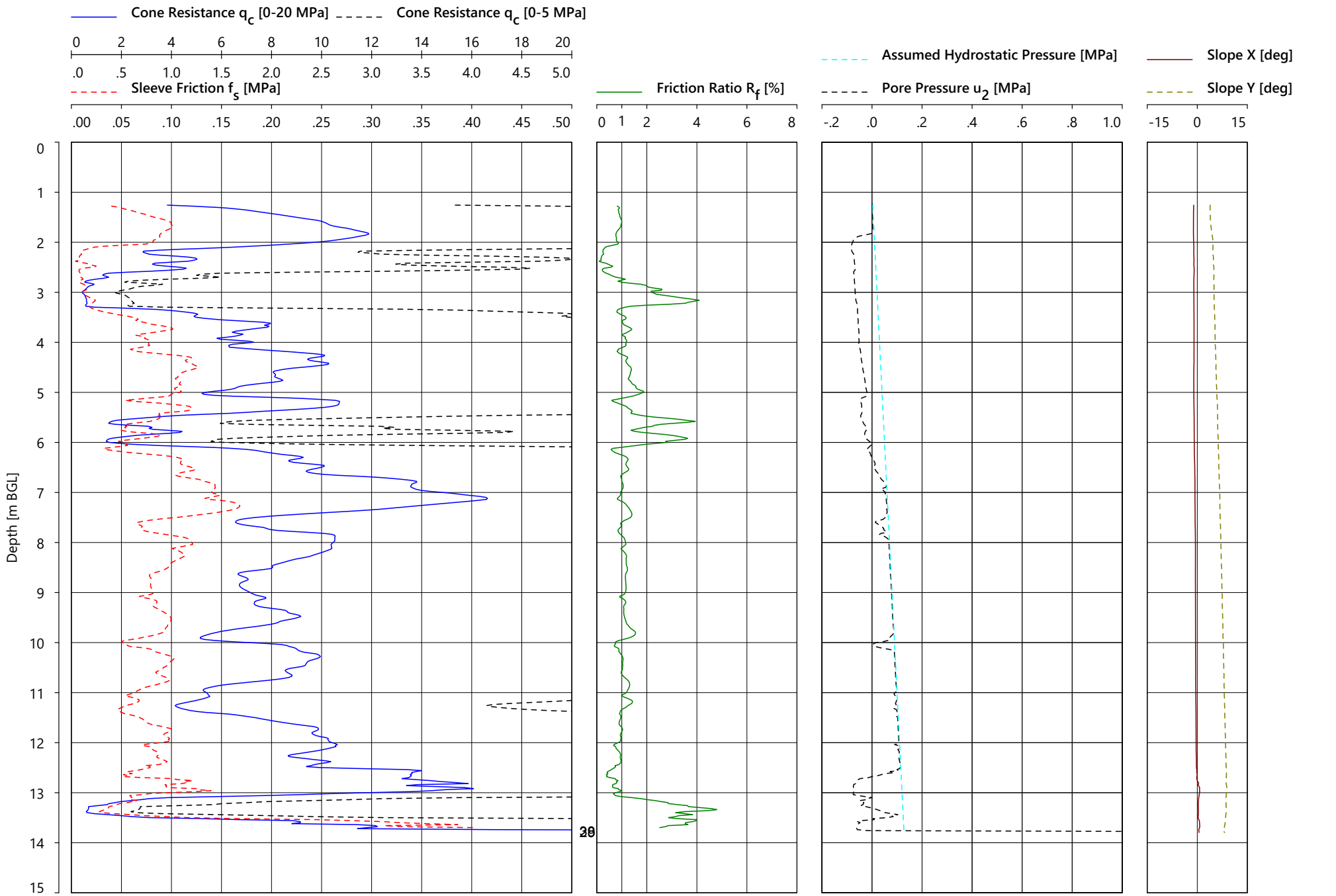


Piezocone Measured Data				**Location :**	**MS-CPT29**
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Coordinates :**	**E** 482102.60 **N** 411634.78 **Ground Level [m OD] :** +0.40
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	27-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT31
Coordinates : E 481841.29 N 412213.69 **Ground Level [m OD] :** +0.50
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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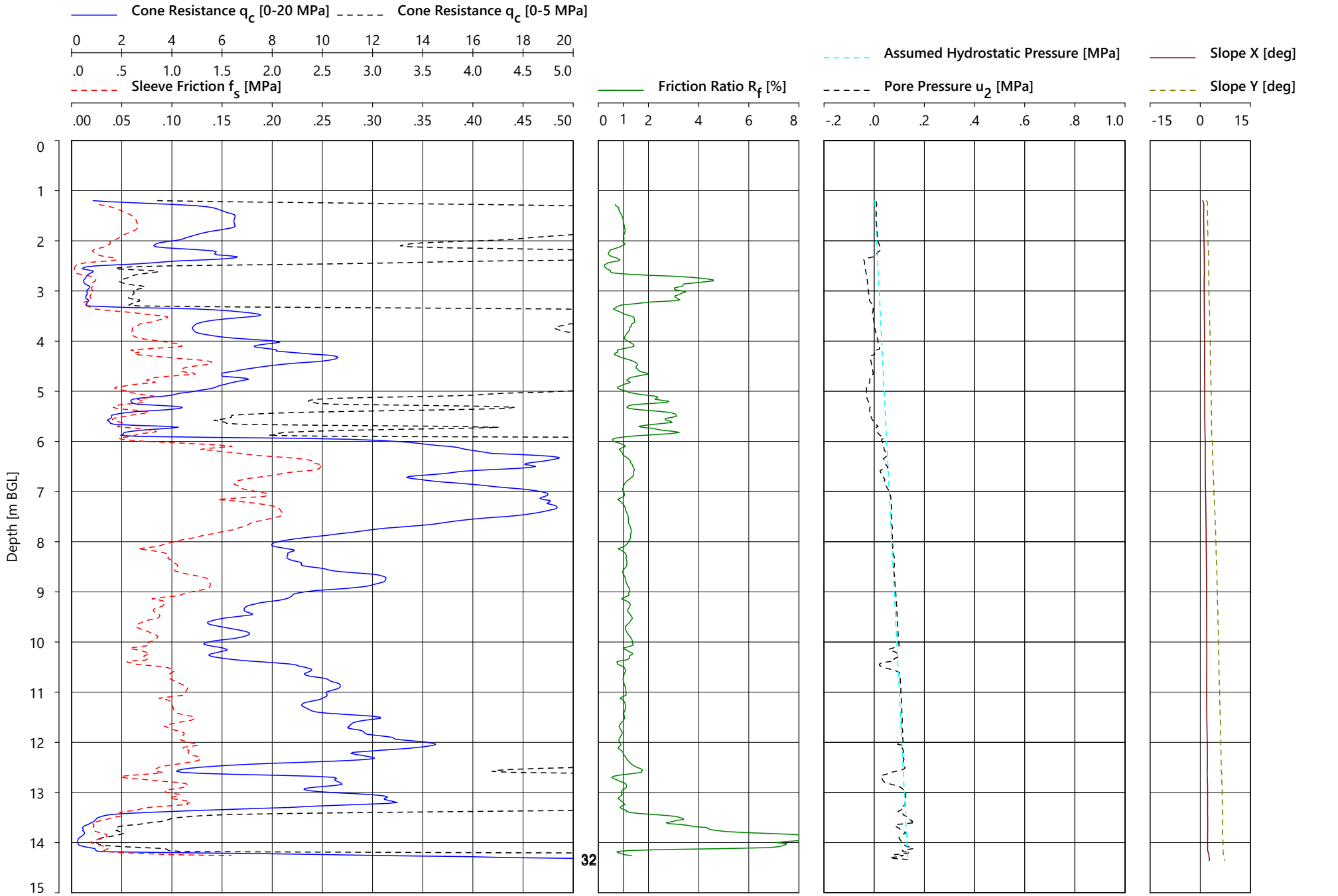
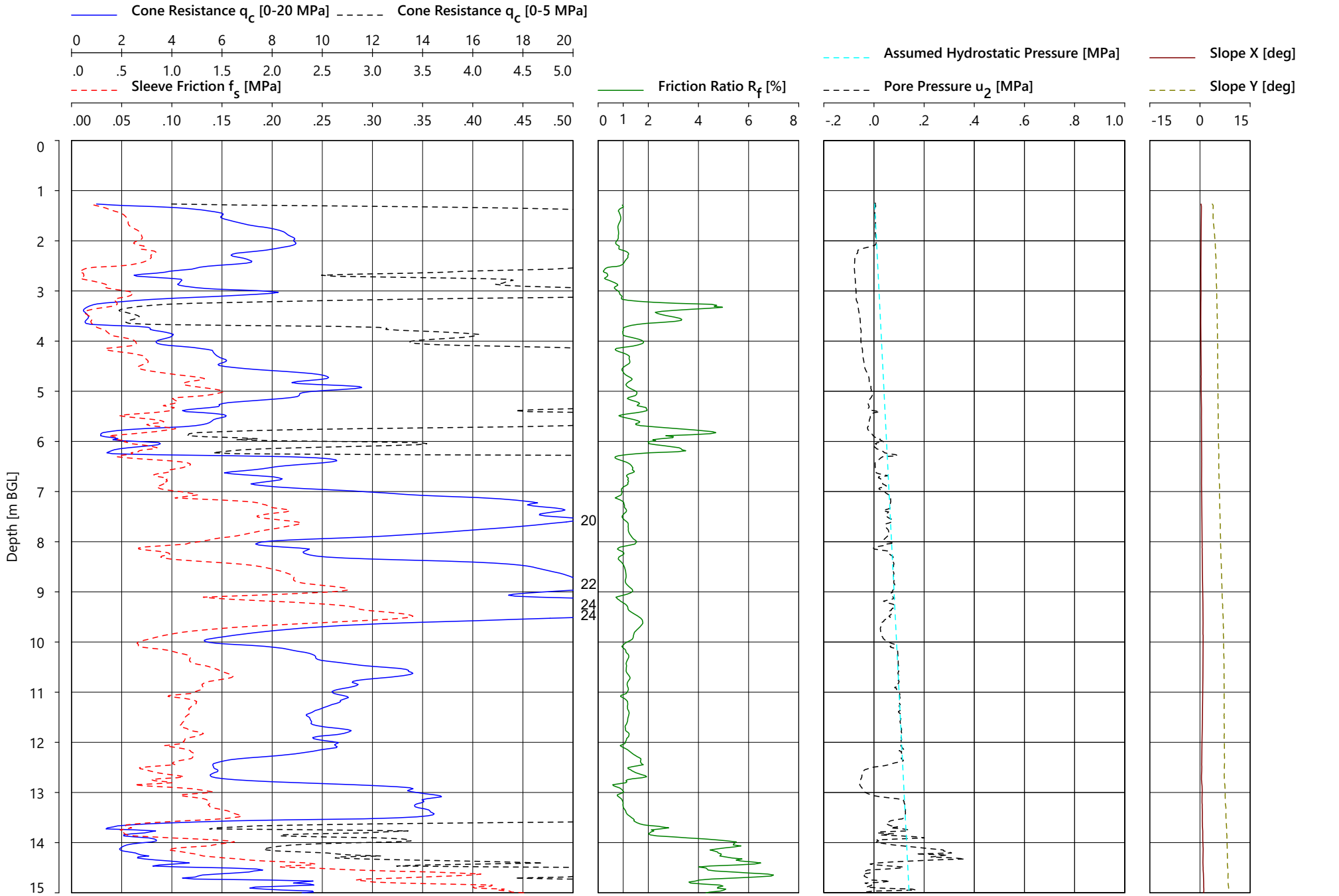
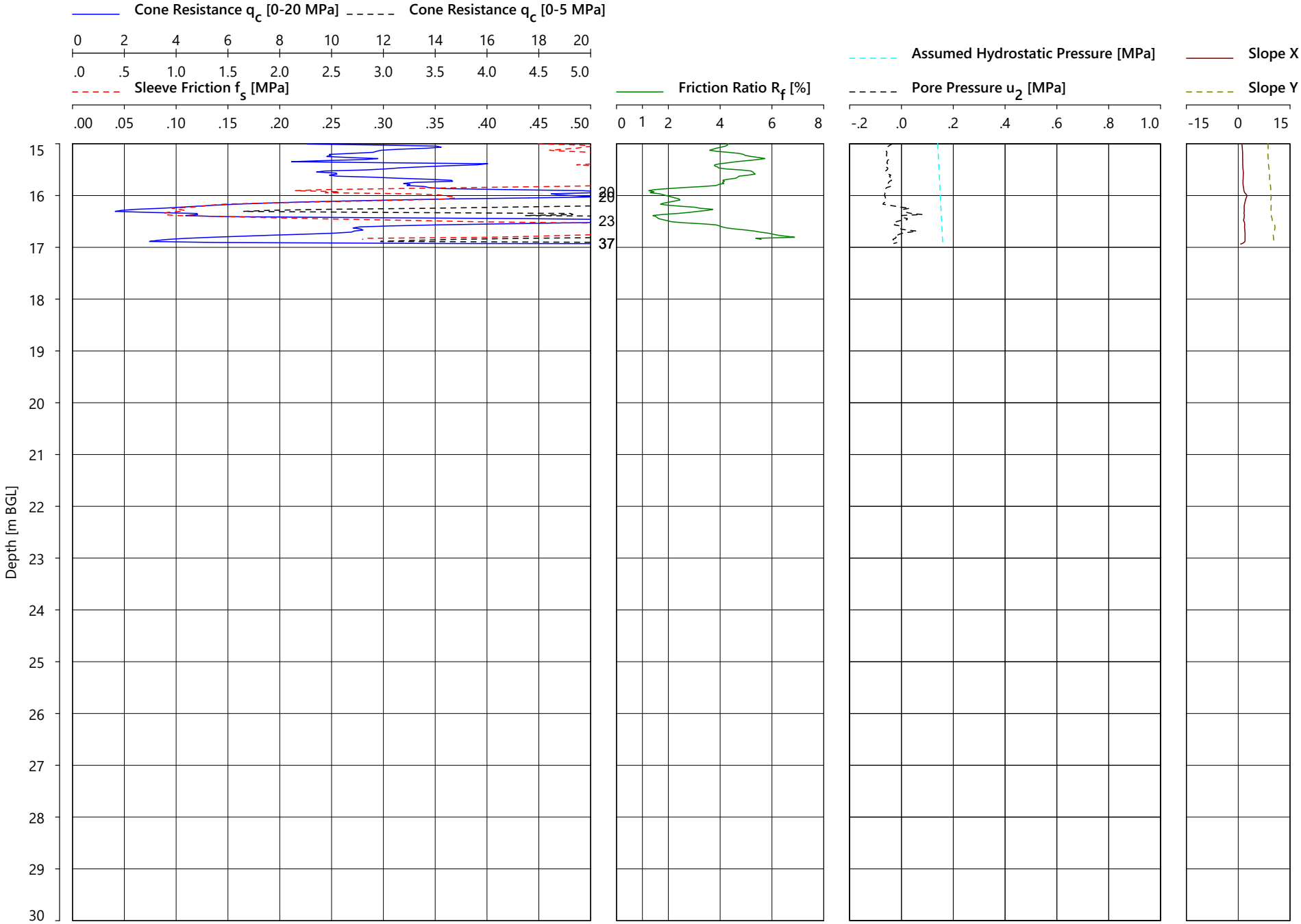


Piezocone Measured Data				**Location :**	**MS-CPT32**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481933.75 **N** 412183.97 **Ground Level [m OD] :** +0.27
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data				**Location :**	**MS-CPT33**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482033.72 **N** 412178.42 **Ground Level [m OD] :** +0.37
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Measured Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT33
Coordinates : **E** 482033.72 **N** 412178.42 **Ground Level [m OD] :** +0.37
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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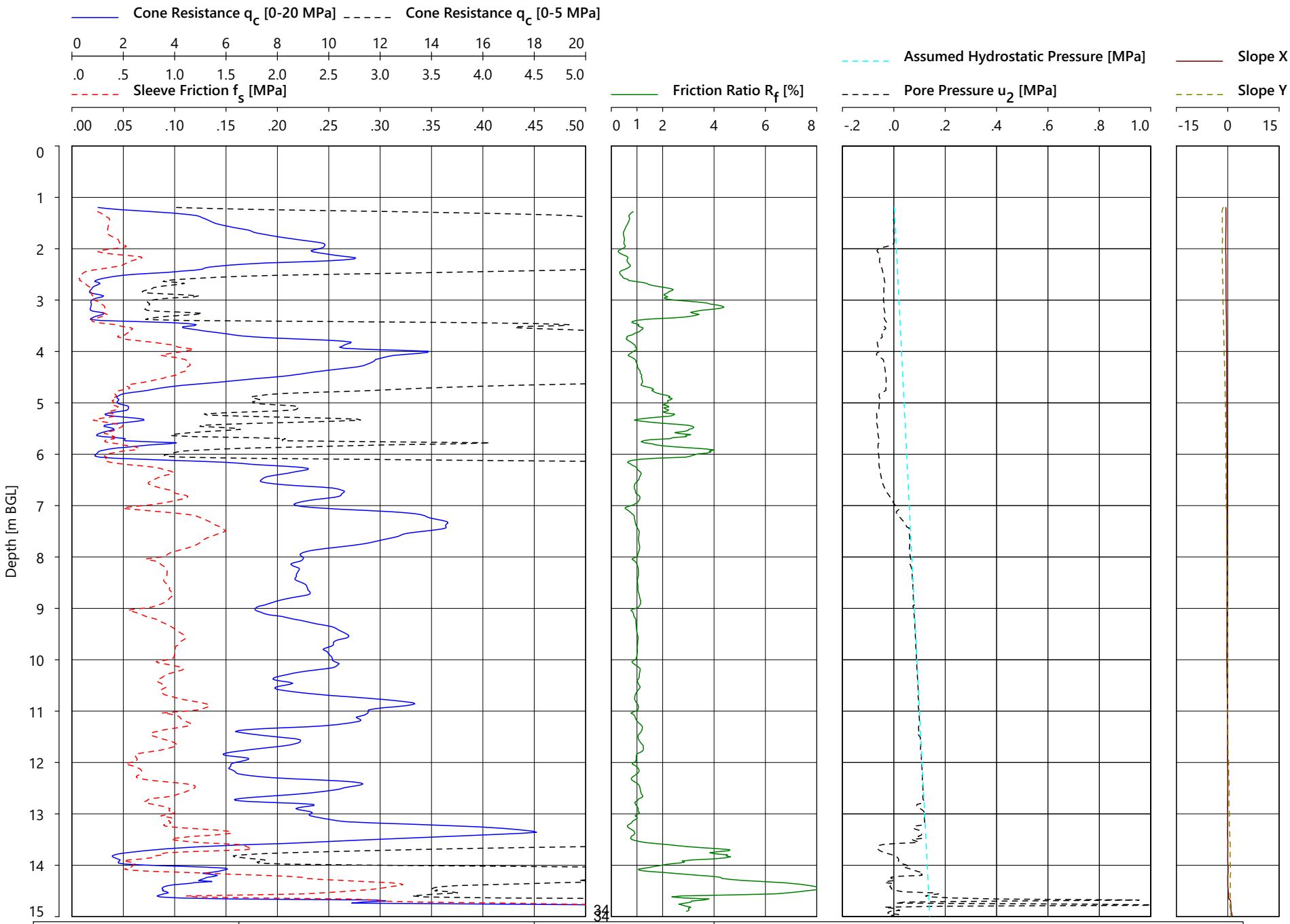

Piezocone Measured Data				**Location :**	**MS-CPT34**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482103.39 **N** 412152.65 **Ground Level [m OD] :** +0.35
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		

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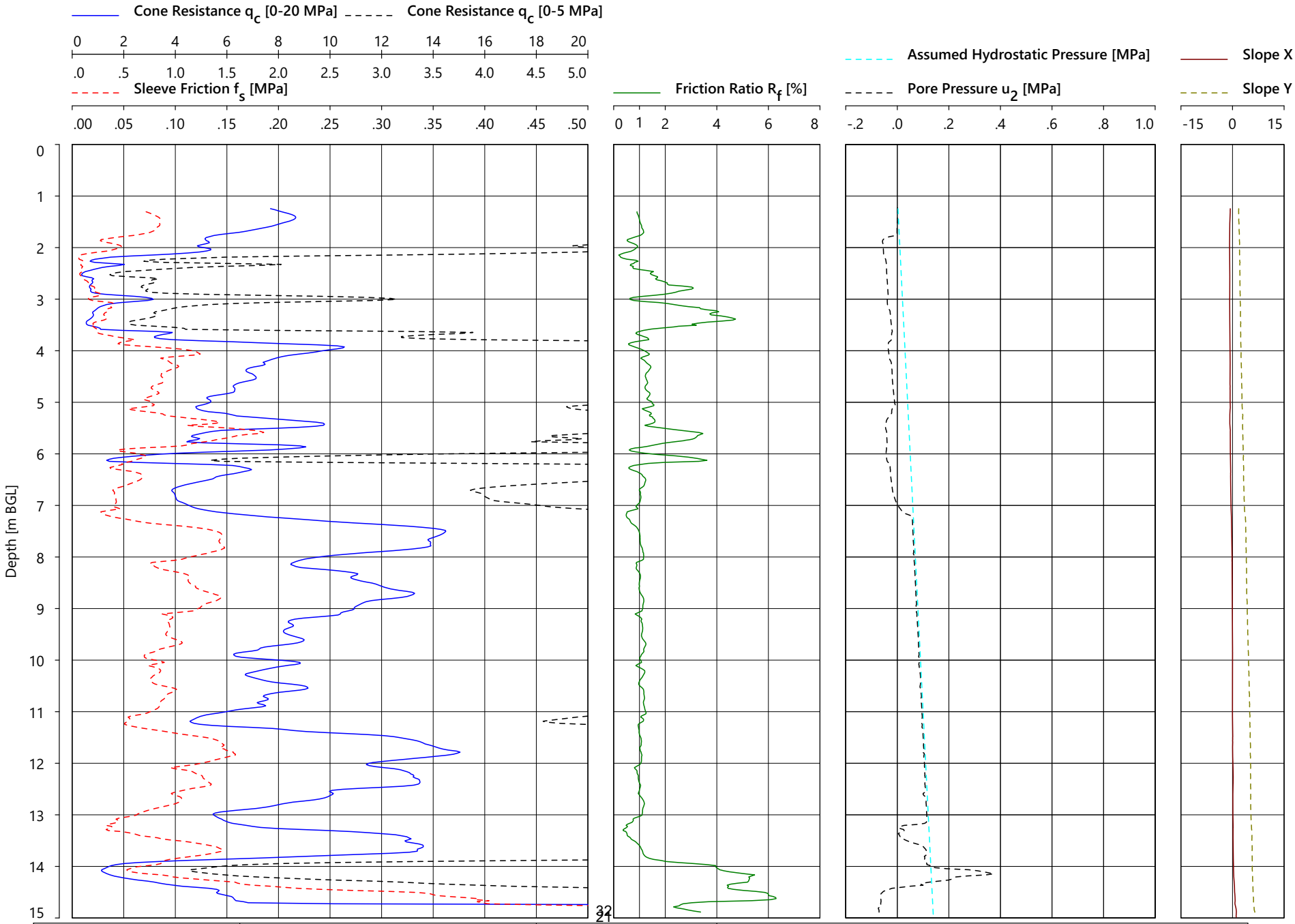
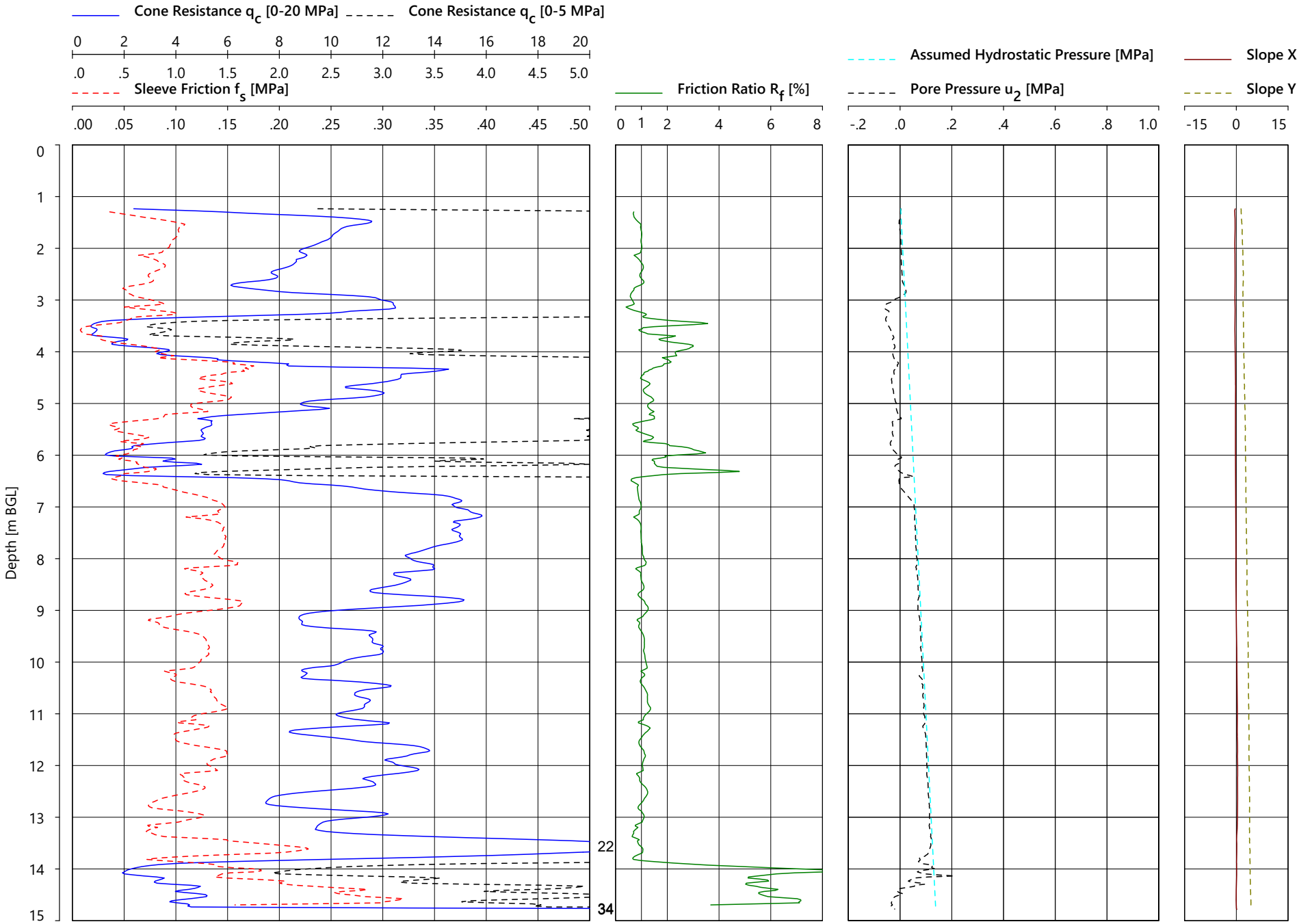
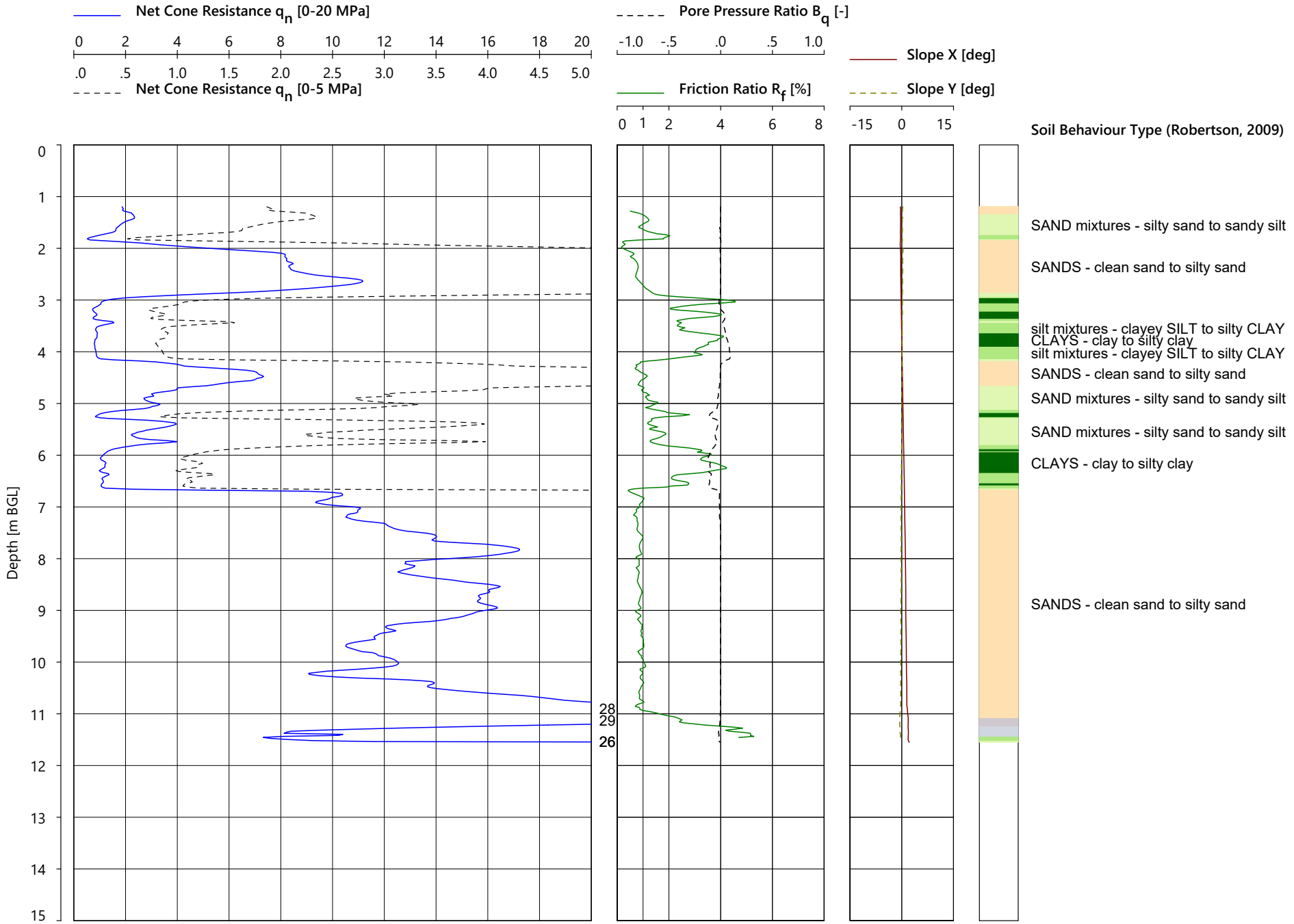


Piezocone Measured Data				**Location :**	**MS-CPT35**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482011.77 **N** 411979.34 **Ground Level [m OD] :** +0.78
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	NF		
		Compiled by :	LCH		
		Checked by :	KES		

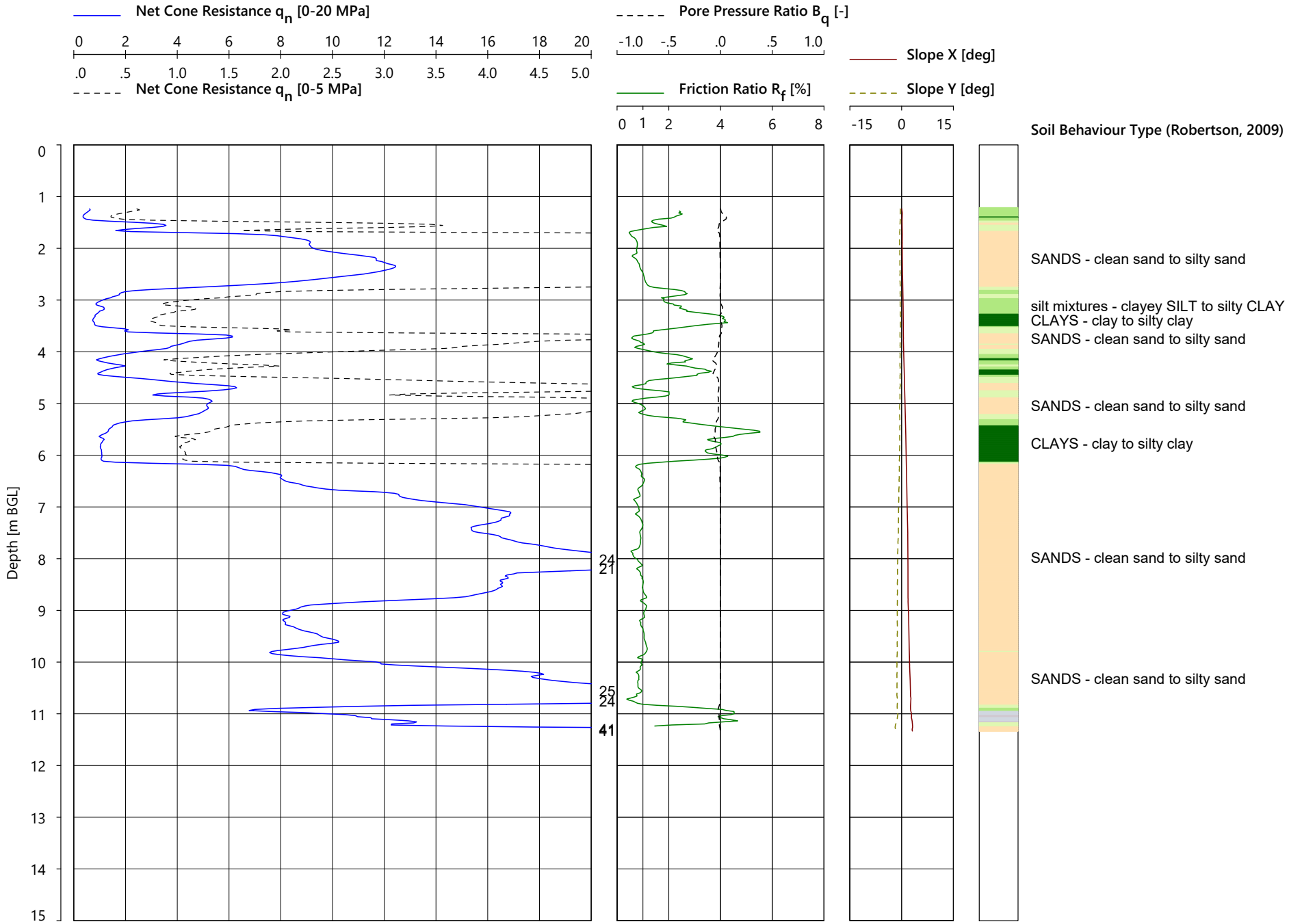


Piezocone Measured Data				**Location :**	**MS-CPT36**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 482110.55 **N** 411781.98 **Ground Level [m OD] :** +0.92
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	HG,MS		
		Compiled by :	LCH		
		Checked by :	KES		



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	18-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT01
Coordinates : **E** 480334.31 **N** 410094.40 **Ground Level [m OD] :** +1.81
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	18-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT02
Coordinates : **E** 480347.81 **N** 410189.59 **Ground Level [m OD] :** +1.30
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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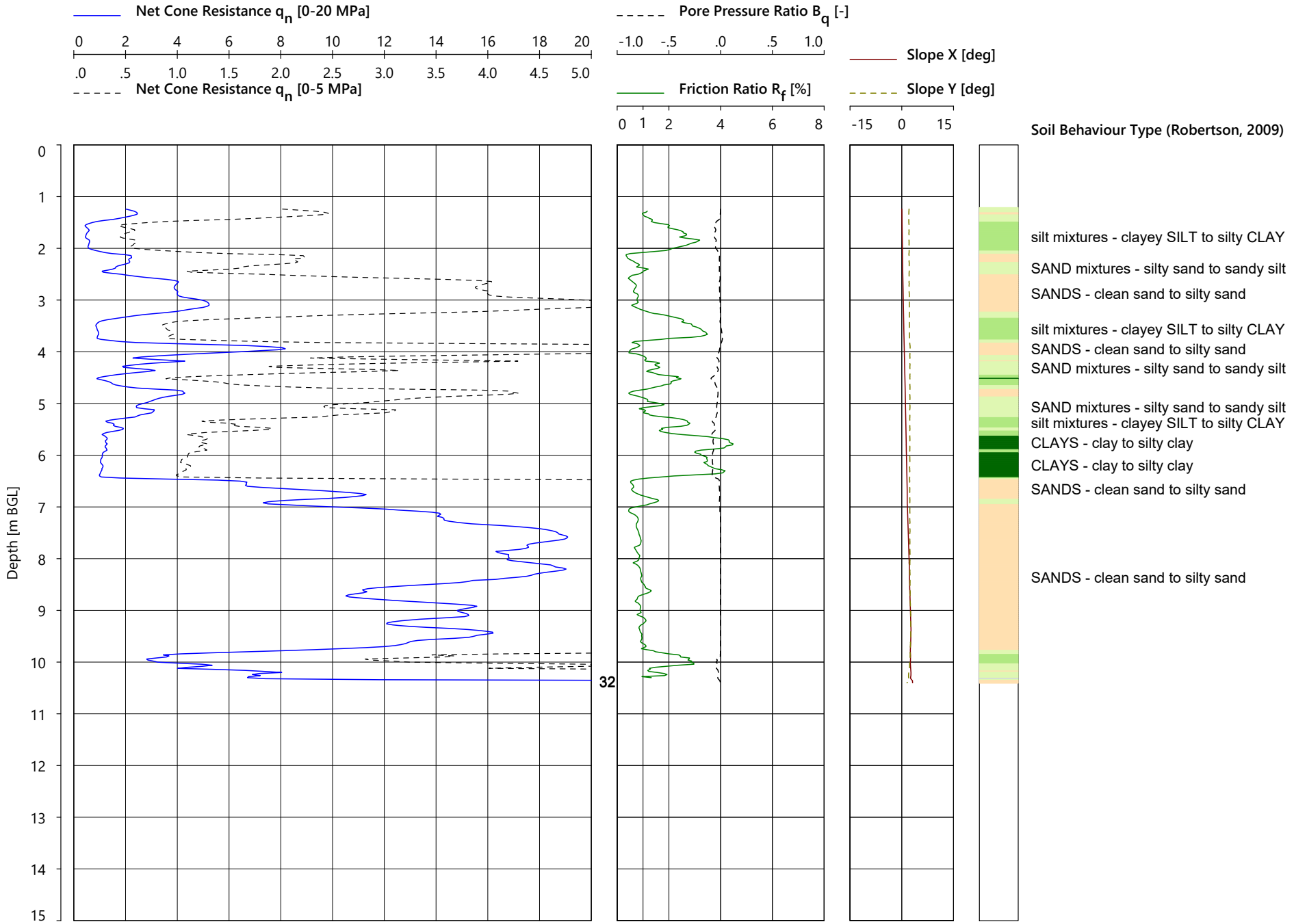

Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	18-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT03
Coordinates : **E** 480362.27 **N** 410292.25 **Ground Level [m OD] :** +1.59
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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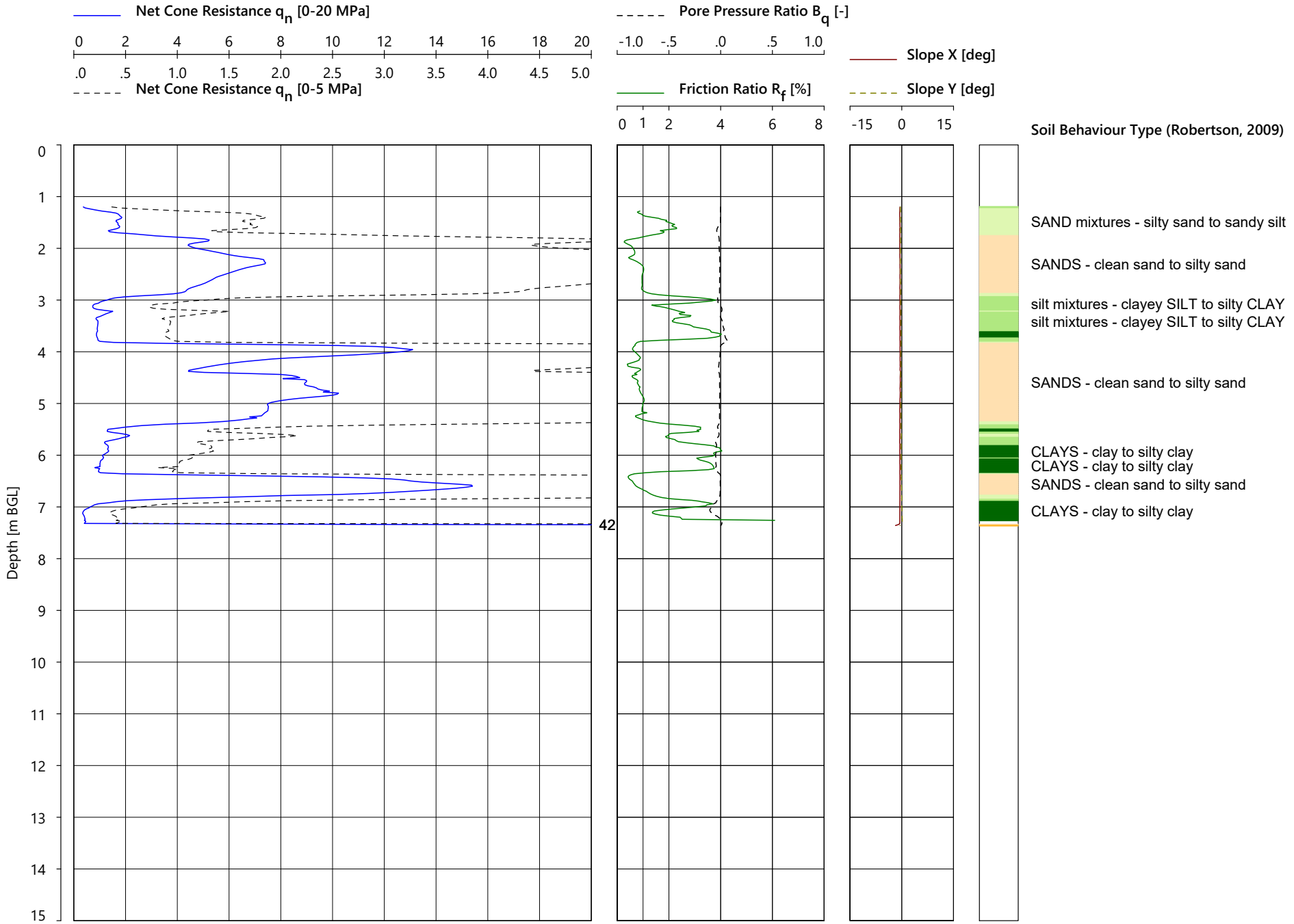
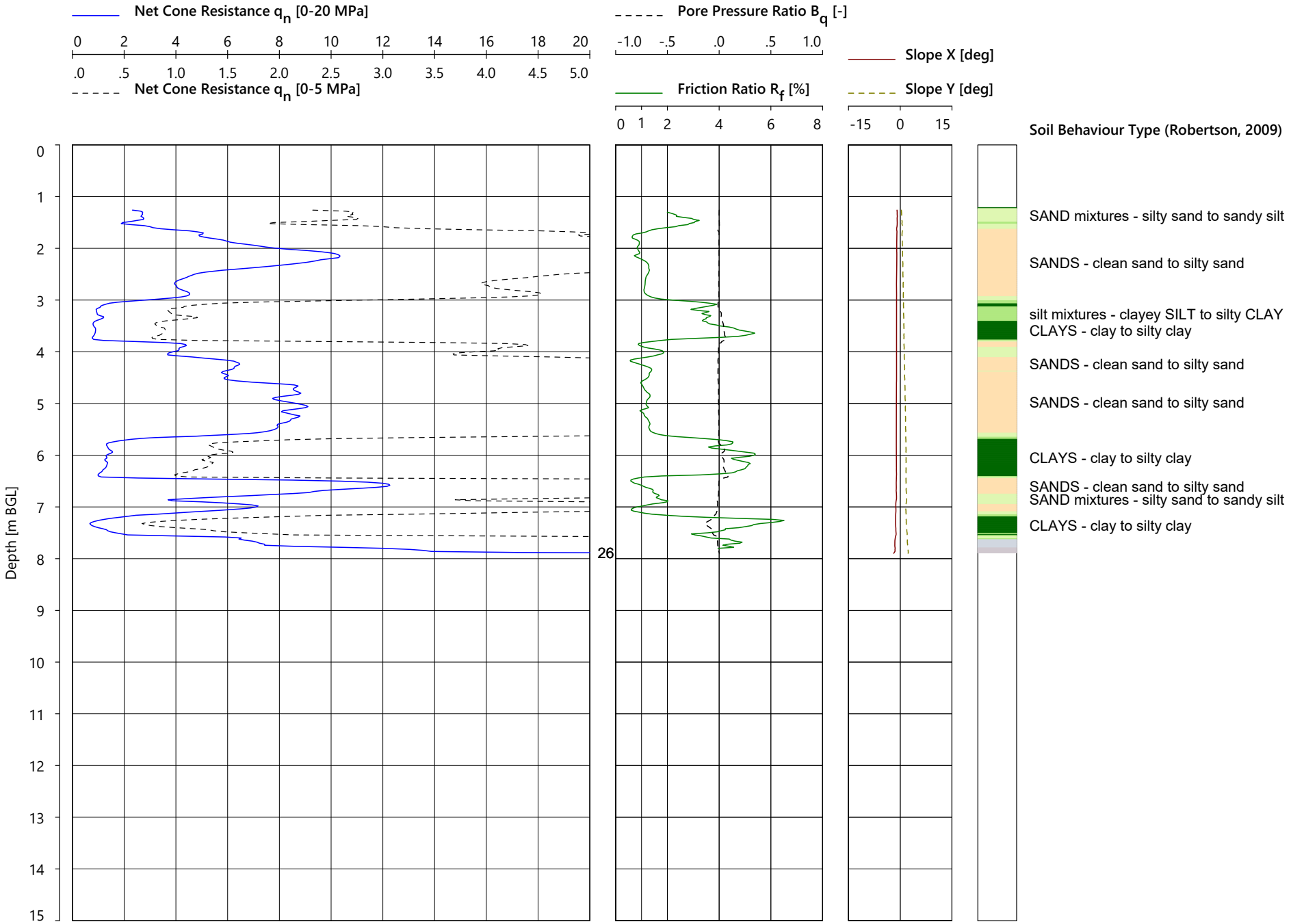


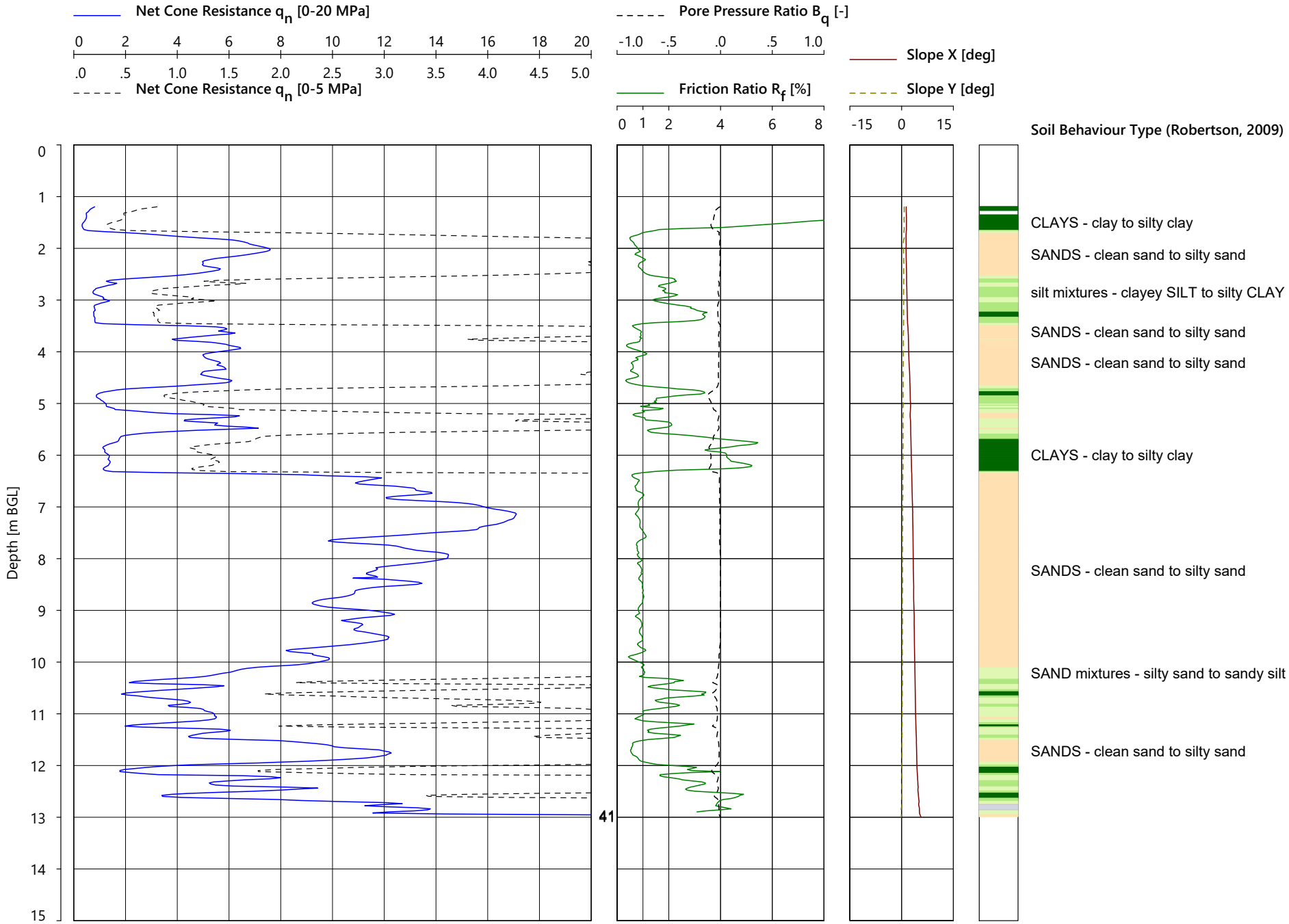
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	03-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT04
Coordinates : **E** 480389.27 **N** 410389.61 **Ground Level [m OD] :** +1.28
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT05
Coordinates : **E** 480390.06 **N** 410490.44 **Ground Level [m OD] :** +1.54
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	13-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT06
Coordinates : **E** 480416.83 **N** 410587.66 **Ground Level [m OD] :** +1.40
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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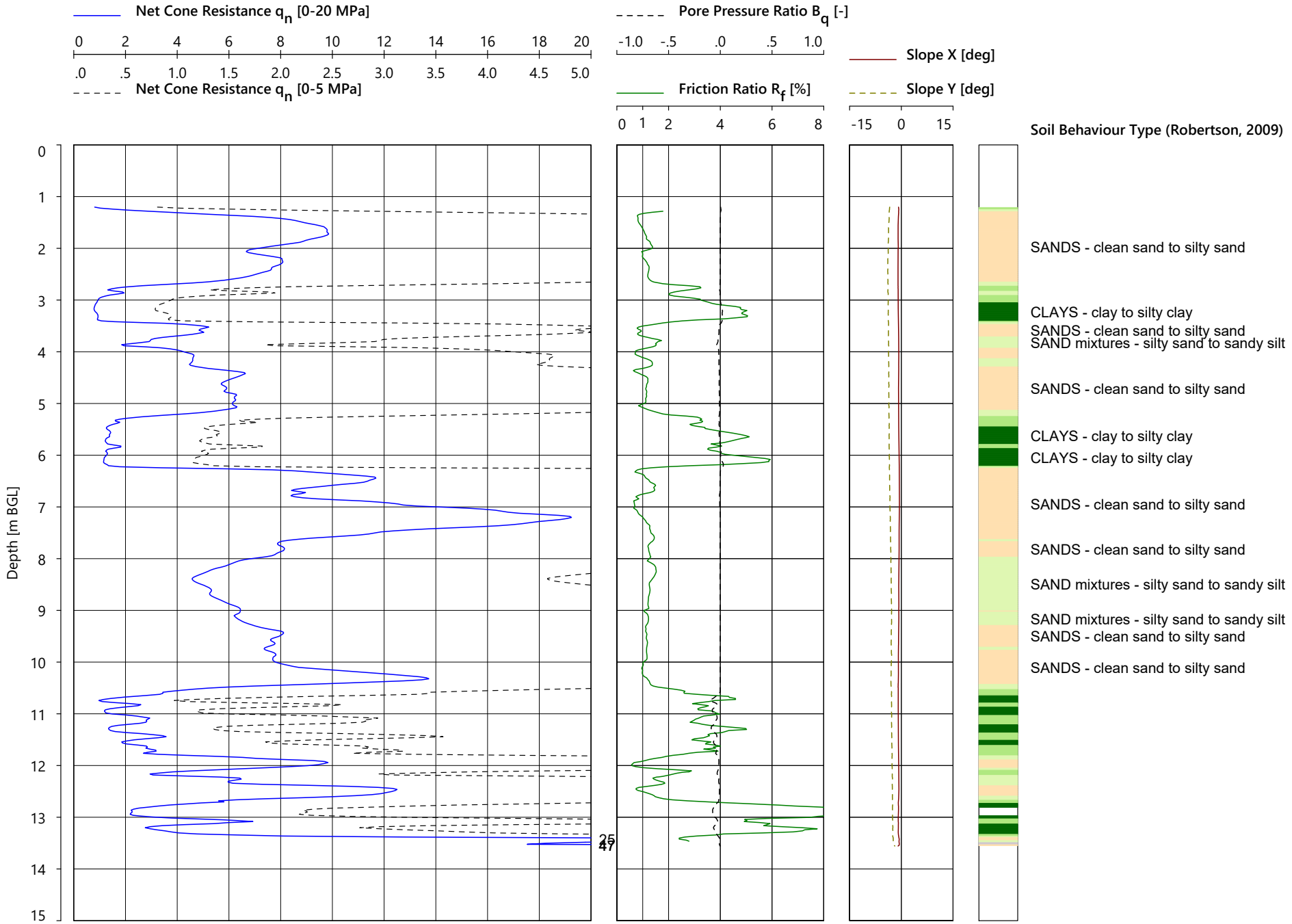
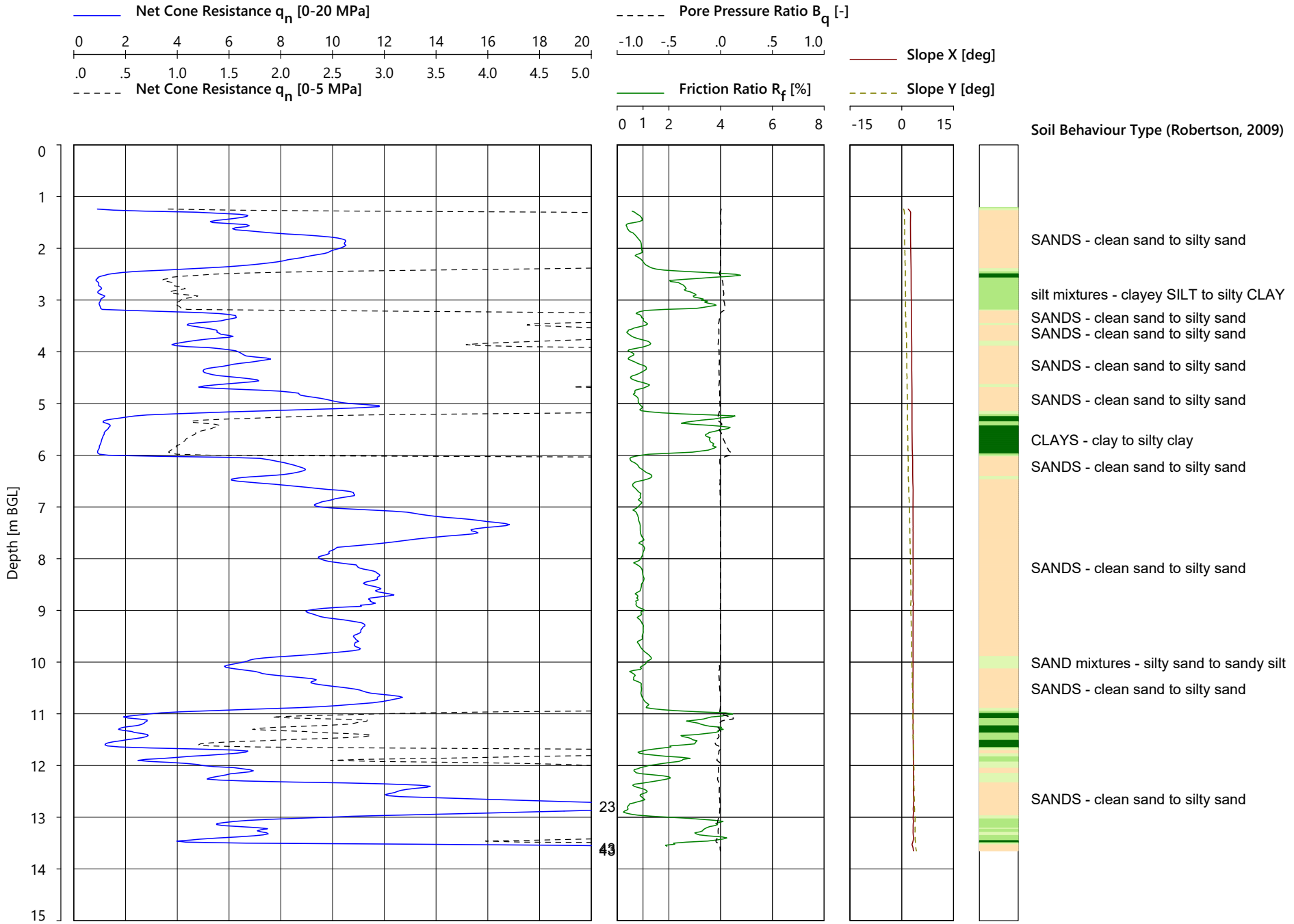
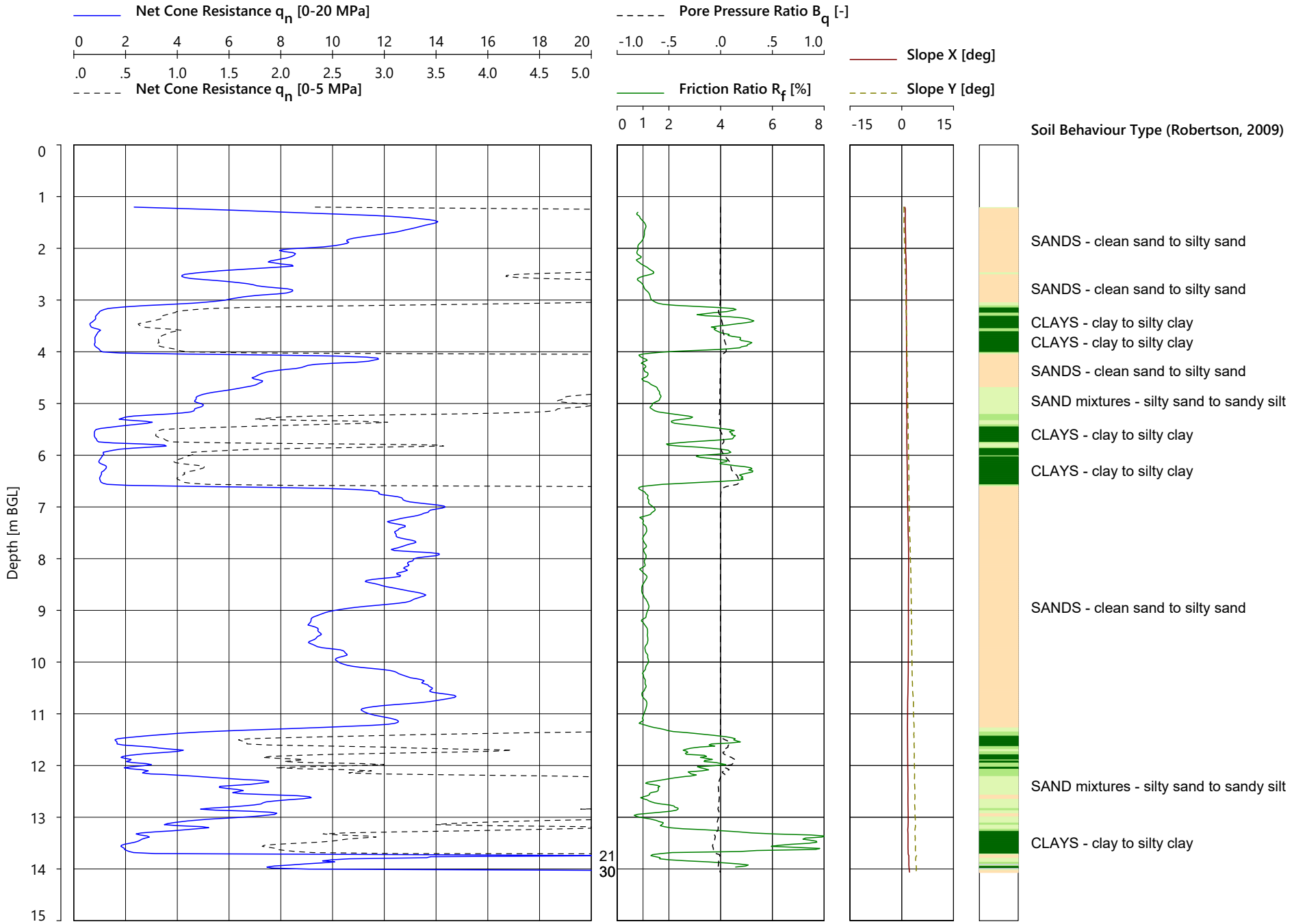


Piezocone Derived Data						Location :	AR-CPT07		
		Stop Criterion :	end depth reached			Coordinates :	E 480417.41	N 410688.22	Ground Level [m OD] : +1.19
CPT Truck ID :	GB17	Application Class / Type :	Class 2 / TE2	Operator :	NF	Project :	212562		
CPT Cone :	1701-3474	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Compiled by :	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
Date of Test :	30-Sep-2022	Assumed Water Level [m gl] :	-1.0	Checked by :	KES	Client :	SSE Generation Limited (SSE)		

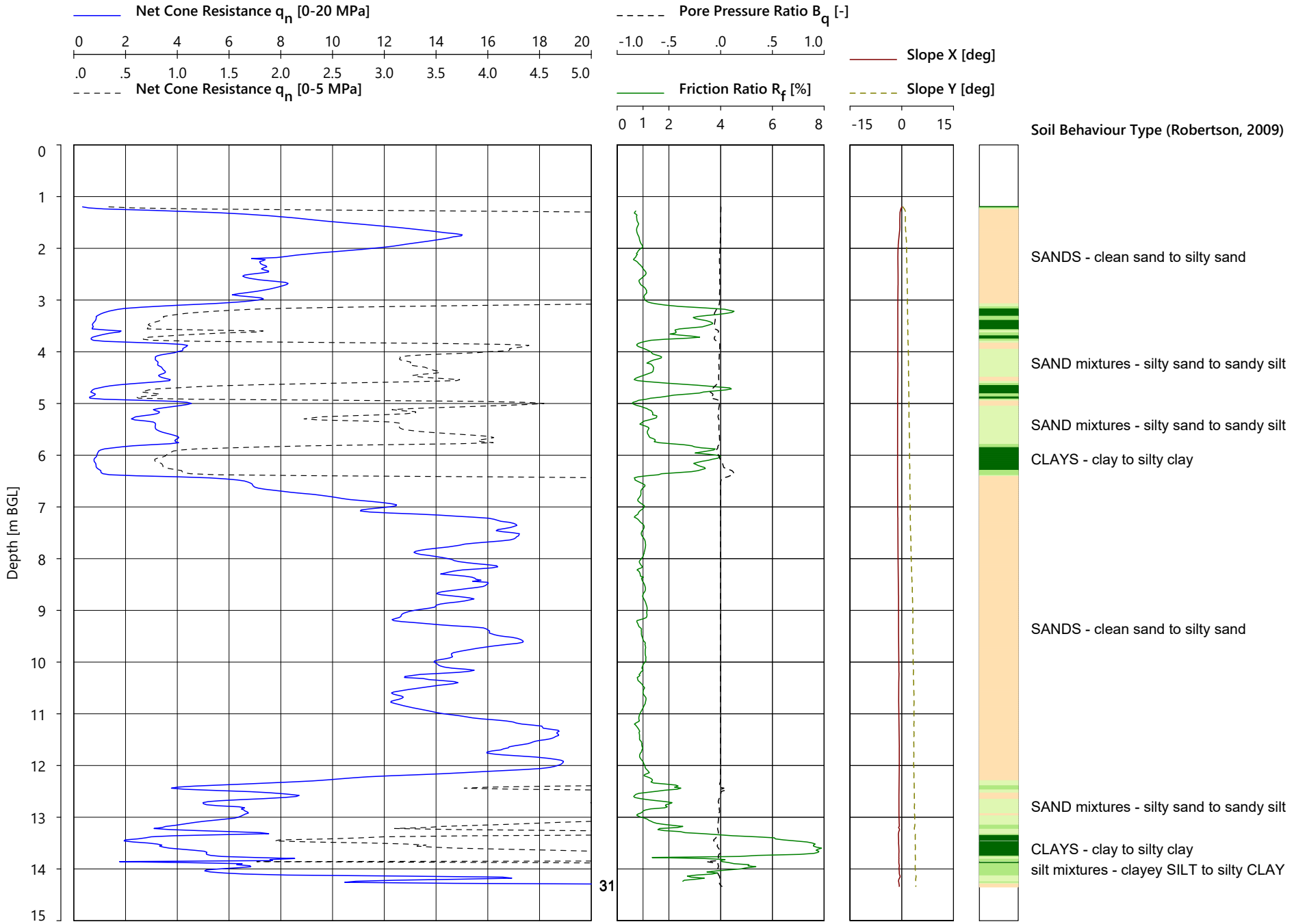


Piezocone Derived Data						Location :	AR-CPT08		
		Stop Criterion :	cone value			Coordinates :	E 480444.65	N 410785.62	Ground Level [m OD] : +0.75
CPT Truck ID :	GB17	Application Class / Type :	Class 2 / TE2	Operator :	MS	Project :	212562		
CPT Cone :	1701-3474	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Compiled by :	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
Date of Test :	03-Oct-2022	Assumed Water Level [m gl] :	-1.0	Checked by :	KES	Client :	SSE Generation Limited (SSE)		



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT09
Coordinates : **E** 480444.94 **N** 410886.70 **Ground Level [m OD] :** +1.40
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data

CPT Truck ID :	GB17
CPT Cone :	1701-3474
Date of Test :	03-Oct-2022

Stop Criterion :	end depth reached
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0

Operator :	MS
Compiled by :	LCH
Checked by :	KES

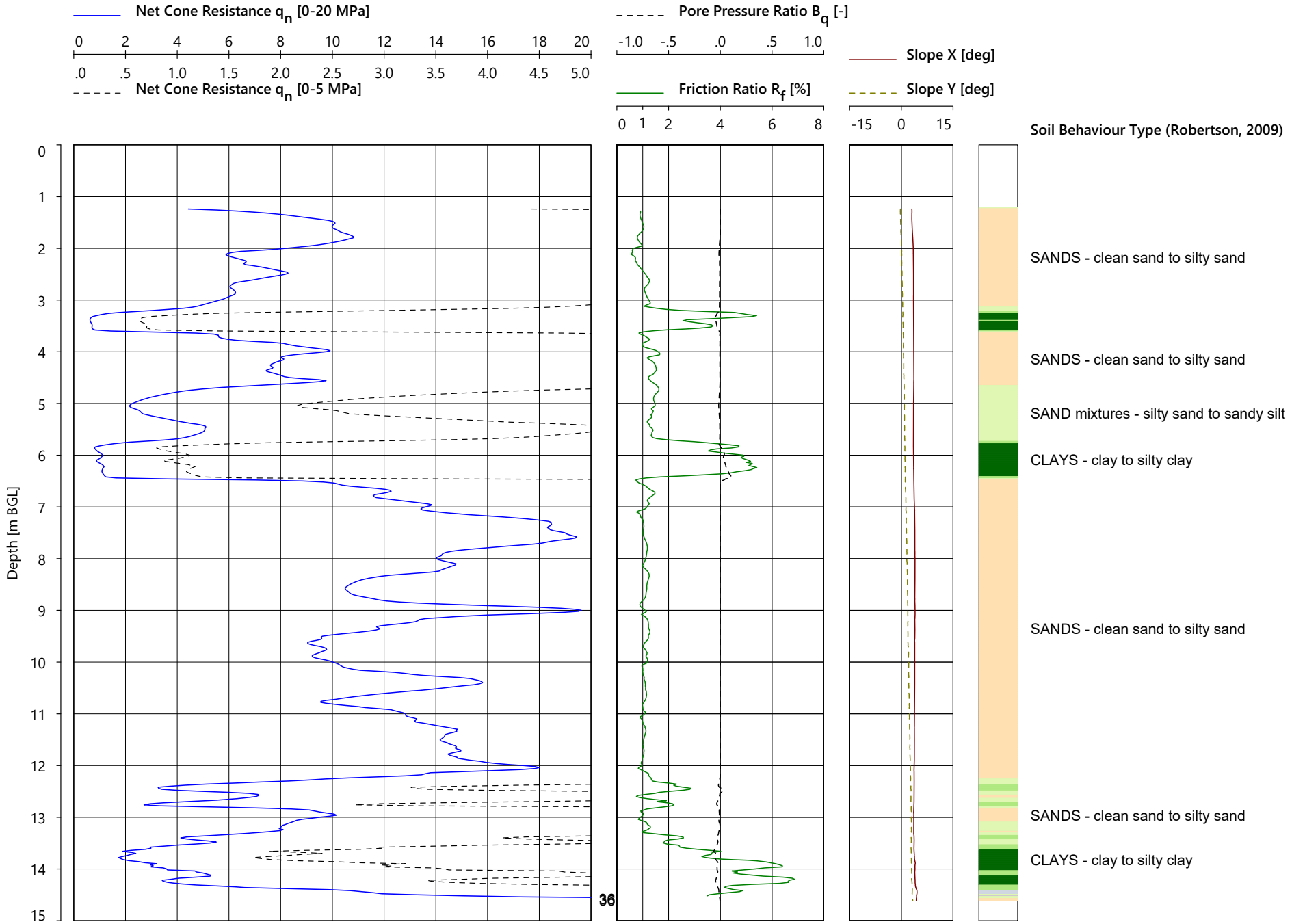
Location : AR-CPT10

Coordinates : **E** 480470.24 **N** 410984.11 **Ground Level [m OD] :** +1.30

Project : 212562

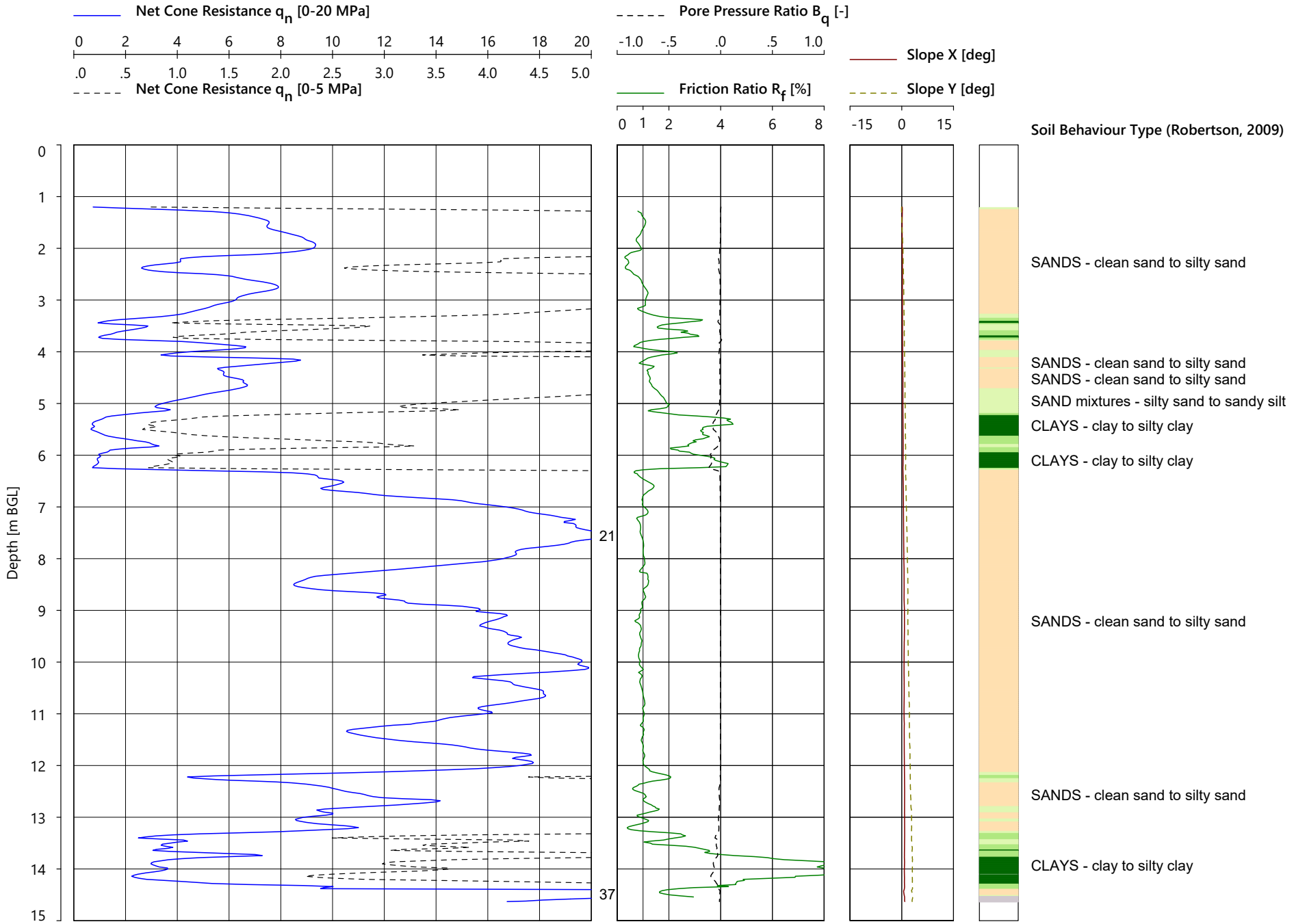
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT11
Coordinates : **E** 480473.42 **N** 411084.17 **Ground Level [m OD] :** +1.39
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT12
Coordinates : **E** 480608.39 **N** 411147.51 **Ground Level [m OD] :** +1.35
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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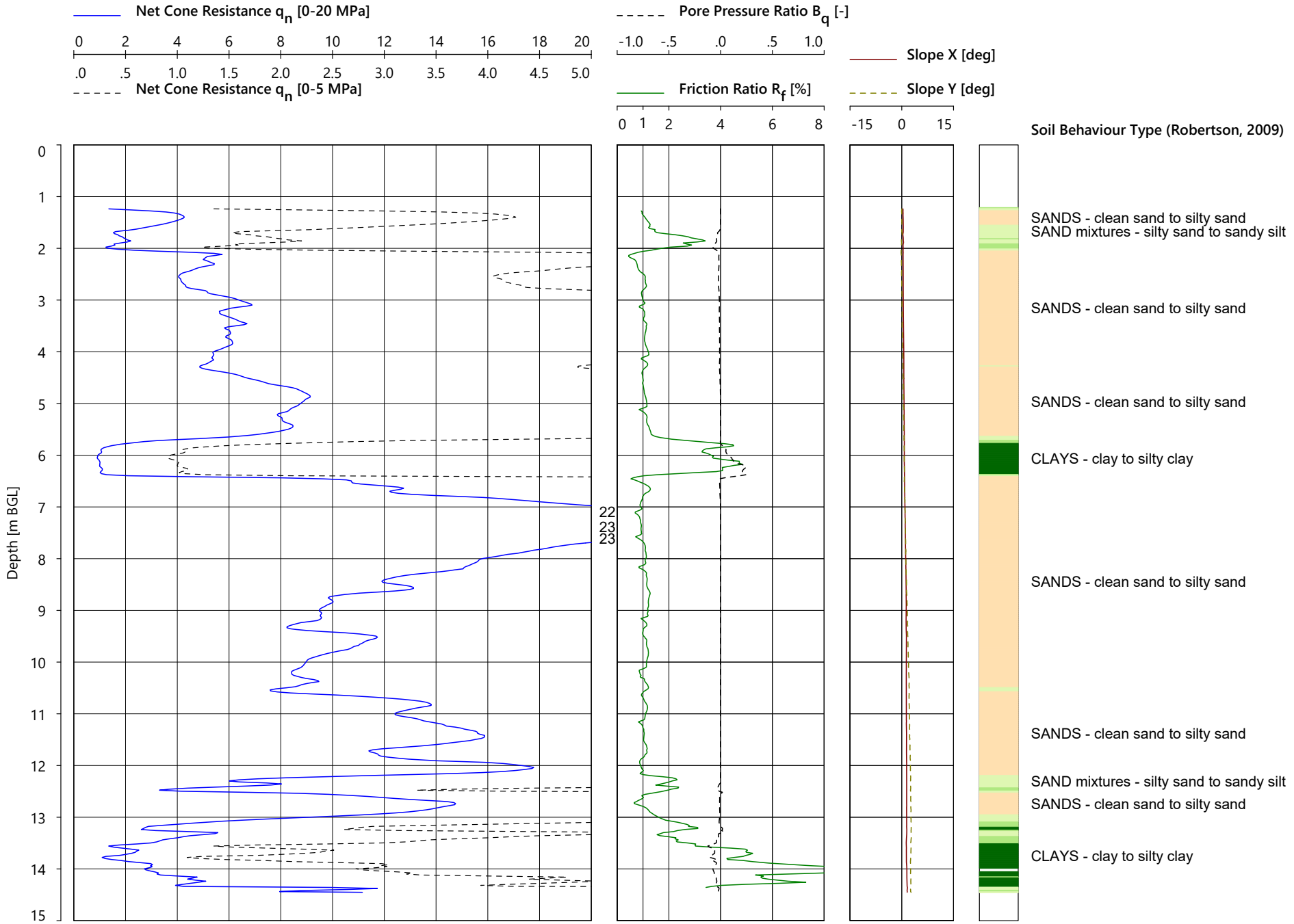

Piezocone Derived Data

CPT Truck ID :	GB17
CPT Cone :	1701-3474
Date of Test :	05-Oct-2022

Stop Criterion :	end depth reached
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0

Operator :	HG,MS
Compiled by :	LCH
Checked by :	KES

Location : AR-CPT13
Coordinates : **E** 480705.86 **N** 411171.71 **Ground Level [m OD] :** +1.26
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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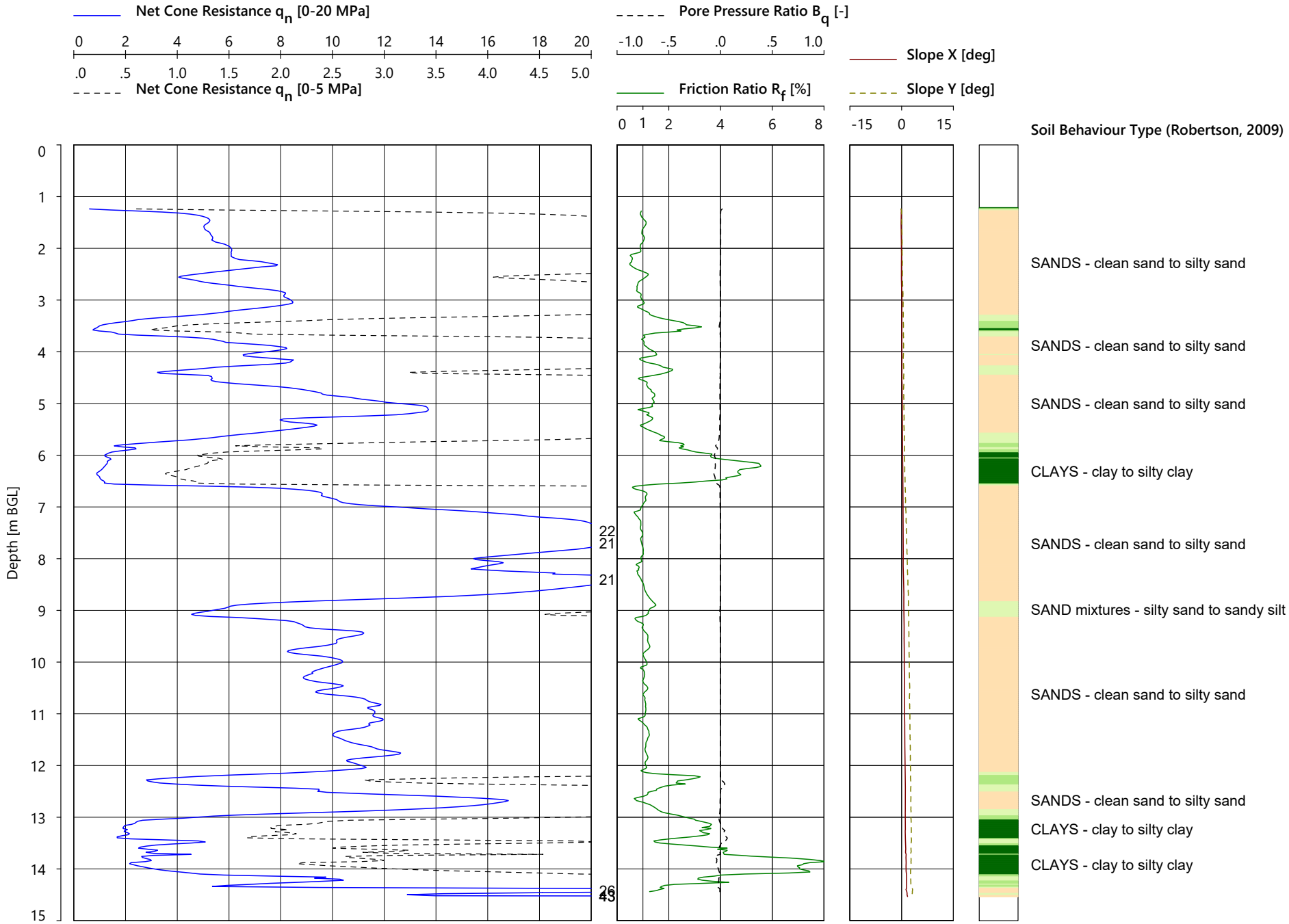
GEOVISUAL 3.8.1 / 02 derived.ucf / 2022-12-05 09:59:57



Piezocone Derived Data

CPT Truck ID :	GB17
CPT Cone :	1701-3474
Date of Test :	05-Oct-2022

Stop Criterion :	end depth reached
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0

Operator :	HG,MS
Compiled by :	LCH
Checked by :	KES

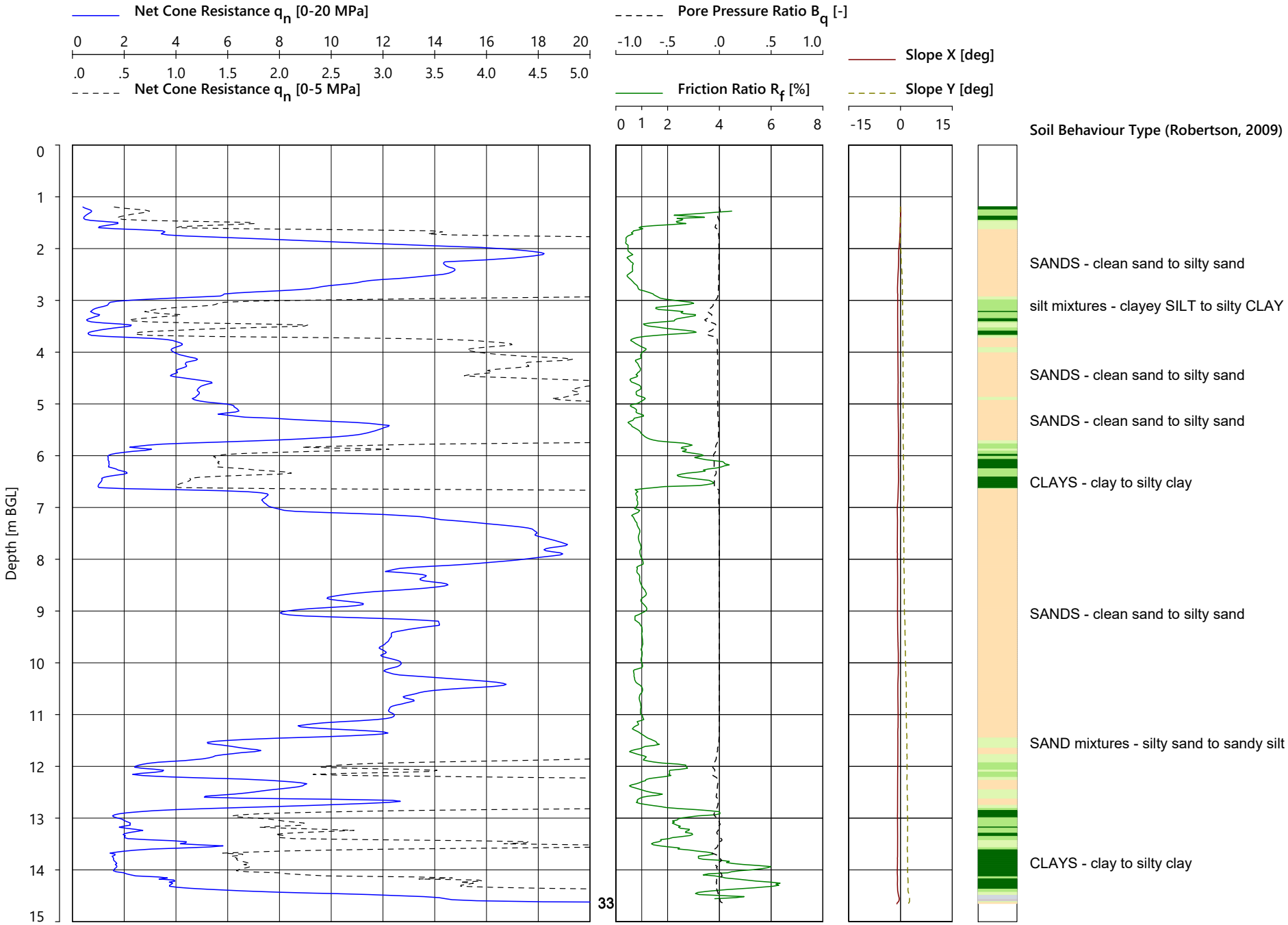
Location : AR-CPT14

Coordinates : **E** 480807.18 **N** 411170.16 **Ground Level [m OD] :** +1.30

Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	06-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT15
Coordinates : **E** 480904.21 **N** 411183.54 **Ground Level [m OD] :** +1.22
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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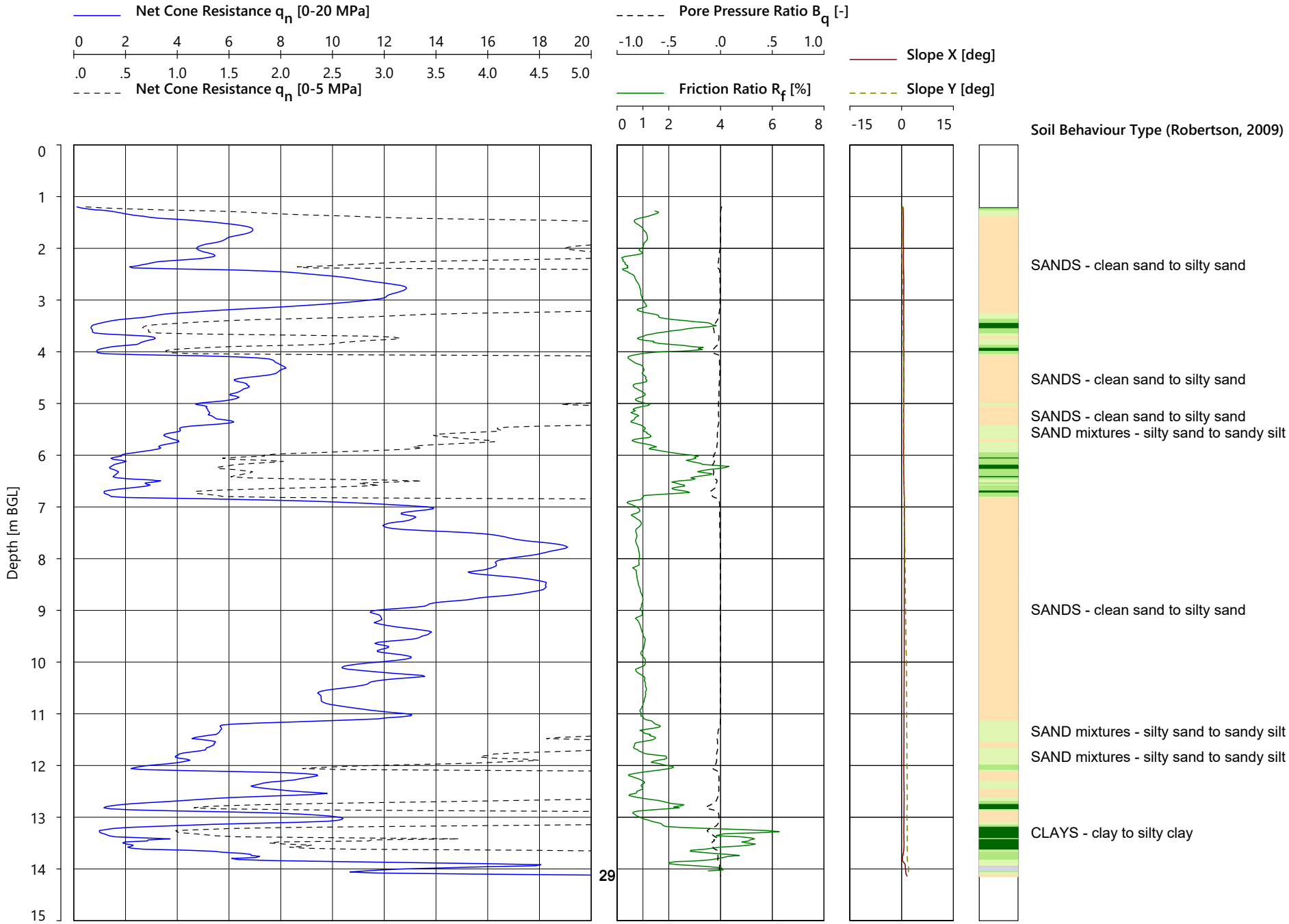

Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT16
Coordinates : **E** 481005.77 **N** 411194.36 **Ground Level [m OD] :** +1.28
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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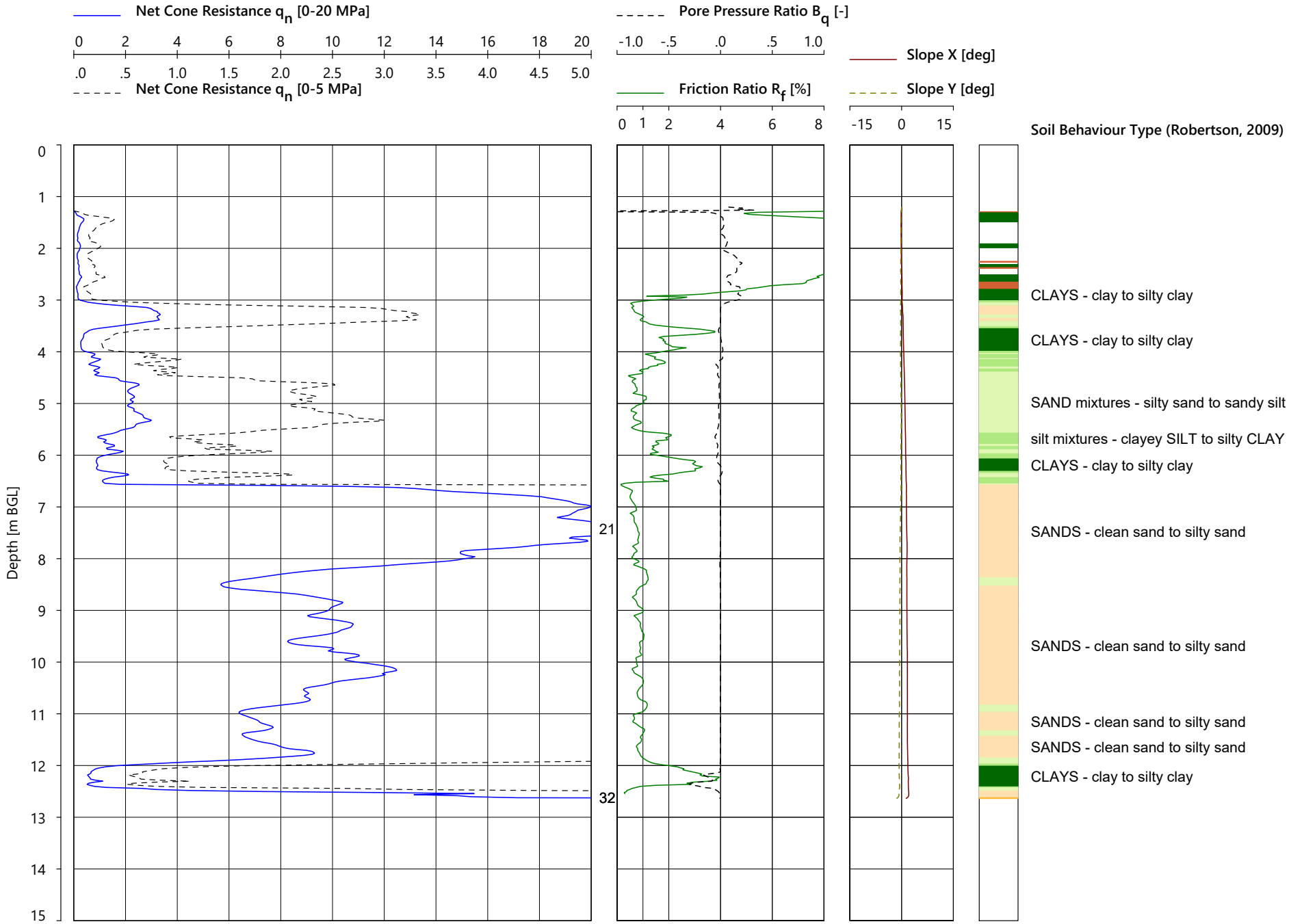
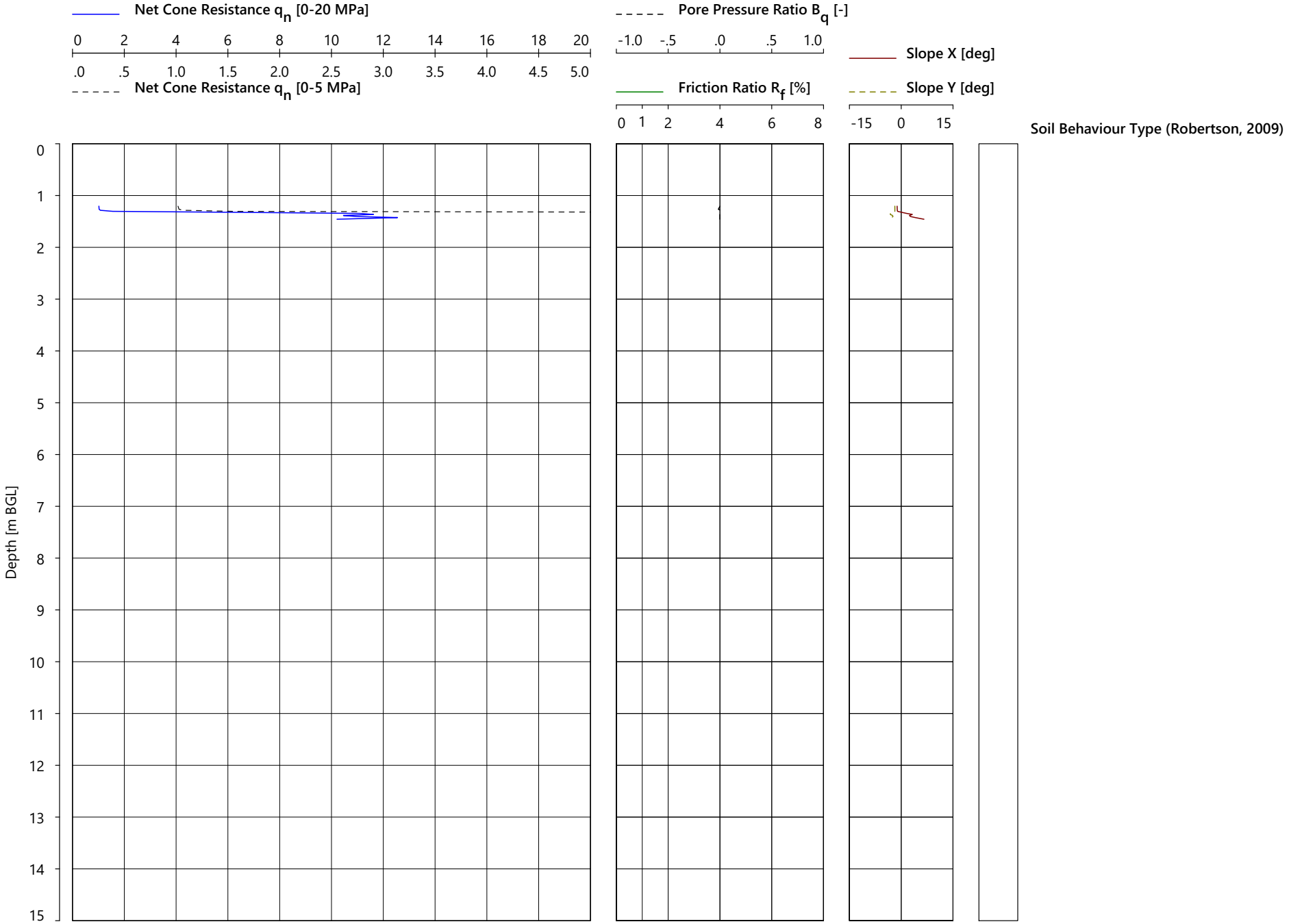


Piezocone Derived Data						Location :	AR-CPT17		
CPT Truck ID :	GB17	Stop Criterion :	end depth reached	Operator :	MS	Coordinates :	E 481103.20	N 411220.50	Ground Level [m OD] : +1.28
CPT Cone :	1701-3474	Application Class / Type :	Class 2 / TE2	Compiled by :	LCH	Project :	212562		
Date of Test :	17-Oct-2022	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Checked by :	KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
		Assumed Water Level [m gl] :	-1.0			Client :	SSE Generation Limited (SSE)		



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. inclination value	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	13-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : AR-CPT21
Coordinates : **E** 481704.32 **N** 411573.67 **Ground Level [m OD] :** +2.99
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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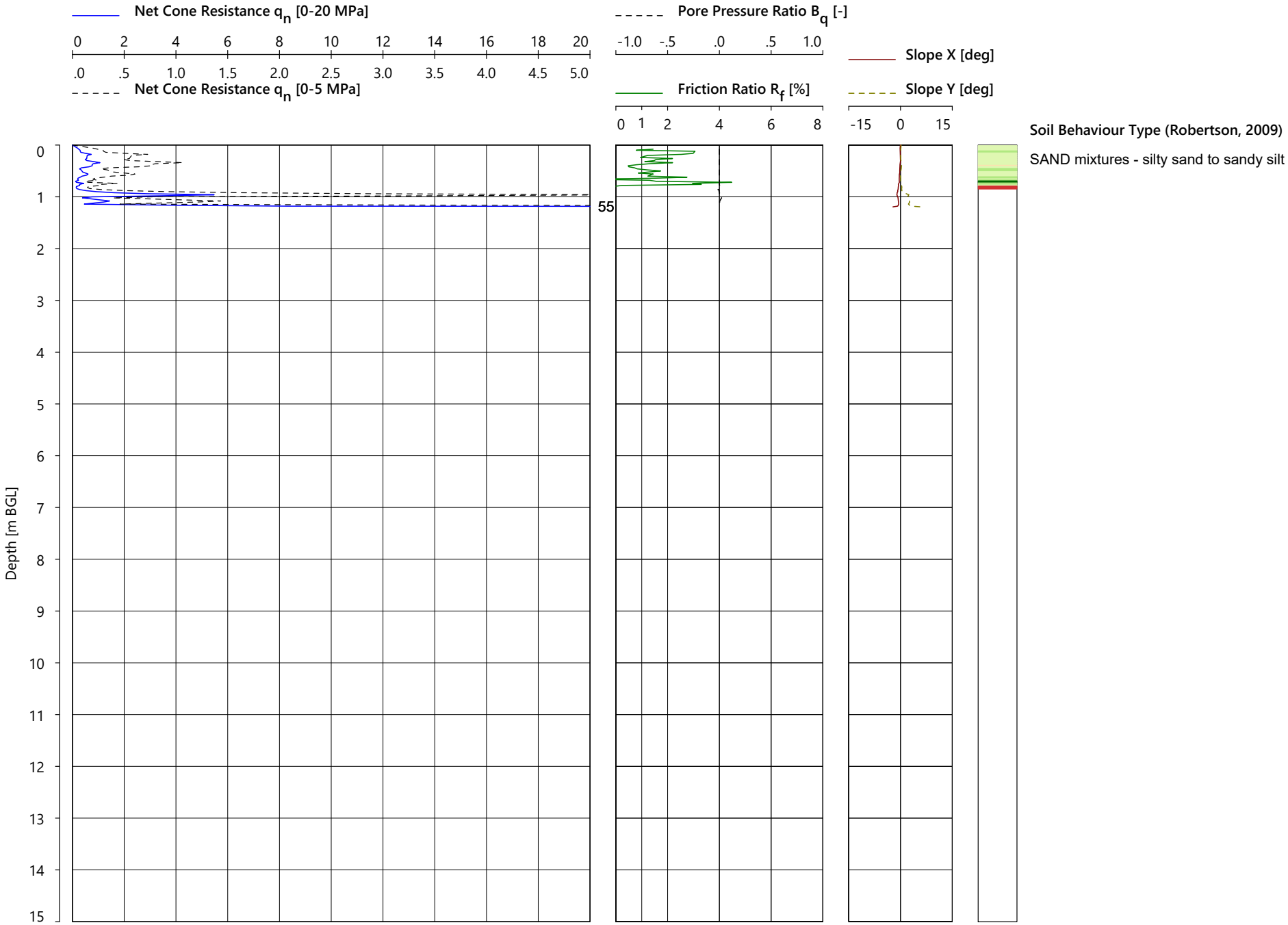
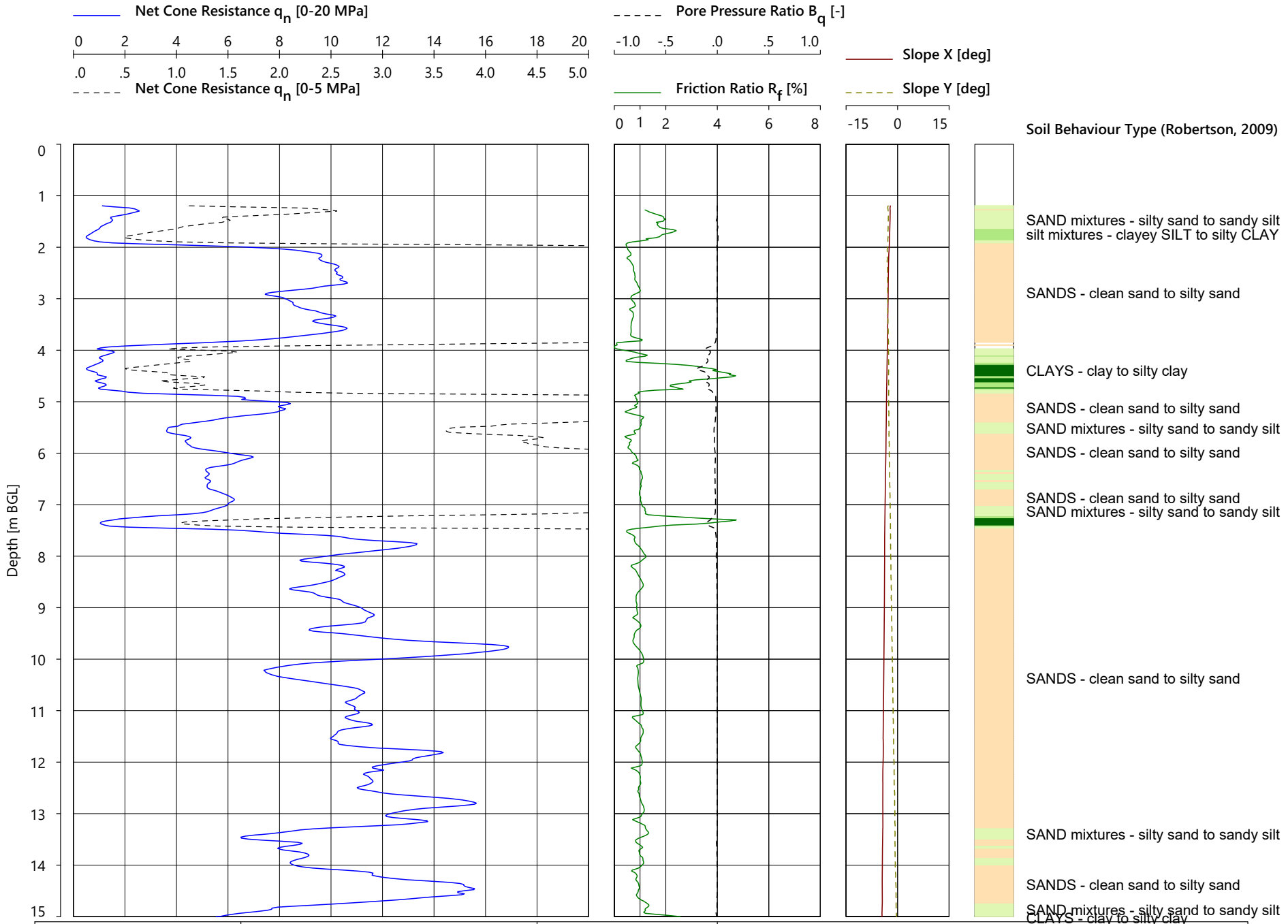


Piezocone Derived Data				Location :	BR-CPT01
CPT Truck ID : EU-115	Stop Criterion : max. penetration force	Operator : HG,MS		Coordinates :	E 482095.20 N 411651.80 Ground Level [m OD] : +2.34
CPT Cone : 1701-3474	Application Class / Type : Class 2 / TE2	Compiled by : LCH		Project :	212562
Date of Test : 27-Oct-2022	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Checked by : KES			F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
	Assumed Water Level [m gl] : -1.0			Client :	SSE Generation Limited (SSE)



Piezocone Derived Data

CPT Truck ID :	EU-115
CPT Cone :	1701-3474
Date of Test :	27-Oct-2022

Stop Criterion :	max. penetration force
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0

Operator :	HG,MS
Compiled by :	LCH
Checked by :	KES

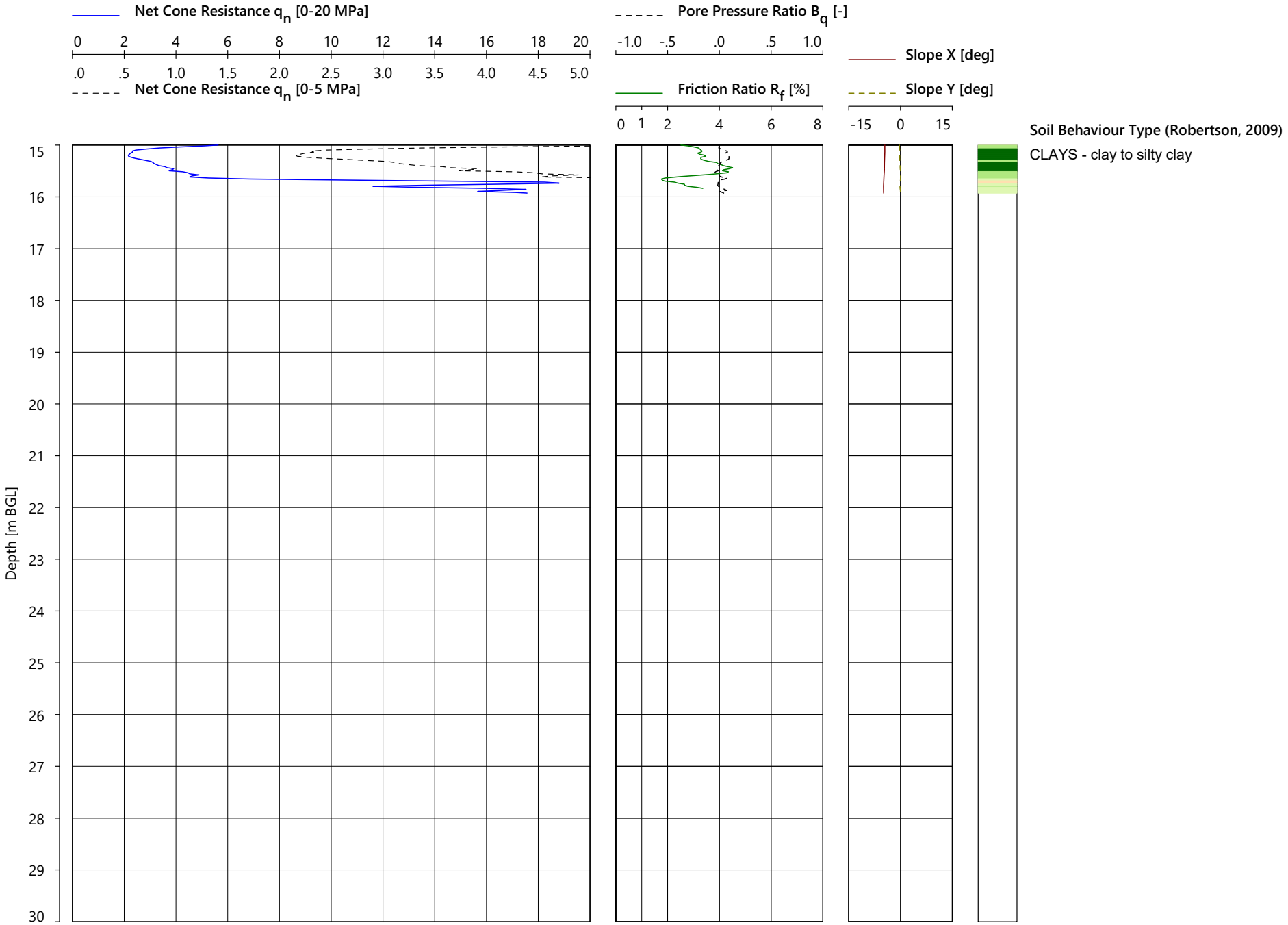
Location : **BR-CPT04**

Coordinates : **E** 482453.70 **N** 411604.00 **Ground Level [m OD] :** +2.02

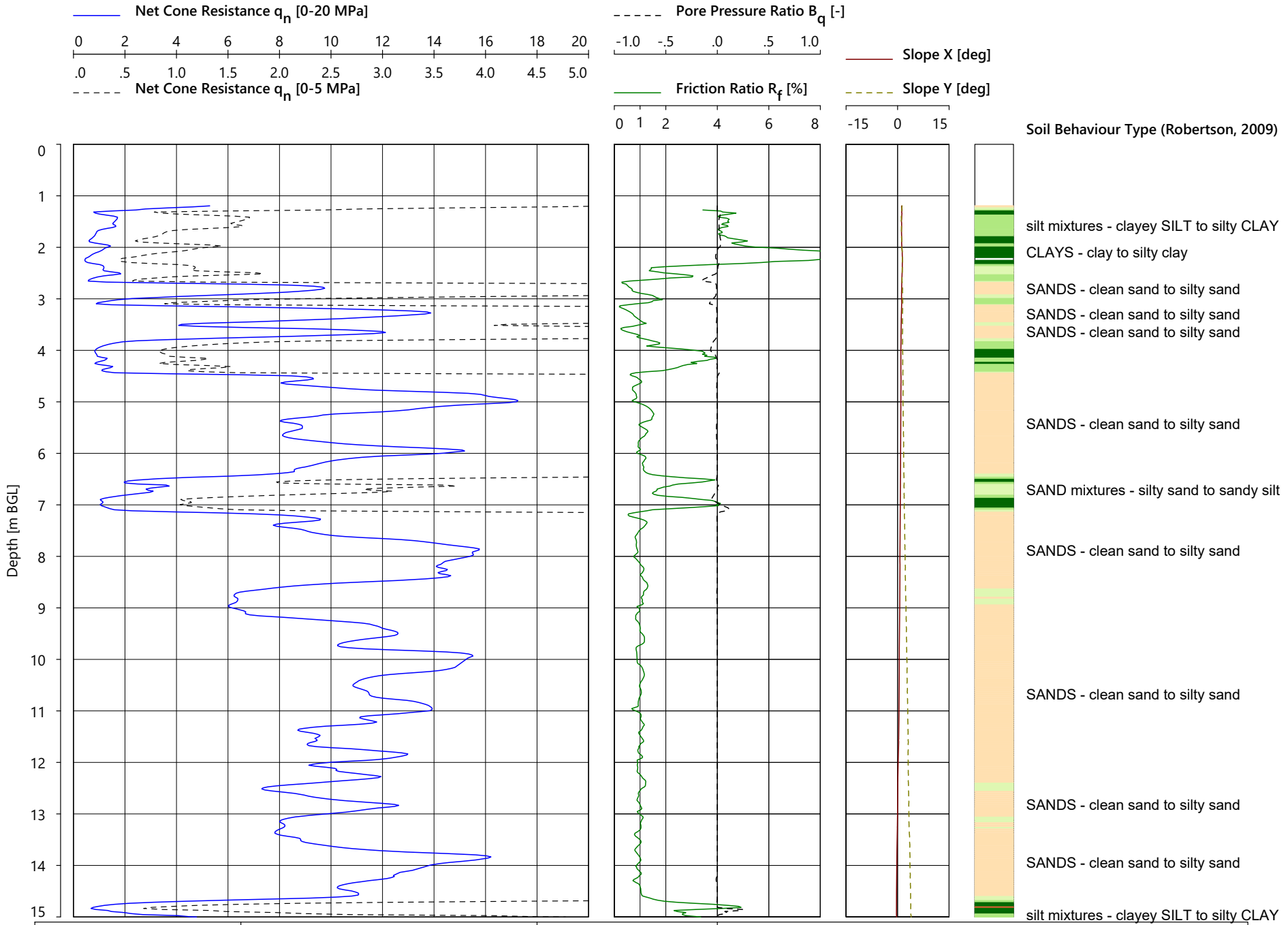
Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID : EU-115	**Stop Criterion :** max. penetration force		**Location :** BR-CPT04		
CPT Cone : 1701-3474	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482453.70 **N** 411604.00		**Ground Level [m OD] :** +2.02
Date of Test : 27-Oct-2022	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562		
	Assumed Water Level [m gl] : -1.0	**Checked by :** KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
			Client : SSE Generation Limited (SSE)		



Piezocone Derived Data

CPT Truck ID :	EU-115
CPT Cone :	1701-3474
Date of Test :	25-Oct-2022

Stop Criterion :	max. penetration force
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0

Operator :	HG,MS
Compiled by :	LCH
Checked by :	KES

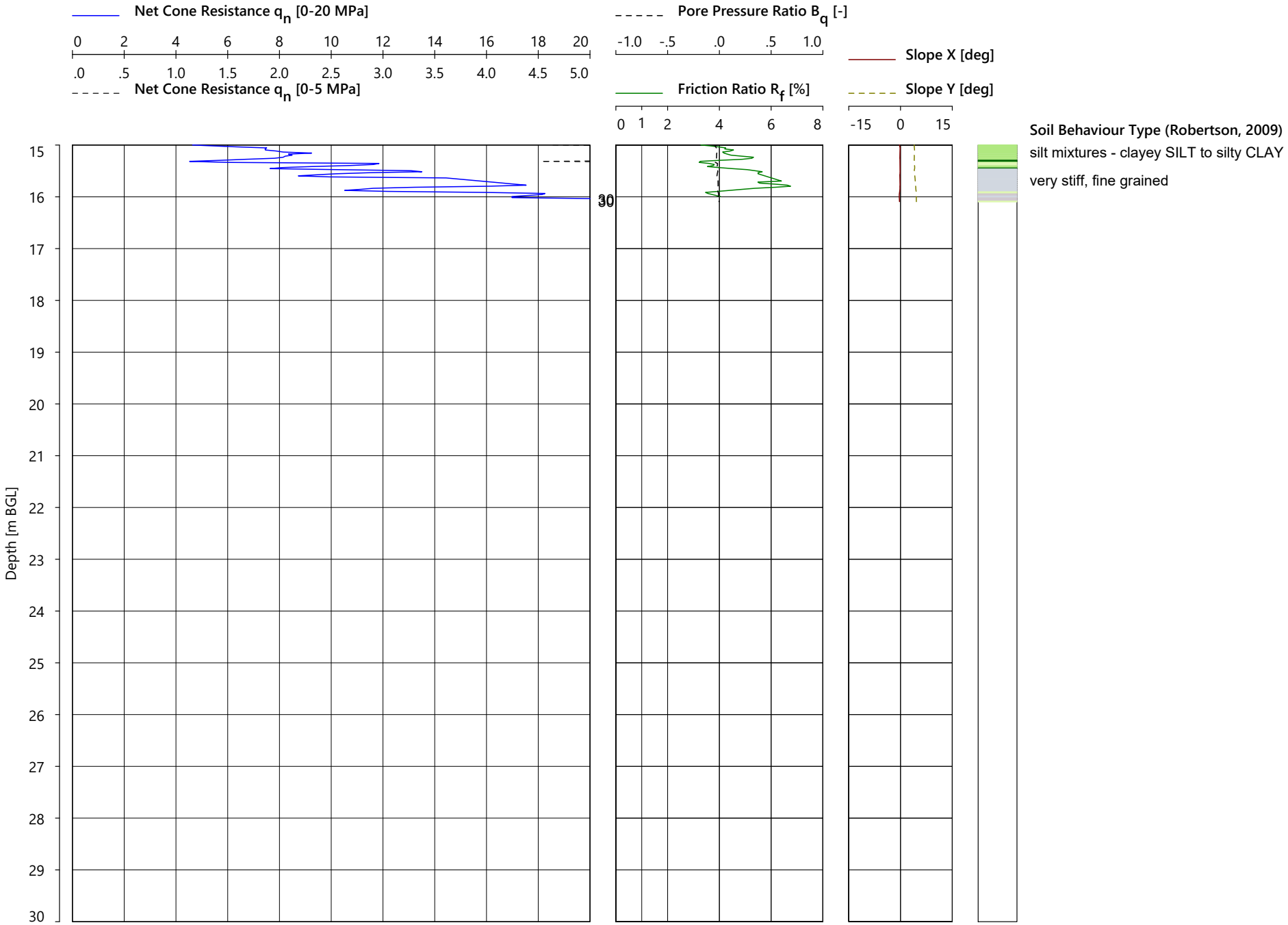
Location : **BR-CPT05**

Coordinates : **E** 482516.32 **N** 411776.49 **Ground Level [m OD] :** +1.72

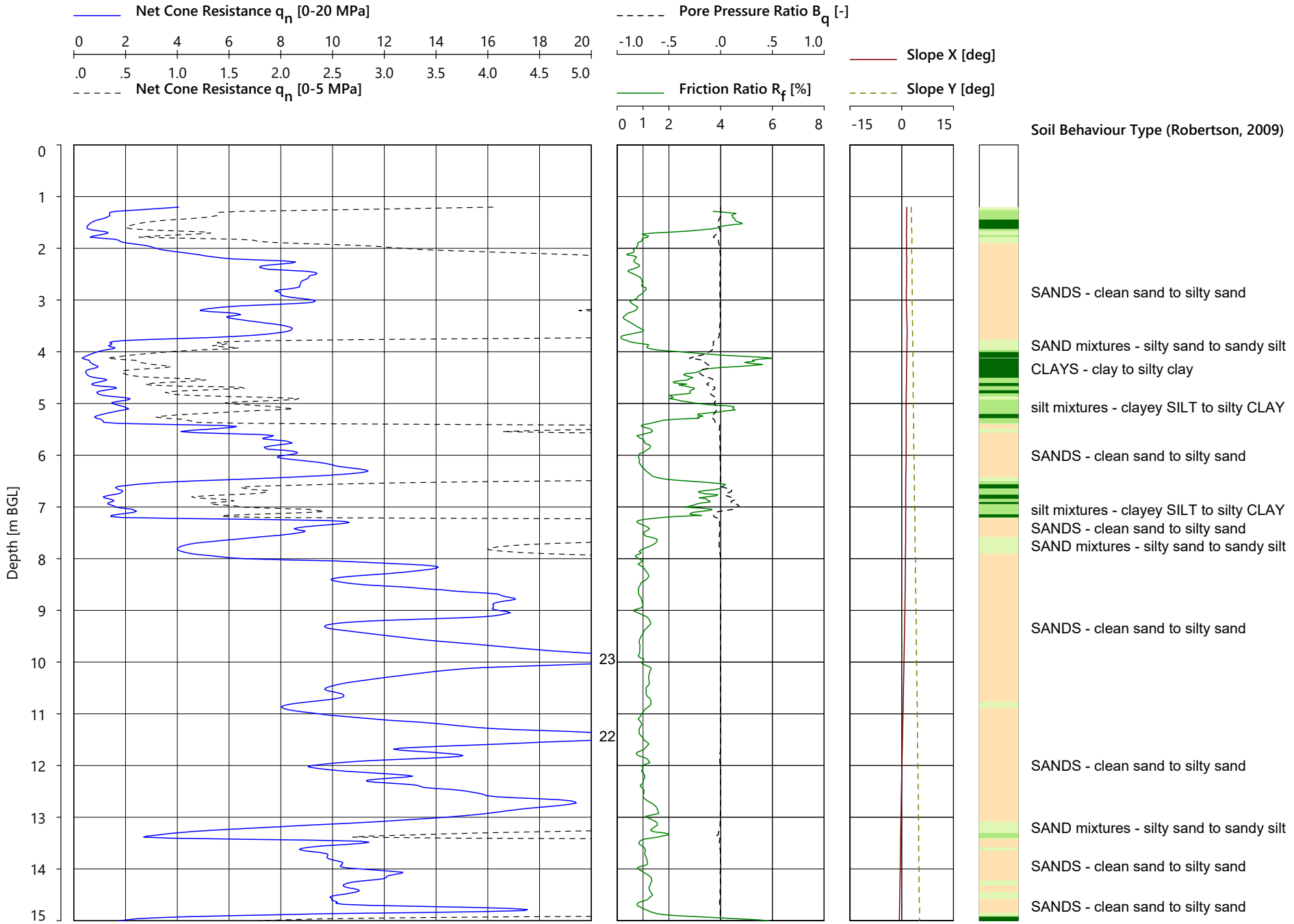
Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

Client : SSE Generation Limited (SSE)



Piezocone Derived Data				Location :	BR-CPT05
	Stop Criterion : max. penetration force			Coordinates :	E 482516.32 N 411776.49 Ground Level [m OD] : +1.72
CPT Truck ID : EU-115	Application Class / Type : Class 2 / TE2	Operator : HG,MS		Project :	212562
CPT Cone : 1701-3474	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Compiled by : LCH			F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Date of Test : 25-Oct-2022	Assumed Water Level [m gl] : -1.0	Checked by : KES		Client :	SSE Generation Limited (SSE)



Piezocone Derived Data

CPT Truck ID :	EU-115
CPT Cone :	1701-3474
Date of Test :	25-Oct-2022

Stop Criterion :	max. penetration force
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0

Operator :	HG,MS
Compiled by :	LCH
Checked by :	KES

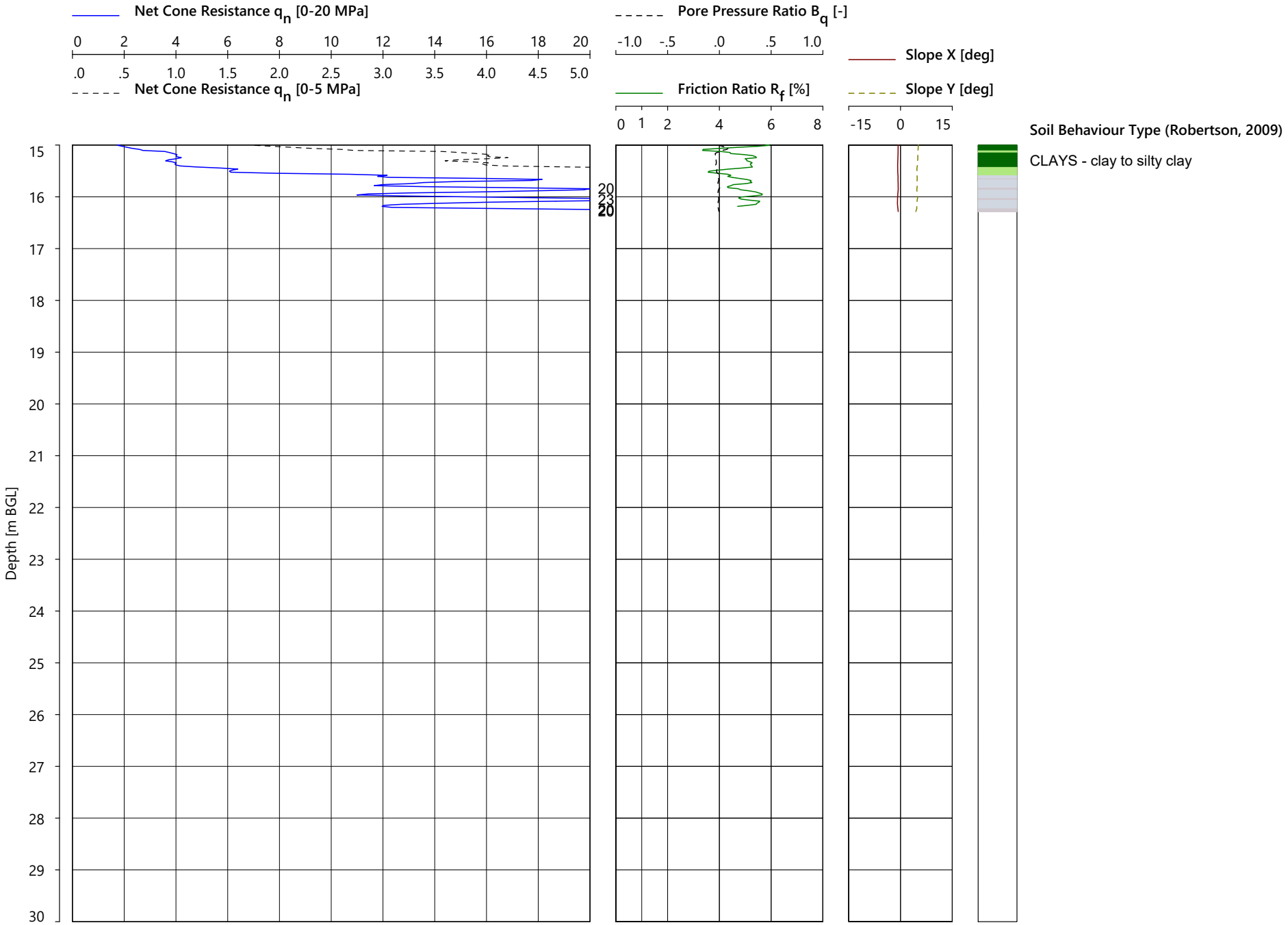
Location : **BR-CPT06**

Coordinates : **E** 482557.80 **N** 411680.40 **Ground Level [m OD] :** +1.70

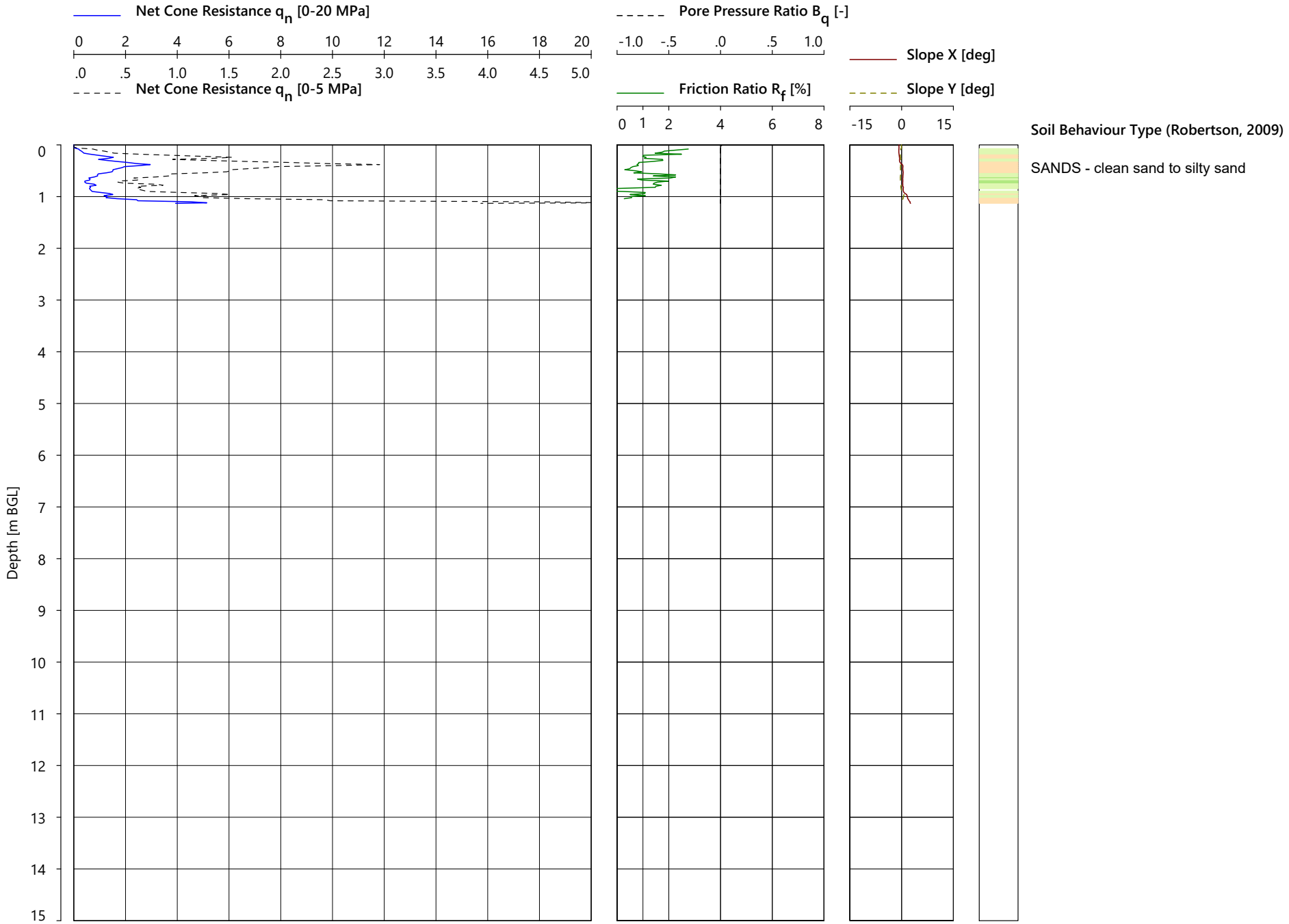
Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

Client : SSE Generation Limited (SSE)



Piezocone Derived Data				Location :	BR-CPT06		
CPT Truck ID :	EU-115	Stop Criterion :	max. penetration force	Coordinates :	E 482557.80	N 411680.40	Ground Level [m OD] : +1.70
CPT Cone :	1701-3474	Application Class / Type :	Class 2 / TE2	Project :	212562		
Date of Test :	25-Oct-2022	Assumed Soil Unit Weight :	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
		Assumed Water Level [m gl] :	-1.0	Client :	SSE Generation Limited (SSE)		
		Operator :	HG,MS				
		Compiled by :	LCH				
		Checked by :	KES				



Piezocone Derived Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	25-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **BR-CPT07**
Coordinates : **E** 482462.51 **N** 411652.94 **Ground Level [m OD] :** +1.80
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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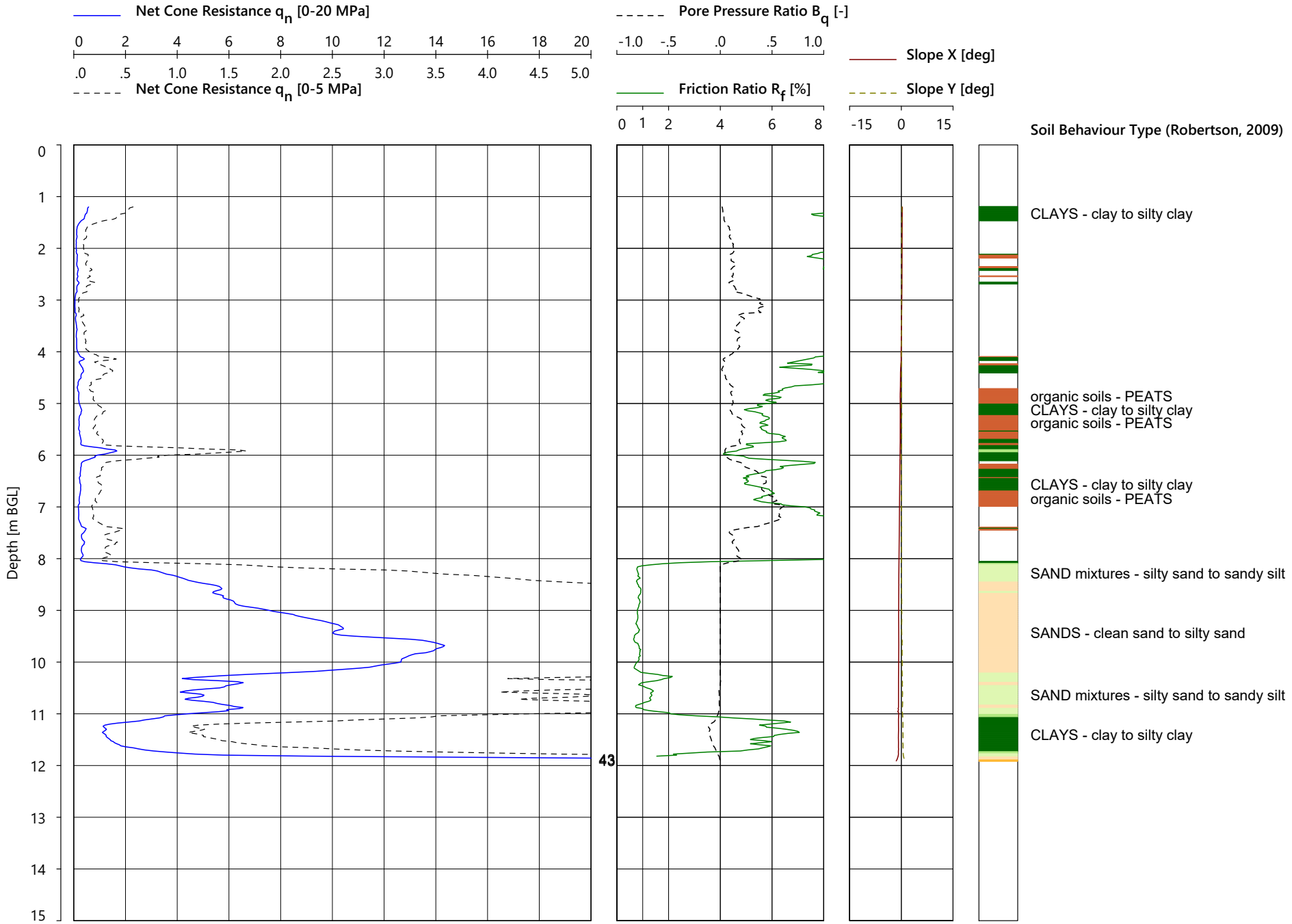

Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	06-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT01
Coordinates : **E** 483329.69 **N** 411567.00 **Ground Level [m OD] :** +0.93
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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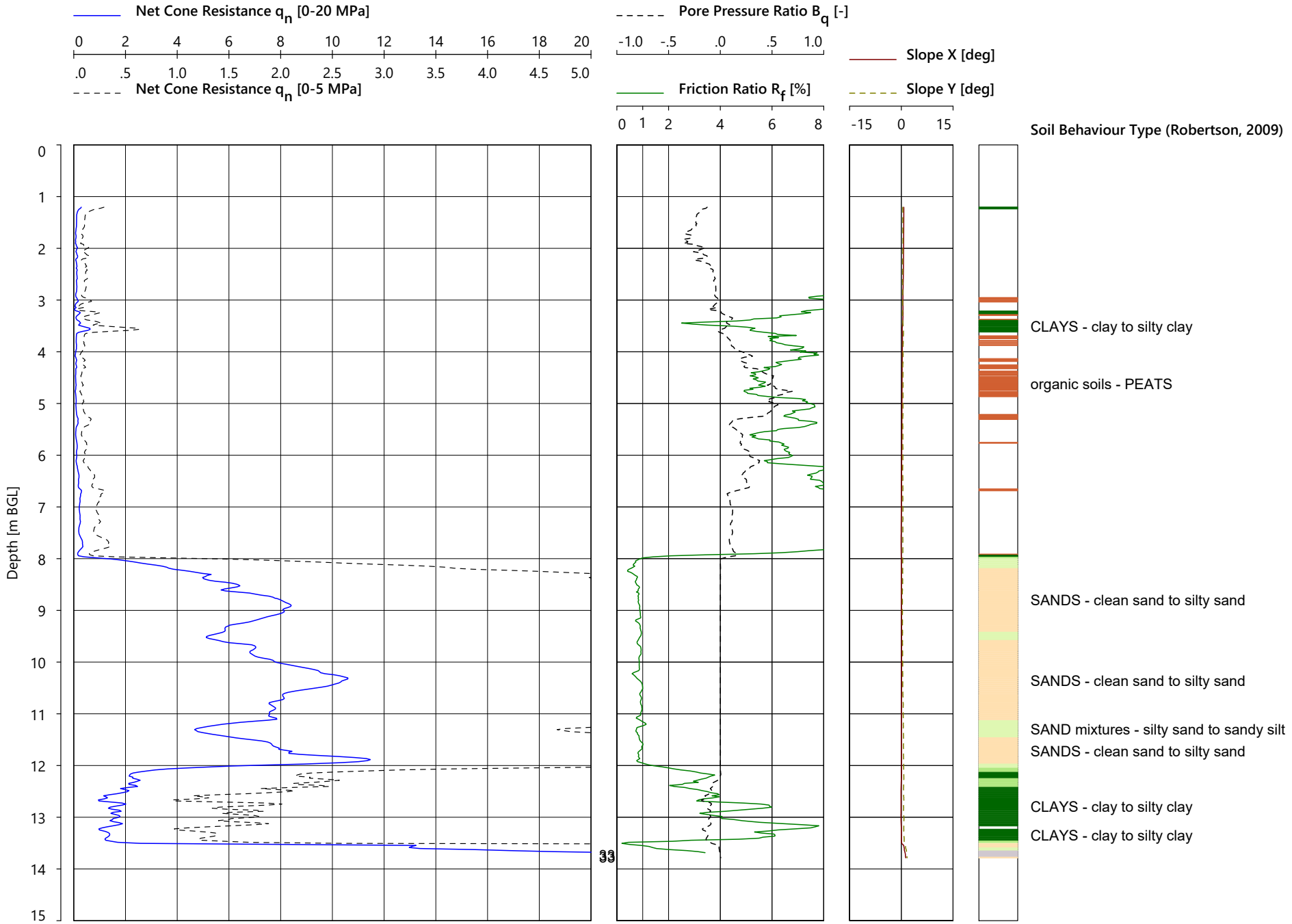

Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	07-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **HR-CPT03**
Coordinates : **E** 483165.50 **N** 411587.50 **Ground Level [m OD] :** +0.32
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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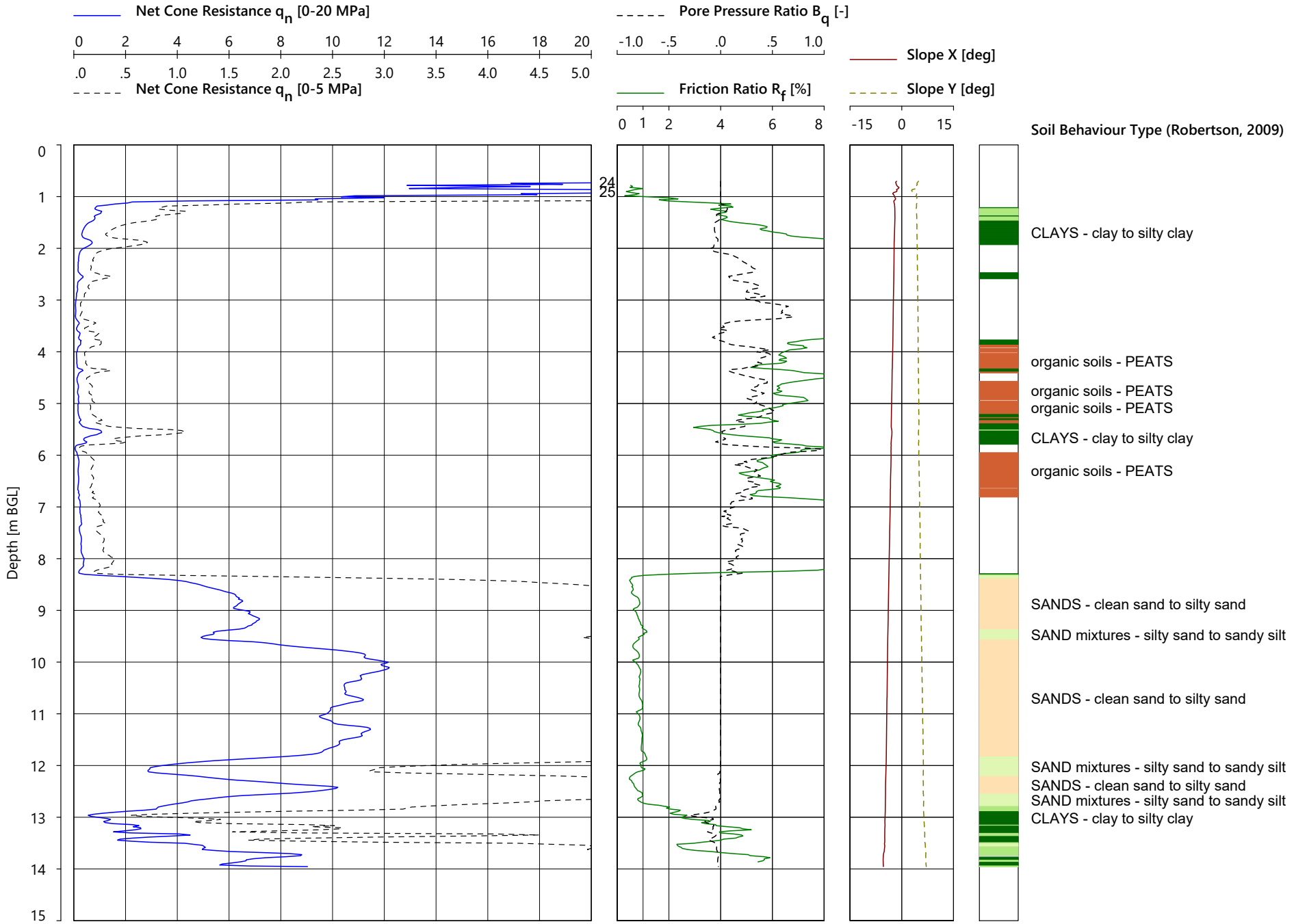
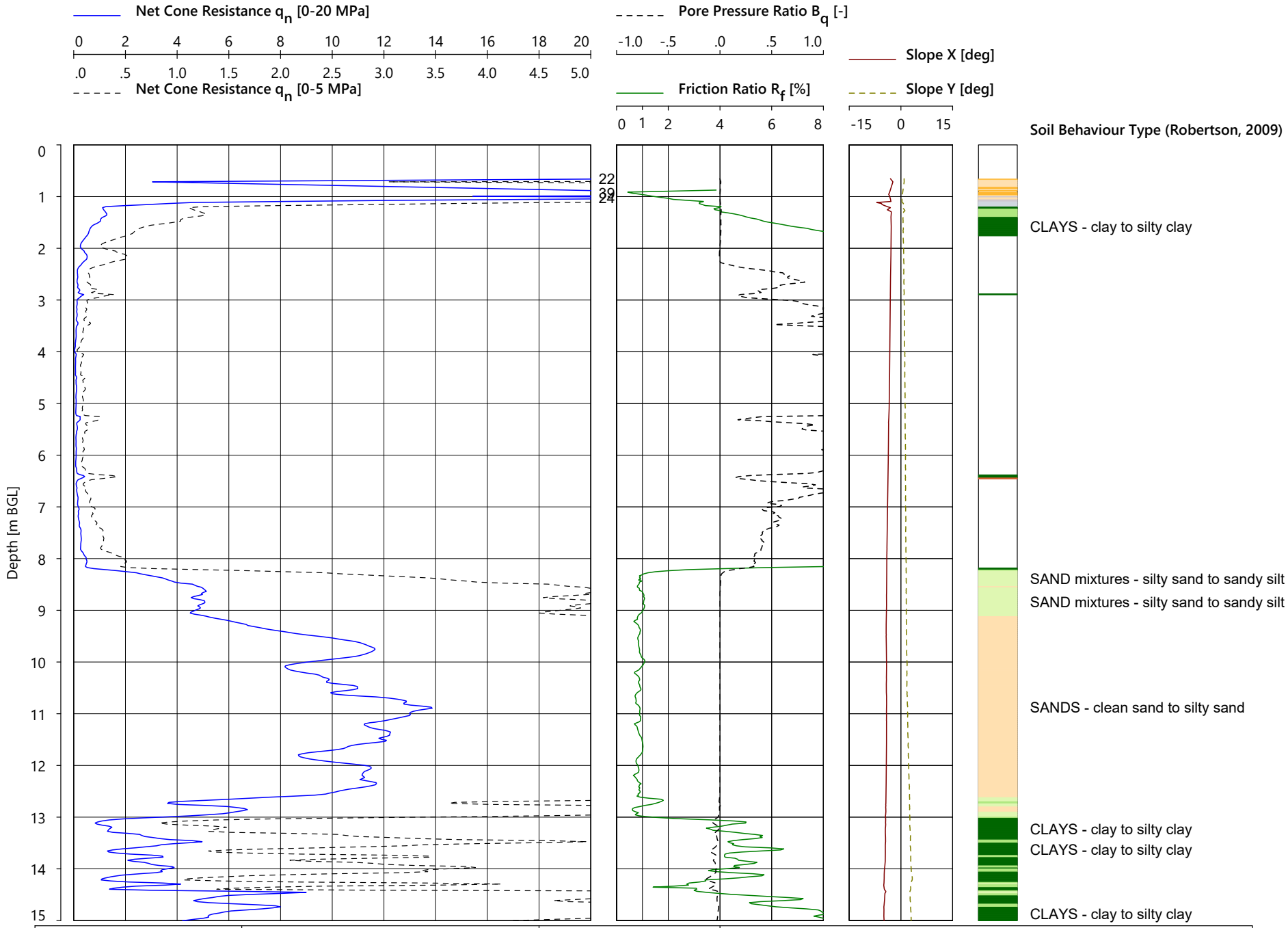


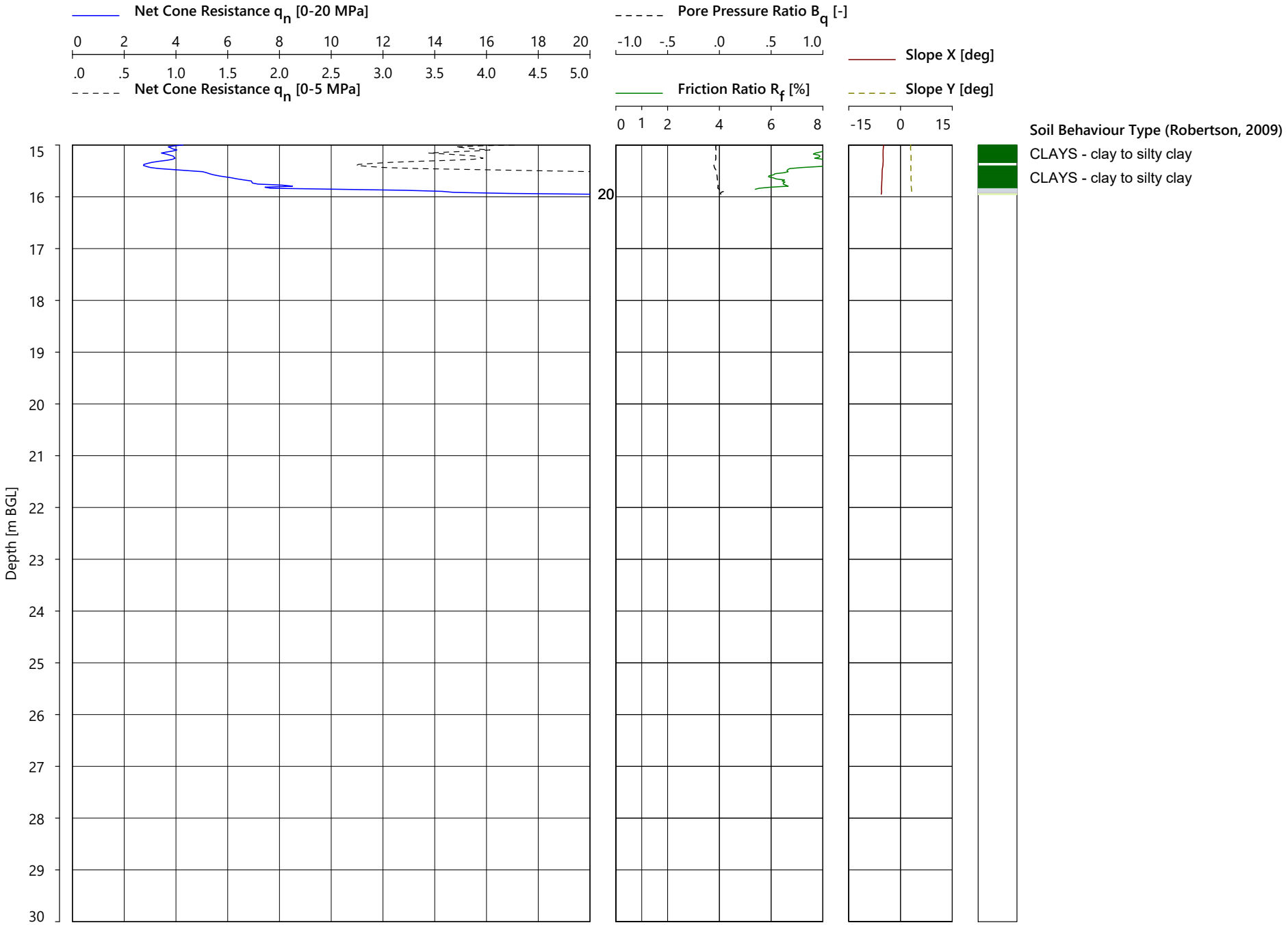
Piezocone Derived Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	danger of buckling	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	26-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **HR-CPT04**
Coordinates : **E** 483127.94 **N** 411569.96 **Ground Level [m OD] :** +0.62
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data						Location :	HR-CPT05		
CPT Truck ID :	EU-115	Stop Criterion :	danger of buckling	Operator :	HG,MS	Coordinates :	E 483107.33	N 411588.29	Ground Level [m OD] : +0.64
CPT Cone :	1701-3474	Application Class / Type :	Class 2 / TE2	Compiled by :	LCH	Project :	212562		
Date of Test :	26-Oct-2022	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Checked by :	KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
		Assumed Water Level [m gl] :	-1.0			Client :	SSE Generation Limited (SSE)		



Piezocone Derived Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	danger of buckling	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	26-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT05
Coordinates : **E** 483107.33 **N** 411588.29 **Ground Level [m OD] :** +0.64
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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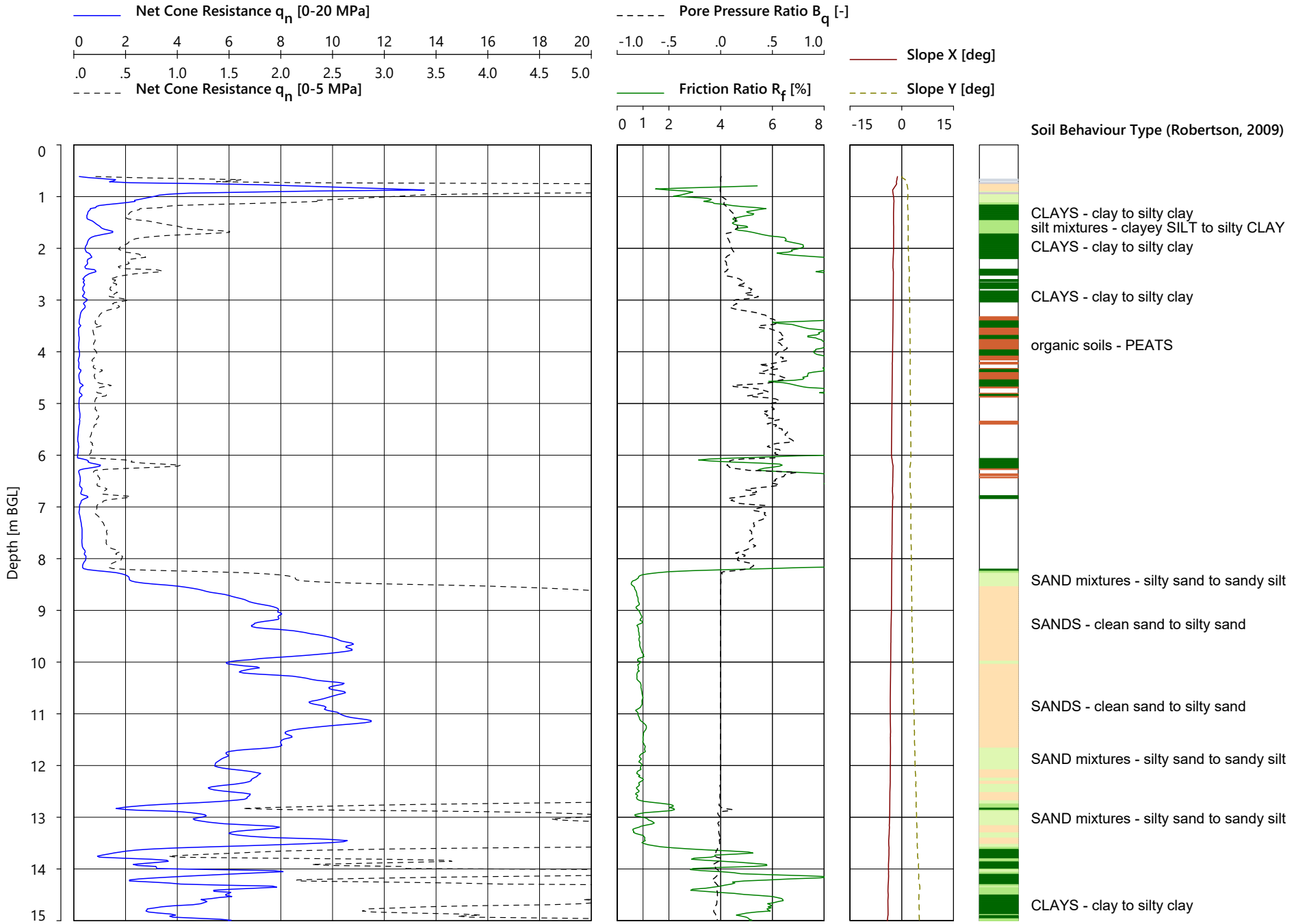
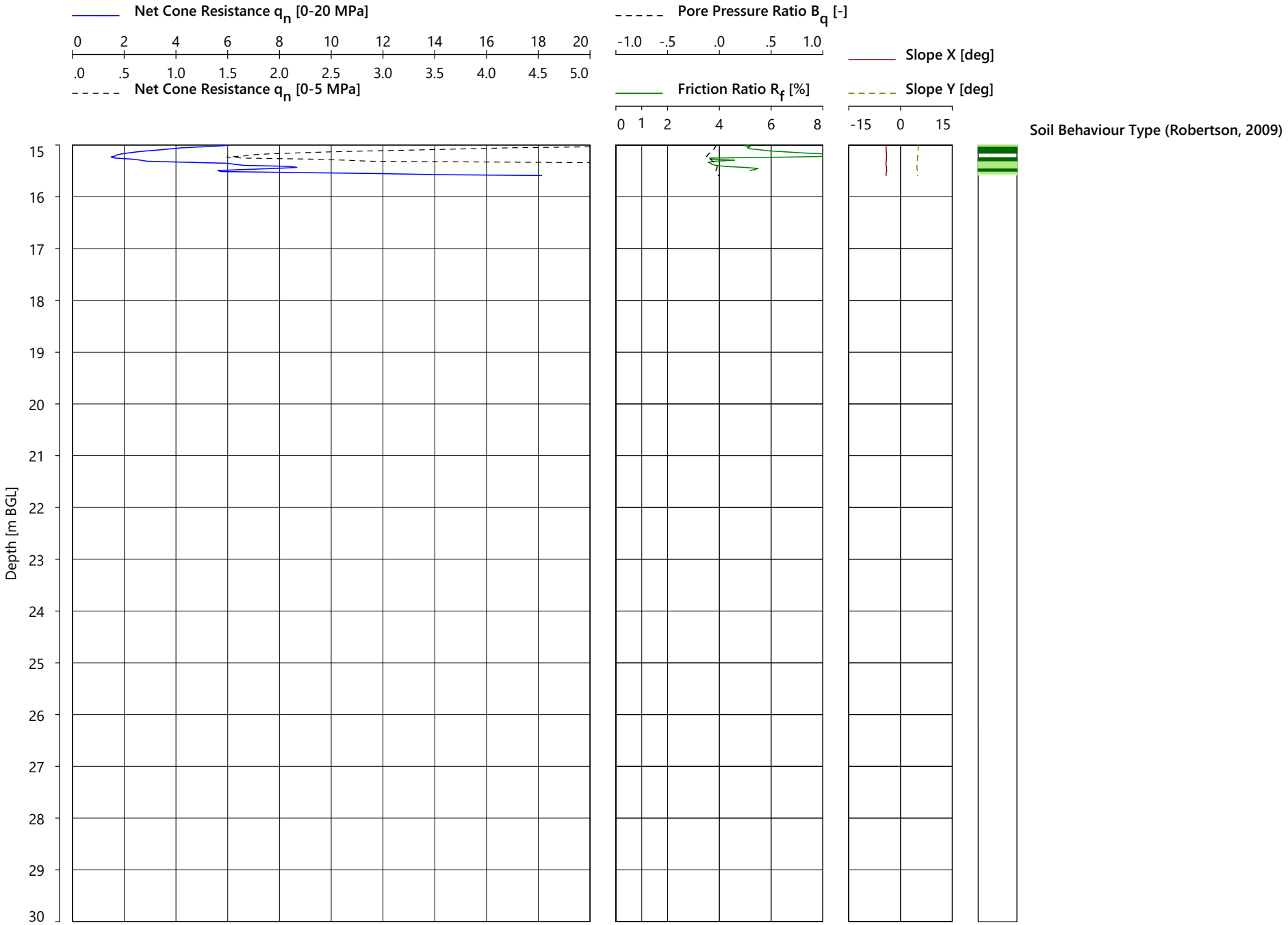
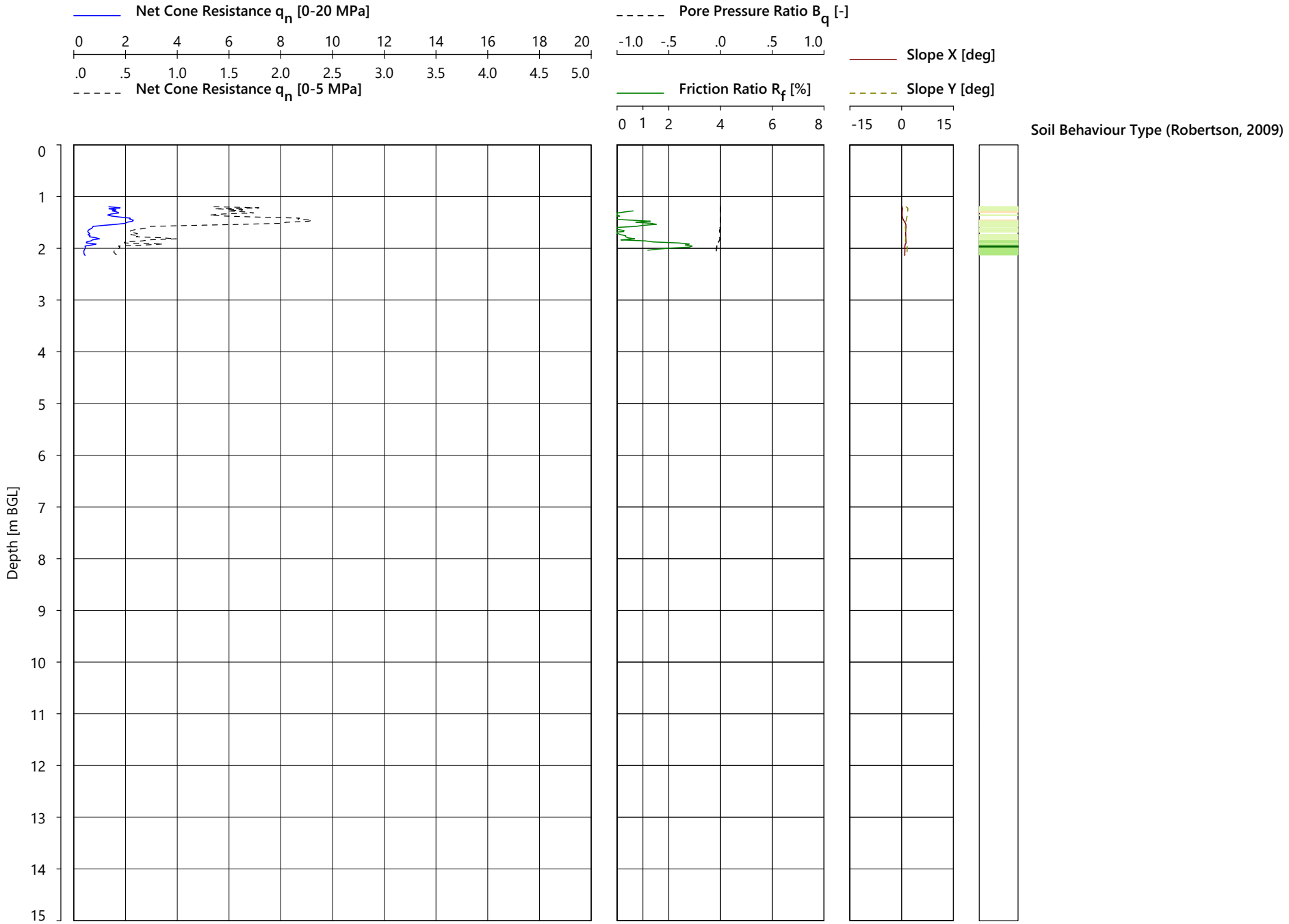


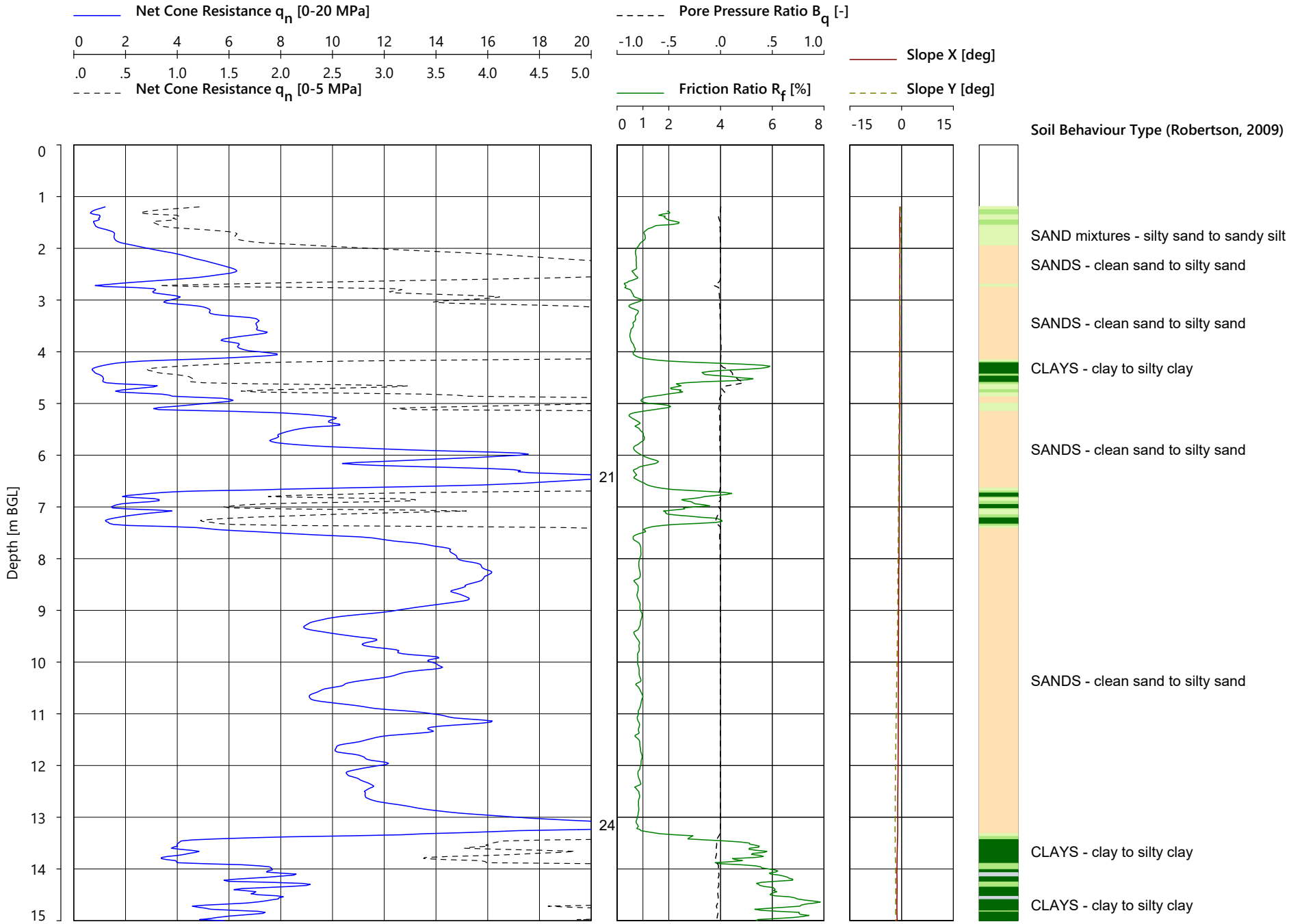
Piezocone Derived Data						Location :	HR-CPT06		
CPT Truck ID :	EU-115	Stop Criterion :	danger of buckling	Operator :	HG,MS	Coordinates :	E 483109.39	N 411640.30	Ground Level [m OD] : +0.76
CPT Cone :	1701-3474	Application Class / Type :	Class 2 / TE2	Compiled by :	LCH	Project :	212562		
Date of Test :	26-Oct-2022	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Checked by :	KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
		Assumed Water Level [m gl] :	-1.0			Client :	SSE Generation Limited (SSE)		



Piezocone Derived Data				Location :	HR-CPT06
	Stop Criterion : danger of buckling			Coordinates :	E 483109.39 N 411640.30 Ground Level [m OD] : +0.76
CPT Truck ID : EU-115	Application Class / Type : Class 2 / TE2	Operator : HG,MS		Project :	212562
CPT Cone : 1701-3474	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Compiled by : LCH			F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Date of Test : 26-Oct-2022	Assumed Water Level [m gl] : -1.0	Checked by : KES		Client :	SSE Generation Limited (SSE)



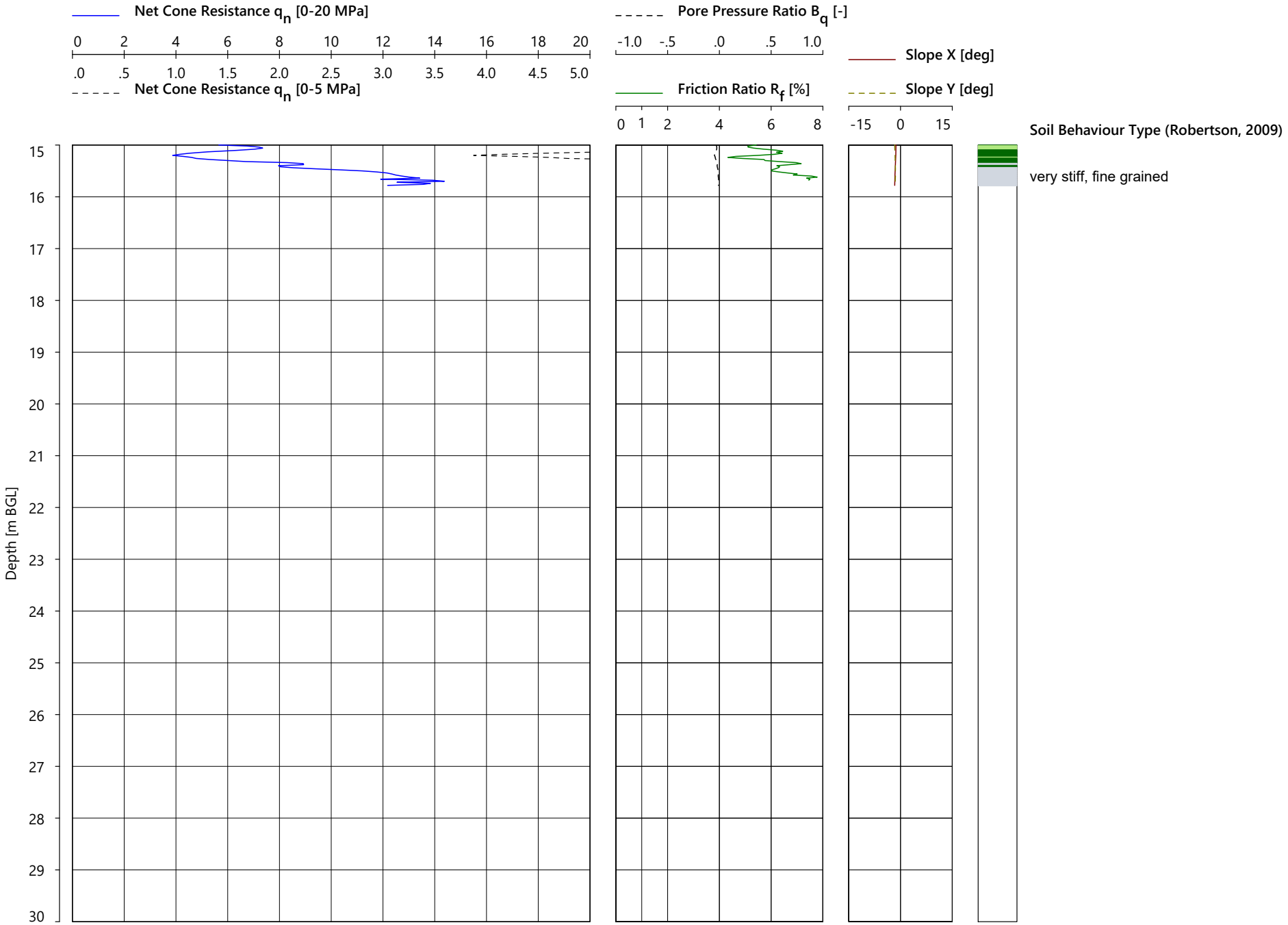
Piezocone Derived Data				Location :	HR-CPT07
	Stop Criterion : max. penetration force			Coordinates :	E 483010.62 N 411725.72 Ground Level [m OD] : +1.62
CPT Truck ID : EU-115	Application Class / Type : Class 2 / TE2	Operator :	HG,MS	Project :	212562
CPT Cone : 1701-3474	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Compiled by :	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Date of Test : 25-Oct-2022	Assumed Water Level [m gl] : -1.0	Checked by :	KES	Client :	SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	MS,HG
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	20-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT08
Coordinates : **E** 482965.30 **N** 411776.58 **Ground Level [m OD] :** +1.50
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO

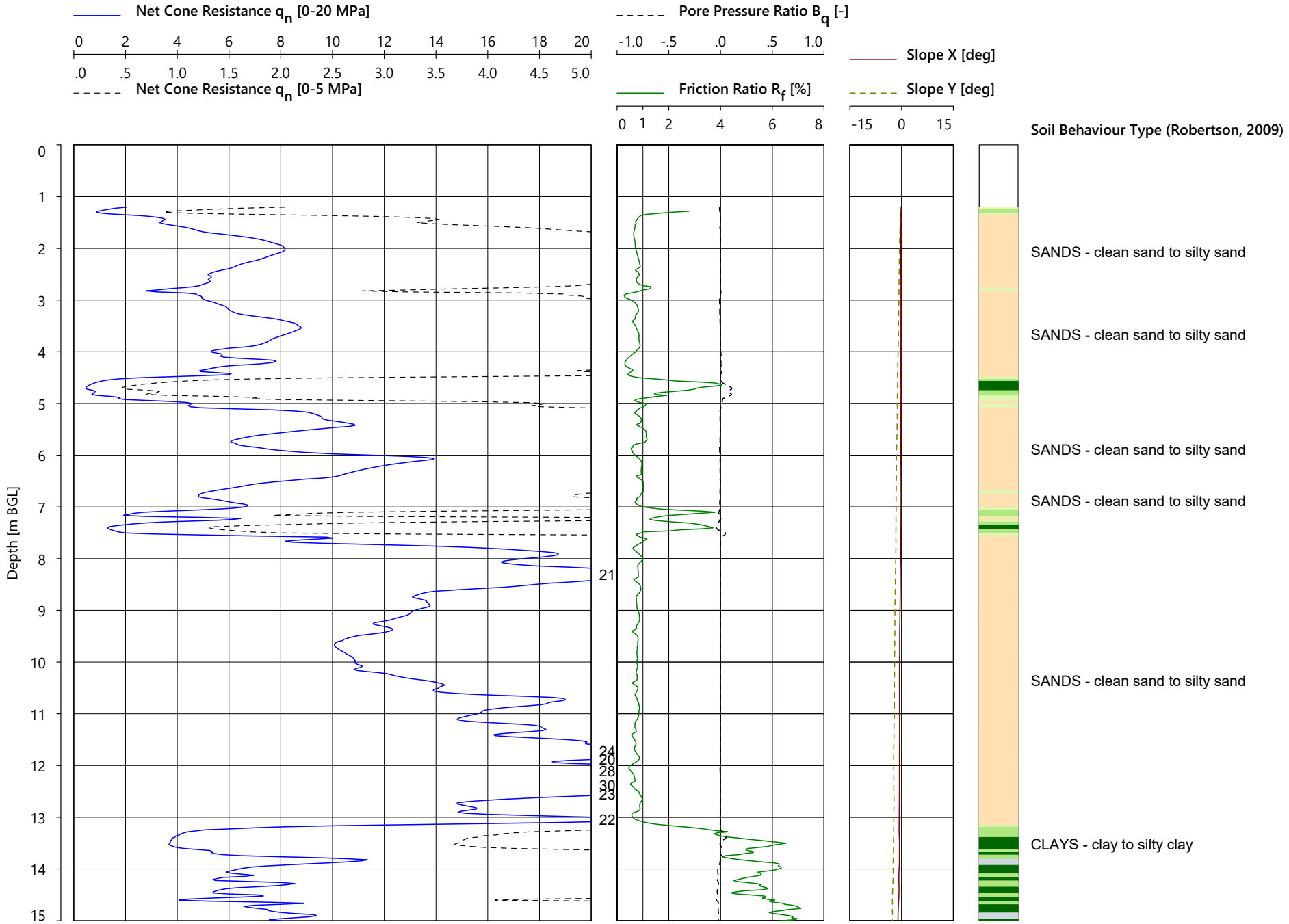


Piezocone Derived Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	MS,HG
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	20-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT08
Coordinates : **E** 482965.30 **N** 411776.58 **Ground Level [m OD] :** +1.50
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO

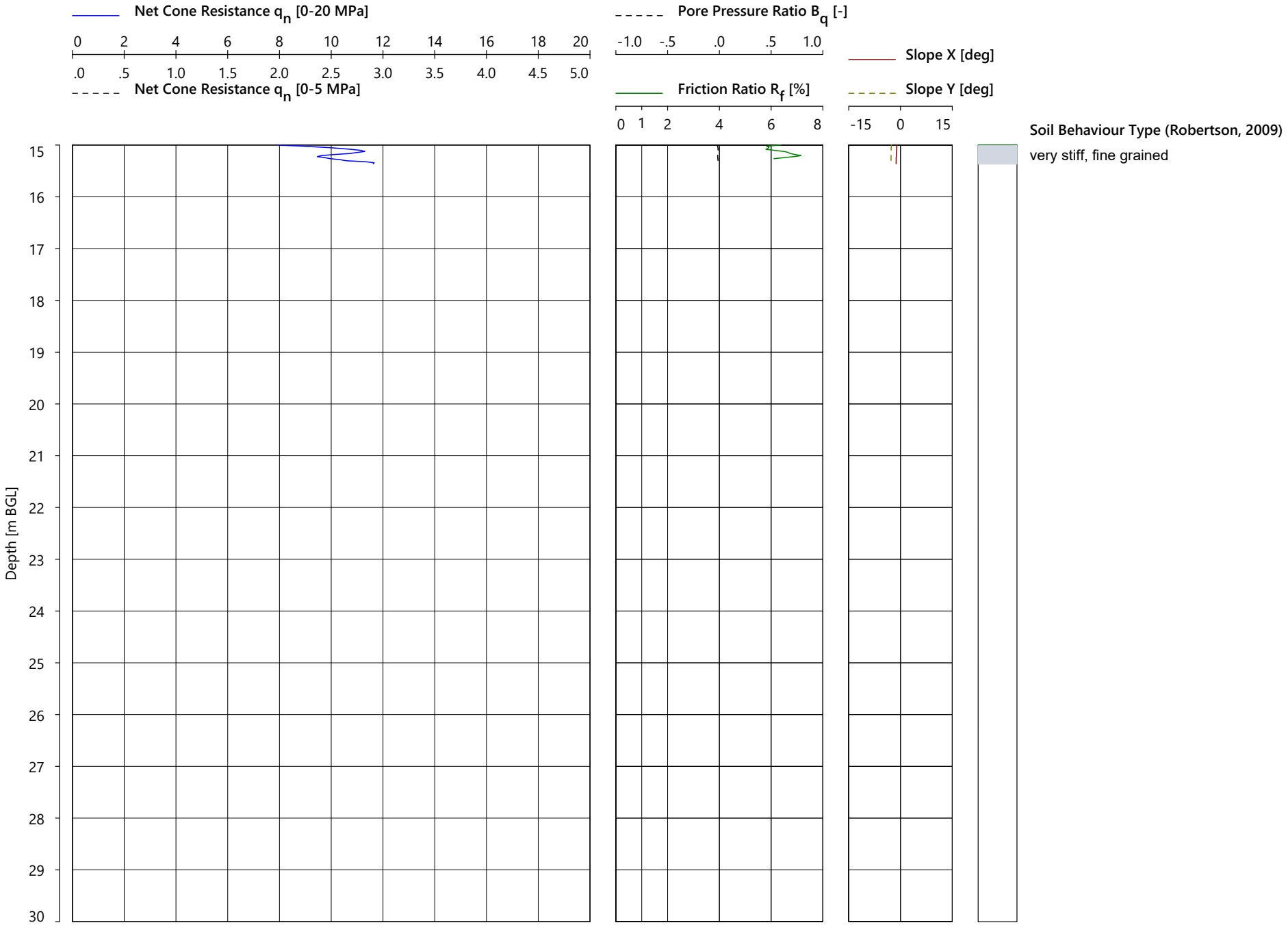
GEOVISUAL 3.8.1 / 02 derived.ucf / 2022-12-05 10:00:04



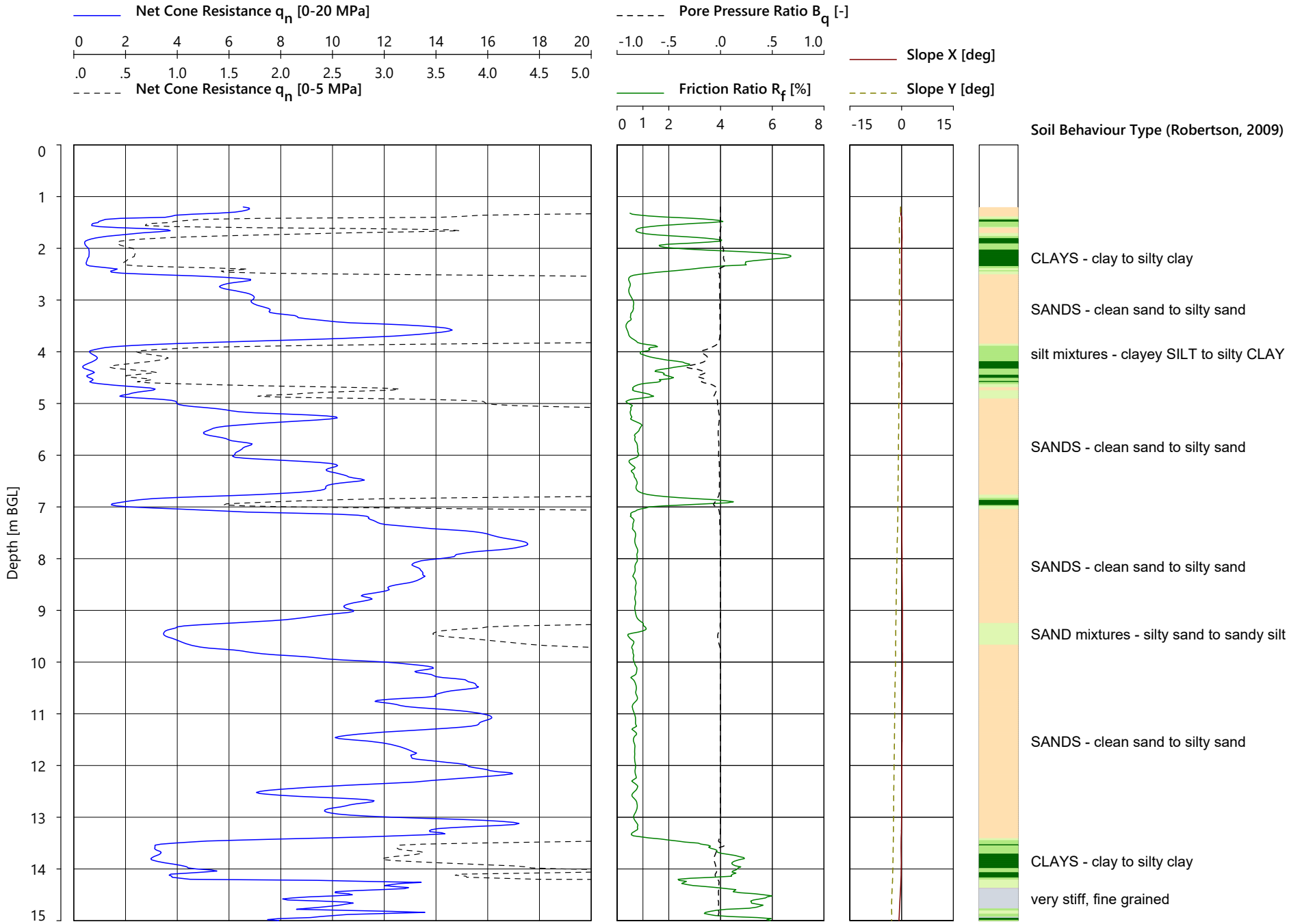
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	MS,HG
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	20-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT09
Coordinates : **E** 482923.40 **N** 411783.20 **Ground Level [m OD] :** +1.82
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



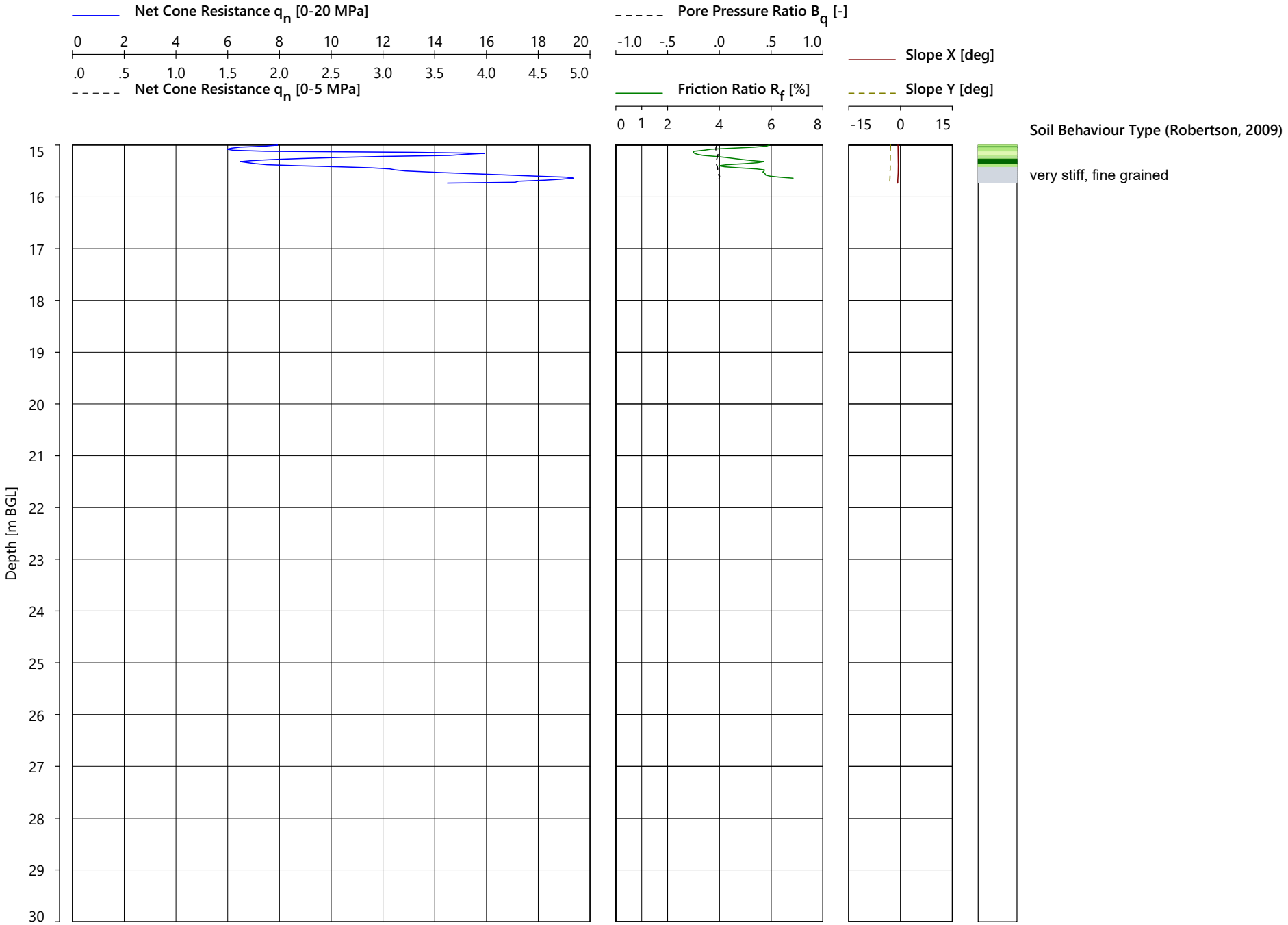
Piezocone Derived Data					
CPT Truck ID : GB17	**Stop Criterion :** max. penetration force		**Location :** HR-CPT09		
CPT Cone : 1701-3056	**Application Class / Type :** Class 2 / TE2	**Operator :** MS,HG	**Coordinates :** **E** 482923.40 **N** 411783.20	**Ground Level [m OD] :** +1.82	
Date of Test : 20-Oct-2022	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562		
	Assumed Water Level [m gl] : -1.0	**Checked by :** KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
			Client : SSE Generation Limited (SSE)		



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	MS,HG
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	20-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **HR-CPT10**
Coordinates : **E** 482848.05 **N** 411784.62 **Ground Level [m OD] :** +1.54
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	MS,HG
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	20-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT10

Coordinates : **E** 482848.05 **N** 411784.62 **Ground Level [m OD] :** +1.54

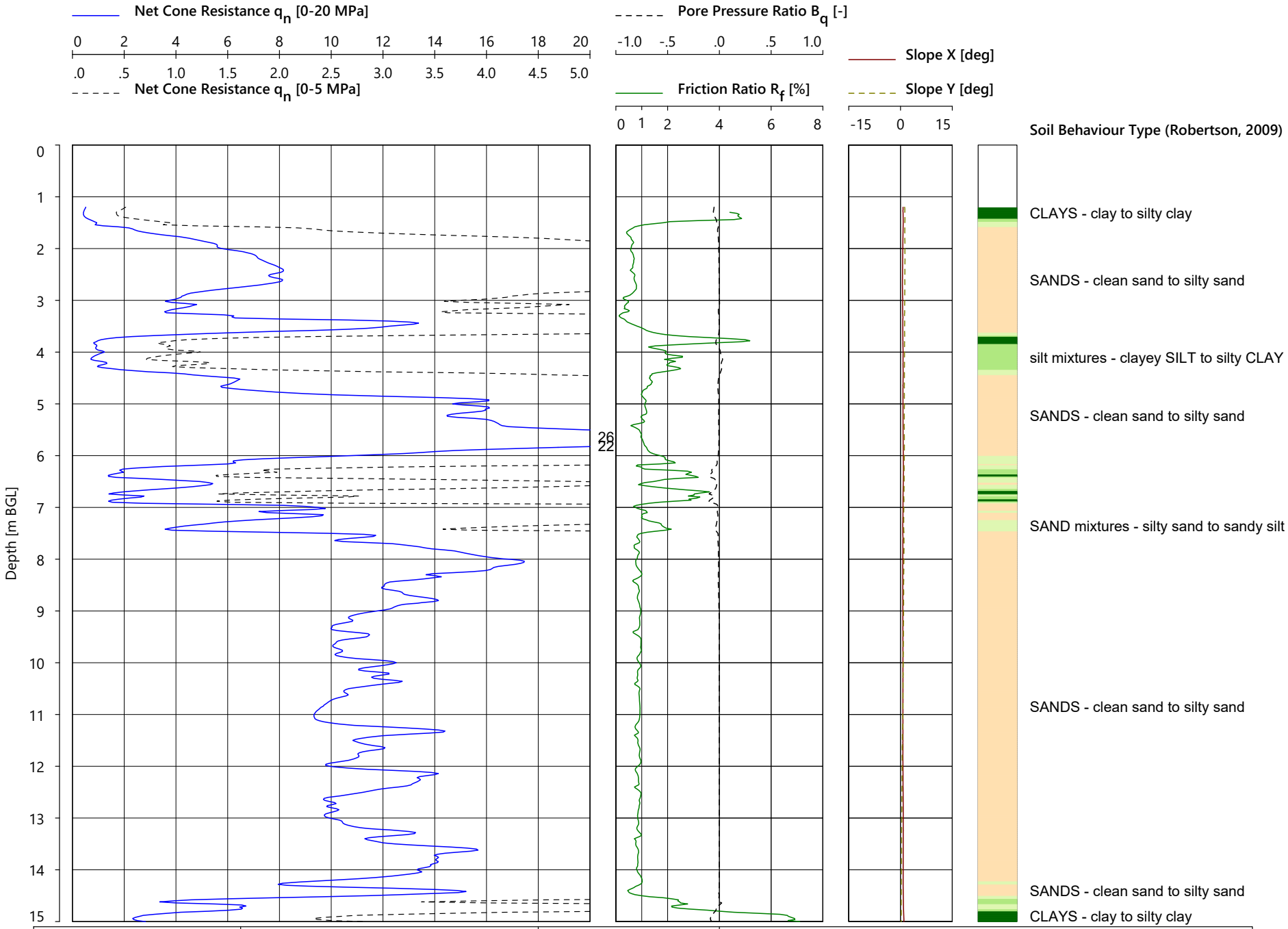
Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

Client : SSE Generation Limited (SSE)

FUGRO

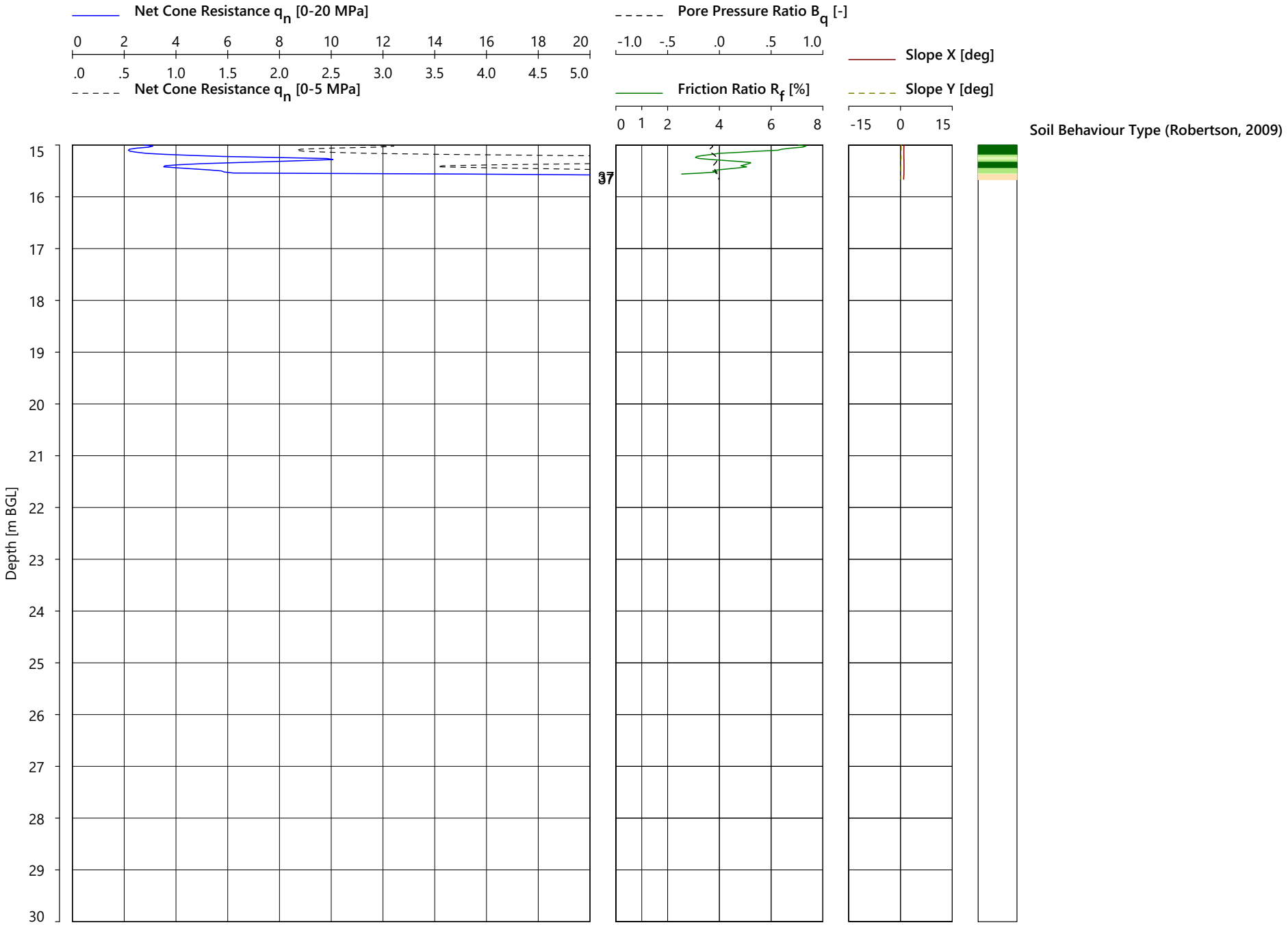
GEOVISUAL 3.8.1 / 02 derived.ucf / 2022-12-05 10:00:08



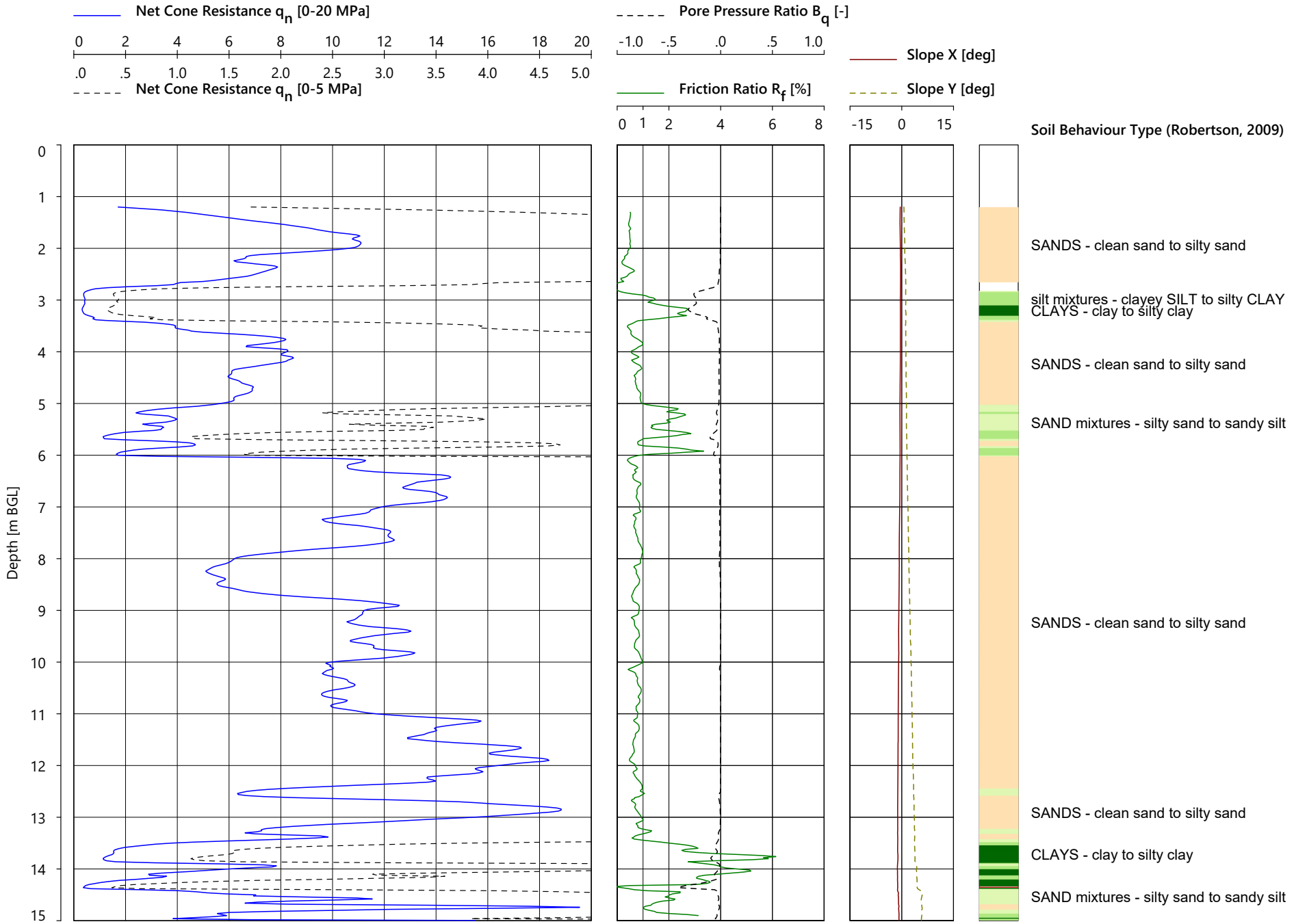
Piezocone Derived Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS
CPT Cone :	1701-3056	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	24-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : HR-CPT20
Coordinates : **E** 482040.79 **N** 411650.29 **Ground Level [m OD] :** +1.42
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



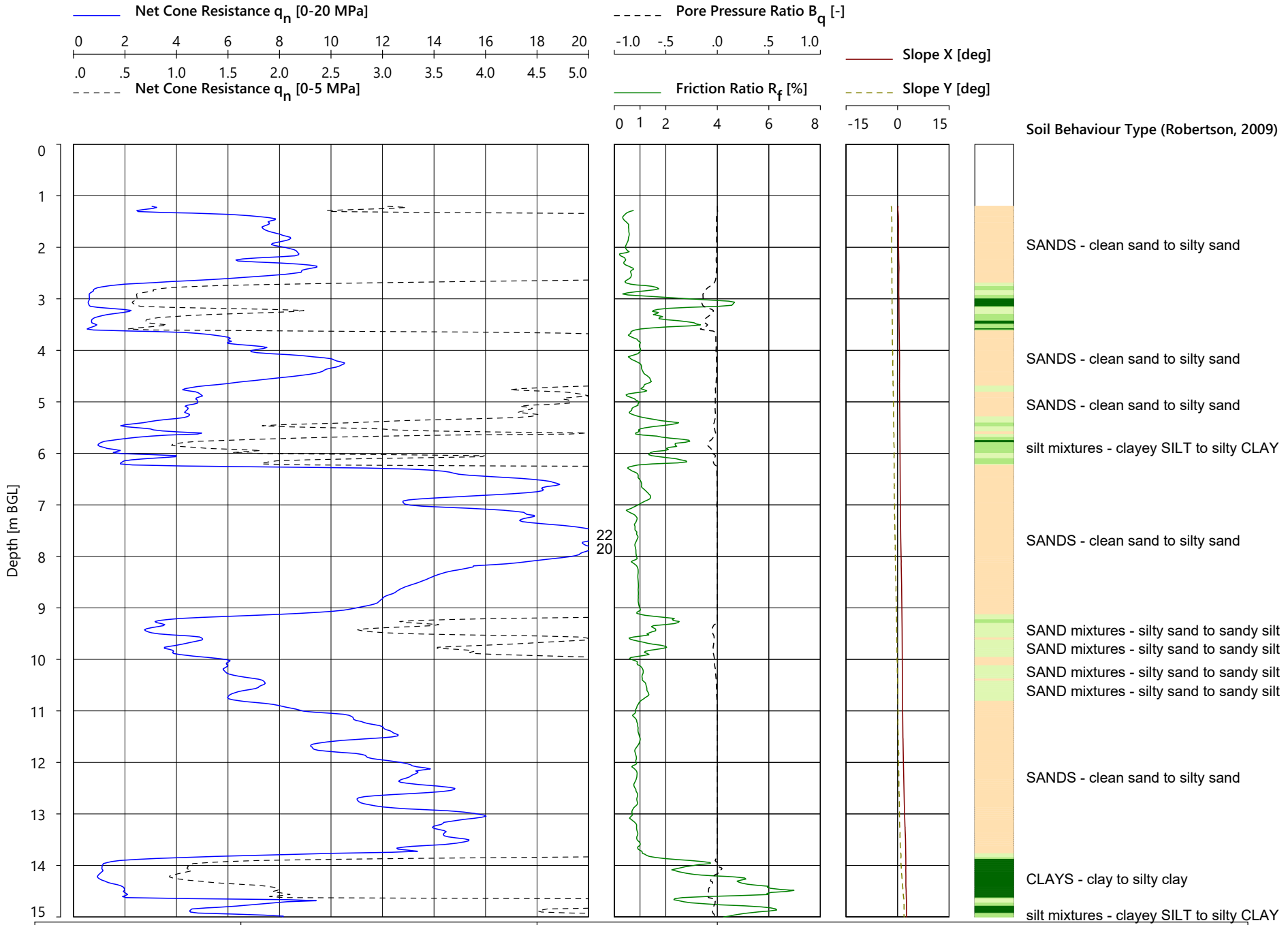
Piezocone Derived Data				Location : HR-CPT20	
CPT Truck ID : EU-115	Stop Criterion : max. penetration force	Operator : HG,MS		Coordinates : E 482040.79 N 411650.29	Ground Level [m OD] : +1.42
CPT Cone : 1701-3056	Application Class / Type : Class 2 / TE2	Compiled by : LCH		Project : 212562	
Date of Test : 24-Oct-2022	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Checked by : KES			F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
	Assumed Water Level [m gl] : -1.0			Client :	SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT01
Coordinates : **E** 481841.71 **N** 412130.80 **Ground Level [m OD] :** +0.29
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data

CPT Truck ID :	GB17
CPT Cone :	1701-3474
Date of Test :	28-Sep-2022

Stop Criterion :	end depth reached
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0

Operator :	NF
Compiled by :	LCH
Checked by :	KES

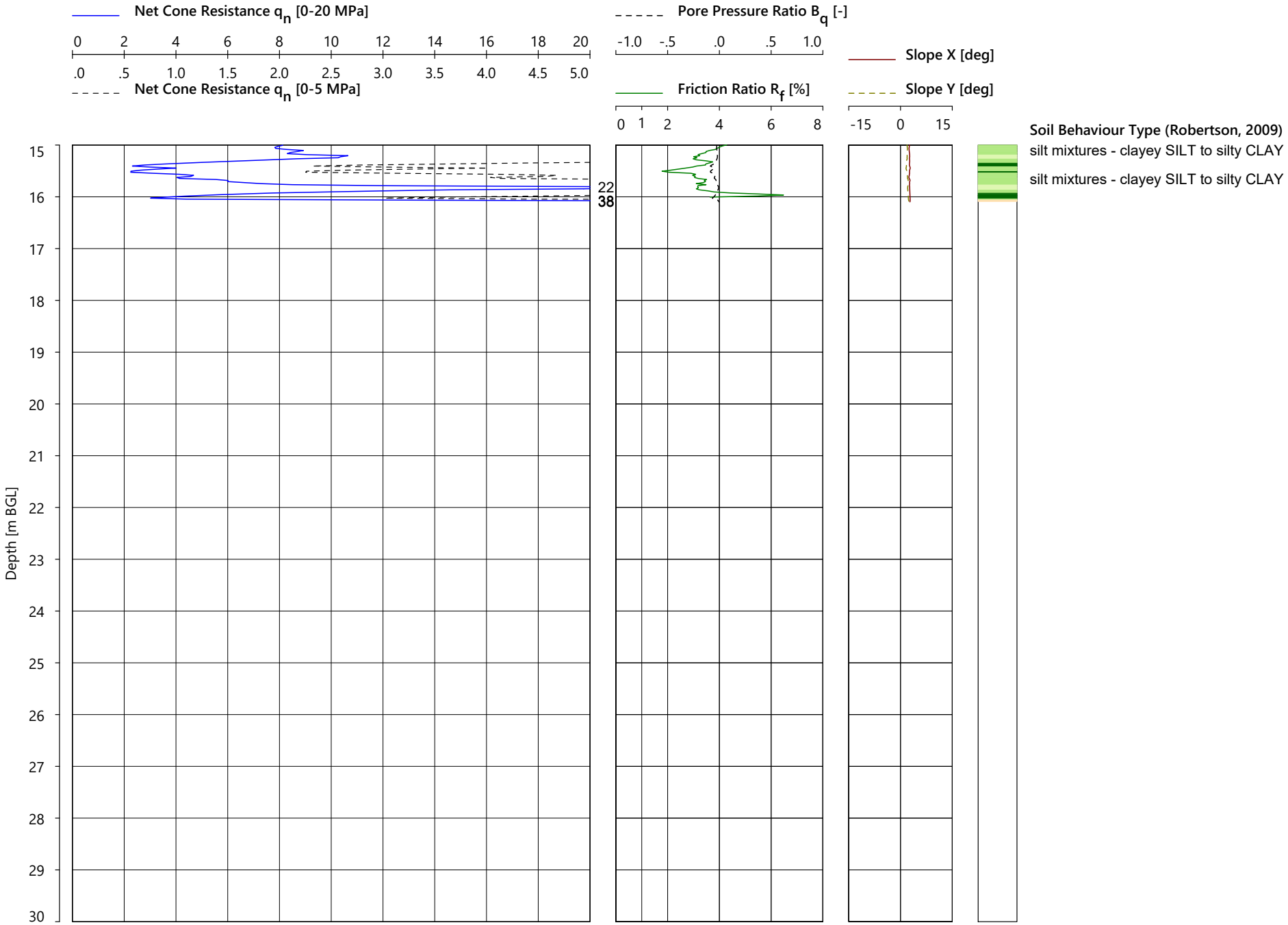
Location : **MS-CPT02**

Coordinates : **E** 481917.79 **N** 412126.69 **Ground Level [m OD] :** +0.40

Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

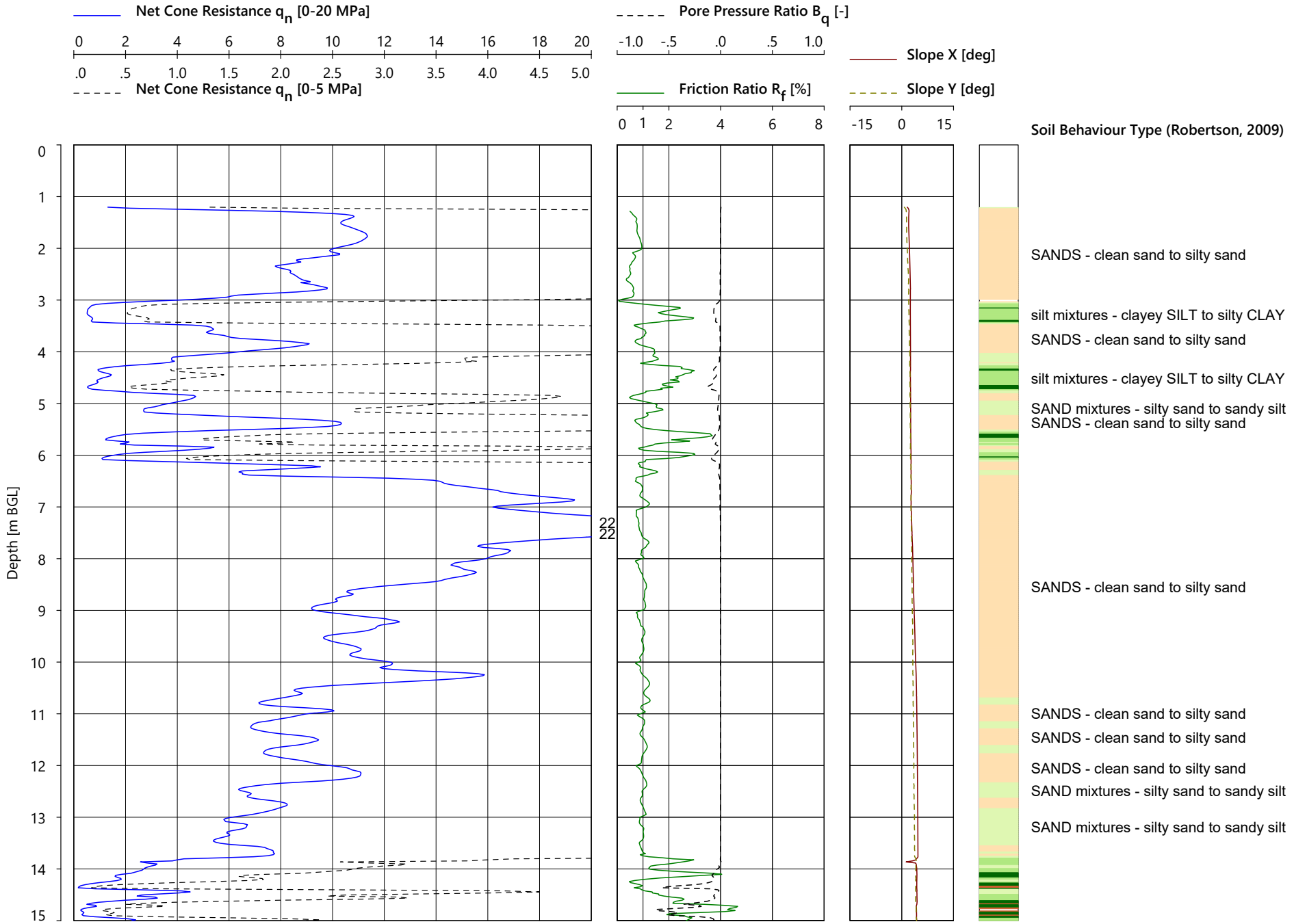
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT02
Coordinates : **E** 481917.79 **N** 412126.69 **Ground Level [m OD] :** +0.40
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

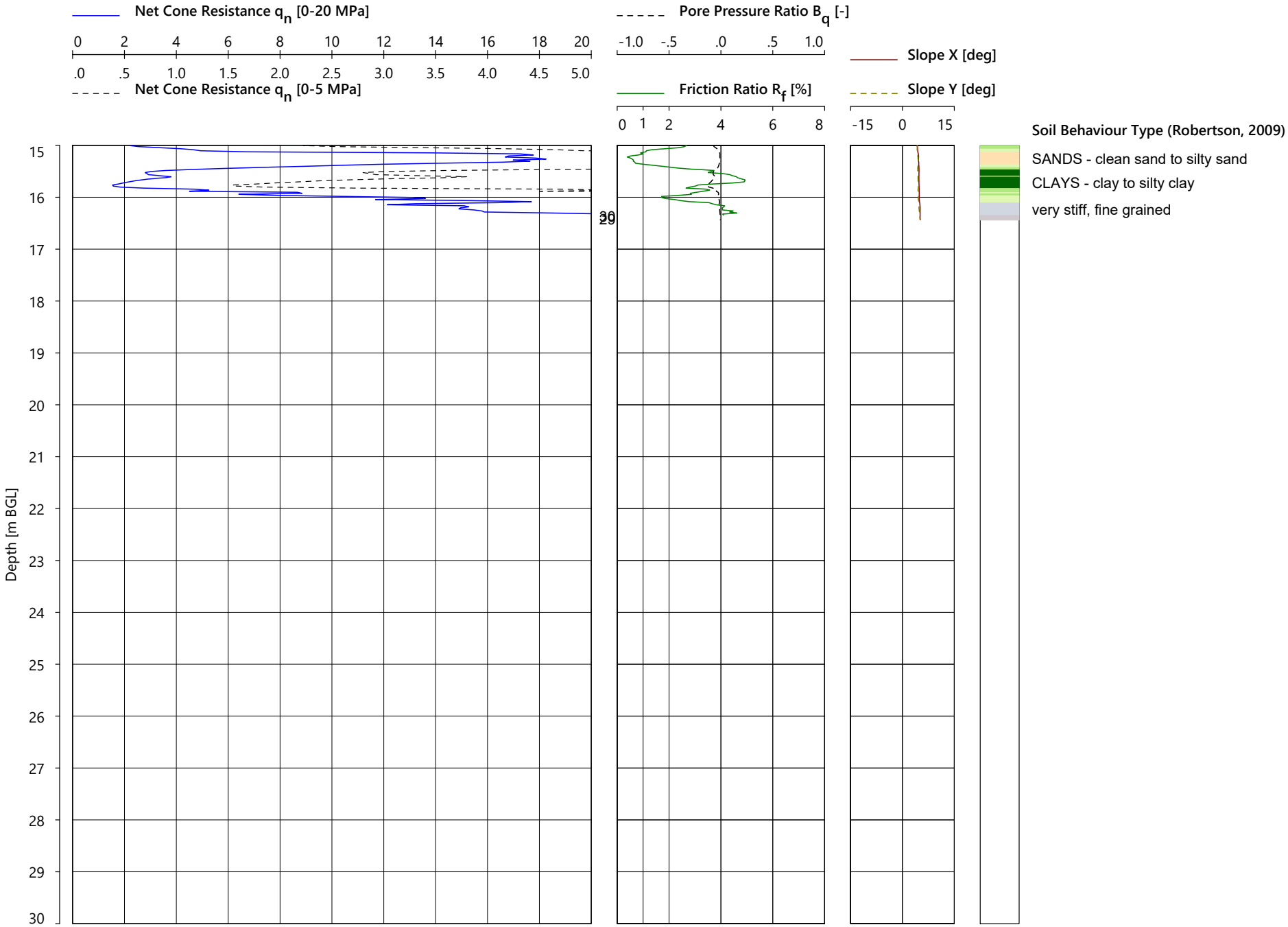
FUGRO



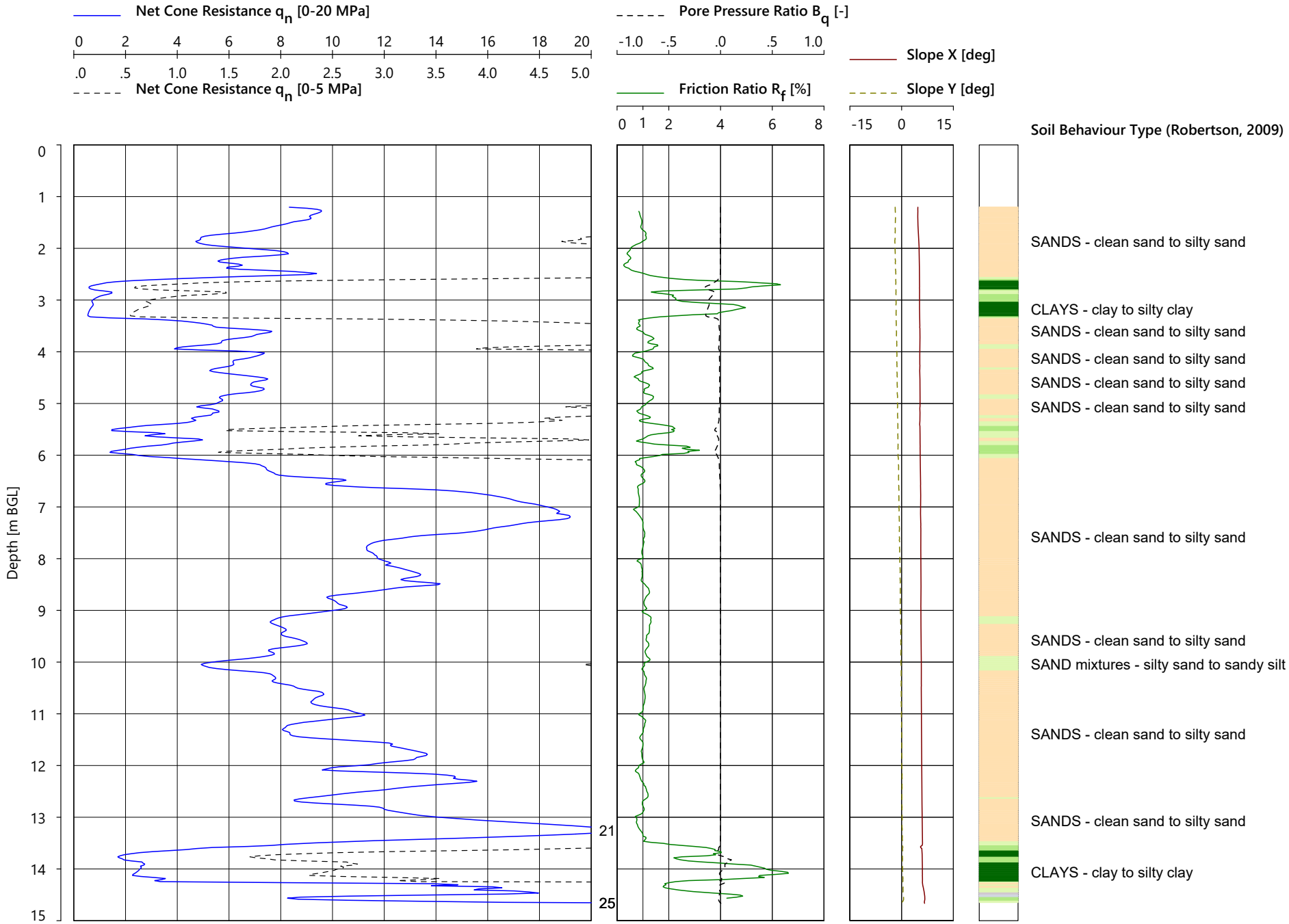
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT03
Coordinates : **E** 482030.81 **N** 412128.35 **Ground Level [m OD] :** +0.21
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO

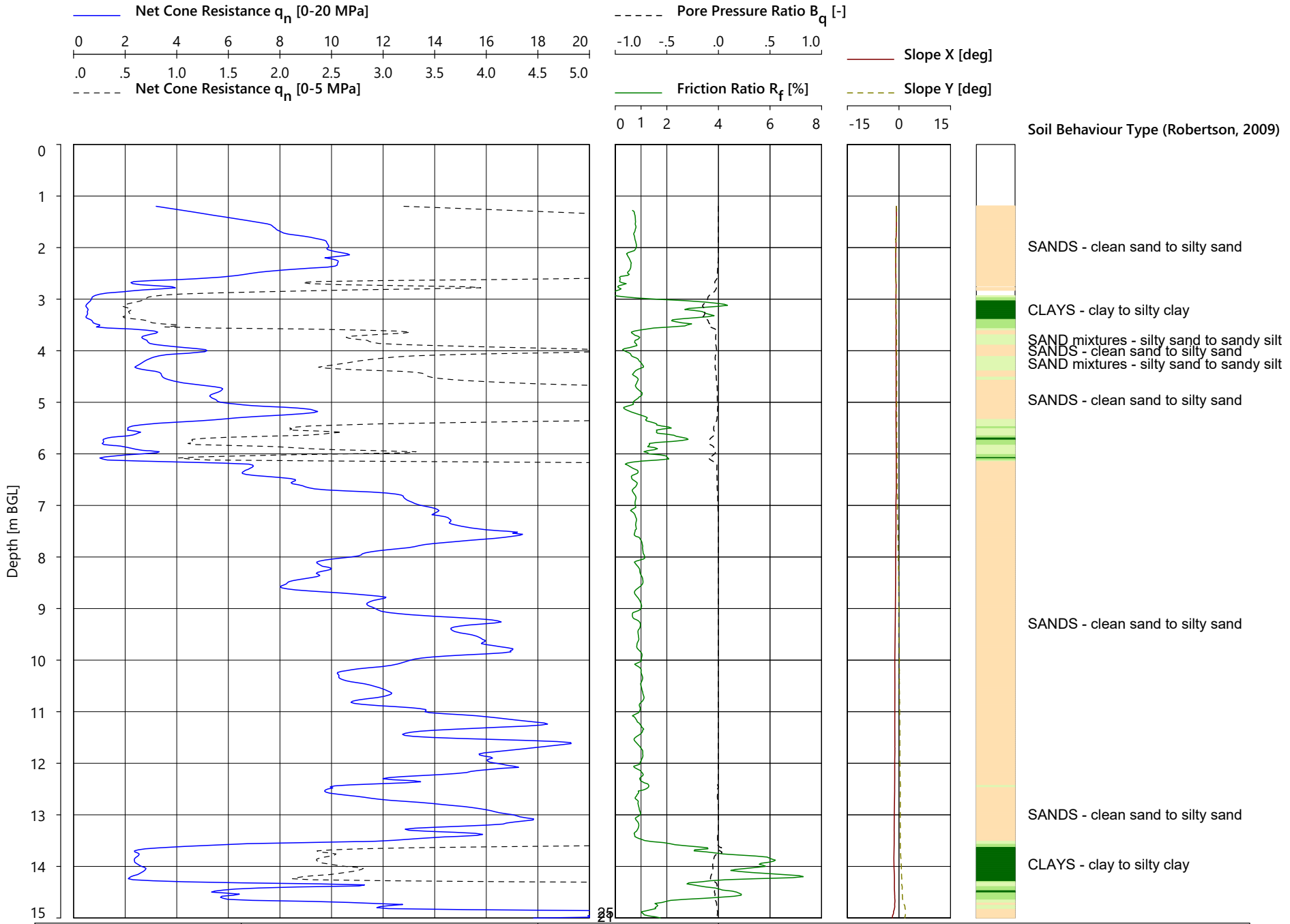


Piezocone Derived Data				Location :	MS-CPT03
	Stop Criterion : end depth reached			Coordinates :	E 482030.81 N 412128.35 Ground Level [m OD] : +0.21
CPT Truck ID : GB17	Application Class / Type : Class 2 / TE2	Operator :	NF	Project :	212562
CPT Cone : 1701-3474	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Compiled by :	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Date of Test : 28-Sep-2022	Assumed Water Level [m gl] : -1.0	Checked by :	KES	Client :	SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

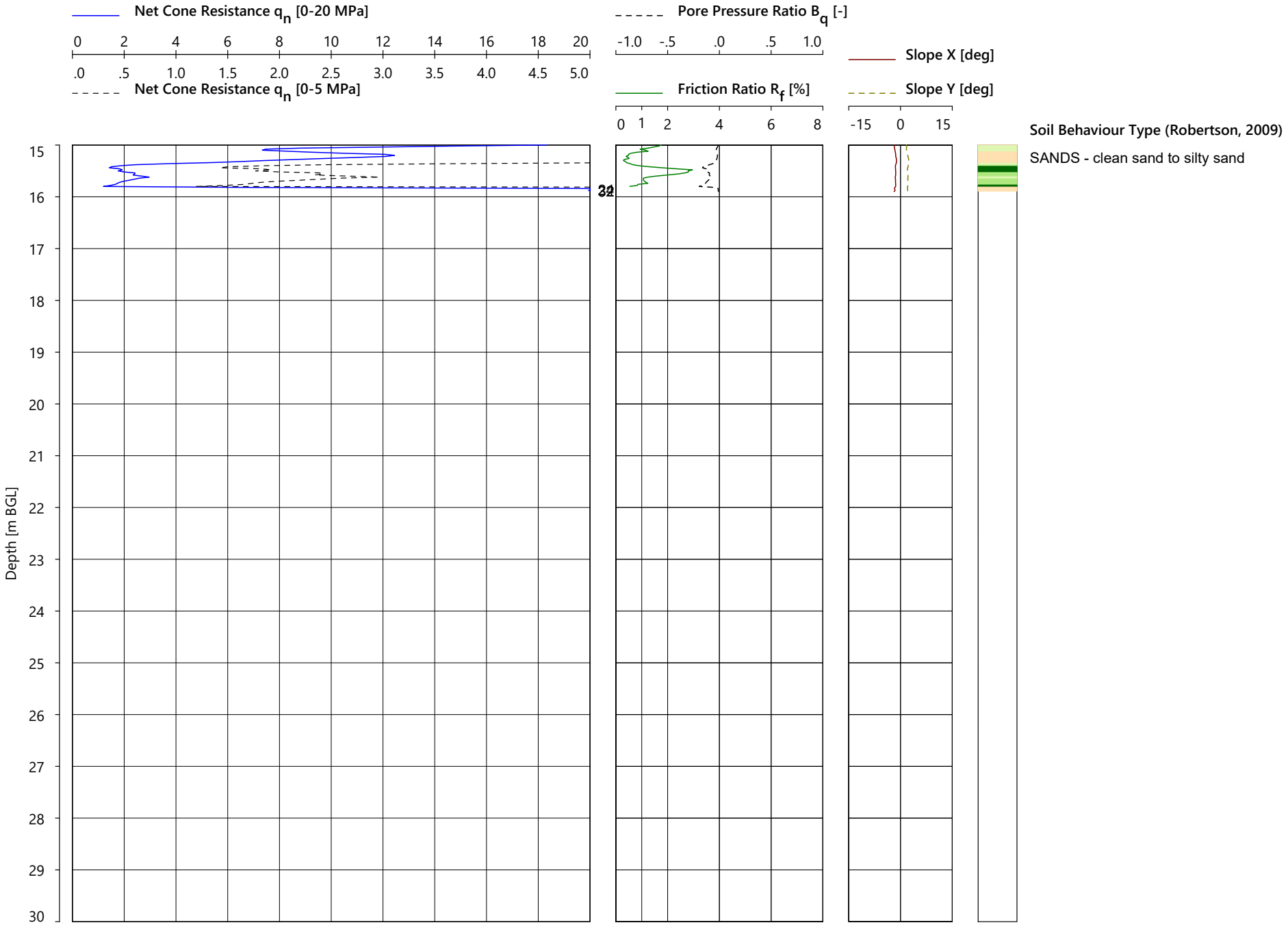
Location : MS-CPT04
Coordinates : **E** 482130.74 **N** 412122.98 **Ground Level [m OD] :** +0.52
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



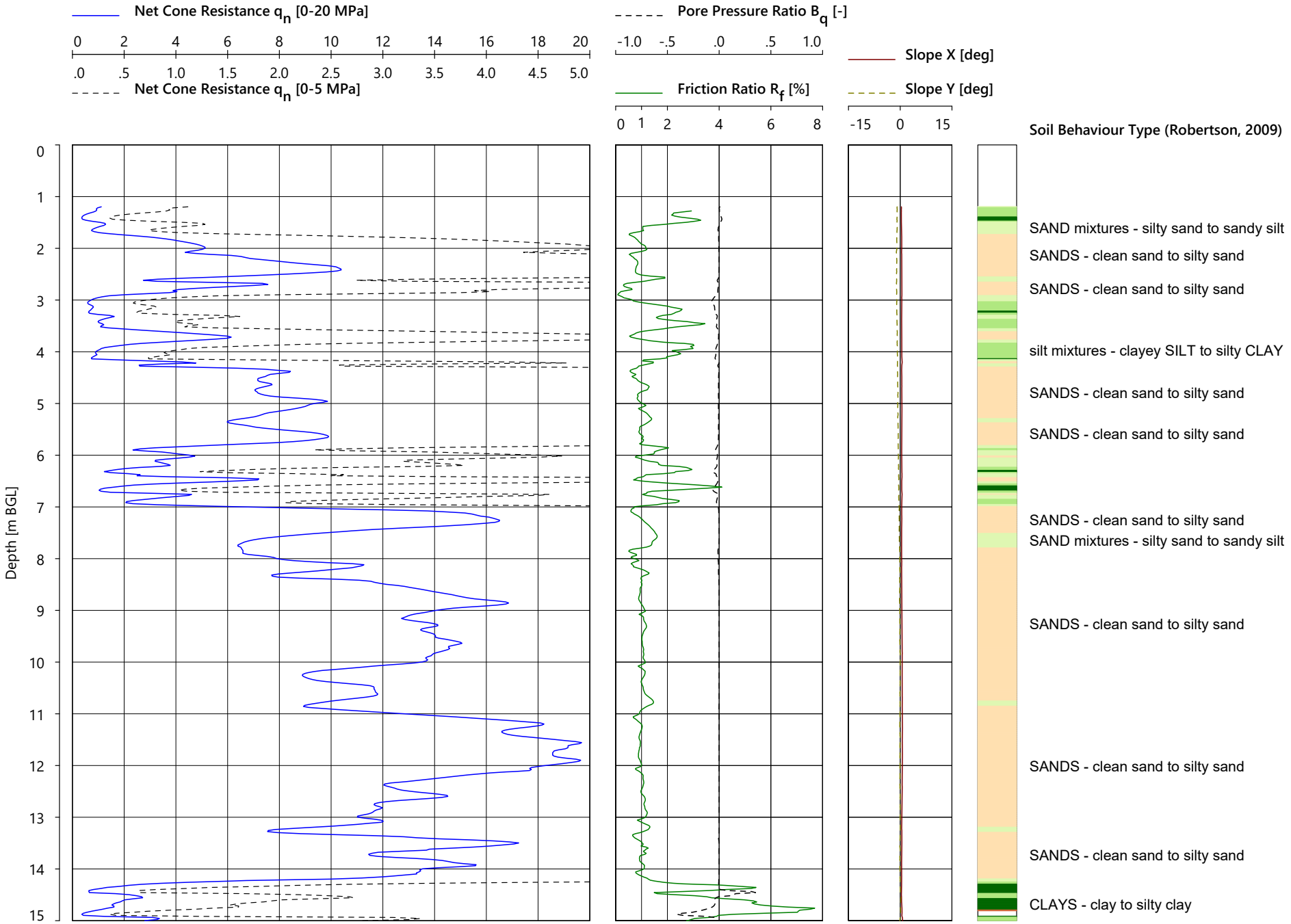
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT05
Coordinates : **E** 481829.72 **N** 412089.45 **Ground Level [m OD] :** +0.33
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



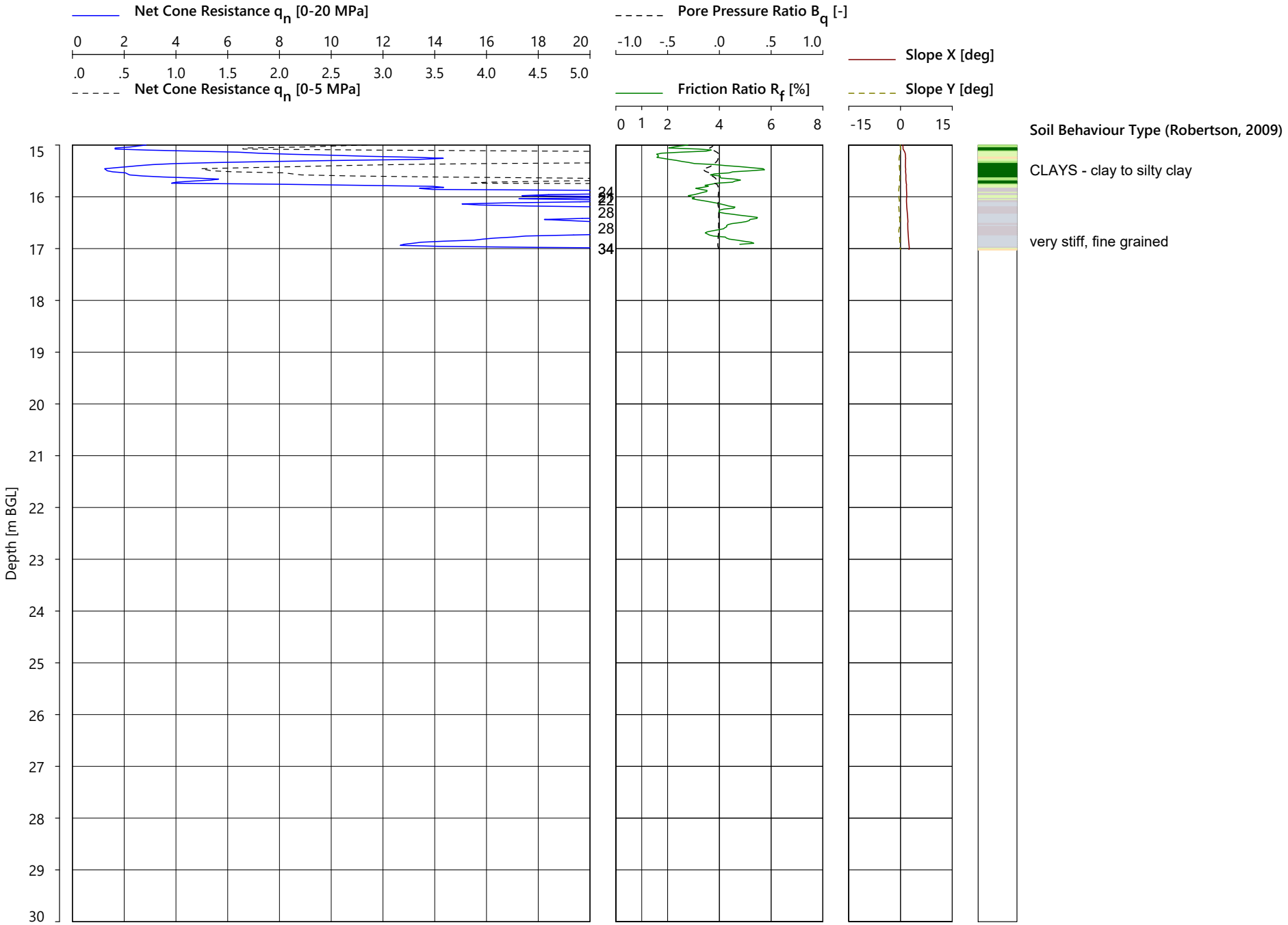
Piezocone Derived Data				Location :	MS-CPT05		
CPT Truck ID : GB17	Stop Criterion : end depth reached			Coordinates :	E 481829.72 N 412089.45	Ground Level [m OD] : +0.33	
CPT Cone : 1701-3474	Application Class / Type : Class 2 / TE2	Operator : NF		Project :	212562		
Date of Test : 28-Sep-2022	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Compiled by : LCH			F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
	Assumed Water Level [m gl] : -1.0	Checked by : KES		Client :	SSE Generation Limited (SSE)		



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

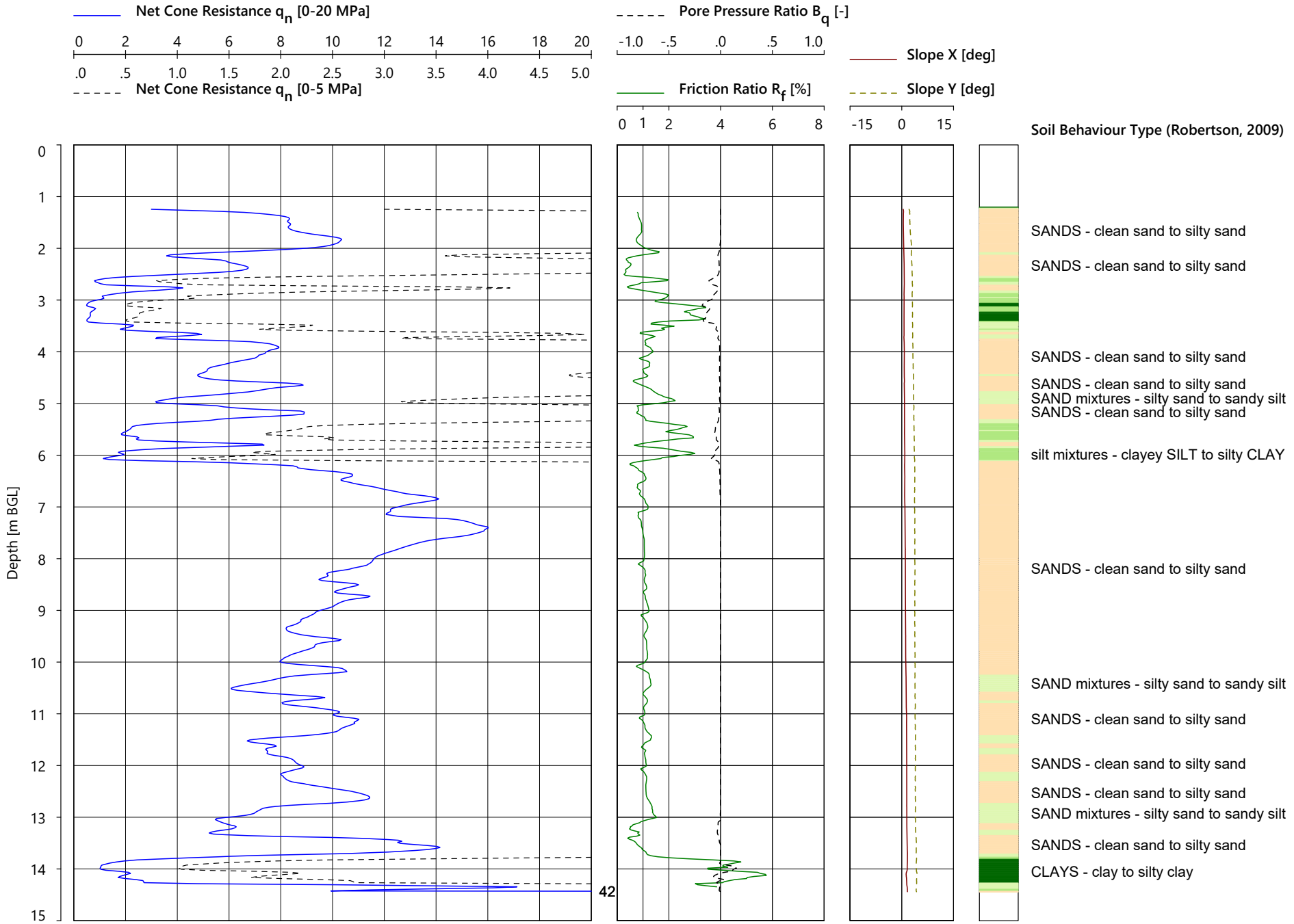
Location : MS-CPT06
Coordinates : **E** 481918.67 **N** 412089.67 **Ground Level [m OD] :** +0.70
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

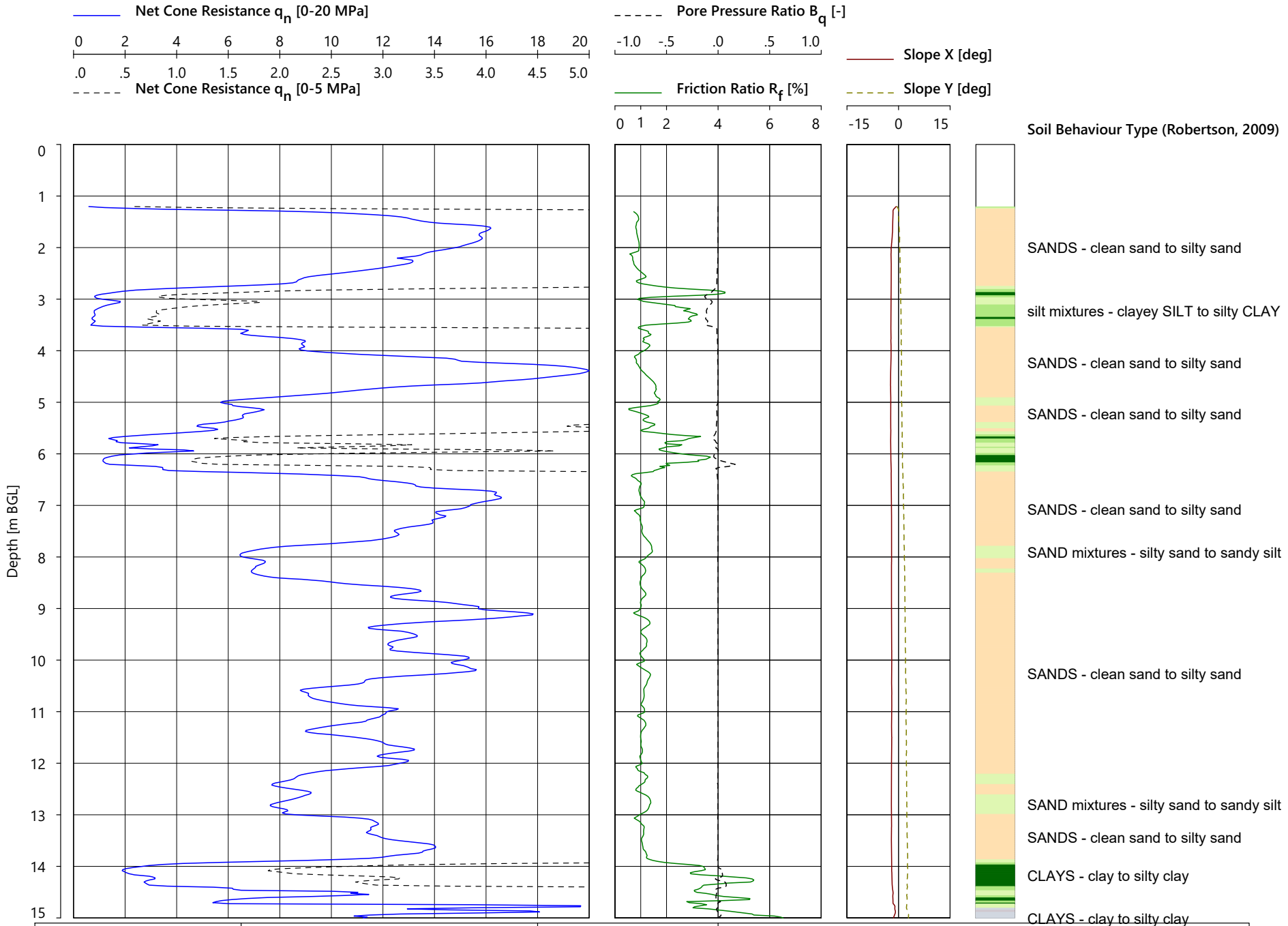
Location : MS-CPT06
Coordinates : **E** 481918.67 **N** 412089.67 **Ground Level [m OD] :** +0.70
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT07
Coordinates : **E** 482070.93 **N** 412089.33 **Ground Level [m OD] :** +0.68
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

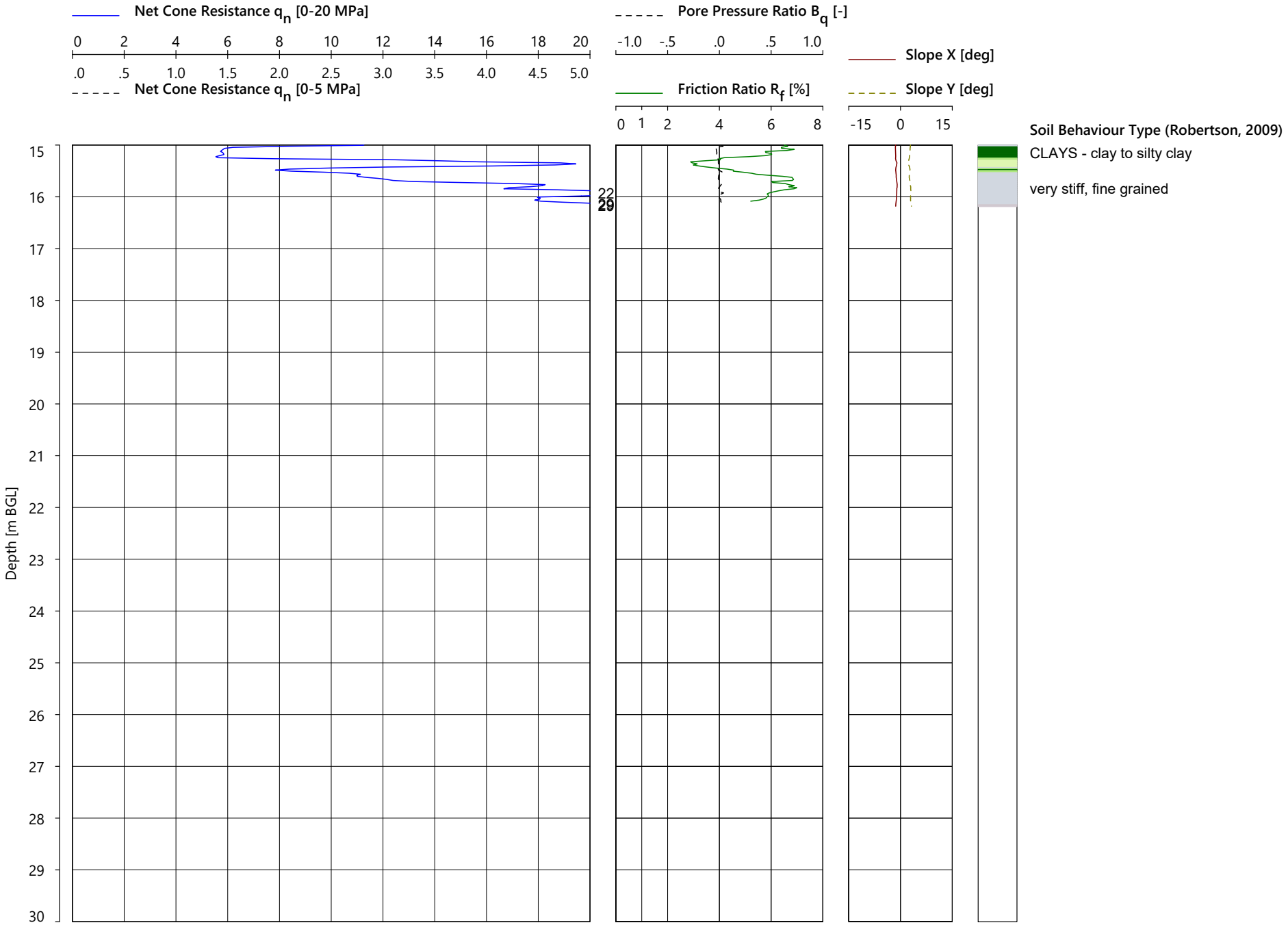
FUGRO



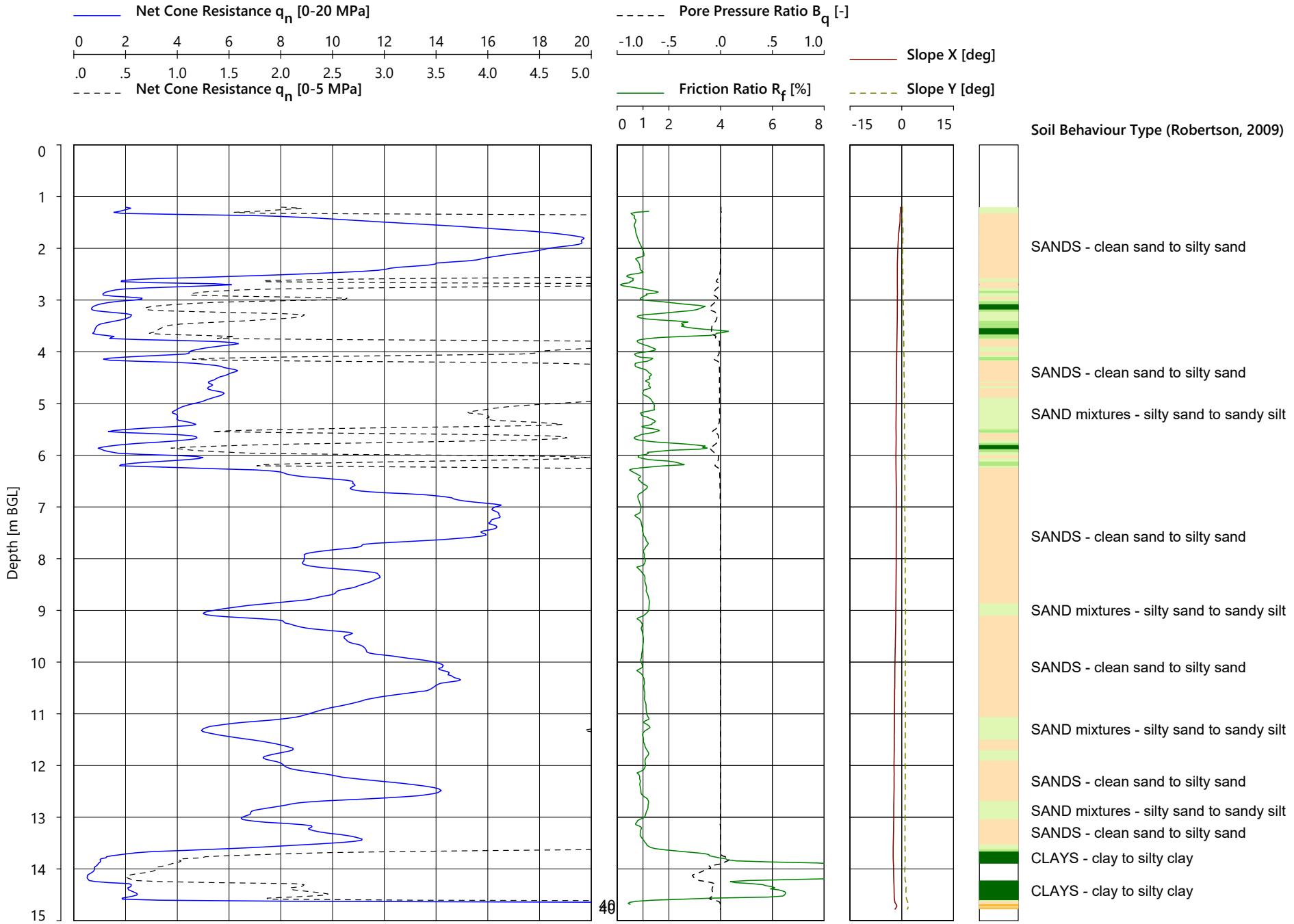
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT08
Coordinates : **E** 482128.44 **N** 412073.17 **Ground Level [m OD] :** +0.65
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO

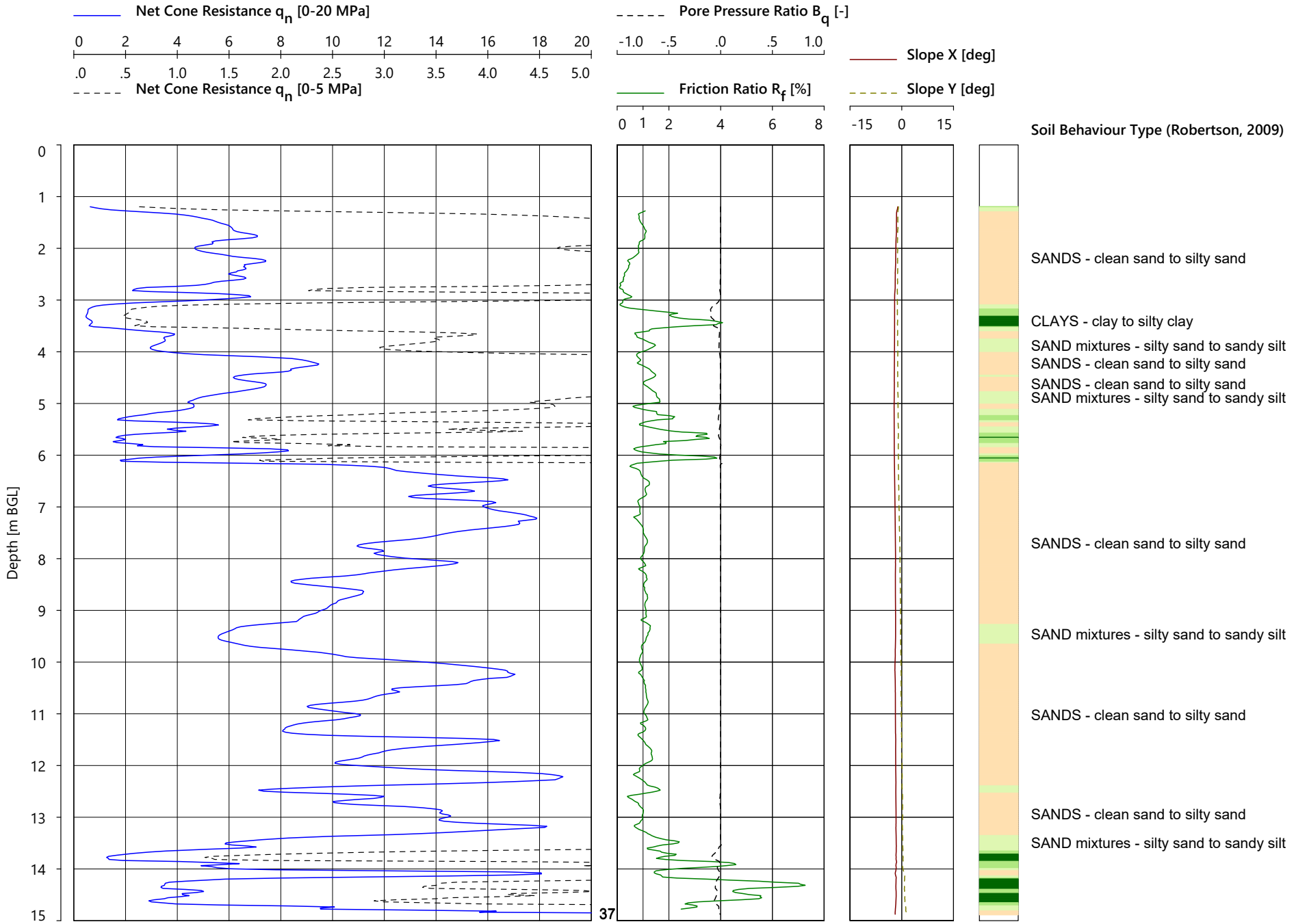


Piezocone Derived Data					
CPT Truck ID : GB17	**Stop Criterion :** end depth reached		**Location :**	**MS-CPT08**	
CPT Cone : 1701-3474	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :**	**E** 482128.44 **N** 412073.17	**Ground Level [m OD] :** +0.65
Date of Test : 28-Sep-2022	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :**	212562	
	Assumed Water Level [m gl] : -1.0	**Checked by :** KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
			Client :	SSE Generation Limited (SSE)	



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

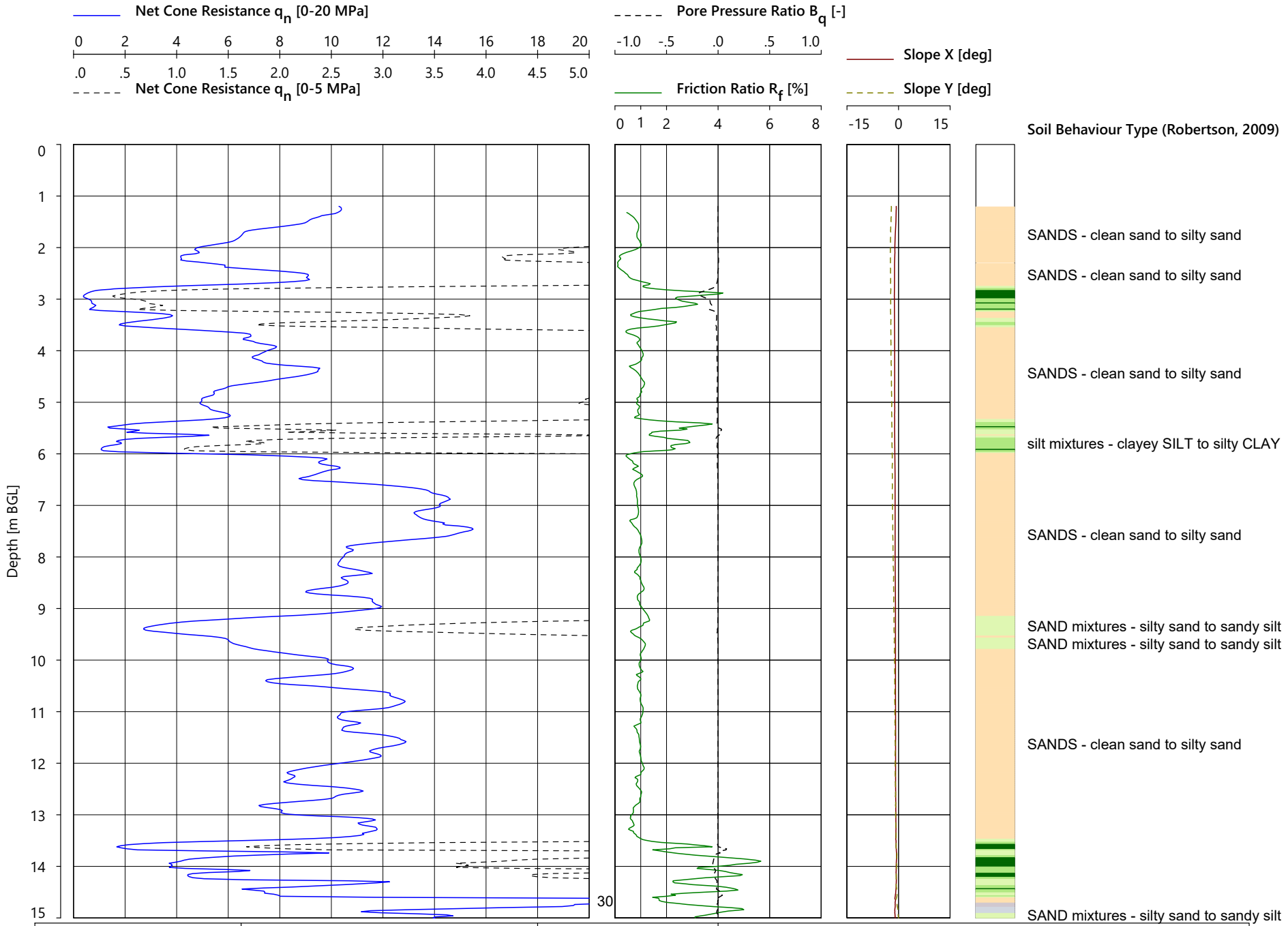
Location : MS-CPT09
Coordinates : **E** 481825.75 **N** 412039.48 **Ground Level [m OD] :** +0.51
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	28-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT10
Coordinates : **E** 481910.37 **N** 412029.00 **Ground Level [m OD] :** +0.36
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data

CPT Truck ID :	GB17
CPT Cone :	1701-3474
Date of Test :	29-Sep-2022
Stop Criterion :	end depth reached
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0
Operator :	NF
Compiled by :	LCH
Checked by :	KES

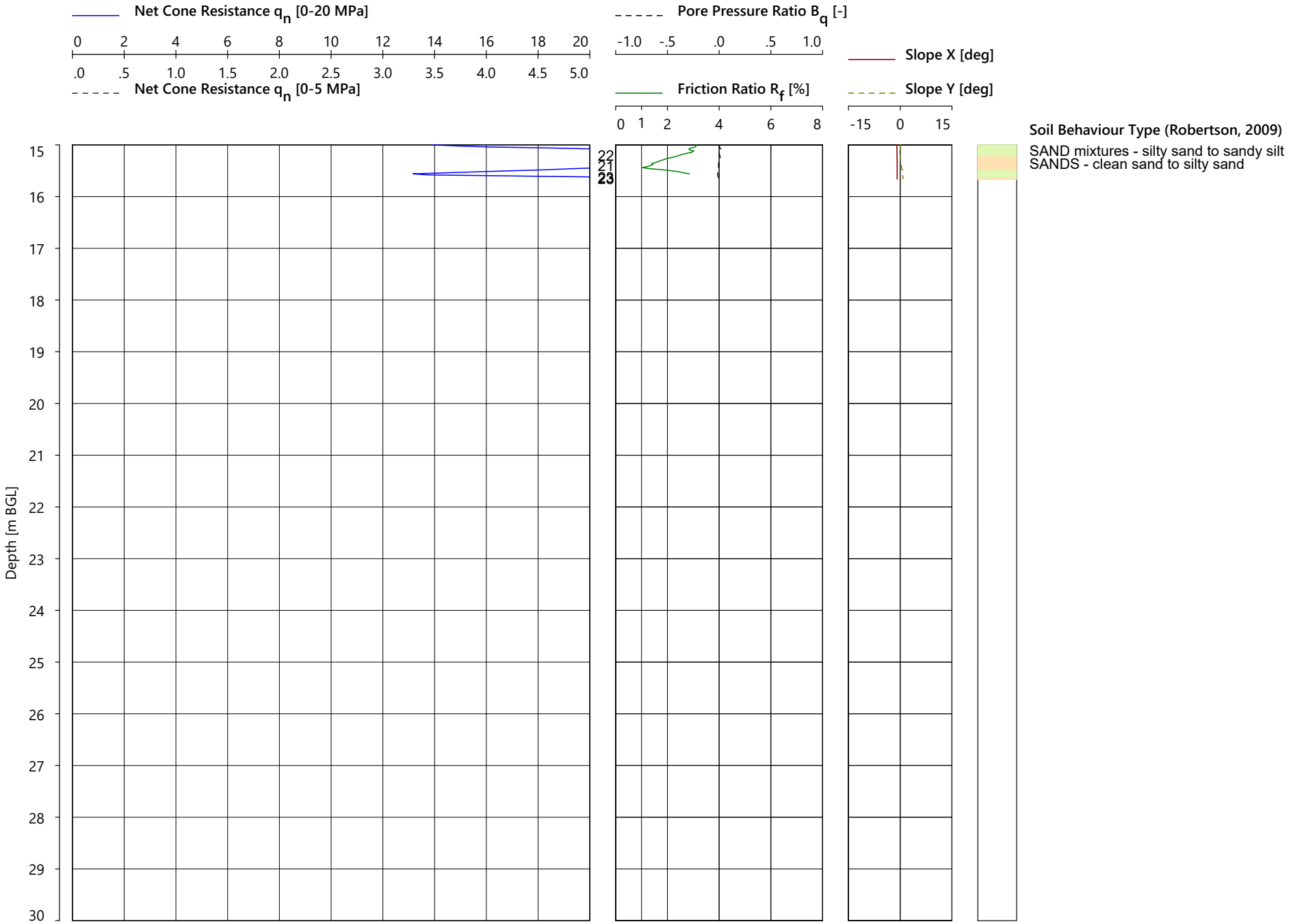
Location : **MS-CPT11**

Coordinates : **E** 482031.79 **N** 412038.38 **Ground Level [m OD] :** +0.62

Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

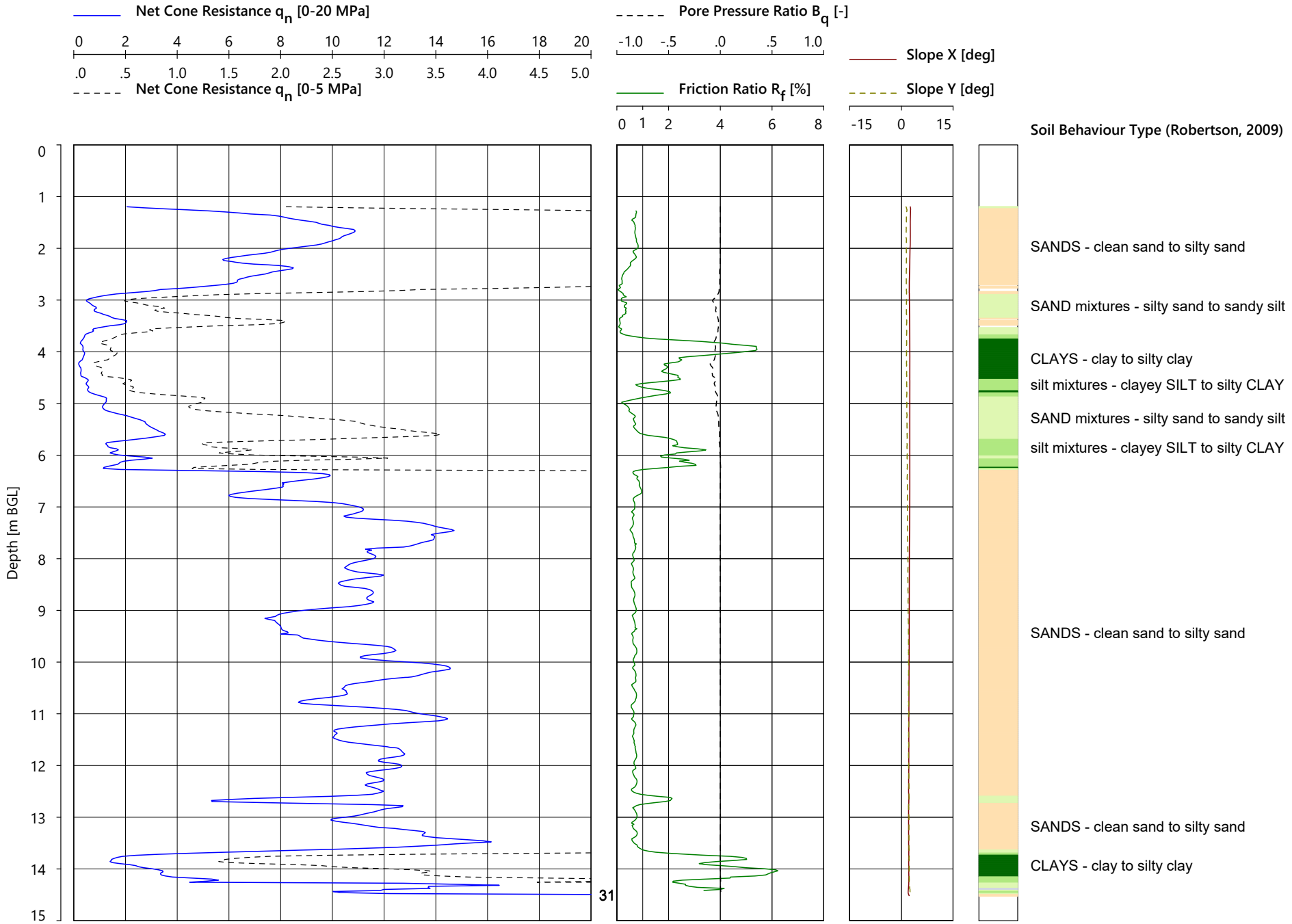
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT11
Coordinates : **E** 482031.79 **N** 412038.38 **Ground Level [m OD] :** +0.62
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

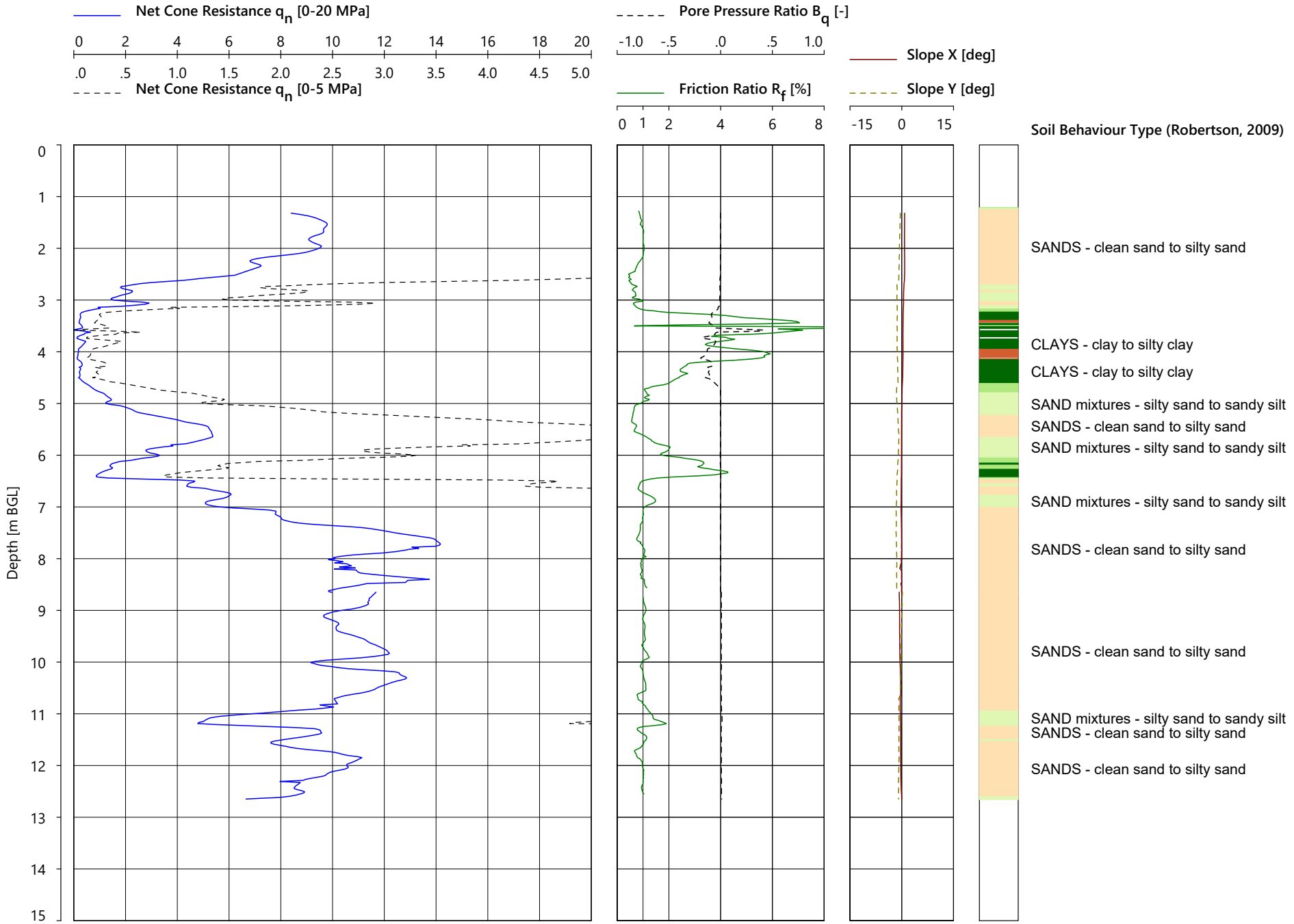
FUGRO



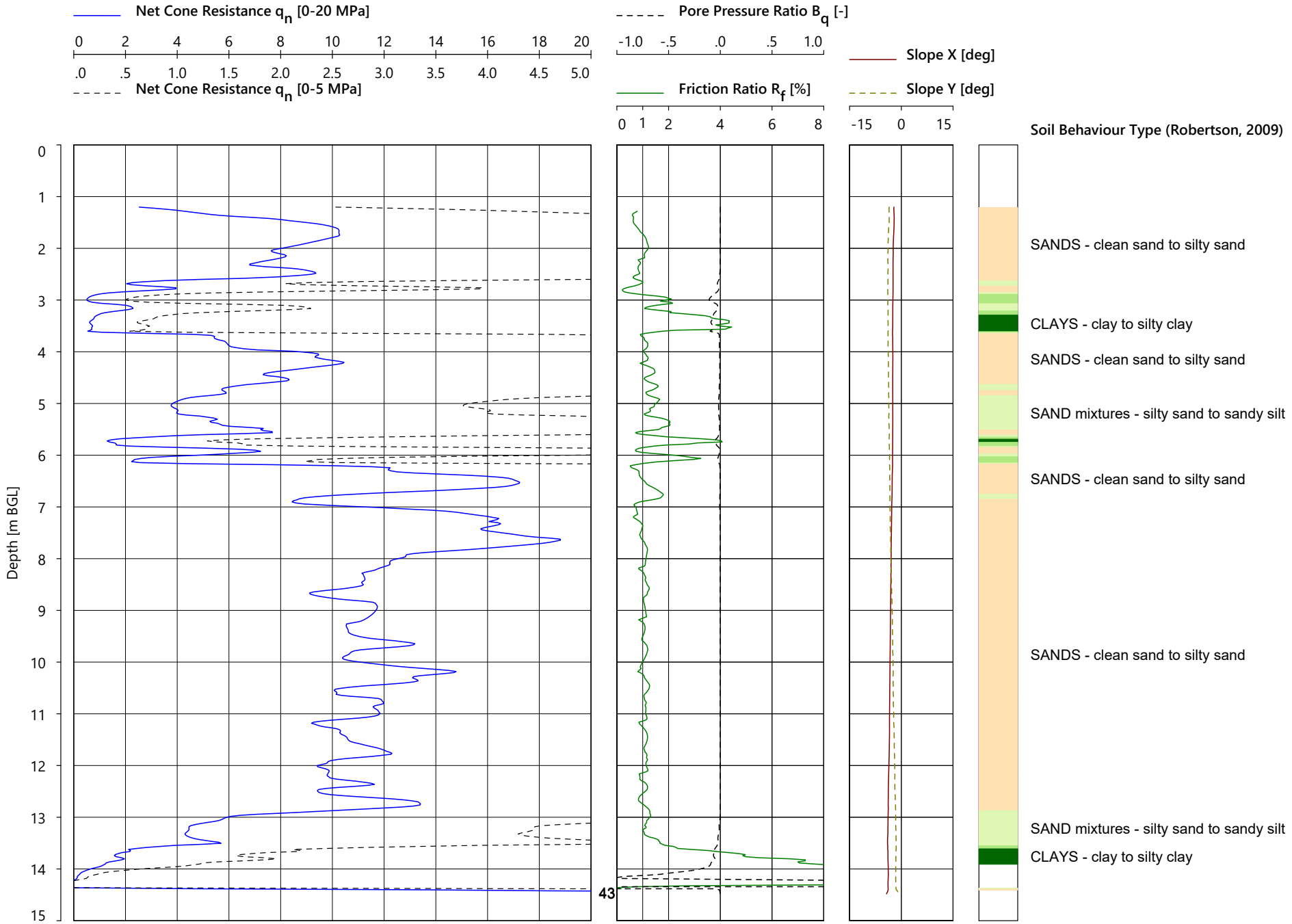
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS
CPT Cone :	1701-3469	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	04-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-SCPT12
Coordinates : **E** 482117.30 **N** 412008.50 **Ground Level [m OD] :** +0.85
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



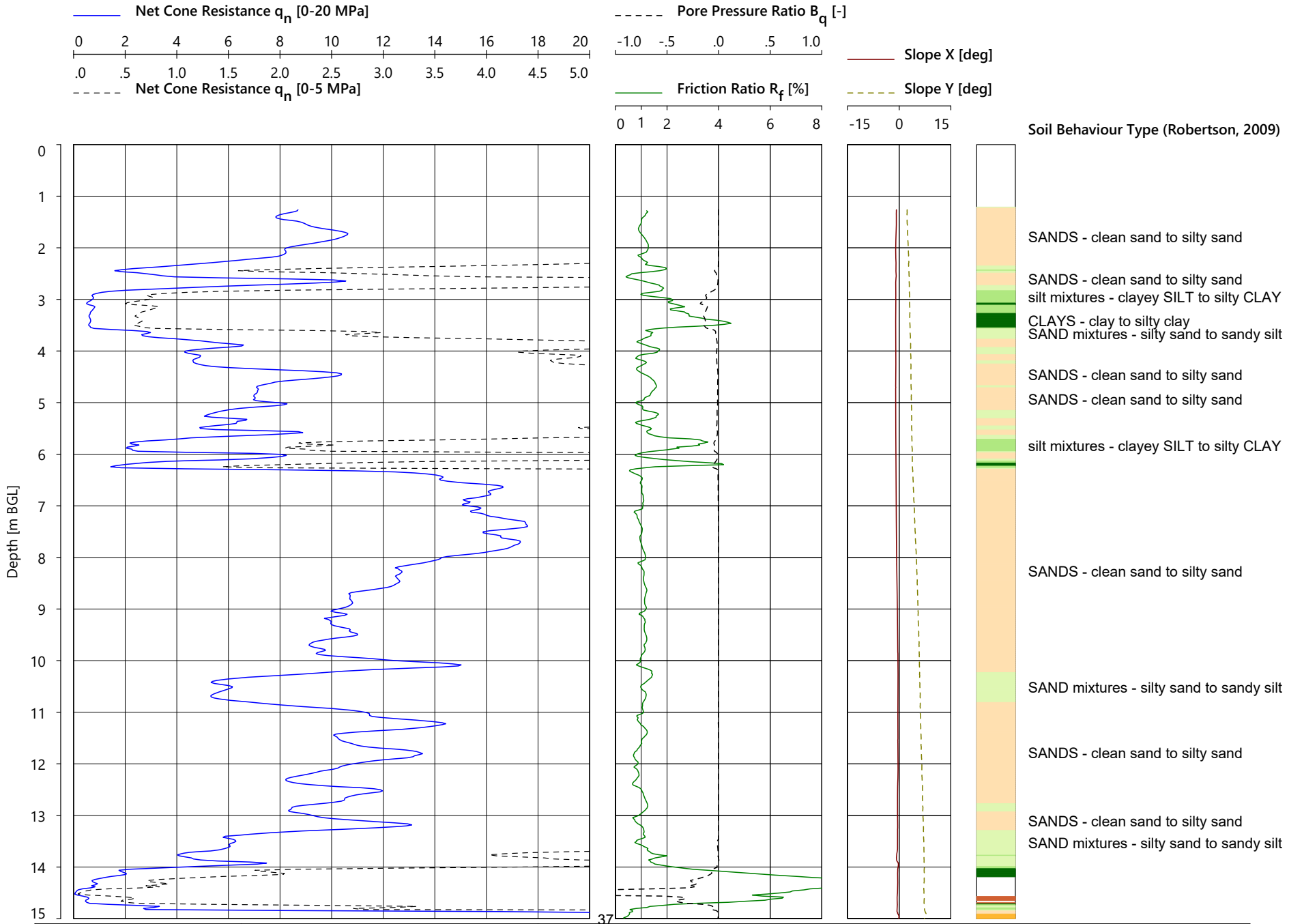
Piezocone Derived Data						Location :	Push 1		
CPT Truck ID :	GB17	Stop Criterion :	other	Operator :	HG,MS	Coordinates :	E 482118.30	N 412008.50	Ground Level [m OD] : +0.85
CPT Cone :	1701-3474	Application Class / Type :	Class 2 / TE2	Compiled by :	LCH	Project :	212562		
Date of Test :	10-Oct-2022	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Checked by :	KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
		Assumed Water Level [m gl] :	-1.0			Client :	SSE Generation Limited (SSE)		



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT13
Coordinates : **E** 481823.05 **N** 411989.59 **Ground Level [m OD] :** +0.73
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data

CPT Truck ID :	GB17
CPT Cone :	1701-3474
Date of Test :	29-Sep-2022
Stop Criterion :	end depth reached
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0
Operator :	NF
Compiled by :	LCH
Checked by :	KES

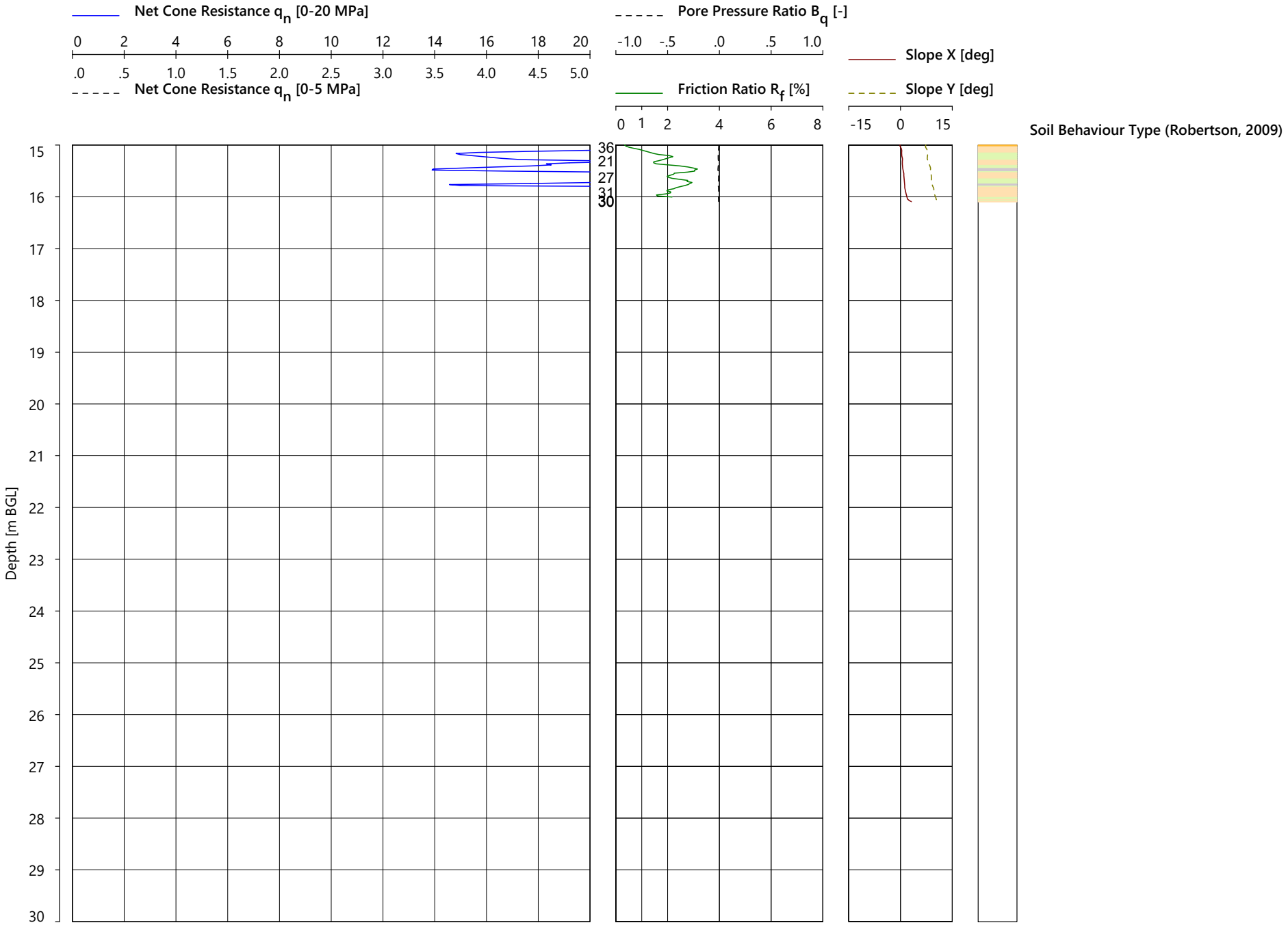
Location : MS-CPT14

Coordinates : **E** 481942.85 **N** 411983.42 **Ground Level [m OD] :** +0.81

Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

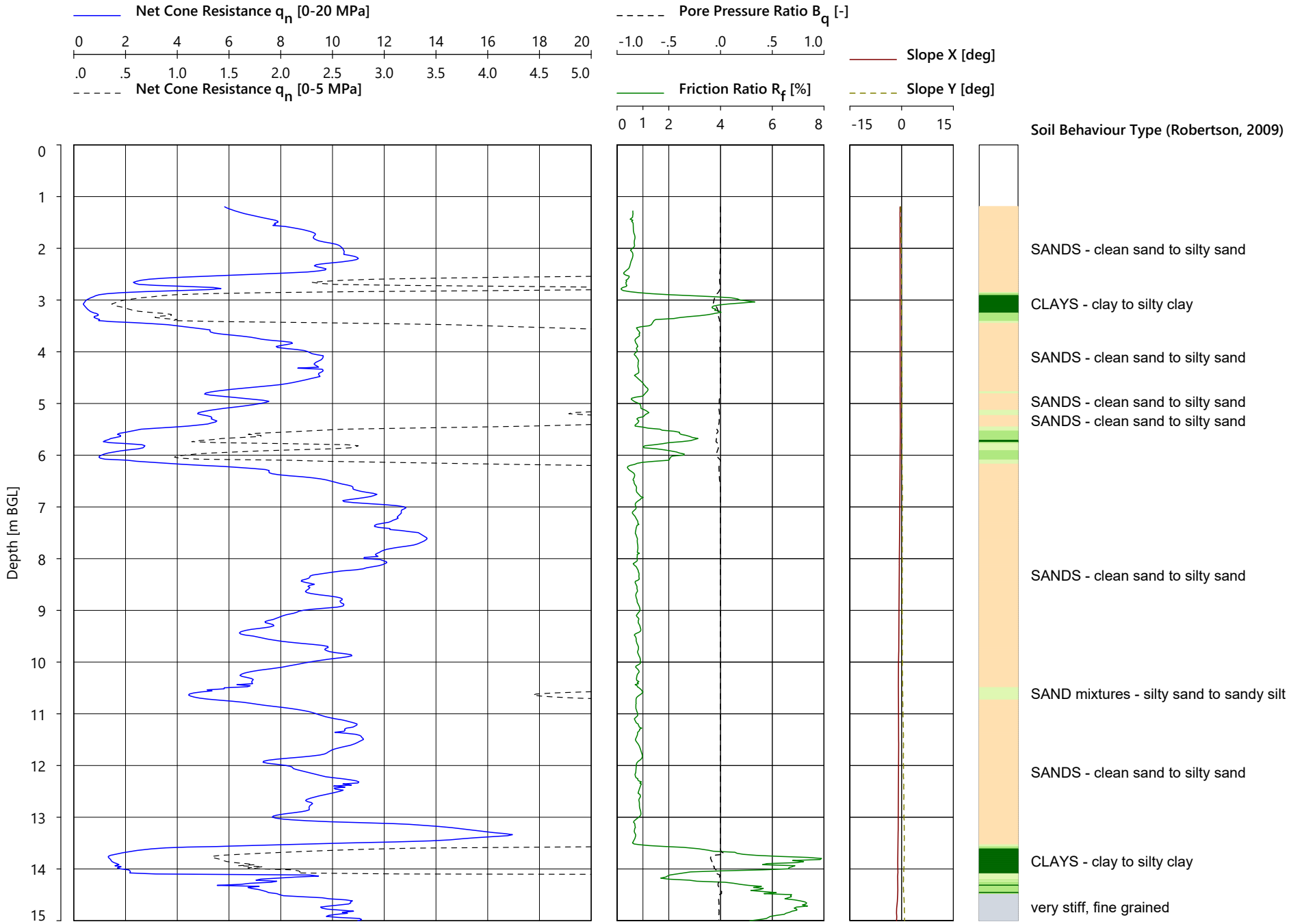
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT14
Coordinates : **E** 481942.85 **N** 411983.42 **Ground Level [m OD] :** +0.81
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

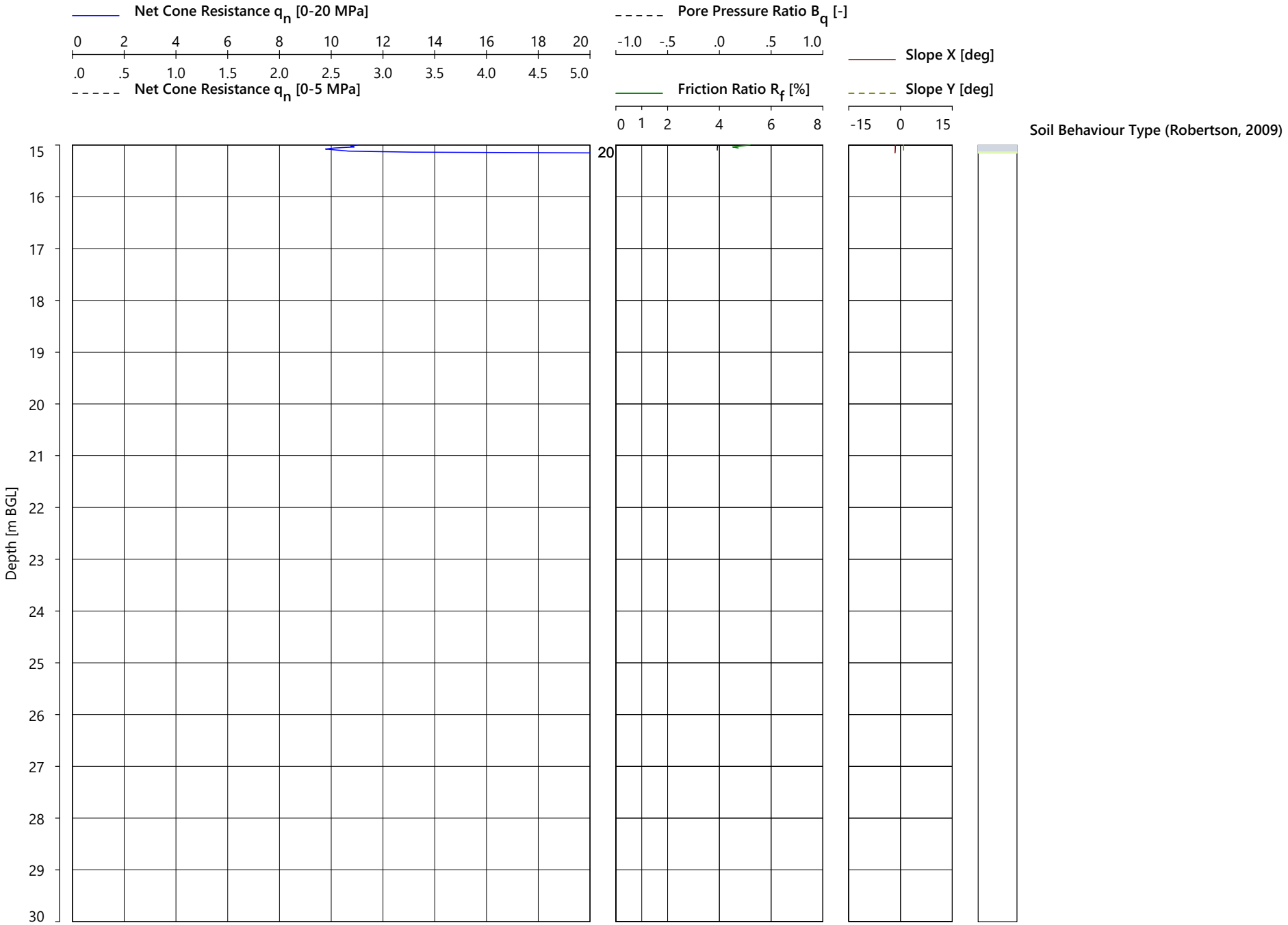
FUGRO



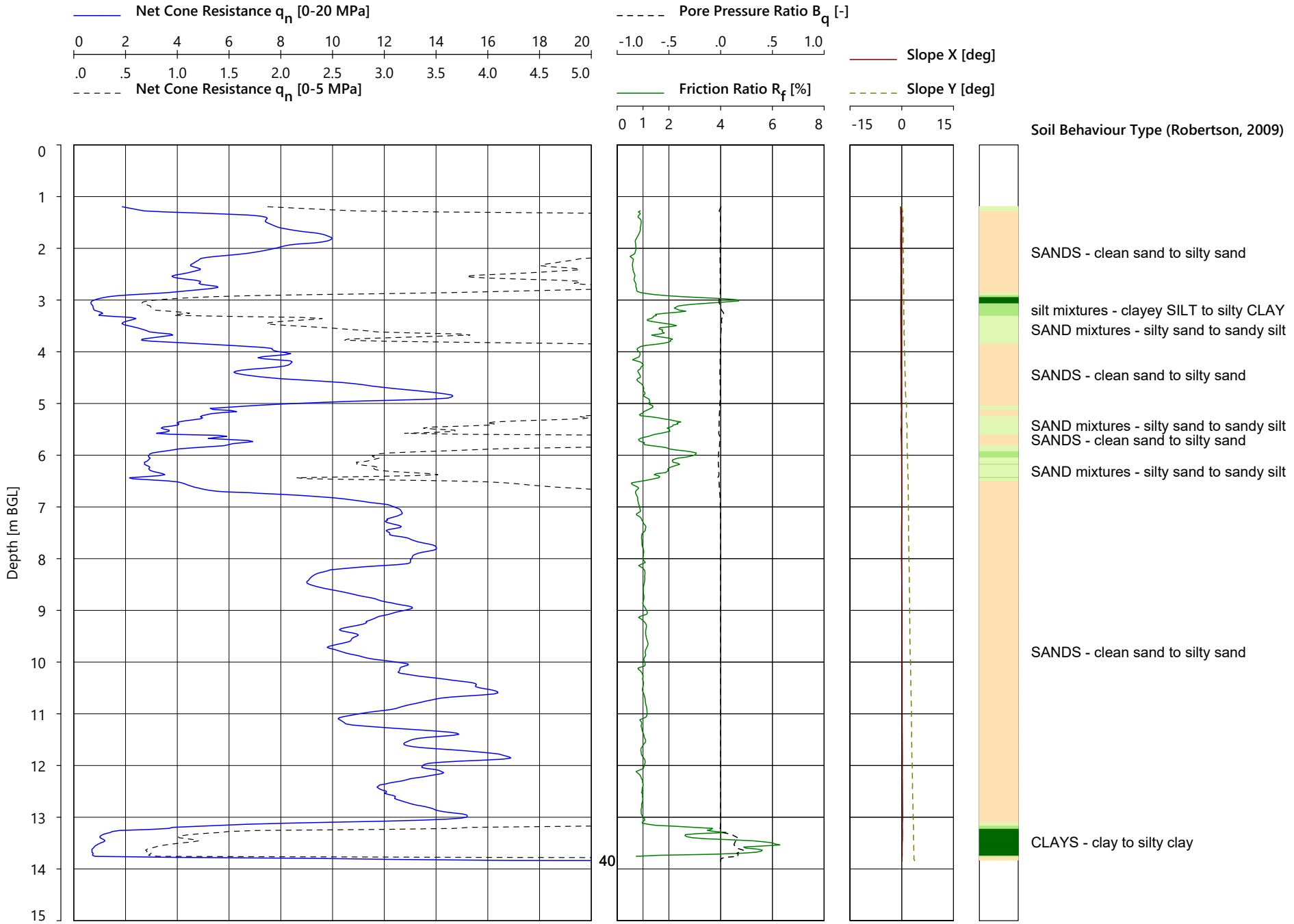
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS,KH
CPT Cone :	1701-3469	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	19-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **MS-SCPT15**
Coordinates : **E** 482093.25 **N** 411955.82 **Ground Level [m OD] :** +0.69
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



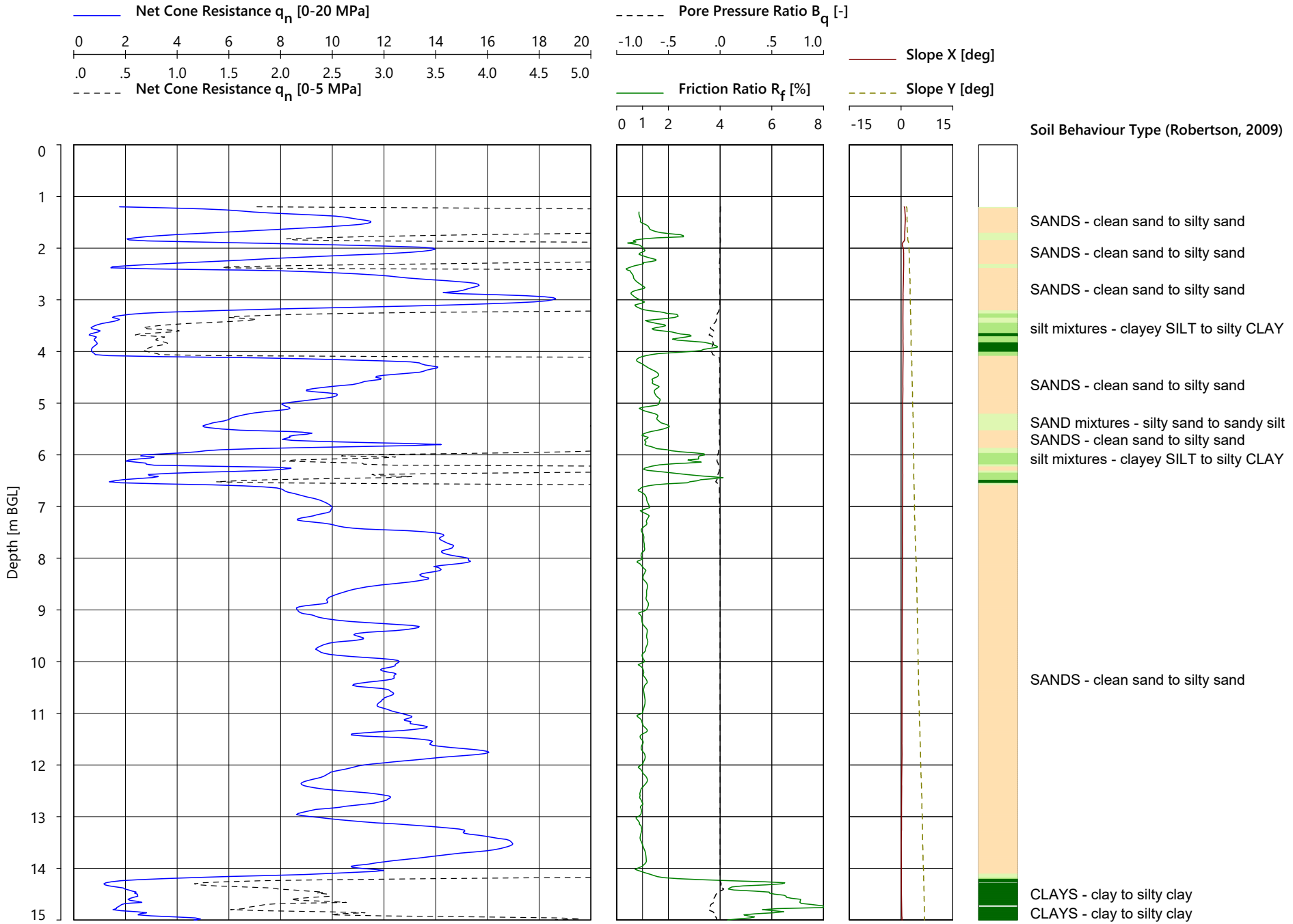
Piezocone Derived Data				Location :	MS-SCPT15
	Stop Criterion : max. penetration force			Coordinates :	E 482093.25 N 411955.82 Ground Level [m OD] : +0.69
CPT Truck ID : GB17	Application Class / Type : Class 2 / TE2	Operator : HG,MS,KH		Project :	212562
CPT Cone : 1701-3469	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Compiled by : LCH			F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Date of Test : 19-Oct-2022	Assumed Water Level [m gl] : -1.0	Checked by : KES		Client :	SSE Generation Limited (SSE)



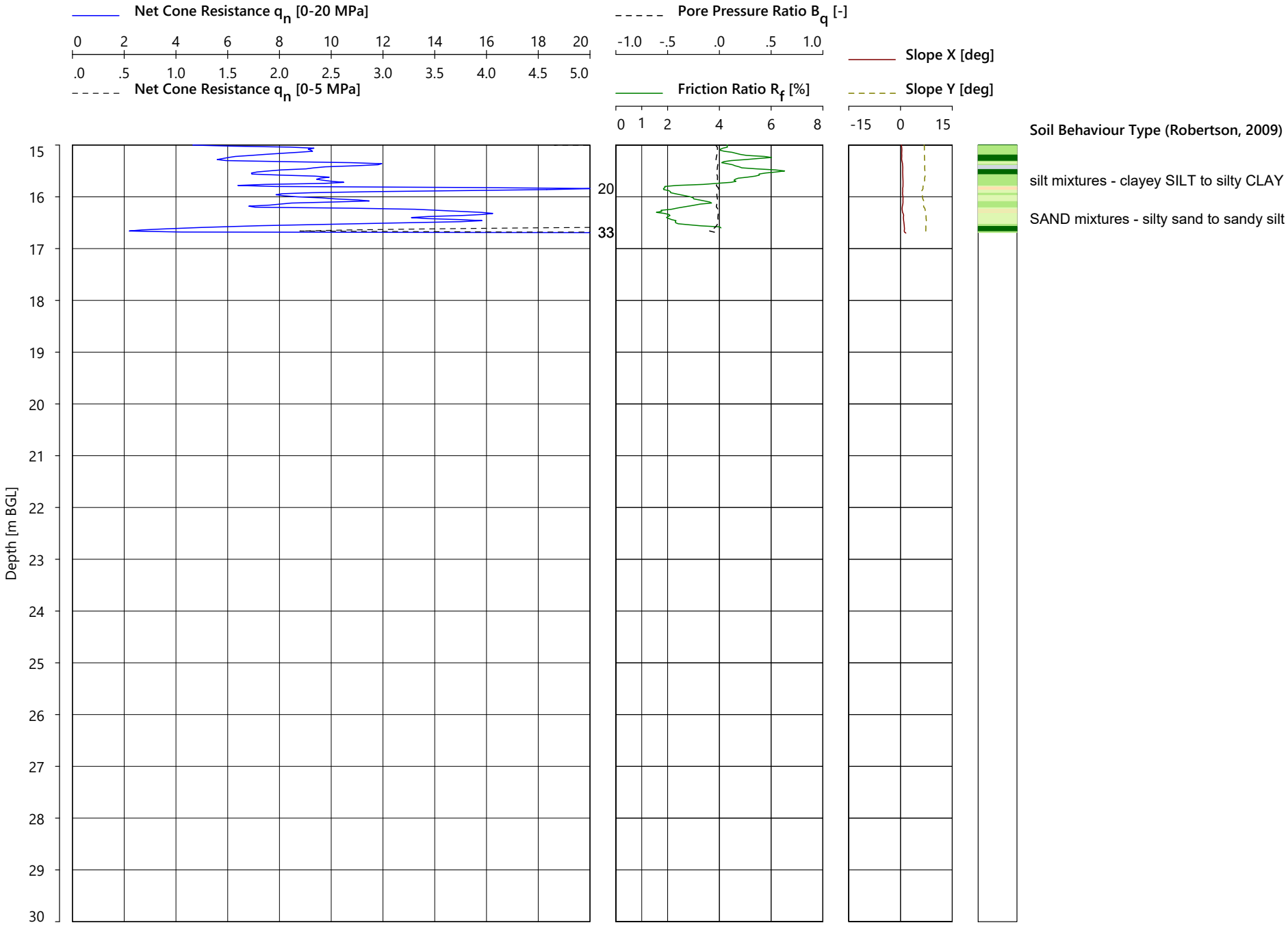
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT16
Coordinates : **E** 481861.56 **N** 411943.34 **Ground Level [m OD] :** +0.53
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

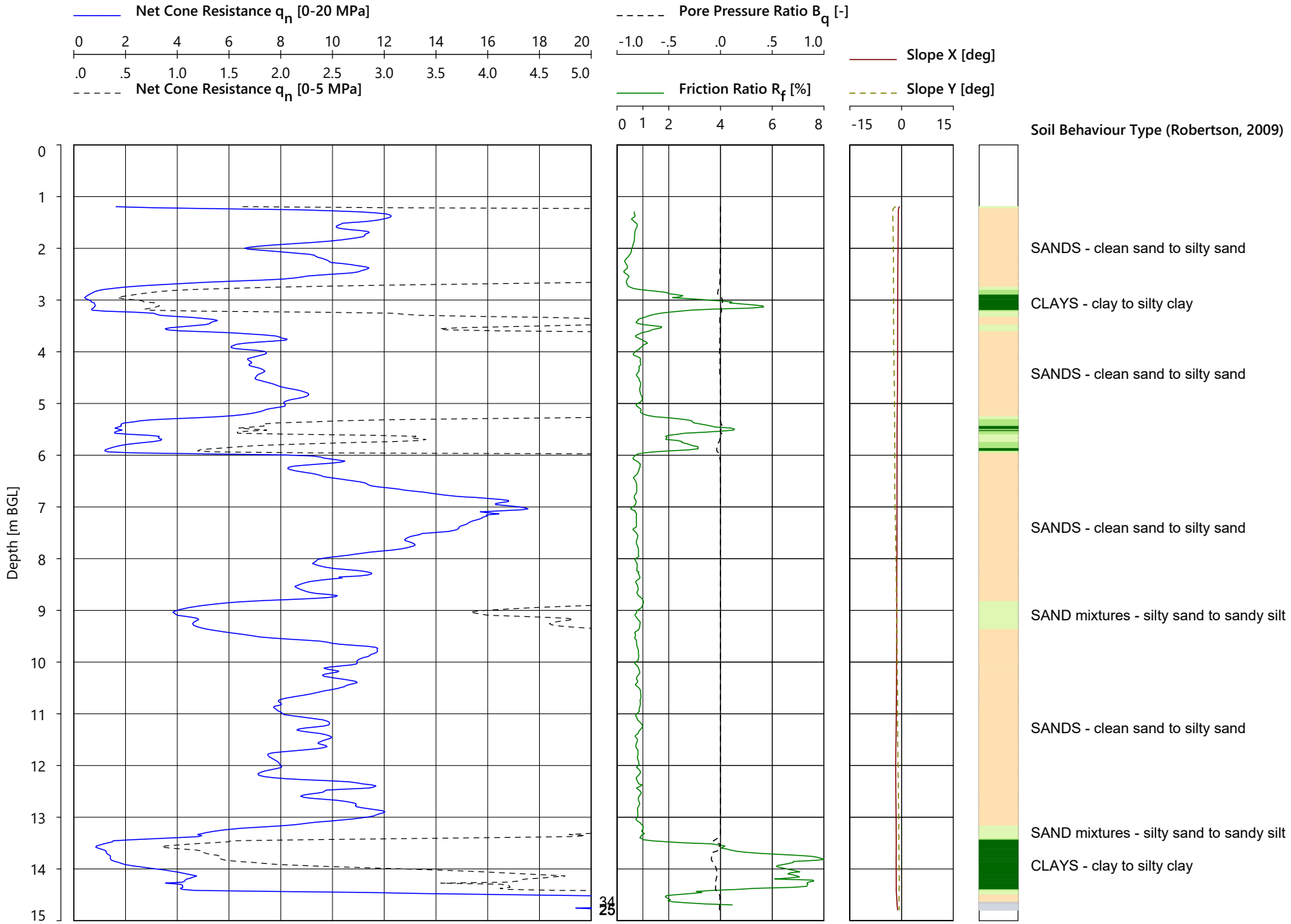
FUGRO



Piezocone Derived Data						Location :	MS-CPT17		
CPT Truck ID :	GB17	Stop Criterion :	end depth reached	Operator :	NF	Coordinates :	E 481939.92	N 411927.62	Ground Level [m OD] : +0.66
CPT Cone :	1701-3474	Application Class / Type :	Class 2 / TE2	Compiled by :	LCH	Project :	212562		
Date of Test :	29-Sep-2022	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Checked by :	KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
		Assumed Water Level [m gl] :	-1.0			Client :	SSE Generation Limited (SSE)		



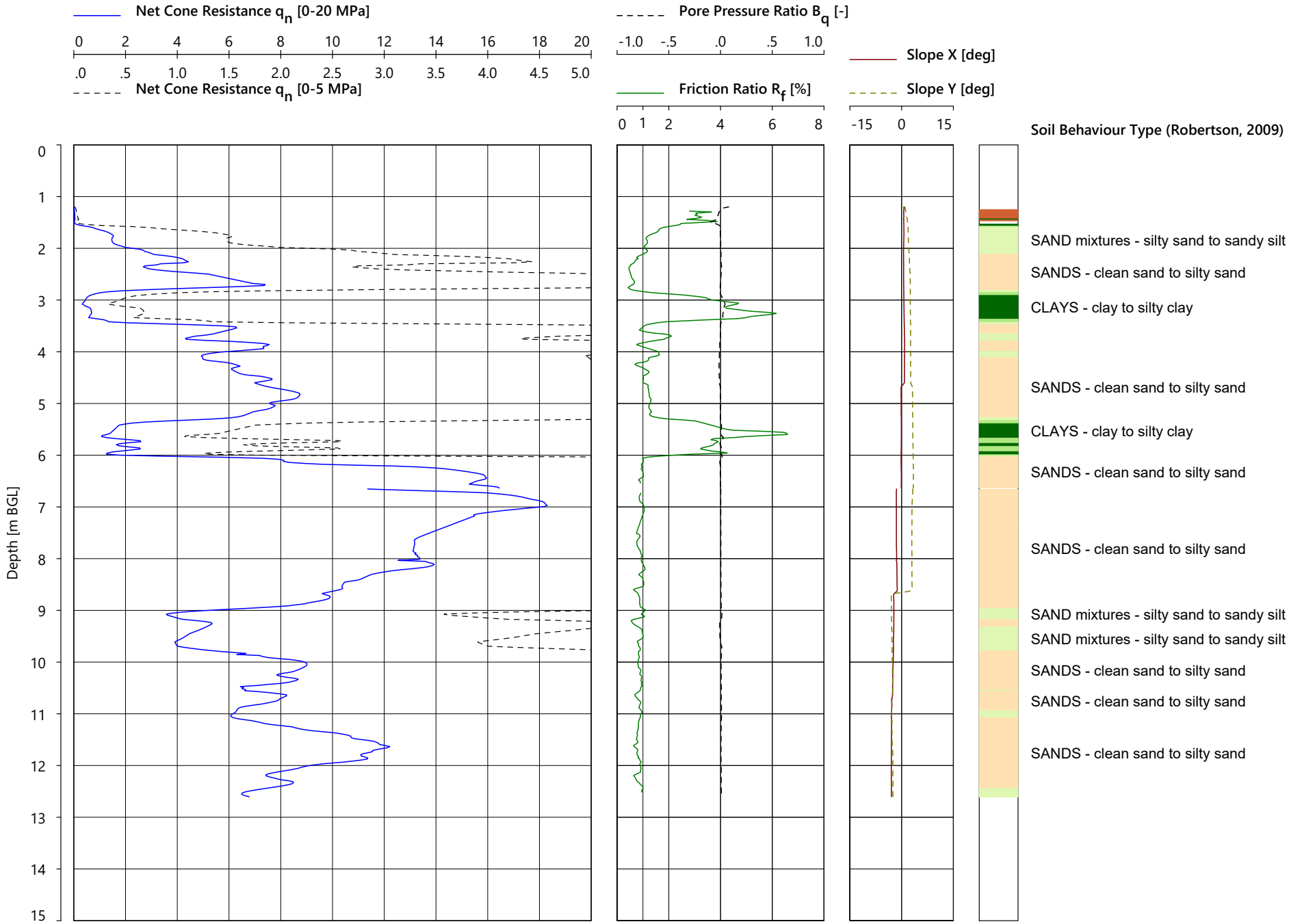
Piezocone Derived Data				Location :	MS-CPT17	
CPT Truck ID : GB17	Stop Criterion : end depth reached	Operator : NF	Coordinates :	E 481939.92 N 411927.62	Ground Level [m OD] : +0.66
CPT Cone : 1701-3474	Application Class / Type : Class 2 / TE2	Compiled by : LCH	Project :	212562	
Date of Test : 29-Sep-2022	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Checked by : KES		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
	Assumed Water Level [m gl] : -1.0		Client :	SSE Generation Limited (SSE)	



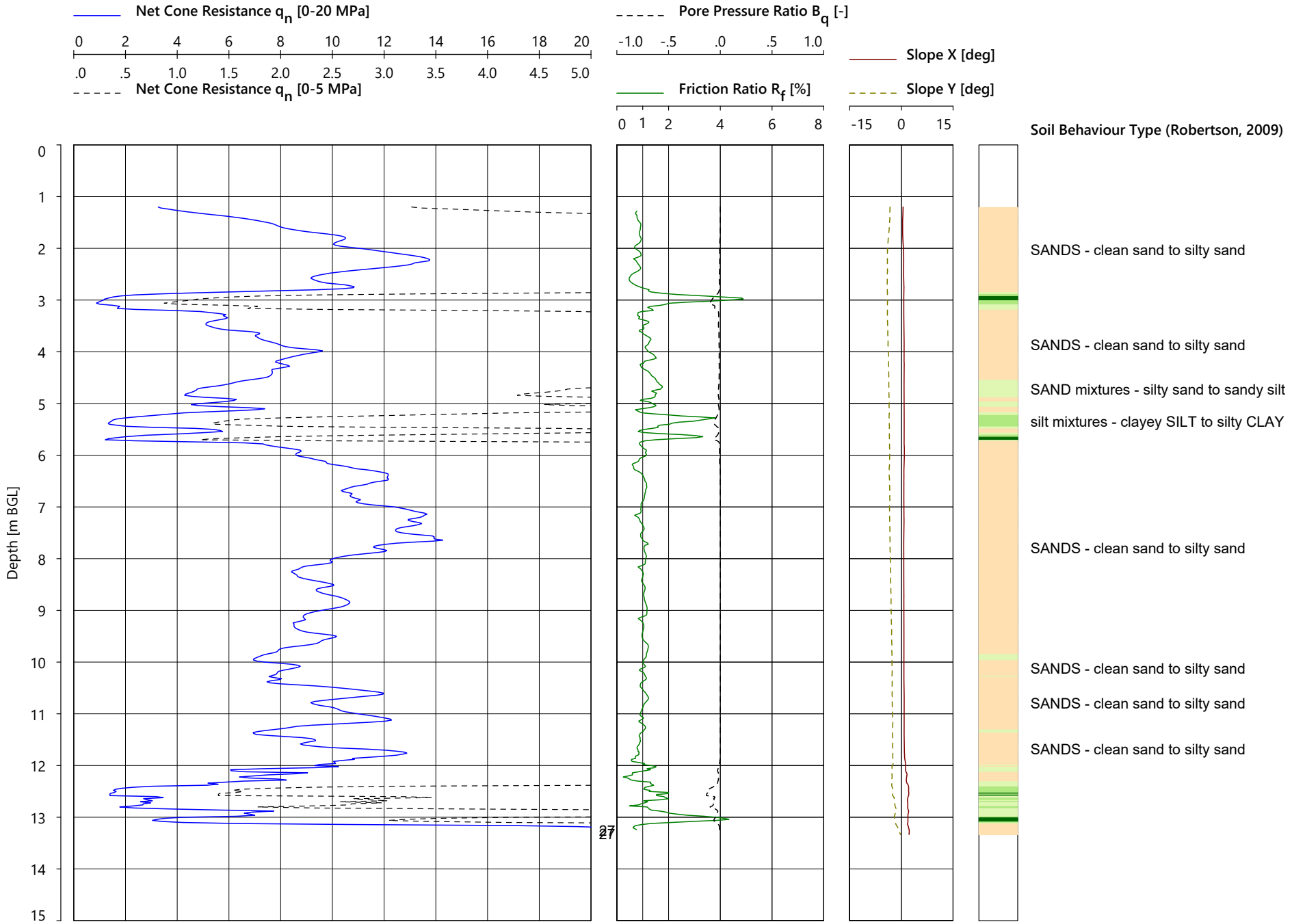
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3469	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	06-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-SCPT18
Coordinates : **E** 482135.21 **N** 411946.57 **Ground Level [m OD] :** +0.60
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



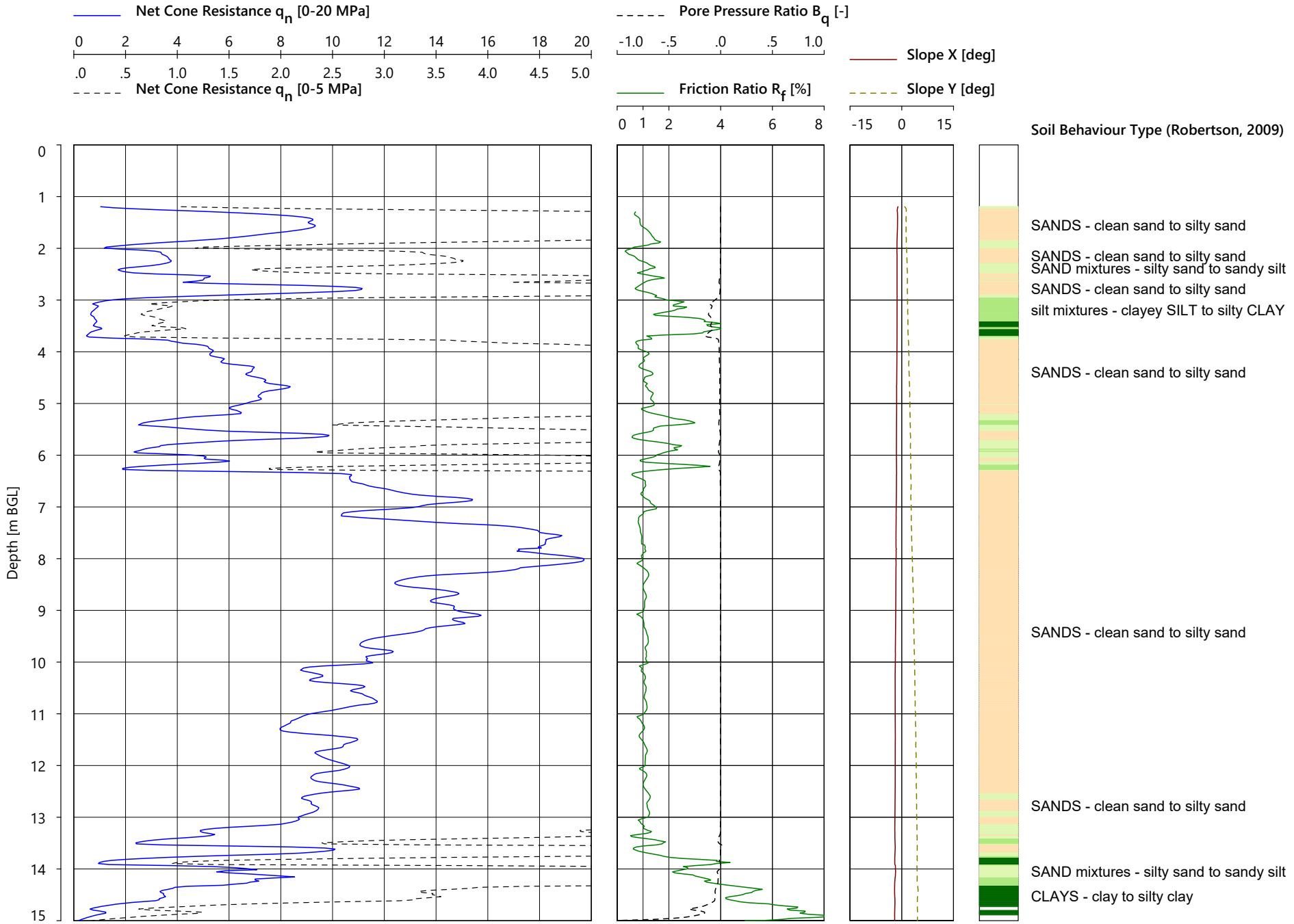
Piezocone Derived Data						Location :	Push 1		
		Stop Criterion :	other			Coordinates :	E 482134.20	N 411946.60	Ground Level [m OD] : +0.60
CPT Truck ID :	GB17	Application Class / Type :	Class 2 / TE2	Operator :	HG,MS	Project :	212562		
CPT Cone :	1701-3474	Assumed Soil Unit Weight :	19.0 [kN/m^3]	Compiled by :	LCH		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
Date of Test :	11-Oct-2022	Assumed Water Level [m gl] :	-1.0	Checked by :	KES	Client :	SSE Generation Limited (SSE)		



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT19
Coordinates : **E** 481817.50 **N** 411889.77 **Ground Level [m OD] :** +0.53
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

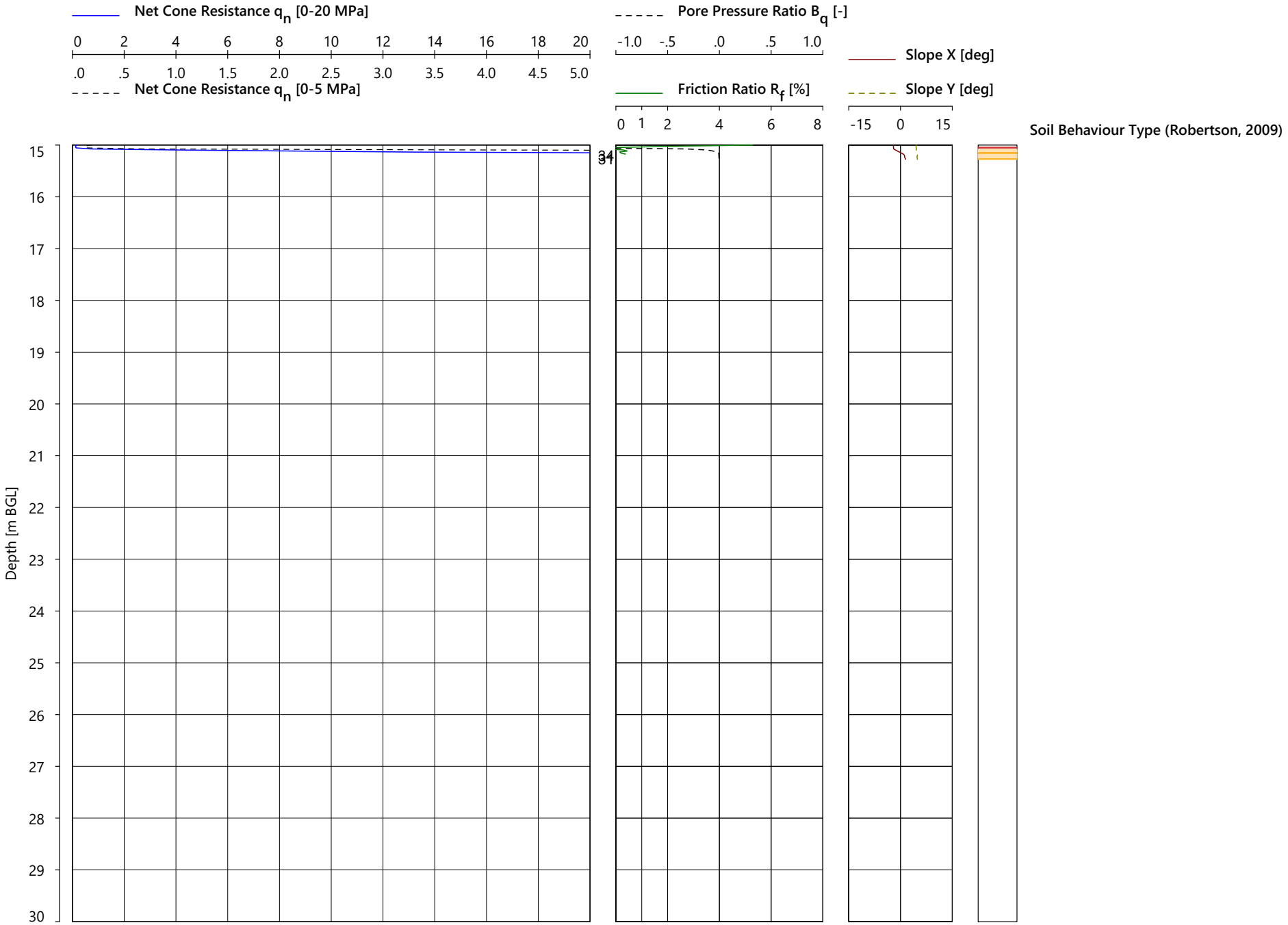
FUGRO



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

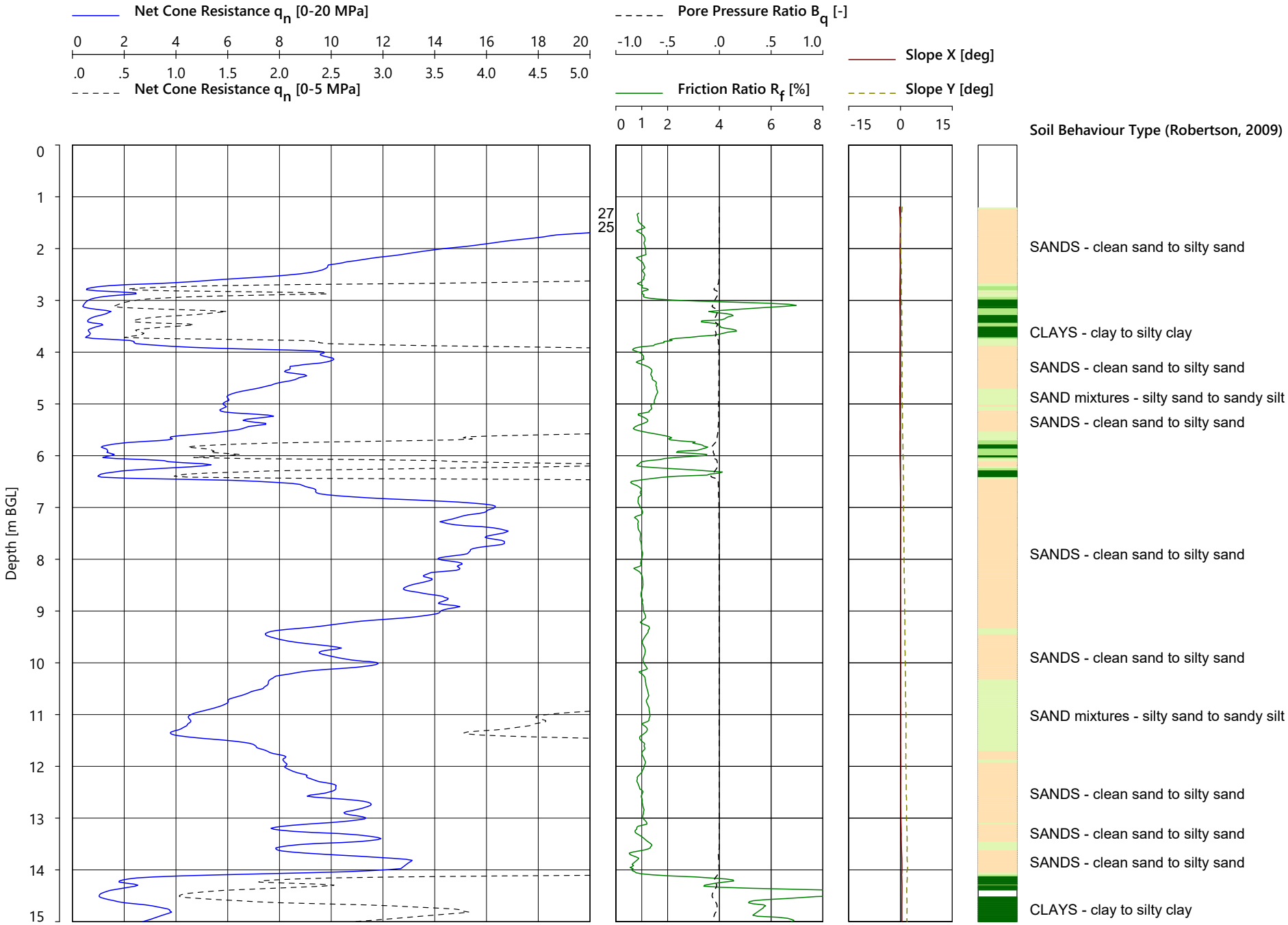
Location : MS-CPT20
Coordinates : **E** 481917.71 **N** 411884.14 **Ground Level [m OD] :** +0.75
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

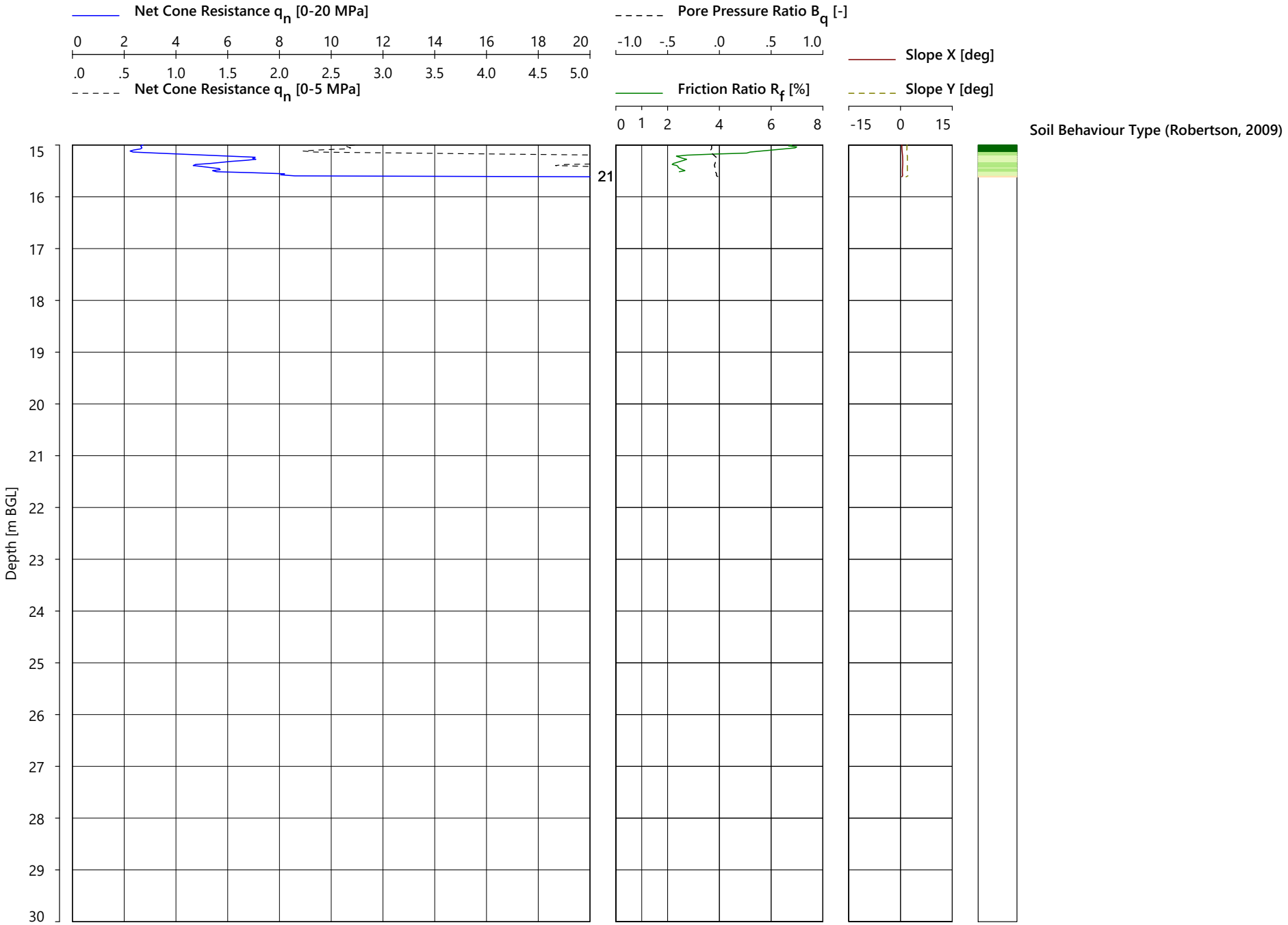
Location : MS-CPT20
Coordinates : **E** 481917.71 **N** 411884.14 **Ground Level [m OD] :** +0.75
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	04-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT21
Coordinates : **E** 482014.44 **N** 411918.06 **Ground Level [m OD] :** +1.07
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

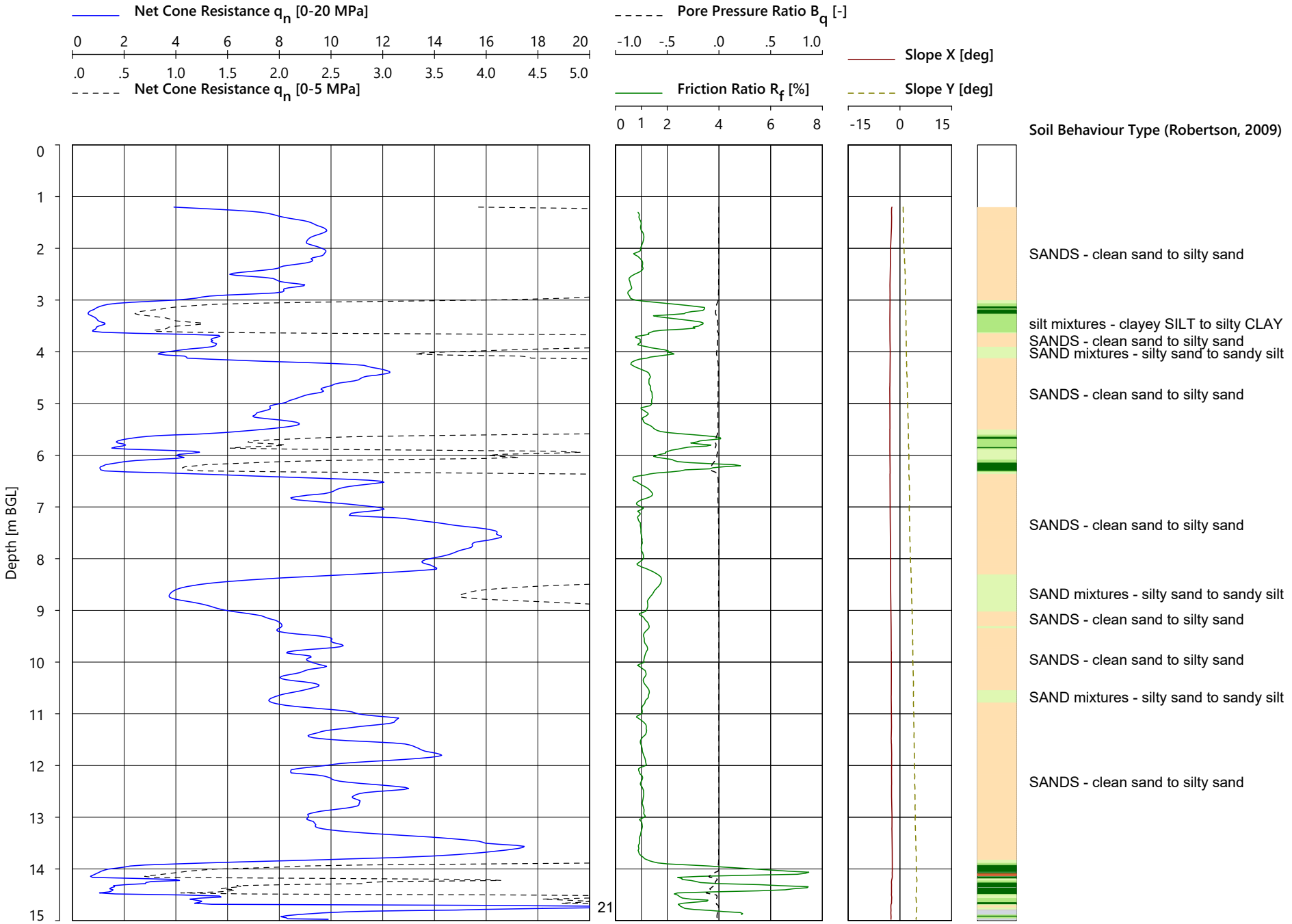
FUGRO



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	04-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT21
Coordinates : **E** 482014.44 **N** 411918.06 **Ground Level [m OD] :** +1.07
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT22
Coordinates : **E** 482118.34 **N** 411891.47 **Ground Level [m OD] :** +0.90
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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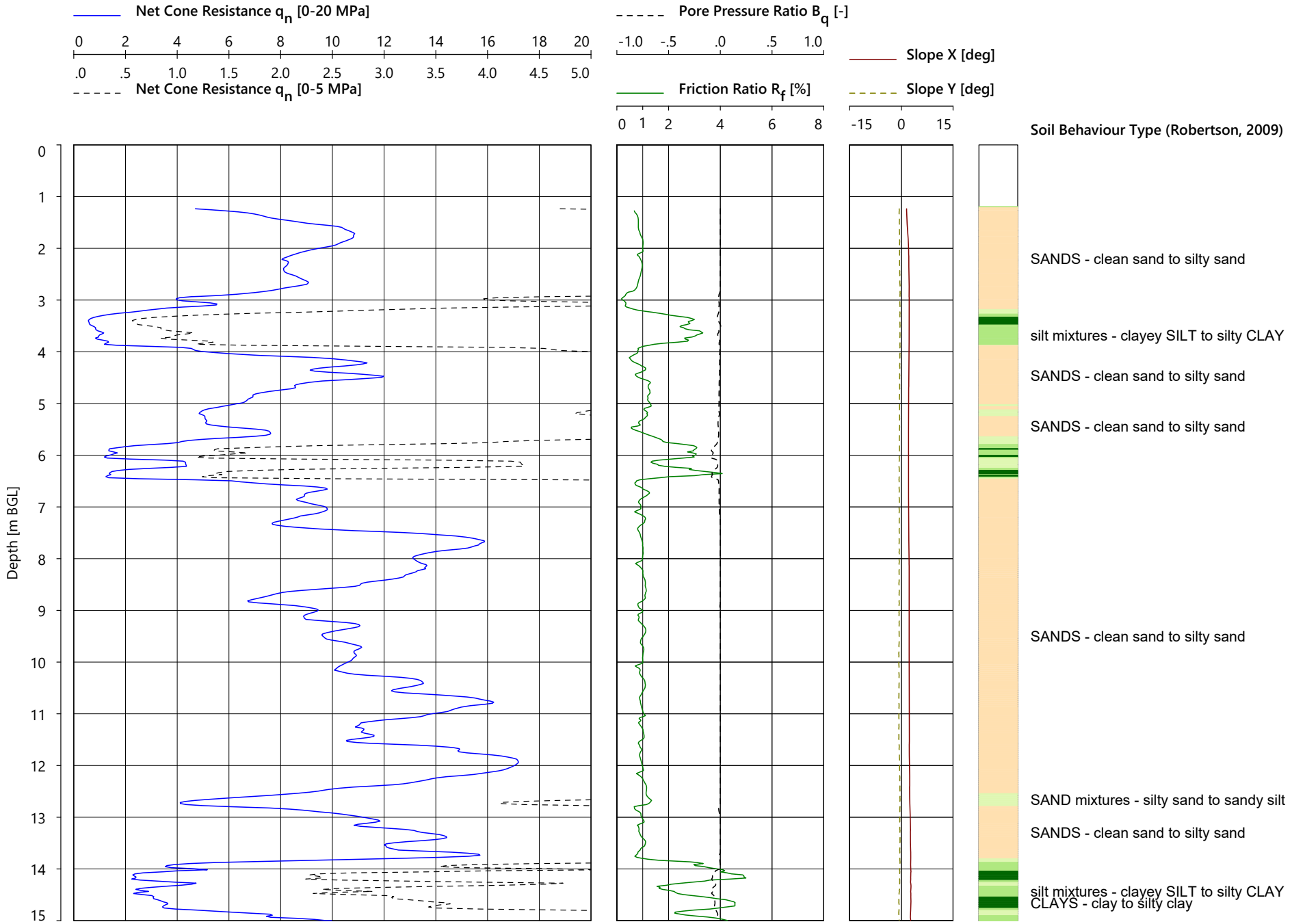
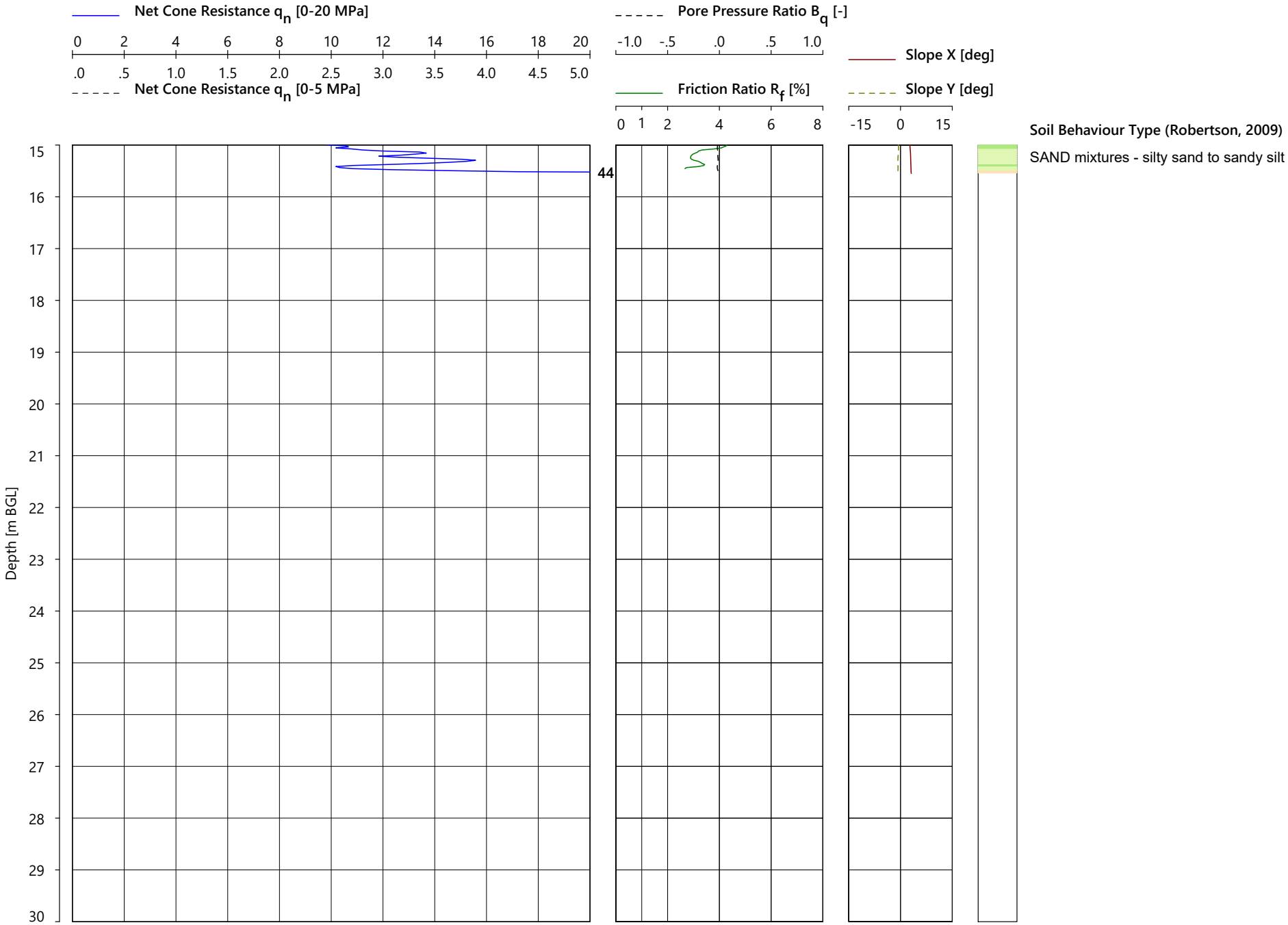


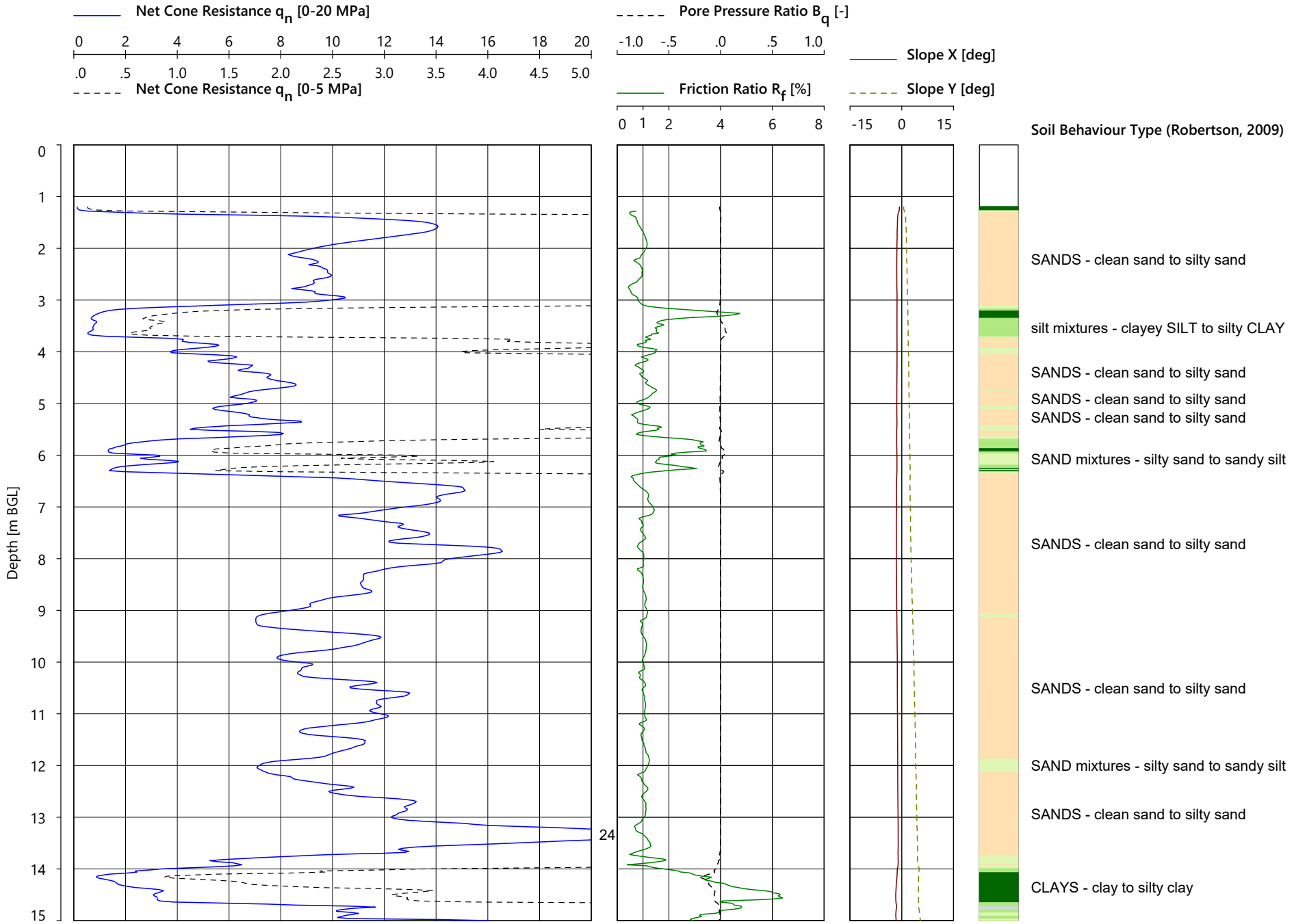
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	12-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT23
Coordinates : **E** 482054.12 **N** 411813.03 **Ground Level [m OD] :** +0.98
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO

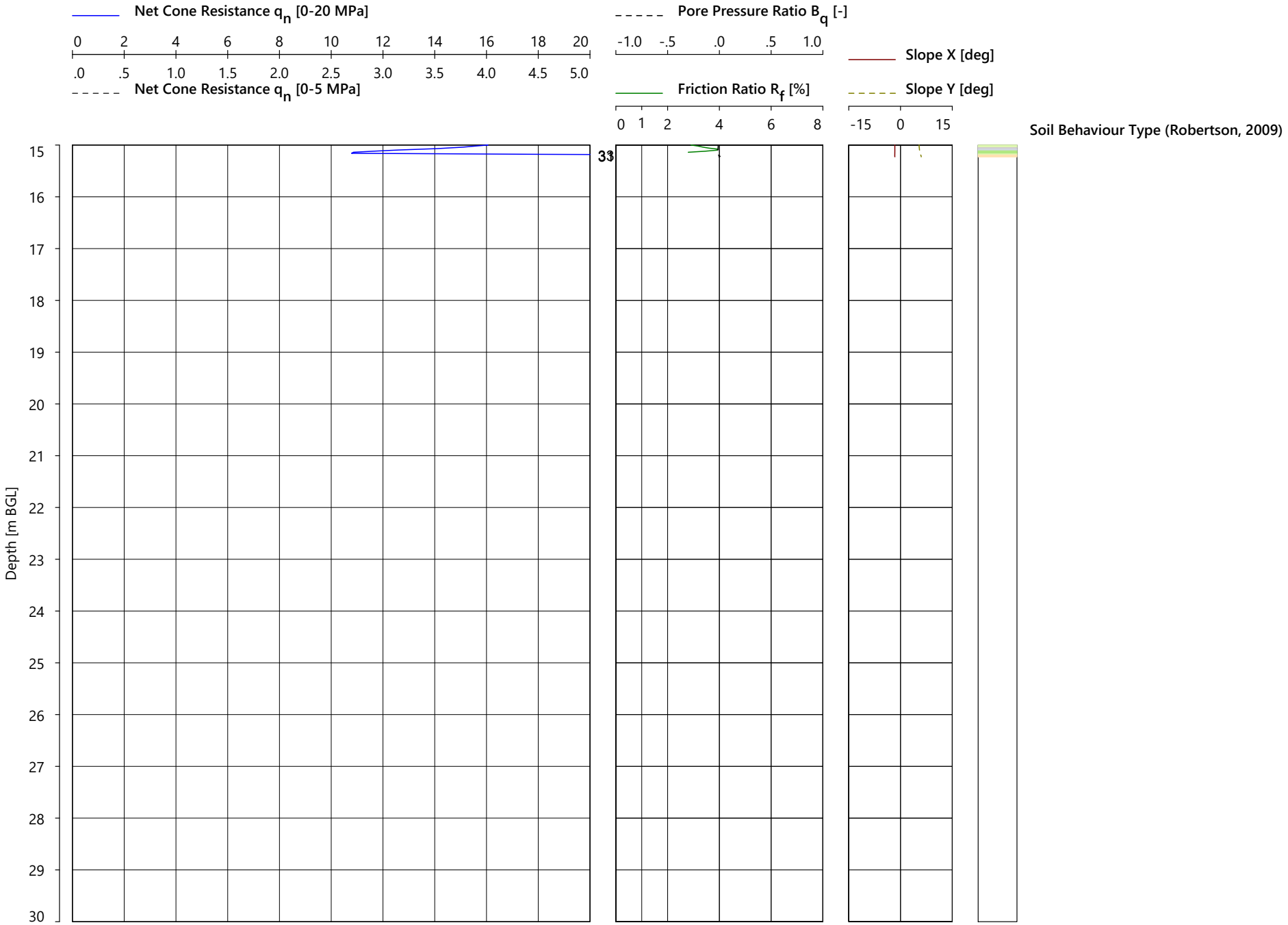


Piezocone Derived Data				Location :	MS-CPT23
CPT Truck ID : GB17	Stop Criterion : end depth reached	Operator : HG,MS		Coordinates :	E 482054.12 N 411813.03 Ground Level [m OD] : +0.98
CPT Cone : 1701-3474	Application Class / Type : Class 2 / TE2	Compiled by : LCH		Project :	212562
Date of Test : 12-Oct-2022	Assumed Soil Unit Weight : 19.0 [kN/m^3]	Checked by : KES			F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
	Assumed Water Level [m gl] : -1.0			Client :	SSE Generation Limited (SSE)



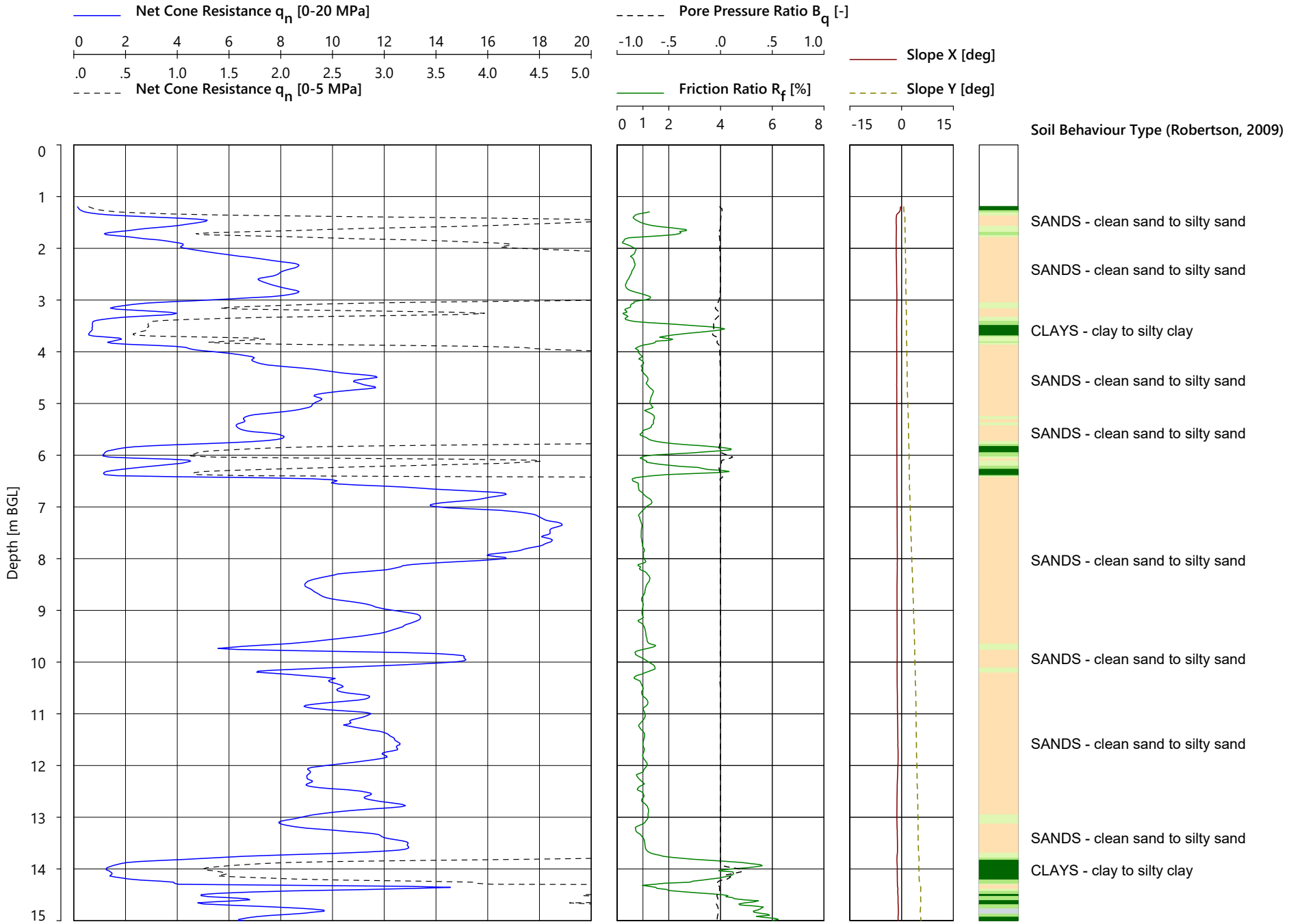
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT24
Coordinates : **E** 482114.48 **N** 411823.43 **Ground Level [m OD] :** +0.91
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT24
Coordinates : **E** 482114.48 **N** 411823.43 **Ground Level [m OD] :** +0.91
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data

CPT Truck ID :	GB17
CPT Cone :	1701-3474
Date of Test :	05-Oct-2022
Stop Criterion :	end depth reached
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0
Operator :	HG,MS
Compiled by :	LCH
Checked by :	KES

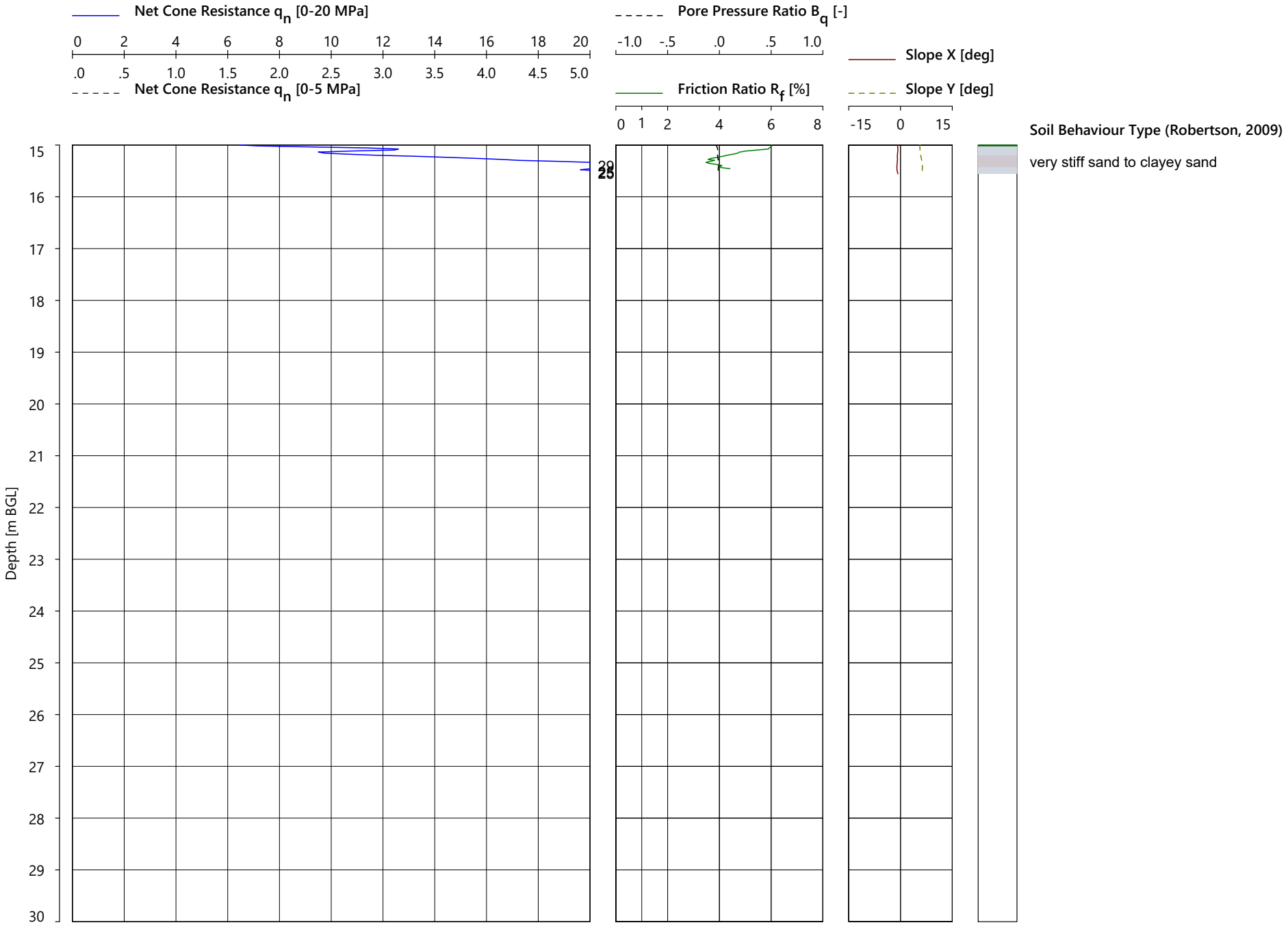
Location : MS-CPT25

Coordinates : **E** 482195.67 **N** 411821.30 **Ground Level [m OD] :** +0.98

Project : 212562

F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

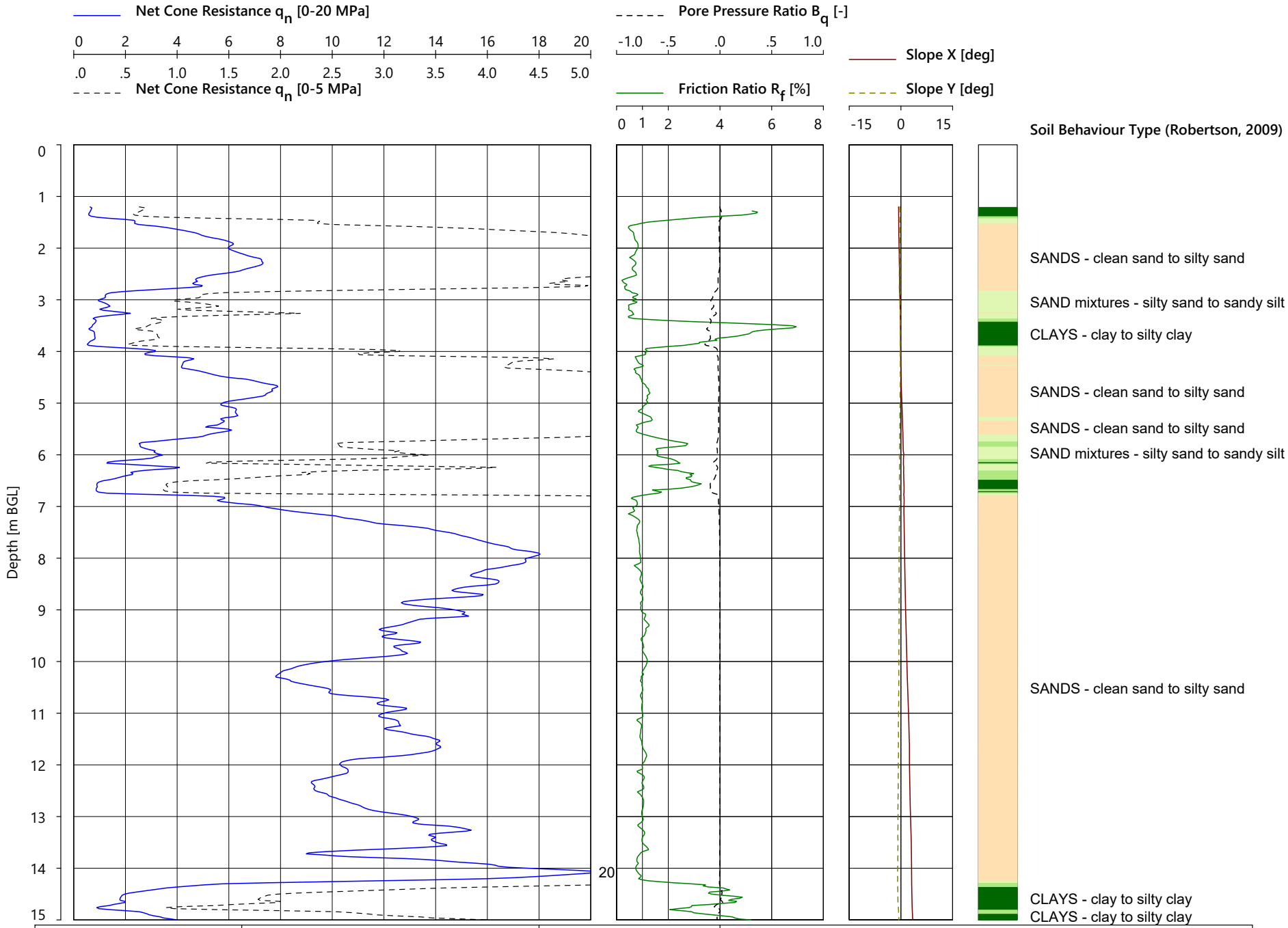
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT25
Coordinates : **E** 482195.67 **N** 411821.30 **Ground Level [m OD] :** +0.98
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

FUGRO



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	14-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : **MS-CPT26**
Coordinates : **E** 482010.17 **N** 411729.07 **Ground Level [m OD] :** +1.22
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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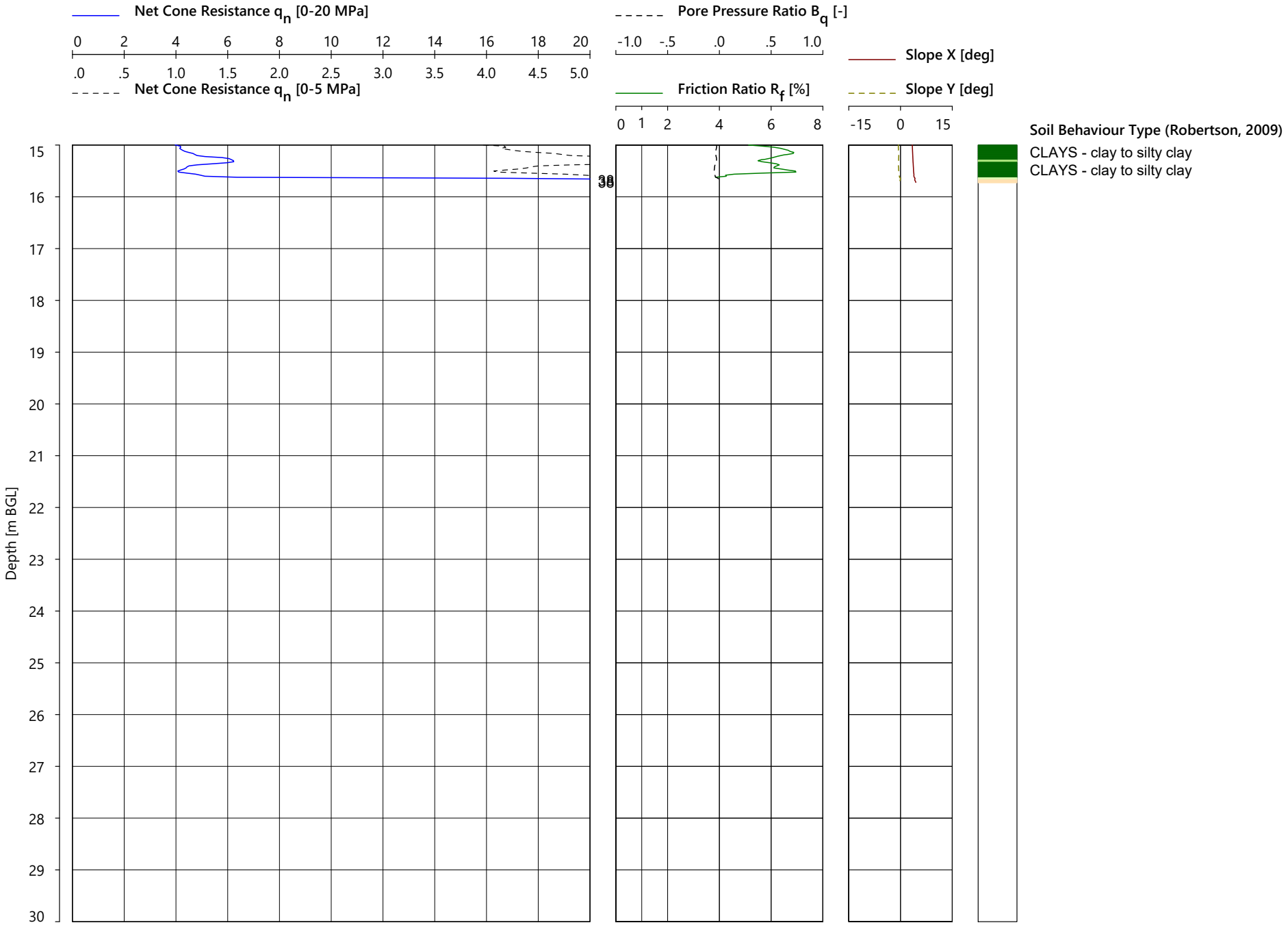

Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	14-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT26
Coordinates : **E** 482010.17 **N** 411729.07 **Ground Level [m OD] :** +1.22
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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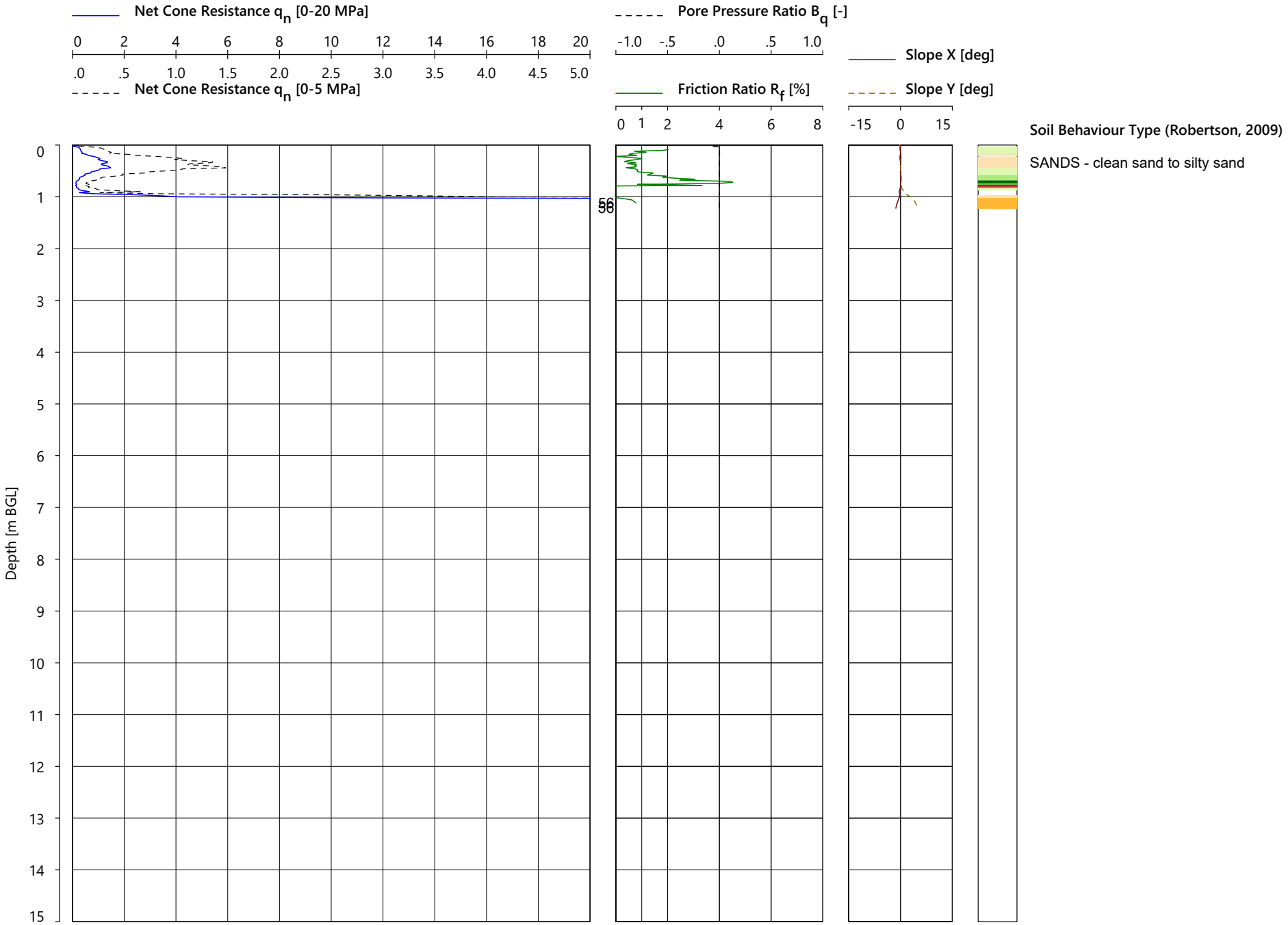
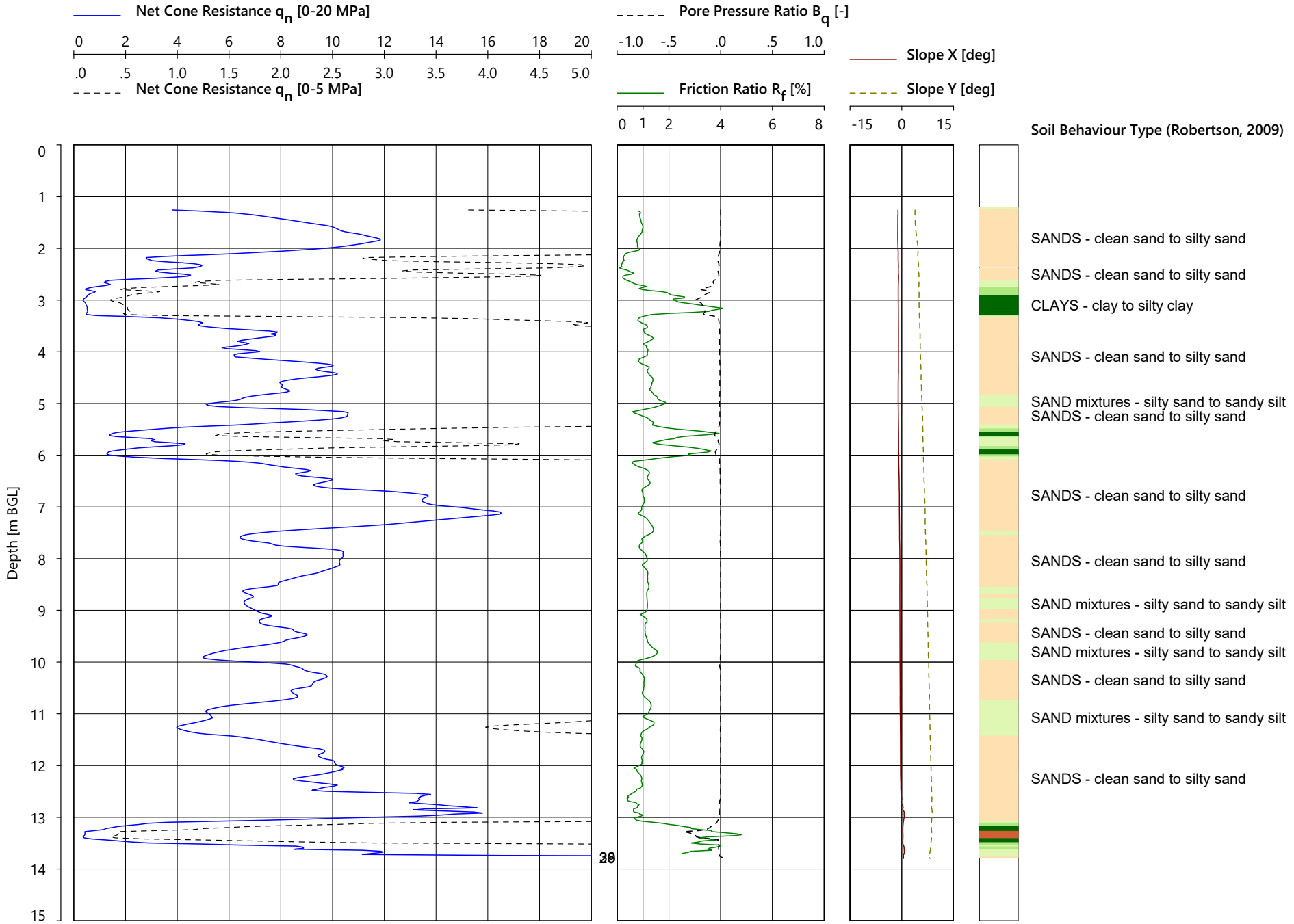


Piezocone Derived Data					
CPT Truck ID :	EU-115	**Stop Criterion :**	max. penetration force	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	27-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT29
Coordinates : **E** 482102.60 **N** 411634.78 **Ground Level [m OD] :** +0.40
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT31
Coordinates : **E** 481841.29 **N** 412213.69 **Ground Level [m OD] :** +0.50
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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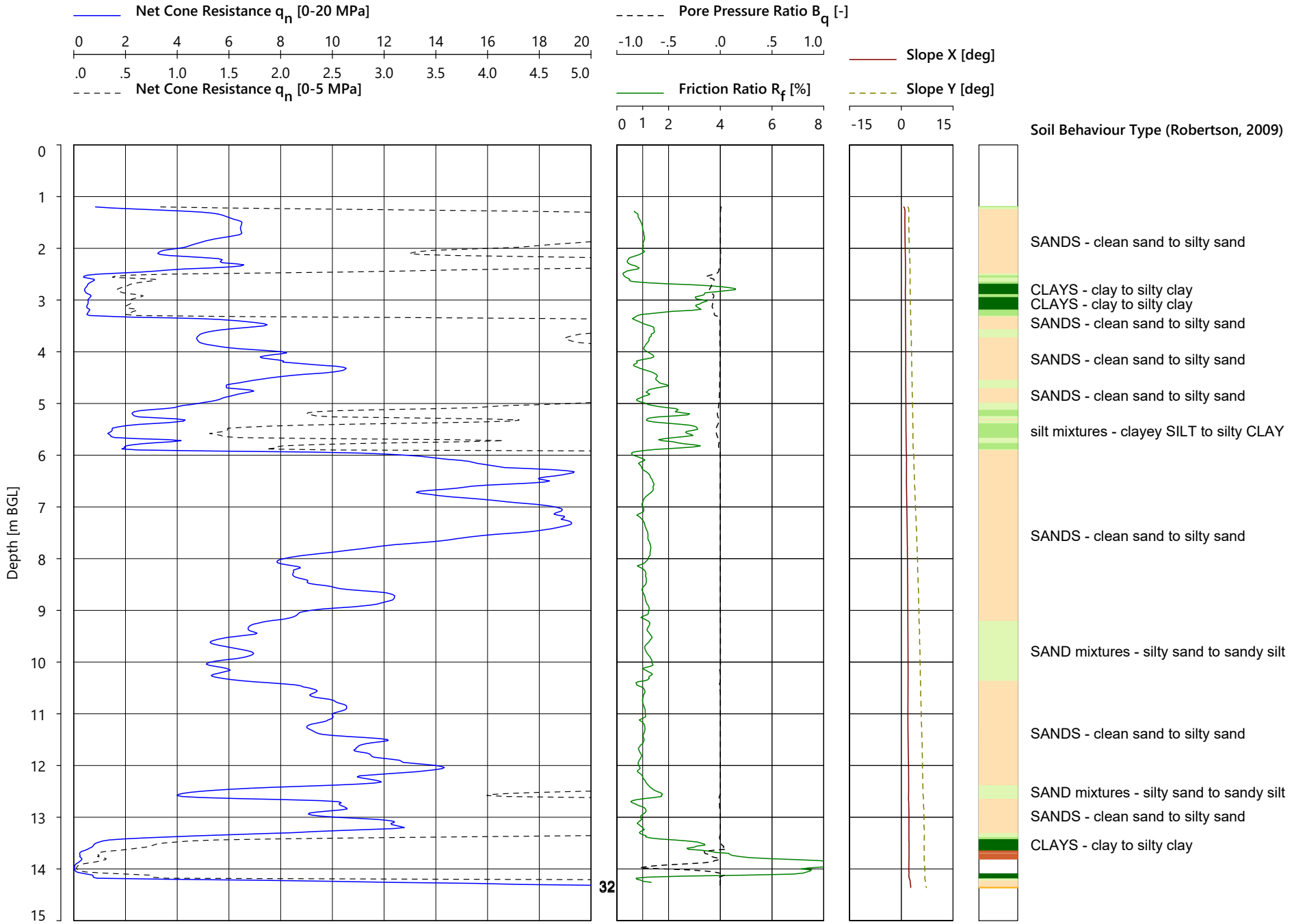
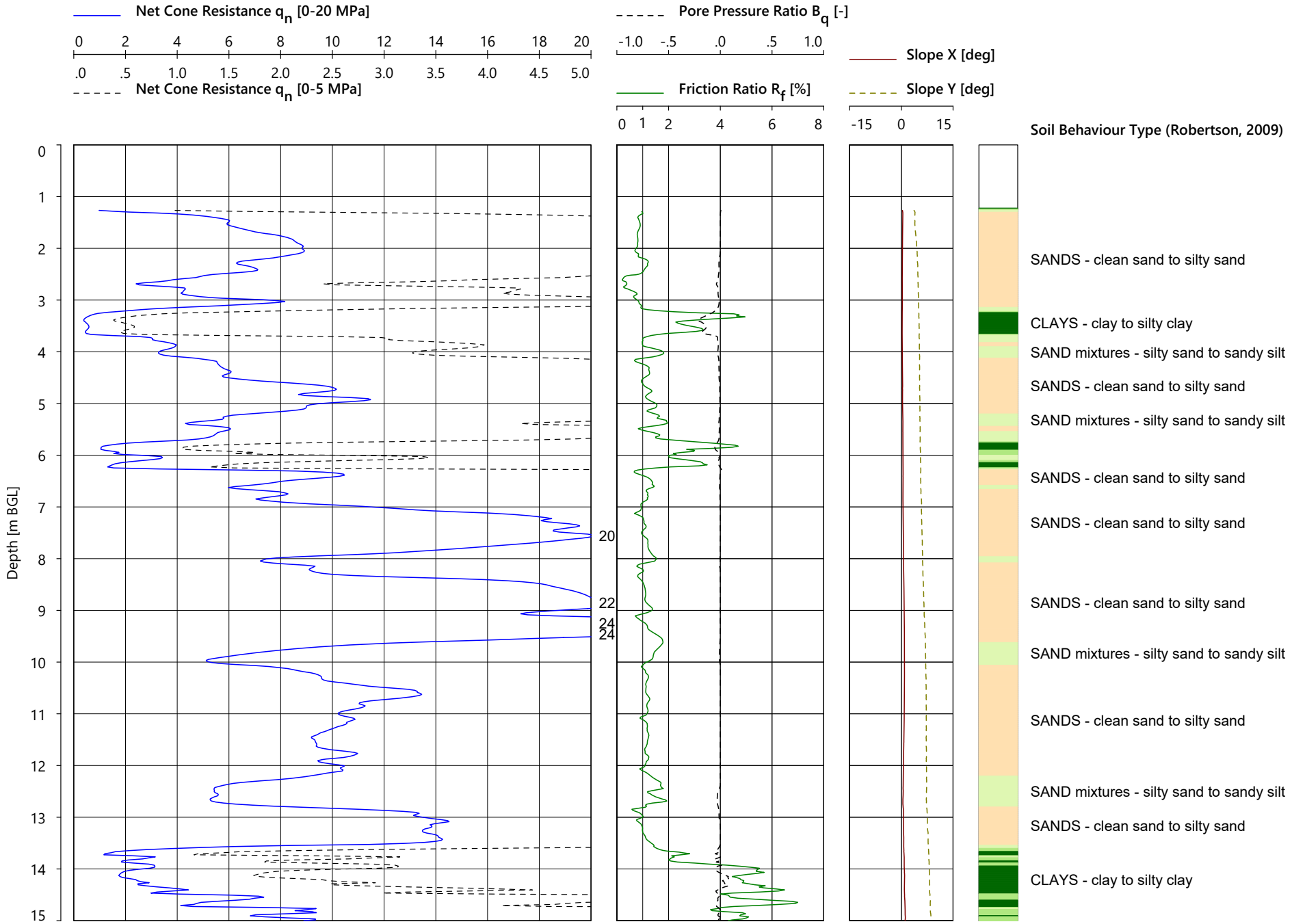


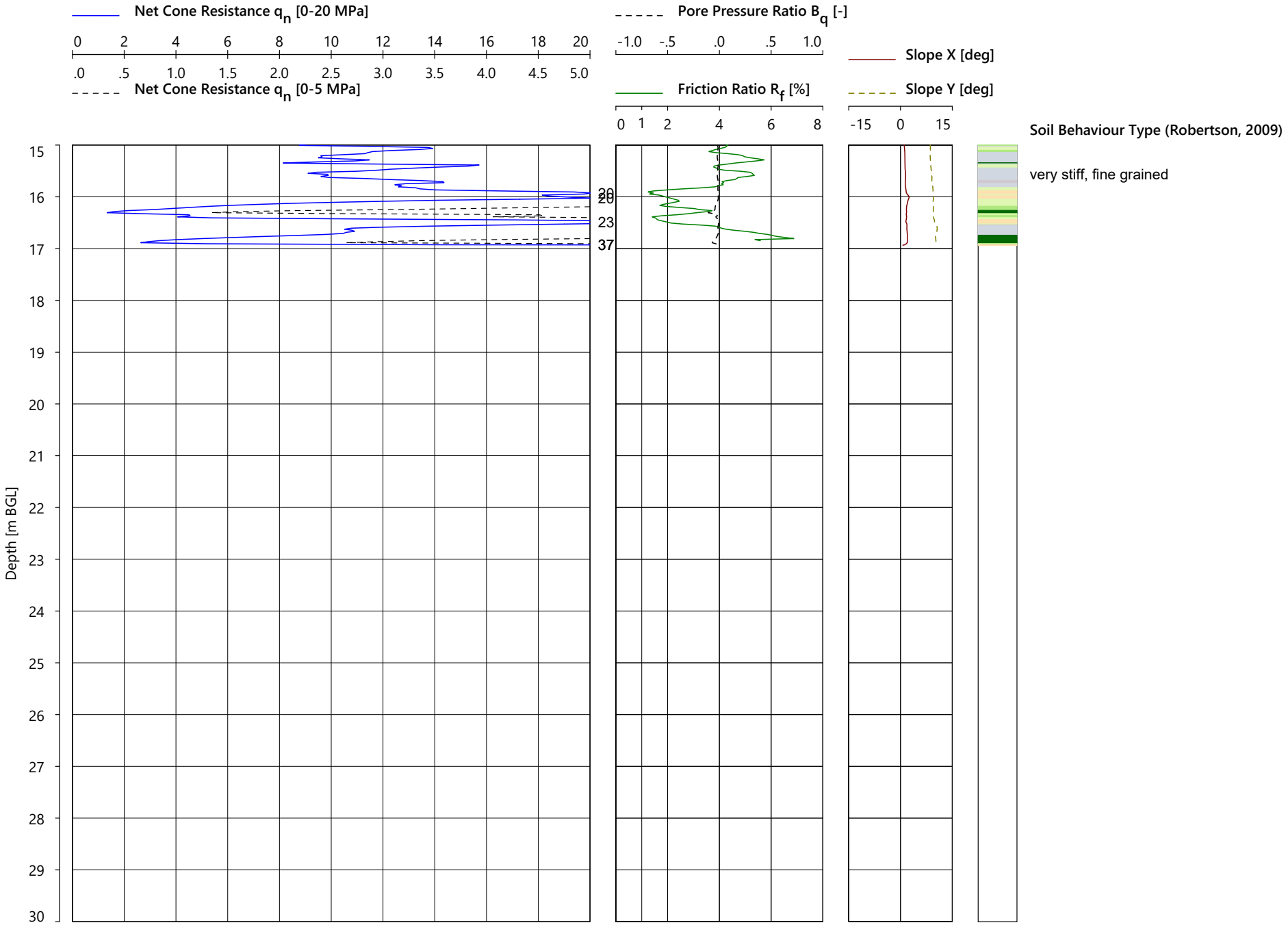
Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	29-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT32
Coordinates : **E** 481933.75 **N** 412183.97 **Ground Level [m OD] :** +0.27
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT33
Coordinates : **E** 482033.72 **N** 412178.42 **Ground Level [m OD] :** +0.37
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT33
Coordinates : **E** 482033.72 **N** 412178.42 **Ground Level [m OD] :** +0.37
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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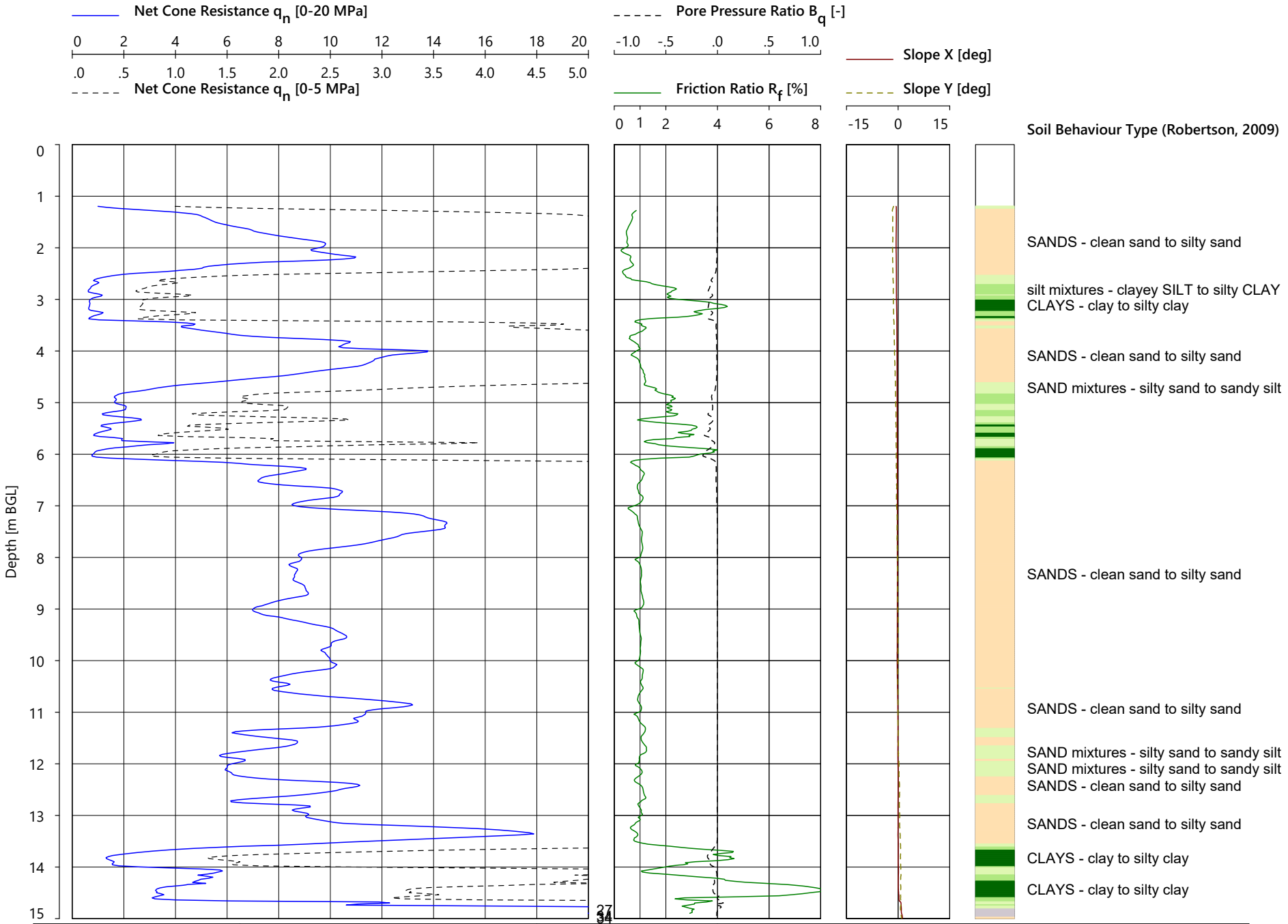

Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	NF
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	30-Sep-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

Location : MS-CPT34
Coordinates : **E** 482103.39 **N** 412152.65 **Ground Level [m OD] :** +0.35
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)

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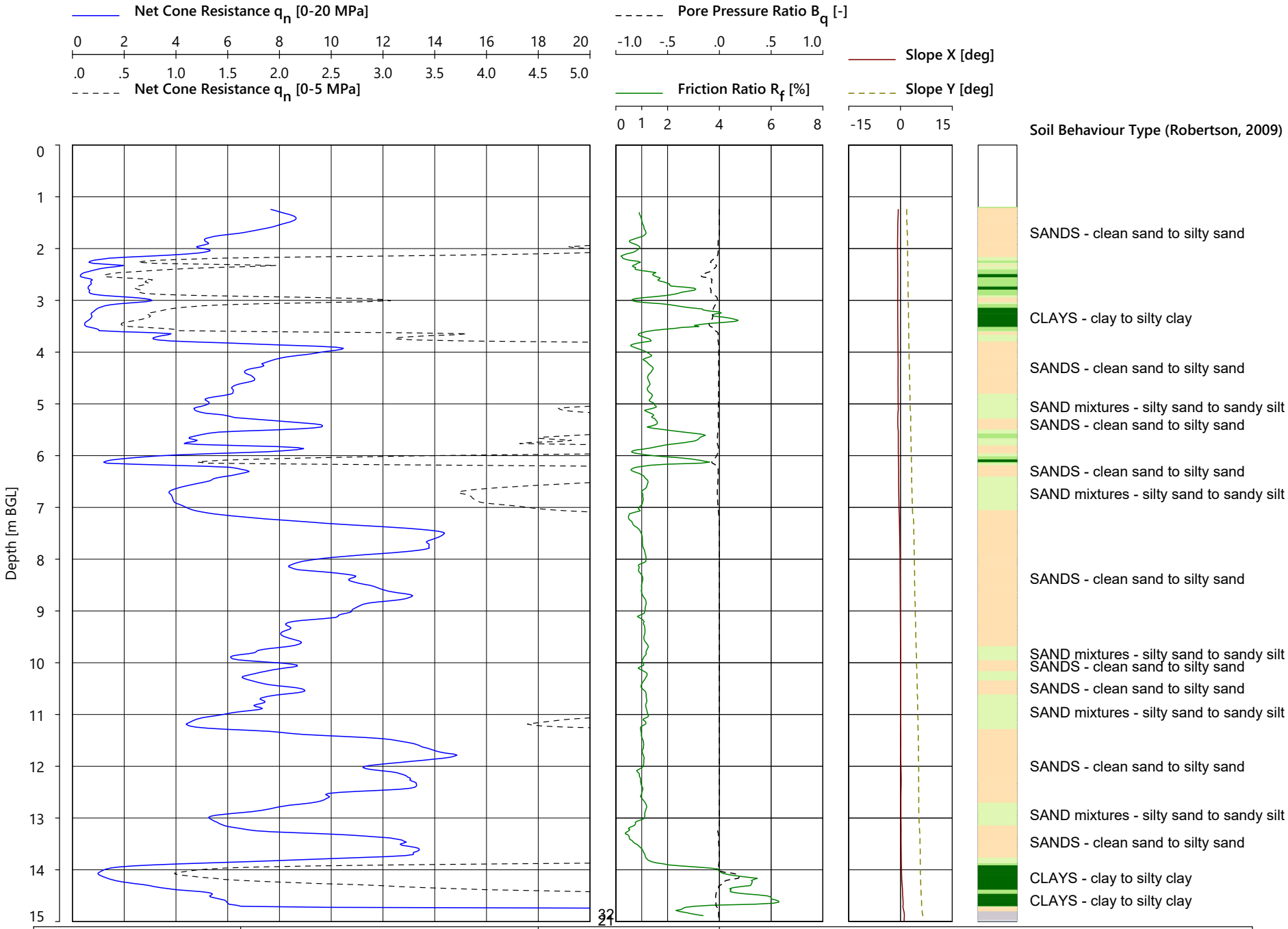


Piezocone Derived Data

CPT Truck ID :	GB17
CPT Cone :	1701-3474
Date of Test :	29-Sep-2022

Stop Criterion :	end depth reached
Application Class / Type :	Class 2 / TE2
Assumed Soil Unit Weight :	19.0 [kN/m^3]
Assumed Water Level [m gl] :	-1.0

Operator :	NF
Compiled by :	LCH
Checked by :	KES

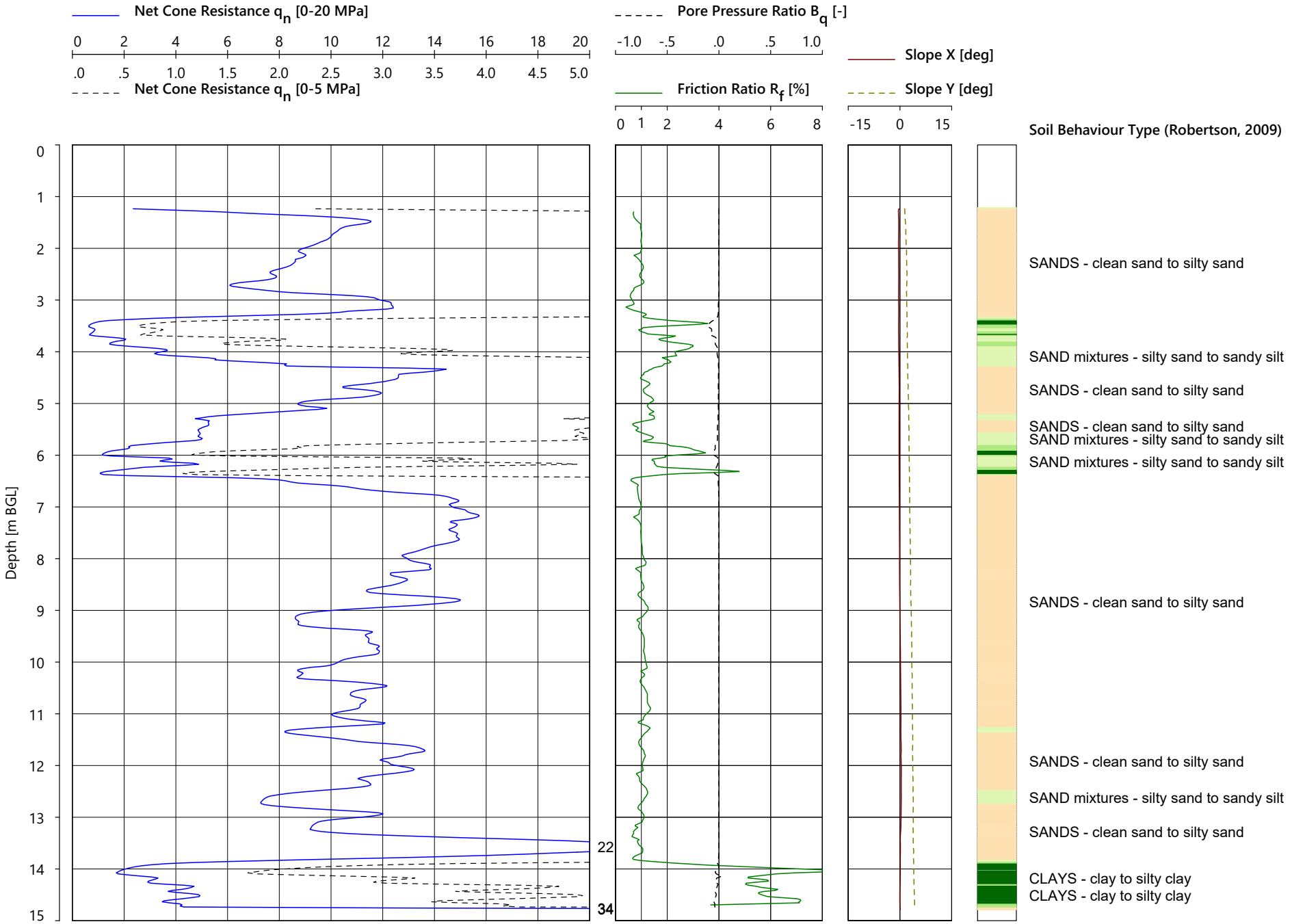
Location : MS-CPT35

Coordinates : **E** 482011.77 **N** 411979.34 **Ground Level [m OD] :** +0.78

Project : 212562

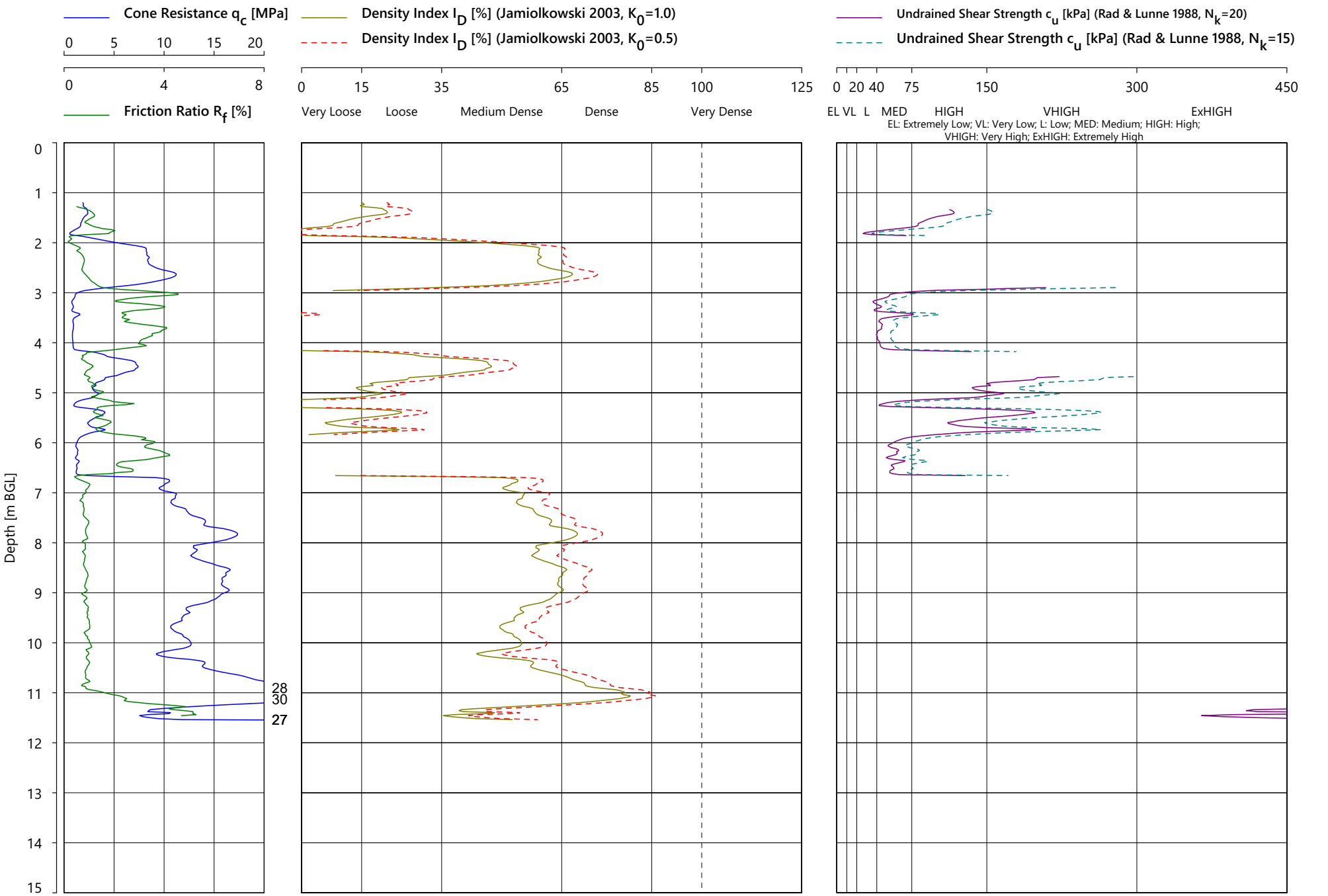
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI

Client : SSE Generation Limited (SSE)

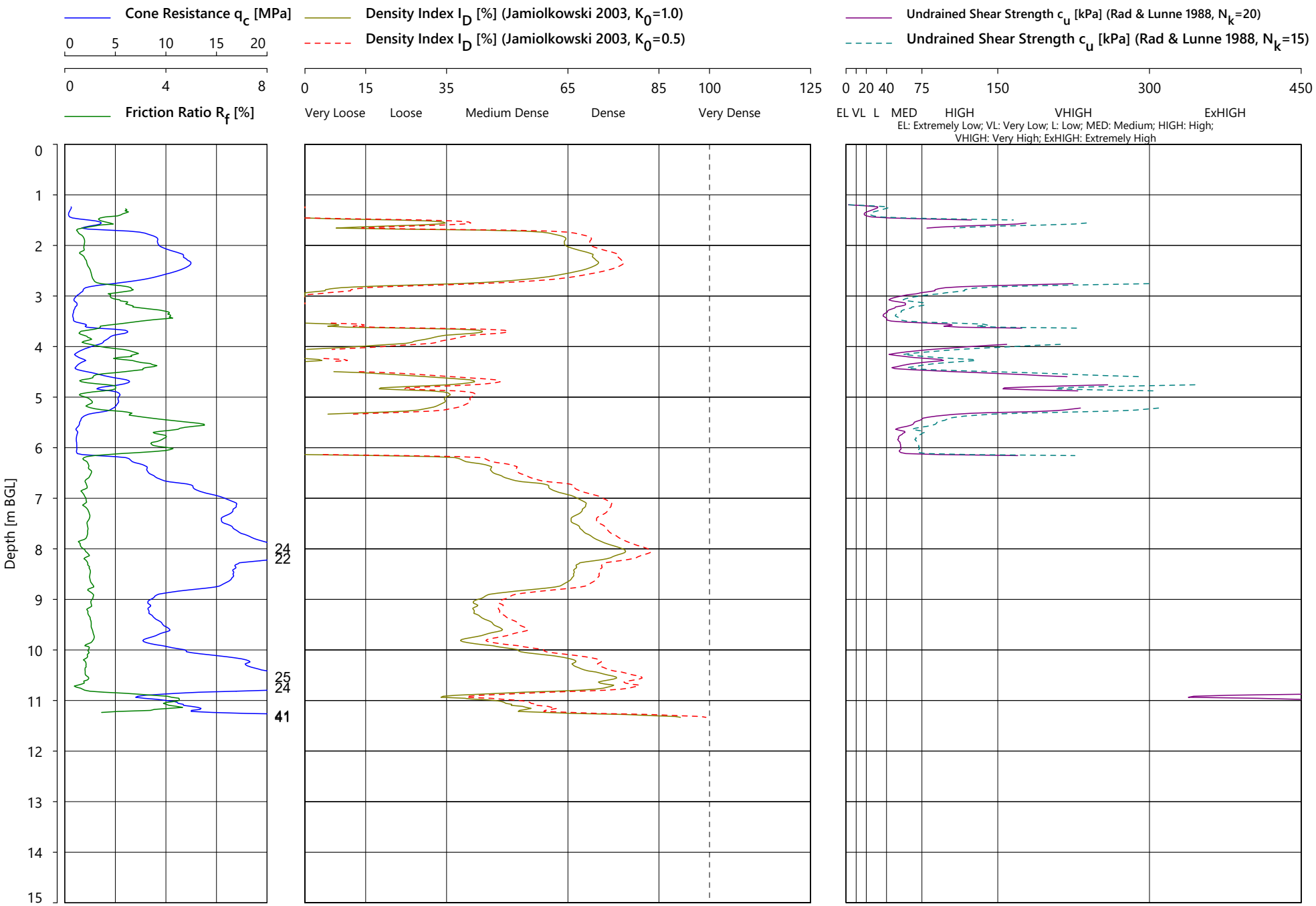


Piezocone Derived Data					
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Operator :**	HG,MS
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Compiled by :**	LCH
Date of Test :	05-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Checked by :**	KES
		Assumed Water Level [m gl] :	-1.0		

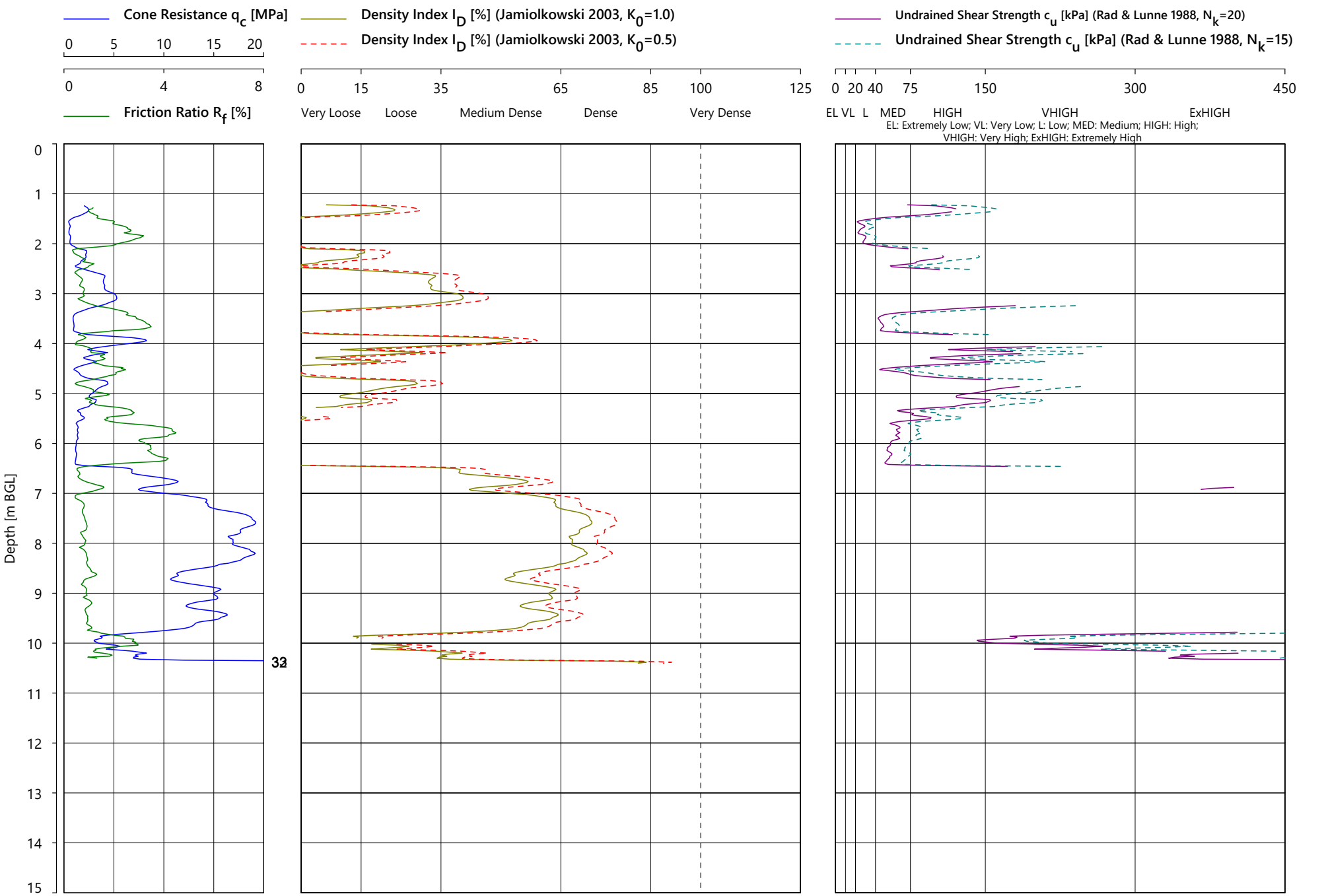
Location : MS-CPT36
Coordinates : **E** 482110.55 **N** 411781.98 **Ground Level [m OD] :** +0.92
Project : 212562
F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
Client : SSE Generation Limited (SSE)



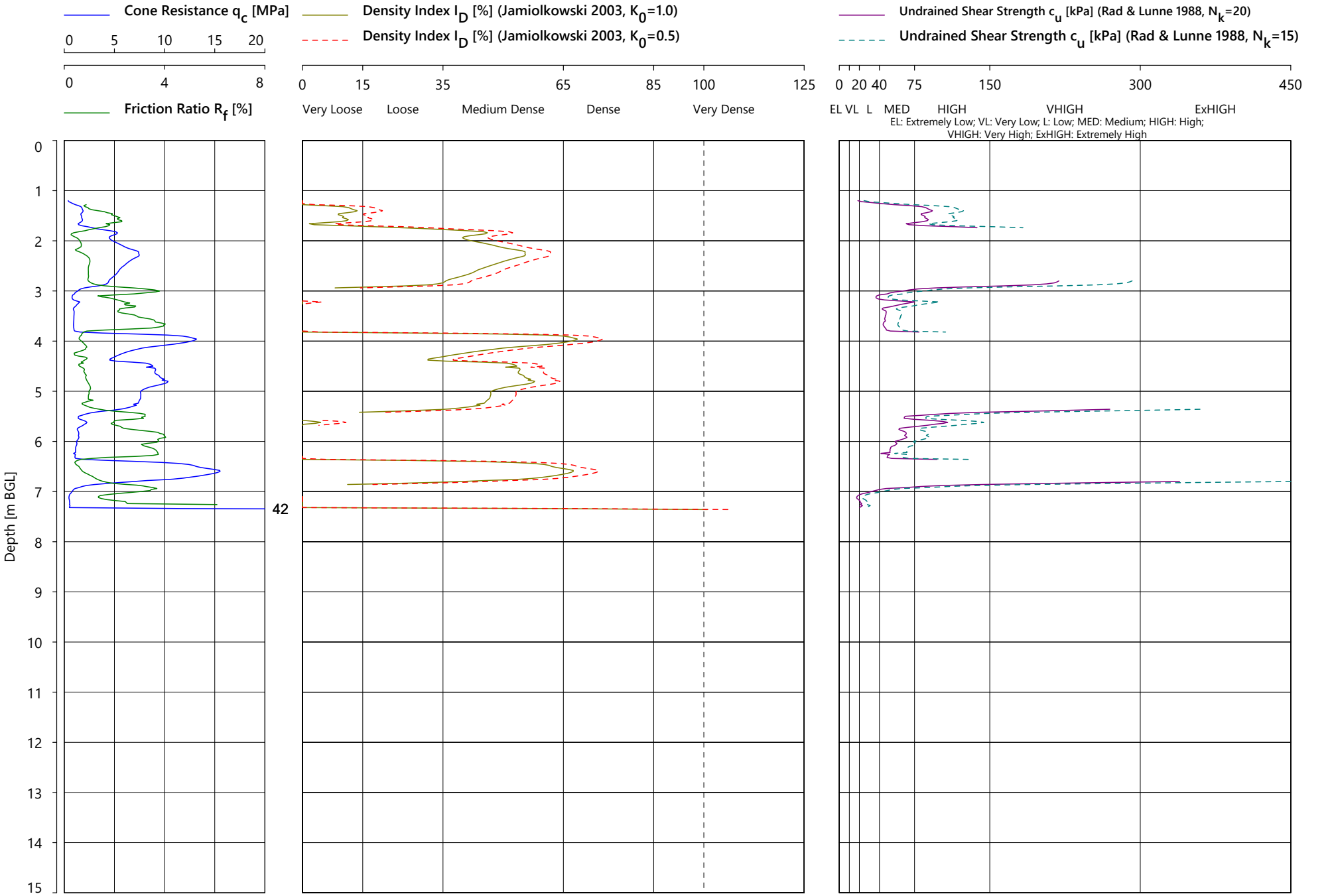
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT01
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS	**Coordinates :** **E** 480334.31 **N** 410094.40 **Ground Level [m OD] :** +1.81
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 18-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



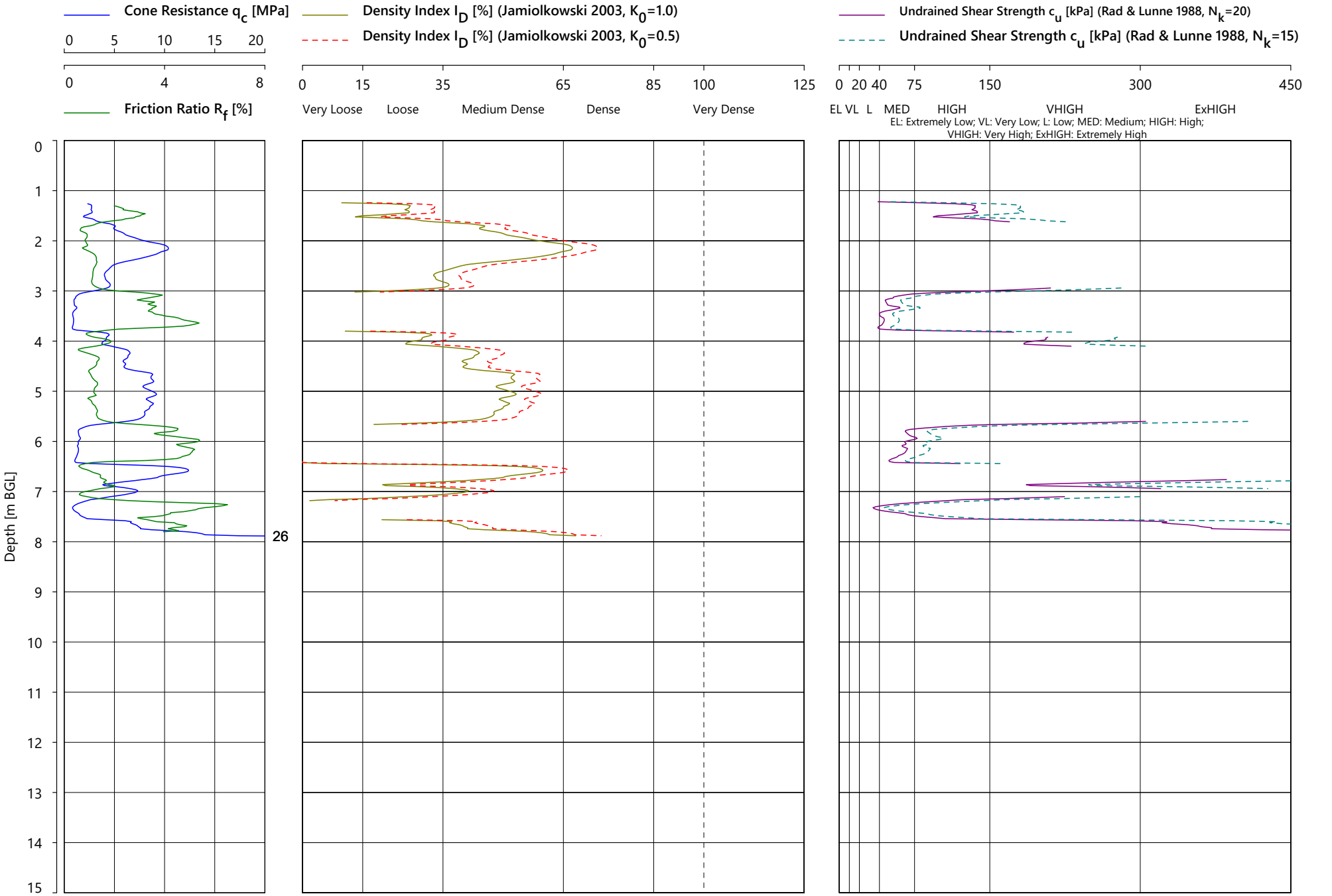
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT02
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS	**Coordinates :** **E** 480347.81 **N** 410189.59 **Ground Level [m OD] :** +1.30
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 18-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



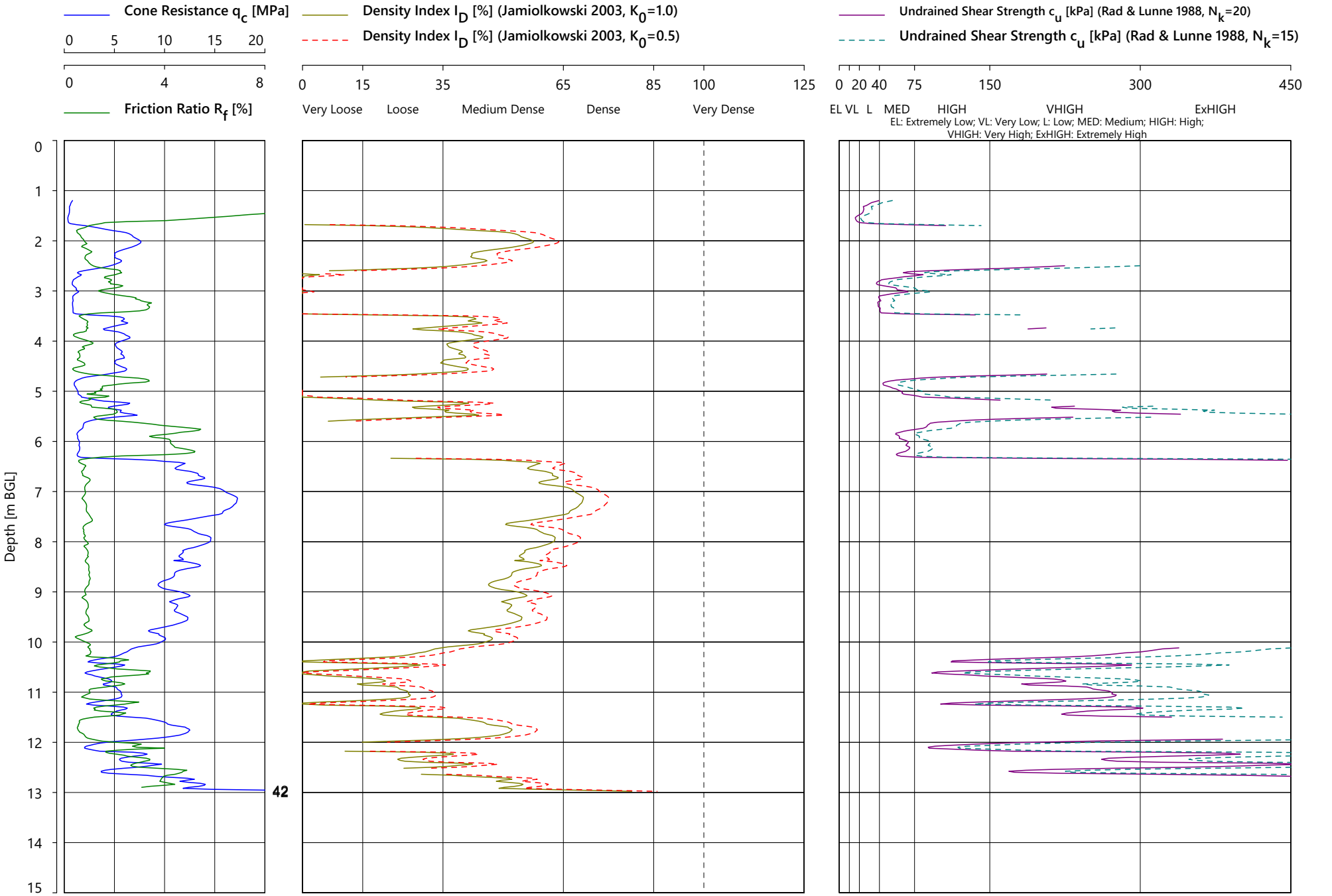
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT03
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS	**Coordinates :** **E** 480362.27 **N** 410292.25 **Ground Level [m OD] :** +1.59
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 18-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



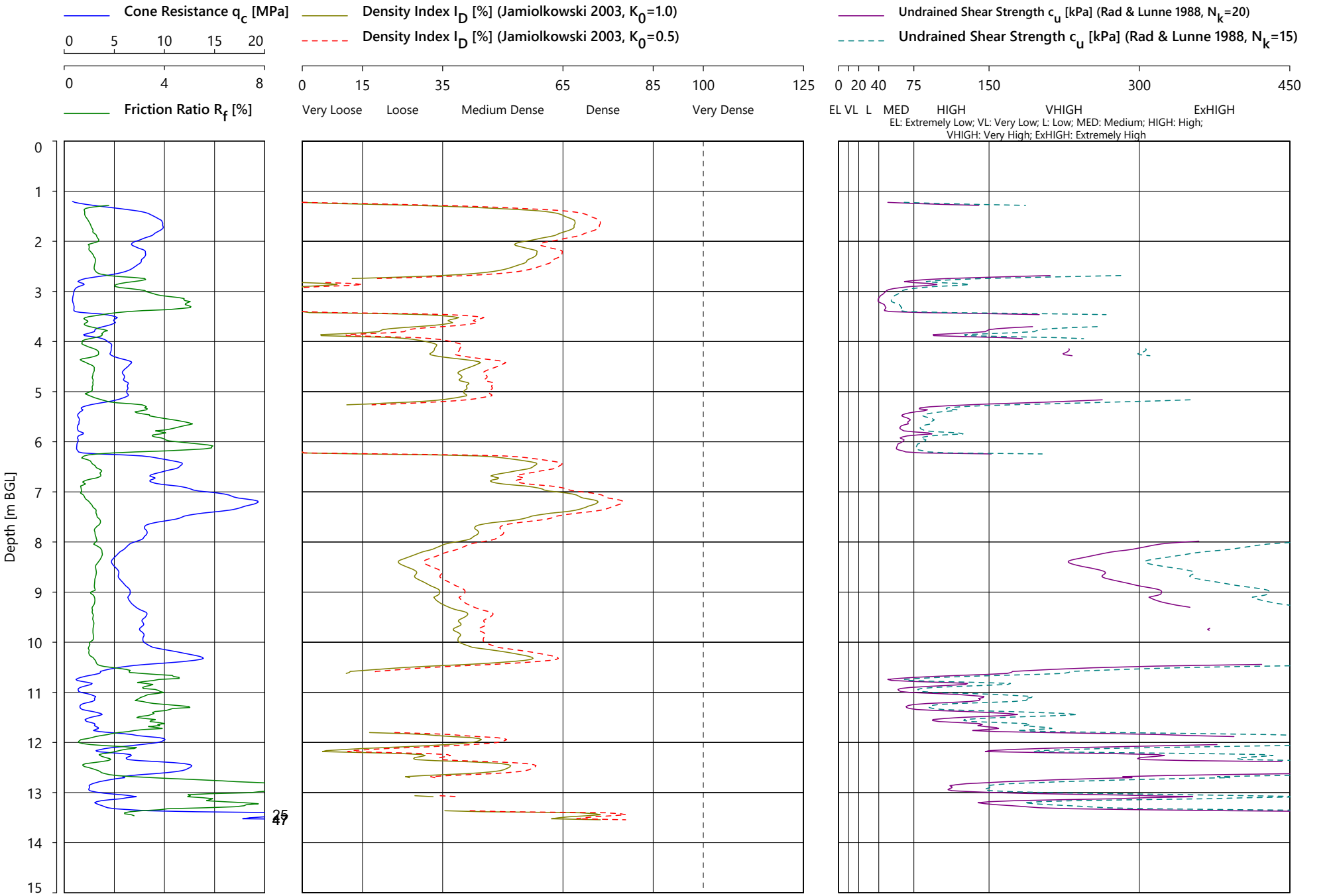
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** AR-CPT04
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS	**Coordinates :** **E** 480389.27 **N** 410389.61 **Ground Level [m OD] :** +1.28
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 03-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



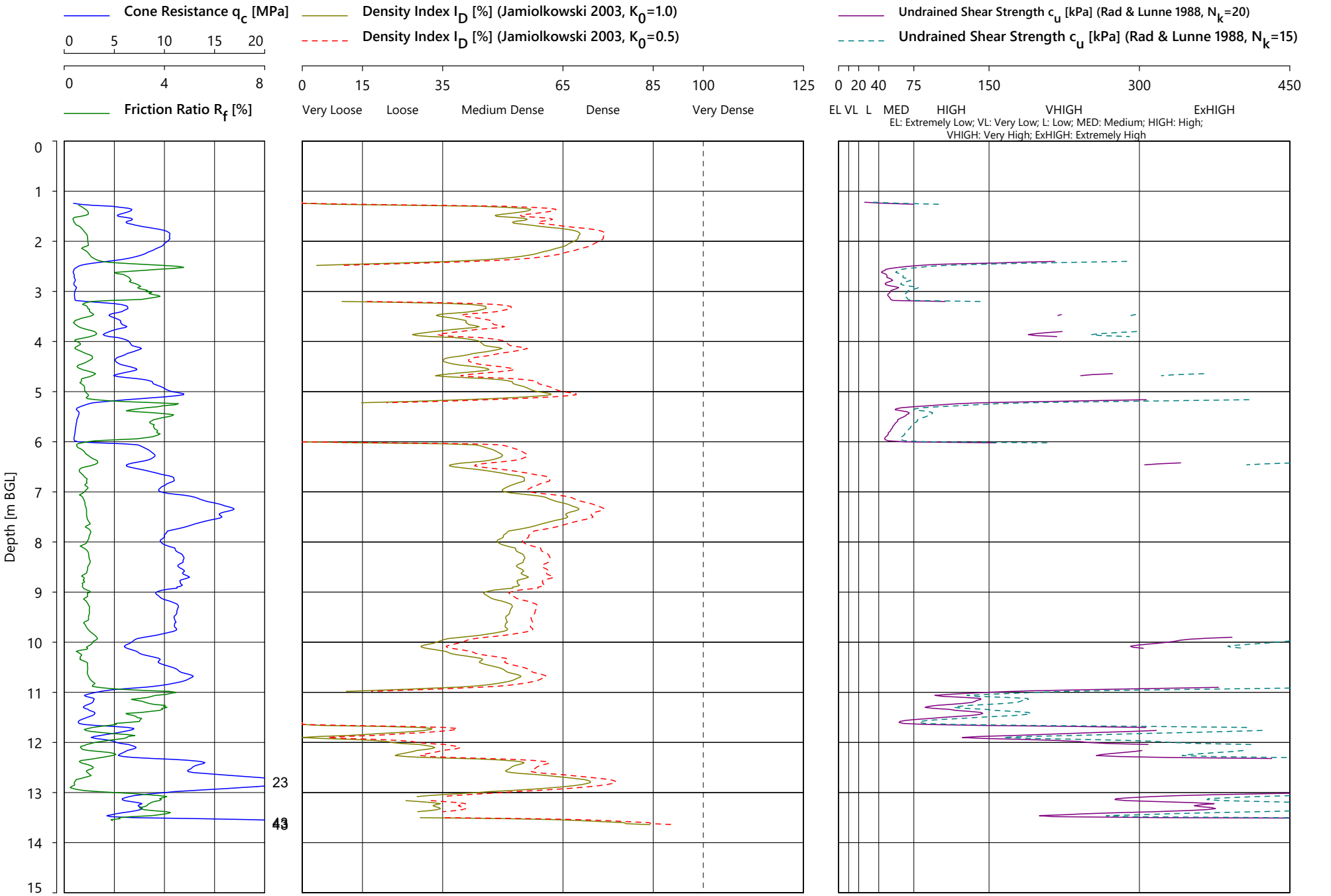
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT05
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 480390.06 **N** 410490.44 **Ground Level [m OD] :** +1.54
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 30-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



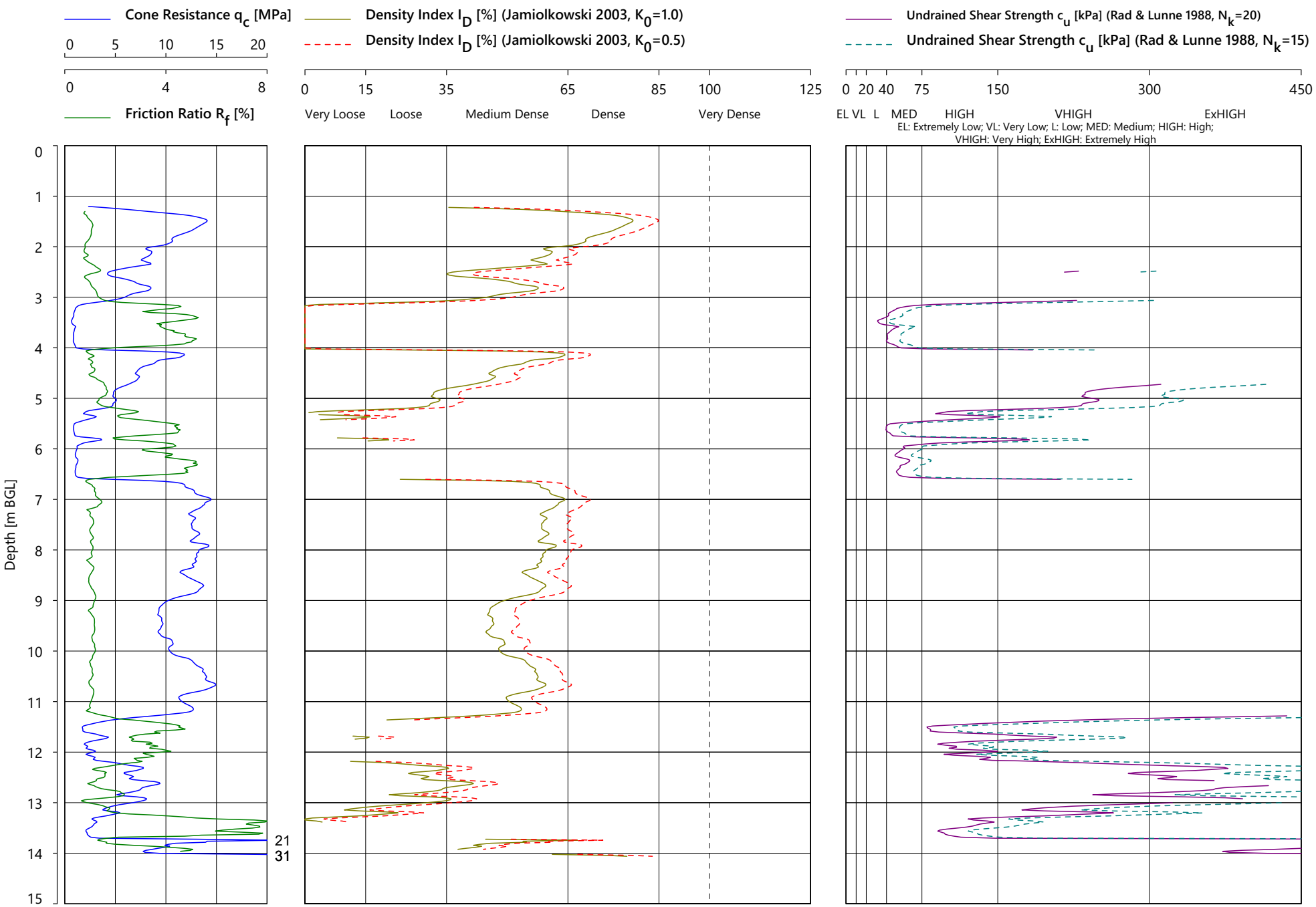
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** AR-CPT06
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 480416.83 **N** 410587.66 **Ground Level [m OD] :** +1.40
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 13-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



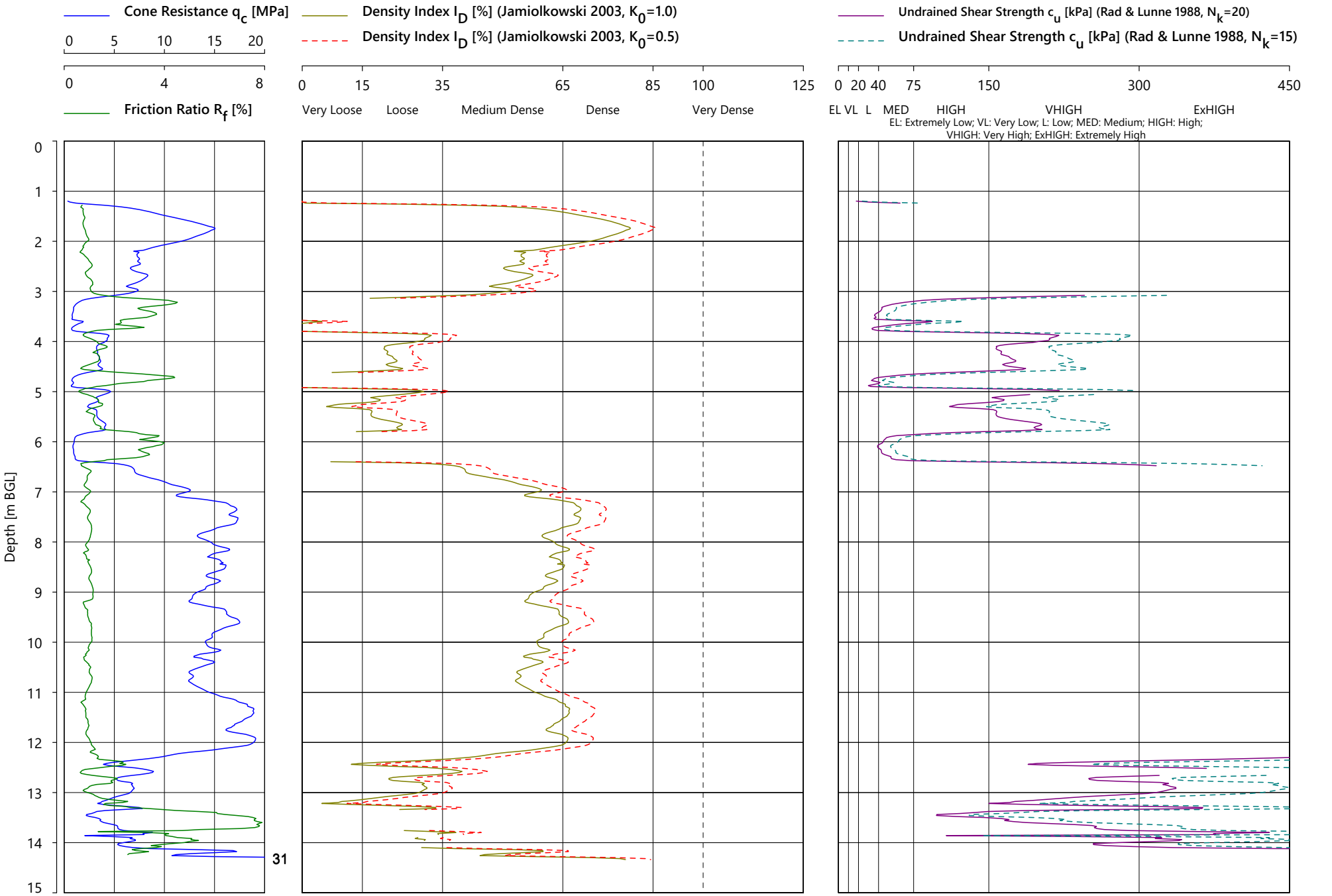
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT07
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 480417.41 **N** 410688.22 **Ground Level [m OD] :** +1.19
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 30-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



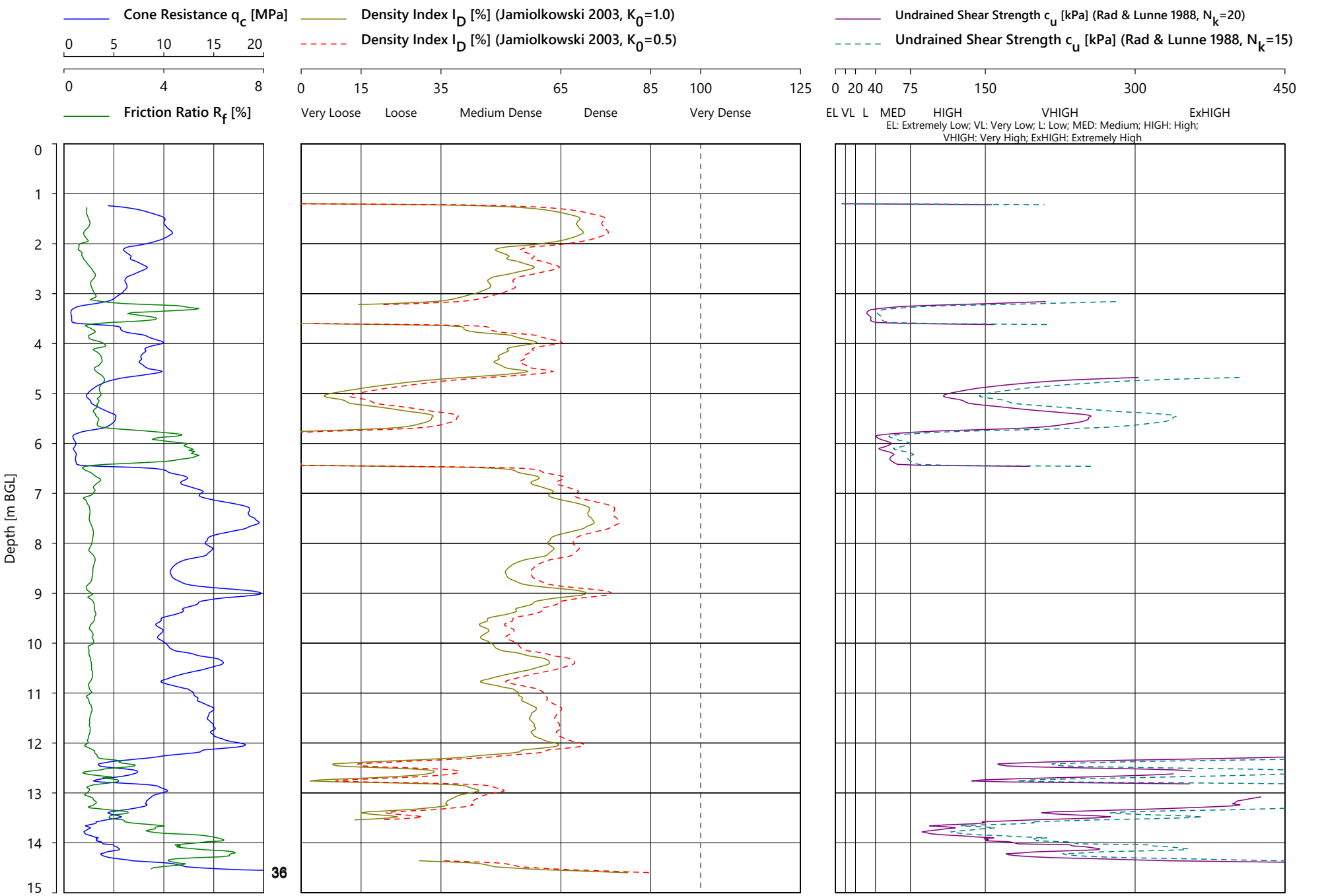
Density Index and Undrained Shear Strength				**Location :**	**AR-CPT08**
CPT Truck ID :	GB17	**Stop Criterion :**	cone value	**Coordinates :**	**E** 480444.65 **N** 410785.62 **Ground Level [m OD] :** +0.75
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	03-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	MS		
		Compiled by :	LCH		
		Checked by :	KES		



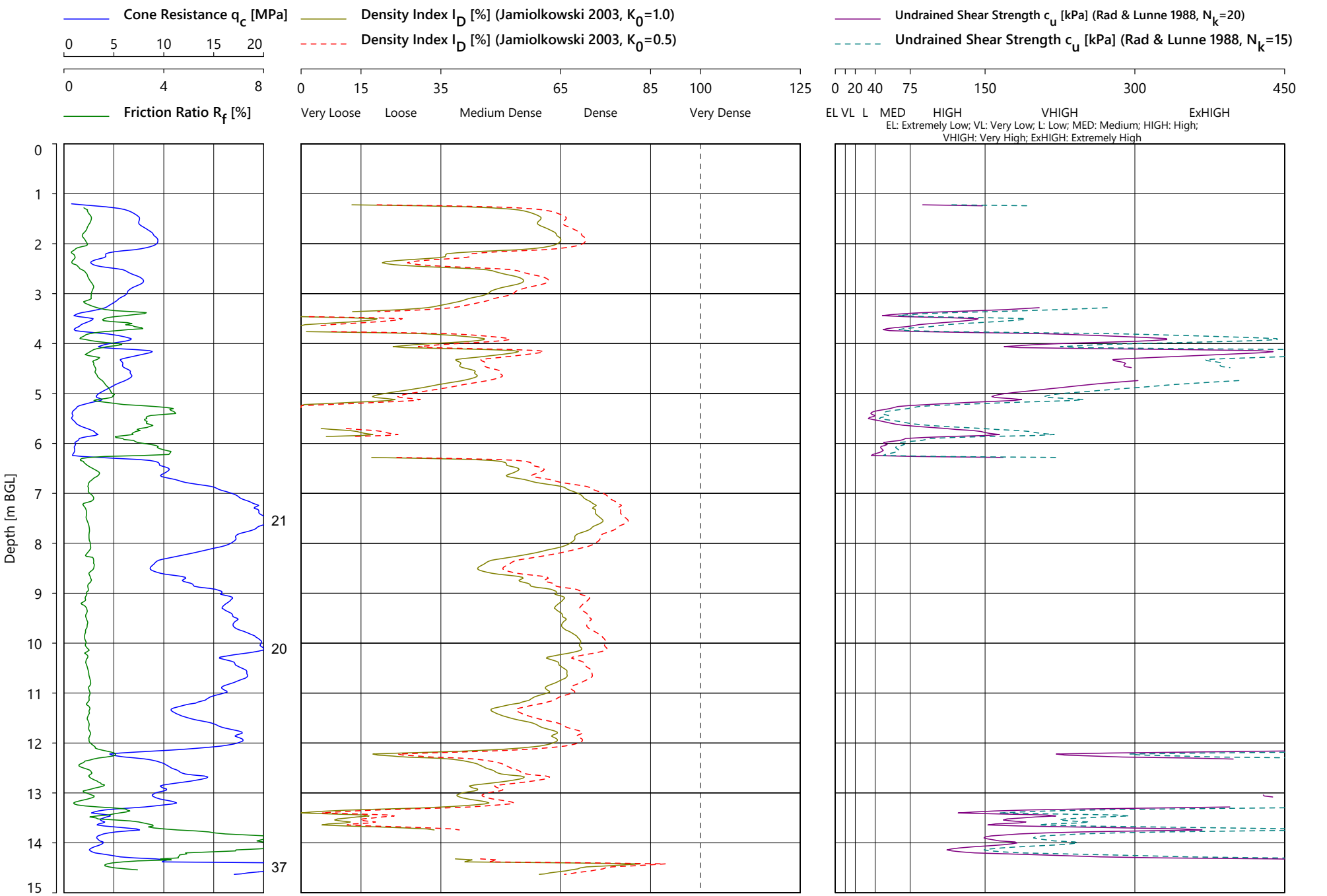
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT09
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 480444.94 **N** 410886.70 **Ground Level [m OD] :** +1.40
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 30-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



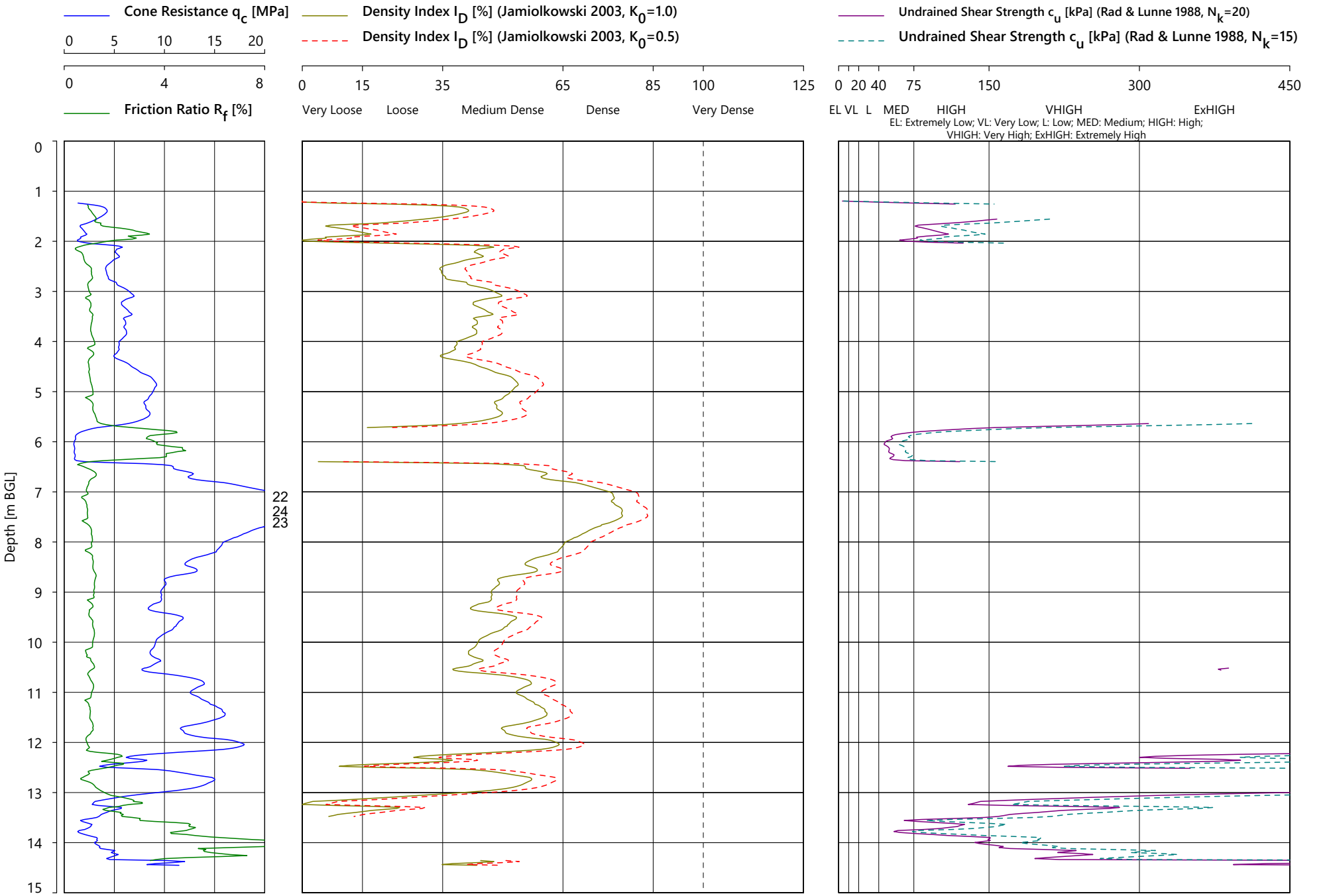
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT10
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS	**Coordinates :** **E** 480470.24 **N** 410984.11 **Ground Level [m OD] :** +1.30
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 03-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



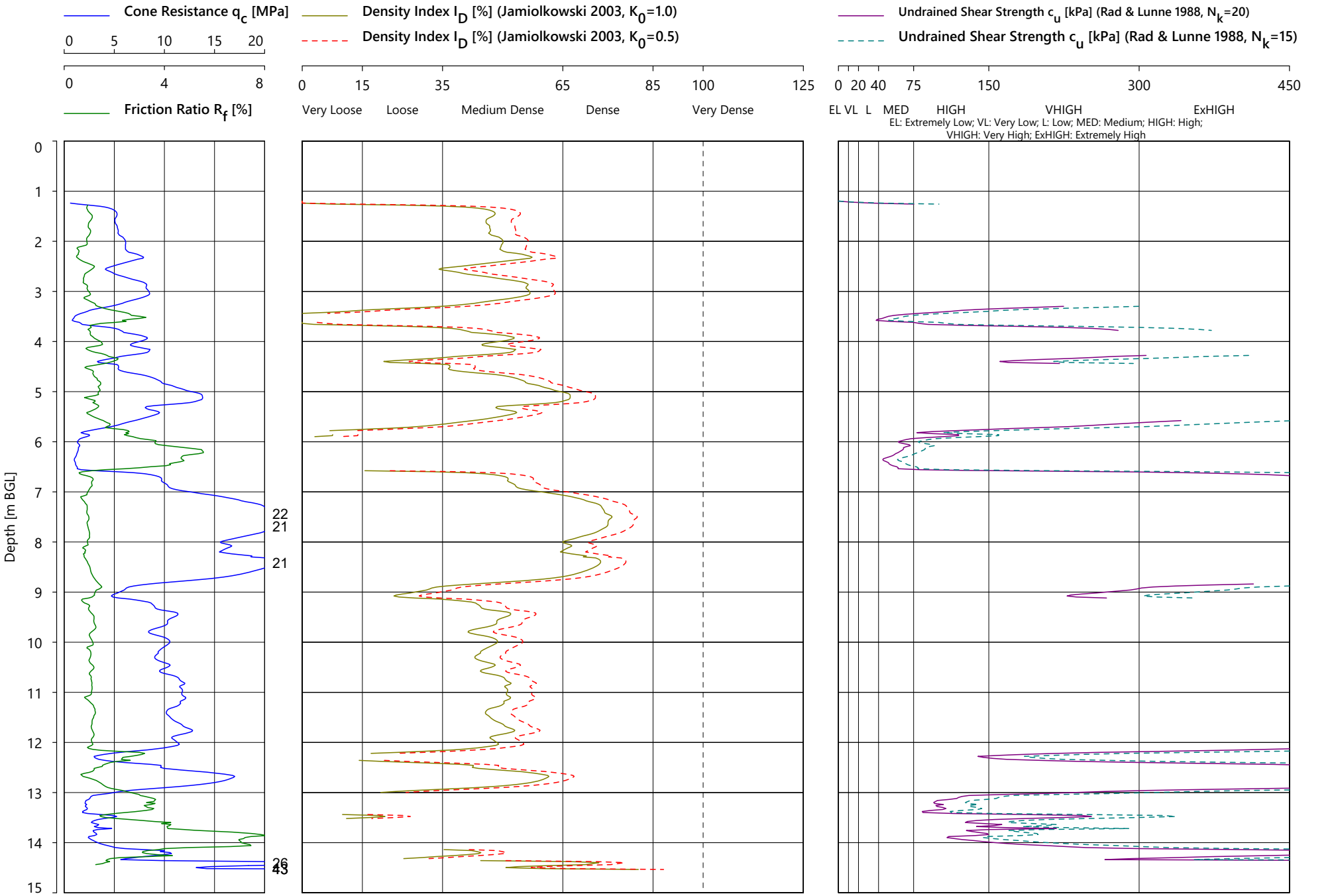
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT11
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 480473.42 **N** 411084.17 **Ground Level [m OD] :** +1.39
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 30-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



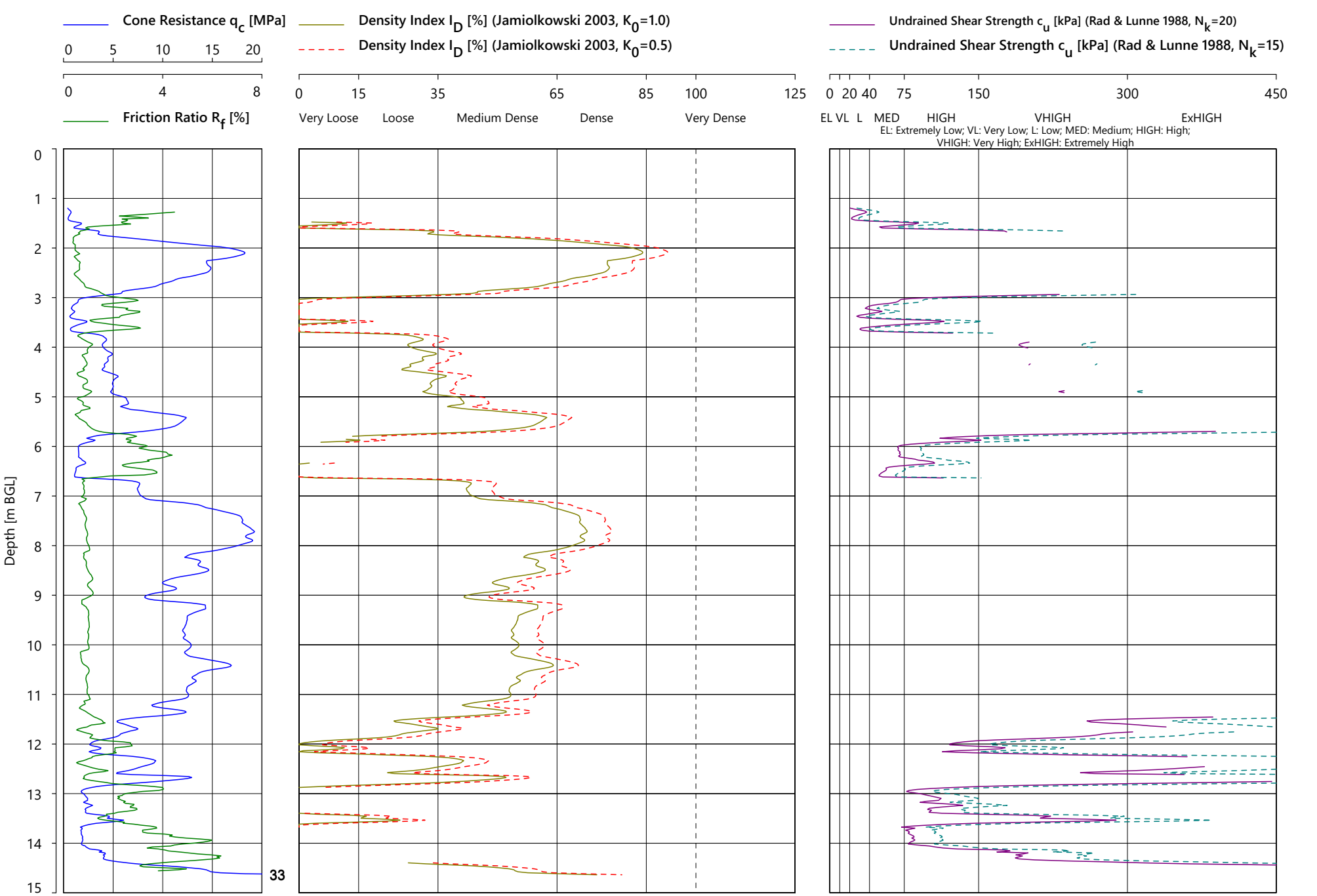
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** AR-CPT12
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 480608.39 **N** 411147.51 **Ground Level [m OD] :** +1.35
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



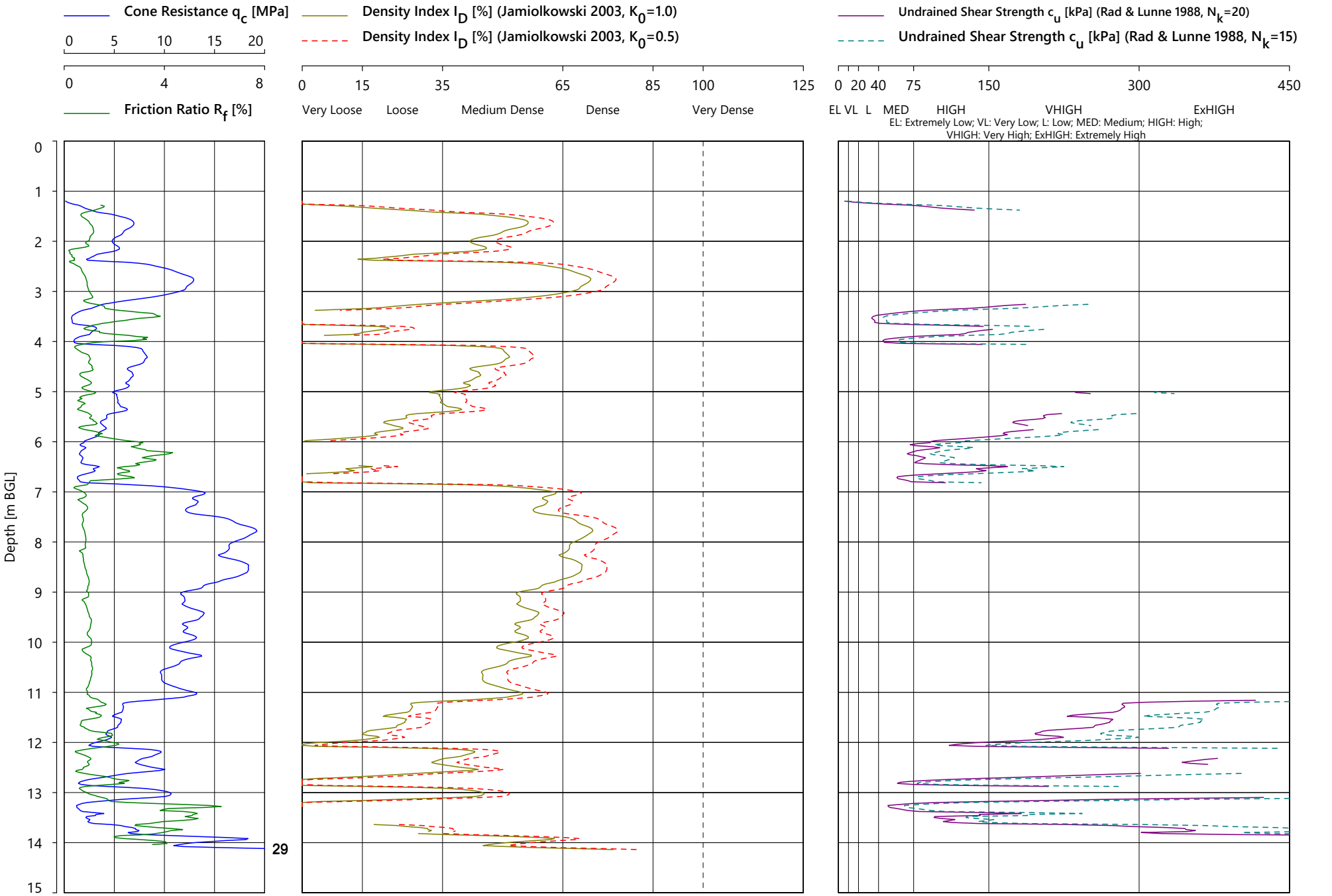
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** AR-CPT13
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 480705.86 **N** 411171.71 **Ground Level [m OD] :** +1.26
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



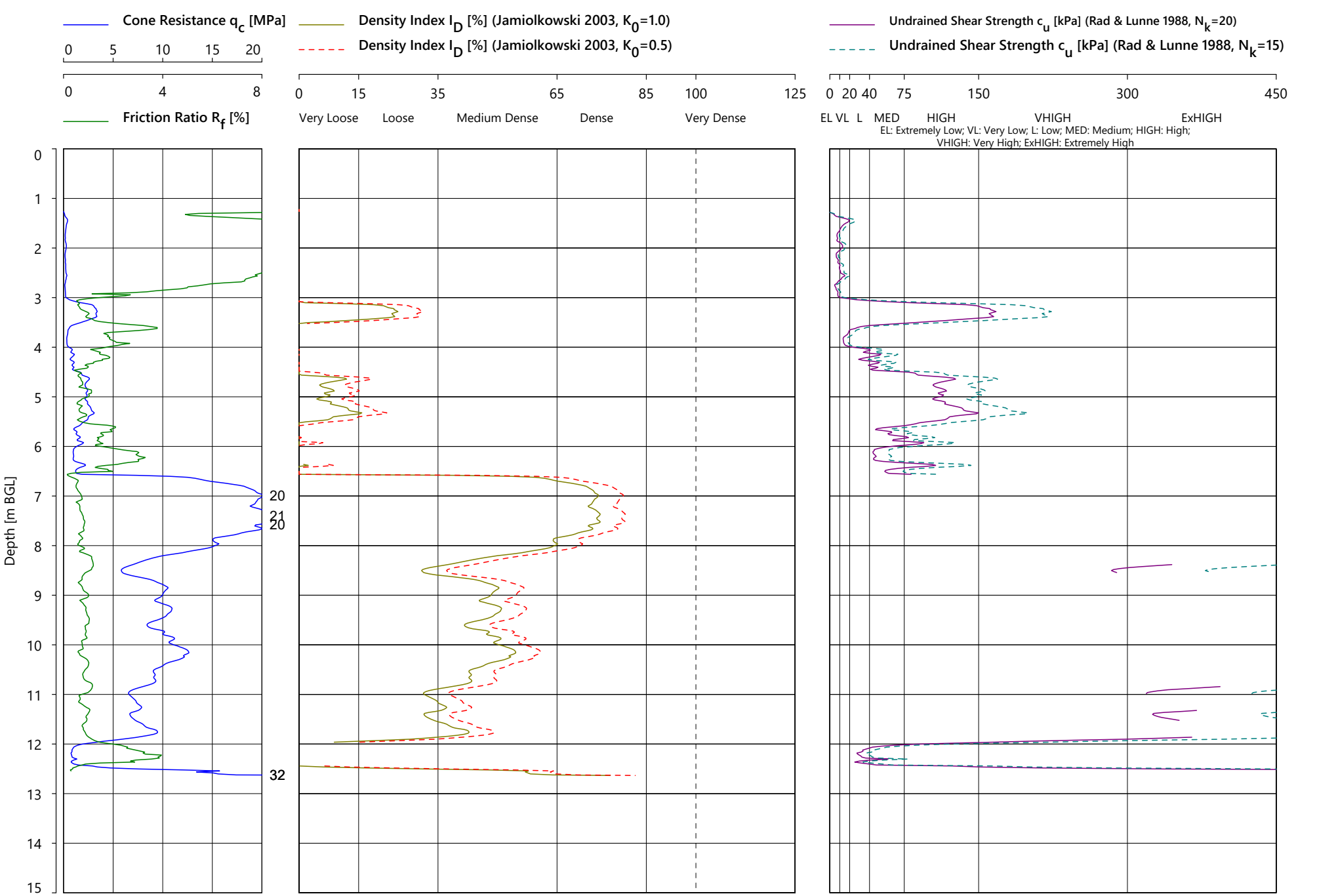
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** AR-CPT14
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 480807.18 **N** 411170.16 **Ground Level [m OD] :** +1.30
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



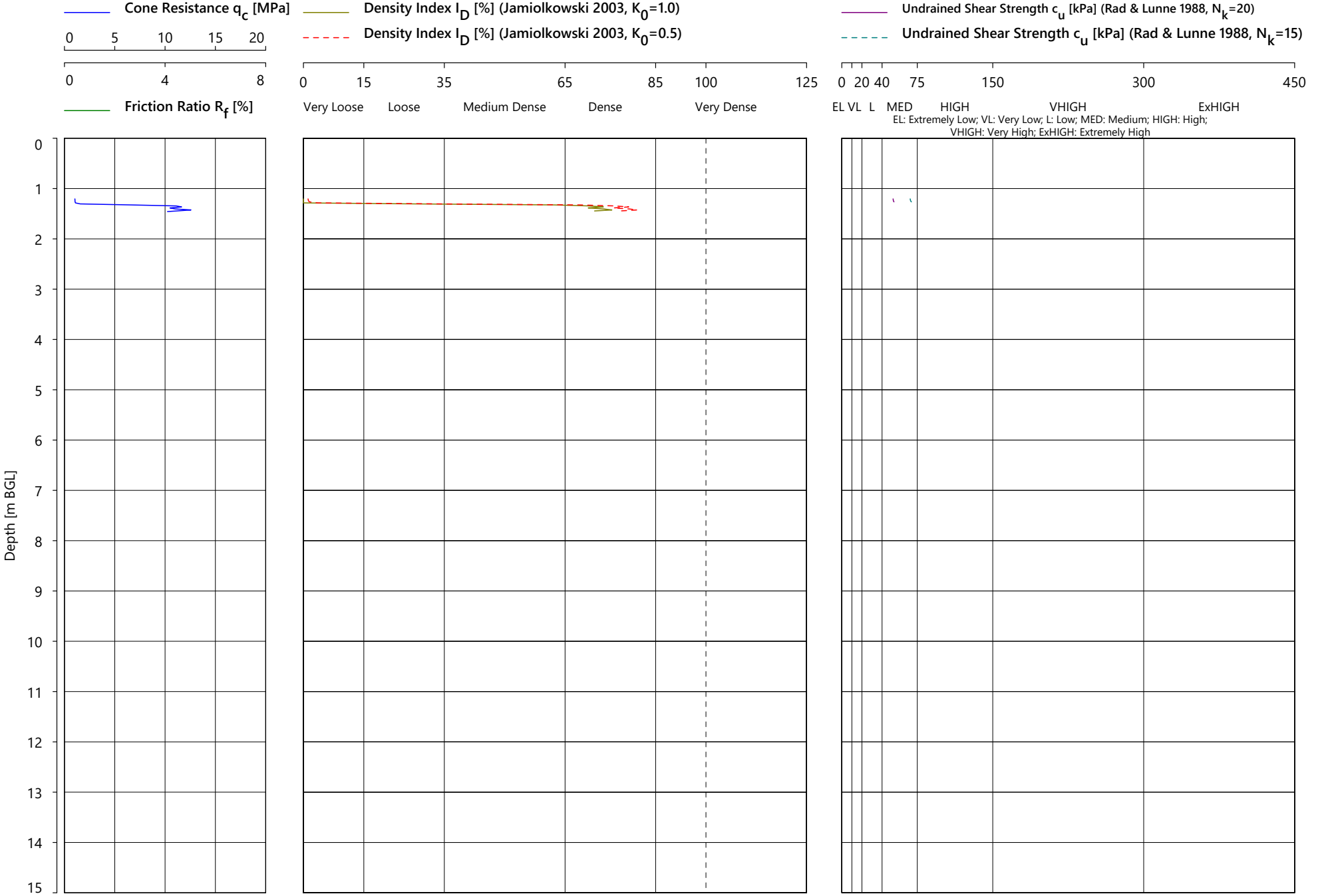
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** AR-CPT15
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 480904.21 **N** 411183.54 **Ground Level [m OD] :** +1.22
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 06-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



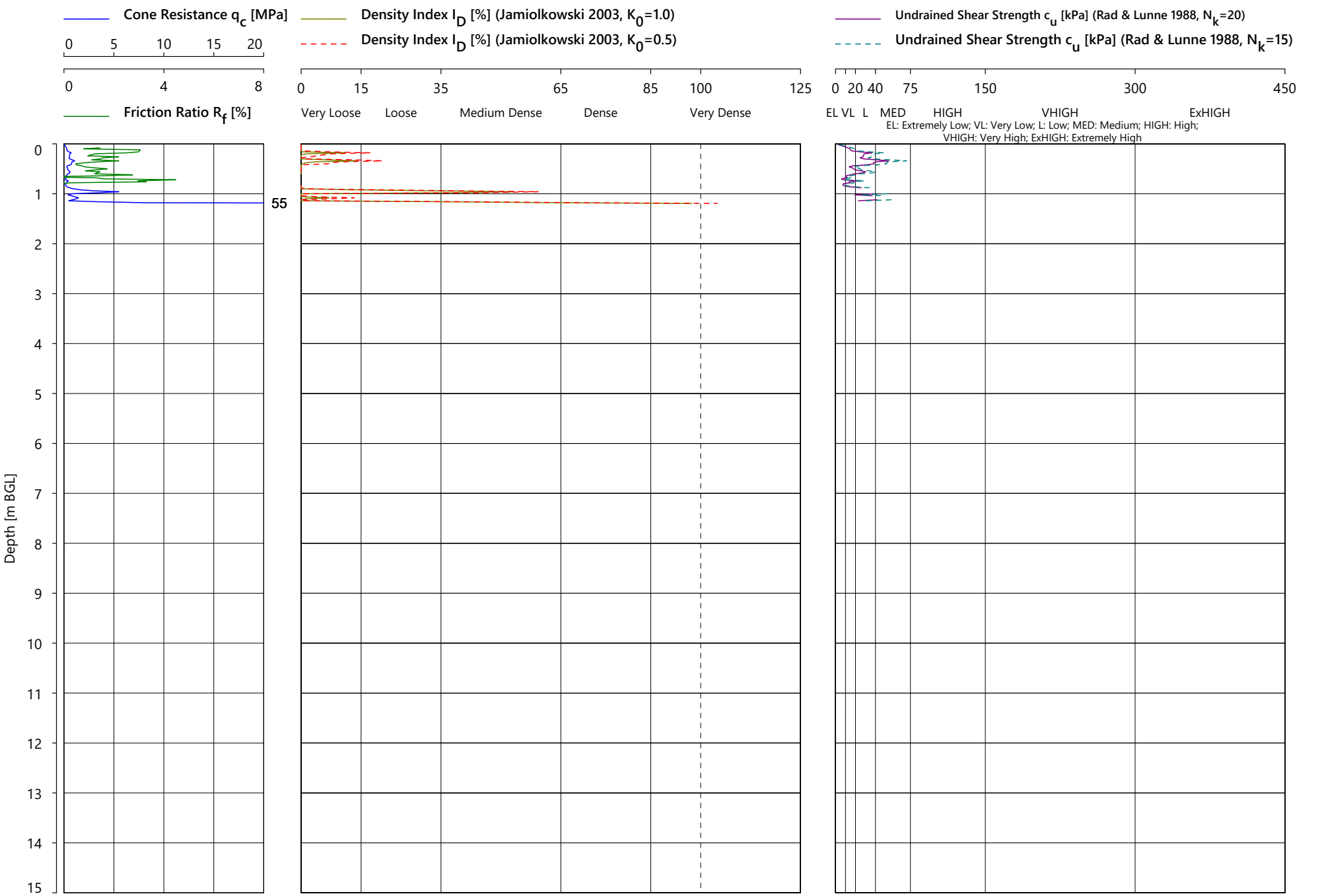
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** AR-CPT16
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 481005.77 **N** 411194.36 **Ground Level [m OD] :** +1.28
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



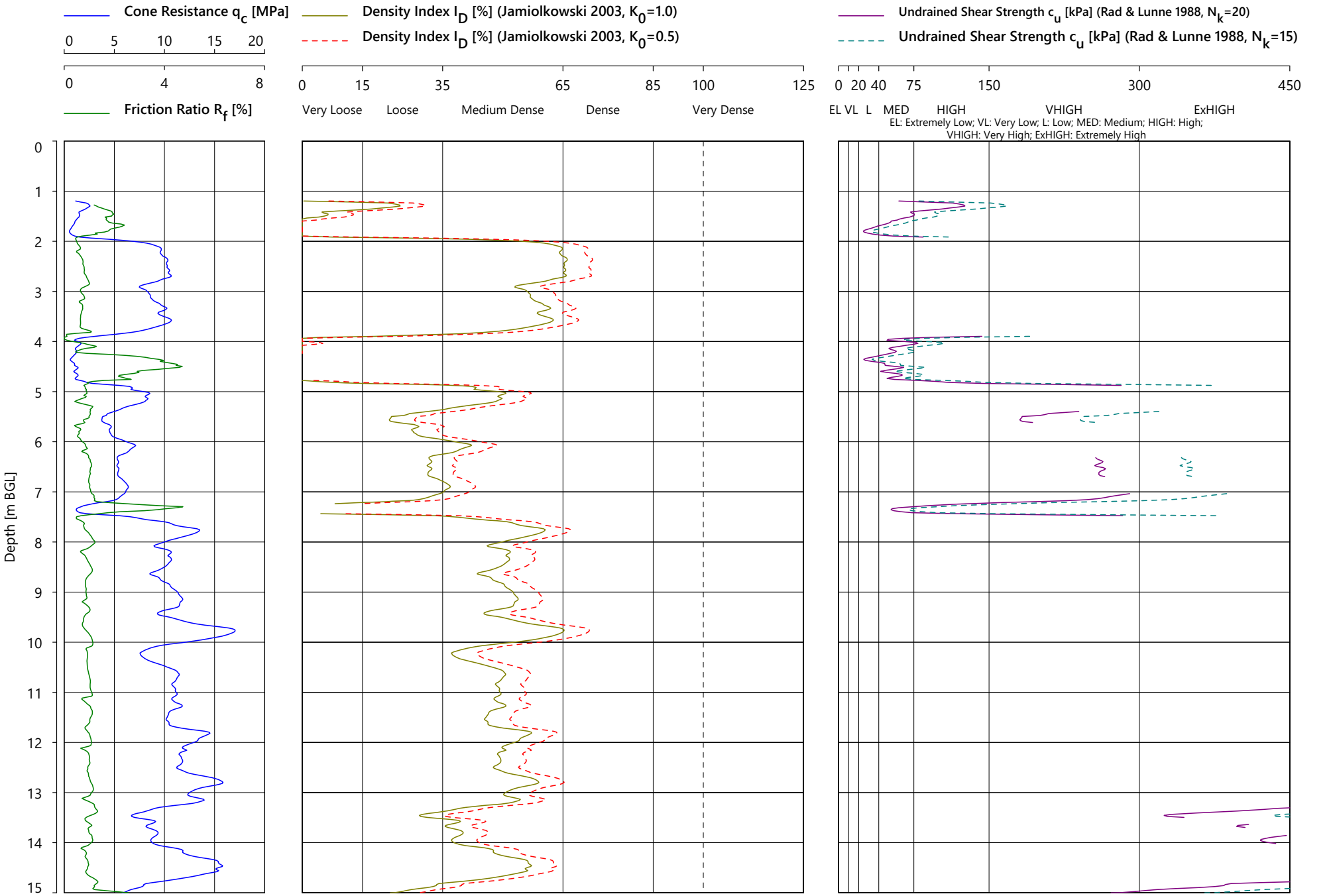
Density Index and Undrained Shear Strength				**Location :**	**AR-CPT17**
CPT Truck ID :	GB17	**Stop Criterion :**	end depth reached	**Coordinates :**	**E** 481103.20 **N** 411220.50 **Ground Level [m OD] :** +1.28
CPT Cone :	1701-3474	**Application Class / Type :**	Class 2 / TE2	**Project :**	212562
Date of Test :	17-Oct-2022	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Assumed Water Level [m gl] :	-1.0	**Client :**	SSE Generation Limited (SSE)
		Operator :	MS		
		Compiled by :	LCH		
		Checked by :	KES		



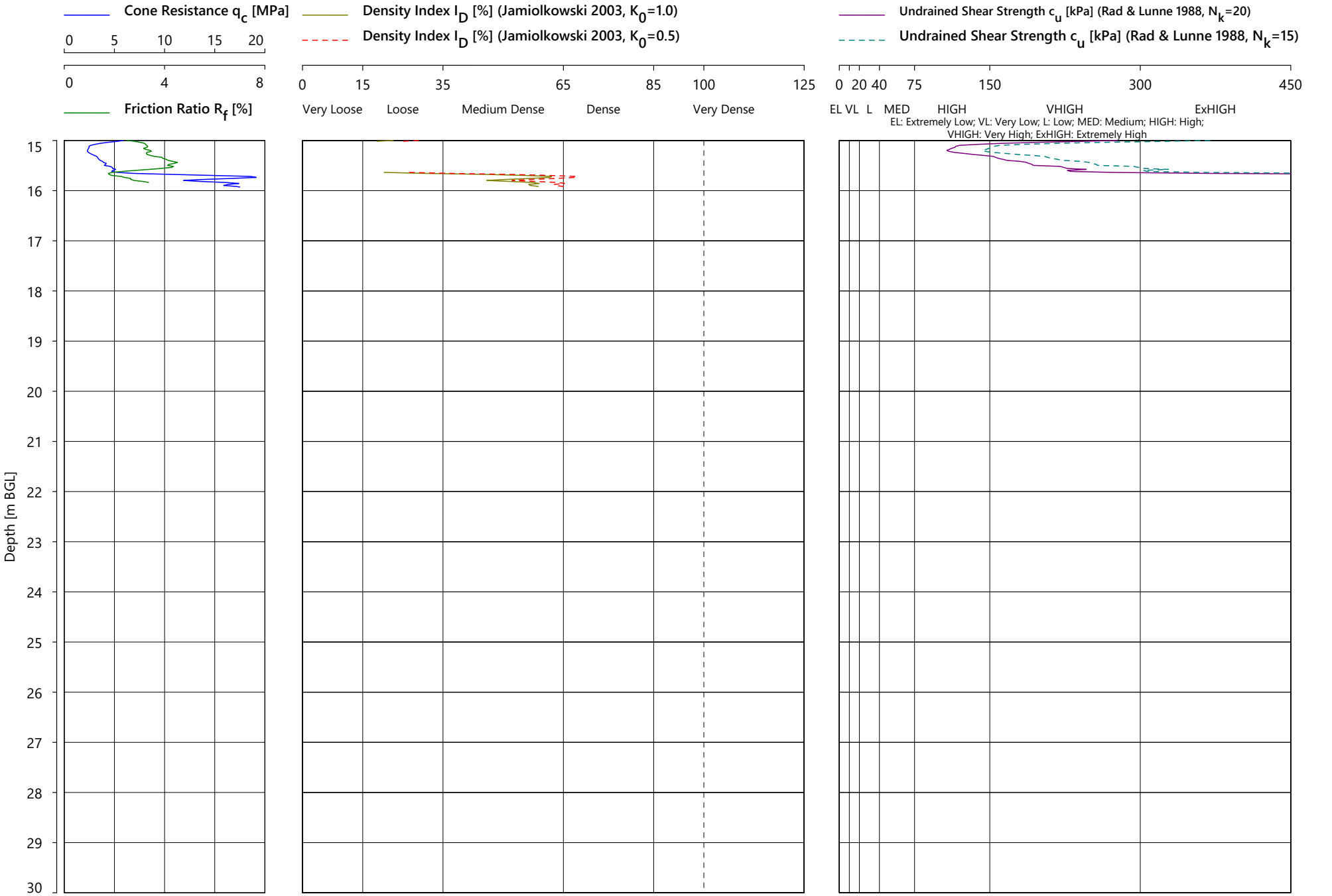
Density Index and Undrained Shear Strength	**Stop Criterion :** max. inclination value		**Location :** AR-CPT21
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 481704.32 **N** 411573.67 **Ground Level [m OD] :** +2.99
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 13-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



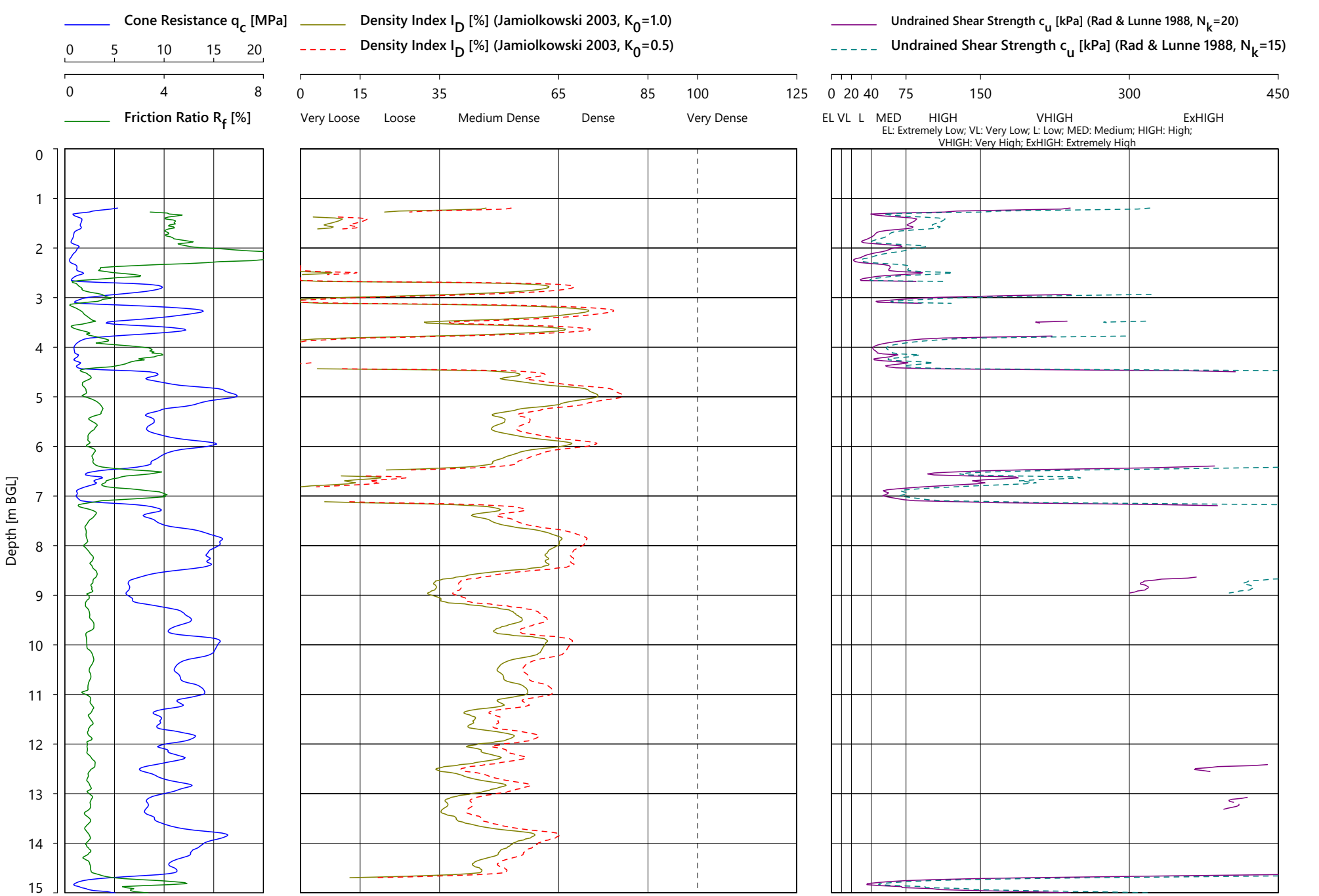
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **BR-CPT01**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482095.20 **N** 411651.80 **Ground Level [m OD] :** +2.34
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 27-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



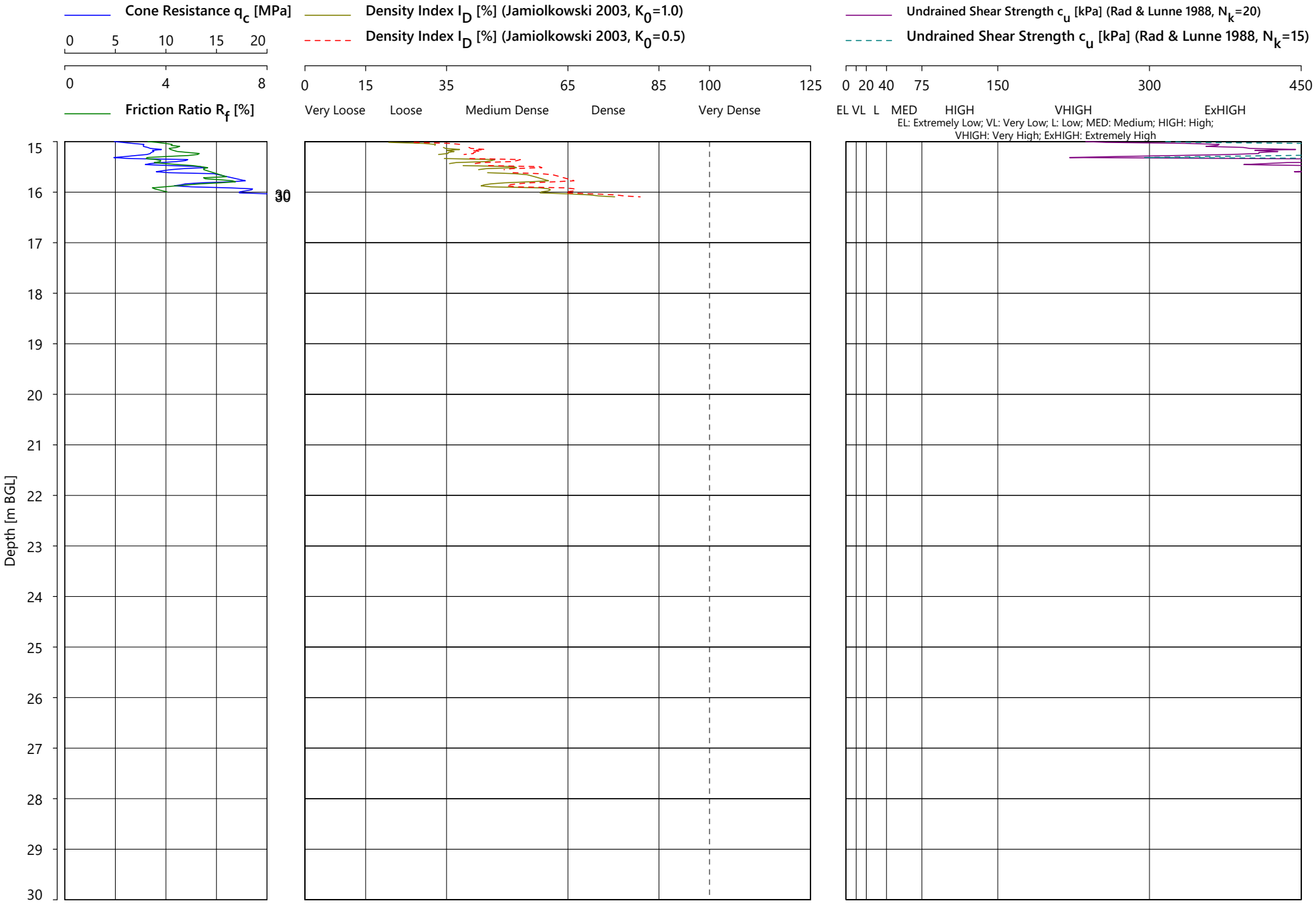
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force	**Operator :** HG,MS	**Location :** **BR-CPT04**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482453.70 **N** 411604.00 **Ground Level [m OD] :** +2.02
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 27-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



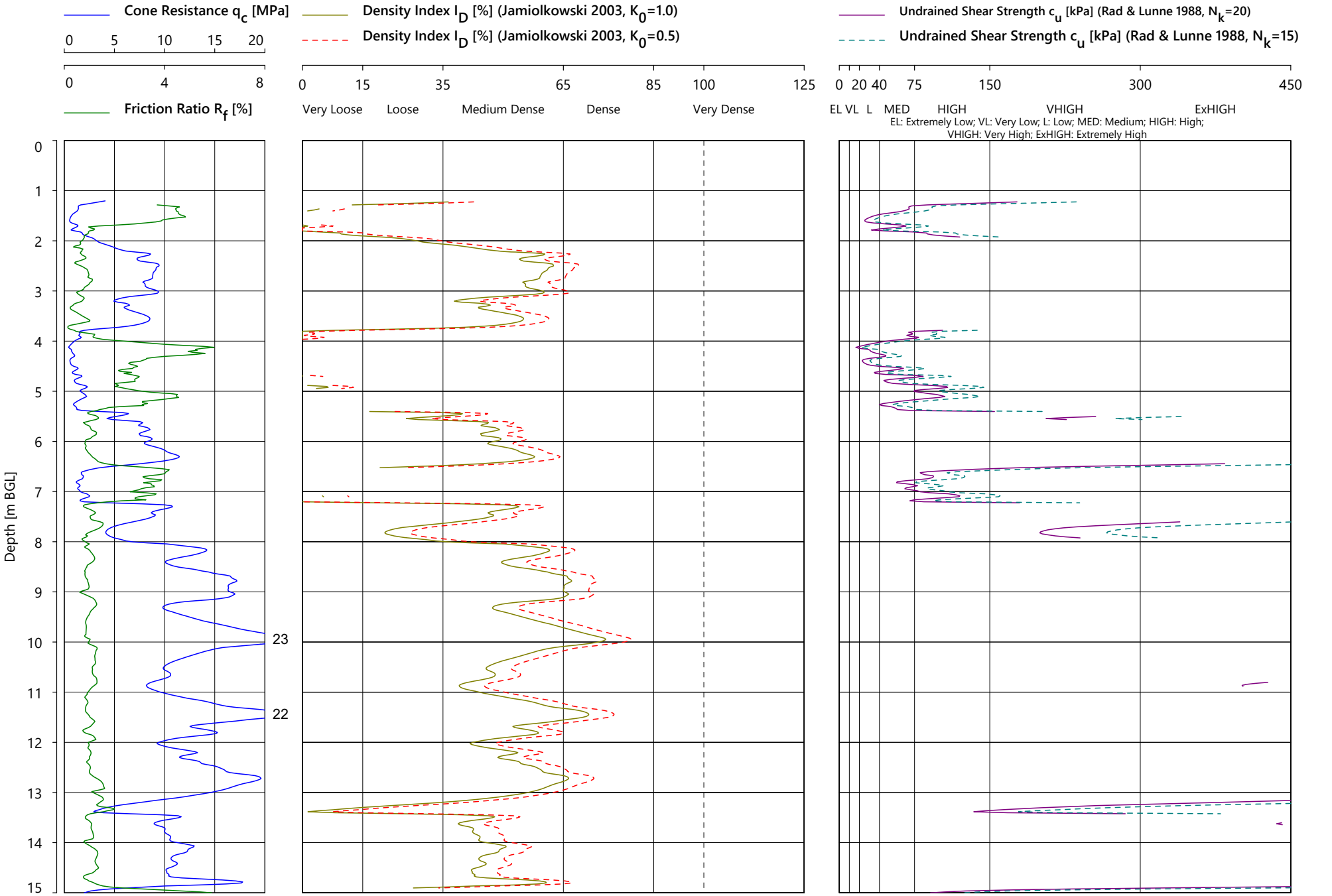
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **BR-CPT04**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482453.70 **N** 411604.00 **Ground Level [m OD] :** +2.02
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 27-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



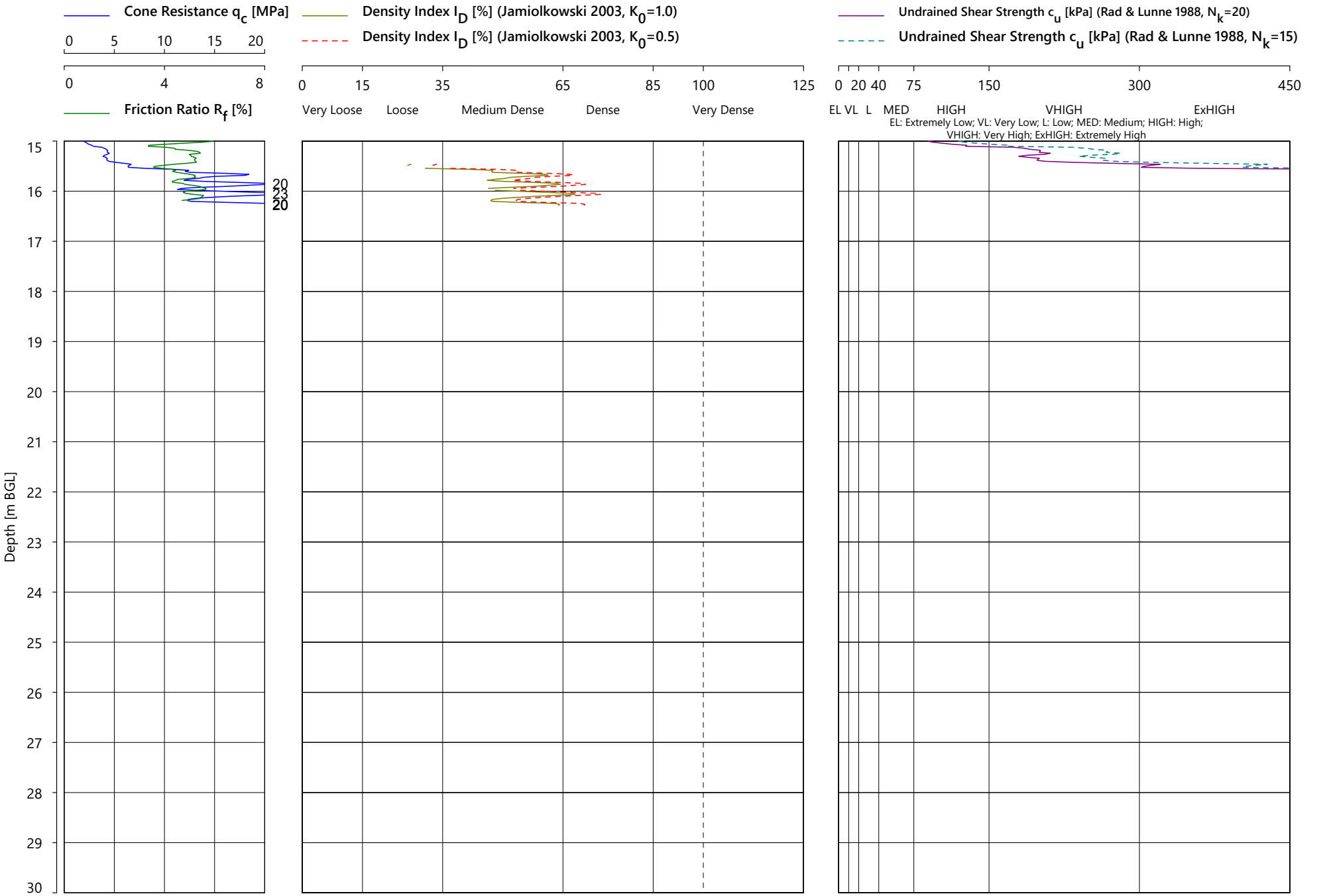
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force	**Operator :** HG,MS	**Location :** BR-CPT05
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482516.32 **N** 411776.49 **Ground Level [m OD] :** +1.72
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 25-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



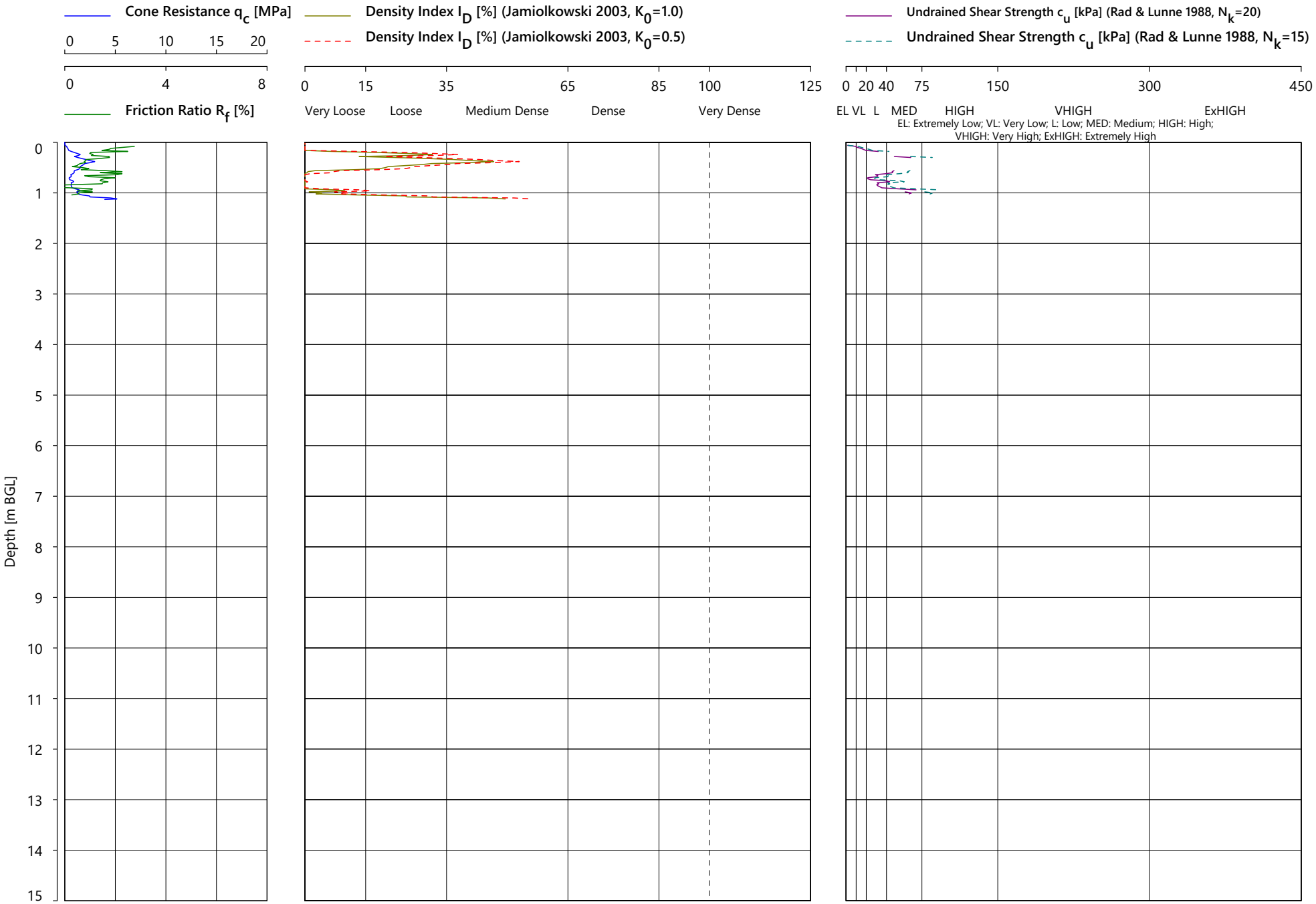
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **BR-CPT05**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482516.32 **N** 411776.49 **Ground Level [m OD] :** +1.72
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 25-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



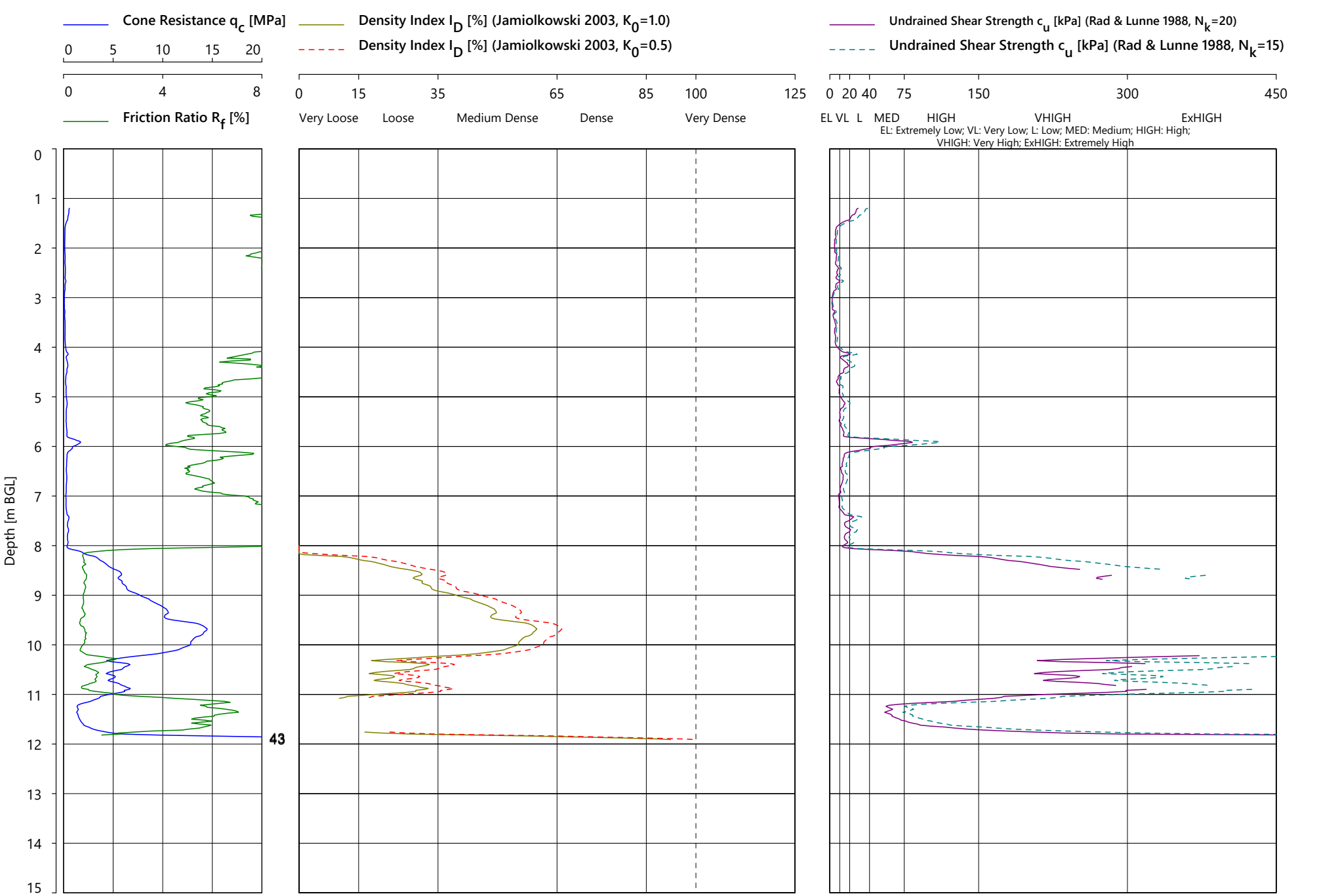
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **BR-CPT06**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482557.80 **N** 411680.40 **Ground Level [m OD] :** +1.70
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 25-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



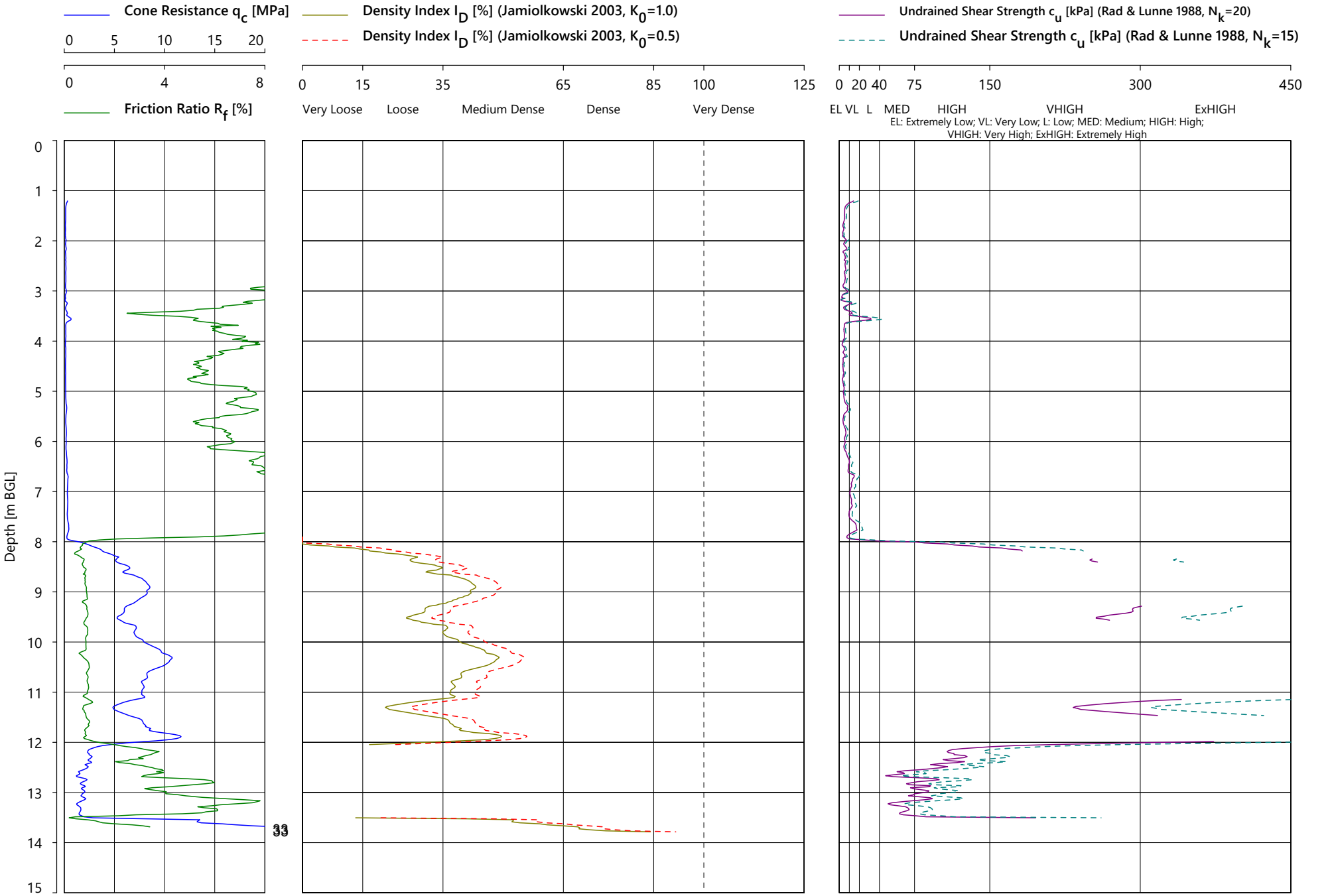
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **BR-CPT06**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482557.80 **N** 411680.40 **Ground Level [m OD] :** +1.70
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 25-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



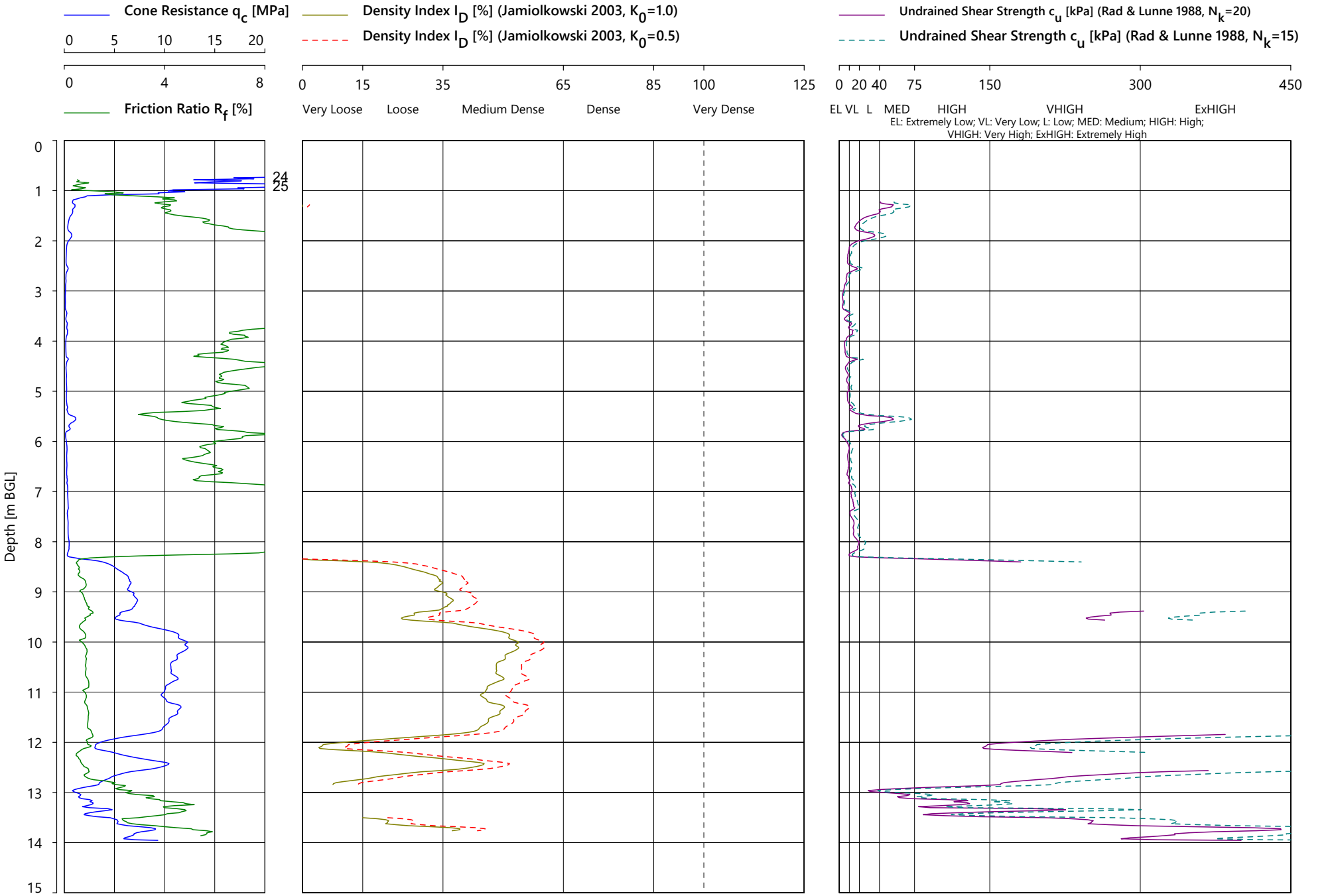
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **BR-CPT07**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482462.51 **N** 411652.94 **Ground Level [m OD] :** +1.80
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 25-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



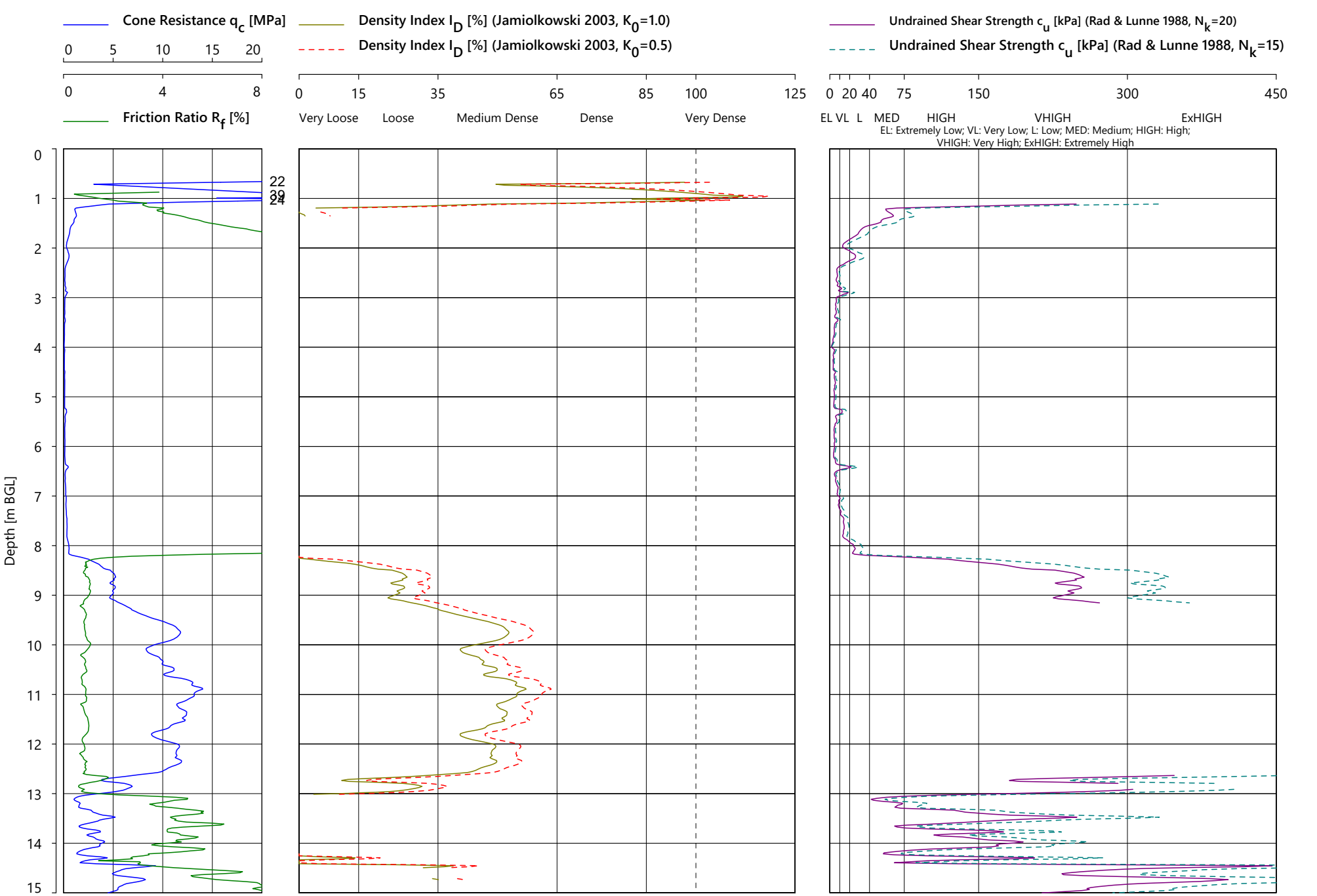
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** HR-CPT01
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 483329.69 **N** 411567.00 **Ground Level [m OD] :** +0.93
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 06-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



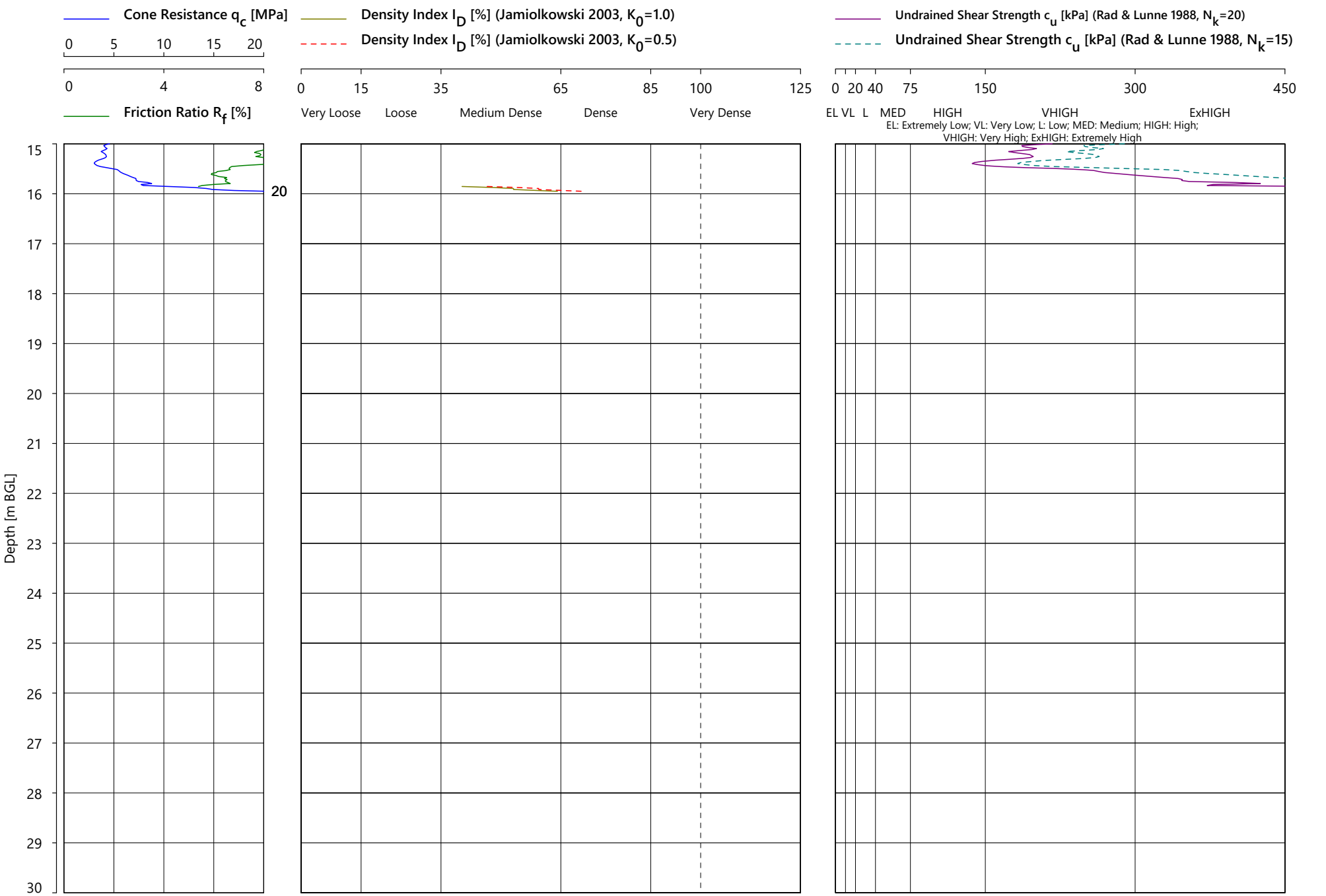
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** **HR-CPT03**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 483165.50 **N** 411587.50 **Ground Level [m OD] :** +0.32
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 07-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



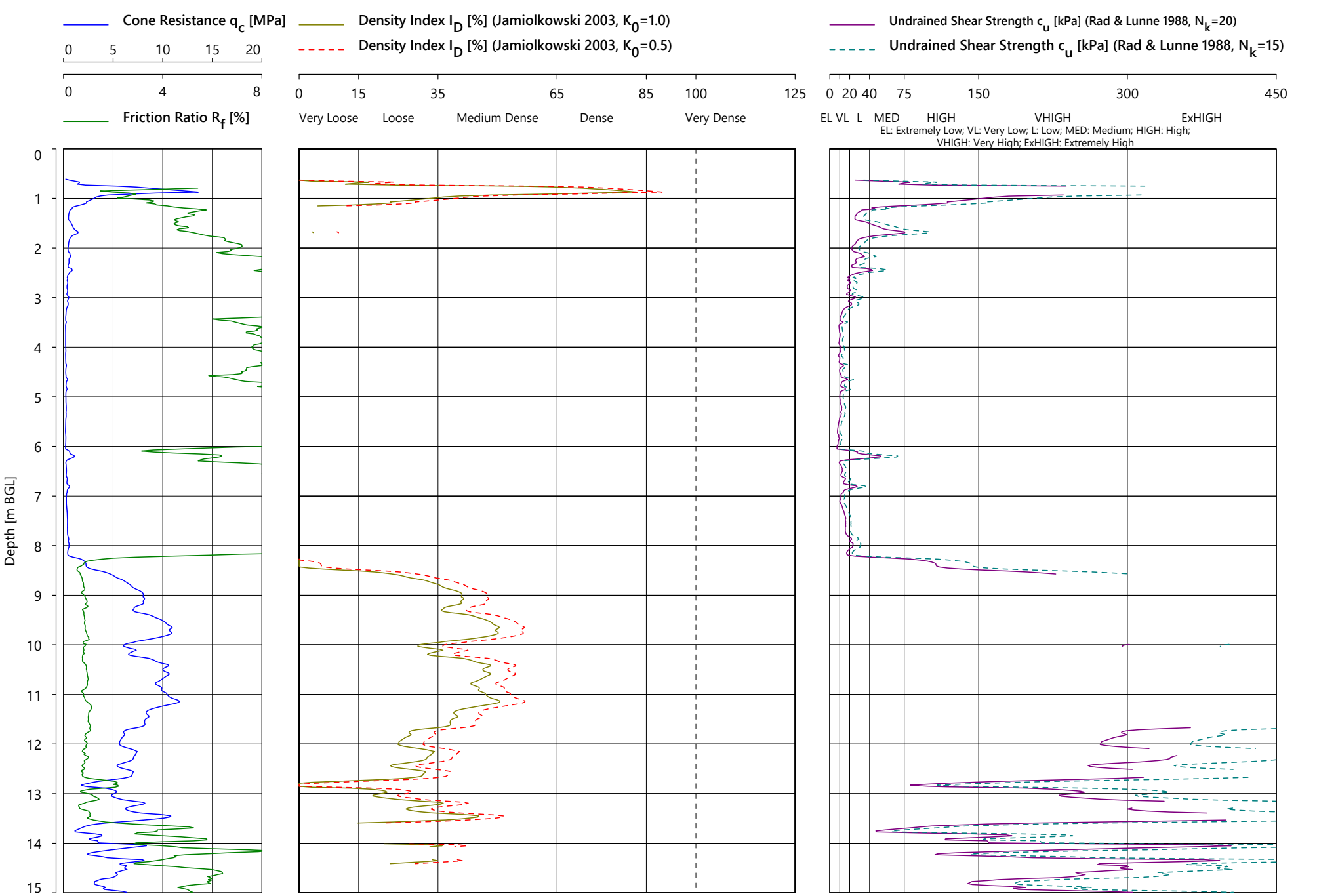
Density Index and Undrained Shear Strength	**Stop Criterion :** danger of buckling		**Location :** **HR-CPT04**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 483127.94 **N** 411569.96 **Ground Level [m OD] :** +0.62
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 26-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



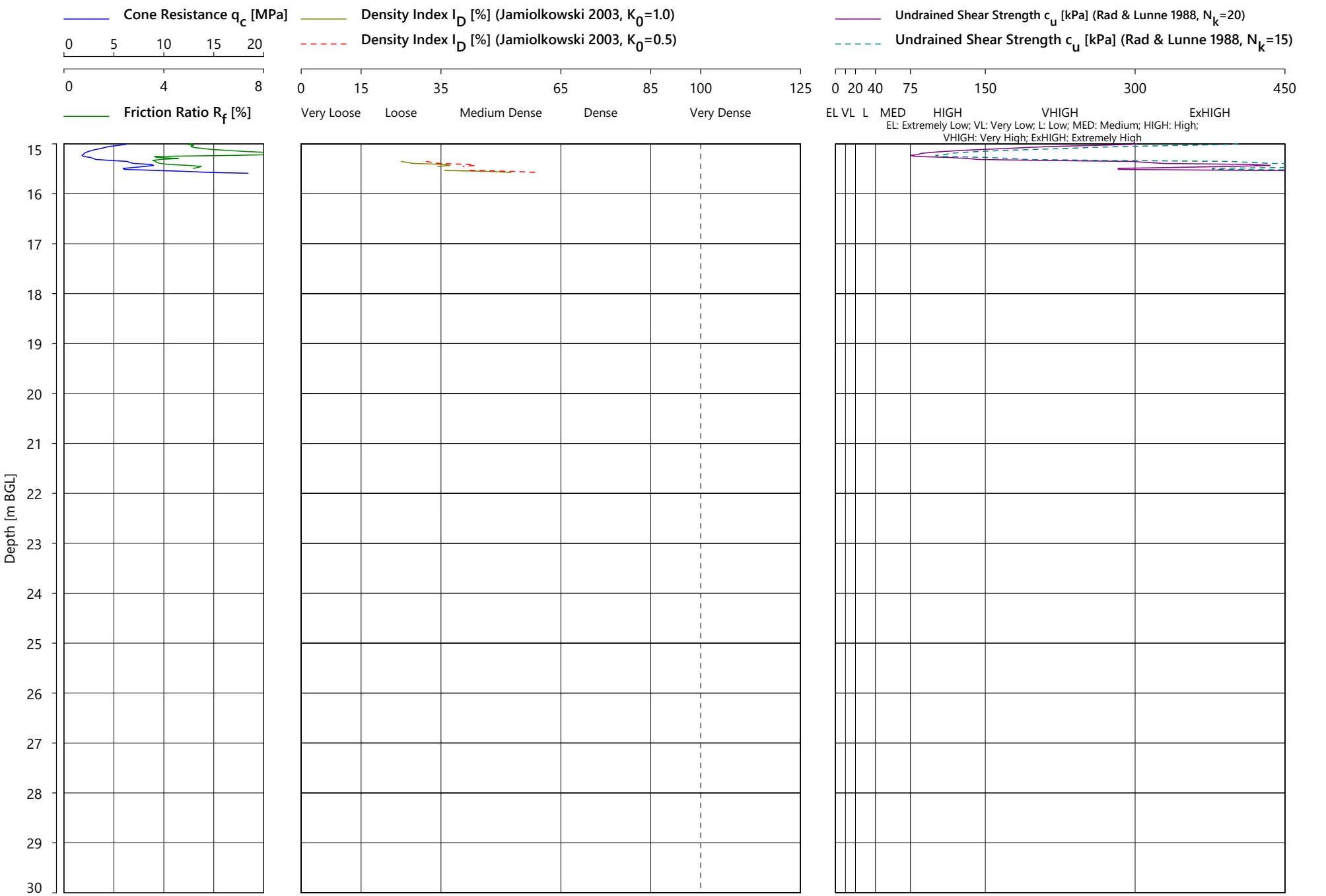
Density Index and Undrained Shear Strength	**Stop Criterion :** danger of buckling	**Operator :** HG,MS	**Location :** HR-CPT05
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 483107.33 **N** 411588.29 **Ground Level [m OD] :** +0.64
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 26-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



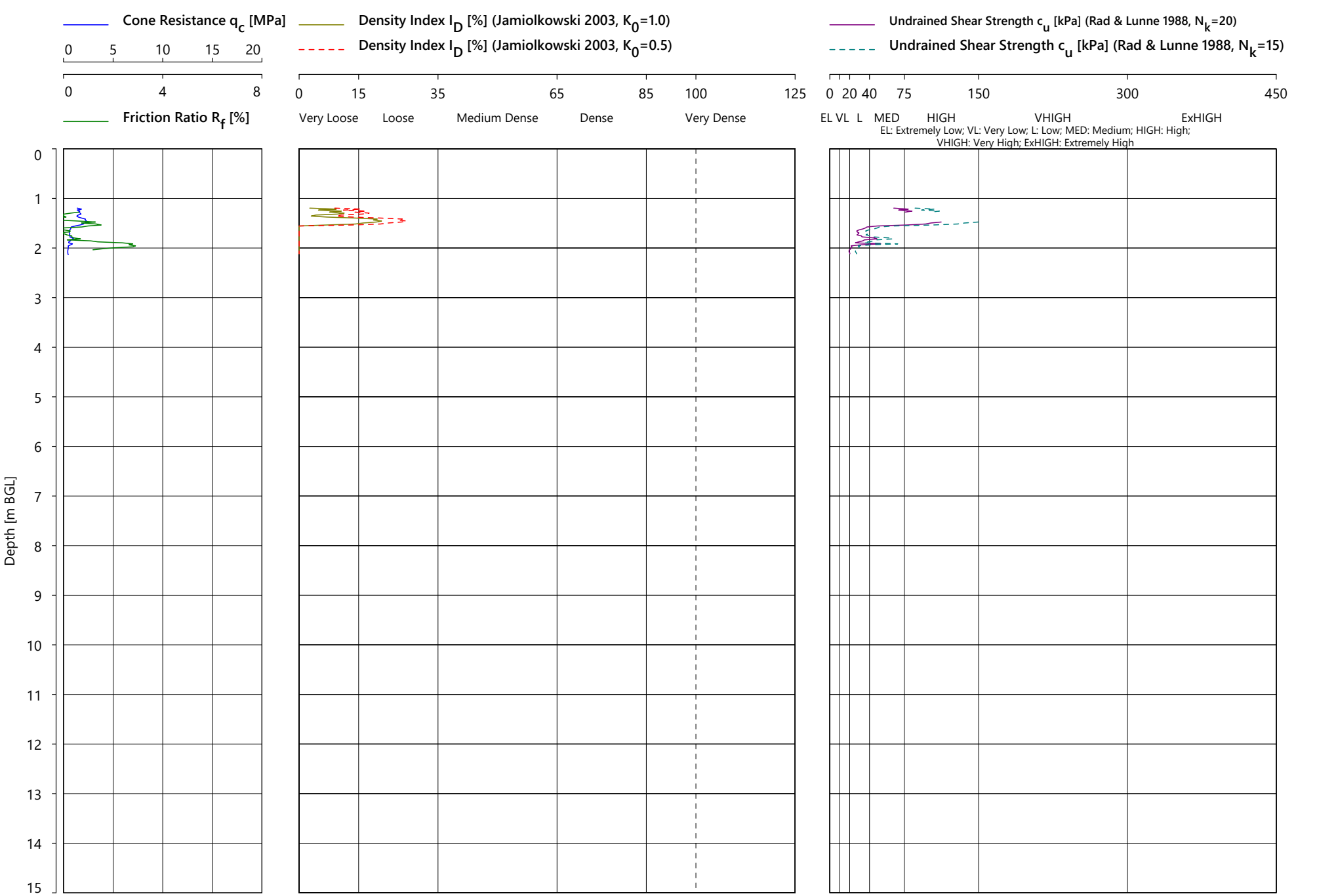
Density Index and Undrained Shear Strength	**Stop Criterion :** danger of buckling		**Location :** **HR-CPT05**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 483107.33 **N** 411588.29 **Ground Level [m OD] :** +0.64
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 26-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



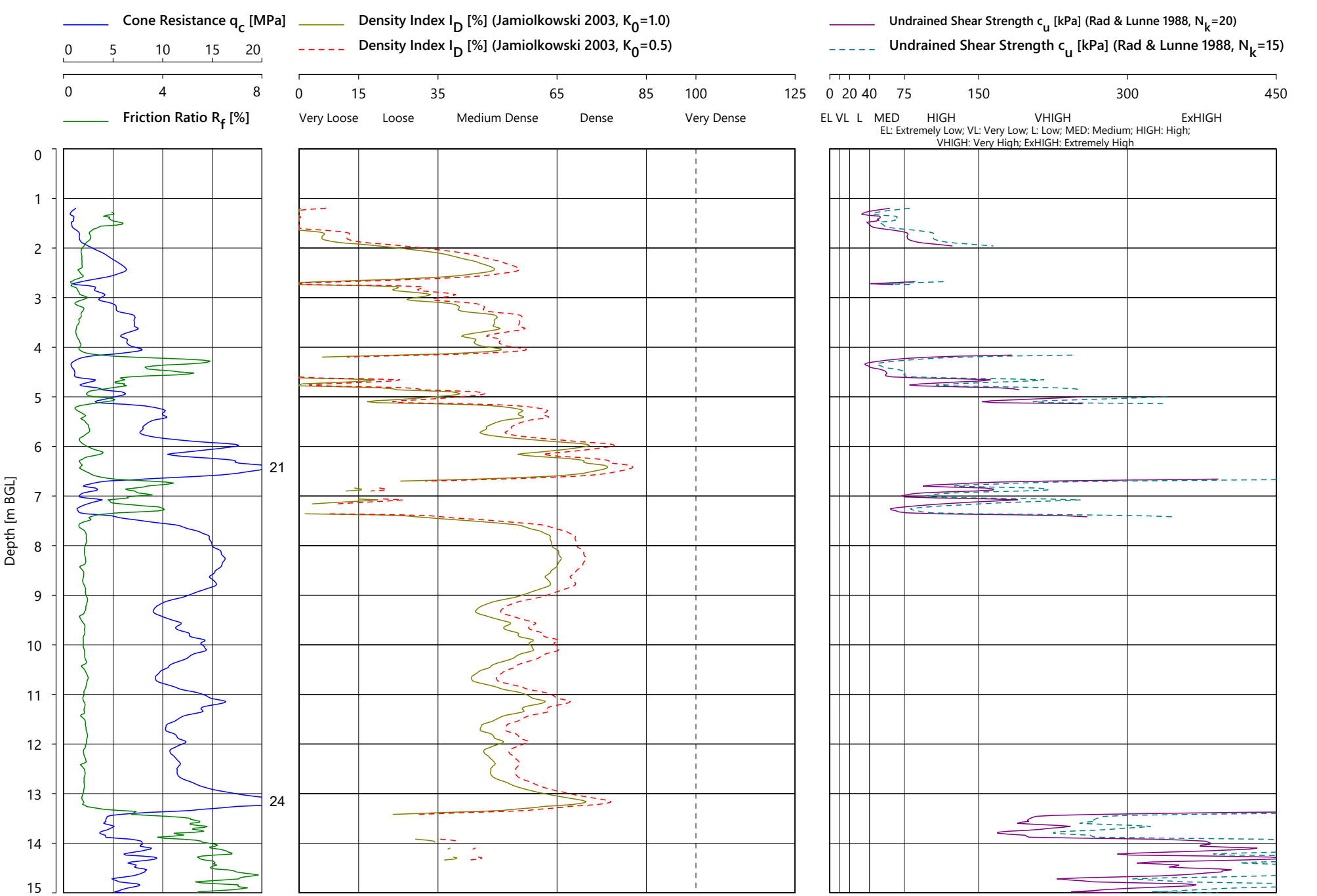
Density Index and Undrained Shear Strength	**Stop Criterion :** danger of buckling	**Operator :** HG,MS	**Location :** HR-CPT06
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 483109.39 **N** 411640.30 **Ground Level [m OD] :** +0.76
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 26-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



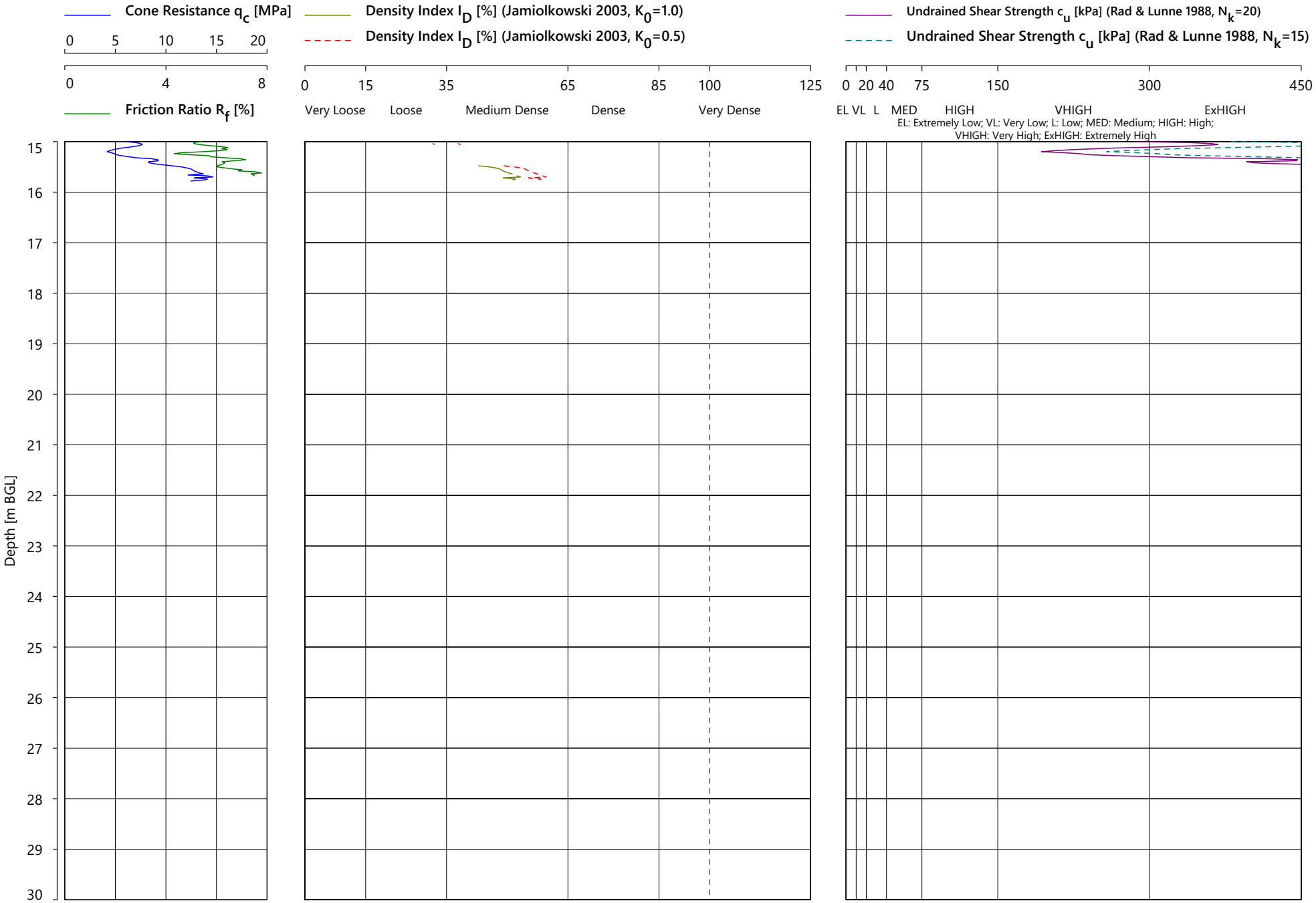
Density Index and Undrained Shear Strength	**Stop Criterion :** danger of buckling		**Location :** **HR-CPT06**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 483109.39 **N** 411640.30 **Ground Level [m OD] :** +0.76
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 26-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



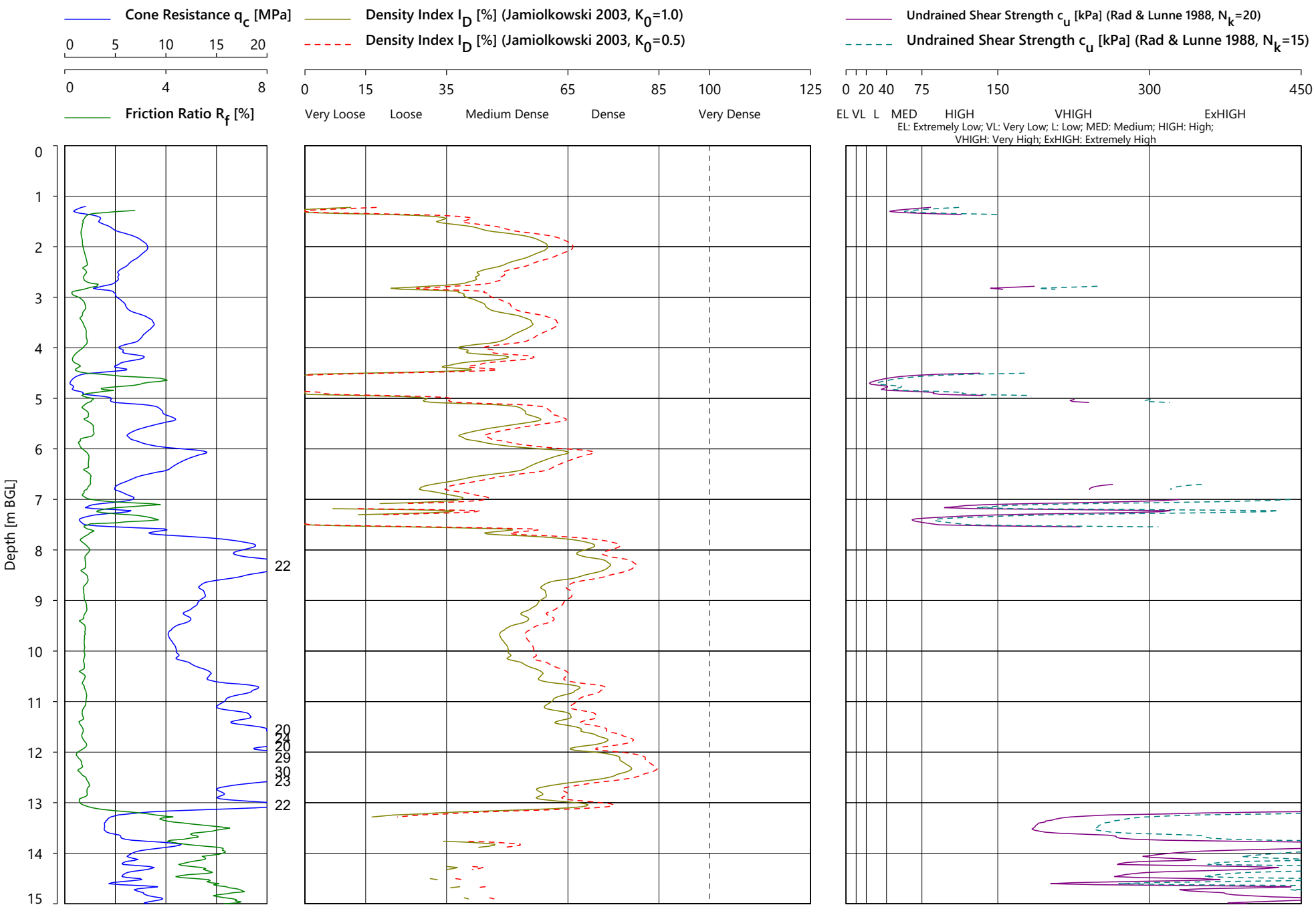
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **HR-CPT07**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 483010.62 **N** 411725.72 **Ground Level [m OD] :** +1.62
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 25-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



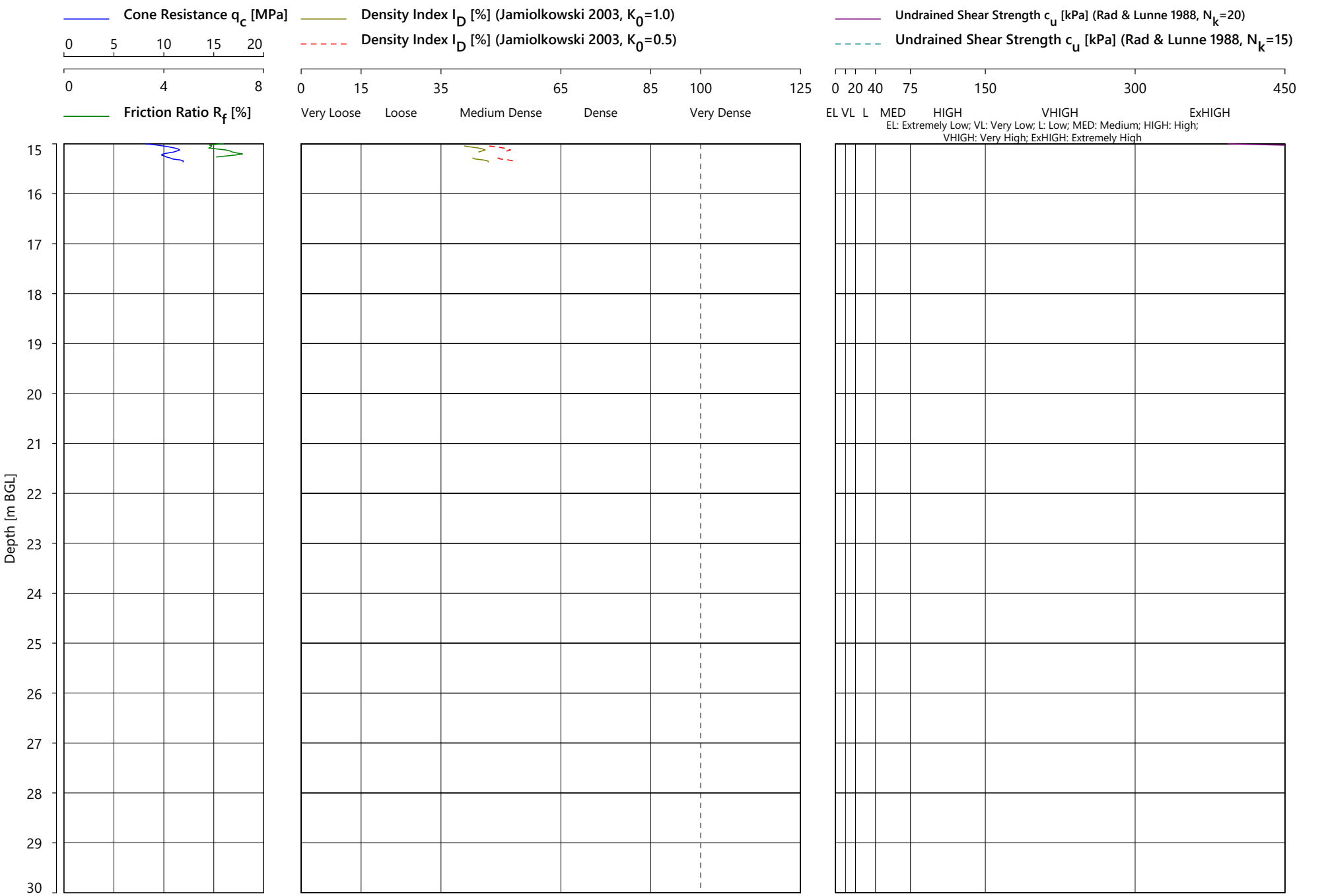
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force	**Operator :** MS,HG	**Location :** HR-CPT08
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482965.30 **N** 411776.58 **Ground Level [m OD] :** +1.50
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 20-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



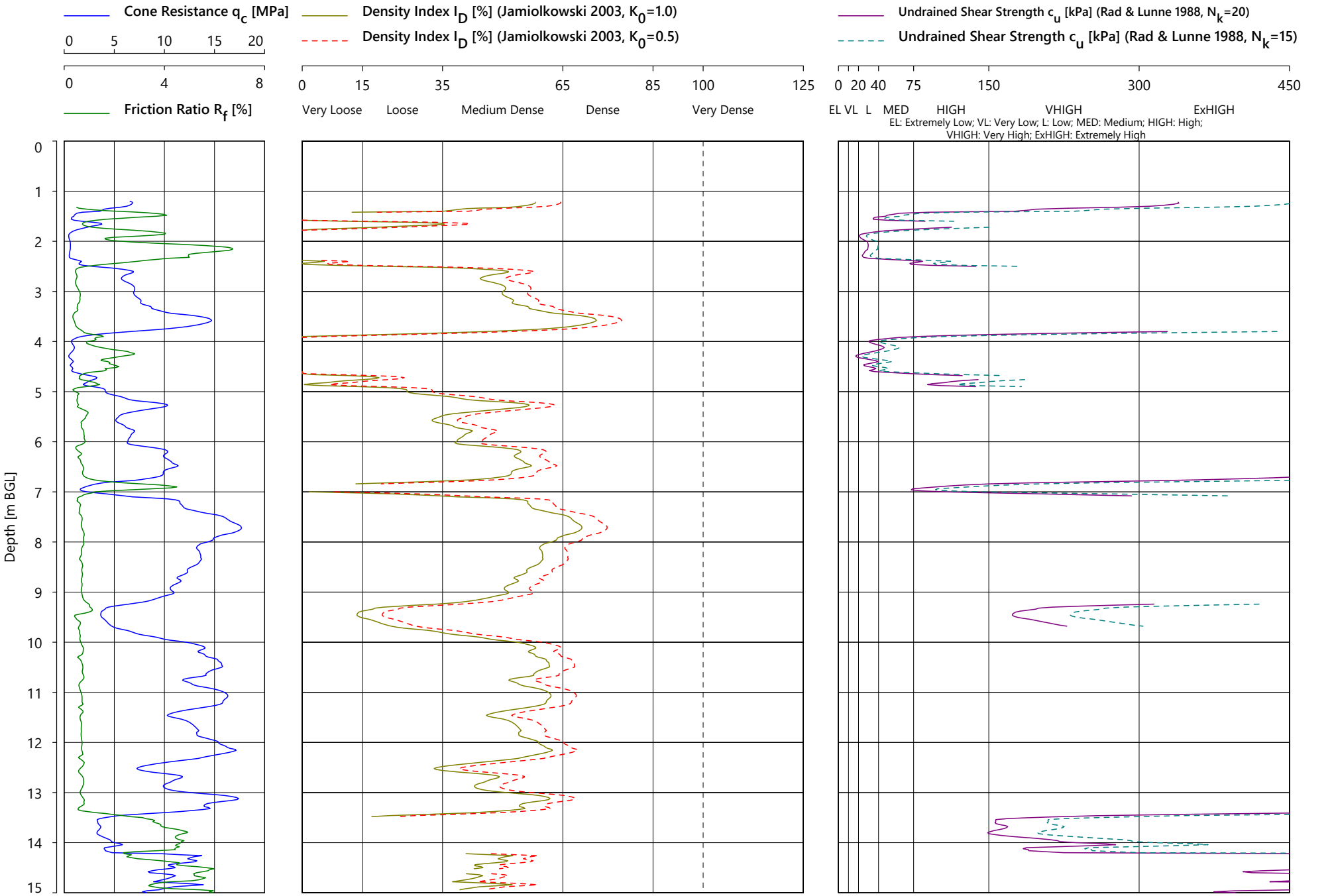
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **HR-CPT08**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** MS,HG	**Coordinates :** **E** 482965.30 **N** 411776.58 **Ground Level [m OD] :** +1.50
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 20-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



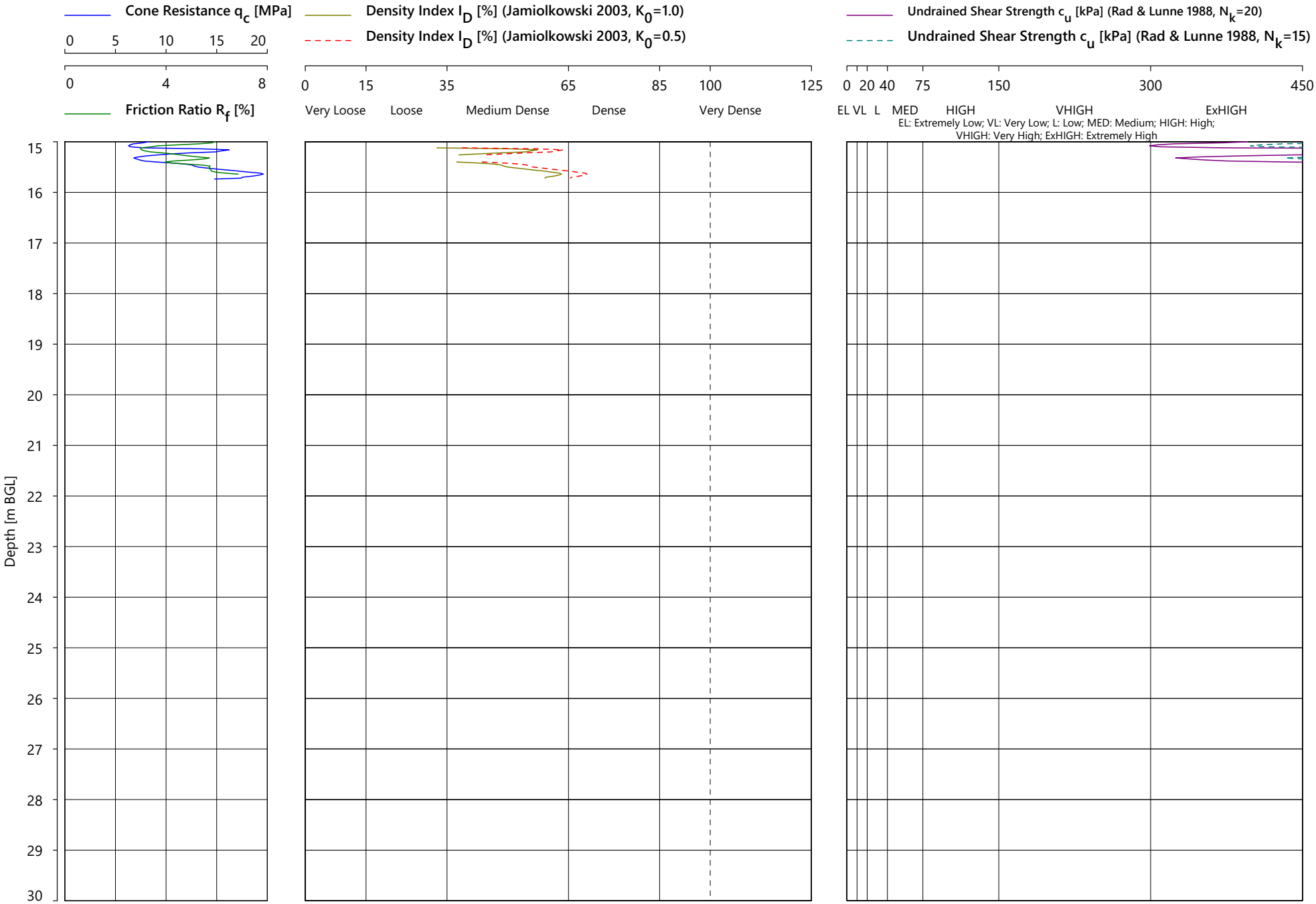
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **HR-CPT09**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS,HG	**Coordinates :** **E** 482923.40 **N** 411783.20 **Ground Level [m OD] :** +1.82
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 20-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



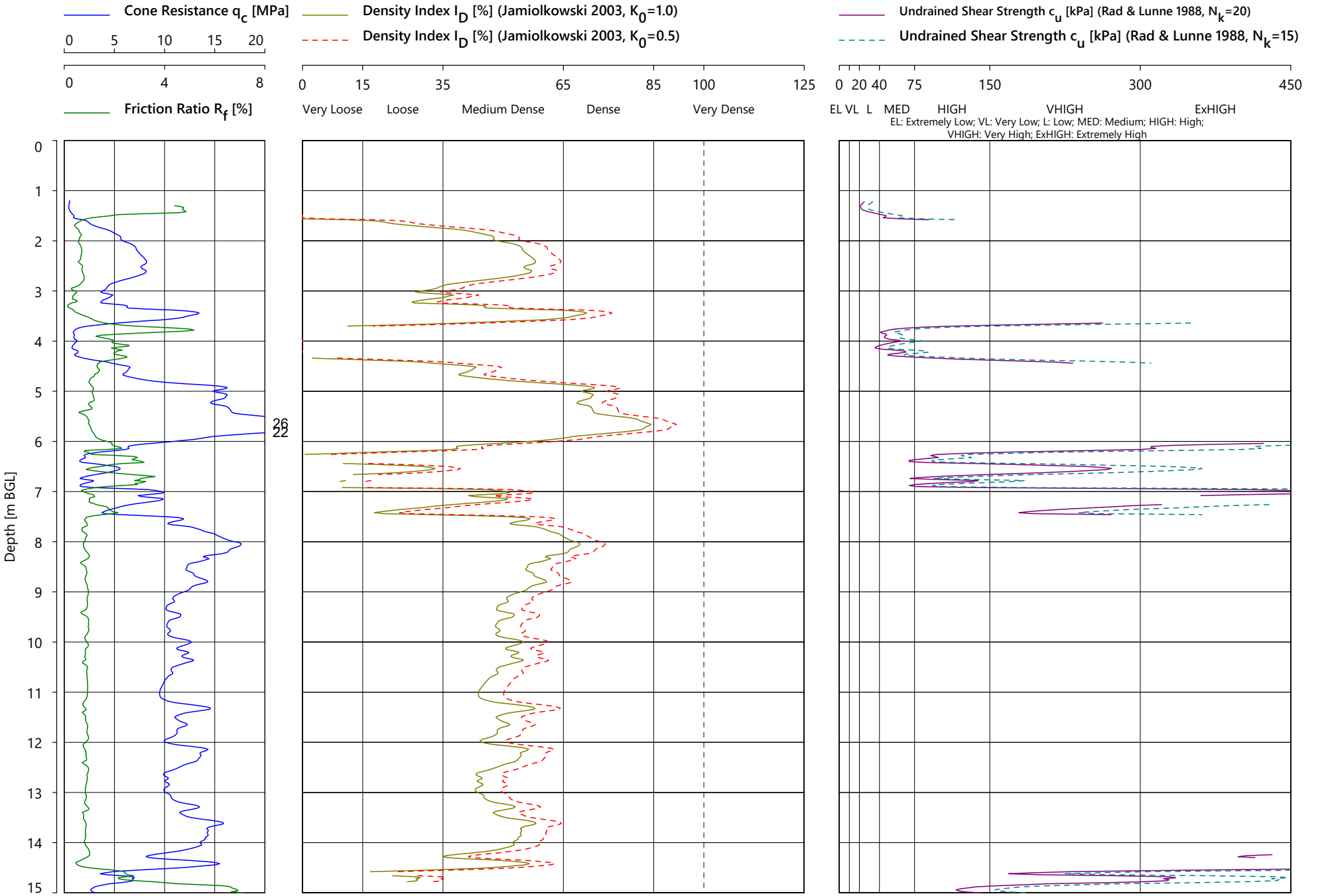
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **HR-CPT09**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS,HG	**Coordinates :** **E** 482923.40 **N** 411783.20 **Ground Level [m OD] :** +1.82
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 20-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



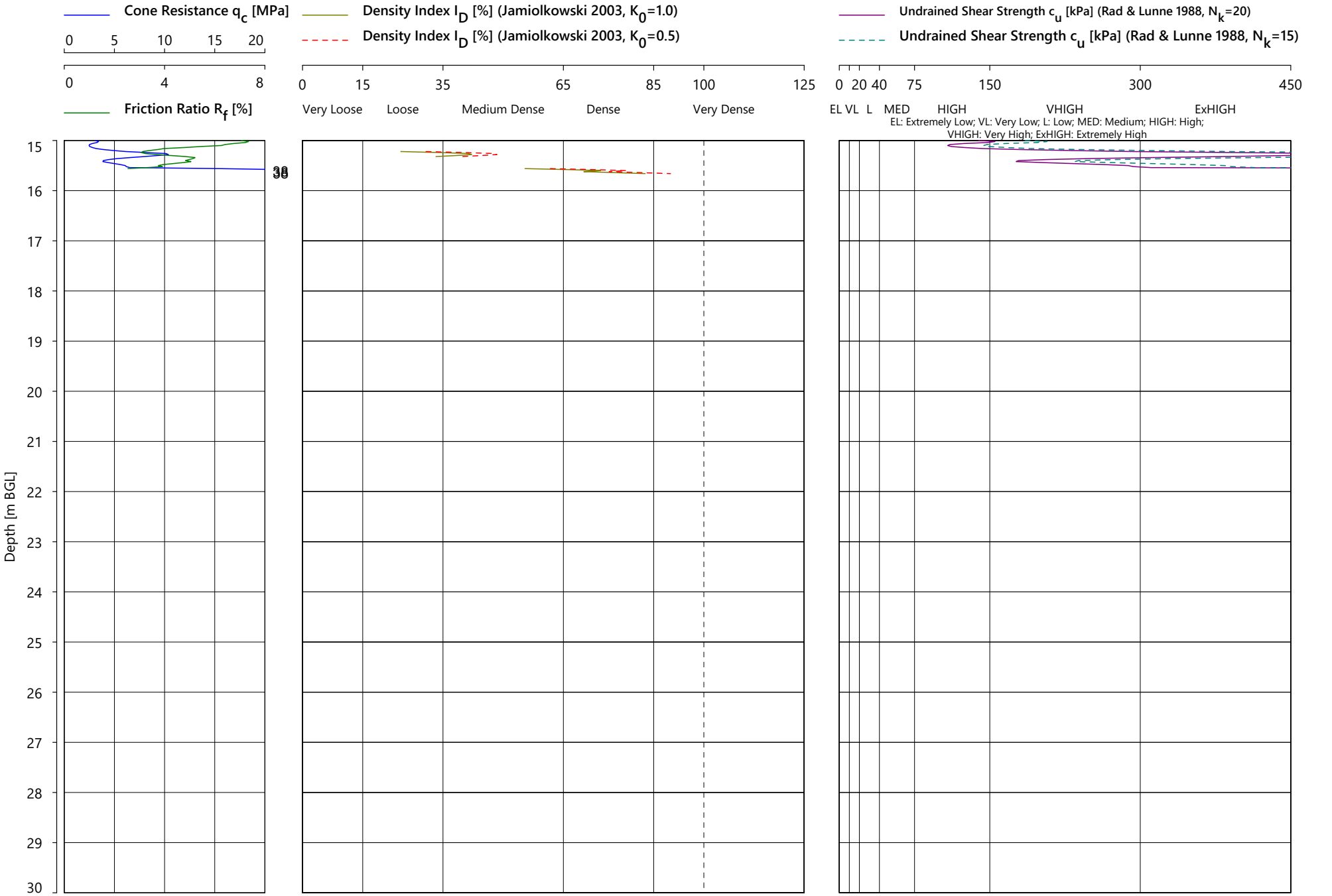
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **HR-CPT10**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS,HG	**Coordinates :** **E** 482848.05 **N** 411784.62 **Ground Level [m OD] :** +1.54
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 20-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



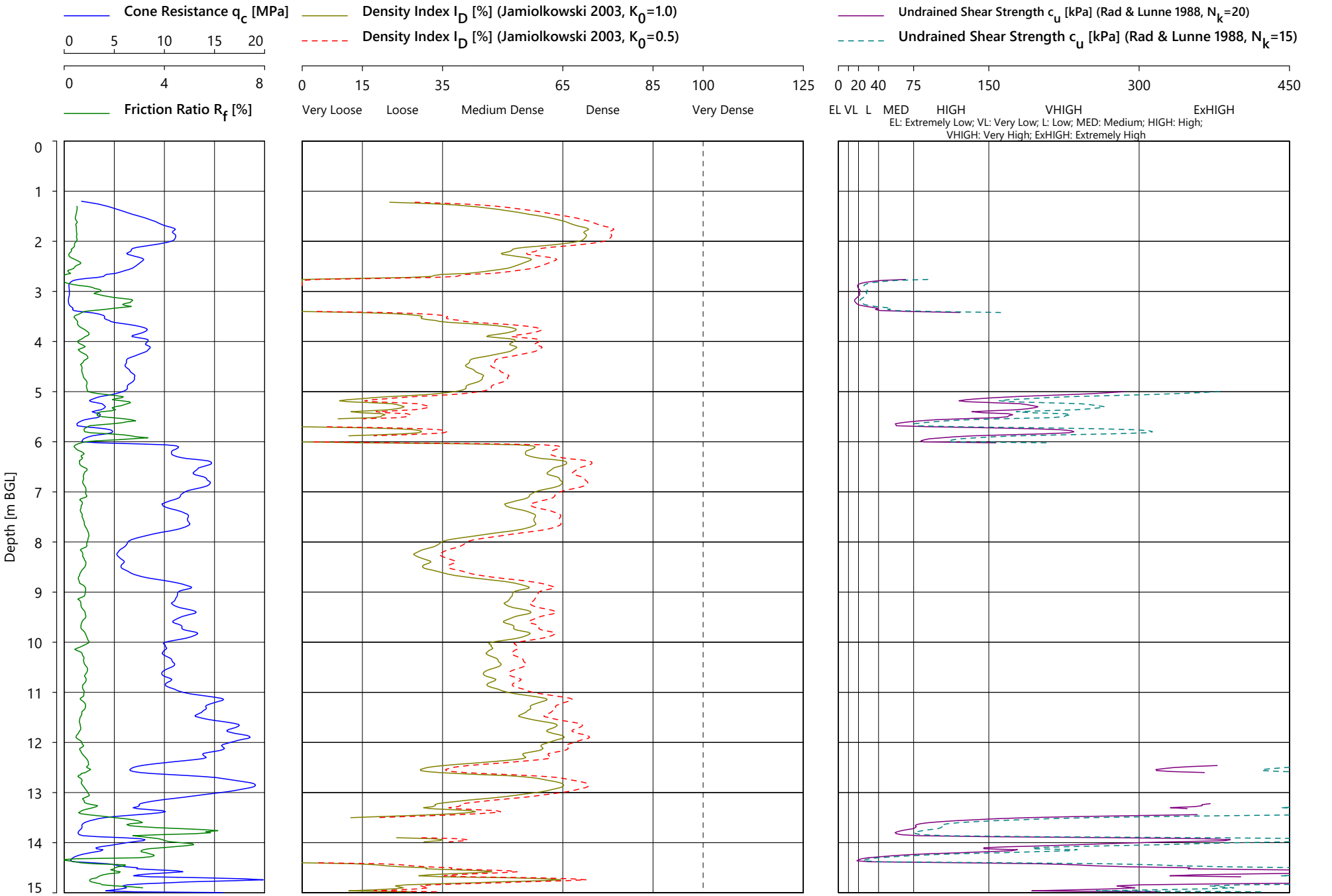
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **HR-CPT10**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** MS,HG	**Coordinates :** **E** 482848.05 **N** 411784.62 **Ground Level [m OD] :** +1.54
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 20-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



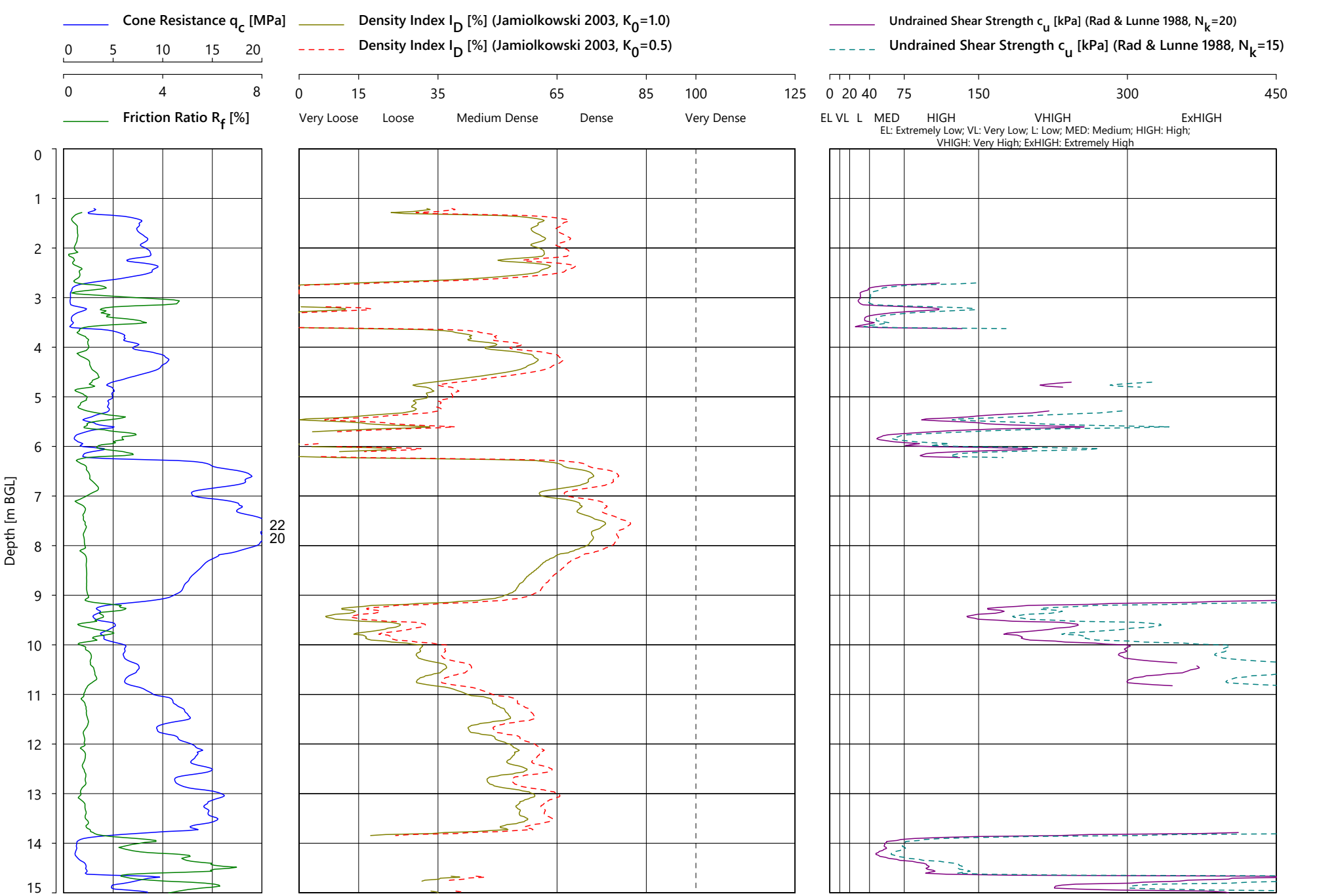
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **HR-CPT20**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482040.79 **N** 411650.29 **Ground Level [m OD] :** +1.42
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 24-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



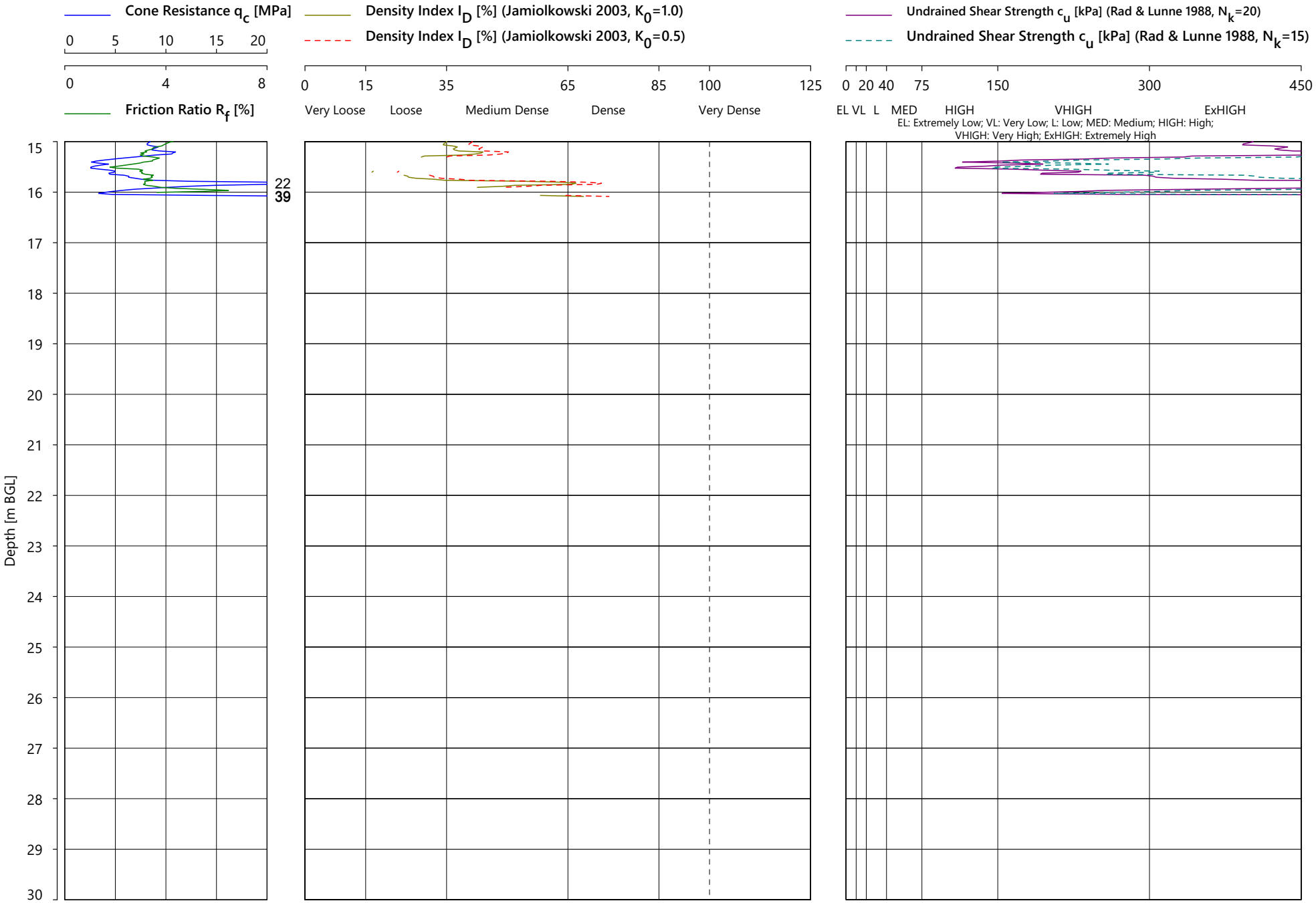
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **HR-CPT20**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482040.79 **N** 411650.29 **Ground Level [m OD] :** +1.42
CPT Cone : 1701-3056	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 24-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT01
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481841.71 **N** 412130.80 **Ground Level [m OD] :** +0.29
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT02**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481917.79 **N** 412126.69 **Ground Level [m OD] :** +0.40
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength		**Stop Criterion :**	end depth reached	**Location :**	**MS-CPT02**
CPT Truck ID :	GB17	**Application Class / Type :**	Class 2 / TE2	**Coordinates :**	**E** 481917.79 **N** 412126.69 **Ground Level [m OD] :** +0.40
CPT Cone :	1701-3474	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Operator :**	NF
Date of Test :	28-Sep-2022	**Assumed Water Level [m gl] :**	-1.0	**Compiled by :**	LCH
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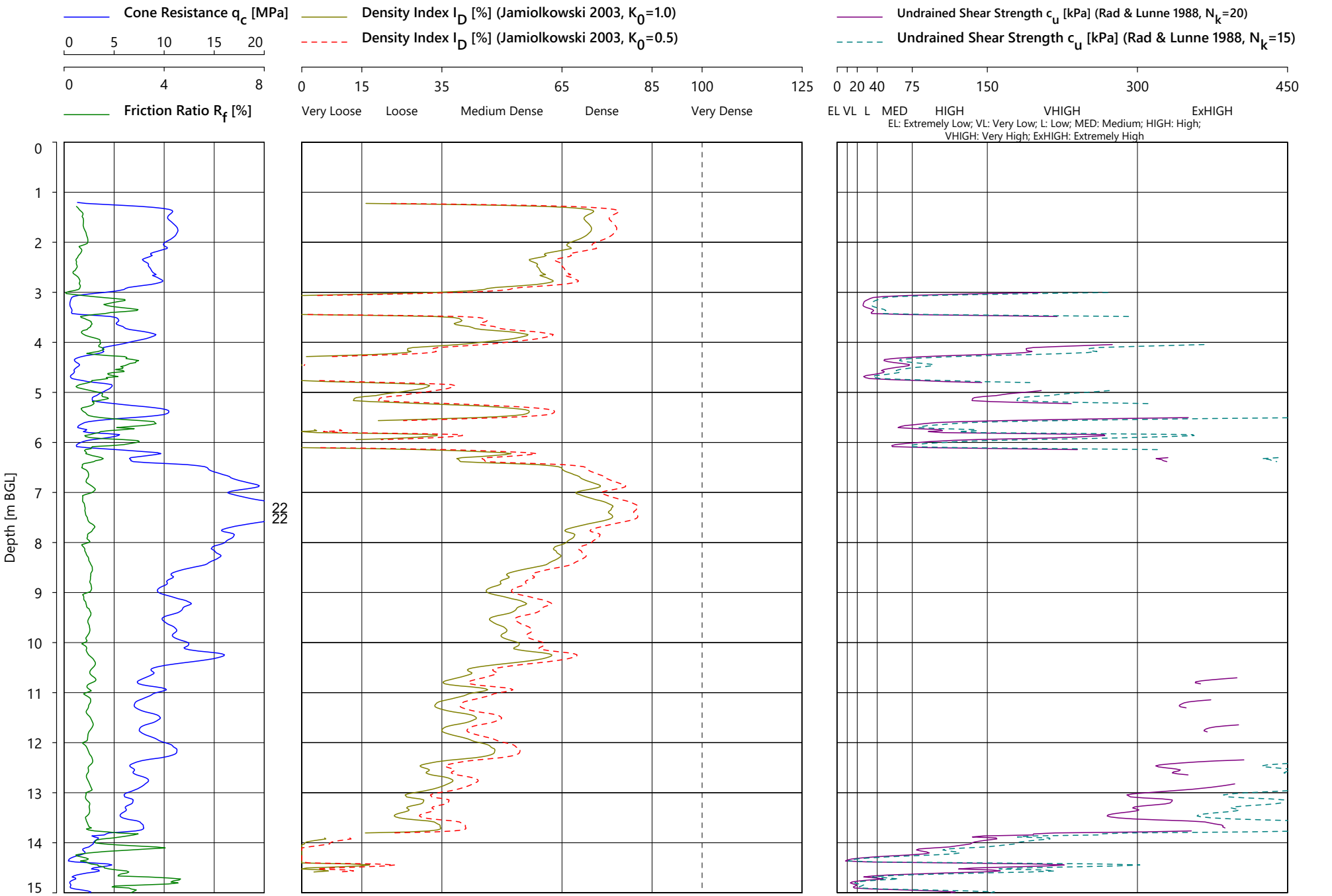
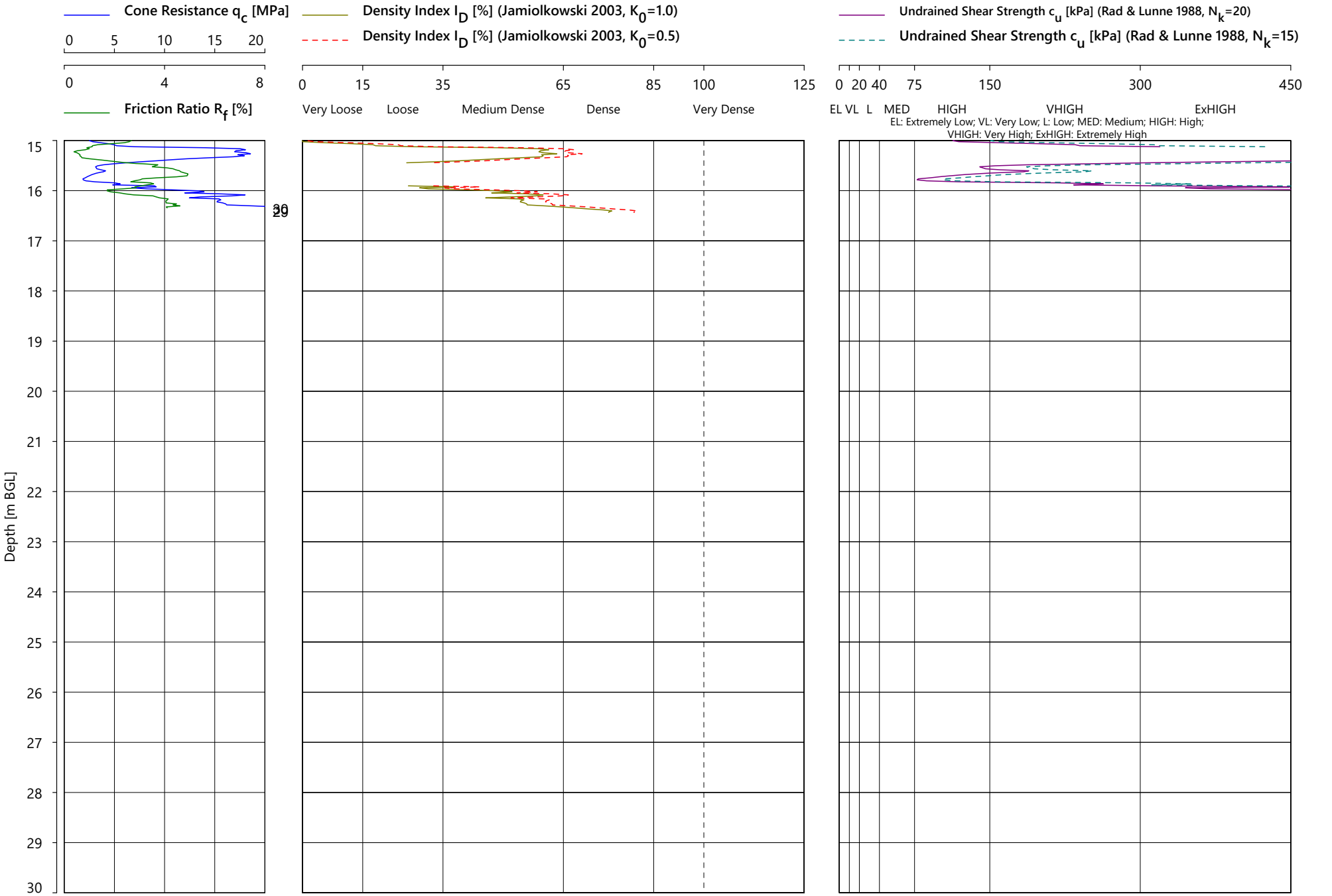
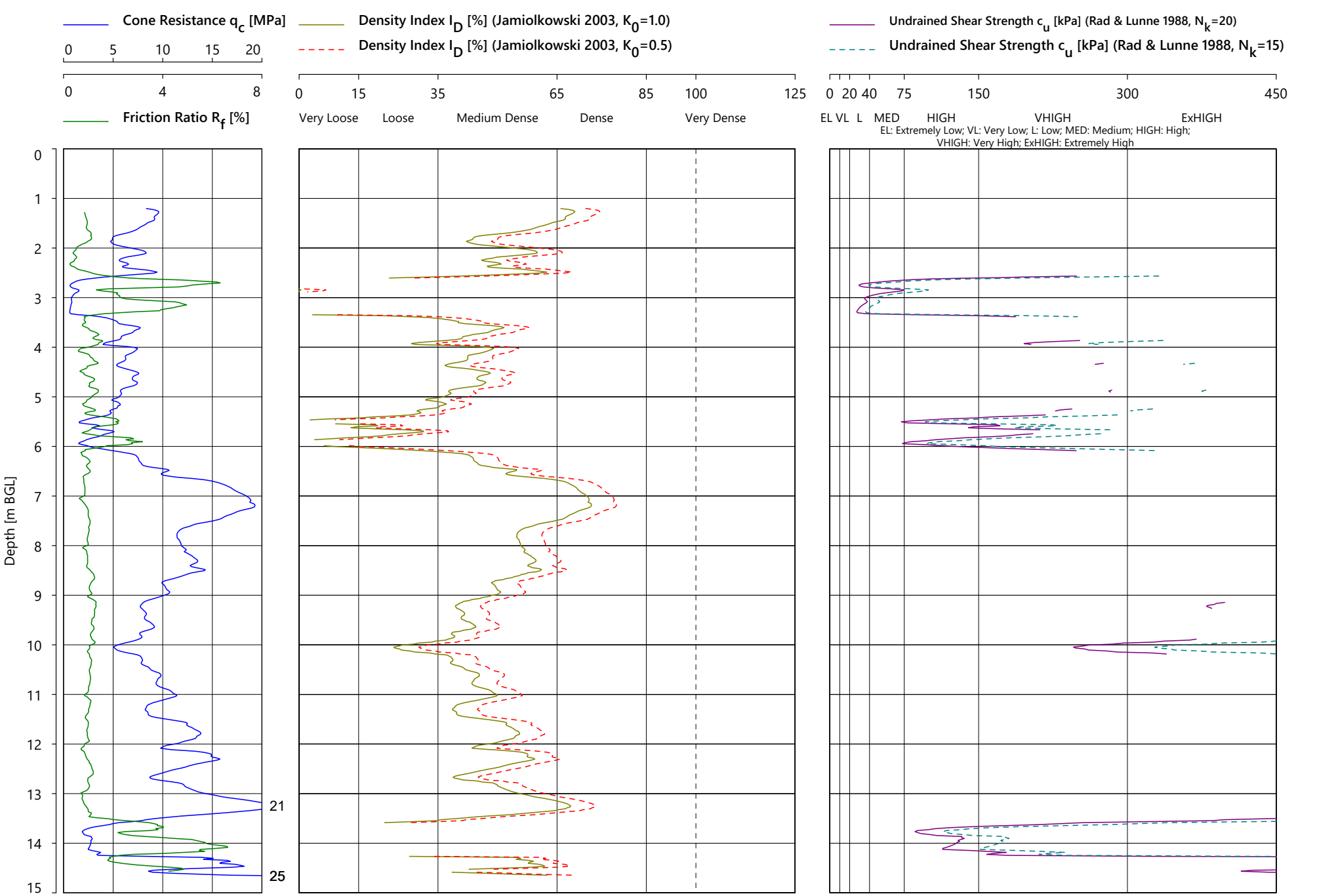
				Project :	212562
				F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
				Client :	SSE Generation Limited (SSE)



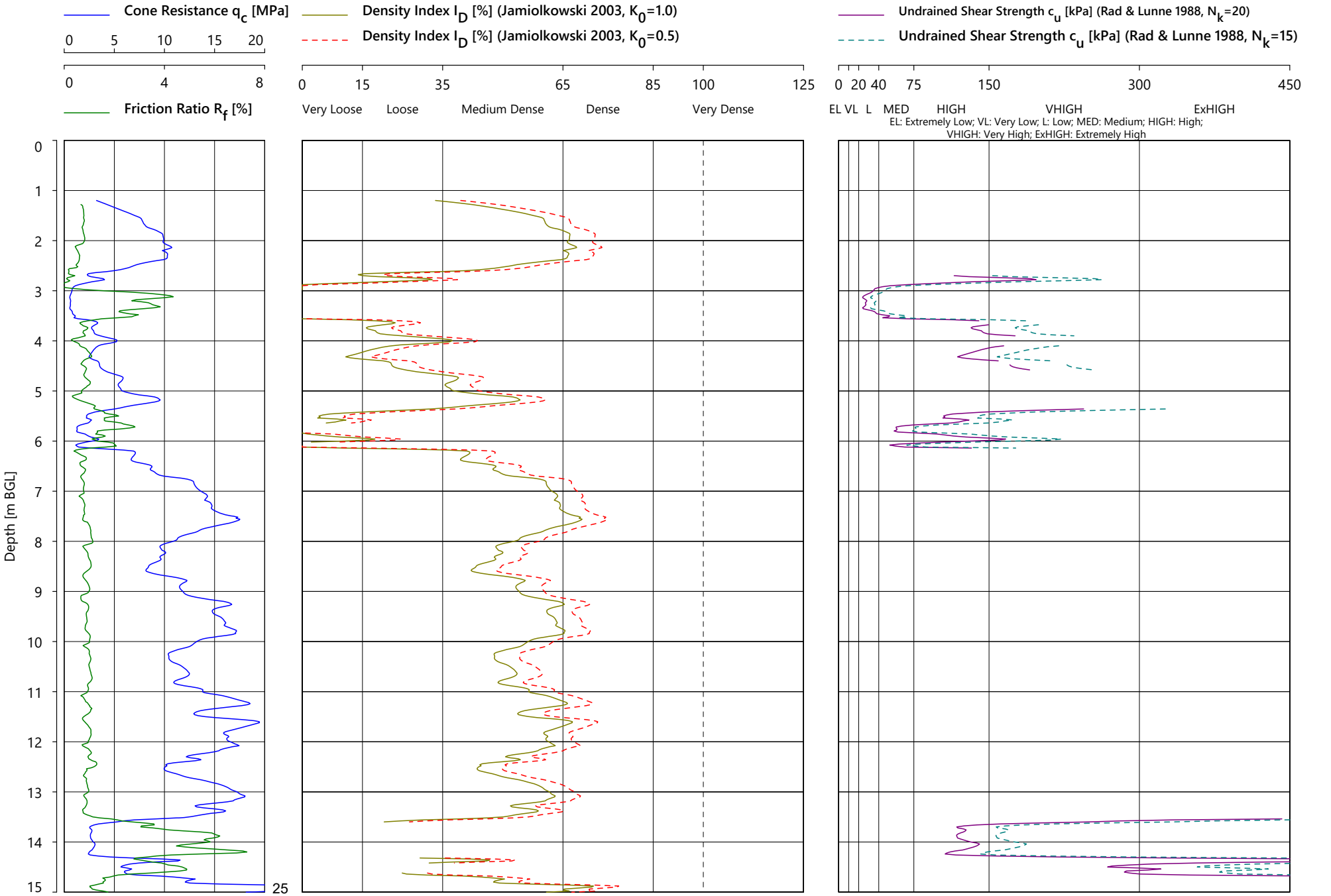
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** NF	**Location :** MS-CPT03
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482030.81 **N** 412128.35 **Ground Level [m OD] :** +0.21
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



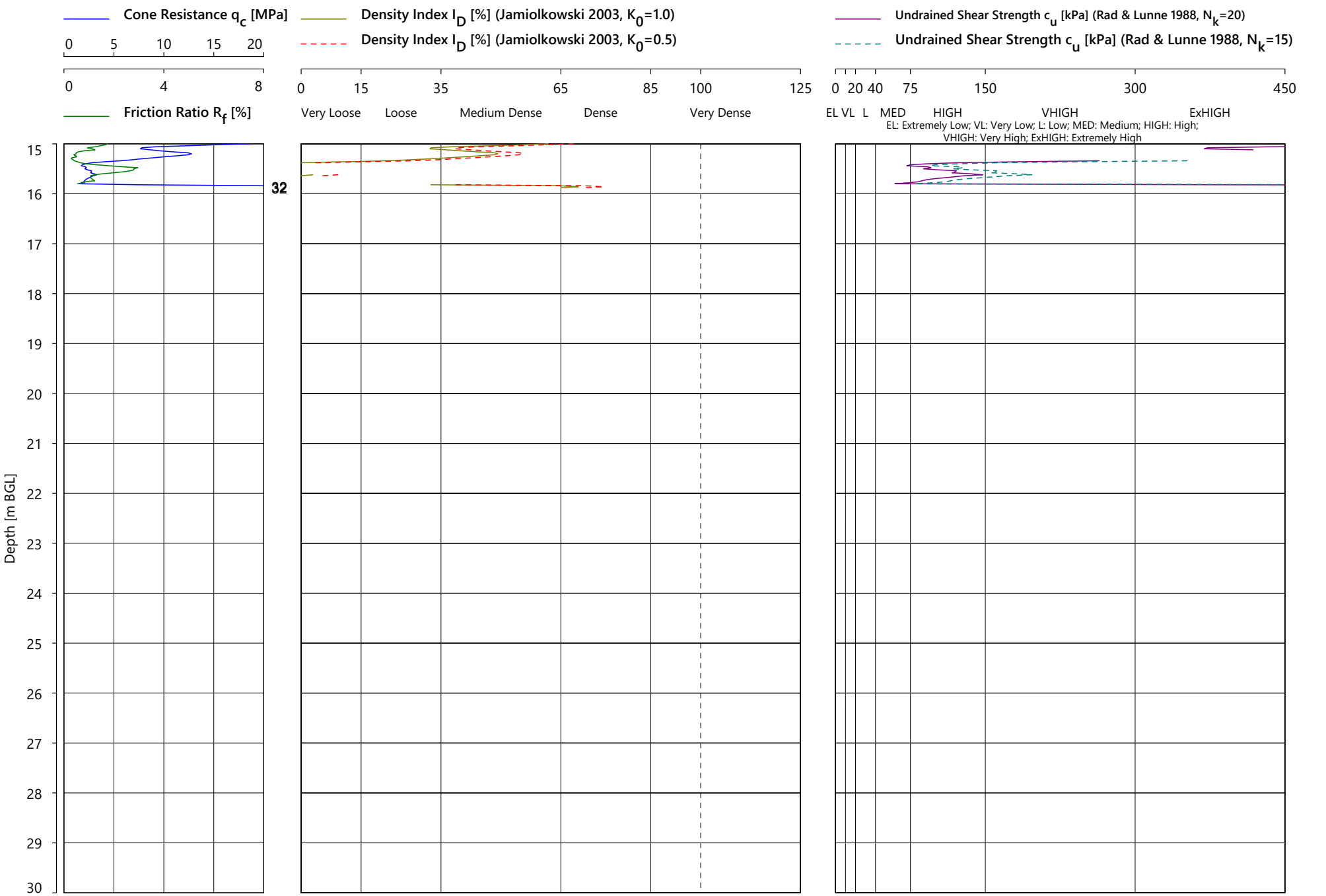
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT03
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482030.81 **N** 412128.35 **Ground Level [m OD] :** +0.21
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



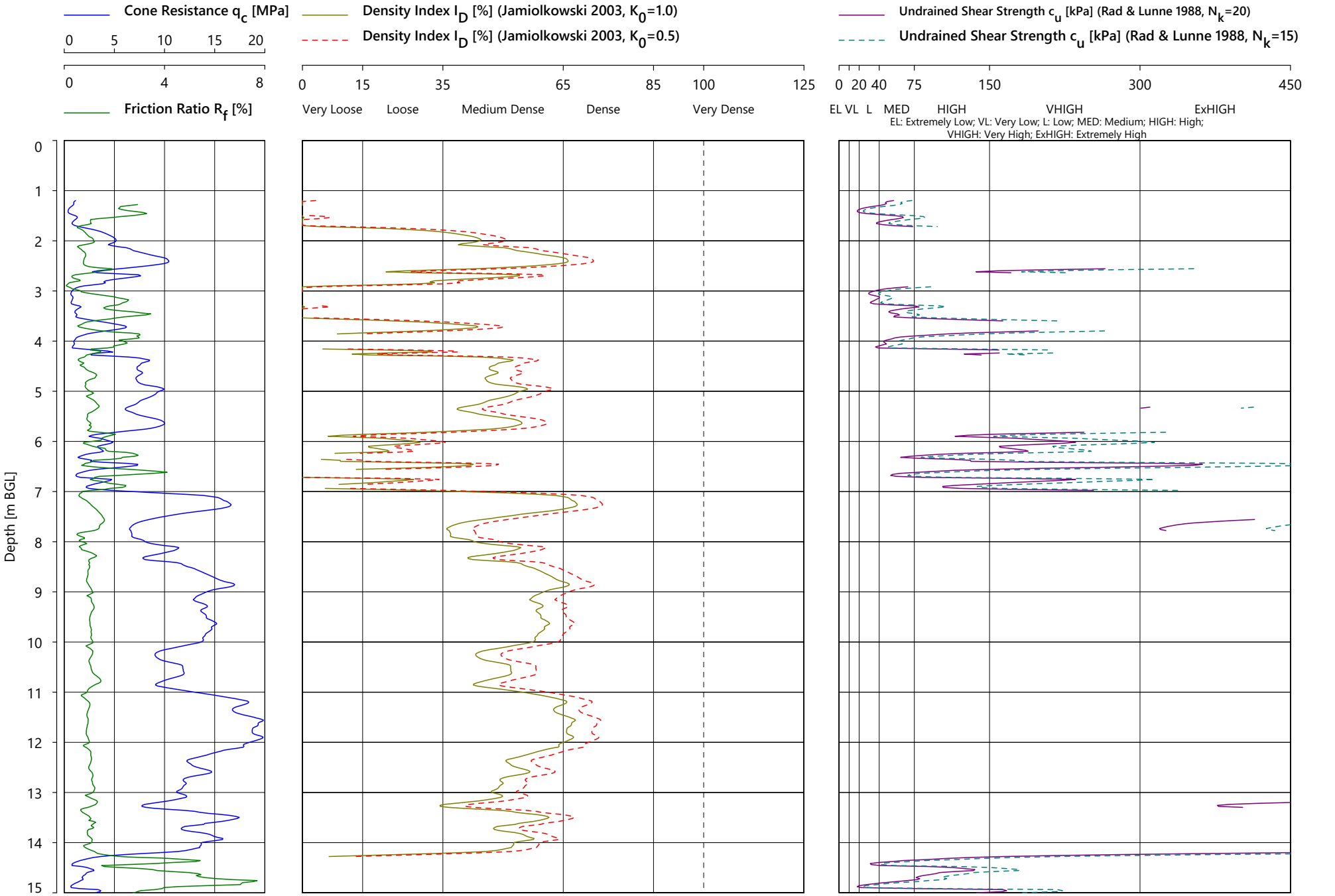
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT04**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482130.74 **N** 412122.98 **Ground Level [m OD] :** +0.52
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



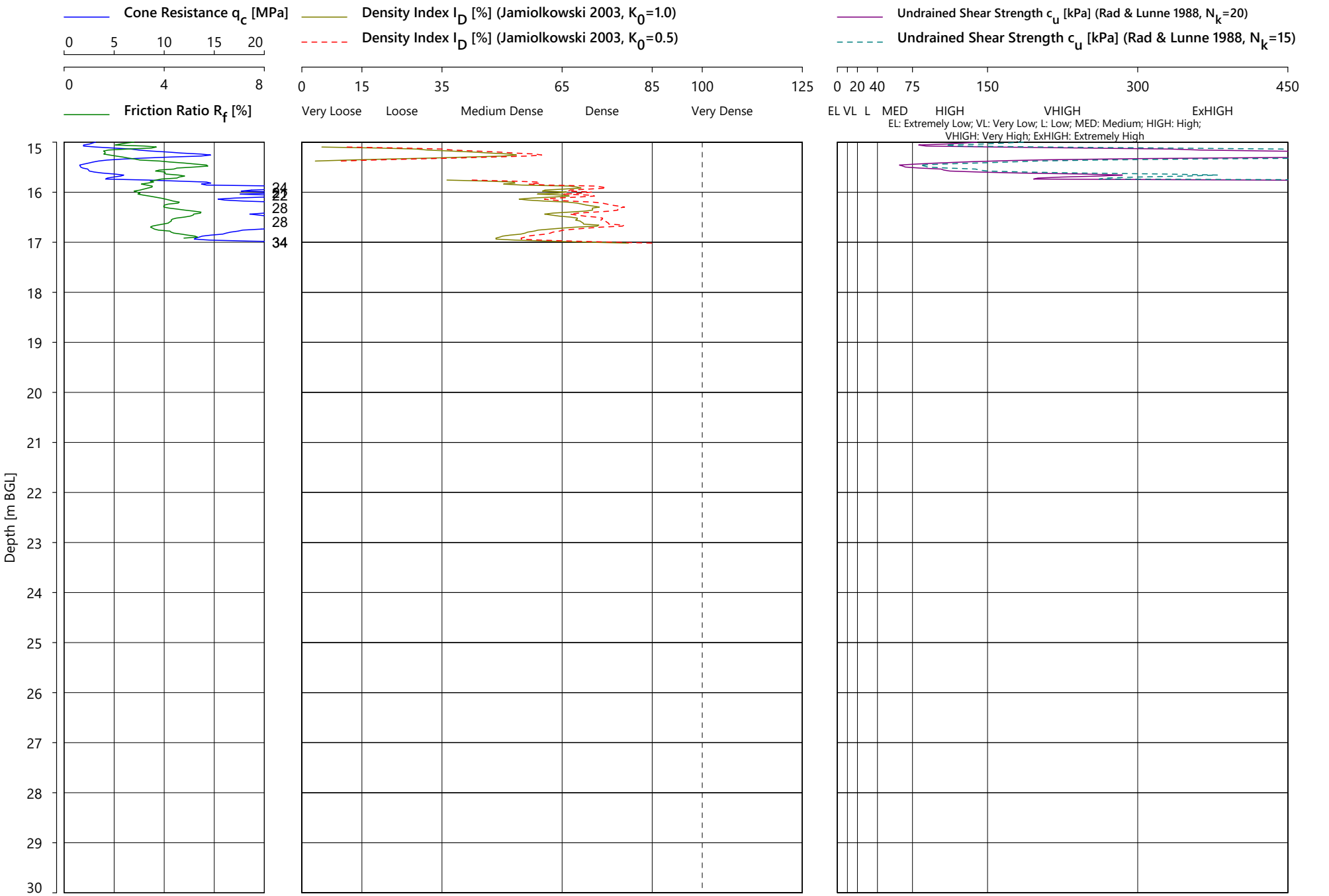
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT05**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481829.72 **N** 412089.45 **Ground Level [m OD] :** +0.33
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



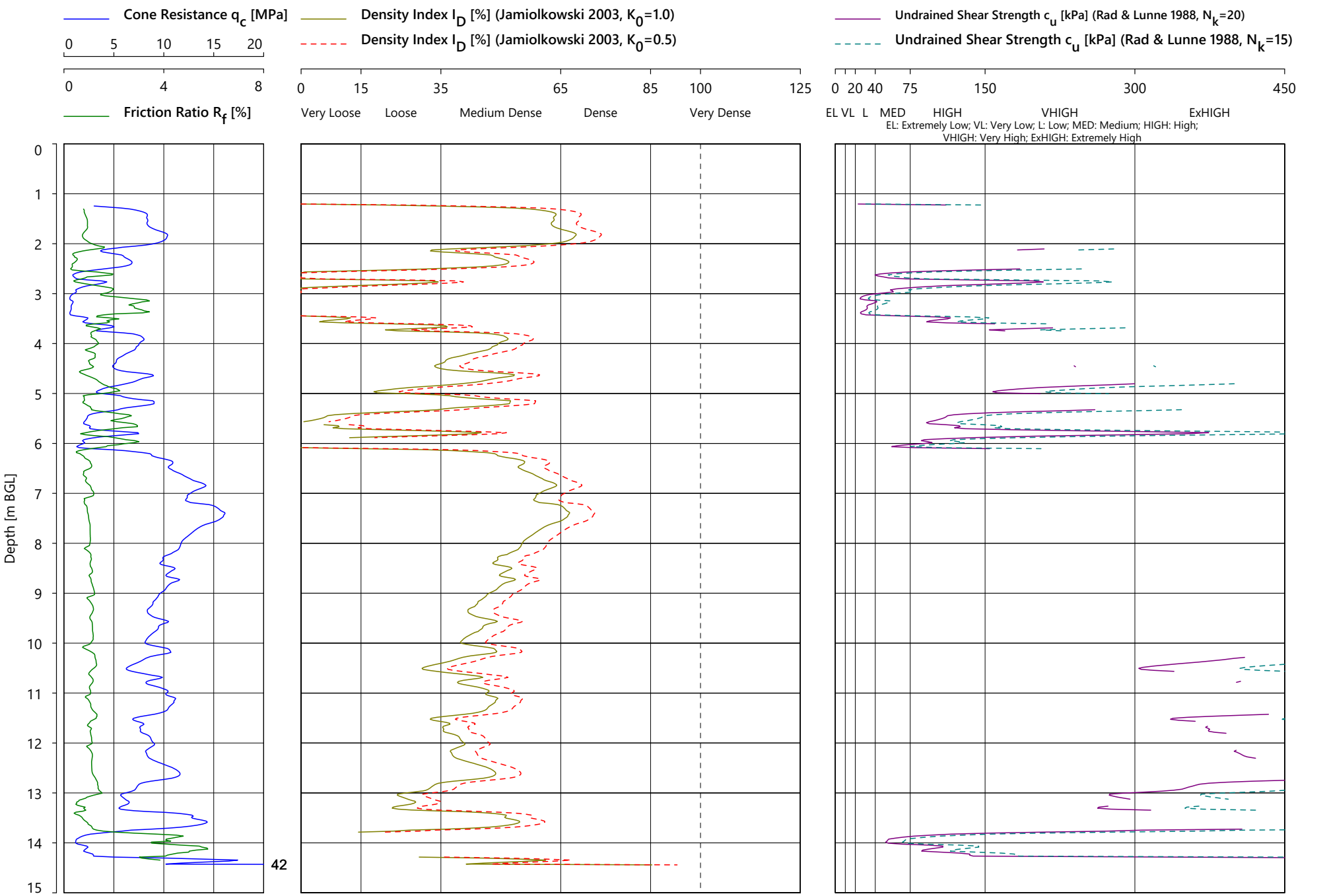
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT05
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481829.72 **N** 412089.45 **Ground Level [m OD] :** +0.33
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



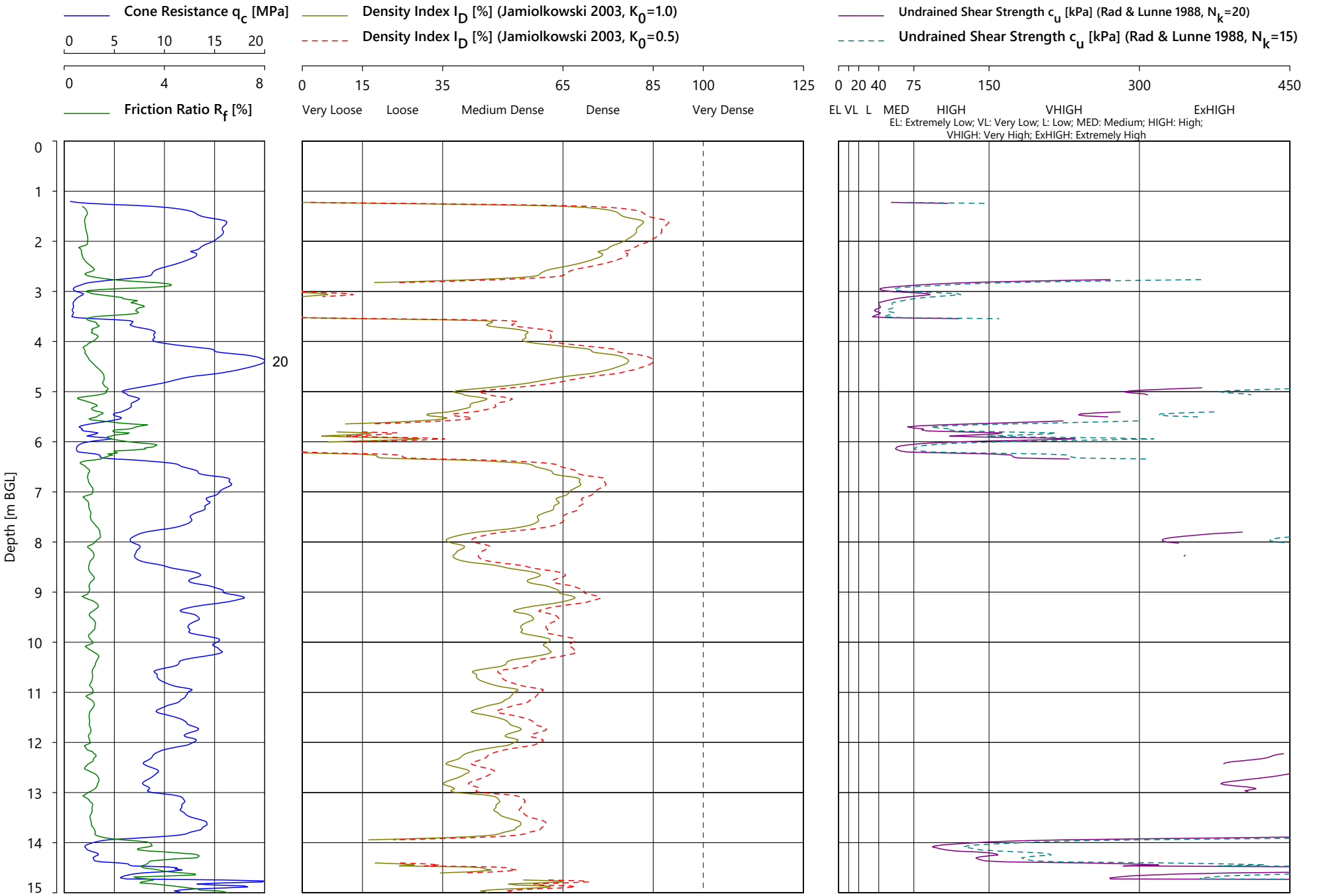
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :**	**MS-CPT06**	
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :**	**E** 481918.67 **N** 412089.67	**Ground Level [m OD] :** +0.70
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :**	212562	
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
			Client :	SSE Generation Limited (SSE)	



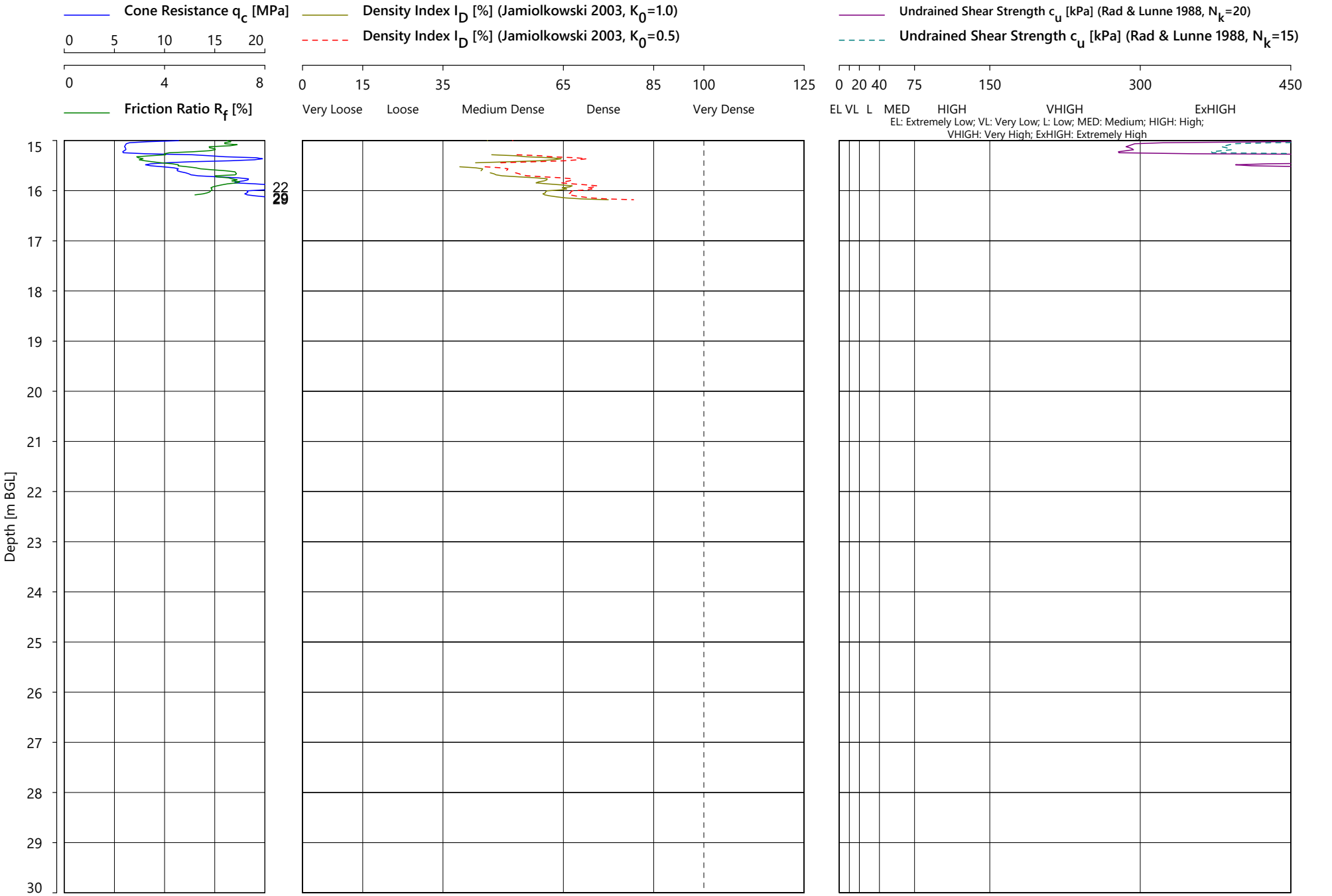
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT06
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481918.67 **N** 412089.67 **Ground Level [m OD] :** +0.70
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



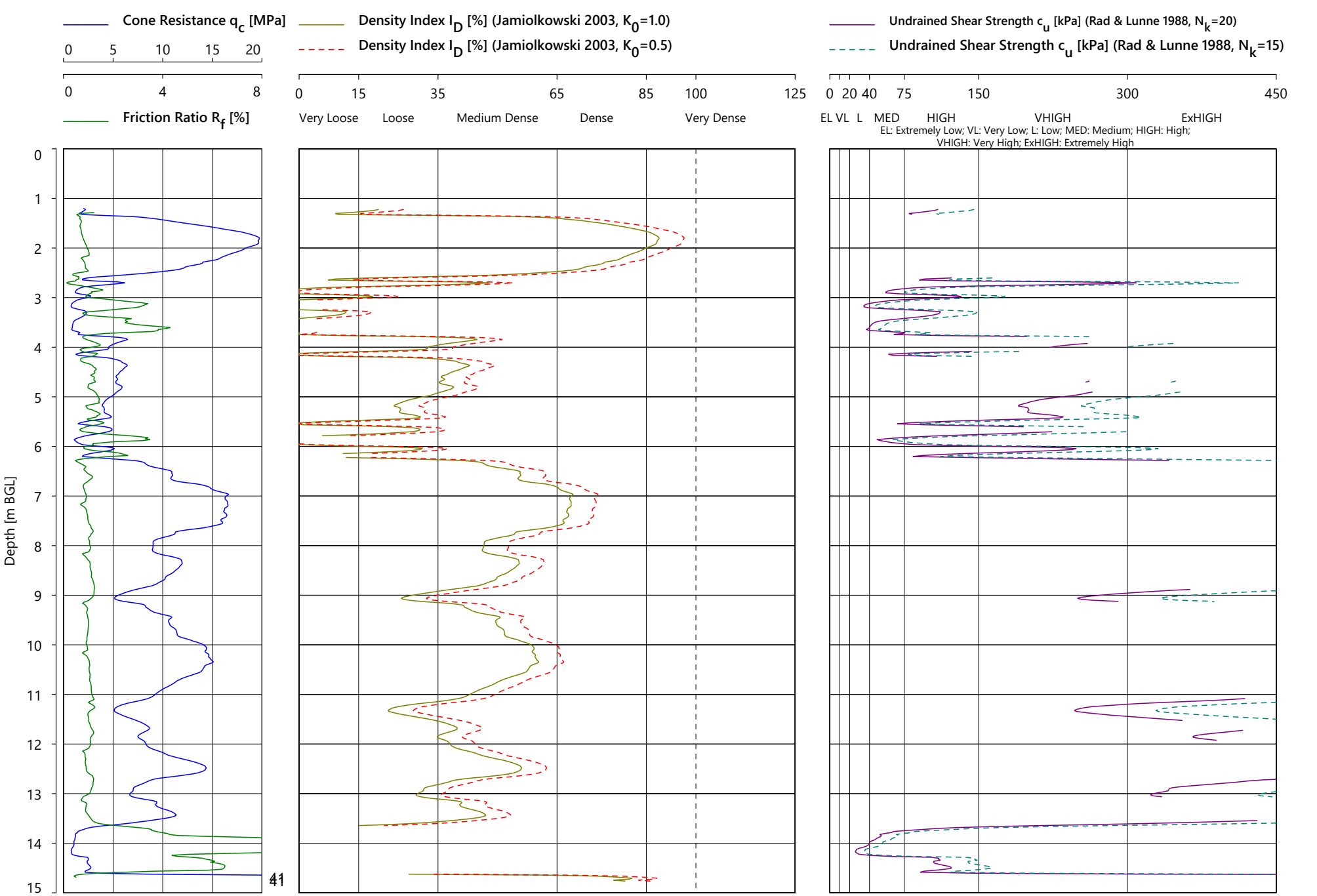
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT07
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482070.93 **N** 412089.33 **Ground Level [m OD] :** +0.68
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



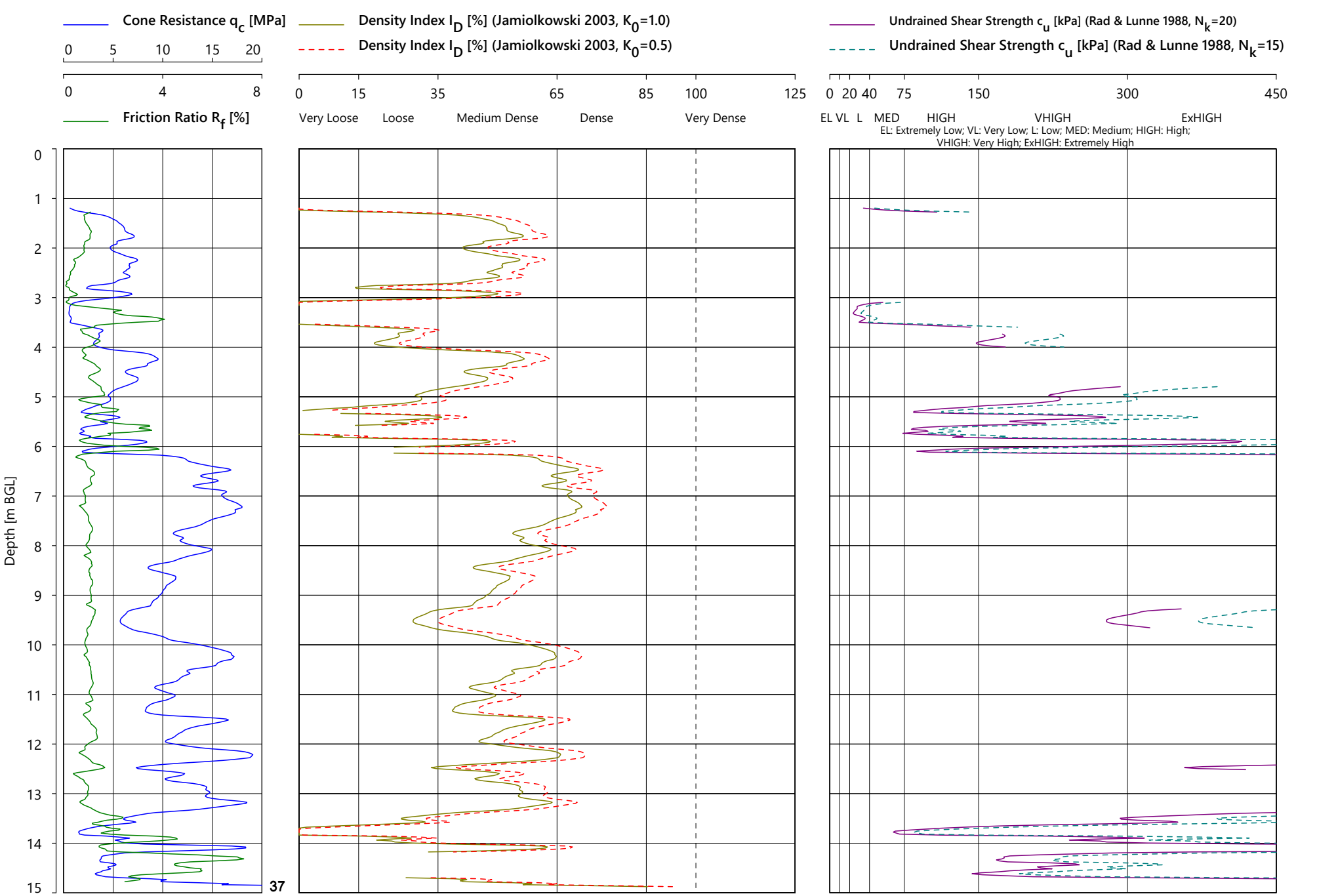
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT08**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482128.44 **N** 412073.17 **Ground Level [m OD] :** +0.65
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



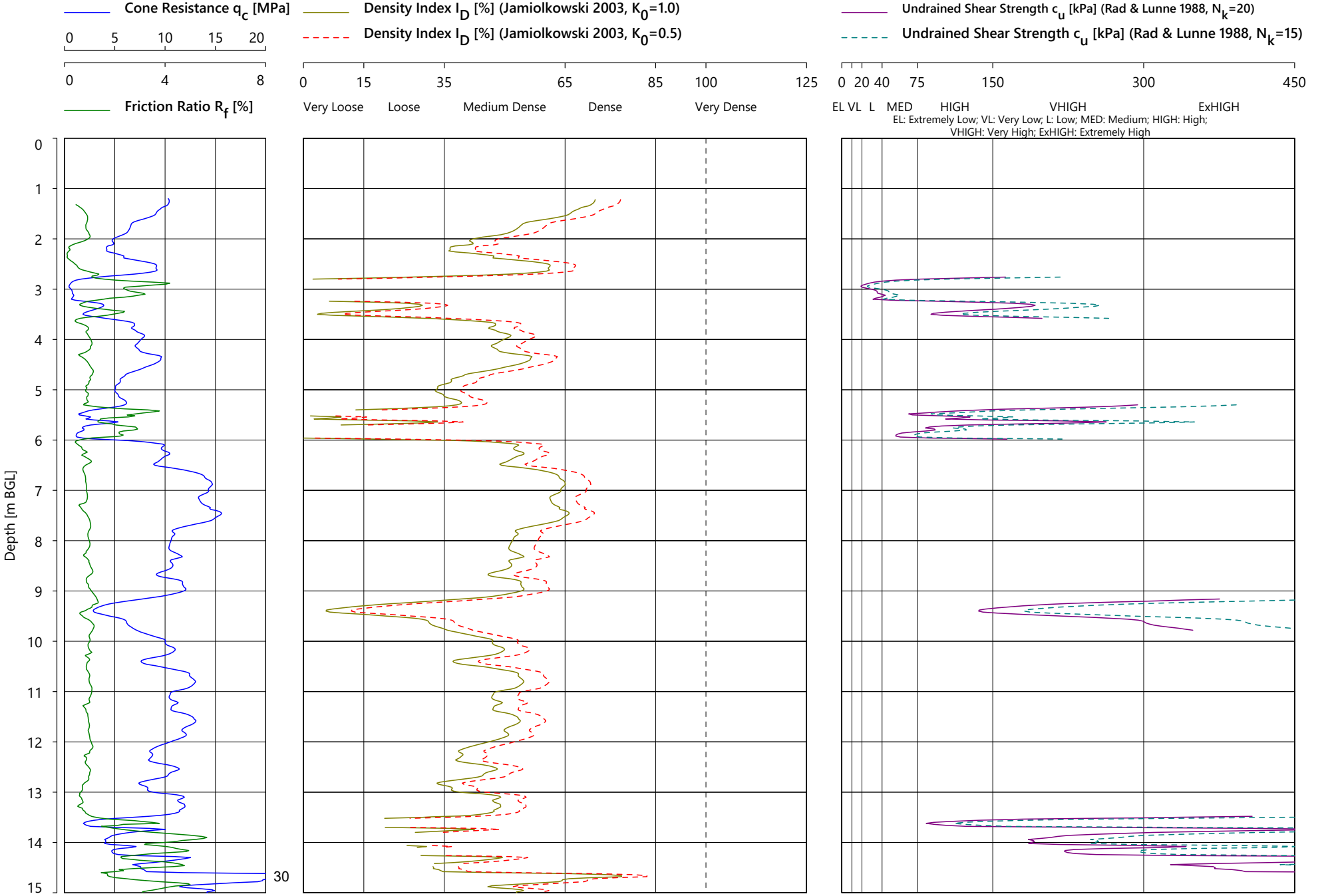
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT08**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482128.44 **N** 412073.17 **Ground Level [m OD] :** +0.65
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



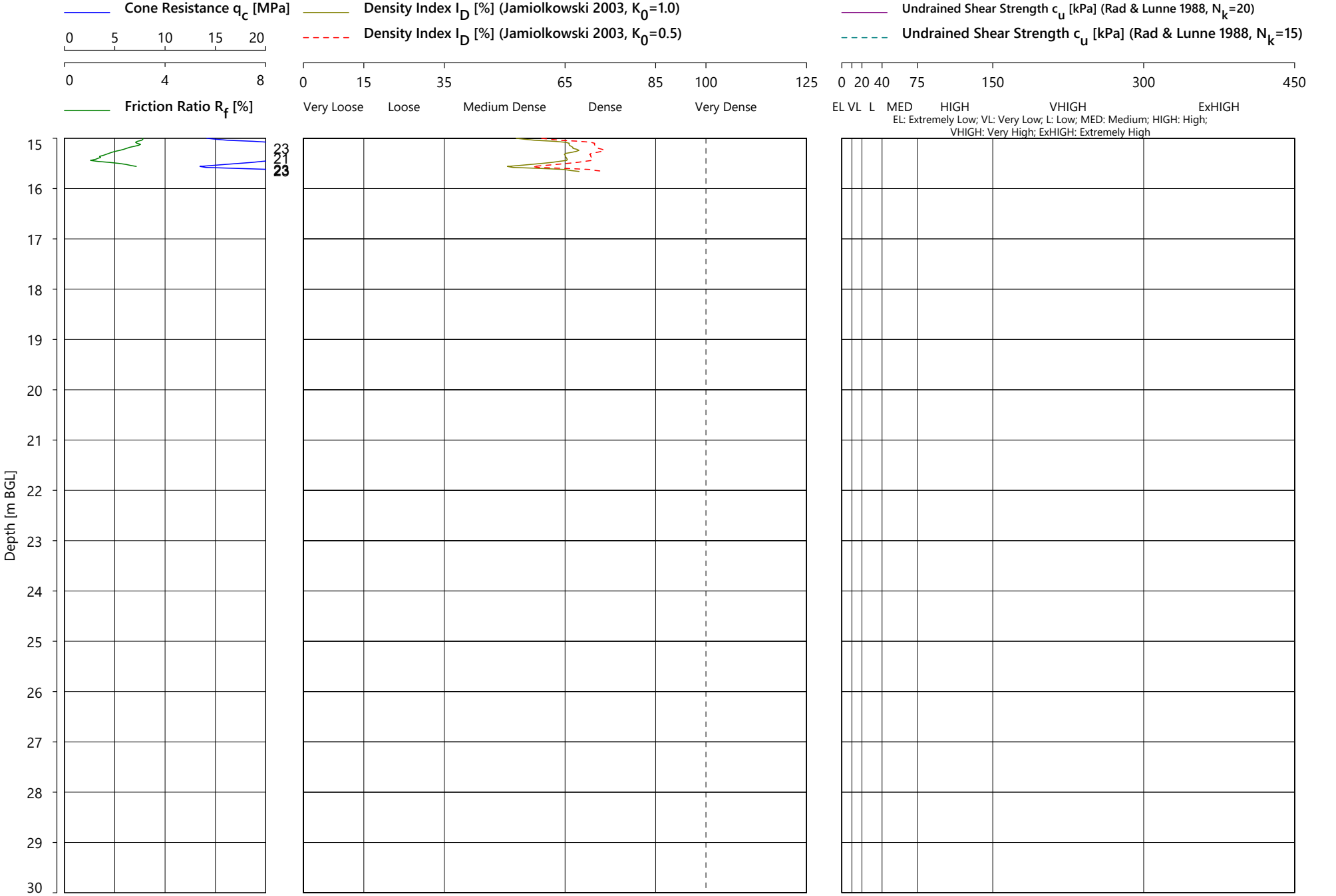
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** NF	**Location :** MS-CPT09
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 481825.75 **N** 412039.48 **Ground Level [m OD] :** +0.51
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



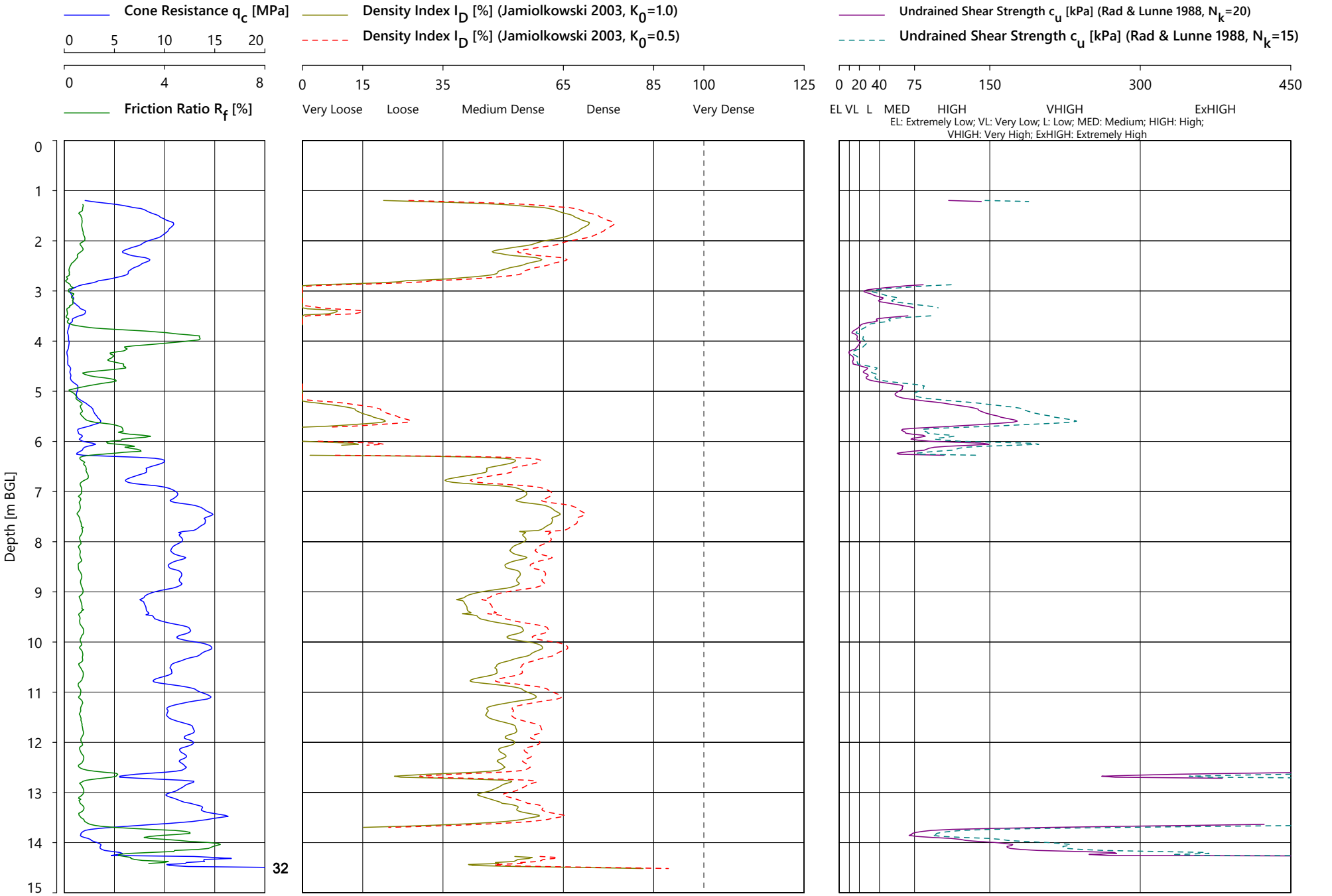
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :**	**MS-CPT10**	
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :**	**E** 481910.37 **N** 412029.00	**Ground Level [m OD] :** +0.36
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :**	212562	
Date of Test : 28-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI		
			Client :	SSE Generation Limited (SSE)	



Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** NF	**Location :** MS-CPT11
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482031.79 **N** 412038.38 **Ground Level [m OD] :** +0.62
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT11
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482031.79 **N** 412038.38 **Ground Level [m OD] :** +0.62
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force	**Operator :** HG,MS	**Location :** MS-SCPT12
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482117.30 **N** 412008.50 **Ground Level [m OD] :** +0.85
CPT Cone : 1701-3469	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 04-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)

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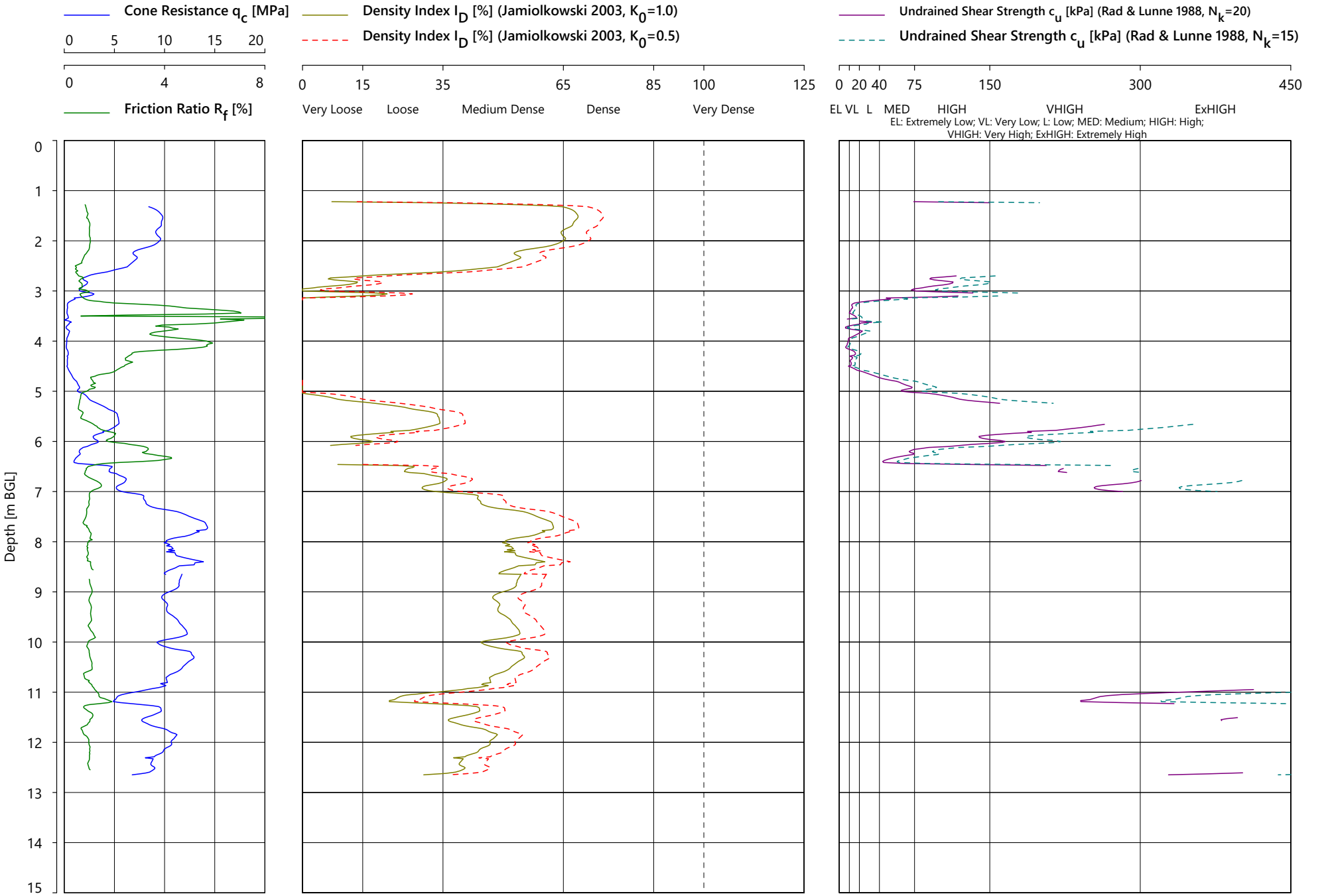
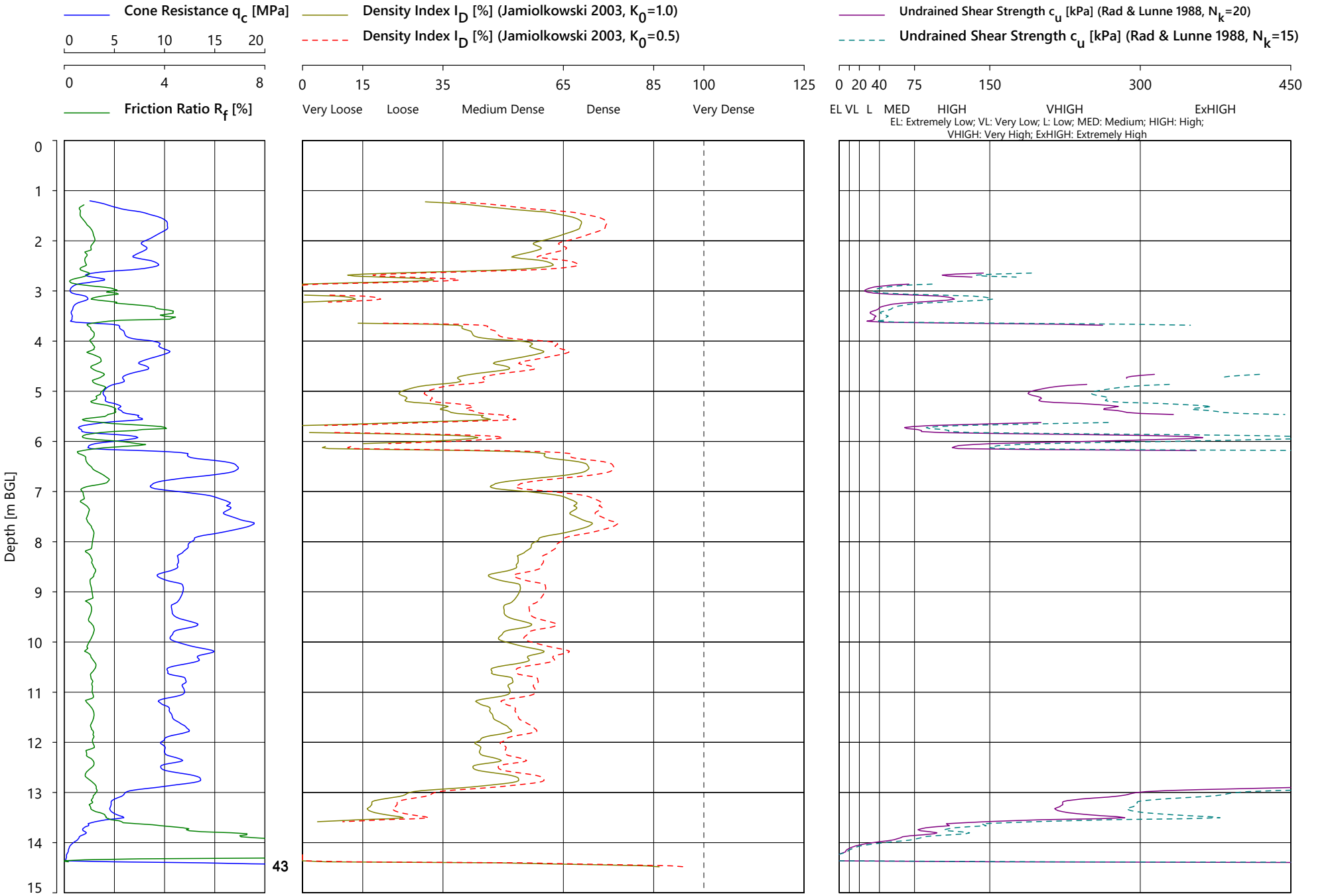
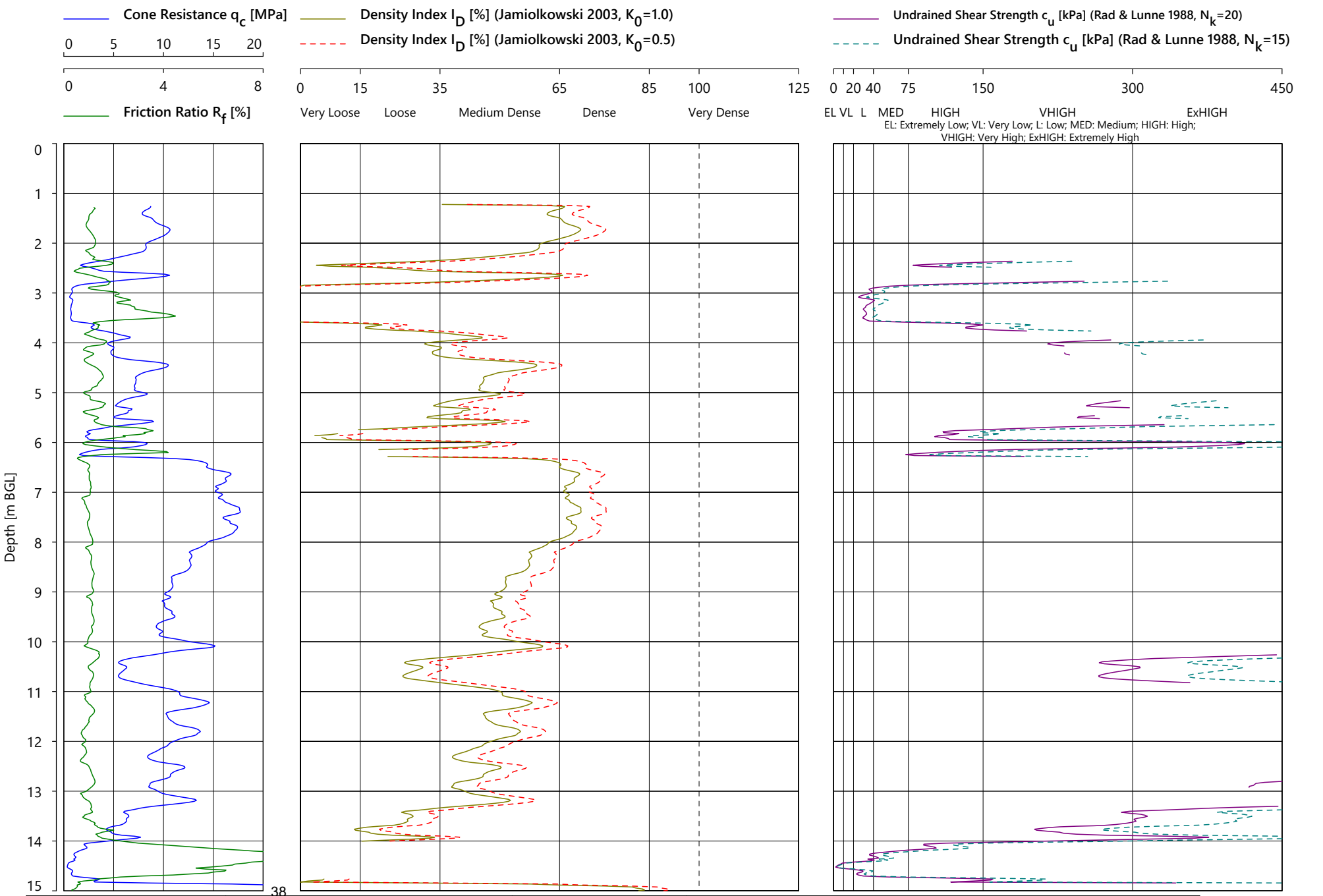


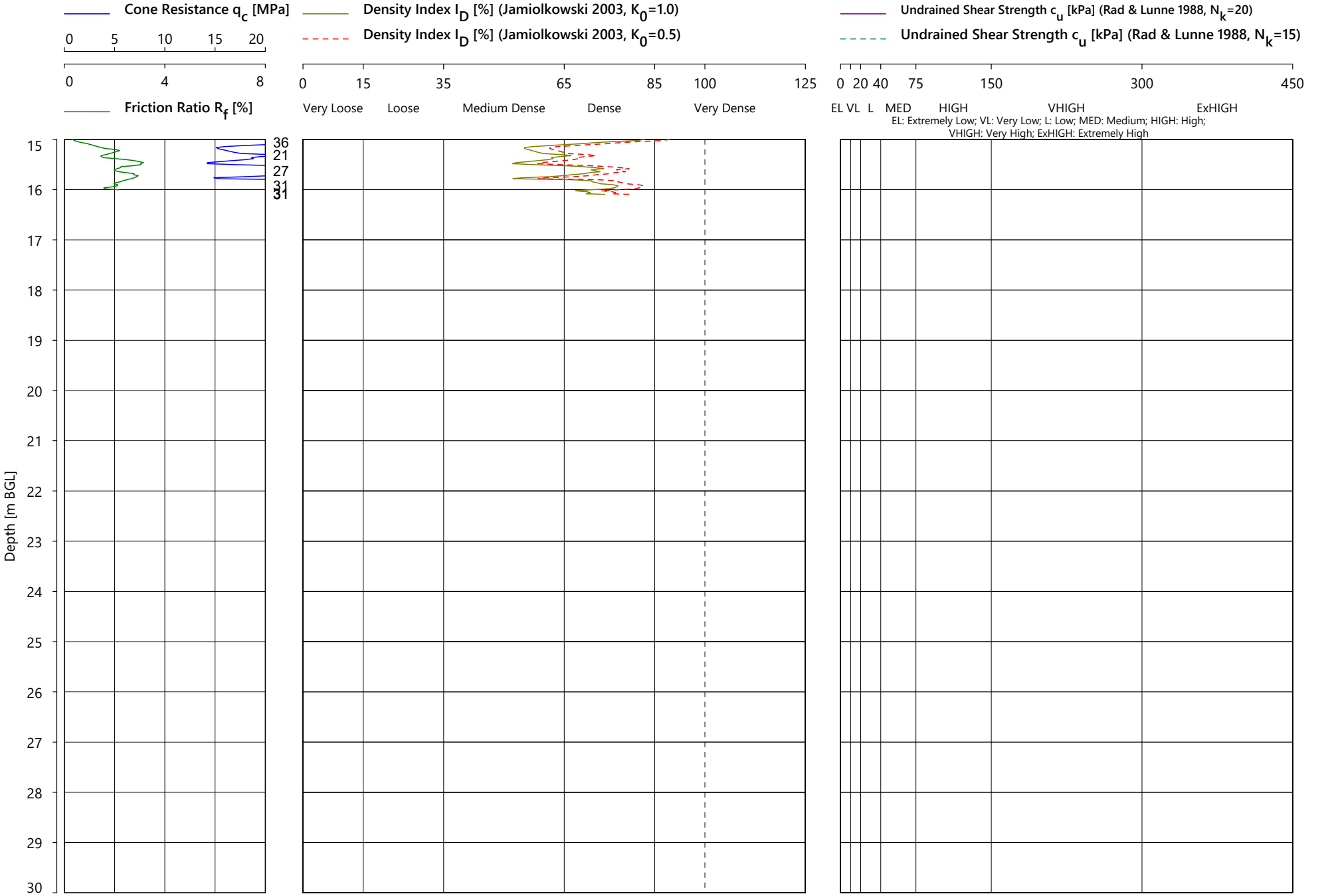
Density Index and Undrained Shear Strength		**Stop Criterion :**	other	**Location :**	**MS-CPM12**
CPT Truck ID :	GB17	**Application Class / Type :**	Class 2 / TE2	**Coordinates :**	**E** 482118.30 **N** 412008.50 **Ground Level [m OD] :** +0.85
CPT Cone :	1701-3474	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Project :**	212562
Date of Test :	10-Oct-2022	**Assumed Water Level [m gl] :**	-1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Operator :	HG,MS	**Client :**	SSE Generation Limited (SSE)
		Compiled by :	LCH		
		Checked by :	KES		



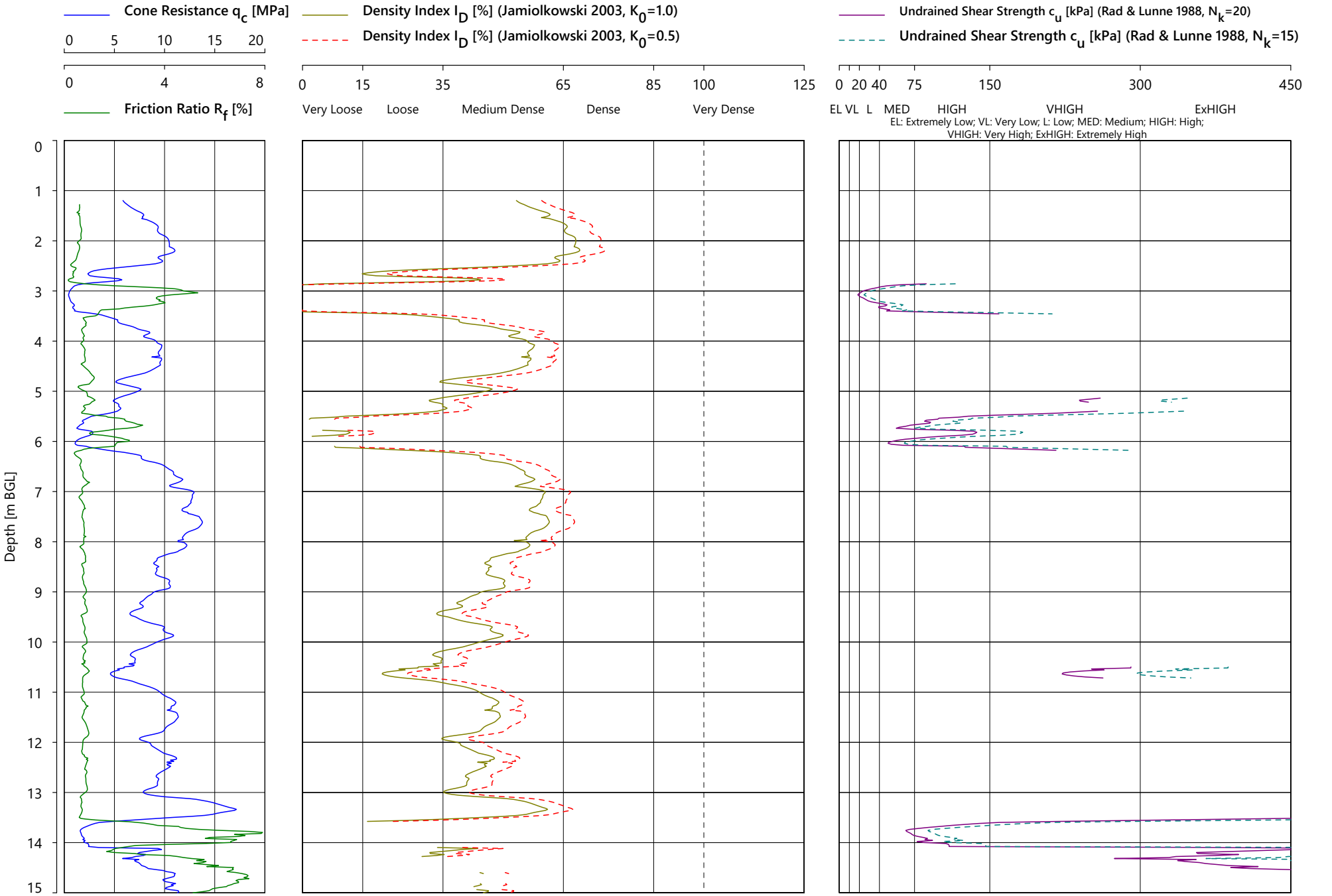
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT13
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481823.05 **N** 411989.59 **Ground Level [m OD] :** +0.73
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



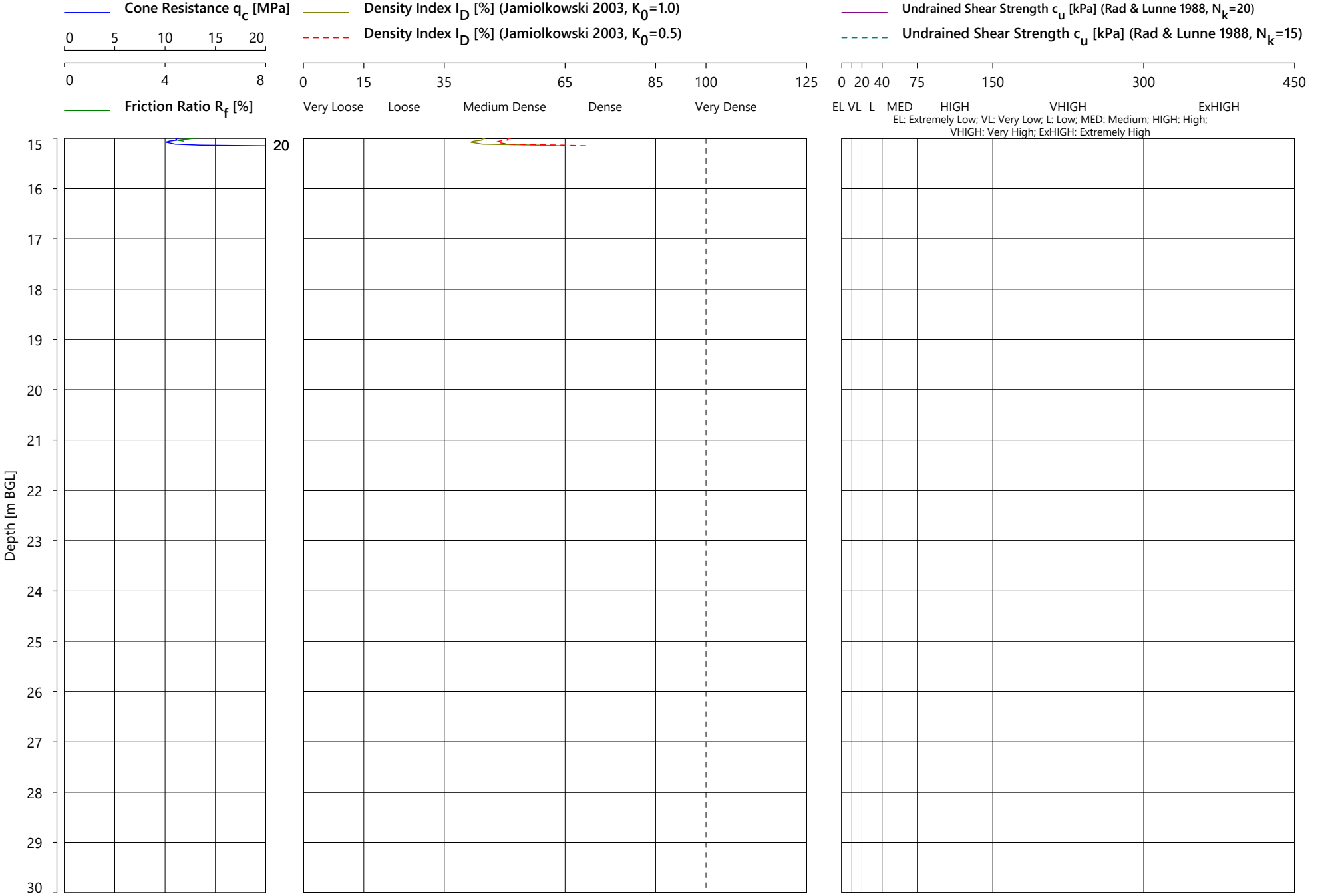
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT14**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481942.85 **N** 411983.42 **Ground Level [m OD] :** +0.81
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



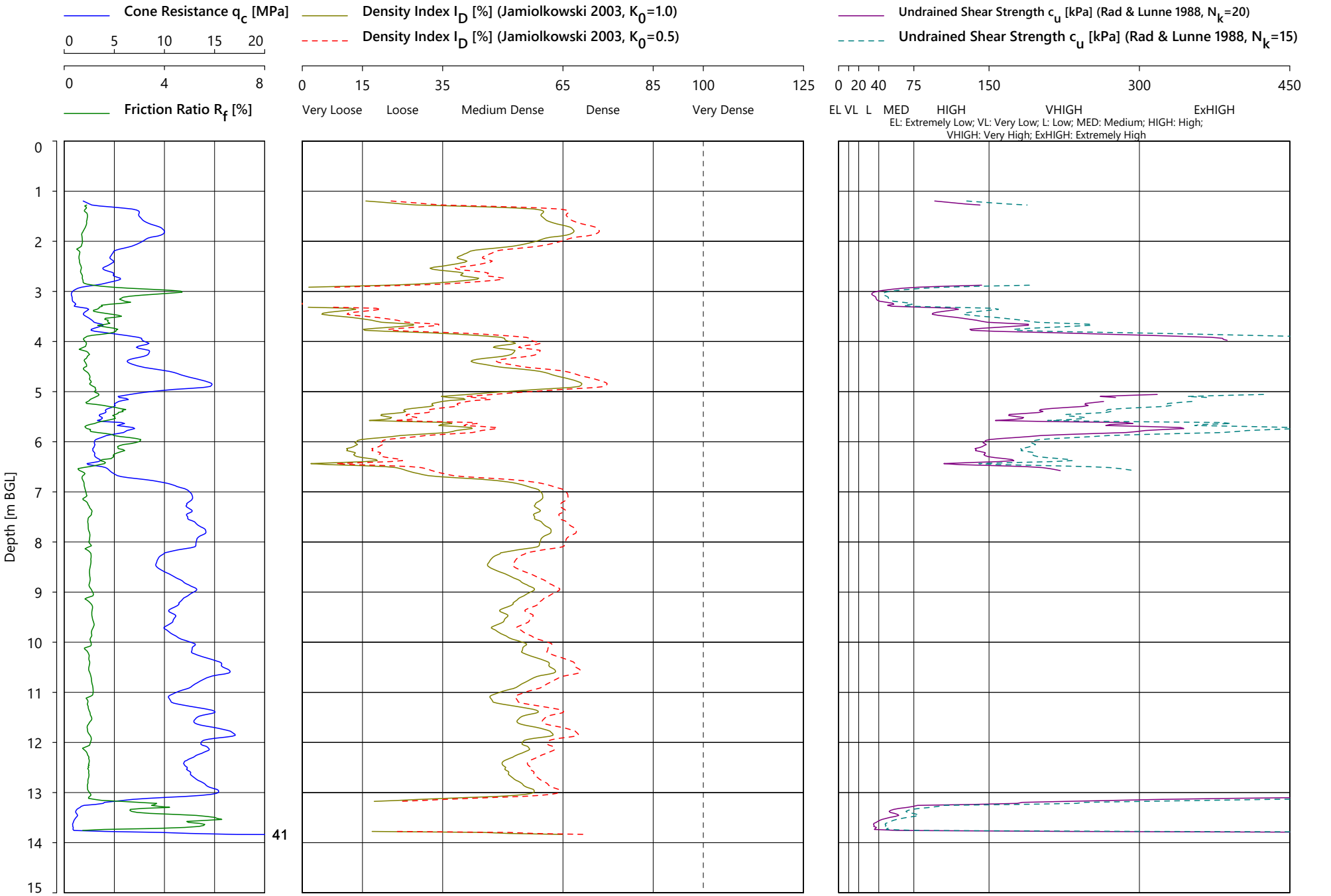
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT14
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481942.85 **N** 411983.42 **Ground Level [m OD] :** +0.81
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



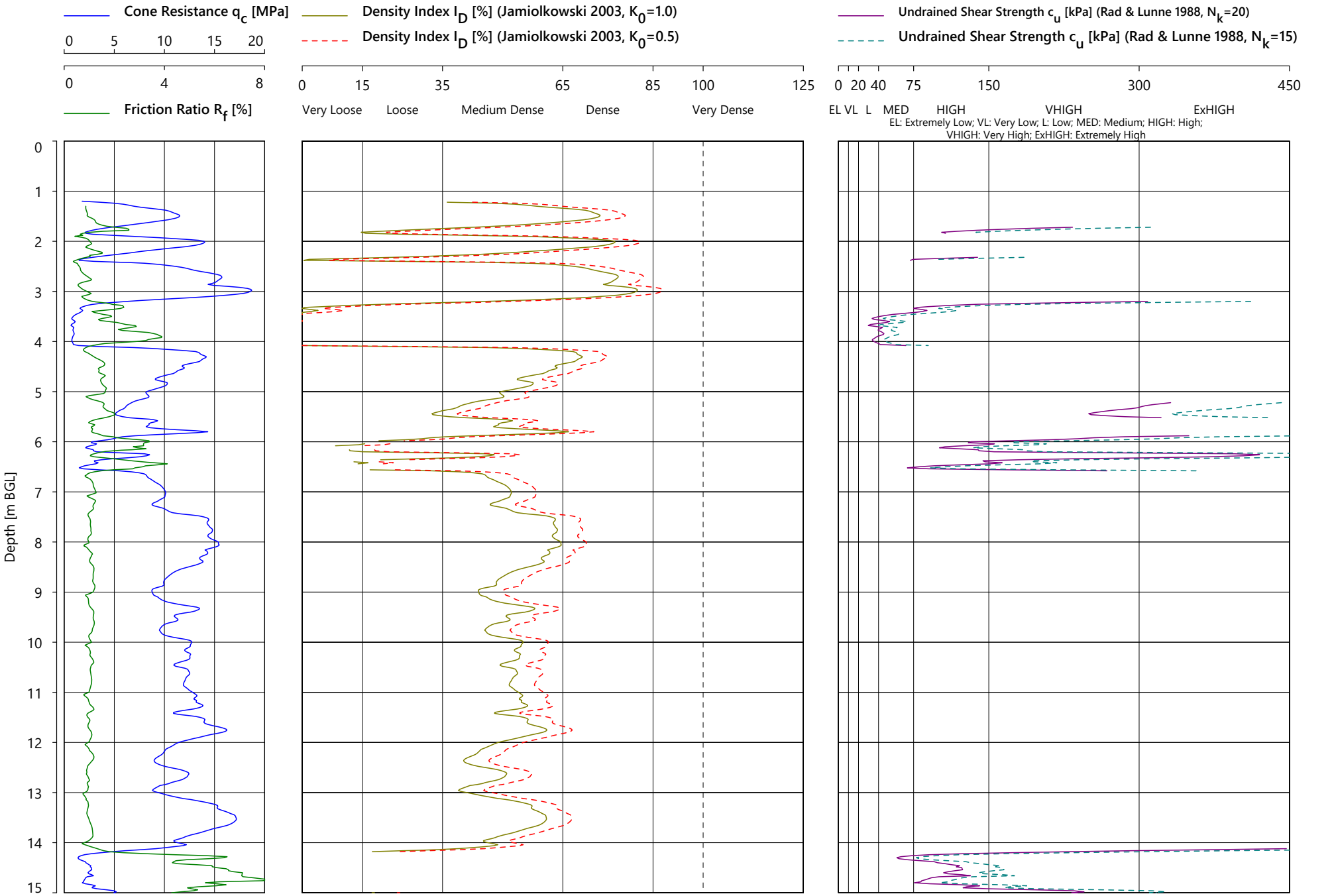
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force	**Operator :** HG,MS,KH	**Location :** MS-SCPT15
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482093.25 **N** 411955.82 **Ground Level [m OD] :** +0.69
CPT Cone : 1701-3469	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 19-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



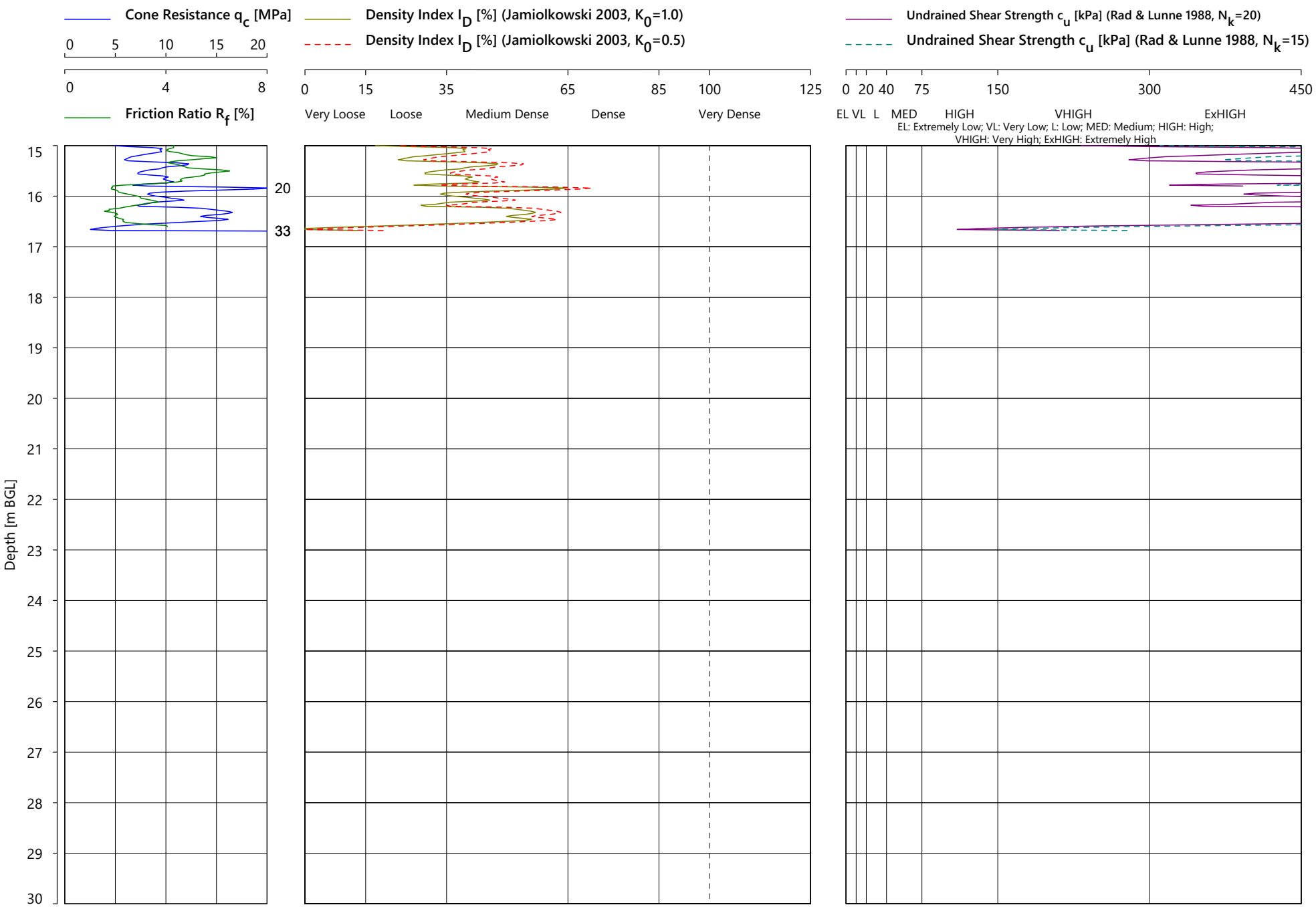
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** MS-SCPT15
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS,KH	**Coordinates :** **E** 482093.25 **N** 411955.82 **Ground Level [m OD] :** +0.69
CPT Cone : 1701-3469	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 19-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



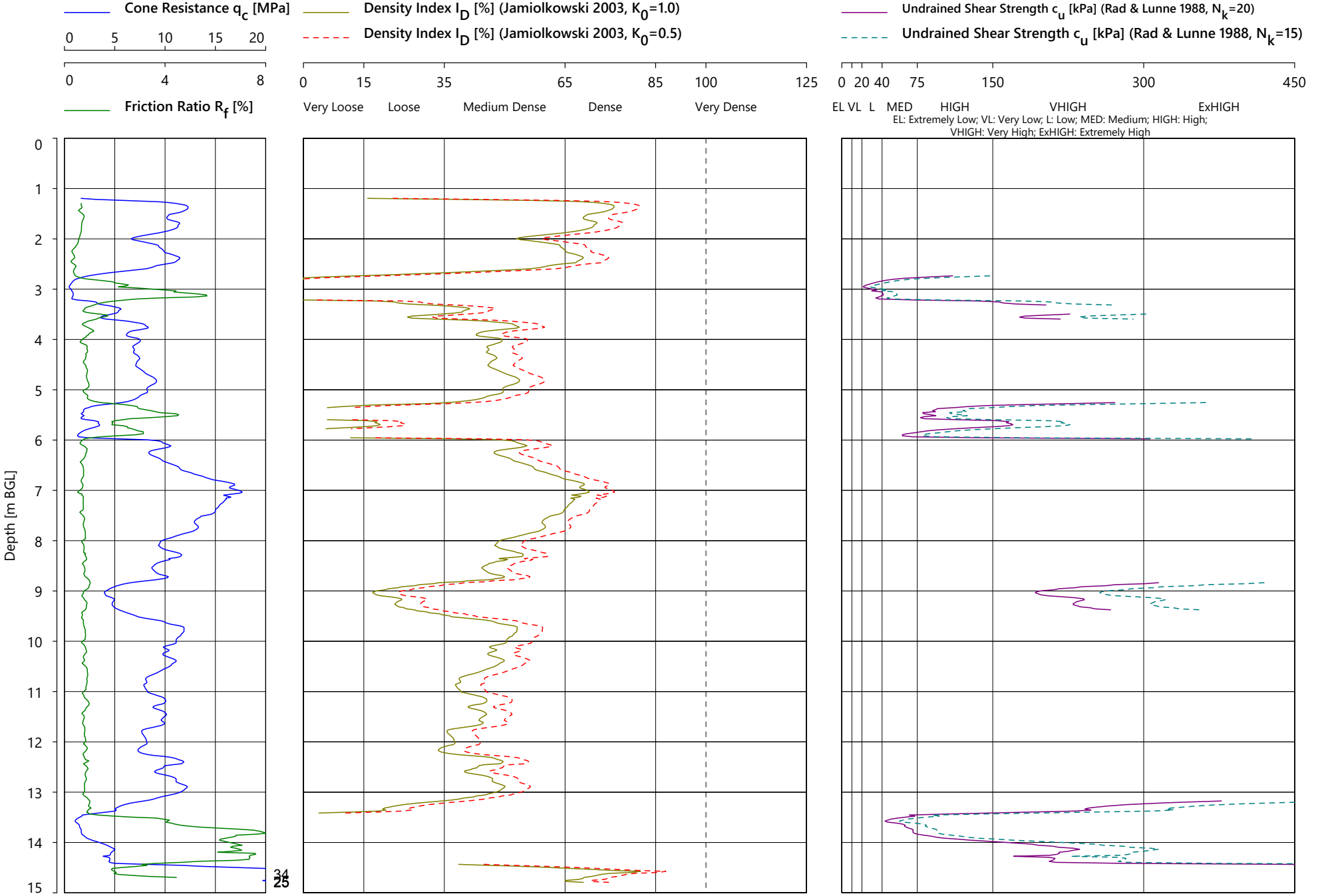
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT16
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481861.56 **N** 411943.34 **Ground Level [m OD] :** +0.53
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



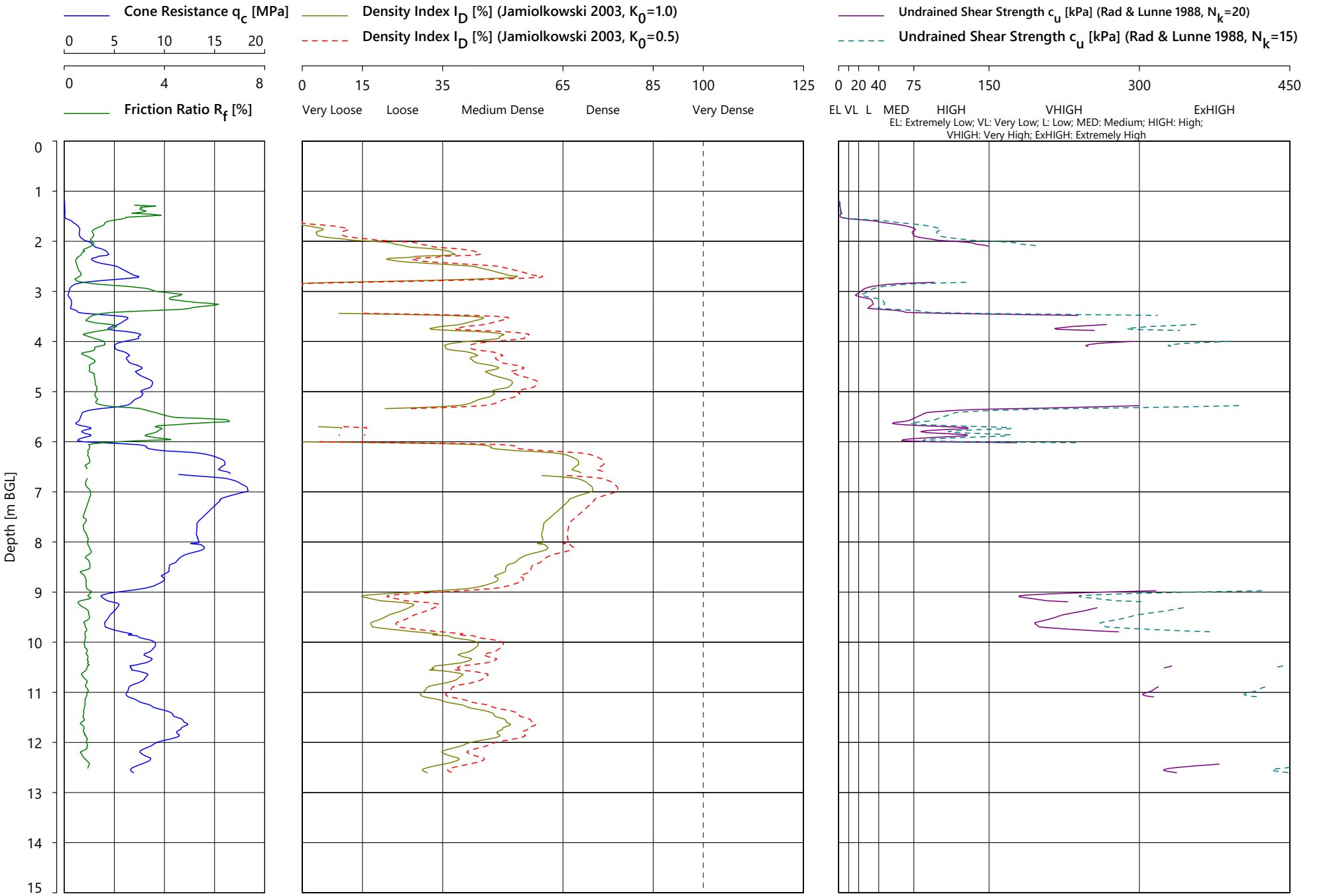
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT17**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481939.92 **N** 411927.62 **Ground Level [m OD] :** +0.66
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



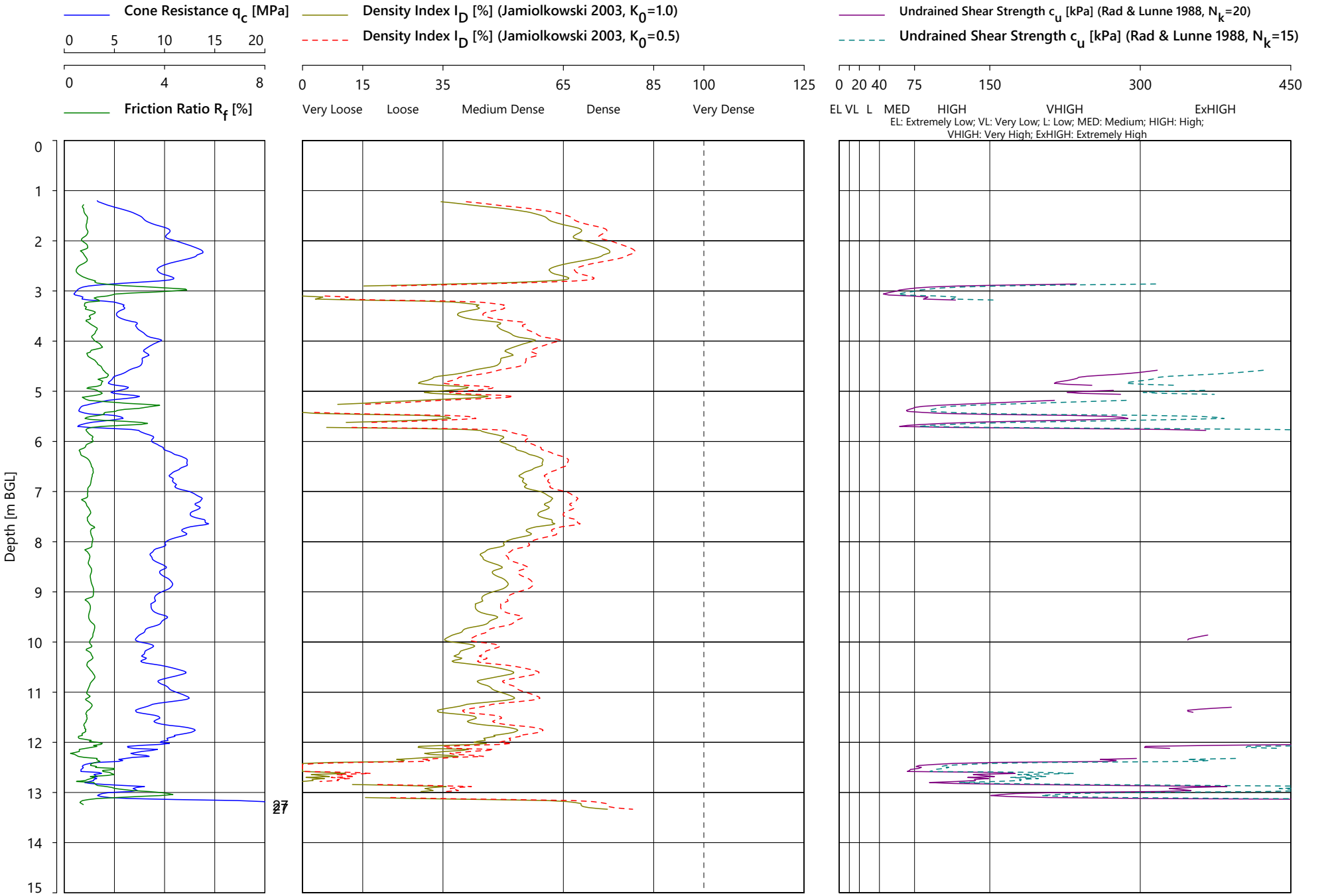
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT17**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481939.92 **N** 411927.62 **Ground Level [m OD] :** +0.66
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



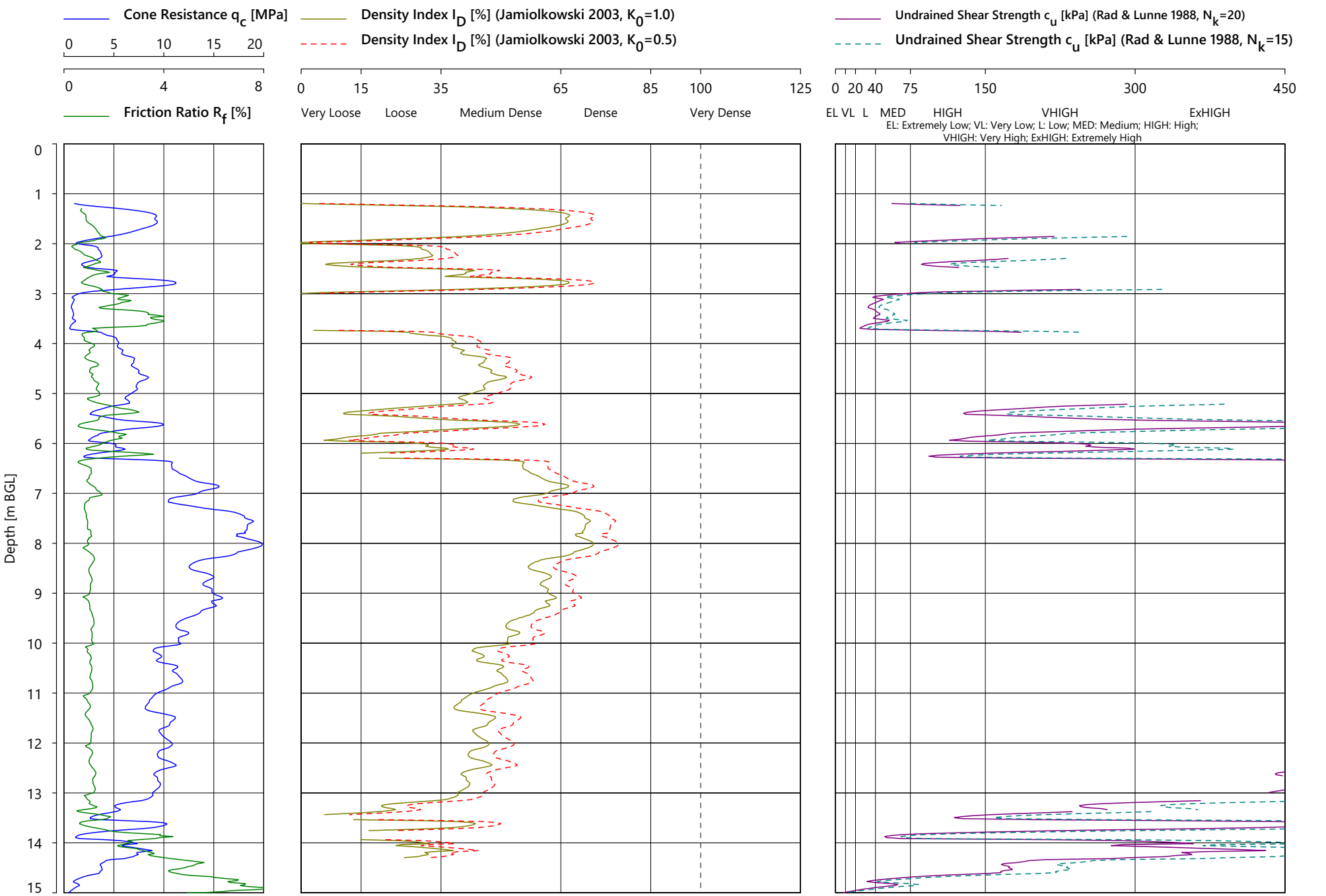
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** MS-SCPT18
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482135.21 **N** 411946.57 **Ground Level [m OD] :** +0.60
CPT Cone : 1701-3469	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 06-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



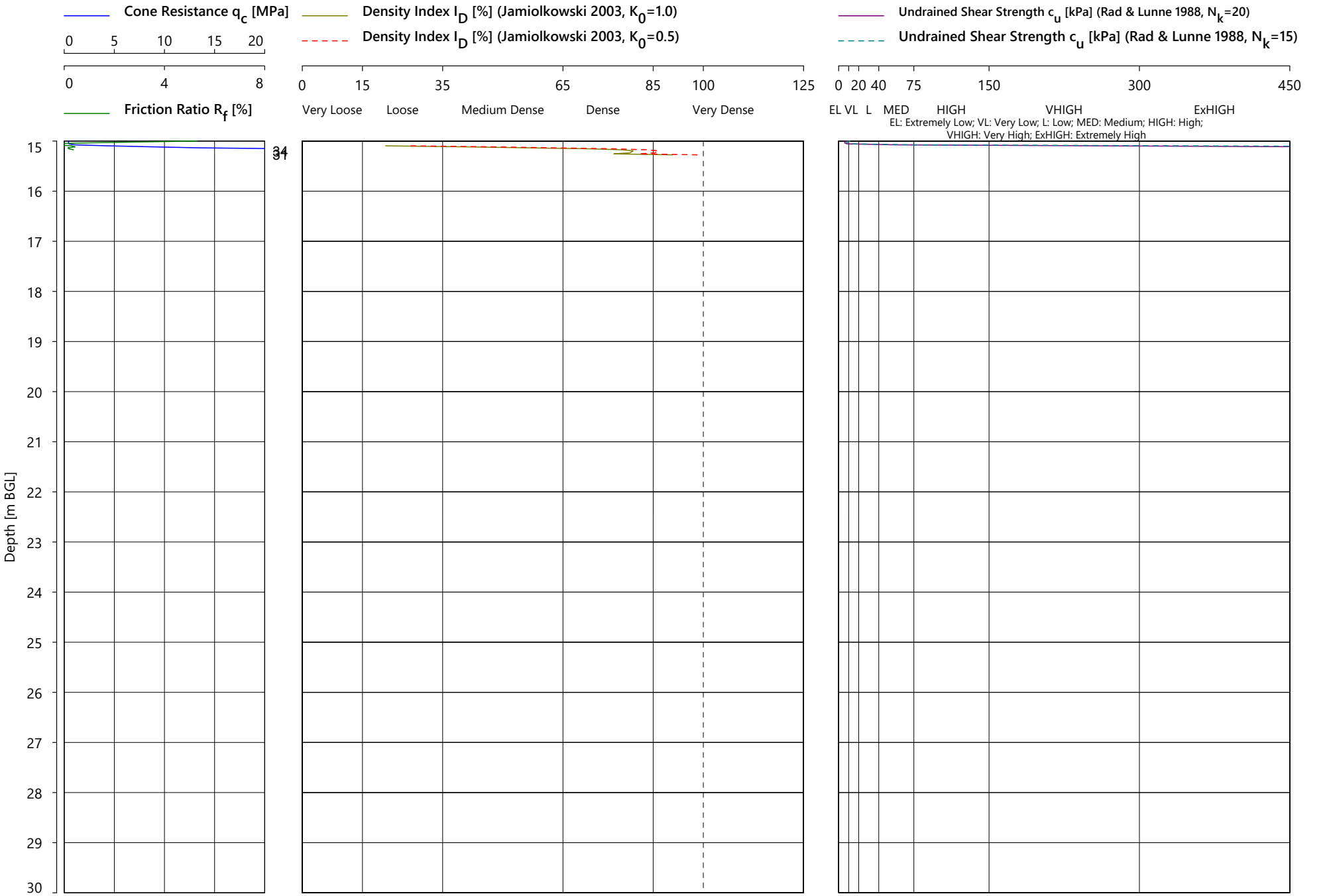
Density Index and Undrained Shear Strength		**Stop Criterion :**	other	**Location :**	**MS-CPM18**
CPT Truck ID :	GB17	**Application Class / Type :**	Class 2 / TE2	**Coordinates :**	**E** 482134.20 **N** 411946.60 **Ground Level [m OD] :** +0.60
CPT Cone :	1701-3474	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Project :**	212562
Date of Test :	11-Oct-2022	**Assumed Water Level [m gl] :**	-1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
		Operator :	HG,MS	**Client :**	SSE Generation Limited (SSE)
		Compiled by :	LCH		
		Checked by :	KES		



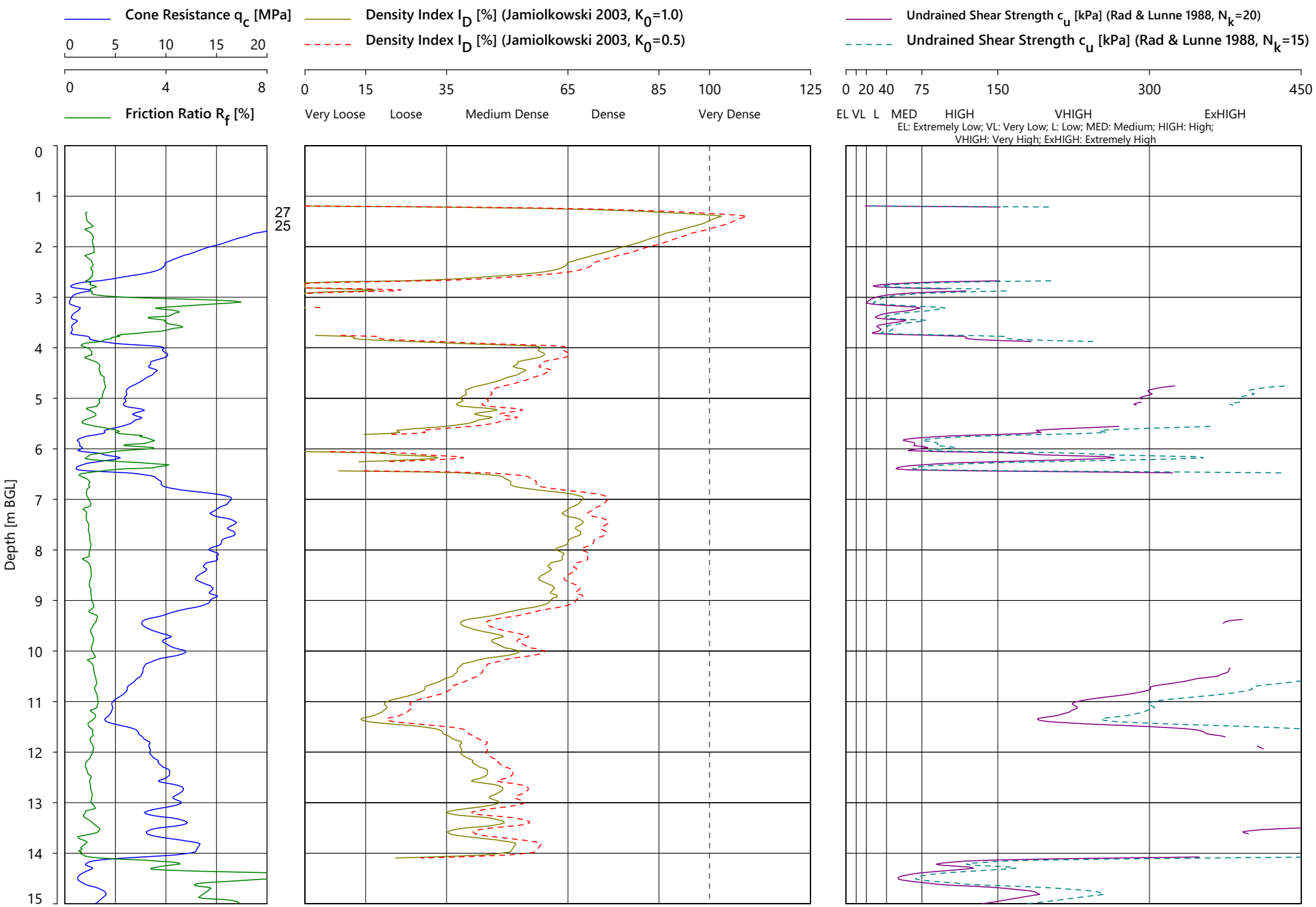
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT19
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481817.50 **N** 411889.77 **Ground Level [m OD] :** +0.53
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



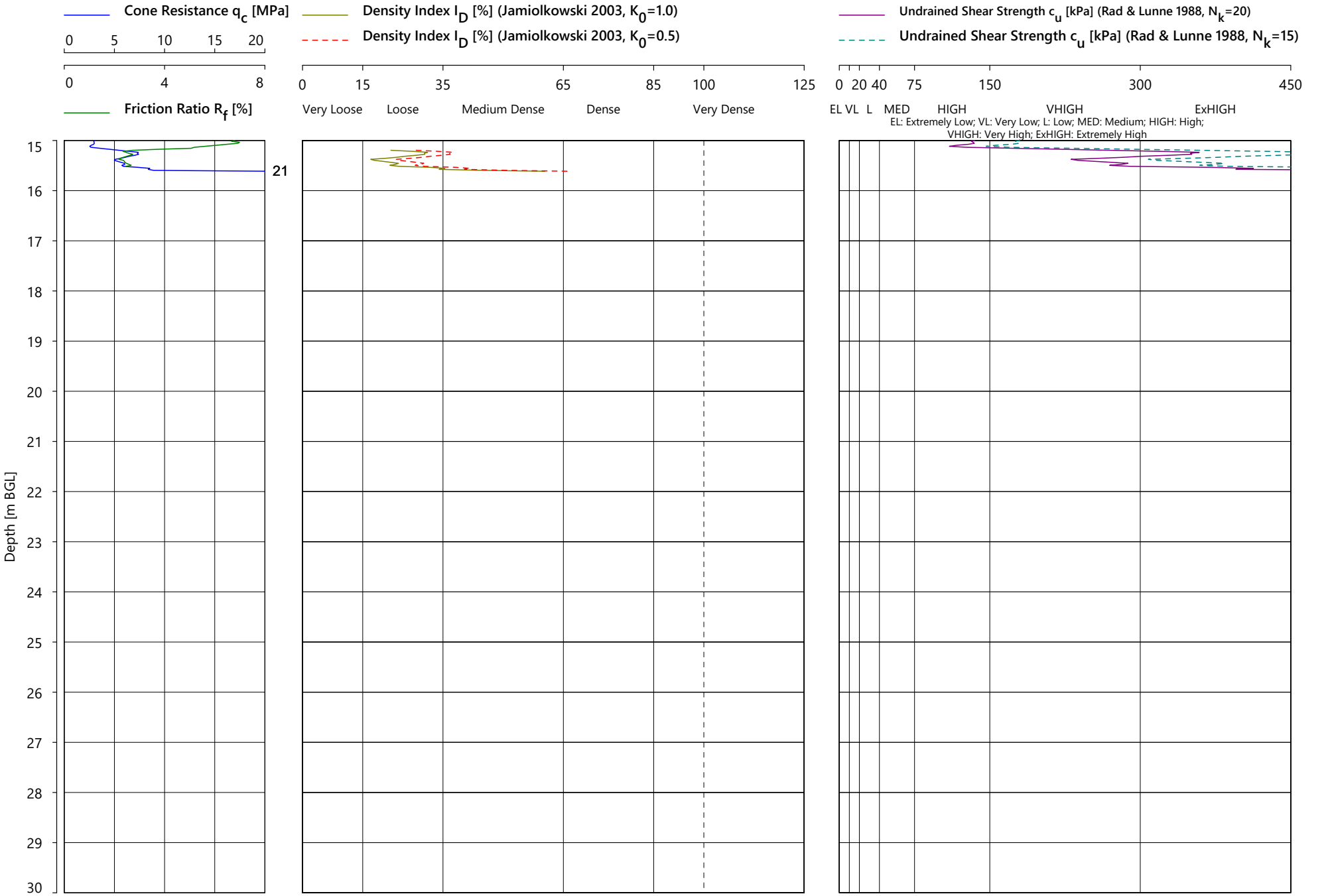
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT20**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481917.71 **N** 411884.14 **Ground Level [m OD] :** +0.75
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



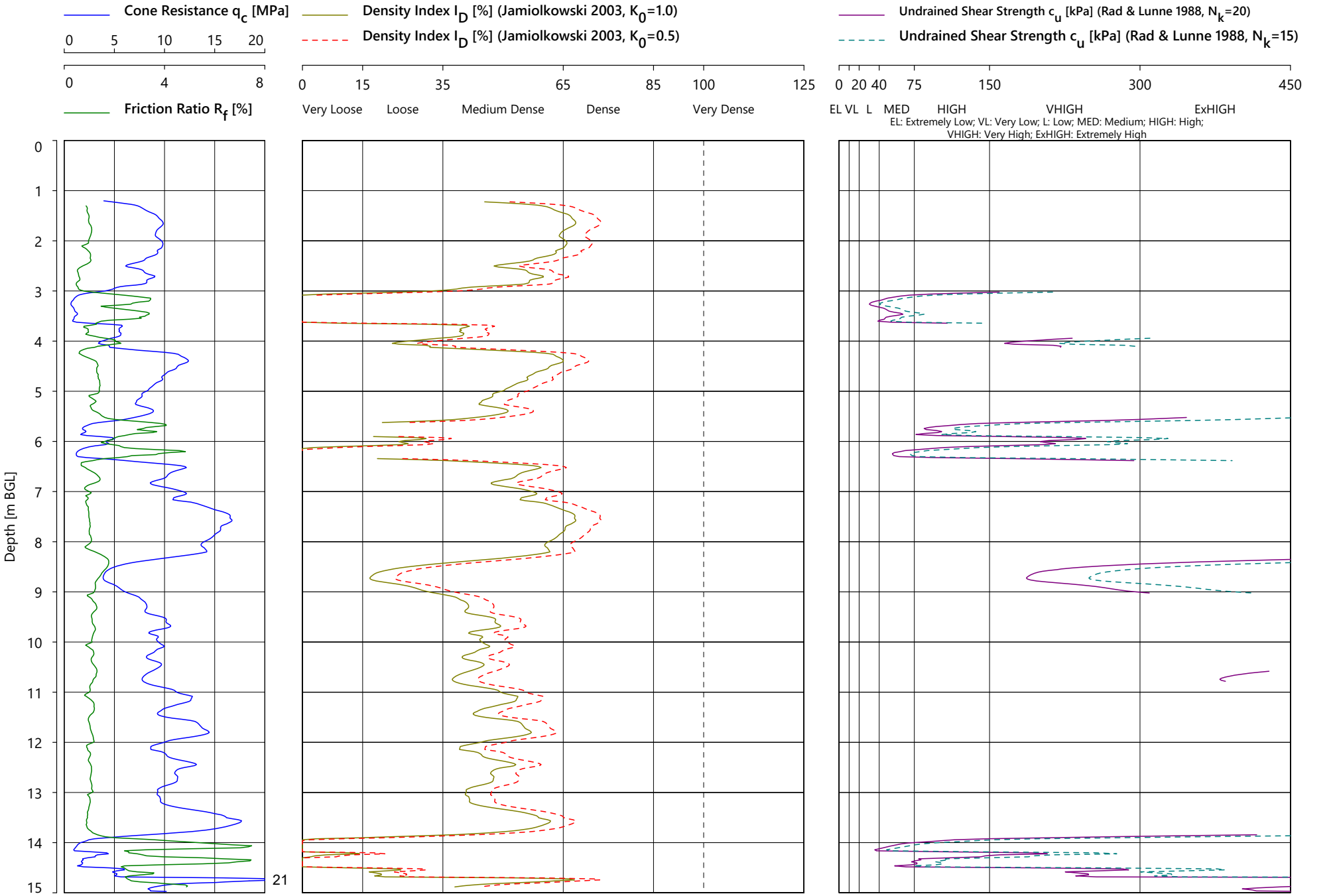
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT20**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481917.71 **N** 411884.14 **Ground Level [m OD] :** +0.75
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



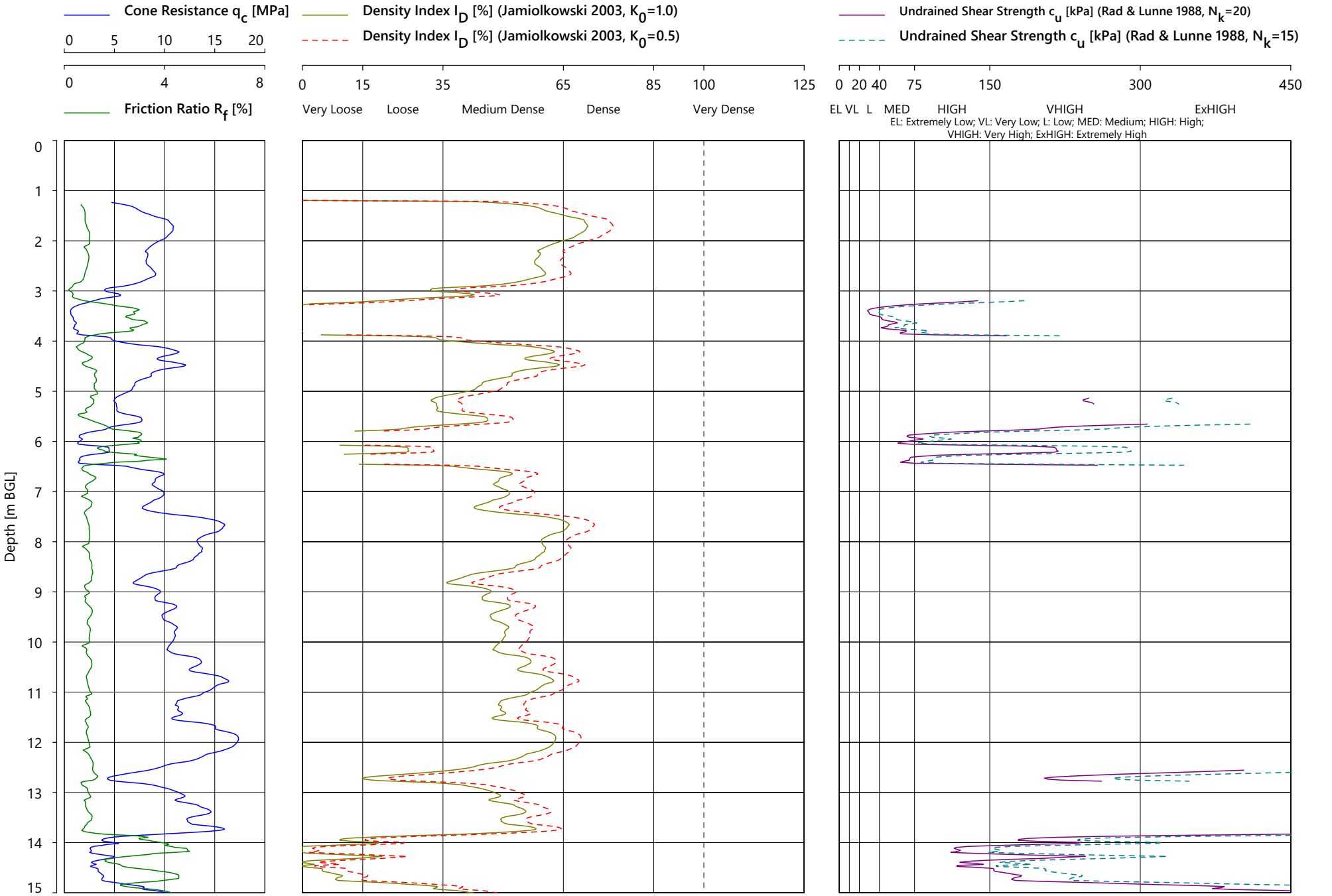
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT21
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482014.44 **N** 411918.06 **Ground Level [m OD] :** +1.07
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 04-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



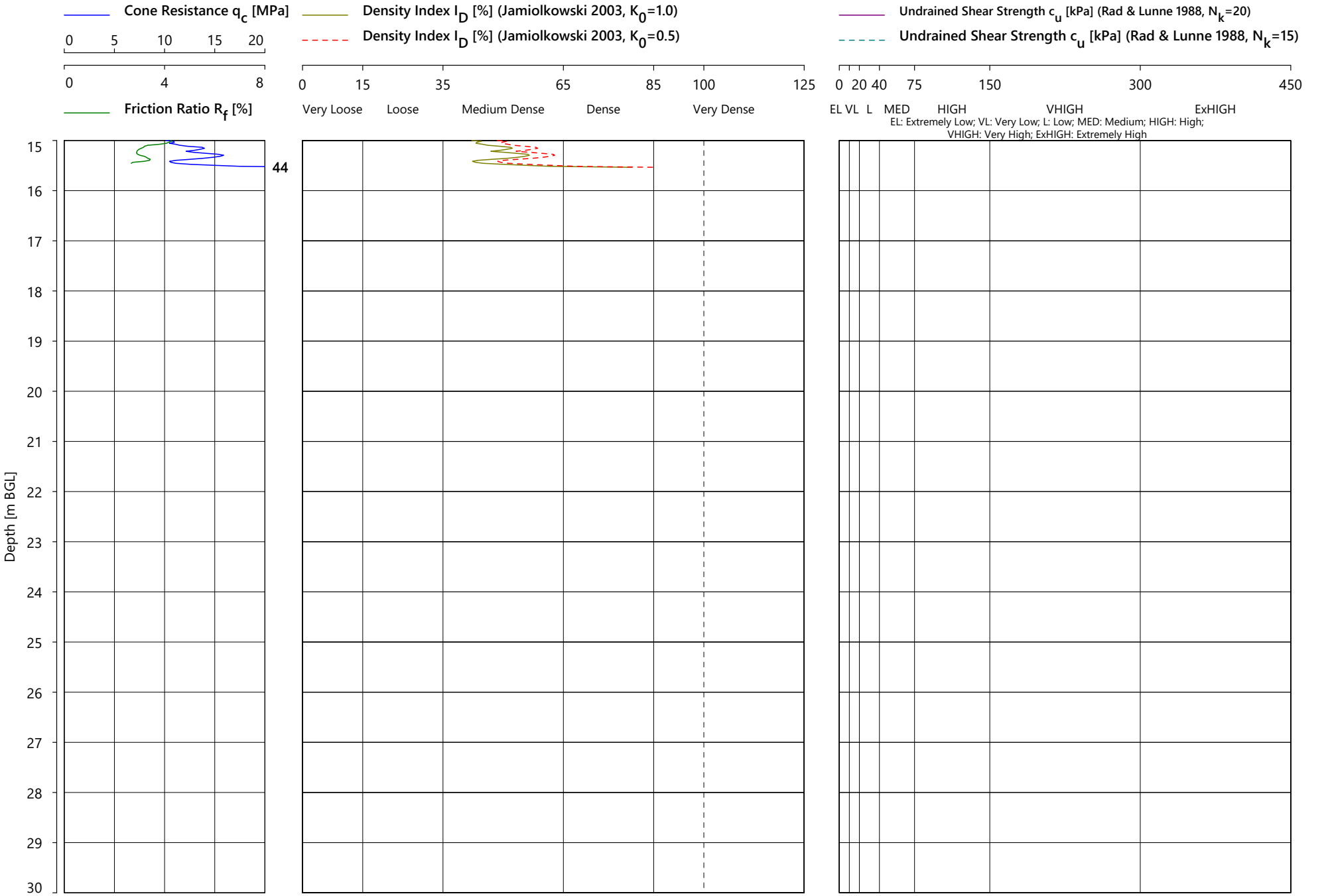
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT21**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482014.44 **N** 411918.06 **Ground Level [m OD] :** +1.07
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 04-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



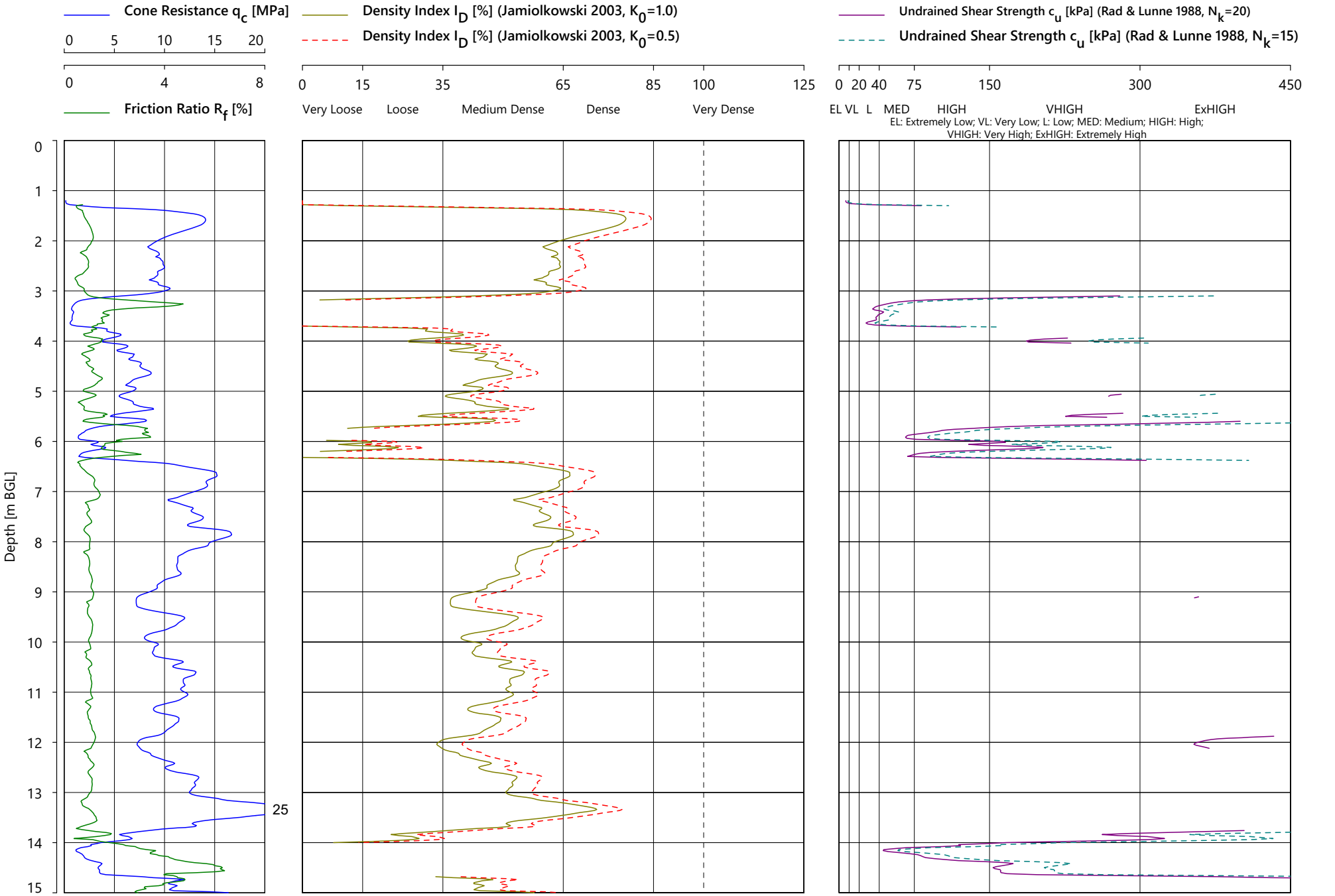
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** NF	**Location :** MS-CPT22
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482118.34 **N** 411891.47 **Ground Level [m OD] :** +0.90
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



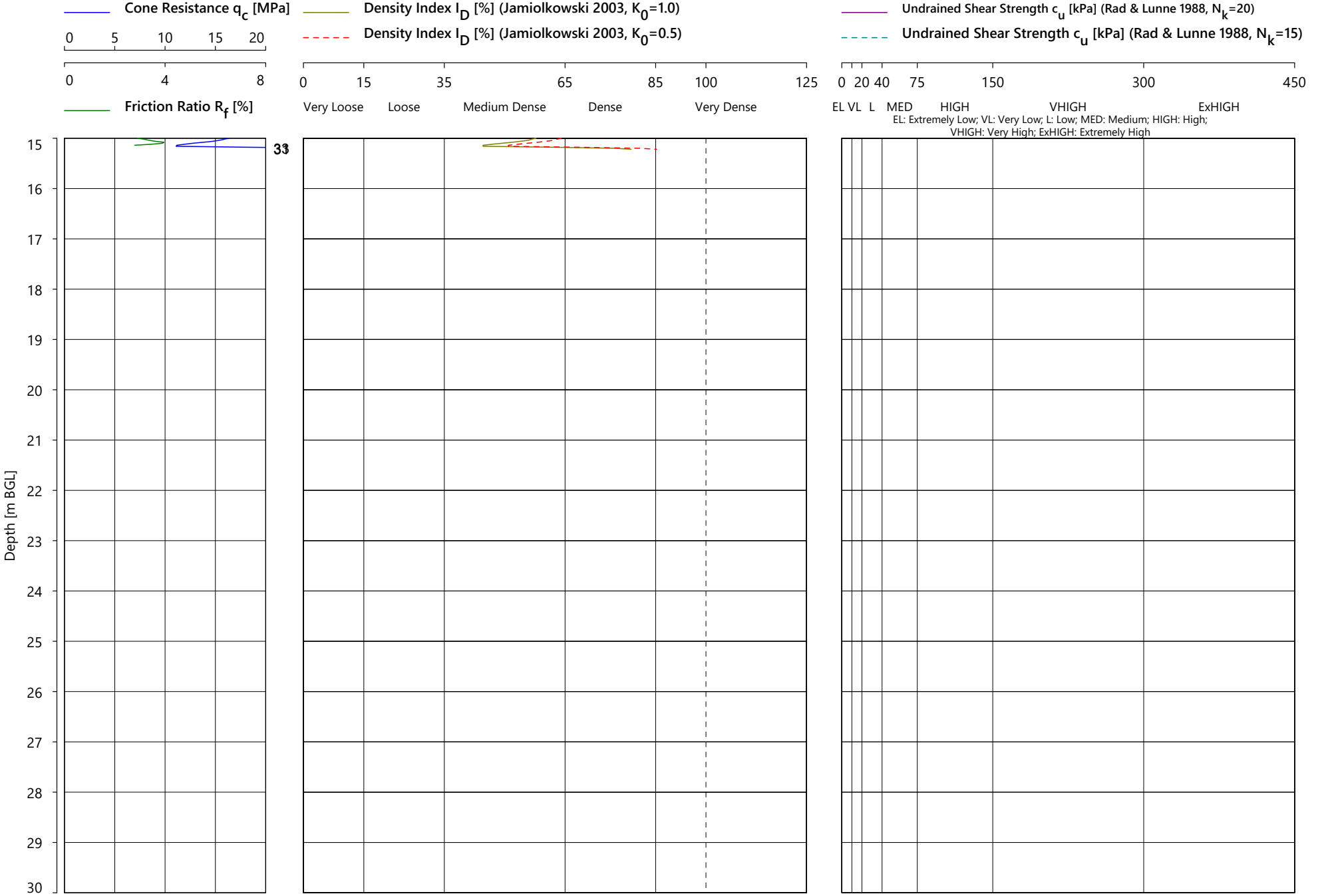
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** MS-CPT23
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482054.12 **N** 411813.03 **Ground Level [m OD] :** +0.98
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 12-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



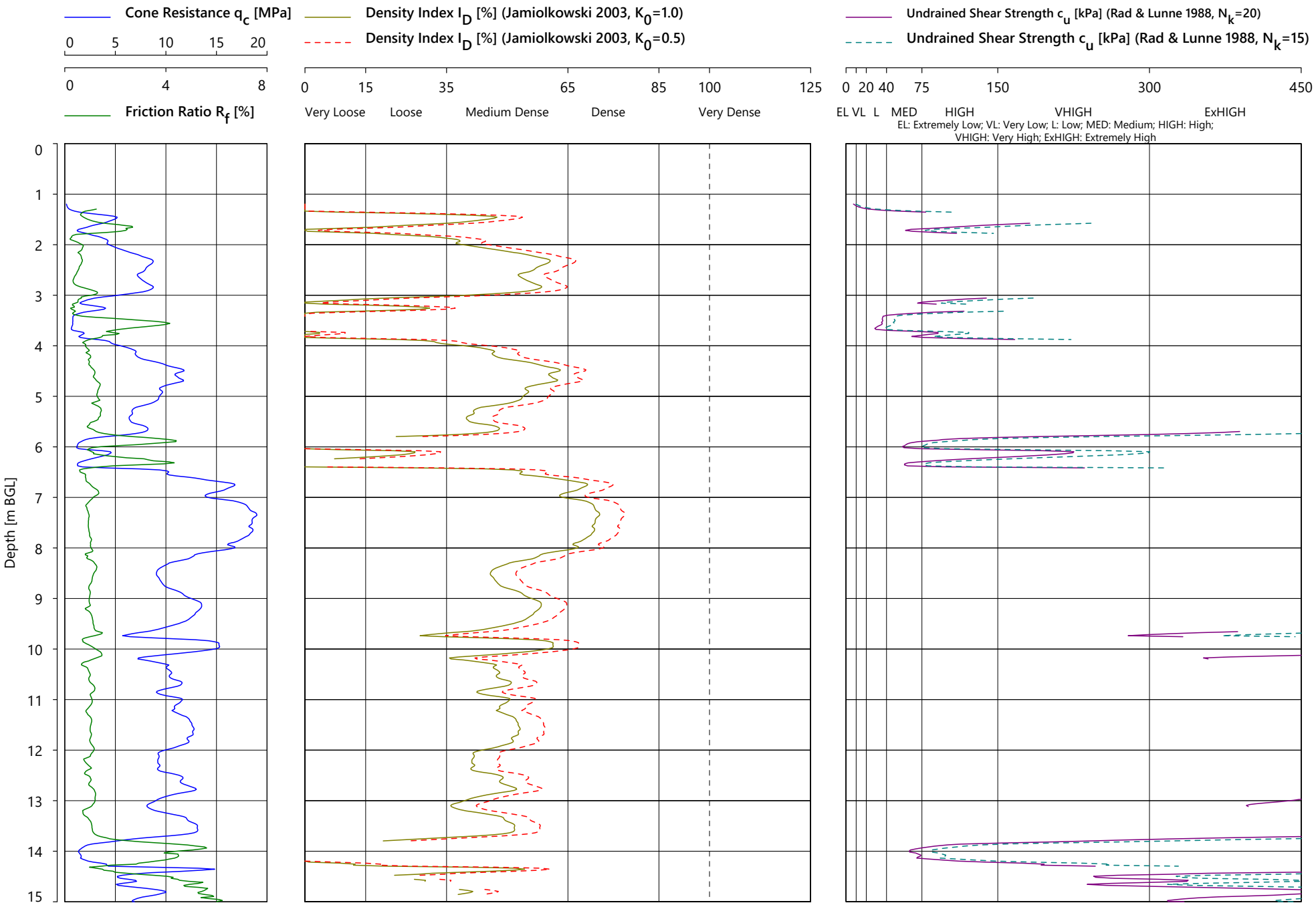
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT23
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482054.12 **N** 411813.03 **Ground Level [m OD] :** +0.98
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 12-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



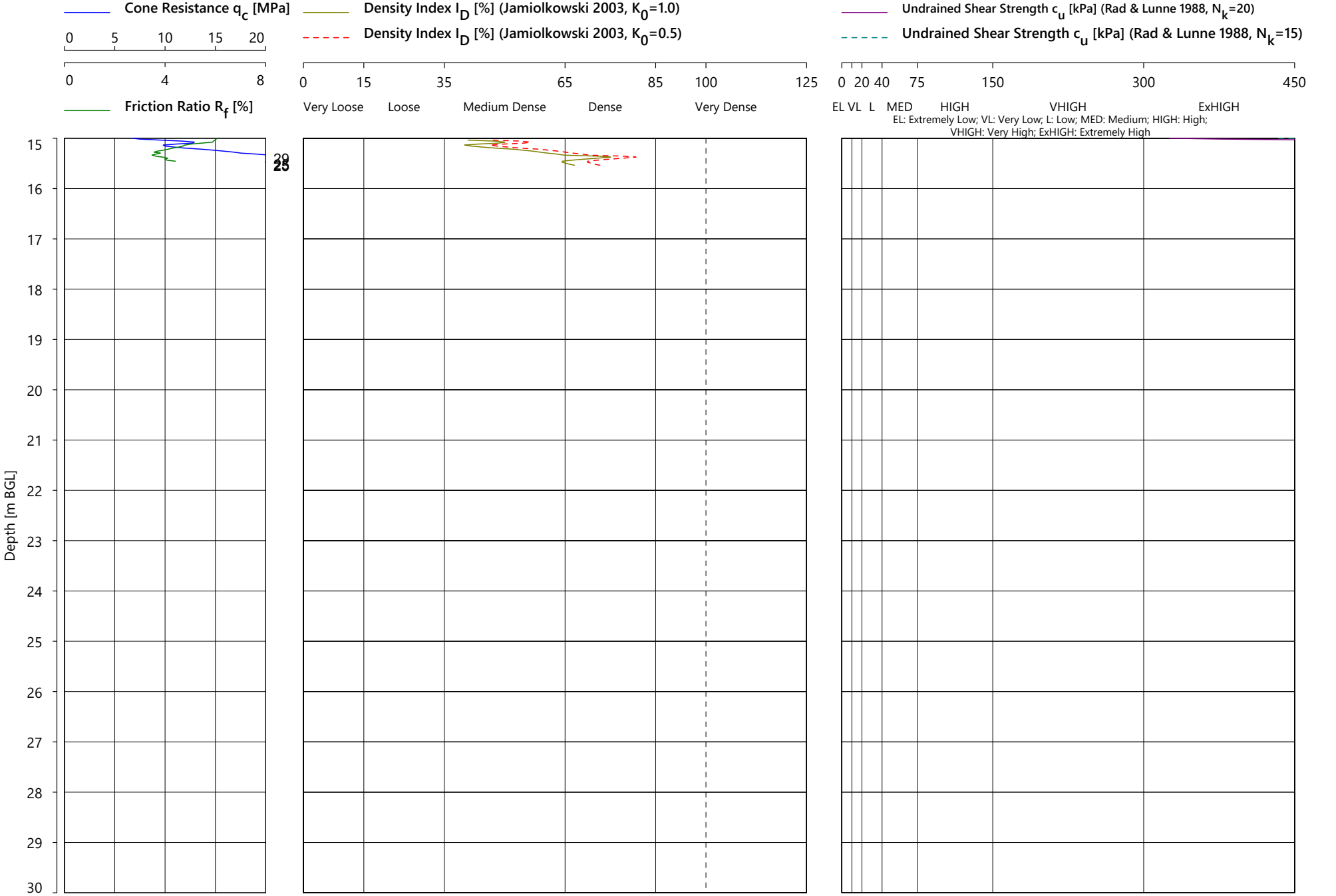
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** MS-CPT24
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482114.48 **N** 411823.43 **Ground Level [m OD] :** +0.91
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



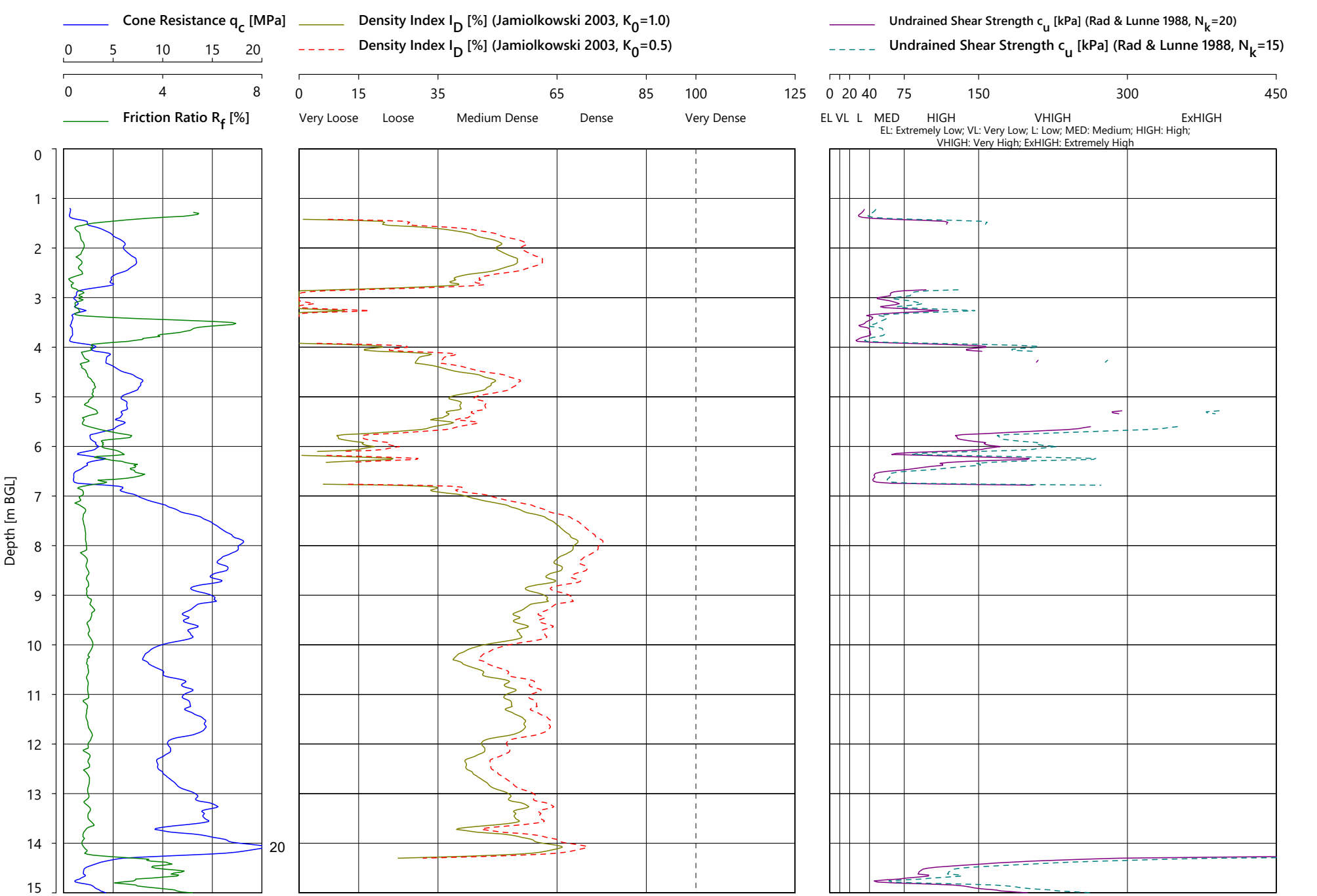
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT24**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482114.48 **N** 411823.43 **Ground Level [m OD] :** +0.91
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



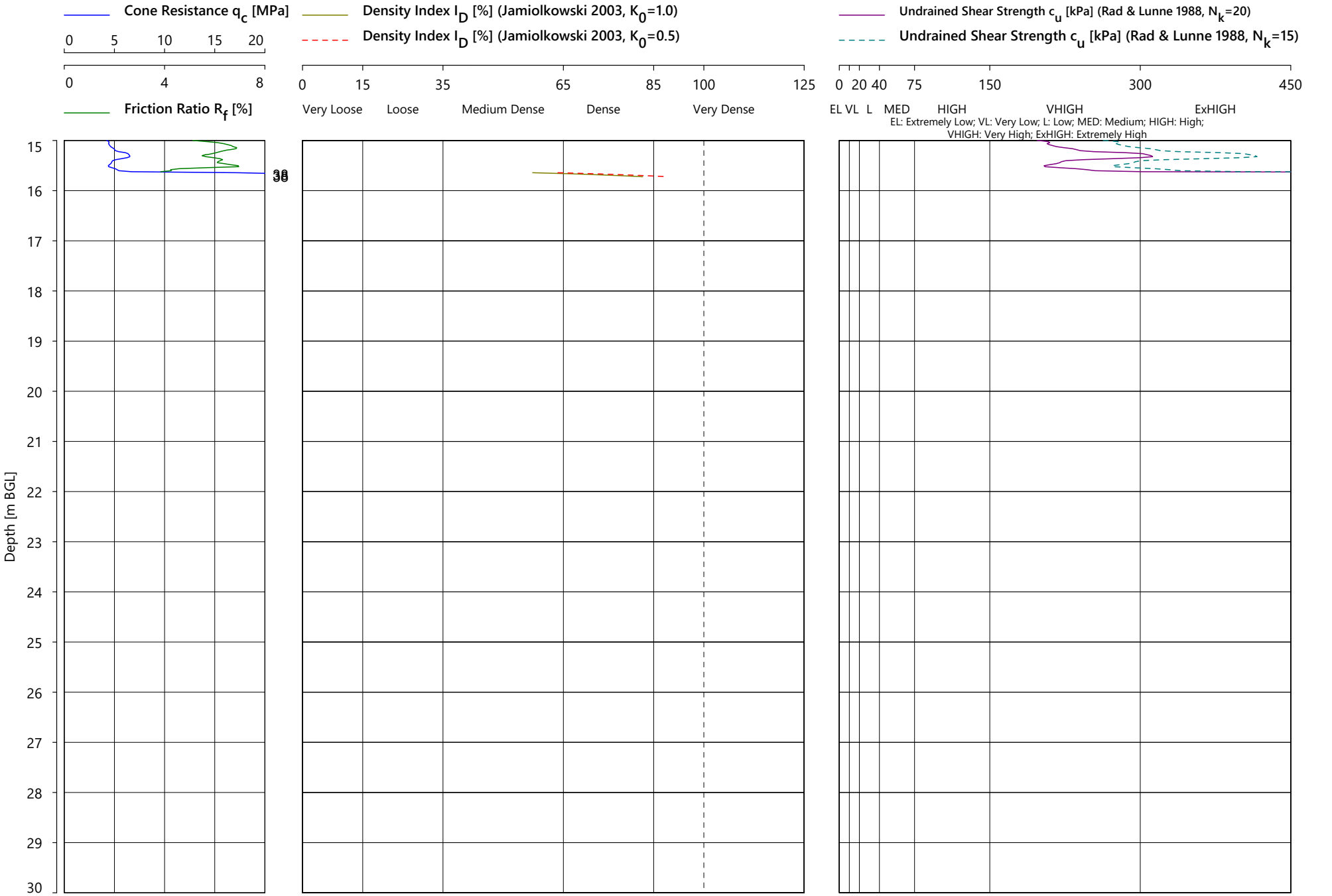
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** MS-CPT25
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482195.67 **N** 411821.30 **Ground Level [m OD] :** +0.98
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



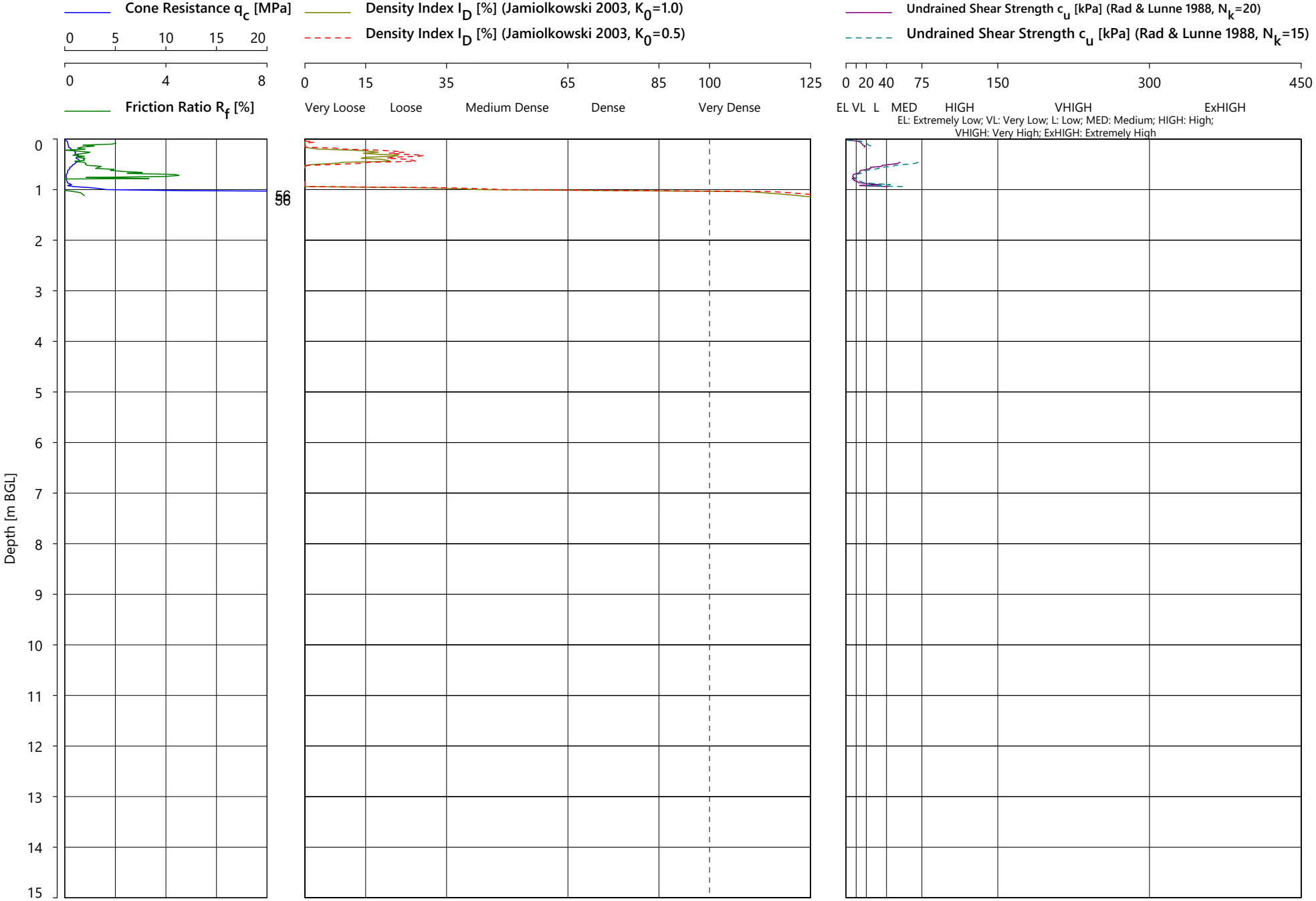
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT25**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482195.67 **N** 411821.30 **Ground Level [m OD] :** +0.98
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



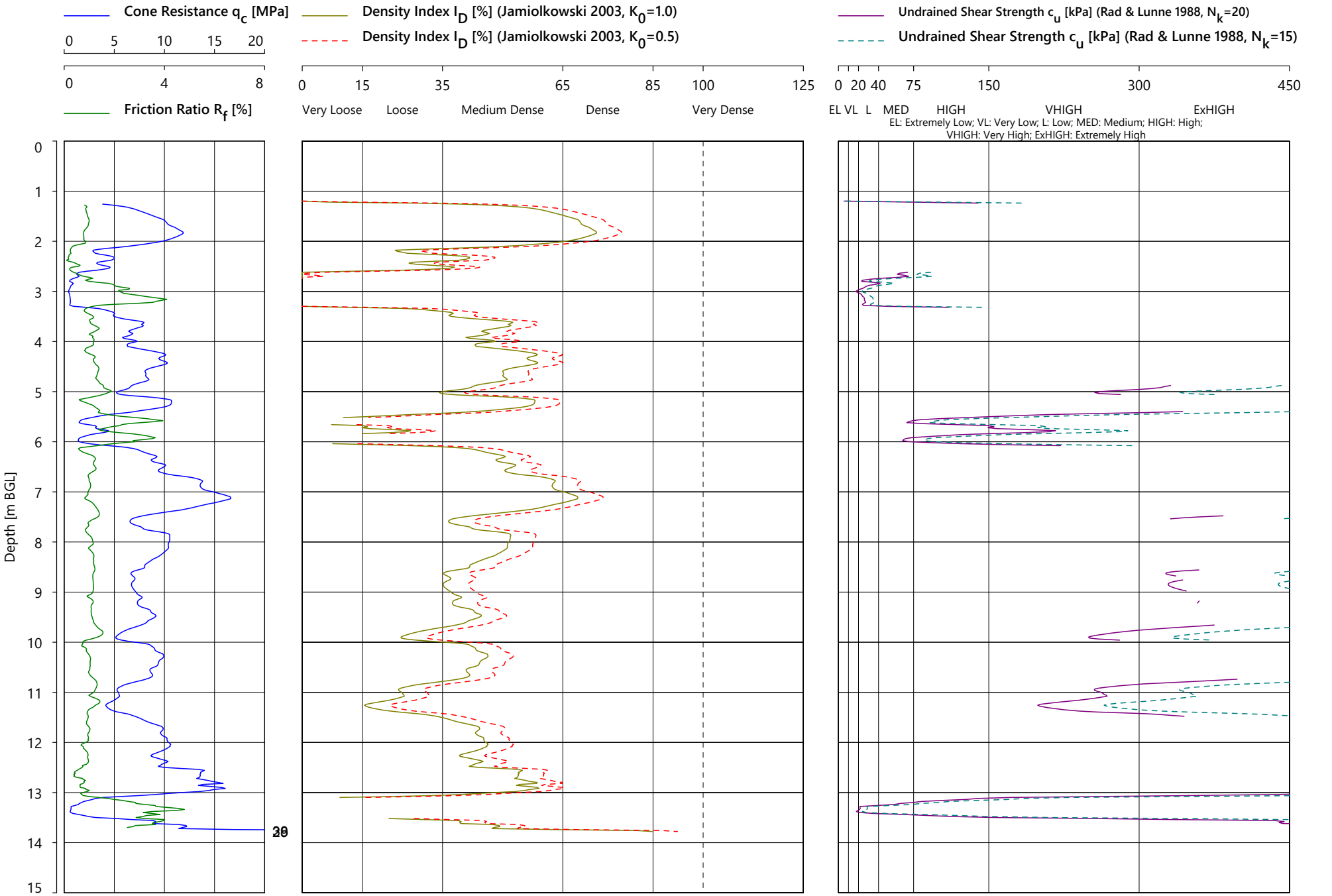
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** MS-CPT26
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482010.17 **N** 411729.07 **Ground Level [m OD] :** +1.22
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 14-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



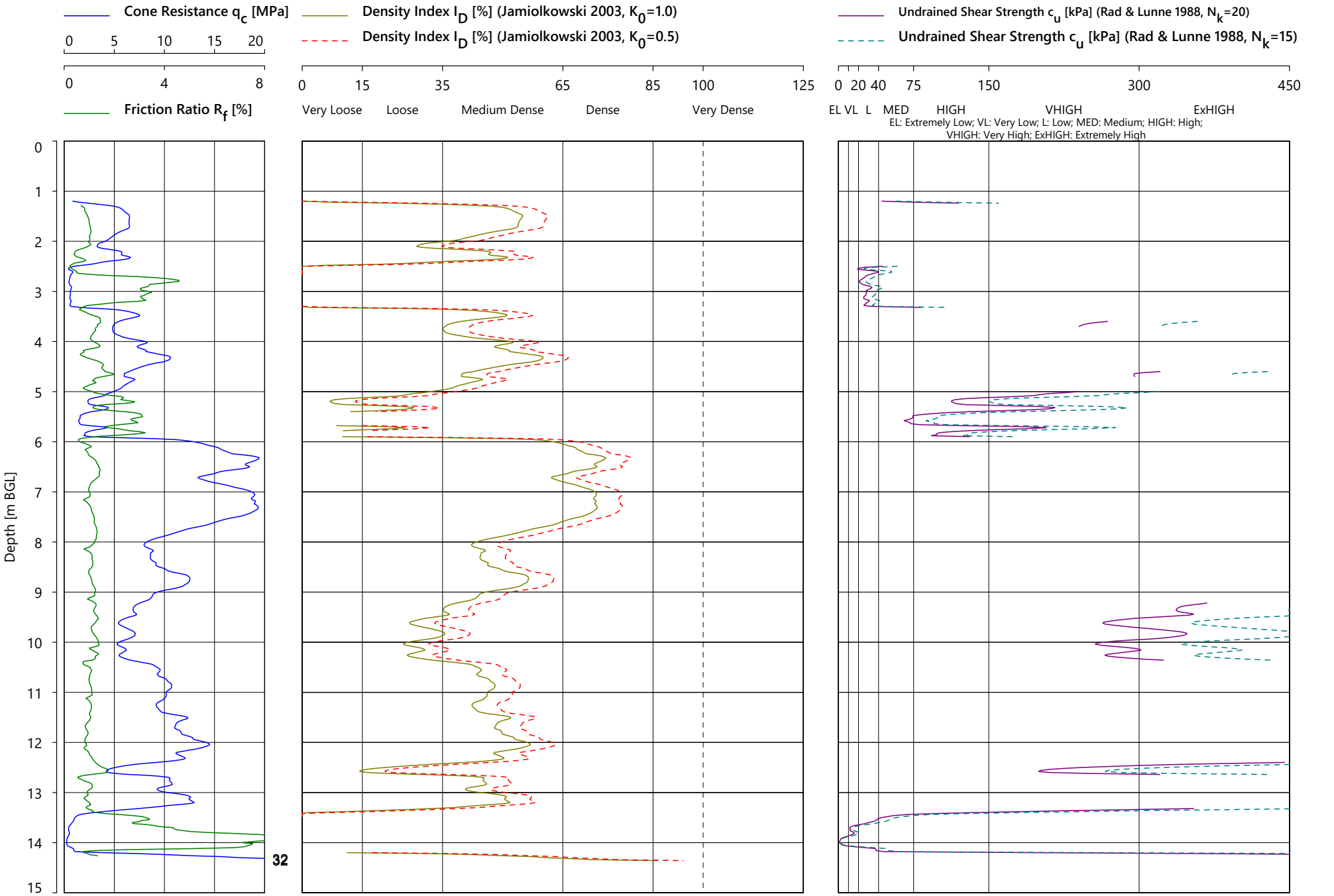
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT26
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482010.17 **N** 411729.07 **Ground Level [m OD] :** +1.22
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 14-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



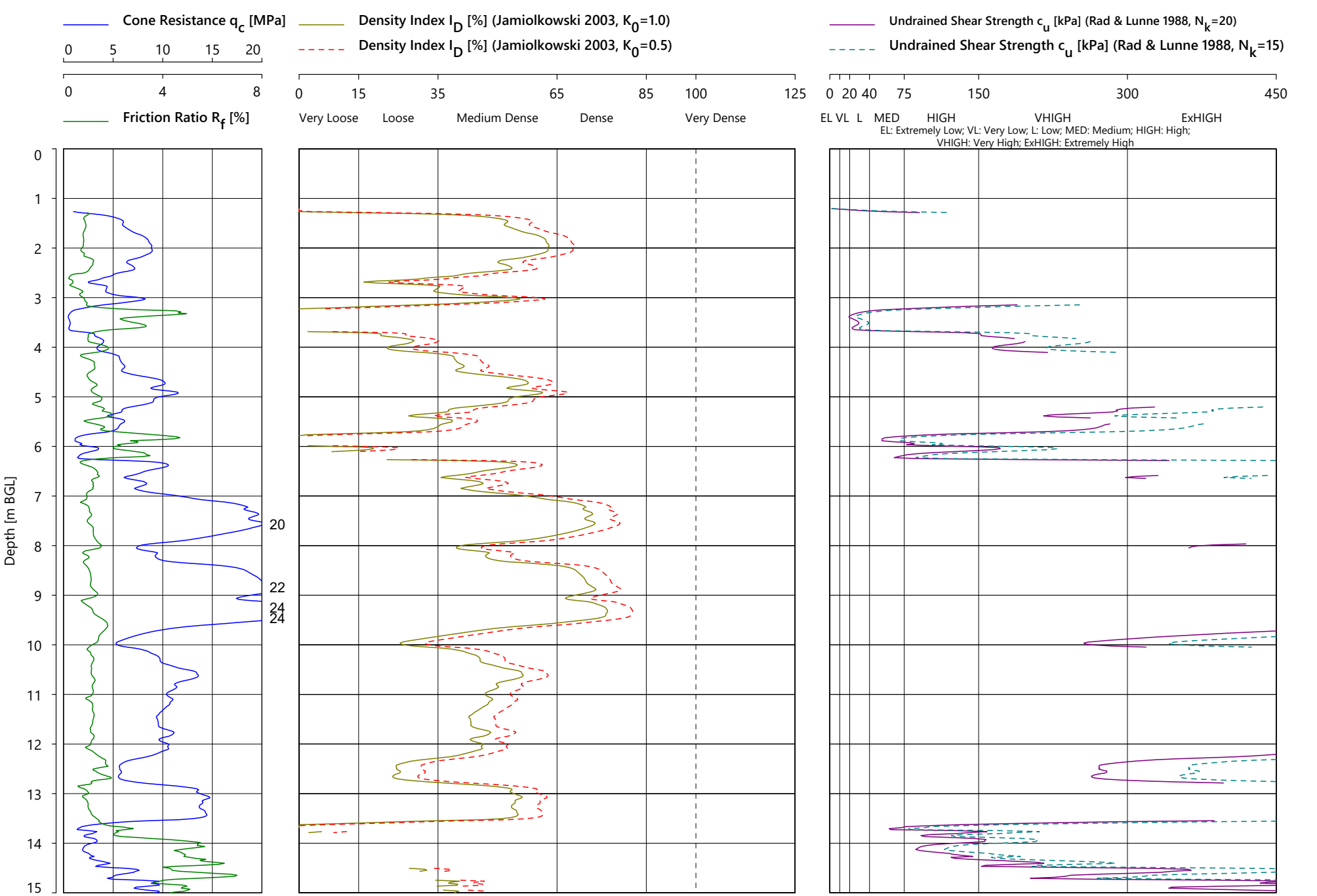
Density Index and Undrained Shear Strength	**Stop Criterion :** max. penetration force		**Location :** **MS-CPT29**
CPT Truck ID : EU-115	**Application Class / Type :** Class 2 / TE2	**Operator :** HG,MS	**Coordinates :** **E** 482102.60 **N** 411634.78 **Ground Level [m OD] :** +0.40
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 27-Oct-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



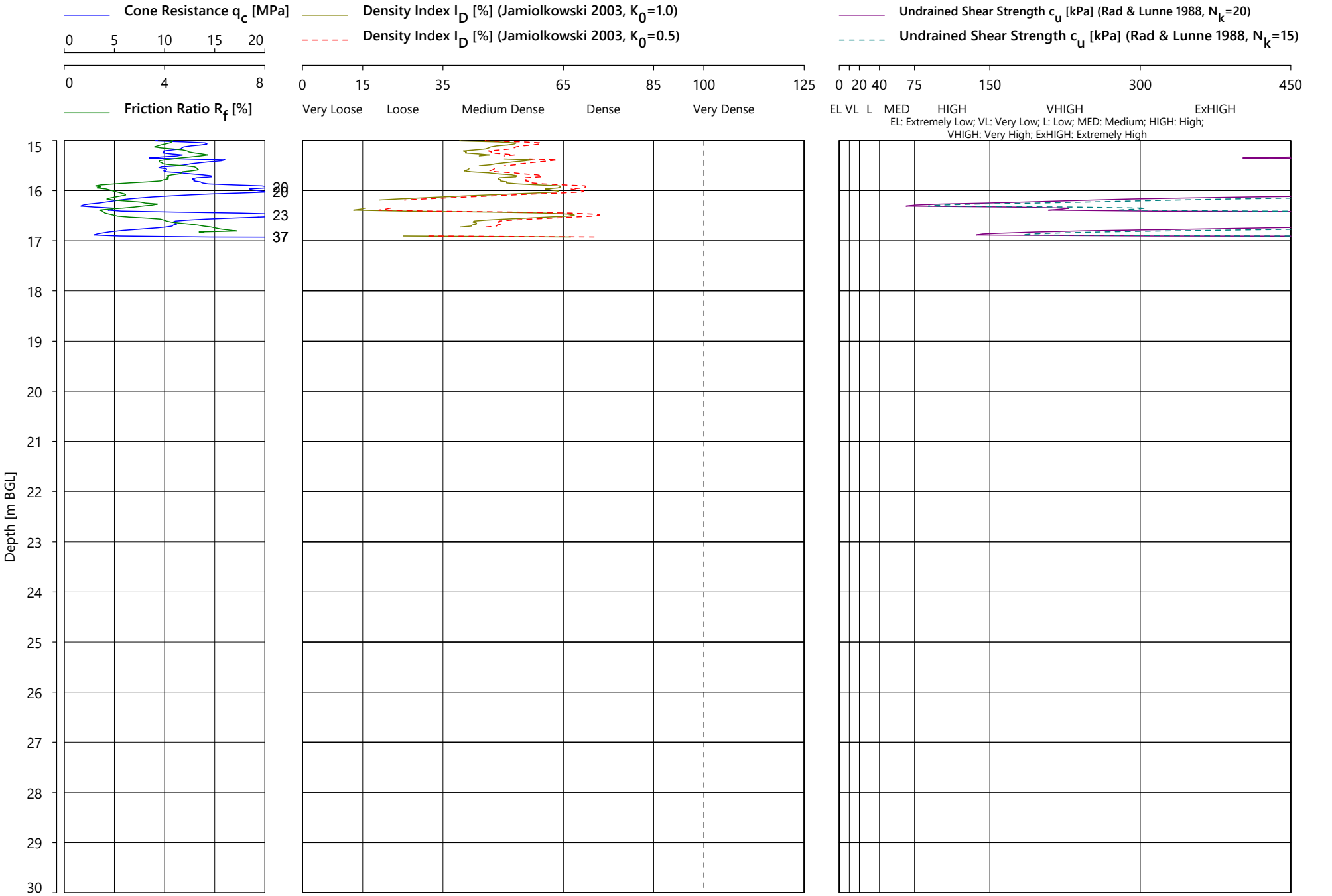
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT31
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481841.29 **N** 412213.69 **Ground Level [m OD] :** +0.50
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



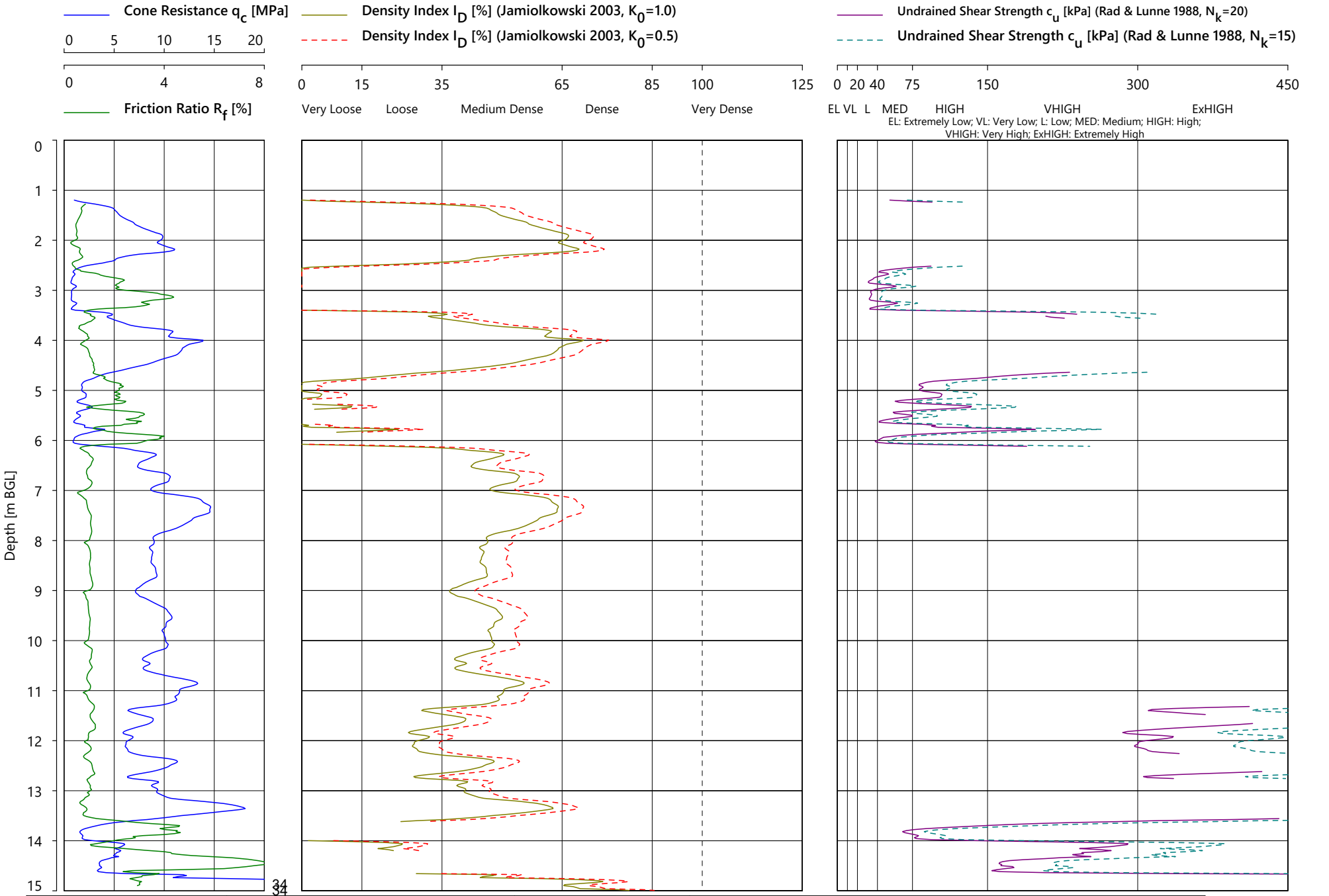
Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT32
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 481933.75 **N** 412183.97 **Ground Level [m OD] :** +0.27
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength		**Stop Criterion :**	end depth reached	**Location :**	**MS-CPT33**
CPT Truck ID :	GB17	**Application Class / Type :**	Class 2 / TE2	**Coordinates :**	**E** 482033.72 **N** 412178.42 **Ground Level [m OD] :** +0.37
CPT Cone :	1701-3474	**Assumed Soil Unit Weight :**	19.0 [kN/m^3]	**Operator :**	NF
Date of Test :	30-Sep-2022	**Assumed Water Level [m gl] :**	-1.0	**Compiled by :**	LCH
				Checked by :	KES
				Project :	212562
				F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI	
				Client :	SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT33
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482033.72 **N** 412178.42 **Ground Level [m OD] :** +0.37
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 30-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** **MS-CPT34**
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482103.39 **N** 412152.65 **Ground Level [m OD] :** +0.35
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 30-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)

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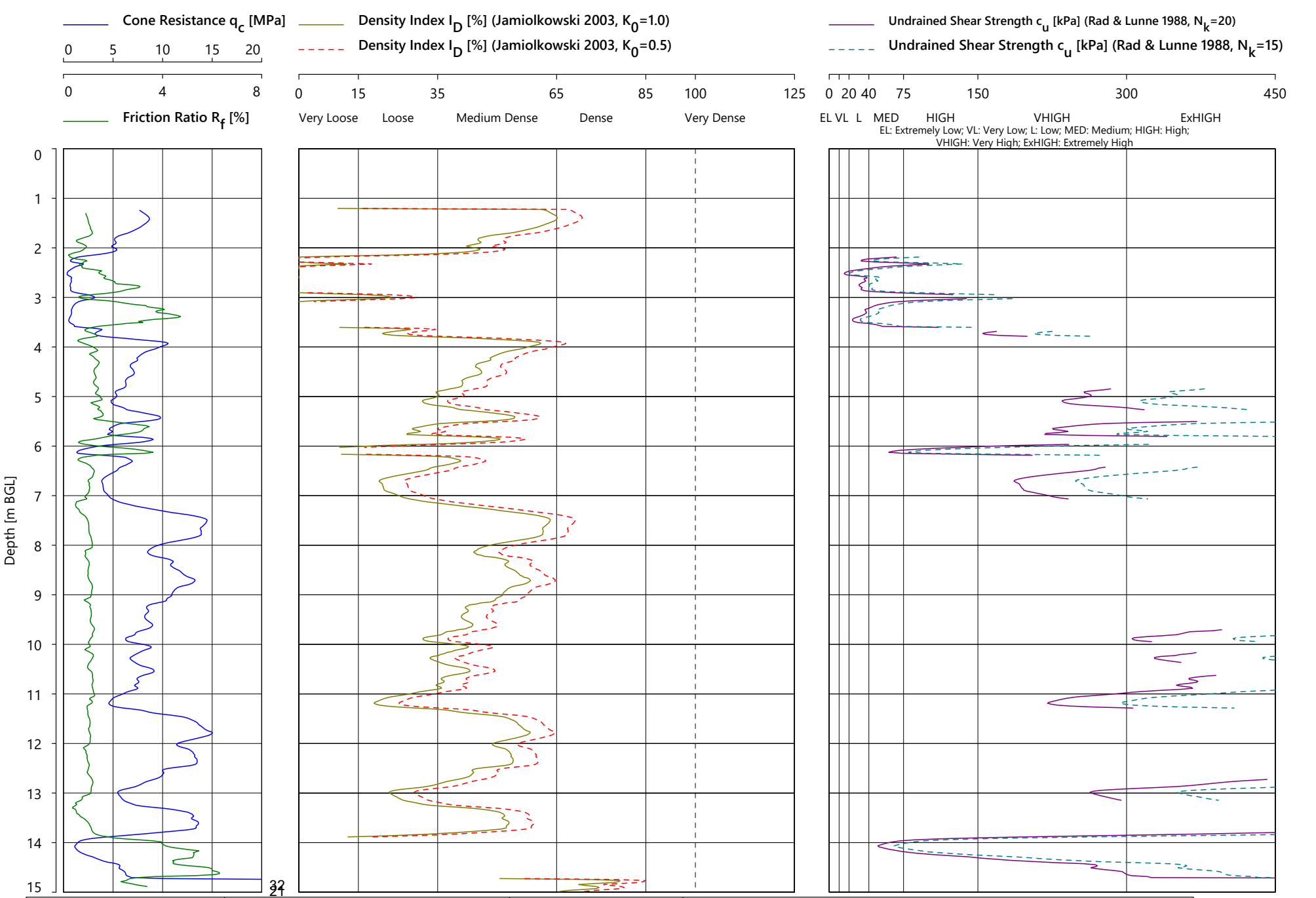
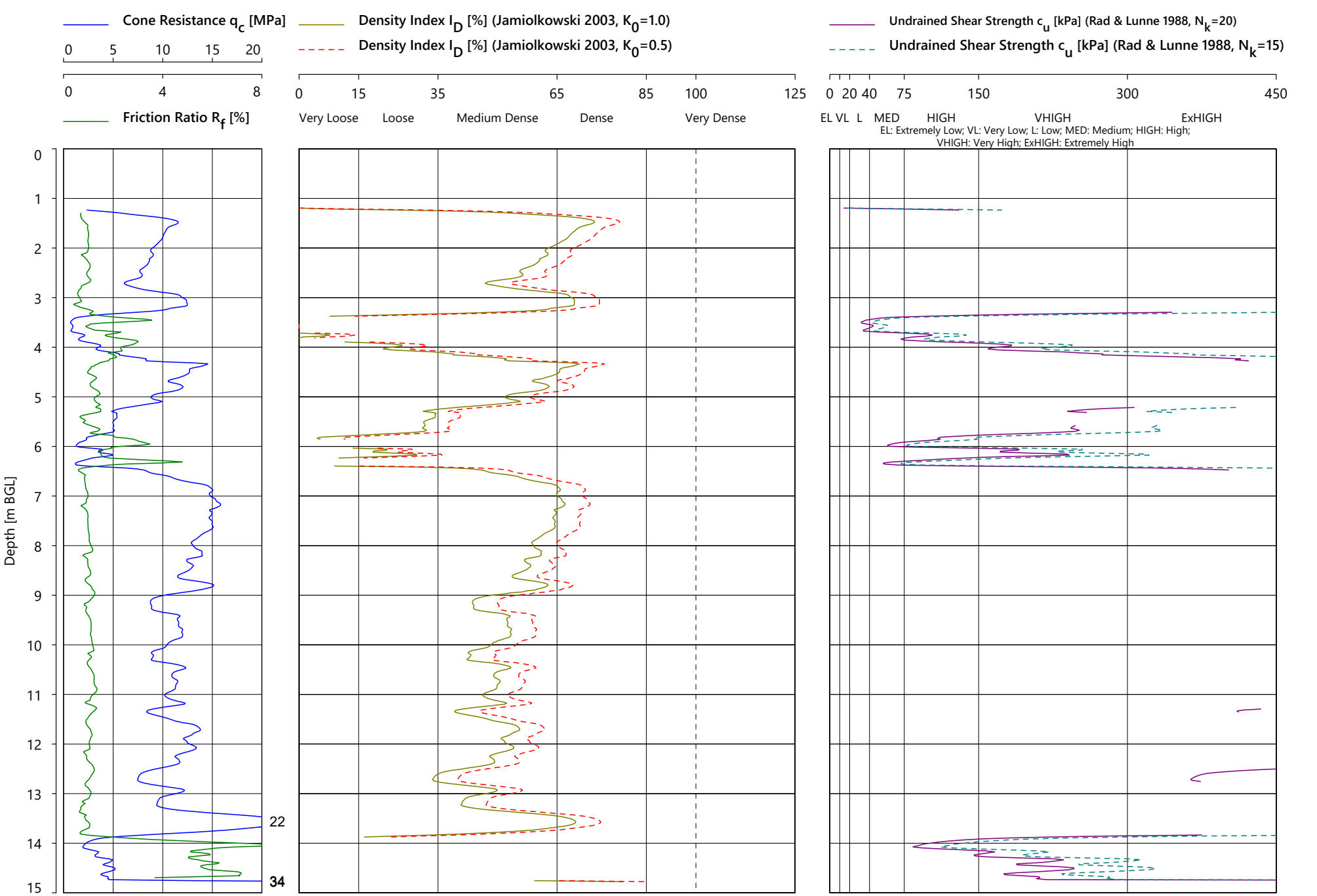


Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached		**Location :** MS-CPT35
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Operator :** NF	**Coordinates :** **E** 482011.77 **N** 411979.34 **Ground Level [m OD] :** +0.78
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Compiled by :** LCH	**Project :** 212562
Date of Test : 29-Sep-2022	**Assumed Water Level [m gl] :** -1.0	**Checked by :** KES	F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)



Density Index and Undrained Shear Strength	**Stop Criterion :** end depth reached	**Operator :** HG,MS	**Location :** MS-CPT36
CPT Truck ID : GB17	**Application Class / Type :** Class 2 / TE2	**Compiled by :** LCH	**Coordinates :** **E** 482110.55 **N** 411781.98 **Ground Level [m OD] :** +0.92
CPT Cone : 1701-3474	**Assumed Soil Unit Weight :** 19.0 [kN/m^3]	**Checked by :** KES	**Project :** 212562
Date of Test : 05-Oct-2022	**Assumed Water Level [m gl] :** -1.0		F212561 | Keadby 3 Low Carbon Gas Power Station Project – GI
			Client : SSE Generation Limited (SSE)

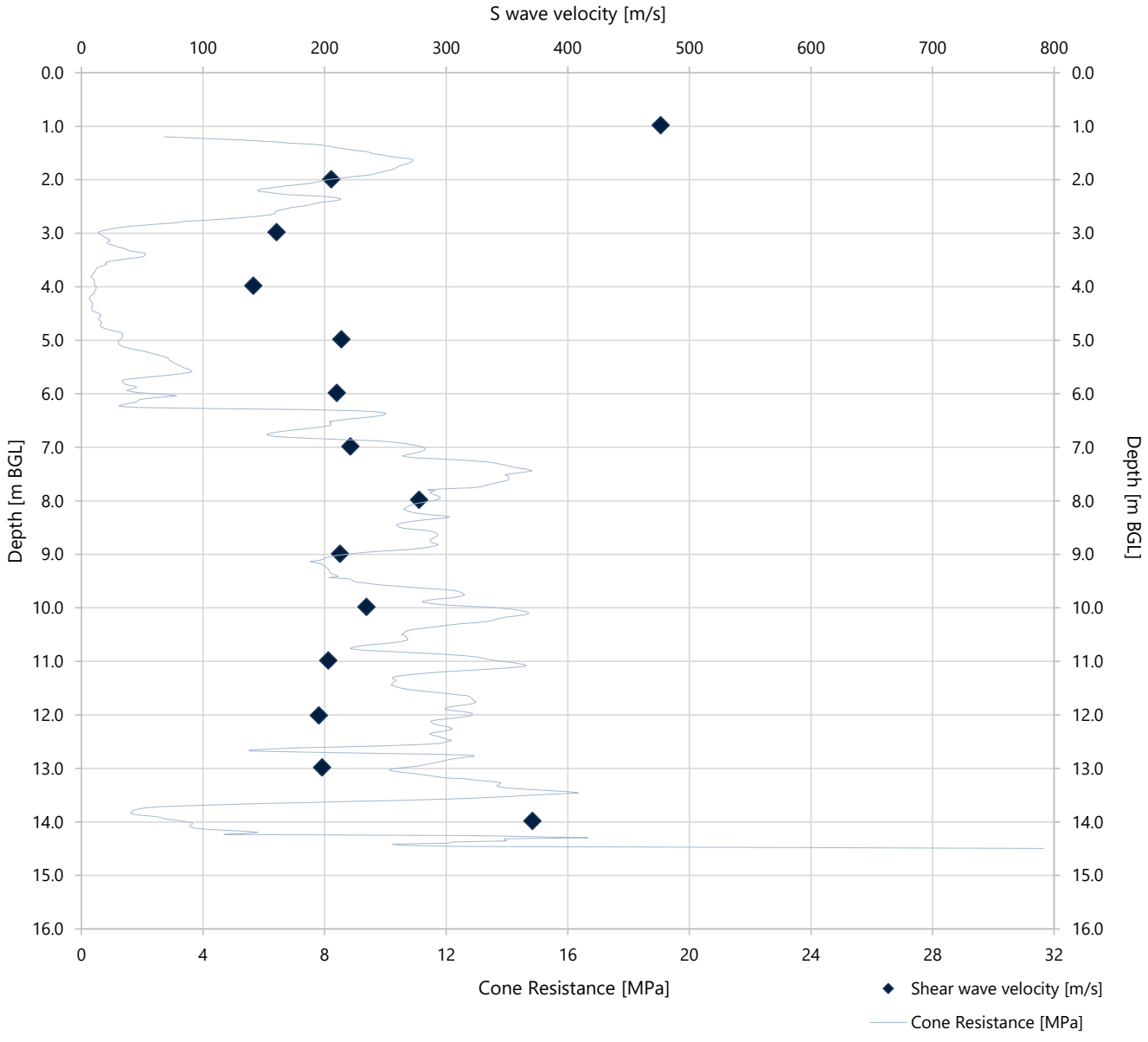
Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
Status	Final	Checked:	KES	Approved:	DK

Location ID
MS-SCPT12

Site Location	Keadby Power Station, Scunthorpe
Test Date	04/10/2022
CPT Truck ID	GB17
CPT Cone	1701-3469

Easting	482117.30	m E
Northing	412008.50	m N
Elevation	0.85	m OD

Seismic Cone Results - Shear Wave Velocity



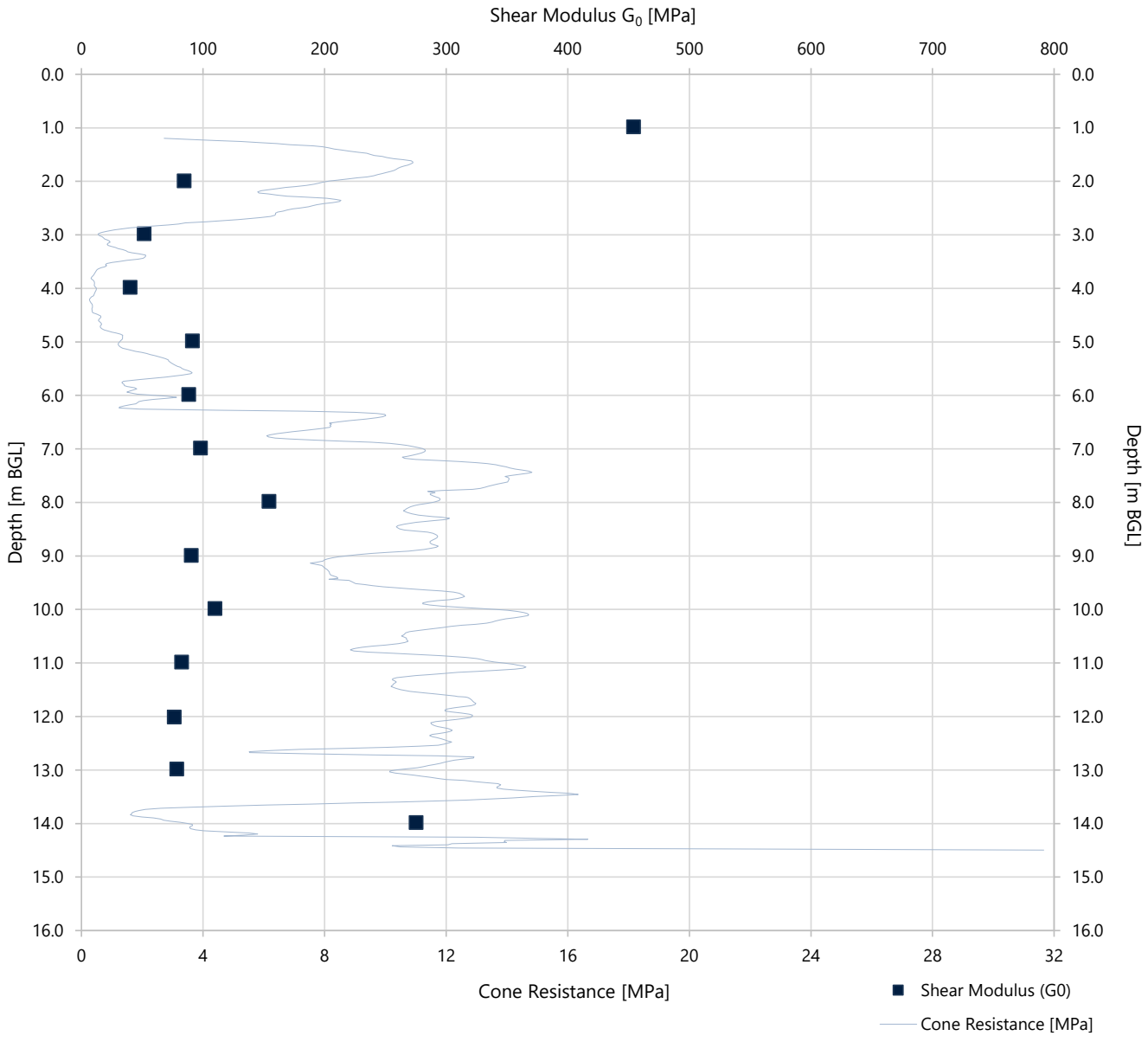
Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
Status	Final	Checked:	KES	Approved:	DK

Location ID
MS-SCPT12

Site Location	Keadby Power Station, Scunthorpe
Test Date	04/10/2022
CPT Truck ID	GB17
CPT Cone	1701-3469

Easting	482117.30	m E
Northing	412008.50	m N
Elevation	0.85	m OD

Seismic Cone Results - Shear Modulus (G_0)



Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
Status	Final	Checked:	KES	Approved:	DK

Location ID
MS-SCPT12

Site Location	Keadby Power Station, Scunthorpe
Test Date	04/10/2022
CPT Truck ID	GB17
CPT Cone	1701-3469

Easting	482117.30	m E
Northing	412008.50	m N
Elevation	0.85	m OD

Tabulated Results - Shear wave velocity & Shear modulus G_0

Tip Depth [m BGL]	Test Depth [m BGL]	Test Elev. [m OD]	Vs [m/s]	Density [kg/m^3]	G_0 [MPa]
1.50	0.98	-0.13	477	2000	454
2.51	1.99	-1.14	205	2000	84
3.50	2.98	-2.13	161	2000	52
4.50	3.98	-3.13	141	2000	40
5.50	4.98	-4.13	214	2000	91
6.50	5.98	-5.13	210	2000	88
7.50	6.98	-6.13	221	2000	98
8.50	7.98	-7.13	278	2000	154
9.51	8.99	-8.14	213	2000	90
10.50	9.98	-9.13	234	2000	110
11.50	10.98	-10.13	203	2000	82
12.53	12.01	-11.16	195	2000	76
13.50	12.98	-12.13	198	2000	78
14.50	13.98	-13.13	371	2000	275

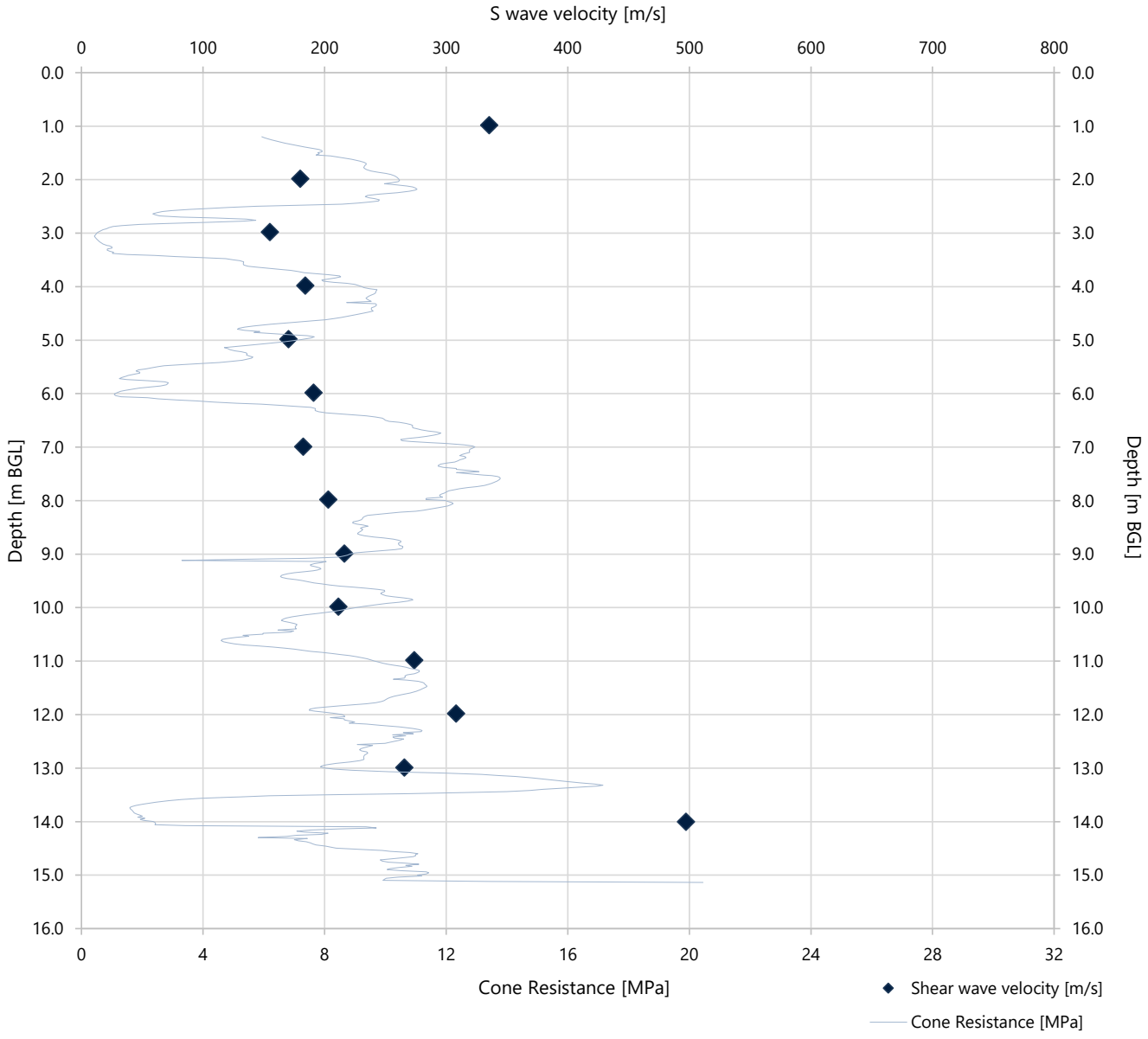
Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
Status	Final	Checked:	KES	Approved:	DK

Location ID
MS-SCPT15

Site Location	Keadby Power Station, Scunthorpe
Test Date	19/10/2022
CPT Truck ID	GB17
CPT Cone	1701-3469

Easting	482093.25	m E
Northing	411955.82	m N
Elevation	0.69	m OD

Seismic Cone Results - Shear Wave Velocity



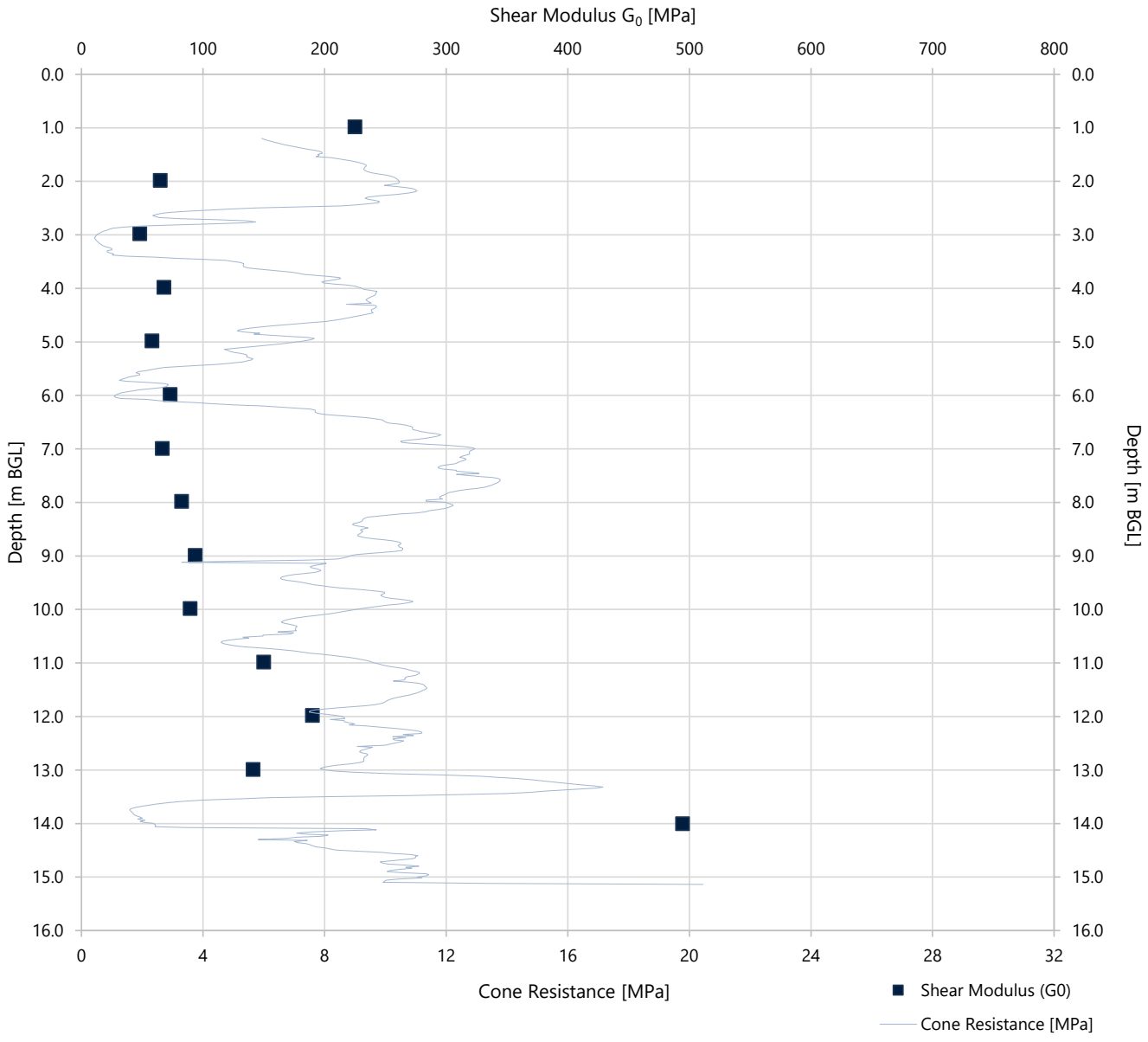
Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
Status	Final	Checked:	KES	Approved:	DK

Location ID
MS-SCPT15

Site Location	Keadby Power Station, Scunthorpe
Test Date	19/10/2022
CPT Truck ID	GB17
CPT Cone	1701-3469

Easting	482093.25	m E
Northing	411955.82	m N
Elevation	0.69	m OD

Seismic Cone Results - Shear Modulus (G_0)



Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
Status	Final	Checked:	KES	Approved:	DK

Location ID
MS-SCPT15

Site Location	Keadby Power Station, Scunthorpe
Test Date	19/10/2022
CPT Truck ID	GB17
CPT Cone	1701-3469

Easting	482093.25	m E
Northing	411955.82	m N
Elevation	0.69	m OD

Tabulated Results - Shear wave velocity & Shear modulus G_0

Tip Depth [m BGL]	Test Depth [m BGL]	Test Elev. [m OD]	Vs [m/s]	Density [kg/m^3]	G_0 [MPa]
1.50	0.98	-0.29	335	2000	225
2.50	1.98	-1.29	180	2000	65
3.50	2.98	-2.29	155	2000	48
4.50	3.98	-3.29	184	2000	68
5.50	4.98	-4.29	170	2000	58
6.50	5.98	-5.29	191	2000	73
7.51	6.99	-6.30	182	2000	67
8.50	7.98	-7.29	203	2000	82
9.51	8.99	-8.30	216	2000	94
10.50	9.98	-9.29	211	2000	89
11.50	10.98	-10.29	274	2000	150
12.50	11.98	-11.29	308	2000	190
13.51	12.99	-12.30	266	2000	141
14.52	14.00	-13.31	497	2000	494

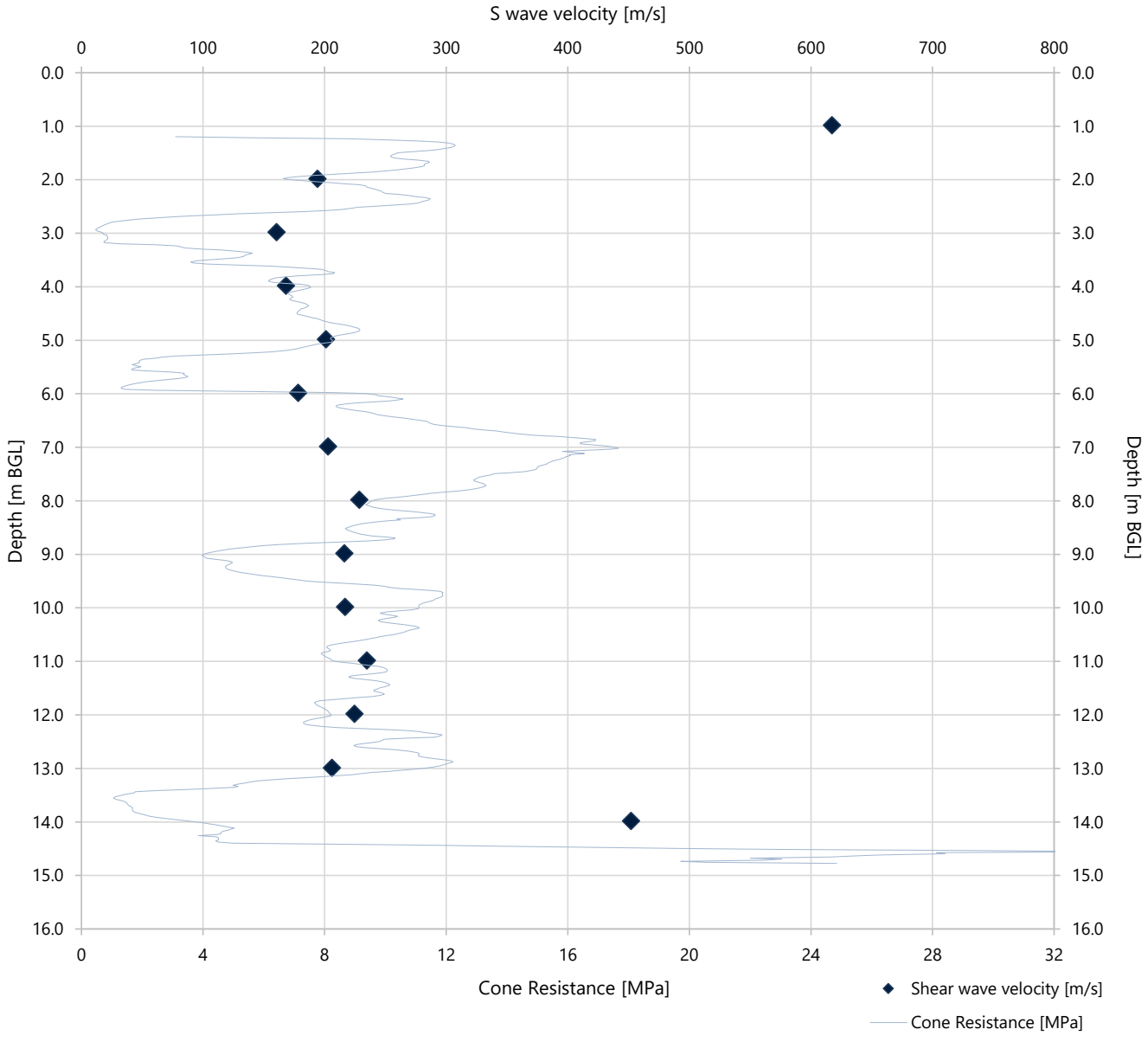
Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
Status	Final	Checked:	KES	Approved:	DK

Location ID
MS-SCPT18

Site Location	Keadby Power Station, Scunthorpe
Test Date	06/10/2022
CPT Truck ID	GB17
CPT Cone	1701-3469

Easting	482135.21	m E
Northing	411946.57	m N
Elevation	0.6	m OD

Seismic Cone Results - Shear Wave Velocity



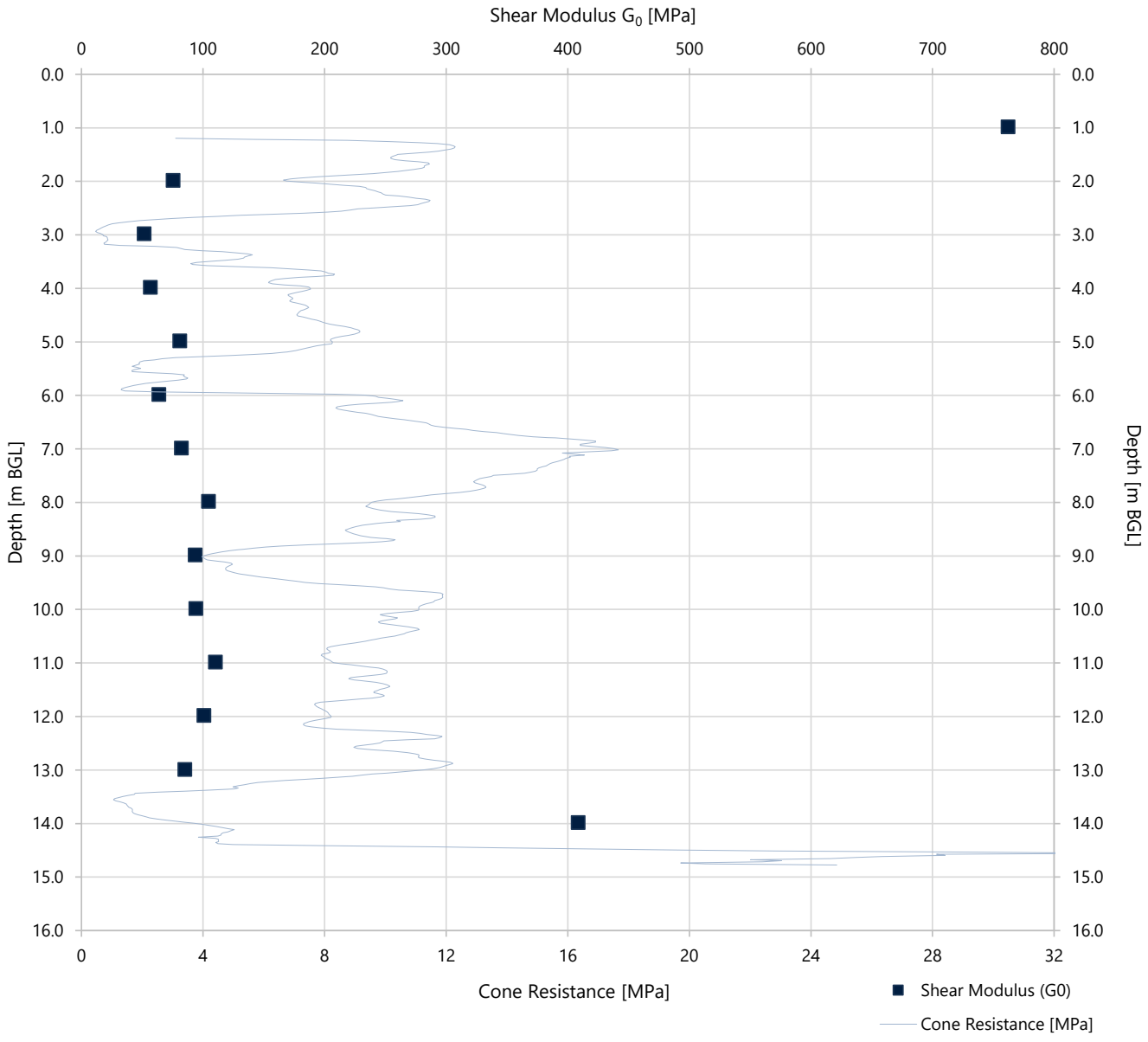
Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
Status	Final	Checked:	KES	Approved:	DK

Location ID
MS-SCPT18

Site Location	Keadby Power Station, Scunthorpe
Test Date	06/10/2022
CPT Truck ID	GB17
CPT Cone	1701-3469

Easting	482135.21	m E
Northing	411946.57	m N
Elevation	0.6	m OD

Seismic Cone Results - Shear Modulus (G_0)



Contract Name	Keadby 3 Low Carbon Gas Power Station Project - Ground Investigation				
Client	SSE Generation Limited (SSE)				
Fugro Reference	F212561				
Data Type	Seismic CPT	Issue Date:	05/12/2022		
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Easting	482135.21	m E
Northing	411946.57	m N
Elevation	0.6	m OD

Tabulated Results - Shear wave velocity & Shear modulus G_0

Tip Depth [m BGL]	Test Depth [m BGL]	Test Elev. [m OD]	Vs [m/s]	Density [kg/m^3]	G_0 [MPa]
1.50	0.98	-0.38	617	2000	762
2.50	1.98	-1.38	194	2000	75
3.50	2.98	-2.38	161	2000	52
4.50	3.98	-3.38	168	2000	57
5.50	4.98	-4.38	201	2000	81
6.50	5.98	-5.38	178	2000	64
7.50	6.98	-6.38	203	2000	82
8.50	7.98	-7.38	229	2000	104
9.50	8.98	-8.38	216	2000	94
10.50	9.98	-9.38	217	2000	94
11.50	10.98	-10.38	235	2000	110
12.50	11.98	-11.38	224	2000	101
13.51	12.99	-12.39	206	2000	85
14.50	13.98	-13.38	452	2000	409

Appendix H

High Pressure Dilatometer and Cone Pressuremeter Testing

H.1 Pressuremeter Tests

H.1.1 Guidance Notes on Pressuremeter Tests

Title	Reference
Guidance Notes on Pressuremeter Tests	H.1.1
• General	H.1.1.1
• Description of the Equipment	H.1.1.2
• The Calibration Procedure	H.1.1.3
• The Test Procedure	H.1.1.4
• The Pressuremeter Test in Rock	H.1.1.5
• Interpretation of Pressuremeter Test	H.1.1.6

H.1.1.1 General

The High Pressure Dilatometer (HPD)

The 95-mm diameter Cambridge High Pressure Dilatometer (HPD) is manufactured by CIS and is a development of a smaller device, the 73-mm HPD, invented by Dr John Hughes in 1978 for carrying out a cavity expansion test in soft to weak rock. It is also able to test competent soils such as stiff clay or dense sand., and difficult material such as boulder clay.

During operations, the HPD instrument is lowered into a nominal 101-mm pocket, typically bored by a rotary coring rig. Once the test depth is reached, pressure is applied, via an umbilical cable, to the membrane covering the central third of the probe. Because the HPD is placed in a slightly larger pocket, initially the membrane inflates without seeing resistance. Once it contacts the borehole wall the loading of the ground takes place. The primary purpose of the probe is the measurement of shear modulus, so during the loading phase several unload/reload loops will be taken, including reload/unload cycles as part of the final cavity unloading.

The cavity expansion is monitored by six arms equally positioned behind the HPD membrane. The pressure applied is measured by two independent pressure cells. All these devices are strain gauged transducers and all signal processing takes place in the probe itself. The output of the probe is a digital data stream that may be connected directly to the serial port of a data logging system at the surface.

The following 95-mm HPD failure criterion are adopted in different ground conditions:

- Soft to weak rock: The instrument will deform the ground elastically. Therefore, the pressure capability of the instrument will decide the end of the test (20-MPa).
- Fine to coarse grained soil or soft rock: The instrument will deform the ground both elastically and plastically without reaching the maximum pressure capability of the instrument. In this case the maximum arm displacement will decide the end of the test (40-mm diametrical displacement). In practice the test will be terminated before reaching the expansion limit once significant plasticity is evident.

Because all the electronic components are located in the probe itself, the umbilical can be replaced without requiring the probe to be re-calibrated.

The Cone Pressuremeter

The Cone Pressuremeter (CPM) is a 47-mm diameter pressuremeter carrying a live 15cm2 Cone Penetrometer (CPT) at the front end. It can be placed in a preformed 50-mm hole, pushed directly into virgin material or used to ream out a smaller diameter CPT probing, typically 10cm2. Once in position, gas pressure is applied down an umbilical hose/cable to the inner surface of the membrane. This pressure causes the membrane to load the borehole wall and carry out a horizontal cavity expansion test. Several unload/reload loops will be performed during the loading phase and one unload/reload cycle will be performed during the unloading phase.

Notation and Units

The software used on site was developed by CIS. At the beginning of each test the operator creates a new test file, and the test name will match the following format: BXXXTXXX in HPD testing and BXXTXX in CPM testing. "B" is generally used in place of Borehole No, where "X" must be a number data type. This is followed by a "T" with T being the test number. As an example, on this report, the first borehole with pressuremeter test data is Borehole No B004T001. Hence, in the logging software the first test on this borehole will have the following format: B004T001.

Calibration tests used to calculate the membrane stiffness and system compliance are saved by the operator in the logging software in a similar manner.

In the logging software, the test depth is quoted in metres (m), the data rate is quoted in seconds (s). The different pressure against displacement curves produced by the logging software are quoted in kilopascal (kPa) and millimetre (mm), respectively. The raw data are in volts (V) and needs to be zero offset and scaled in order to be converted to engineering units. A technical note from Cambridge Insitu Limited describing this calculation process is available on request.

H.1.1.2 Description of the Equipment

Outline for High Pressure Dilatometer

The 95-mm HPD is a pre-bored hole pressuremeter for testing a 101-mm diameter pocket.

The instrument has an overall length of approximately 2m. The central third of the instrument is covered by a nitrile rubber membrane approximately 8-mm thick; pressure is applied to the inside of the instrument and the membrane expands, pressing against the borehole wall. The radial displacement of the inside boundary of the membrane is measured at six points equally distributed around the centre of the

expanding section. It is up to 95-mm in diameter at the ends of the membrane and 94-mm diameter at the centre of the membrane where displacements are sensed.

This displacement, and the pressure necessary to cause the movement, are continuously monitored by strain gauged transducers contained within the instrument. Also, within the instrument is the analogue and digital electronic circuitry necessary to condition the signals from the transducers. Every ten seconds a set of readings from all the measuring circuits are transmitted to the surface. Plotting displacement against pressure produces a loading curve for the material being tested. A number of mathematical analyses are available for translating this loading curve to fundamental strength and stiffness parameters for the ground.

Figure H.1.1: The 95-mm High Pressure Dilatometer

As the instrument has six strain arms there is redundancy in the measurement of strain, and this enables the user to carry out a successful test even if one of the arms are defective. The use of two pressure transducers means that there is also some redundancy in the pressure

measurement. If all transducers are working correctly then the field curve obtained from the average of all displacement followers plotted against the average of both pressure cells is used for analytical purposes.

The 95-mm HPD can apply up to 20-MPa of pressure to the ground, and can expand from an initial diameter of 95-mm to nearly 140-mm. It will resolve displacements less than one micron and pressure changes less than 1-kPa. Although developed to test weak rock the HPD can test stiff clays (which yield at pressures below 1-MPa), and weak rock with a shear modulus greater than 4-GPa.

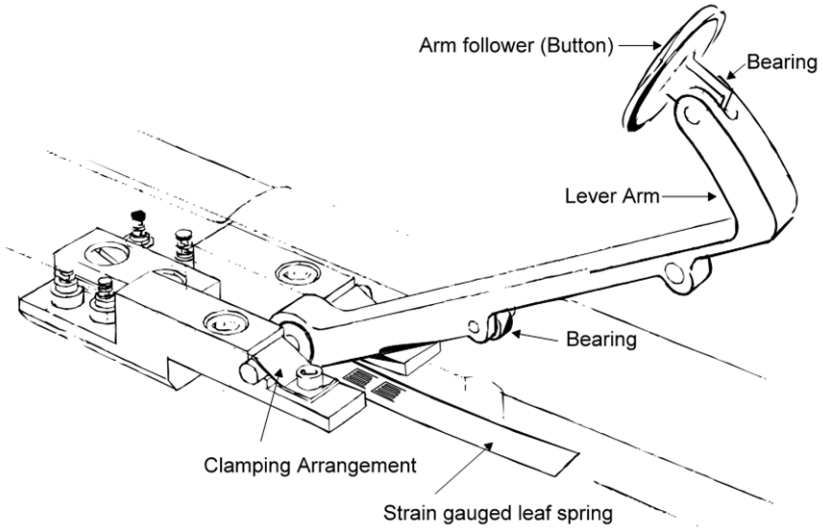


Figure H.1.2: Displacement Sensor of the 95-mm HPD

An additional feature of the 95-mm HPD is an electronic compass module fitted to the foot of the instrument. This gives a continuous reading of the orientation of a fixed reference on the instrument with respect to magnetic North.

The 95-mm HPD has a fundamental limitation in that the loading curve is derived from the movement of the inside boundary of the elastic membrane. This will differ by a small amount from the movements of the outside boundary and hence the movement of the ground. Calibration procedures quantify the contribution of the membrane and the finite stiffness of the instrument itself and the logging software uses these data to adjust the readings accordingly. For the majority of tests, the contribution of these effects is insignificant. However at the extremes (soft

ground or hard rock) the uncertainty can be significant. Refer to Section 3 for a detailed description of the calibration process which is carried out whenever a membrane is changed.

Figure H.1.3: Under the Membrane of a 95-mm High Pressure Displacement Dilatometer

Outline for Cone Pressuremeter

The Cone Pressuremeter (CPM) is a 47-mm diameter and approximately 1m long. The central part is covered by an elastic membrane, 250-mm long.

It can be placed into the ground using cone rods or small casing and the umbilical linking the probe to the surface runs inside the coupling rods for additional security. Displacement of the membrane and the pressure required to do so are measured by transducers in the probe itself, giving a high-resolution output and relative simplicity of calibration, as all the variables that affect the pressuremeter output are part of the downhole tool.

The umbilical is a combined pressure hose and cable assembly conveying the pressuremeter electrical signals to data logging equipment. When a pressuremeter test is carried out, dry nitrogen gas or air passes down the hose to the pressuremeter. When the pressure behind the membrane exceeds the pressure due to the soil bearing against the instrument the membrane inflates in a controlled manner.

The pressure transducer is a strain gauged diaphragm with a vacuum on one side and the pressure in the probe on the other. A displacement transducer (arm) consists of a pivoted lever which bears on the inside wall of the membrane at one end and has a leaf spring forcing it to follow the movements of the membrane on the other side of the pivot. The leaf spring is train gauged with a full bridge circuit so that movement is converted to an electrical signal. The leaf spring is de-coupled from the pivoted lever by a small ball race to minimise frictional effects. There are three displacement followers in the CPM, all in the same plane and spaced 120 degrees apart. They act at the centre of the expanding membrane and the electrical signal represents the radial displacement of the inside of the membrane. The arms of the pressuremeter are positioned 350 millimetres back from the bottom of the probe.

There are electronics in the probe that regulate the voltage supplied to the strain gauges and which amplify the small signal output from the transducers. These analogue signals are multiplexed and converted to digital form and are transmitted up the umbilical as ASCII in RS232 format. All the conditioning electronics are contained in a plug-in module and ensure that changes to the length of the cable connecting the pressuremeter to the surface do not affect the output of the pressuremeter. The output of the probe connects to a purpose built interface unit on the surface. This supplies power and routes the digital signals to a laptop via an isolation circuit. Winlog, a software developed by Cambridge Insitu Limited logs the data, and a separate software called WinSitu, also developed by Cambridge Insitu Limited analyses the data.

The CPM and all associated electronics operate from a single 12 volts battery.

Figure H.1.4 presents the 47-mm Cone Pressuremeter

Figure H.1.4: The 47-mm Diameter Cone Pressuremeter

The Membrane

Membrane for High Pressure Dilatometer

The membrane itself is a nitrile rubber sleeve. Because the behaviour of the membrane has an influence on the derived displacements it is kept thin in relation to the overall diameter so that its contribution is relatively small. Steps have to be taken to prevent the membrane extruding axially by stiffening the ends of the membrane with rings of stainless steel fingers. There is also a version of the membrane which carries local reinforcement at the ends consisting of Kevlar strands. When the applied pressures are anticipated to be fairly modest (no more than 50 % of the available range) then the Kevlar membrane gives sufficient protection against axial extrusion.

The entire length of the of rubber membrane is covered with a sheath of 18 stainless steel strips that are axially stiff but free to expand radially. This sheath protects the membrane from sharp edges and is known as a 'Chinese Lantern'.

Membrane for Cone Pressuremeter

The membrane itself is a nitrile rubber sleeve. Because the behaviour of the membrane has an influence on the derived displacements it is kept thin (3.65-mm), so its contribution is relatively small. The entire length of the of rubber membrane is covered with a sheath of stainless steel

strips ('Chinese Lantern') that are axially stiff but free to expand radially. This sheath protects the membrane from sharp edges. There is no axial reinforcement of the membrane because in normal use the probe is an exact fit to the pocket.

The Pressurising System

The pressuremeter instruments are inflated by oil or gas. A hose connects the instrument to the pressure source, which is either a manually operated hydraulic pump or a pneumatic control system. The passage down the centre of the hose is large enough to incorporate a steel logging cable with four electrical conductors. Three of these conductors are used; one carries the digital signals output by the instrument, and two carry power to the instrument from a conventional 12 volts vehicle battery. The power consumption of the pressuremeter is small; up to 500 metres of hose and cable can be connected to the instrument with only minor modification.

The advantages of oil inflation are that it is inherently safe, requires very little equipment and as the oil is re-cycled the consumable costs are low. However, if the instrument is connected by a long cable then it takes a significant time for the oil to return to the surface and in a dry hole it will never return unaided. Additionally, in environmentally sensitive areas the use of oil is deprecated, even though the type used is bio-degradable.

When working over water, it is normal to fill the probe itself with oil but surcharge it with air. Should the membrane become punctured the oil will keep the water out of the probe.

Electronic Interface Unit (EIU)

All pressuremeter hardware is powered by a single 12 volts battery. The battery is connected to the Electronic Interface Unit (EIU), which introduces some protection and distributes the power to a number of outlets, including one for the pressuremeter. The returning signals from the pressuremeter connect to the same socket. The digital signals pass through an opto-isolation circuit and are then made available on two identical sockets for connection to the serial port of a computer. The unit has a panel meter switchable to read either battery volts or an analogue signal representing the current pressure inside the probe.

Data Logging/Analysis Software

CIS provide a software package Winlog®. It is used to log the test data, and to produce data in a format that can be passed to a separate analysis package. The logging software stores the incoming data, displays the pressure/expansion curve in real time, and provides a text output file of the test data in engineering units.

For analysis, we use software developed by Cambridge Insitu limited called Winsitu®. The input for this software is the file produced by Winlog®. It then saves it in a proprietary format that allows the analysed data to be replayed and changed as necessary.

The logging software does not differentiate the data. The first task when analysing a file is to inform the software of the significance of the different parts of the field curve. A data point can be part of:

- the expansion curve;
- a reload loop;
- the contraction curve;
- none of the above. This might mean a 'rogue' data point, but it is more likely to be parts of the loading where the expansion was slowed prior to taking an unload/reload cycle. Data points recorded at this time are neither part of the expansion nor part of a cycle and should be identified as such so that the program ignores them in any calculation.

There is a quick on-screen routine for marking the points. Once marked, they appear in different colours. Most of the analyses use a limited set of the available data - for example the Gibson & Anderson analysis for undrained shear strength uses only points on the expansion curve.

The program implements all the standard analyses mainly in a graphical form. As Figure H.1.27 implies, there are significant changes of gradient in the pressure/strain curve denoting critical soil parameters. The user of the program is provided with on-screen tools to mark these breakpoints or to obtain the slope of the loading curve. The tools can be visualised as rulers, whose position is stored by the program in the file of test data. The evidence for any derived parameter is a screen dump of the appropriate analysis that shows the position of any rulers set by the user and quotes the parameter obtained. Even when the user declines to make a choice it is good practice to provide the screen dump as evidence of why a choice is difficult.

The results for a test appear as a summary sheet of derived parameters followed by a number of plots showing the application of the various procedures.

Sometimes procedures or analyses are required which are not included in the Winsitu program. In such instances commonly available spreadsheet software is used to implement the additional tools. Winsitu has export facilities that write the first version of the spreadsheets but there is always the risk that subsequent modifications may introduce errors.

Average Displacement versus the Output of The Separate Axes

There are several displacement sensors in the expansion probe, but recommended practice is to quote parameters from the average displacement curve. This is for two reasons:

- The reference for the measured displacements is the body of the instrument itself; trying to separate the individual axes means assuming that the body of the instrument remains fixed at all times, which is not realistic.
- All available analyses assume isotropic properties in the surrounding soil, and only the average pressure/strain curve represents this condition.

These remarks assume that the instrument is in full working order throughout the test; failure of a displacement follower means that alternative strategies must be adopted.

The significance of the first point above has been demonstrated by an examination of cycles of unloading taken from separate arms (Whittle 1993) and by work with a six-arm version of the Self Boring Pressuremeter (Whittle et al 1995).

Origin

What the pressuremeter test produces is a set of readings of total pressure and displacement of the inner surface of an expanding membrane. These are directly related to the radial stress and circumferential strain at the cavity wall. To convert the displacements to strain, a reference point for the displacements must be established. The ideal case is a perfectly installed pressuremeter where the 'at rest' diameter of the probe is the initial diameter of the cavity and the initial stress in the cavity before the pressuremeter test begins will be the in situ lateral stress. In the case of a pre-bored test, the initial stress in the cavity is less than the in situ lateral stress and the true origin for the expansion will be greater than the O.D of the probe. Deciding the origin is important for the derivation of strength parameters as it affects the magnitude of the strain scale.

Whenever the direction changes in the pressuremeter test, a new origin is required. This applies to unload/reload cycles where the direction changes twice, and to the start of the final unloading when the expansion phase is completed. When the direction changes it is easy to decide the new origin within small margins simply by inspection. It is only the initial origin that is difficult to decide by inspection alone

Defining Strain

For a pressuremeter measuring the radius of an expanding cavity, the conversion from displacement to strain follows the following relationship:

$$\varepsilon = \frac{r - r_0}{r_0}$$

Equation H.1.1

Where:

ε = simple strain]
r = current radius of the cavity
r_0 = initial radius of the cavity

When displacements are measured at the borehole wall simple strain, ε , is cavity strain, ε_c.

r_0 can be approximated by the radius of the instrument at rest. The preferred approach is to identify when the applied pressure has reached the in situ lateral stress, and interpolate from this the corresponding radius, which then becomes r_0.

Note that although the pressuremeter measures the radius of the cavity wall, ε_c is actually a specific instance of circumferential or hoop strain. It is usually expressed as a percentage.

Figure H.1.5 presents the arrangement of pressure and strains in the expanding borehole.

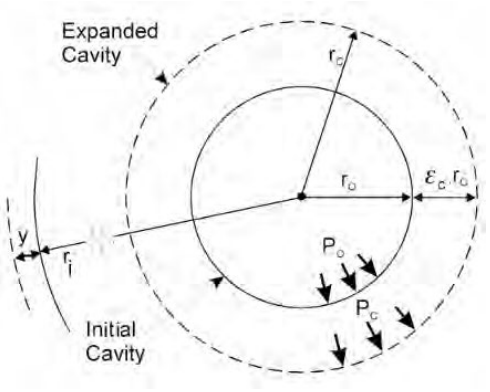


Figure H.1.5: Pressures and Strains Around an Expanding Cavity

Where:

y = small radial displacement
r_i = any radius
r_c = current radius of cavity
r_0 = initial radius of cavity
P_c = current pressure applied to cavity wall
P_0 = cavity reference pressure
ε_c = circumferential strain at cavity wall where = $\frac{rc-r0}{r0}$

Shear strain when the cavity is deforming at constant volume can be derived from cavity strain using the constant area ratio, $\frac{\Delta A}{A}$. Equation H.1.2 gives the change of area over the current area, and equal to:

$$\frac{\Delta A}{A} = \frac{\pi(1+\varepsilon c)^2 - \pi}{\pi\,(1+\varepsilon c)^2} = 1 - \frac{1}{(1+\varepsilon c)^2}$$

Equation H.1.2

H.1.1.3 The Calibration Procedure

The calibration procedure is the same for all pressuremeter apparatus. Although the equipment to run the calibration process may differ in size the theory stays identical. In this section, an example of High Pressure Dilatometer calibration is given.

General

There are eight aspects to the calibration of pressuremeter equipment:

i. Scale factors;
ii. Displacement measuring system;
iii. Pressure measuring system;
iv. Reference ('zero') outputs;
v. Membrane stiffness;
vi. System stiffness;
vii. Membrane thinning;
viii. Repeatability (or how much effort should be devoted to calibrations);
ix. Scalar values, membrane and system compliance calibrations values;
x. Sample calculation of a line of data

The general calibration procedures are described in this section with the project-specific calibration information provided where appropriate. Examples of calibration calculation are also given.

Scale Factors

The transducers in the probe are based on full bridge strain gauge circuits. Output is dependent on the voltage, the deflecting stress and amplification or buffering between the transducers and the recording system.

The instrument contains electronic devices that provide a regulated voltage to the transducers and output signals. The electrical output of the transducer is quoted only as a function of the deflecting stress. This function is termed ‘sensitivity’ and represents the scale factor for deriving pressure or displacement from the transducer electrical output.

Although the output of the transducers is recorded in volts, the true output of the system is a digital data stream of ASCII. All variables associated with producing the final digital output from the strain gauge signals are a function of the pressuremeter and are independent of external changes such as replacing the cable.

It is assumed that sensitivity calibrations are linear, and that the hysteresis is negligible. However, the calibration procedure needs to provide evidence that these assumptions are reasonable.

Displacement Measuring System

The displacement measuring device is often referred to as ‘the arm’. The arms are calibrated by mounting a micrometer above each arm and recording the displacement output for a given deflection. It is necessary to plot readings for both increasing and reducing deflection. The difference in output at a given deflection between increasing readings and reducing readings is a measure of the hysteresis and the worst-case figure is calculated. Figure H.1.6 shows the slopes of the best fit straight lines through all the point used during the displacement measuring system calibration process.

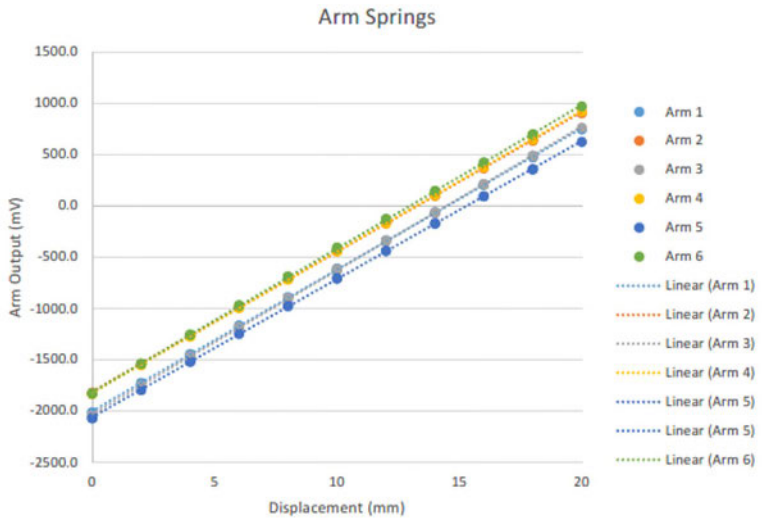


Figure H.1.6: Example of High Pressure Dilatometer Displacement Measuring System Calibration

A typical slope value is 120 mV/mm for a 95-mm HPD. The arms have a range of 24-mm, so the output swing is about 3 Volts.

Steps are taken to reduce the friction in the system if the hysteresis is outside an acceptable limit (hysteresis must be between -0.5 % and 0.5 %).

Pressure Measuring System

For pressure measuring circuits the maximum possible sensitivity is desirable, the only requirement is that the sensitivity be known, and be linear and stable. The sensitivity of internal pressure transducers is determined by placing a large metal cylinder over the probe and applying a known pressure to the inside of the instrument. The pressure being applied is measured by a standard test gauge. Readings are plotted, the hysteresis noted, and the best fit straight line drawn through the plotted points as shown in Figure H.1.7 A typical pressure sensitivity figure for the 95-mm HPD is 100 mV/MPa.

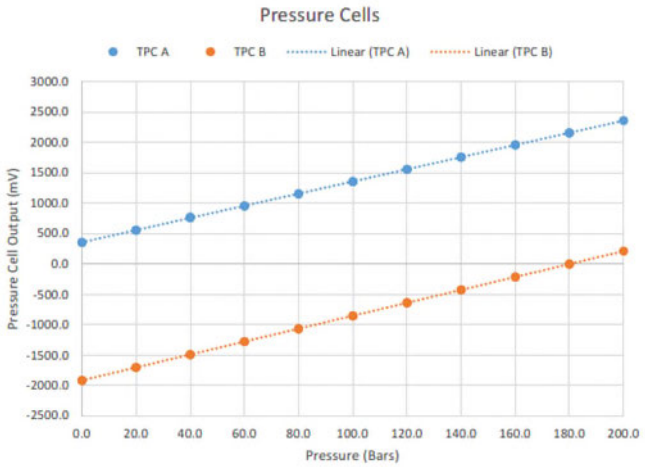


Figure H.1.7: Example of High Pressure Dilatometer Pressure Cell Calibration

References 'Zero' Outputs

The transducers have a known electrical output for an 'at rest' position. This is the value of the outputs produced by the circuits at atmospheric pressure both inside and outside the instrument, and the displacement measuring system at the initial radius position. This are called 'zero'. It is important that the 'zero' readings be stable when viewed over a period of a few minutes.

There is no requirement that the reference state be set at 0 volts. The 'at rest' readings for the arms are usually set to be about –2 volts to allow a large output range with a margin for gradual drift over time. The same is true for the pressure cells. However, an exception is made for pressure cell A. This is the source of the analogue signal that is a switchable option of the EIU (see earlier) and is easier to interpret if surface pressure and zero volts coincide.

Adjustment positions using 1% metal film resistors are provided in the instruments for setting all 'zero' outputs.

It is typical to record 'zero' readings both at ground level and immediately prior to carrying out a test. Should a significant change between 'zero' readings must be investigated, e.g. a change of +/- 30 mV from the last set of 'zero' readings would be considered significant. It is not unusual for shifts of a few millivolts to occur from day to day.

Note that when using oil to inflate the probe, ground level readings are the preferred reference. Once in the borehole the pressure transducers will read the head of oil. For gas inflation it is preferred to use the zero readings when the probe is in the borehole. It will then be at the temperature most applicable to the test.

Membrane Stiffness

The pressuremeter membrane is initially in tension requiring some small pressure to make it move. The readings measured by the stress cells during testing must be reduced by this initial pressure in order to determine the net stress being applied to the ground.

The membrane correction has two components:

i. The initial pressure to move the membrane from its position at rest on the instrument;
ii. The additional pressure component to keep it expanding.

The correction data are obtained by pressurising the instrument in 'free air', ideally using similar rates of expansion as applied during a test. This is typically performed inside a large cylinder that fits closely at the ends of the membrane. This is partly for safety, but also because the ends of the membrane are usually reinforced, and it is important that these are not over extended.

The membrane is not necessarily homogeneous. An unconfined inflation in the air exaggerates any variations in the membrane properties so only an average correction factor should be derived.

The membrane correction data include the pressure in kiloPascal (kPa) to move the membrane from its rest position and the pressure in units of kiloPascal per millimetre (kPa/mm) to maintain the inflation. Typical correction figures might be 45-kPa and 15-kPa/mm.

Figure H.1.8 presents the slope and the intercept on the pressure axis of the graph produced by this test give the membrane correction information.

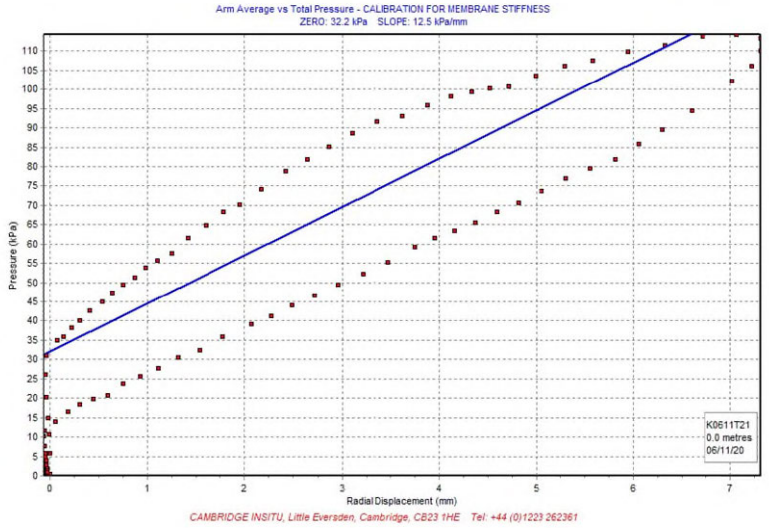


Figure H.1.8: Example of a Membrane Stiffness Calibration

System Stiffness

The displacement measuring system uses the pressuremeter body as the central node for relative displacement of the arms, and by extension the membrane. However, when large internal pressure is applied to the membrane, the pressuremeter body will also experience some deformation due to stretching. This deformation of the pressuremeter body will be erroneously recorded as membrane displacement leading to the under-estimation of modulus. This correction is sometimes referred to as 'membrane compression', but this is misleading. What is being determined is a measure of the finite stiffness of the probe itself in all aspects. A correction value can be derived using a procedure such as that used to calibrate the pressure cells.

Figure H.1.9 presents the slope produced by the stiffness calibration process test.

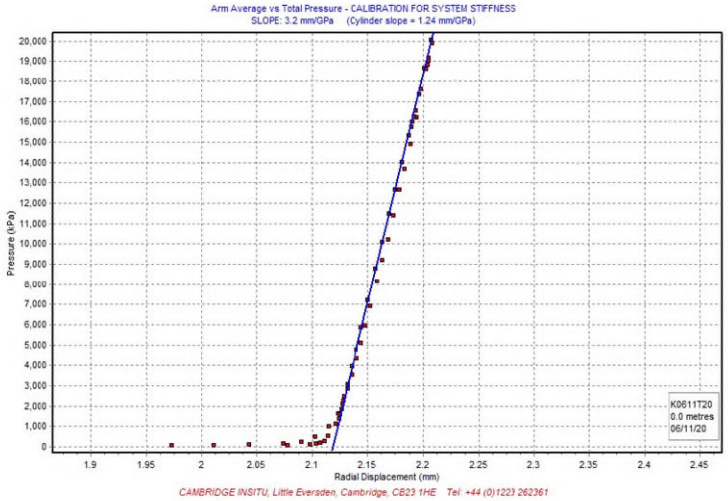


Figure H.1.9: An Example of a Membrane Compression Calibration

To calibrate the pressuremeter, the 'Chinese lantern' is removed, and an aluminium cylinder of known properties with close fitting ends is placed over the membrane of the pressuremeter. The instrument is inflated slowly until the membrane contacts the wall of the cylinder. These data are used for membrane correction. The test continues, either as a gentle continuous inflation or in discrete steps of 10 bars. Each step is held briefly to ensure maximum accuracy. The probe is pressurised up to a maximum 200 bars.. The pressure is then reduced in steps of 10 bars.

The calibration is obtained by plotting the pressure/displacement curve and determining the best fit slope through the data points. Ideally the slope should be that of the calibration tube. In practice it will be more, so the correction is the raw value minus the calibration tube contribution. A typical result is 3-mm/GPa.

Quoting the compression in this manner allows the software to calculate the appropriate error for every step of pressure and to make the necessary adjustment to the measured displacements.

To put the correction in context, a slope of 5-mm/GPa (a relatively large correction) is equivalent to a modulus greater than 4-GPa. However, because the calibration is highly repeatable, with an uncertainty of less 0.5-mm/GPa, it is reasonable to quote modulus parameters of up to 20-GPa.

Membrane Thinning

During a test the pressuremeter membrane changes in thickness as a consequence of stretching through expansion. This change in thickness can be calculated by assuming that the cross-section area of the membrane is constant.

Note that the term 'membrane' includes the stainless steel protective sheath, and that the measurement made by the arms is the radial distance to the inside of the membrane.

The calculation method is presented below. The different terms used in the following equations are defined as follows:

a = internal radius of the membrane at rest
b = external radius of the membrane at rest
c = internal radius of the membrane expanded
r = external radius of the membrane expanded
t = thickness of the stainless steel sheath strips (the 'Chinese lantern')
d = measured movement of the strain arm
E = actual expansion of the membrane

At rest, the cross-section area of rubber is equal to:

$$\pi(b-t)^2 - \pi a^2$$

Equation H.1.3

The expanded cross-section area of rubber is equal to:

$$\pi(r-t)^2 - \pi c^2$$

Equation H.1.4

The rubber membrane is assumed incompressible as pressure is applied equally across the membrane. Therefore, Equation H.1.3 and Equation H.1.4 must be equal:

$$(b-t)^2 - a^2 = (r-t)^2 - c^2$$

Equation H.1.5

Knowing that:

$$c = a + d$$

Equation H.1.6

And:

$$r = b + E$$

Equation H.1.7

Hence:

$$(b - t)^2 - a^2 = [(b + E) - t]^2 - (a + d)^2$$

Equation H.1.8

Thus:

$$(b - t) + E = \sqrt{[(b - t)^2 + d(2a + d)]}$$

Equation H.1.9

And:

$$E = \sqrt{[(b - t)^2 + d(2a + d)]} - (b - t)$$

Equation H.1.10

With 2a, 2b and t being known from the manufacture's data, and d being the measurement made by the displacement sensors during the test. See Table H.1.1

Table H.1.1 : Typical Dimensions for the 95-mm HPD

Data	Value [mm]-HPD
2a	81.00
2b	95.00
t (1 'Chinese lantern' layer)	0.50
t (2 'Chinese lantern' layers)	1.00

Where:

a = internal radius of the membrane at rest [mm]
b = external radius of the membrane at rest [mm]
t = thickness of the stainless steel sheath strips [mm]

To apply the correction at a given expansion the average radius of the expanding membrane is calculated. This average is then entered into Equation H.1.10 and the ratio between the corrected average and the measured average is expressed as a factor (typically 0.88 for a 95-mm HPD at all expansions). The factor is then applied to individual arm displacement measurements.

Repeatability (or how much effort should be devoted to calibrations)

Although it is important to regularly check the sensitivities of the strain gauge circuits, it is unusual for them to change markedly. Indeed, it is common for the hysteresis to improve with use. 90 % of the performance of a strain gauge bridge application can be predicted from its design; the calibration removes the uncertainty due to manufacturing tolerances and can give early warning of impending problems in a particular circuit.

The expansion test is concerned with relative measurements, not absolute measurements. The HPD displacement measuring system will resolve movements of less than 0.5 microns over a range of 20-mm and the pressure measuring system will resolve changes of 0.5-kPa over a range of 20-MPa .This resolution is considerably higher than can be seen with a standard micrometer or test gauge.

Hence the term 'calibration' may be considered inappropriate. What is done in practice is to check that the various sensors are linear over a number of relatively coarse steps or intervals. We assume that this linear behaviour will be true for very much smaller changes. Successive calibrations on the same sensor are expected to be within 2% and differences greater than 3% are investigated.

Secondary sources of error, such as temperature change are not considered during calibration. When measurements are being made during a test, it is reasonable to assume the temperature remains constant. The ground is typically at a constant temperature during testing. However, there may be instances where the temperature of the gas being supplied to the probe can have an influence, especially if the gas bottle reservoir is stored in direct sunlight in a hot climate.

Using a spreadsheet to present the calibrations results for sensitivity is common practice. Gradients can be calculated by linear regression routines, ensuring different operators given the same data set will derive consistent calibration factors. The calibrations are presented as a tabulation of transducer output against a known reference, with the linearity and hysteresis calculated for each calibration step.

If the strata is weak (shear strength less than 100-kPa) then membrane stiffness correction is important. If the material is extremely stiff (shear modulus greater than 1-GPa) then system stiffness correction is important. In between these extremes the influence of the membrane and system stiffness correction on the derived parameters is negligible.

Scalar Values, Membrane and System Compliance Calibrations Values

Table H.1.2 presents an example of arms and pressure cells calibration. They are known as internal calibrations.

Table H.1.2: Scalar Values for High Pressure Dilatometer

Probe: HPD 1 (Fugro)								
Date	**Arm 1**	**Arm 2**	**Arm 3**	**Arm 4**	**Arm 5**	**Arm 6**	**TPC A**	**TPC B**
	[mV/mm]	[mV/mm]	[mV/mm]	[mV/mm]	[mV/mm]	[mV/mm]	[mV/MPa]	[mV/MPa]
06/07/2022	138.1	136.3	140.9	138.6	135.4	140.0	100.6	106.7

Table H.1.3 presents the results for the membrane stiffness calibration (zero and slope) and the system stiffness calibration (compliance).

Table H.1.3: Membrane and System Compliance Calibrations Values

Probe: HPD 1 (Fugro)				
Test Ref	**Date**	**Zero**	**Slope [kPa/mm]**	**Compliance [mm/GPa]**
S0607T22	06/07/2022	21.7	11.6	3.2

Sample Calculation of Engineering Data

Cambridge Insitu software 'Winlog' does the calculation. A technical note from Cambridge Insitu Limited regarding this calculation process is available on request.

H.1.1.4 The Test Procedure

General

The following sections detail the methods used to perform pressuremeter testing. Where possible examples are taken from tests carried out as part of this contract. The test procedure was developed by CIS.

Coring the High Pressure Dilatometer (HPD) Pocket

The HPD test is carried out in a 101-mm diameter core pocket that has been formed by coring or occasionally by open hole drilling. Coring is the conventional method as the recovered core can provide strata information at the test depth. Samples of the core are typically of sufficient quality to perform standard laboratory testing, which may be compared with the pressuremeter test results. Details about the core may also be noted as they can assist in interpreting the results.

The core pocket should be at least 2m long. This allows the user to determine the exact point in the core pocket to place the HPD. Note the following critical measurements:

- From the foot of the instrument to the centre of the measuring section is 0.75m;
- The expanding part of the instrument is approx. 0.6m;
- The 95-mm HPD is 2m in length. The extension rod is attached to it and so the effective length from the foot of the 95-mm HPD to the start of the rotary drill string is approx. 3.50m;
- If the pocket is longer than 3m then the diameter of the drill rod used to place the pressuremeter must not exceed 75-mm; this together with two thicknesses of hose is the maximum that will fit into a 101-mm pocket;

Tests performed in the very lowest section of the pocket should be avoided because any cuttings not transported to the surface collect here. However, as the HPD test centre is some distance from the foot of the instrument this is not usually a problem.

Zone of weak strata in the core sample are considered points of interest that should be in the HPD test section. However, zone of weak strata at the ends of the HPD expanding section may result in the membrane rupturing before the pocket has been properly loaded by the 95-mm HPD.

Although not likely to burst the membrane, heavily fractured strata around the test centre, may also present problems of a different kind. The analyses that currently exist for the pressuremeter test assume intact strata. If this is not the case, then although the data collection may be good, data interpretation may be complex.

The quality of the test is dependent on the quality of the initial coring. Standard coring practice is designed to preserve the core, without regard for the borehole wall. This is in conflict with the priorities for the pressuremeter test and many high quality HPD tests have been performed in pockets where no core sample was recovered.

Placing and Recovering the Cone Pressuremeter (CPM)

Placement of the CPM probe is similar to a standard CPT test. However, the length is such that parts of the CPT system used to stiffen up the string of rods near the surface normally must be removed. This means that the initial push has to be very cautious, with monitoring of the inclinometer to make sure the deviation is less than 3 degrees. It may be necessary to pre-drill or dig out the first metre of material. Once safely buried a greater tolerance is allowed on the inclination but anything greater than 8 degrees requires considerable caution from the operator. The penetrating rate tends to be slower than a standard CPT. The CPT profile is then monitored and compared to the targeted test depth. For the most part, tests can be made at the specified level but occasionally the CPT data is used to position the expanding part of the CPM in a consistent zone of material that differs by a few centimetres from the nominal target. Once the CPM has reached the targeted depth, the load is taken off the cone rods and a cavity expansion test is carried out. After the test, the probe is advanced to the next level and the testing process repeated. This continues until either the end of the borehole is reached, or the system meets refusal. Refusal for the CPM means an applied load greater than 12 tonnes but probably less than 15 tonnes. The highest loads are applicable when the inclination is small. When the decision to pull out is taken, the electronics are switched off and electrical cables and pneumatic hoses at the surface disconnected. The first metre of pull back has to be very slow. The rod string is then lifted back until the probe is recovered. The probe is then checked, cleaned and made for the next attempt.

Description of the Test

The High Pressure Dilatometer (HPD)

The HPD test is a loading test. Pressure is applied to the instrument and readings are taken of this pressure and the resulting displacements of the cavity. Plotting pressure against displacement gives a test curve with a characteristic 'S' shape. The HPD may perform two types of test:

i. The material yields before the maximum pressure capability of the equipment is reached;
ii. Tests are limited by the maximum pressure capability of the HPD;

Pressure can be applied continuously or as increments held for a short period of time, typically one minute. The continuous approach is appropriate for soils, and the incremental approach for rocks. The incremental approach gives the loading curve a slightly stepped appearance and the change in displacement between start and end of the increment is referred to as 'creep' displacement.

Creep readings are not taken within unload/reload cycles or the final unloading. Analysis of the creep data can inform the transition from elastic to plastic deformation. It also means that tests with a sufficient number of steps can be analysed using methods developed for another type of pressuremeter: the Ménard pressuremeter.

The Cone Pressuremeter (CPM)

The instrument is primarily a device for determining the stiffness of the ground and the test procedure is arranged to make the best possible measurements of elastic movements. It is also important to record a cavity contraction phase. Because the probe is pushed into the material this is the only part of the loading curve capable of providing realistic data for strength.

At the start of the test, gas pressure is applied to the instrument in constant small increments. The test is stress controlled and initially the pressure increases without discernible displacements. Because the probe has been pushed into place there is no indication of stress relief and at an arbitrary point the cavity starts to expand. This may be a "witness" to the initial stress state. The response continues to be monitored until the stress in the probe exceeds the likely overburden stress by a significant amount and the expansion is underway. Several unload/reload cycles (or loops) are then carried out during the loading phase. Before the start of an unload/reload cycle, a creep reading is undertaken, 1 minute hold for material considered as undrained and 3 minutes hols for granular material considered as drained material. An unload/reload cycle is defined by 8 to 10 points in the unload part and again during the reload part. Operators adjust the pressure control system in order to get that rate. The pressure drop for the unload needs to be kept within the elastic range of the material, meaning it does not want to be so great that reverse yield is achieved. Due to the non-linearity of the shear stress:shear strain curve of the material a change of 3-4 times the mobilised shear stress is required before the elastic range is exceeded, but as a "rule of thumb" a stress change of a third of the current cavity pressure at the start of the unload is always safe. If the two first cycles look similar, then no further cycles need to be taken, strictly speaking. Nevertheless, as the expansion continues, one more cycle is taken on the loading. In the case of a drained event, each cycle is taken at a different mean effective stress and successive cycles give an ever stiffer response. If there are at least 3 cycles in the test, then there is the possibility that the stress dependency

effect can be quantified. Once the expansion is well established, and starting to level off, the test cavity can be unloaded. There is no point in advancing the cavity further because no data can be determined from the loading phase. It is only necessary to be sure that the process has taken the cavity to a new higher state of stress and strain than previously experienced. This is what the levelling off indicates. In an undrained test, the expansion will level off at the material limit pressure, but this may not happen in a drained test. The test cavity is then unloaded at a relatively gentle rate because it is this part of the test that is of the greatest interest. A wait of about one minute before starting the unloading event is normal so that the unloading is not made to seem too stiff due to creep strain opposing the contraction. Usually a reload/unload cycle is taken during the final unloading phase, aiming to reproduce the same form as the last loop on loading. There is no need to wait for creep strain. The pressure in the system is then allowed to fall to zero. When the loading points become approximately horizontal then the membrane has lost contact with the borehole wall and the remaining pressure can be vented quickly.

An example of a Cone Pressuremeter test is shown in Figure H.1.10.

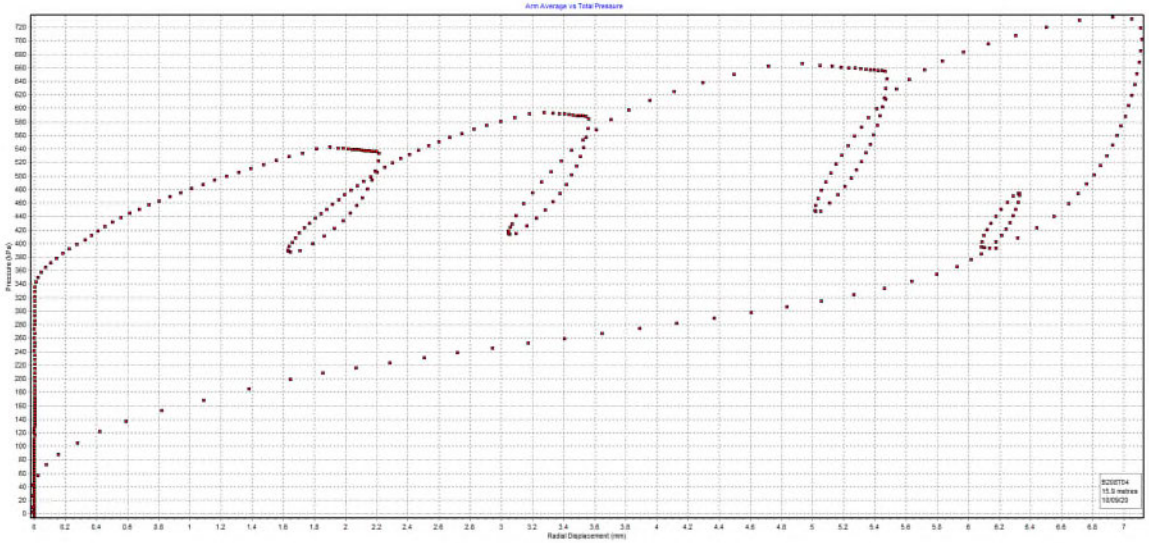


Figure H.1.10: Example of a Cone pressuremeter Test (not from this contract)

Test in Material That Yields

The loading curve of these tests tends to take an 'S' shaped form Figure H.1.11 presents an HPD test in a material that yields.

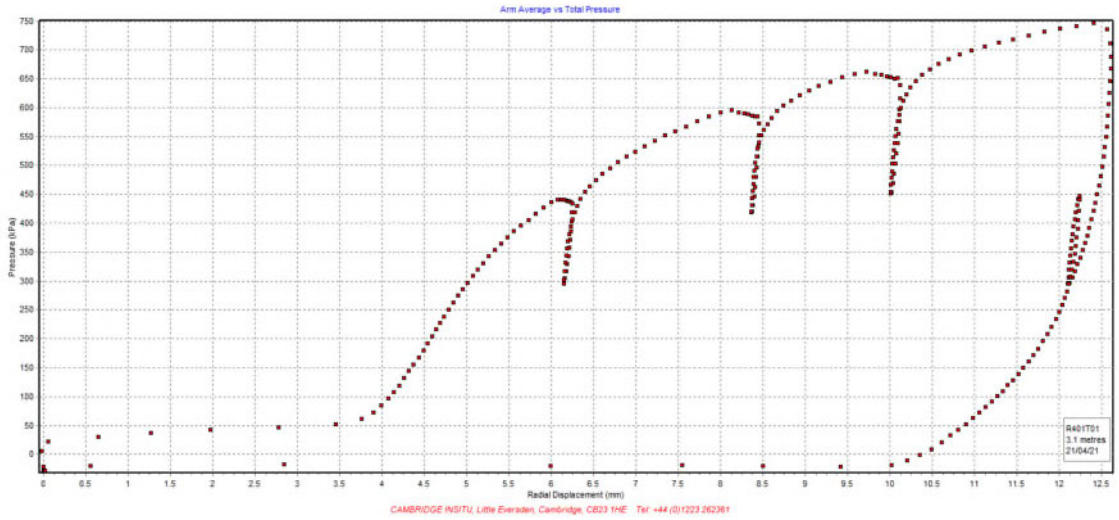


Figure H.1.11: A High Pressure Dilatometer Test in a Yielding Material (not from this contract)

The test procedure/loading stages are as follows:

i. At the start of the test the membrane is flush to the body of the HPD;
ii. Pressure is applied, the membrane lifts off the body of the HPD and expands out to contact the sides of the borehole. There are large displacements for very little pressure change;
iii. Further increments of pressure define the first curve of the 'S' shape; this curve is the instrument taking up the contour of the pocket and squeezing out any cuttings;
iv. Following this is a linear part of the loading curve. The pressure being applied is remoulding the material adjacent to the HPD that has been failed by the coring process but is not yet sufficient to extend the zone of failure into fresh material. In this part of the test the pressure is increasing at a greater rate than the strain.
v. Once the pressure is sufficient to extend the zone of failed material the upper curve of the 'S' starts to be defined, eventually reaching an almost linear condition once more where strain is increasing rapidly for very little increase in pressure;
vi. At this stage the material can be unloaded and the full unloading curve be drawn. The first part of this will be nearly linear, curving away as the pressure and strain reduce to zero.

The pressure/strain curve data are used to derive fundamental parameters about the strength of the material being tested. Therefore, the manner in which the test is performed should be selected to ensure these parameters may be assessed.

The following parameters are typically derived from pressuremeter test data:

i. The slope of the initial upward curve of the 'S' shape can be used to estimate the initial shear modulus G_i. However, this part of the curve is sensitive to the disturbance caused by coring and the derived value will not be representative of the true shear modulus of the material;
ii. It is considered that a more reliable estimate of G can be determined by taking unload/reload loops at intervals along the loading path. To do this, a little of the pressure that has been applied is released and then reapplied in a controlled manner, taking readings of the changing strain and pressure. This produces a characteristic loop. The slope of the best fit straight line through the long axis of the loop can be used to derive G_UR (for unload-reload);
iii. The value of G produced in this way is unaffected by the initial drilling disturbance. The shear modulus is probably the single most useful parameter that the HPD test can produce. Because of this significance it is usual to take at least two loops at suitable points on the test curve. Suitable points would be on the linear part of the curve and as soon as there are indications of failure. Loops can also be taken on the unloading curve. Before starting the loop the pressure is held for a short time to allow residual creep or rate effects to minimise;
iv. The ratio of G_i to G_{ur} can give an indication of the extent of the disturbance created by the coring of the pocket;
v. Deductions about the undrained shear strength or internal friction angle are made from the post-yield curve until the end of loading. Note that it is also possible to analysis the final cavity contraction curve for strength and stiffness. This is often preferable as there is only minor uncertainty concerning the origin of the contraction event.

Figure H.1.12 shows an example of $G_i$and G_{ur}plotted on an 'S' shape test.

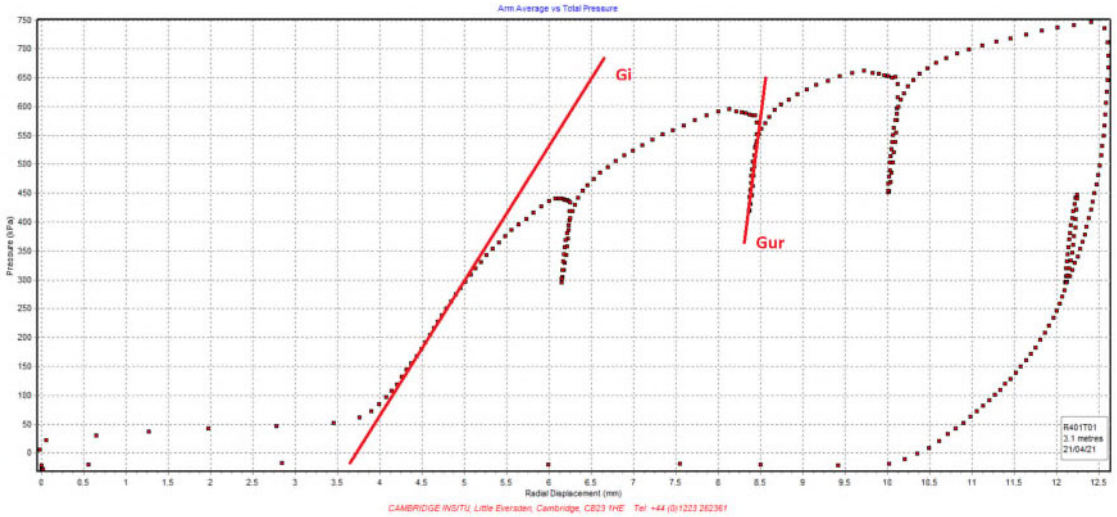


Figure H.1.12: G_i and G_{ur} plotted on an 'S' shape test

Test in Material Elastic Deformation Only

Tests where the material does not fail before reaching the HPD maximum pressure need to be treated with care. For a large change in pressure there is little apparent strain. Any errors in the displacement sensing system will have consequences for the results.

If the material displays only elastic behaviour, then it is difficult to analyse the test for maximum strength. Typically, only shear modulus results are reported.

The value of shear modulus may be in excess of 1-GPa. This implies that the displacements seen during the loop will be very small. Therefore, the reduction of test pressure may need to be substantial to obtain the maximum possible definition of strain.

If unusually large creep behaviour is seen at any point, then this creep behaviour would be monitored further by extending pressure holds. The creep response is best monitored by making holds at increasing stress levels and for longer periods of time. However, such behaviour may be due to fractures in the strata opening and the risk of rupturing the membrane can increase. It may be preferable to start the final unloading process having seen abnormal material response, in order to ensure a full contraction curve is performed.

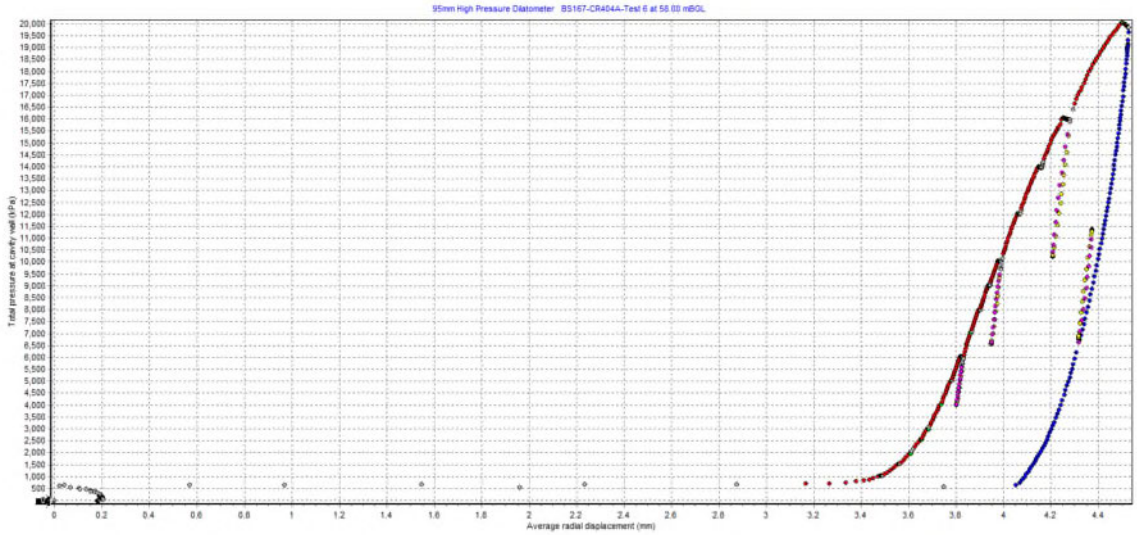


Figure H.1.13: A High Pressure Dilatometer test in a material deforming predominantly elastically (not from this contract)

Terminating a Test

The decision about when to stop a test depends on several factors, as follows:

- All standard pressuremeter tests aim to include a minimum two unload/reload cycles, point of elastic to plastic deformation (where not limited by equipment maximum capability) and a full cavity contraction.
- The aim of the test is to yield the material and record the plastic response of the material
- If the maximum pressure capability of the instrument is reached, then the test is terminated.
- The test may be terminated if the material is cracking or exhibiting unusual behaviour.
- If the maximum displacement capability of the instrument is reached the test is terminated.

H.1.1.5 The Pressuremeter Test in Rock

General

The following sections detail the methods used to derive pressuremeter tests results in rock. This section is illustrated with example from tests performed for this contract. The results derivation procedure was developed by CIS.

Rock Strata – Specific Data Interrogation

There is little published text on analysing pressuremeter test results in rock. The methods commonly applied are analytical techniques for deriving strength parameters from soil and the assumptions implicit in these techniques may be considered invalid for test data in rock strata.

Many analytical models for deriving strength parameters assume that the material tested has reached large strains and shear failure is a measured boundary.

Because of the strength of rocks, it is often not possible to yield the material before reaching the pressure limit of the equipment used. Consequently, there is little scope for deriving the maximum shear strength. In most cases all that can be recorded is a value that the shear strength must exceed.

One of the virtues of the 95-mm HPD is that relative displacements of less than one micron can be measured reliably. It is possible to accurately interpret loading paths where there are little or no indications of plastic behaviour.

The following aspects of the pressuremeter testing in rocks are discussed in this report:

- The test may be idealised as a gross "proof load test" of the rock to determine relative stiffness and strength of strata.
- The test data can be used to determinate material properties of the rock.

Proof Load Test

The pressuremeter may be conceptualised as a jack that forces the walls of the borehole apart. The pressuremeter can be idealised to consist of two half cylindrical plates 100-mm wide and 600-mm long pushed against the rock with force of approx. 120 tonnes on the borehole wall.

Figure H.1.14 presents the conceptualised proof load test.

When testing rock with the HPD a typical maximum deformation or separation of these “plates” would be approx. one millimetre, although typically less. Due to relatively small strain on the rock strata the pressuremeter tests can be interpreted as providing an indication of the behaviour of the rock mass.

These displacements can be translated into a modulus by assuming that the rock behaves as an elastic continuum.

This procedure is analogous to the empirical procedure developed by Louis Menard in 1957 for determining the deformation modulus. It is considered to be only useful for comparative purposes as the actual elastic modulus may be several times greater.

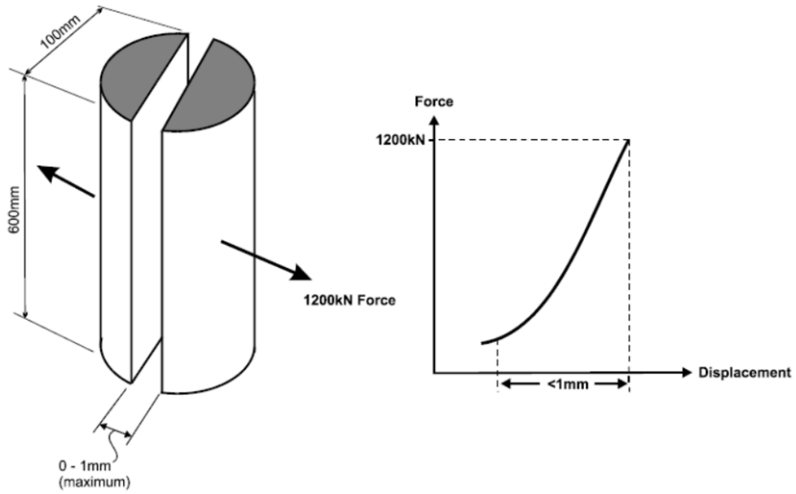


Figure H.1.14: The Conceptualised Proof Load Test

The Determination of Material Properties from Pressuremeter Tests

In view of the complex nature of the rock a simple material model of the rock behaviour is proposed. This model attempts to take into account the major material properties of the rock. It is noted there are limitations to the mode considered, and these are used to give further understanding of the rock behaviour revealed by the tests. There are six variations of the model.

Model 1: Homogeneous/Elastic

Model 1 considers the rock to be dry, homogeneous and behaving in an elastic manner Figure H.1.15a presents the stress path of an element adjacent to the cavity. Figure H.1.15b presents the pressure/strain curve for the rock material representative of loading and unloading on the cavity wall.

In Figure H.1.15a the original in situ lateral stress is represented by point P_0. The radial stress σ_r, initially zero, increases at the same rate as the circumferential stress σ_c decreases, regardless of whether the rock is deforming under plane strain or plane stress conditions.

As the pressure in the pressuremeter increases the shear stress in the rock at the boundary wall will change, reducing at first up to the line O - O (the line containing the in situ lateral stress), then increasing. If the lateral stress is low, as represented by point P_0', then the circumferential stress will go into tension; as long as the rock does not fail in tension the loading and unloading pressure/expansion curves will be straight lines.

The shear modulus of the rock can be determined from the slope of the pressure/expansion curve using the classic procedure of Bishop et al (1945), provided that the pressure/expansion curve is linear.

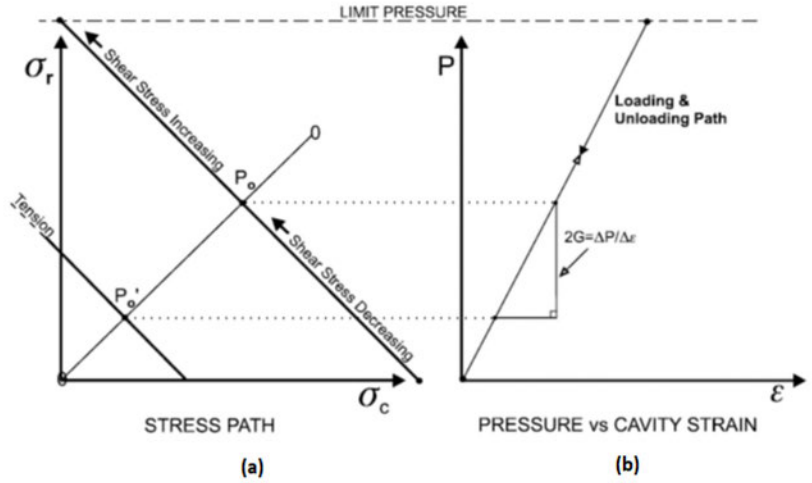


Figure H.1.15: The Homogeneous/Elastic Model

Model 2: Elastic Behaviour before Failing in Shear

Model 2 considers the effect of material strength. In this model it is assumed that there is a limit to the shear stress the rock can sustain before yielding.

Figure H.1.16a presents the stress path of an element adjacent to the cavity. Figure H.1.16b presents the pressure/strain curve for the rock material representative of loading and unloading on the cavity wall.

The rock is assumed to behave as an elastic material prior to failing in shear.

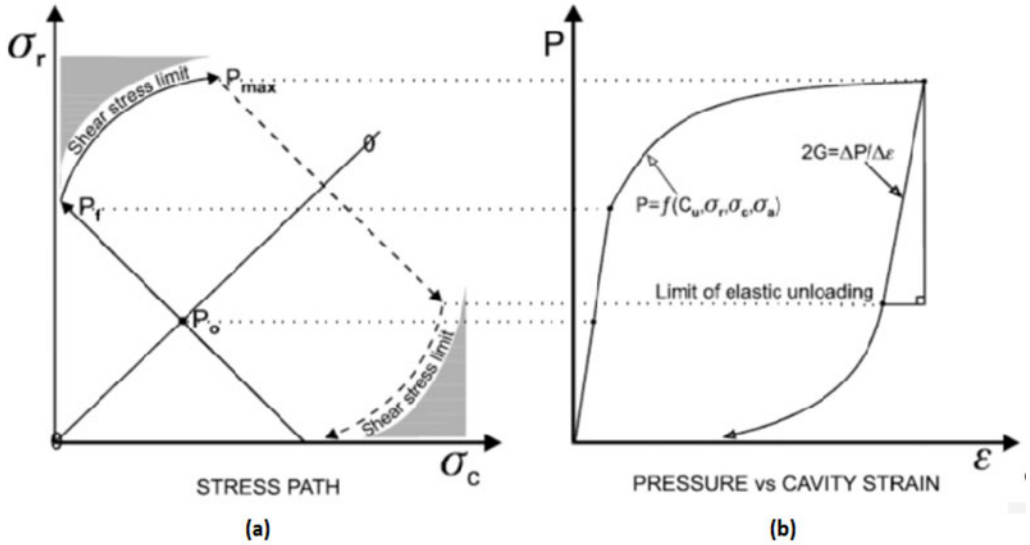


Figure H.1.16: The Elastic Behaviour before Failing in Shear Model

During loading, as the pressure exceeds P_f, the pressure required to initiate shear failure, the radial strain rate will show a substantial increase. Figure H.1.16b represents that behaviour. The form of the non-linear portion of the pressure/expansion curve will be a function of the shear strength of the rock. If the shear stress limit is constant and not influenced by pressure, and the rock deforms at constant volume, the failure shear strength can be determined (Gibson and Anderson, 1961). This ideal behaviour is presented in Figure H.1.17b. Typically at least one of these assumptions will not be appropriate and a more complex solution will be required (such as Haberfield and Johnston, 1990).

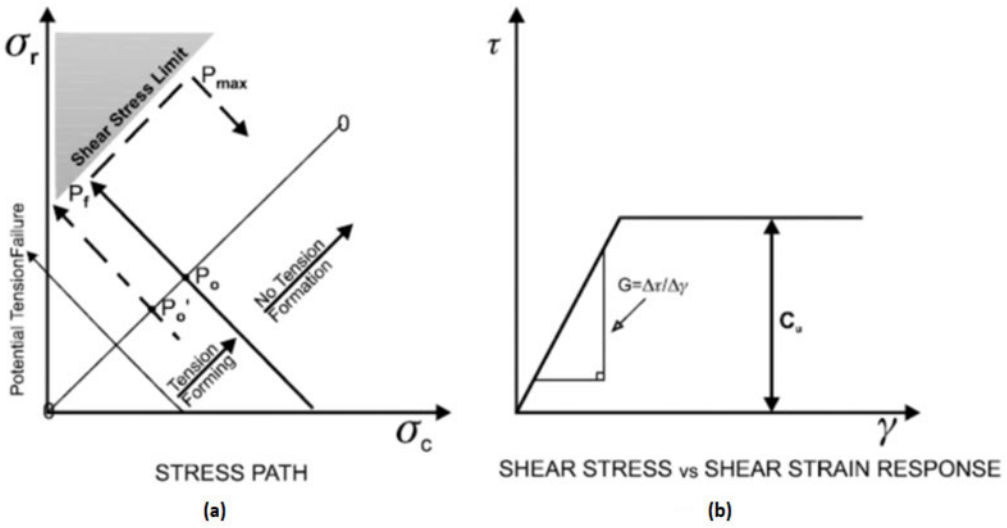


Figure H.1.17: The Linear Elastic/perfectly Plastic Model

During unloading the material will behave elastically until the failure strength is reached as shown on Figure H.1.17b. At this point the circumferential stress becomes the major principal stress.

In the ideal test shown in Figure H.1.16, the elastic shear modulus can be evaluated from both the slope of the loading curve and the unloading curve. In an actual test it is unlikely that the in situ shear modulus can be determined from the loading phase. The in situ behaviour of the rock is affected by the test cavity drilling process disturbance or by soft cuttings lodged between the pressuremeter and the cavity wall.

The defect of this model is the assumption that the rock only fails in shear and not in tension. If the tensile strength of the rock is sufficiently low the lateral stress must be high enough to ensure that the rock does not fail in tension, in such instance the analytical procedures developed for this model is inappropriate.

Models 3,4,5 and 6: Elastic, Shear and Tension

Most rocks types do not exhibit isotropic strength properties, and as such they are typically weak in tension and much stronger in compression or shear. If the in situ lateral stress is low and the shear strength high, then tensile stresses can develop during the testing. The stress path followed during such a test is presented in Figure H.1.18.

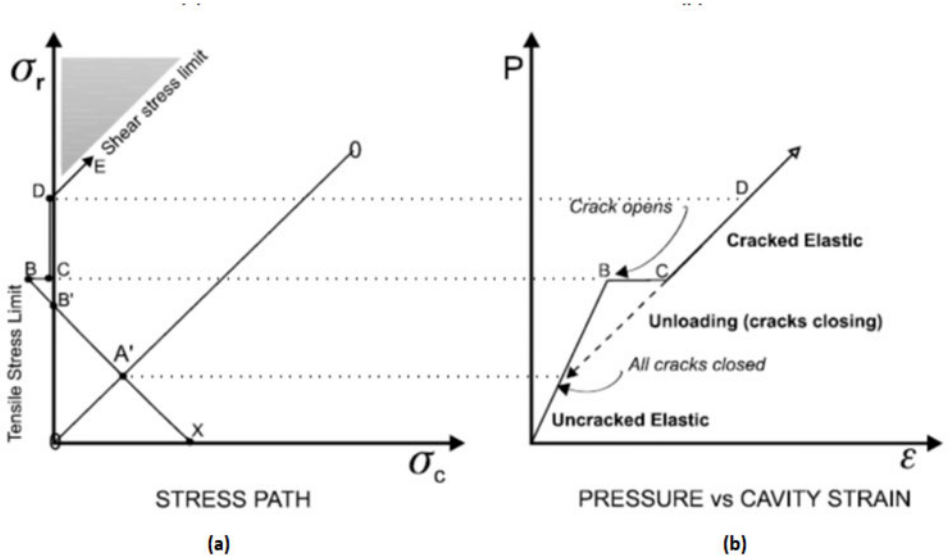


Figure H.1.18: Elastic Response followed by Tensile Failure

As the test pressure increases the stress path will follow point X to point A' to point B'. At point B' the circumferential stress will start to go into tension. At some stress the rock will crack, theoretically in a radial direction (as illustrated in Figure H.1.19). With further increase in radial pressure the stress path will shoot from point B to point C as the radial cracks form, the radial pressure increases the cracks will grow and the stress path will continue along point C to point D.

The lowest limit of tensile stress gives a maximum value for the in situ lateral stress. As the symmetry of the stress path in Figure H.1.18 indicates, the in situ lateral stress at point A' can be no more than half of the stress necessary to make the material fail in tension.

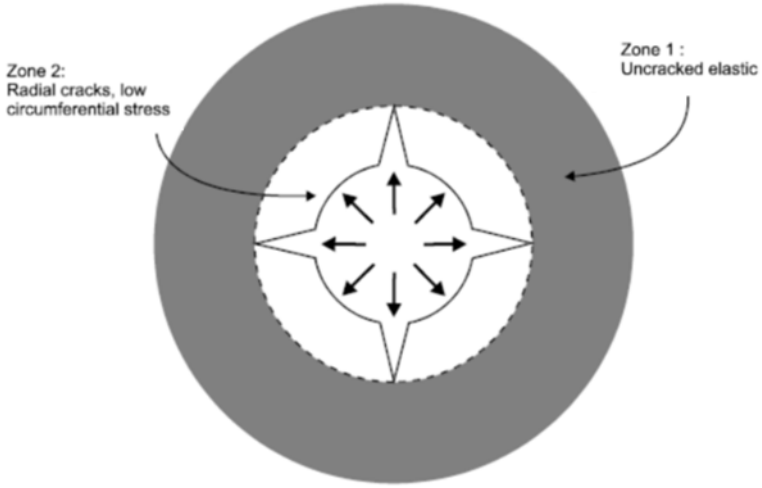


Figure H.1.19: The Onset of Radial Cracking

During unloading, the stress path will regress along the same curve until the cracks close completely. The curve will then follow the initial "uncracked elastic path" (Figure H.1.18).

Figure H.1.20 presents the pressure/expansion curve for a test where tensile failure is followed by shear failure.

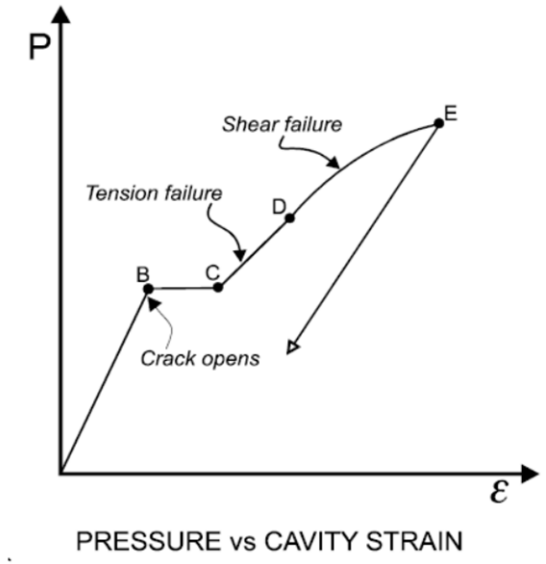


Figure H.1.20: Tensile Failure Followed by Failure in Shear

Should the test pressure continue to increase the mechanism of failure at the boundary will change to a shear failure mode as the stress path intersects the shear failure boundary at point D (Figure H.1.18).

Figure H.1.21 presents the spread of radial cracking adjacent to the pressuremeter. In the material adjacent to the pressuremeter there will be three distinct zones:

- Zone 1: An outer zone in which the rock is uncracked and behaves elastically;
- Zone 2: An intermediate zone where the rock will have radial cracks and a low circumferential stress. In this zone the rock will probably not deform at constant volume as it is likely to have open cracks;
- Zone 3: An inner zone, adjacent to the borehole wall in which the rock will be failing in shear, and the cracks will be closed.

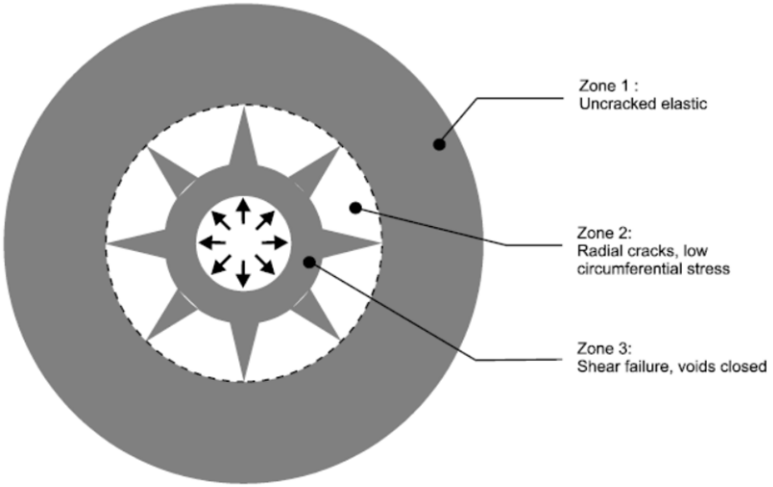


Figure H.1.21: The Spread of Radial Cracking

Figure H.1.22a presents the resulting stress path when radial cracks developed before testing. In this case, no tension can develop. If the shear strength of the rock is too high to fail under the maximum pressure of the 95-mm HPD then the pressure/expansion curve will have the form shown in Figure H.1.22b. There is a distinct change of curvature when the crack forms and opens. If the pressure is reduced the curve will retrace itself as the material is behaving elastically at all times. However, the conventional method for determining the shear modulus will only be appropriate for the initial part of the curve on Figure H.1.22b, not the upper section.

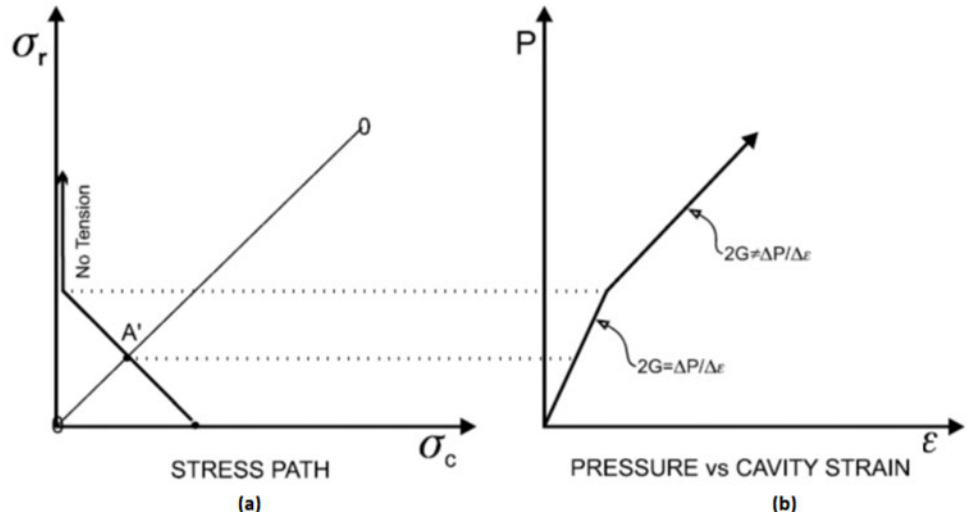


Figure H.1.22: The Influence of Existing Radial Cracking

If existing cracking does not dominate then as soon as a crack forms, the stress path will shoot step (point B to point C in Figure H.1.18). This usually appears on the pressure/strain plot as a sudden increase in expansion and this behaviour is frequently observed in hard rocks near the surface. In view of the erratic nature of the tensile strength several abrupt steps are typically seen in the pressure/expansion curve as the pressure increases. It is reasonable to assume that the lowest limit of tensile stress is denoted by the onset of "cracking".

Figure H.1.23a and Figure H.1.23b presents the stress path and the pressure/expansion curve for tensile failure in a material of variable tensile strength.

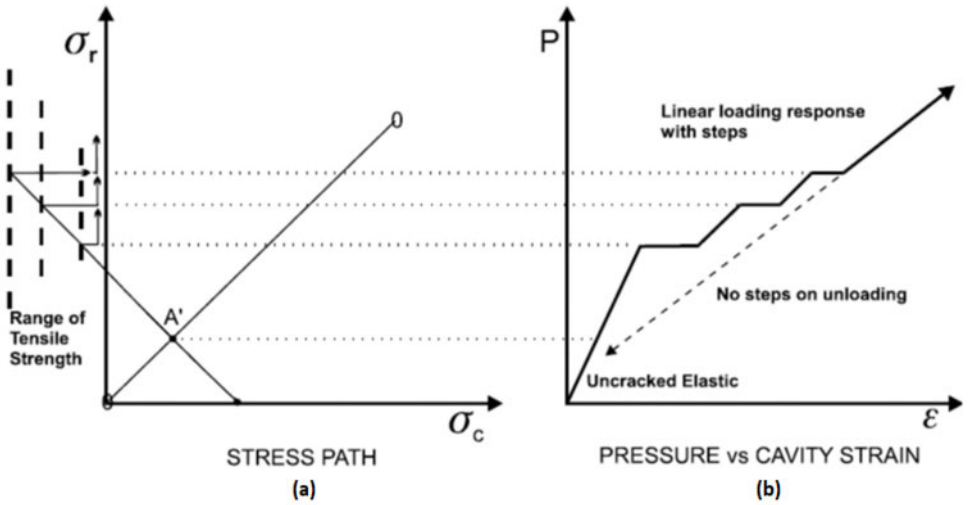


Figure H.1.23: Tensile Failure in a Material of Variable Tensile Strength

The pressure/expansion curve will have the form shown in Figure H.1.23b. In general, it will be a straight line containing small steps but with no significant increase in strain (unless or until the rock begins to fail in shear). During unloading the curve will follow a similar path to the loading except that it will be smooth, without steps. However, if during loading the cracks become filled with rock cuttings then the unloading curve will be much stiffer than the loading curve as presented in Figure H.1.24. Both tension and shear failure could occur with the cracks being filled before unloading.

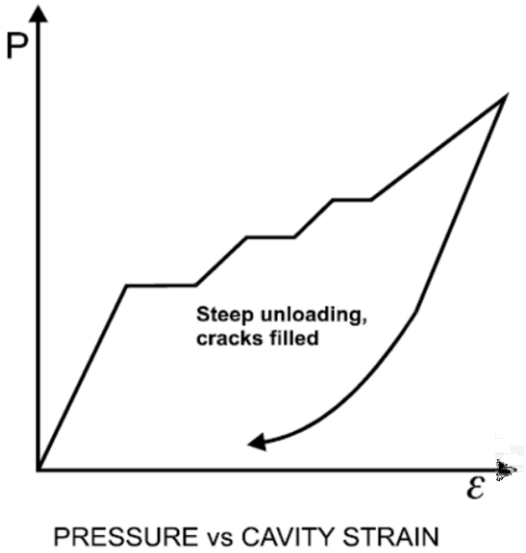


Figure H.1.24: Crack Filling

All Models: Influence of Water in the Hole

The various models for determining material properties from pressuremeter tests all assume dry conditions during testing. However, water is typically present as a consequence of the drilling process or from the hydrostatic water pressure (i.e. testing below the water table).

If the hydrostatic water table is near the surface then pressure will exist throughout the formation. The various models still apply with the provision that the stresses considered must be effective rather than total.

Figure H.1.25 presents the stress path followed during a test performed with water flowing freely throughout the test zone.

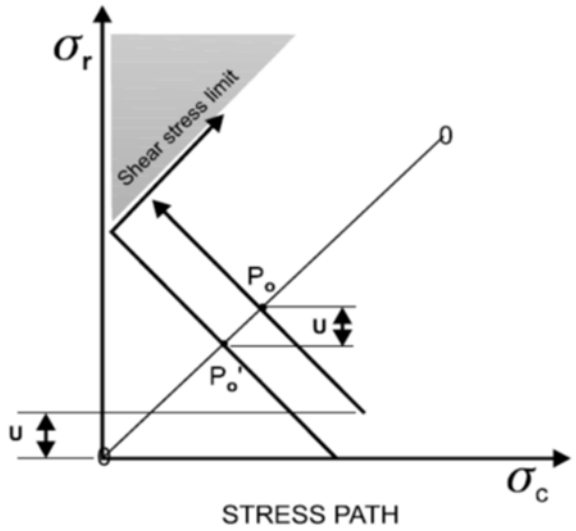


Figure H.1.25: The Effective Stress Path

Test may be performed where the borehole is full of water. However, if the natural water table is below the borehole base, the in situ hydrostatic pressure is exceeded by the hydrostatic pressure of the borehole water column. Assuming low permeability rock strata, any rock fractures opened during pressuremeter testing may be extended due to borehole fluid pressure, without the requirements of additional radial pressure from the pressuremeter.

This is a time dependent phenomenon. If the pressures are held constant then the displacements that result are likely to be a combination of creep, consolidation and crack growth.

Conclusion

A simple model has been proposed constructed from three material parameters: shear strength, tensile strength, and in situ lateral stress. The simple model can have at least six distinct forms. Figure H.1.26 presents the basic forms of pressure-strain curve for a pressuremeter test.

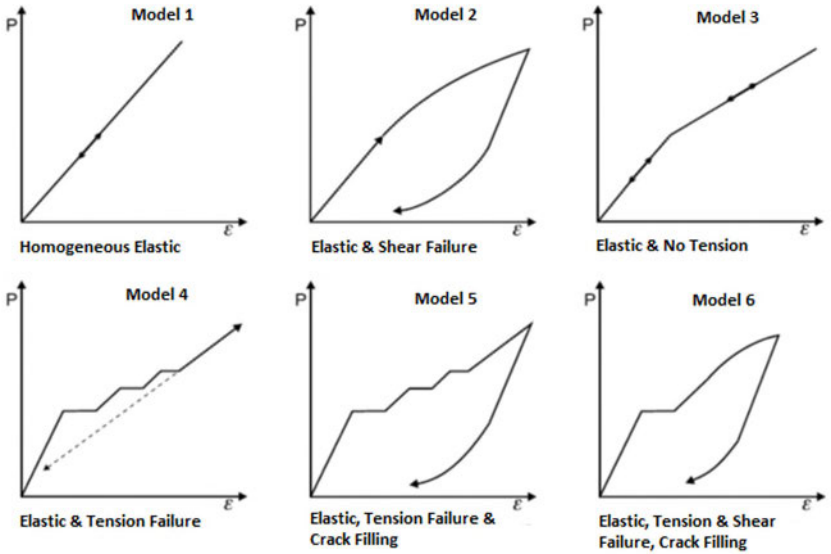


Figure H.1.26: The Basic Forms of Pressure-Strain curve for a Pressuremeter Test

Each model may be generally summarised as:

- Model 1: Homogeneous Elastic;
- Model 2: Elastic and shear failure only (which implies high lateral stress);
- Model 3: Elastic and no tension allowed (low lateral stress);
- Model 4: Elastic and tension failure (low lateral stress);
- Model 5: Elastic and tension failure with crack filling (low lateral stress);
- Model 6: Elastic, tension and shear failure, with crack filling (low lateral stress).

The principal use of these diagrams is to aid judging when a particular analysis is appropriate, and when it is not.

H.1.1.6 Interpretation of Pressuremeter Test

The following section gives detail of the methods used to derive the results of pressuremeter tests on this contract. This section is illustrated with example from tests performed for this contract. This section has been developed by Cambridge Insitu over the last decades and they have all the credits regarding the pressuremeter analysis developed on the following sections.

Assumption for Interpretation of Cone Pressuremeter Test

The primary assumption conditioning the analysis of the cone pressuremeter test is that the installation of the pressuremeter behind a cone results in the soil experiencing a repeatable amount of disturbance. This repeatable disturbance can be modelled as a cylindrical cavity expansion that starts at zero initial radius and raises the stress in the surrounding material to the limit condition.

The geometry of the cone is such that some relaxation from this condition takes place prior to the pressuremeter arriving at the same level in the ground. The pressuremeter needs to re-establish the maximum stress state reached by the cone and then expand the cavity even further so that the elastic/plastic boundary is extended and all material between the boundary and the pressuremeter is in a uniform plastic condition. Now the direction of loading can be reversed and what follows will be the response of the elastic material beyond the boundary that was on the point of yielding when the loading direction changed.

Only data obtained following stress reversal has the potential for giving realistic parameters – the loading phase is concerned only with erasing the stress history of the insertion process.

The comparison of the passage of the cone to a cylindrical cavity expansion is an approximation. The stress distribution behind the cone tip is complex, but provided that the pressuremeter is located 10 diameters behind the cone tip the approximation seems to be justified (Teh 1987).

Although the Cone Pressuremeter is sometimes referred to as a Full Displacement Pressuremeter (FDPM), the two tests are not the same, even though the probe itself is similar. The FDPM is used in a pre-bored hole and needs to increase the cavity diameter by some 50% during the test in order that the material surrounding the pressuremeter can be considered to be at or near limit pressure. For the Cone Pressuremeter, the 'cavity inflation' to limit pressure has already been accomplished by the passage of the cone tip; the CPM needs only to inflate far enough to overcome the slight relaxation that is inherent in the cone geometry, and to re-establish the radial stress as the major principal stress. This is normally achieved after a fairly modest inflation of about 10%.

Material Properties from Pressuremeter Tests in Soil

There are two established approaches to the interpretation of expansion pressuremeter test data. The first, developed by Menard, uses empirical correlations to allow measured co-ordinates of pressure and displacement to be inserted directly into design equations. This approach depends on a standardised test procedure and a large data bank of pressuremeter tests correlated with observations of the response of finished structures.

The second approach, which will be described briefly here and is the usual way of interpreting the pressuremeter test in the UK, relies on solving the boundary problem posed by the pressuremeter test.

The aim of the pressuremeter test is to expand a long cylindrical cavity within an undisturbed mass of soil. Fundamental strength properties of the material can be deduced from measurements made of cavity pressure and displacement. In practice no instrument can be placed into the ground without affecting the surrounding soil. In the case of a pre- bored pressuremeter test the disturbance is stress relief and can often be allowed for in the analysis procedure.

The Pressuremeter Test in Soils – Initially Elastic Response/Failure in Shear

Consider that the soil is homogeneous, and shows simple elastic behaviour before failing in shear. The stress path followed by an element of soil adjacent to the cavity is given in Figure H.1.27 and the corresponding pressure /strain curve is shown alongside.

The radial stress, ideally at the in situ horizontal stress for a perfect installation, increases at the same rate as the circumferential stress decreases, regardless of whether the material is deforming under plane strain or plane stress conditions. The line 0 - 0 represents stress equality, so that in the ideal case considered here the point P_0 is the in situ lateral stress.

Once the radial stress increases above the in situ stress then the shear stress in the soil at the cavity wall will increase. If the in situ lateral stress is low, then it is possible that the circumferential stress would go into tension. However in this example the in situ stress is high enough to ensure that the shear stress limit is reached before tensile stresses can be generated.

The pressure necessary to initiate shear failure is denoted P_f in Figure H.1.27. After this pressure the strain rate shows a substantial increase, and the form of this part of the pressure/strain curve is a function of the shear strength of the material.

Radial stress and circumferential stress now increase together. If the shear stress limit is constant, and is not influenced by pressure, and if the material deforms at constant volume, then the failure shear strength can be determined by the analytical solution developed by Gibson & Anderson.

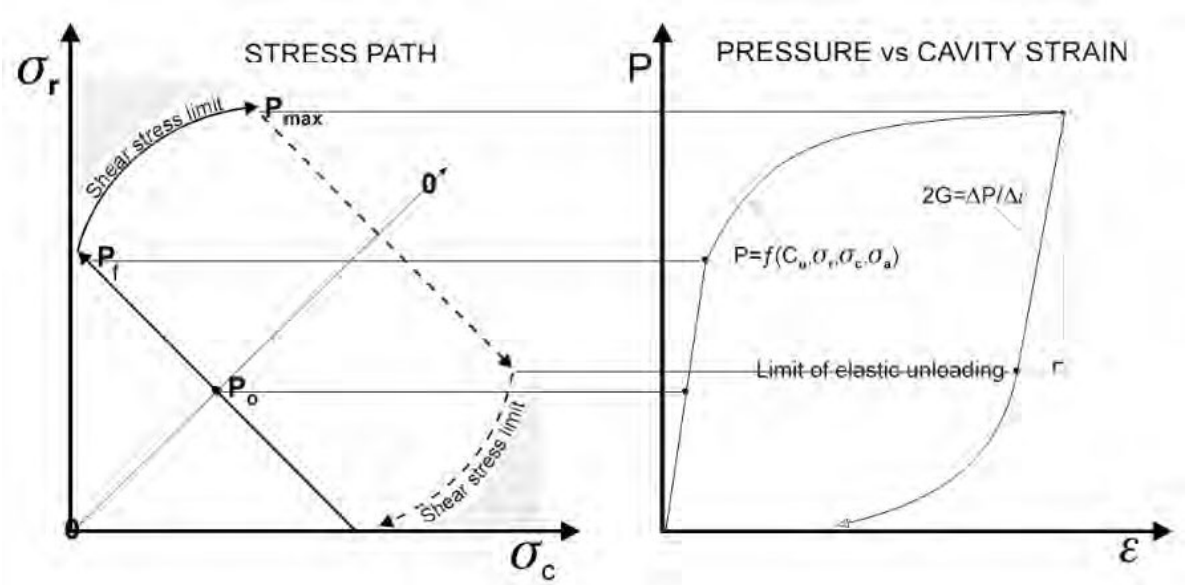


Figure H.1.27: Elastic Response Followed by Failure in Shear

Before the shear stress limit is reached the pressuremeter response is elastic, both in loading and unloading. Assuming the soil deforms at a constant modulus and the installation is perfect then the slope of the initial loading path gives the shear modulus of the material, using the classic procedure of Bishop, Hill & Mott (1945). The diagram also indicates that reversing the direction of loading causes an initial elastic response giving an alternative means of deriving the shear modulus. This implies that small cycles of unloading and reloading taken anywhere in a test after reaching the shear stress limit can be used as a source of stiffness information (Hughes 1982).

As Figure H.1.27 suggests, the complete unloading of the pressuremeter can also be used to give strength and stiffness parameters comparable with those obtained from the loading path.

From the right hand side of the stress diagram it is apparent that the pressuremeter provides only a limited set of the necessary information for resolving the stresses and strains around the probe. Specifically it gives the changes in radius of the borehole wall (a special case of hoop strain) and the corresponding changes in radial stress at the borehole wall. There are no data for hoop stress or radial strain or movements in the vertical direction. Test procedures are chosen to allow the missing data to be inferred – for example an undrained expansion means shearing occurs at constant volume and hence changes of radial strain must be equal and opposite to changes in hoop strain. The unseen vertical axis data are rendered redundant by making pressuremeters long with respect to their diameter, allowing plane strain expansion to be assumed.

Analysis for In Situ Lateral Stress

Table H.1.4 is a list of the different terms used on section *Analysis for In Situ Lateral Stress*.

Table H.1.4: Symbols, Unit and definition for section *Analysis for In Situ Lateral Stress*

Symbol	Unit	Term or Definition
c_u	[kPa]	Undrained shear strength
k_0	[-]	Coefficient of earth pressure at rest
p_f	[kPa]	Yield stress
p_0	[kPa]	Effective cavity reference pressure
u_a	[kPa]	Water pressure due to water depth z_a. Water stress above the sea bed.
u_b	[kPa]	Water pressure due to water depth z_b. Water stress below the sea bed
u_0	[kPa]	Ambient pore water pressure
γ_s	[kPa.m^{-1}]	Saturated unit weight of soil
γ_w	[kPa.m^{-1}]	Saturated unit weight of water
σ_{H0}	[kPa]	In situ lateral stress
σ_{V0}	[kPa]	In situ vertical stress or overburden stress
σ'_{H0}	[kPa]	Effective in situ lateral stress

Symbol	Unit	Term or Definition
σ'_{v0}	[kPa]	Effective in situ vertical stress
τ_y	[kPa]	Shear stress at first yield

Overview

The expansion pressuremeter test is a sequence of measured co-ordinates of pressure and displacement of the cavity wall.

An origin for the expansion must be determined to resolve the pressure and displacement sequence. For methods that imply stress relief, the origin is taken to be the point where in situ conditions are restored to the cavity. An estimate of the in situ lateral stress is made, and the measured radius of the cavity at the point where the in situ lateral stress is restored is used to convert subsequent displacements to strain.

For pre-bored pressuremeters it is possible to recognise by inspection the shear stress limit (point P_f in Figure H.1.27), as this is indicated by the onset of a non-linear response. An iterative procedure first suggested by Marsland and Randolph (1977) allows the in situ lateral stress to be inferred. The method is not valid for tests in sands or material with non-linear elastic properties, which is considered to rule out all soils type. However, it is typical to run the analysis as it may set an upper limit to the estimate of in situ lateral stress.

The method is outlined by Mair and Wood (1987). This method can provide a value for the cavity reference pressure, P_0. It is not possible to measure the in situ lateral stress σ_{h0} because the act of coring and placing instrumentation always results in disturbance to the borehole wall. It is a matter of judgement whether a particular value for P_0 is an appropriate value for σ_{h0} . It may be checked for plausibility by carrying out a K_0 calculation, or by checking that the derived vertical/horizontal anisotropy can be supported by the material shear strength:

$$\sigma_{h0} - \sigma_{v0} < 2c_u$$

Equation H.1.11

Where:

σ_{h0} = the in situ lateral stress [kPa]
σ_{v0} = the in situ vertical stress [kPa]

c_u = the undrained shear strength [kPa]

A more complex approach uses the full set of parameters derived from a pressuremeter test within a model and determine whether the measured field curve can be recovered (curve matching process). The input data set is then adjusted in a controlled manner until the best match for all parameters is obtained.

Marsland & Randolph (1977) Analysis

Marsland and Randolph (1977) analysis identifies the onset of plastic behaviour (i.e. the yield stress P_f). Only three tests in this contract have been analysed with this method.

The theory is as follows:

- Under in situ lateral stress conditions, the soil response is simple elastic manner and therefore the total pressure/cavity strain plot will be linear;
- Elastic behaviour will cease when the undrained shear strength, c_u, is exceeded by in the wall adjacent to the cavity. The pressure/strain plot will begin to curve (see Figure H.1.27).
- The simple elastic response can be expressed as:

$$P_f = P_0 + c_u$$

Equation H.1.12

Where:

P_f = the yield stress [kPa]
P_0 = the in situ lateral stress [kPa]
c_u = the undrained shear strength [kPa]

- Based on Equation H.1.12, it follows that in situ lateral stress, P_0 , can be deduced by iteration. Initially an approximation is made of a value for P_0 . Using this approximation to define a temporary strain origin, a total pressure vs log volumetric strain plot is generated in order to derive a value for c_u .The sum of these two parameters is compared with the selected value of P_f. The P_0 value is adjusted, until a good match is determined.

A modified approach to the Marsland and Randolph (1977) method is used (Hawkins et al (1990)) as a response to the fact that perfectly plastic deformation is not a realistic model for many materials tested and yield may occur at a different shear stress than the large strain shear strength. Hawkins et al (1990) suggested that the most appropriate choice was the value of shear stress at the apparent onset of plasticity. Equation H.1.12 becomes:

$$P_f = P_0 + \tau_f$$

Equation H.1.13

Where:

P_f = the yield stress [kPa]
P_0 = the in situ lateral stress [kPa]
τ_f = the shear stress at the apparent onset of plasticity [kPa]

Figure H.1.28 shows an example of the modified Marsland & Randolph (1977, 1990) analysis.

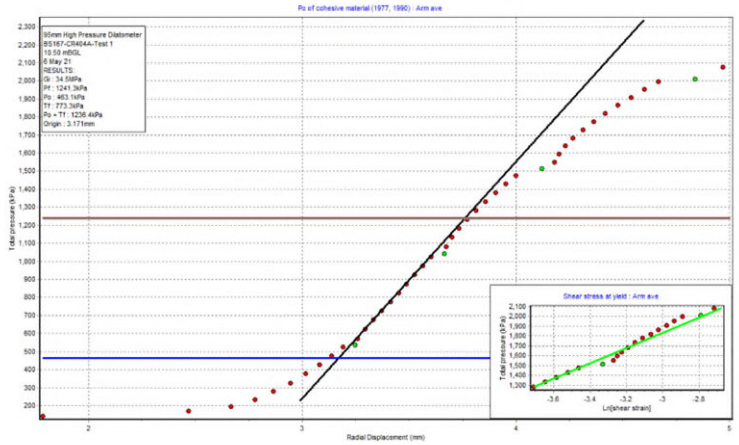


Figure H.1.28: An Example of the Modified Marsland & Randolph (1977, 1990) Analysis (not from this contract)

The τ_f can be obtained from a total pressure vs log volumetric strain plot by selecting the slope at the pressure and strain corresponding to the choice of P_f (typically using the Palmer (1972) method to identify the mobilised shear stress at failure).

The analysis is implemented graphically, using a number of rulers to identify significant points on the curve. However, there are limitations:

- The assumption of simple elastic response: most soils exhibit marked non-linear elastic characteristics, so that the pressure at which the material appears to become fully plastic is more than one increment of shear strength above P_0;
- The original analysis was to interpretate pre-bored pressuremeter tests where the process of forming the pocket results in the complete unloading of the cavity prior to the test commencing. Therefore, the strata has experienced stress relief. It is arguable whether in these circumstances the yield point remains unchanged as more than elastic unloading has taken place. However, the form of such tests does give an unambiguous onset of plasticity.

There is empirical evidence that regardless the failure mode, identifying the yield stress and back calculating the in situ stress works for all test paths, provided the apparent mobilized shear stress is taken at failure, not large strain.

Iteration from tensile Failure (Rock Analysis)

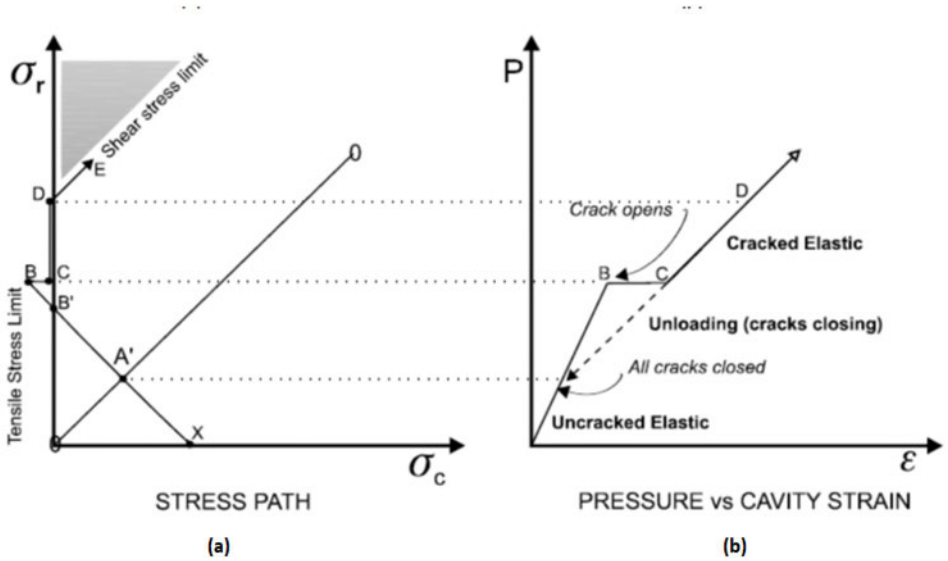


Figure H.1.29: Failure in Tension Prior to Failure in Shear

It is possible to infer values for cavity reference pressure for tests in rock showing tensile failure. Figure H.1.29b presents the theoretical response of a pressuremeter loading curve influenced by tensile failure. Figure H.1.29a plots circumferential against radial stress, and Figure H.1.29b presents the theoretical pressuremeter response curve. Point A' is the in situ lateral stress. If the point B can be identified, then B/2 is the largest value A' can be. If the tensile strength were known (B – B') then a better approximation of A' could be given.

Figure H.1.30 presents an example of tensile failure (not from that contract).

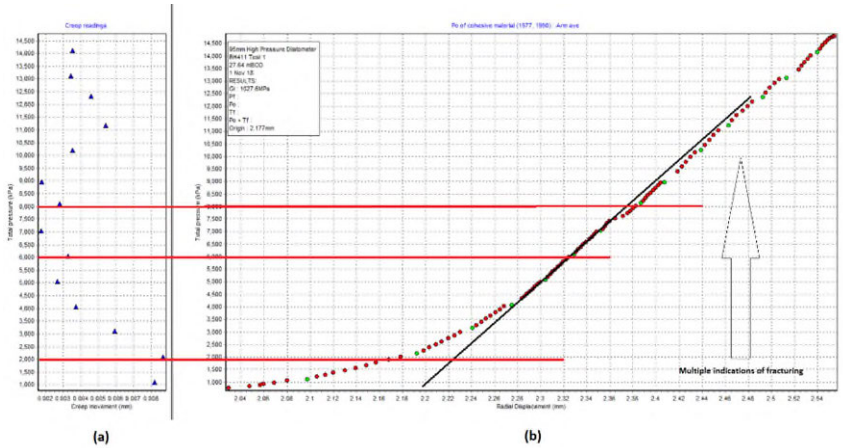


Figure H.1.30: An Example of Tensile Failure (not from this contract)

As presented on Figure H.1.30a, creep readings confirm that something significant has taken place. Fractures can be deducted when the three next things happen successively:

- Creep reading falls near to zero;
- Creep reading suddenly increases;
- Creep reading reduces.

The zone inferred as possible fractures implies that the in situ lateral stress can be no greater than 1-MPa. Figure H.1.30b suggests the ground is more complex than that idealised sketch in Figure H.1.29, with the material having a range of tensile strength. The difficulty is to identify the first failure, which is likely to be at a low stress level and can be difficult to infer from the pressuremeter forming itself to the shape of the test pocket. This procedure must always over-estimate the in situ lateral stress as the tensile strength is unknown and therefore modelled as zero.

Inspection of the Initial Loading (Rock Analysis)

Figure H.1.31 presents the procedure to estimate the in situ lateral stress from test curve inspection. The procedure simply identifies the focus of the initial part of the test curve. However, it is often the case that the technique does appear to coincide with a greater point of curvature on the final contraction. It can also identify when an unload/reload cycle is unlikely to be valid. If the values chosen in Figure H.1.31 for the best

estimate of in situ lateral stress and the strain origin are correct, then the first cycle is taken at “negative” cavity strain and this may account for it having a significantly less steep response than the second cycle.

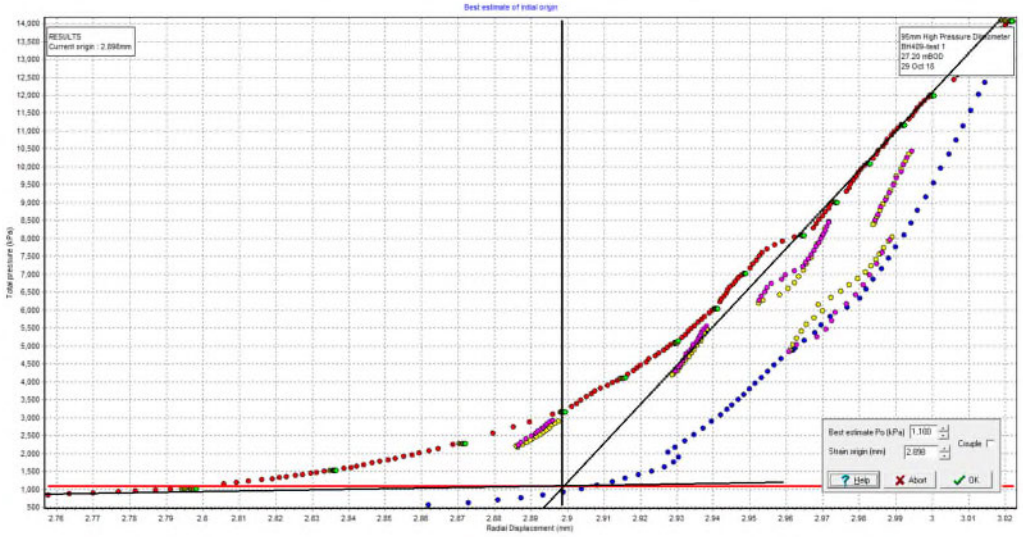


Figure H.1.31: Cavity reference Pressure from Inspection (not from this contract)

Deriving In Situ Lateral Stress by Synthesis

The doubt concerning the appropriateness of using the measured values for cavity reference pressure p_0 as best estimates for the in situ lateral stress σ_{h0} mean that other methods for inferring plausible values are required. We use two models, depending on the manner of the loading. For an undrained test the procedure introduced by Whittle (1999) is used. This assumes an undrained cavity expansion and contraction in a non-linear elastic/perfectly plastic medium. A single set of parameters matches both parts of the test curve. The procedure is rigorous with only one degree of freedom, the ability to adjust the in situ lateral stress.

For drained expansions in c’-phi material (where cohesion can be zero) a modified version of the Carter et al (1986) solution is used. The modified version assumes a non-linear elastic/perfectly plastic medium, and extends the solution to cover the elastic part of the final unloading.

There are two degrees of freedom in the model, because cohesion cannot be independently determined and must also be adjusted in addition to the in situ lateral stress.

These procedures can be applied to pre-bored pressuremeter test data but the fit to the loading will always be questionable.

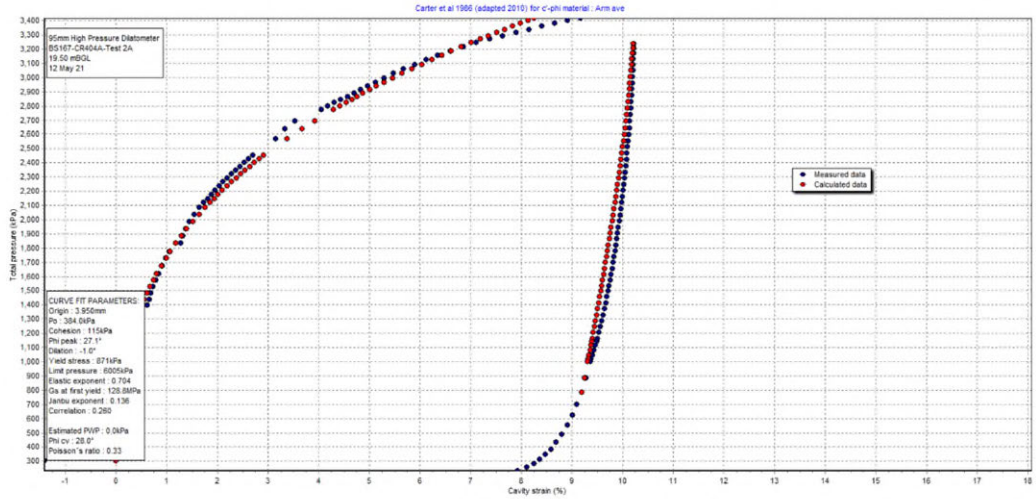


Figure H.1.32: Using a Drained Non-linear Elastic/perfectly Plastic Solution (not from this contract)

It is only possible to derive one value for in situ lateral stress from this method because isotropy of soil properties is a fundamental assumption. Because the procedure makes uses of all the evidence it is the preferred method for deriving the in situ lateral stress.

A Note About $\mathbf{K_0}$ – the Coefficient of Earth Pressure at Rest

The following statement is the text book description of the relationship between effective stress and the coefficient of earth pressure at rest K_0.The ambient water pressure u_0 is deducted from both the total in situ vertical stress σ_{v0} and the total in situ horizontal stress σ_{h0} to give K_0.

"*The principle of effective stress is fundamentally important in soil mechanics. It must be treated as the basic axiom, since soil behaviour is governed by it.*

Changes in water level below ground (water table changes) result in changes in effective stresses below the water table. Changes in water level above ground (e.g. in lakes, rivers, etc.) do not cause changes in effective stresses in the ground below.

The coefficient of earth pressure at rest can be defined as that state of stress equilibrium where there are no strains in the lateral direction. If the effective vertical stress is unaffected by changes in the water level above ground level then the same must be true of the effective lateral stress, otherwise the condition of no lateral strain will be violated. Therefore whatever water pressure u is being deducted from the total vertical stress to give effective vertical stress is the same u that must be deducted from the total lateral stress."

Source: http://environment.uwe.ac.uk/geocal/SoilMech

The coefficient of earth pressure is defined as follows:

$$K_0 = \frac{\sigma_{h0} - u_0}{\sigma_{v0} - u_0}$$

Equation H.1.14

Where:

K_0 = the coefficient of earth pressure at rest [kPa.m^{-1}]
σ_{h0} = the total in situ horizontal stress [kPa]
σ_{v0} = the total in situ vertical stress [kPa]
u_0 = the ambient water pressure [kPa]

When a pressuremeter test is performed on a submerged ground, care has to be taken to establish what we are actually measuring to get the appropriate parameters for K_0.

Figure H.1.33 shows the different stress applied in a submerged ground:

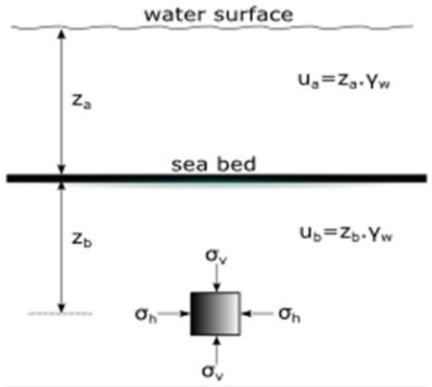


Figure H.1.33: Effective Stresses on an Element of Soil

Figure H.1.33 is the arrangement for a submerged soil, where u_a is the water pressure due to water depth z_a and u_b is water pressure due to soil depth z_b.

The total in situ vertical stress, σ_{v0}, is the weight of everything above the element of soil in Figure H.1.33, and is defined as follows:

$$\sigma_{v0} = z_b.\gamma_s + u_a$$

Equation H.1.15

Where:

σ_{v0} = the total in situ vertical stress [kPa]
z_b = the soil depth [m]
γ_s = the saturated unit weight of soil [kPa.m^{-1}]
u_a = the water stress above the sea bed = $z_a.\gamma_w$ [kPa]
z_a = the water depth [m]
γ_w = the unit weight of water [kPa.m^{-1}]

The effective in situ vertical stress, σ'_{v0}, is defined as follows

$$\sigma'_{v0} = \sigma_{v0} - u_a - u_b$$

Equation H.1.16

Where:

σ'_{v0} = the effective in situ vertical stress [kPa]
σ_{v0} = the total in situ vertical stress [kPa]
u_a = the water stress above the sea bed = $z_a.\gamma_w$ [kPa]
u_b = the water stress below the sea bed = $z_b.\gamma_w$ [kPa]
γ_w = the unit weight of water [kPa.m^{-1}]

Because u_a cancels in the calculation of effective vertical stress, Equation H.1.16 reduces to:

$$\sigma'_{v0} = z_b.\gamma_s - u_b$$

Equation H.1.17

Where:

σ'_{v0} = the effective in situ vertical stress [kPa]
z_b = the soil depth [m]
γ_s = the saturated unit weight of soil [kPa.m^{-1}]
u_b = the water stress below the sea bed = $z_b.\gamma_w$ [kPa]

Or:

$$\sigma'_{v0} = z_b(\gamma_s - \gamma_w)$$

Equation H.1.18

Where:

σ'_{v0} = the effective in situ vertical stress [kPa]
z_b = the soil depth [m]
γ_s = the saturated unit weight of soil [kPa/m^3]
γ_w = the unit weight of water [kPa/m^3]

Equation H.1.17 and Equation H.1.18 make no mention of the water above the sea bed and satisfy the condition that the effective vertical stress is unaffected by changes in the water level above bed level. However, the total vertical stress is affected by the water level and similarly the total in situ horizontal stress σ_{h0}.

σ_{h0} is a locked-in stress not directly related to gravity and so is not easily predicted. The head of water above the soil element will add to σ_{h0}, and this combination is the stress determined from the pressuremeter test, referred to as cavity reference pressure p_0. In the context of a cavity expansion it is the value of total stress at the cavity wall where total radial stress and total circumferential stress are equal for the first time. If the process of forming the cavity has not altered the in situ stress state, then the following applies:

$$p_0 = \sigma_{h0} + u_a$$

Equation H.1.19

Where:

p_0 = cavity reference pressure [kPa]
σ_{h0} = the total in situ horizontal stress [kPa]
u_a = the water stress above the sea bed = $z_a . \gamma_w$ [kPa]

The effective in situ horizontal stress is the cavity reference pressure less the contribution of the water pressure:

$$\sigma'_{h0} = p_0 - u_a - u_b$$

Equation H.1.20

Where:

σ'_{h0} = the effective in situ horizontal stress [kPa]
p_0 = cavity reference pressure [kPa]
u_a = the water stress above the sea bed = $z_a.\gamma_w$ [kPa]
u_b = the water stress below the sea bed = $z_b.\gamma_w$ [kPa]

Of course this could be written in a form similar to Equation H.1.17:

$$\sigma'_{h0} = \sigma_{h0} - u_b$$

Equation H.1.21

Where:

σ'_{h0} = the effective in situ horizontal stress [kPa]
σ_{h0} = the total in situ horizontal stress [kPa]
u_b = the water stress below the sea bed = $z_b.\gamma_w$ [kPa]
z_b = the soil depth [m]
γ_w = the unit weight of water [kPa.m^{-1}]

This satisfies the statement that the contribution of water above ground level does not affect the effective stress but masks the fact that σ_{h0} is never measured. In practice, then, it turns out to be necessary to know u_a, the pressure of the water above the ground surface.

K_0 is calculated using the results of Equation H.1.17 and Equation H.1.20:

$$K_0 = \frac{\sigma'_{h0}}{\sigma'_{v0}}$$

Equation H.1.22

Where:

K_0 = the coefficient of earth pressure at rest [kPa.m^{-1}]
σ'_{h0} = the effective in situ horizontal stress [kPa]
σ'_{v0} = the effective in situ vertical stress [kPa]

p_0 is often treated as being synonymous with σ_{h0}. If there is no water above the ground surface then for a perfectly installed pressuremeter they might be the same thing. For submerged material this cannot be true.

Analysis for Shear Modulus

Table H.1.5 is a list of the different terms used in section *Analysis for Shear Modulus*.

Table H.1.5: Symbols, Unit and definition for section *Analysis for Shear Modulus*

Symbol	Unit	Term or Definition
E_H, E_V	[GPa]	Young's moduli in the horizontal or vertical direction
G_{HH}, G_{VH}	[MPa]	Shear moduli for transversely isotropic material
G_i	[MPa]	Initial shear modulus
G_P	[MPa]	Pressuremeter shear modulus
G_s	[MPa]	Secant shear modulus
G_T	[MPa]	Tangential modulus
G_{ur}	[MPa]	Unload-reload shear modulus
$G_{100}, G_{min}, G_{yield}$	[MPa]	Secant shear modulus at the maximum elastic strain
n	[-]	Ratio of horizontal Young's modulus to vertical Young's modulus

Symbol	Unit	Term or Definition
p_c	[kPa]	Pressure applied by pressuremeter at the cavity wall, or radial stress
α	[MPa]	Shear stress intercept
β	[-]	Elastic exponent
γ_c	[-]	Shear strain measured at borehole wall
ε_c	[-]	Cavity strain or circumferential strain, measured by pressuremeter at the cavity wall and is $(r - r_0)/r$
ν_{HH}, ν_{VH}	[-]	Poisson's ratio for transversely isotropic material
σ_{AV}	[kPa]	Plane strain mean effective stress and is $0.5 * (\sigma'_r + \sigma'_c)$
σ'_c	[kPa]	Effective circumferential stress
σ'_r and p'	[kPa]	Effective radial stress
φ'	[deg]	Peak angle of internal friction

Background

Values of stiffness in real soils, however measured, are strain level and stress level dependent. Pressuremeter stiffness is affected by the additional factor of cross anisotropy. The pressuremeter used conventionally gives shear modulus parameters of type G_{HH}, where the first suffix shows the direction of loading and the second suffix the direction of particle movement. Most design calculations that require a value for shear modulus mean in practice the independent shear modulus G_{VH}. Translating between pressuremeter values and alternative expressions for modulus is complex but worth pursuing because of the high quality of the pressuremeter measure. What follows is a brief outline of a possible approach.

There are three parts of the pressuremeter curve capable of providing information concerning shear modulus:

- From the slope of the initial elastic loading phase
- From the slope of the chord bisecting small rebound cycles
- From the slope of the first part of the contraction curve

The Initial Shear Modulus

Shear modulus can be derived from the slope of the initial part of the loading curve (see Figure H.1.34). In a pre-bored pressuremeter test, unless the probe is in good rock, this underestimates the true elastic properties of the material. The initial part of the test is affected by the process of making a pocket and the complete unloading of the cavity wall prior to starting the pressuremeter test.

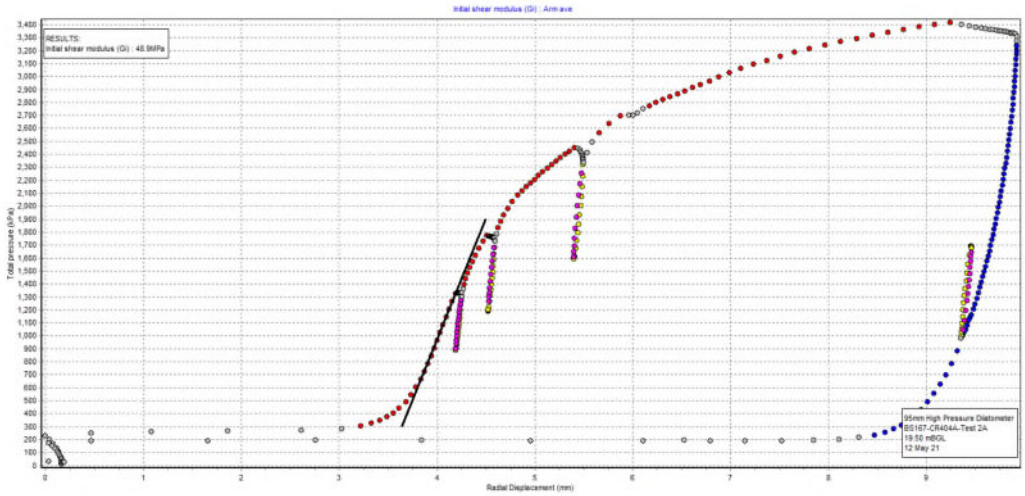


Figure H.1.34: Deriving the Initial Shear Modulus, G_i (not from this contract)

The initial shear modulus G_i is defined as follows:

$$G_i = \frac{dp_c}{2d\varepsilon_c}$$

Equation H.1.23

Where:

G_i = the initial shear modulus [MPa]
P_c = the pressure applied by pressuremeter at the cavity wall [kPa]

εc = Cavity strain measured by pressuremeter at the cavity wall [-a]

The origin for deciding cavity strain ε_c is set by the point where the projected initial modulus line cuts the displacement axis. This origin does not apply to other parts of the loading curve and each cycle of unloading and reloading uses its own local origin.

Cycles of Elastic Unloading and Reloading

Data points from an unload/reload cycle are the preferred source of stiffness parameters, because these data are a function of the 'far field' material response. The plots provided show the position of a cursor which has been placed by eye to bisect the cycle. The slope of the cursor is the gradient of the reload loop and the program uses this slope to derive a value for shear modulus. This value is quoted in the top left hand corner of the plot together with an indication of the size of the loop expressed as the change of pressure and strain, and the co-ordinate of the centre of the loop. The theoretical equation used is:

$$G_{ur} = (1 + \varepsilon_c).\frac{dp_c}{2d\varepsilon_c}$$

Equation G.1.24

Where:

G_{ur} = the unload-reload shear modulus [MPa]
P_c = the pressure applied by pressuremeter at the cavity wall [kPa]
εc = Cavity strain measured by pressuremeter at the cavity wall [-]

Figure H.1.33 shows an example of an unload-reload cycle.

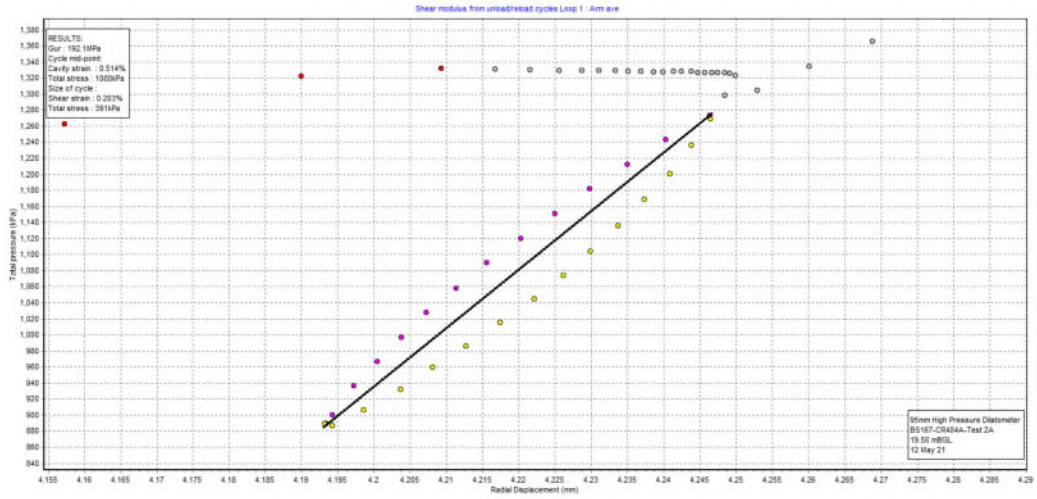


Figure H.1.35: View of an Unload-Reload Cycle (not from this contract)

In practice, using Figure H.1.35 as an example, we calculate the unload-reload shear modulus, also defined as the secant shear modulus, by calculating the gradient of the plotted line as change of pressure divided by change of displacement. This gradient is then multiplied by the displacement of the midpoint of the line added to the initial radius. The results obtained by this calculation is $2G_{ur}$. It takes account of the alteration in the strain scale represented by loops taken at different stages of the cavity expansion.

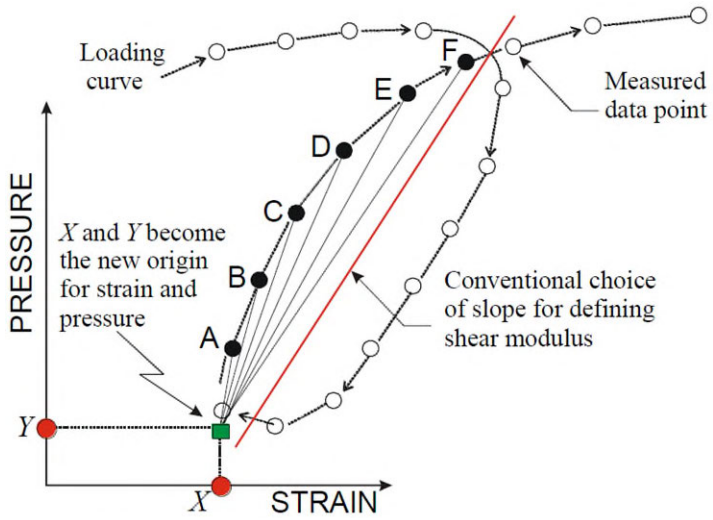


Figure H.1.36: Annotated Unload-Reload Cycle

It is important that the effects of creep (for whatever cause) be minimised before starting the cycle. Figure H.1.35 shows "deleted" points before the start of the unloading where the pressure in the probe was held for a period of time.

In practice the strain behaviour of soils below yield strain demonstrably non-linear and a power wer law has to be introduce in order to solve that problem, and so secant shear modulus is known to be as follows $G_S = \alpha {\gamma_c}^{\beta-1}$. This method is explained on the following paragraph. Although, if the response was linear elastic, then β would be equal to 1, and α would be identical to G_{ur}.

Non-linear Stiffness – Strain Response

In all soils and some rocks the stiffness/strain relationship is not linear. The unload/reload cycle can be made to describe the non-linear relationship by looking at smaller steps of pressure/strain other than the points at the extreme ends of the cycle.

For reasons explained in Whittle et al (1992) it is preferable to examine one half of the rebound cycle only, that following the reversal of stress in a loop. The lowest recorded value of stress and strain then becomes the origin for subsequent data points until the original loading path is re-joined as shown on Figure H.1.36.

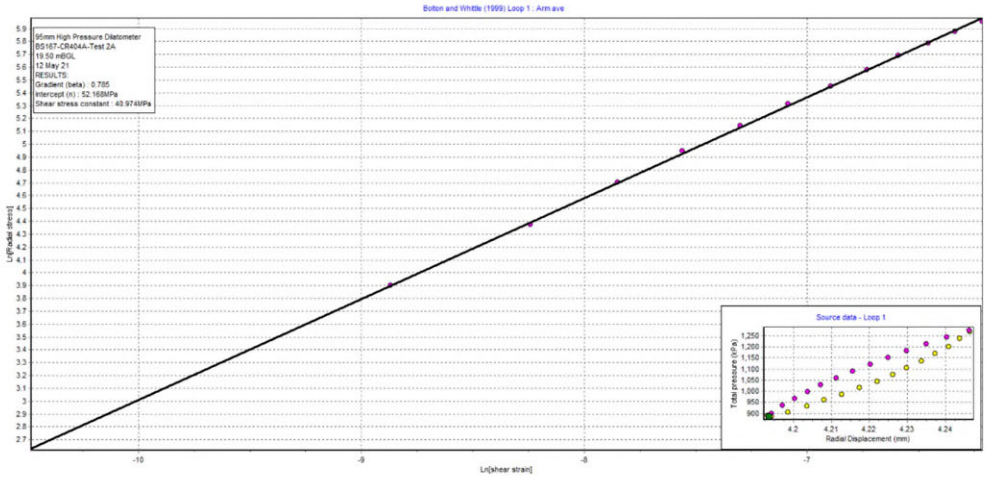


Figure H.1.37: The Non-linear Elastic Response (not from this contract)

The reloading data can be plotted on axes of log Δp_c versus log shear strain (Figure H.1.37: The Non-linear Elastic Response (not from this contract)

The gradient of the best fit straight line to the data points gives the non-linear elastic exponent, where 1 is a linear elastic response.

The linear relationship between pressure and shear strain on log scales expands to a power law as follows:

$$p_c = \eta \gamma_c^{\beta}$$

Equation H.1.25

Where:

p_c = radial stress at the cavity wall
γ_c = shear strain measured at the cavity wall
η = radial stress intercept
β = elastic exponent

Palmer (1972) shows for undrained plane strain loading the connection between cavity pressure and shear stress at any point on the pressure versus strain plot is given by the following equation:

$$\tau = \gamma_c \frac{\mathrm{d}p_c}{\mathrm{d}\gamma_c}$$

Equation H.1.26

Using the right hand side of Equation H.1.25 in Equation H.1.26 gives:

$$\tau = \gamma_c \frac{\mathrm{d}(\eta\gamma_c^{\beta})}{\mathrm{d}\gamma_c}$$

Equation H.1.27

The differential equation can now be solved as follows:

$$\tau = \gamma_c \left(\eta\beta{\gamma_c}^{\beta-1}\right) = \eta\beta{\gamma_c}^{\beta}$$

Equation H.1.28

Hence the shear stress is related to the radial stress measured at the cavity wall by the following equation:

$$\tau = \beta p_c$$

Equation H.1.29

This is precisely the result obtained by Bolton & Whittle (1999) using an alternative approach. It is convenient at this point to replace the combined coefficient $\eta\beta$ with a single term α:

$$\alpha = \eta\beta$$

Equation H.1.30

Equation H.1.28 can be turned into a general expression for secant shear modulus G_S by dividing both sides by the shear strain γ:

$$G_S = \eta\beta{\gamma_c}^{\beta-1} = \alpha{\gamma_c}^{\beta-1}$$

Equation H.1.31

And because the tangential modulus G_T is related to the secant modulus by the following relationship (Muir Wood 1990, Jardine 1992):

$$G_T = G_S + \gamma_c \frac{dG_S}{d\gamma_c}$$

Equation H.1.32

It follows from Equation H.1.31 that the solution to Equation H.1.32 is:

$$G_T = \eta\beta^2 {\gamma_c}^{\beta-1} = \alpha\beta {\gamma_c}^{\beta-1}$$

Equation H.1.33

Most tests in rock show a linear elastic response. Occasionally, where the material is friable or crushable a significant non-linear elastic response is apparent. Often loops carried out later in the loading when the applied stress is higher show the influence of grain crushing, revealed as a tendency for the exponent to become more non-linear.

If the test is drained, meaning the mean effective stress increases throughout the loading, then successive loops will have a higher intercept (Figure H.1.38). Loops taken too early in the expansion sometimes show an exponent greater than 1. This is a certain indication that the cycle has been taken too soon, and the response is a mixture of elastic and plastic strain changes.

Our practice is to give the exponent and intercept of the power law, and for comparative purposes to quote secant shear modulus parameters at three levels of plane shear strain, 10^{-2}, 10^{-3} and 10^{-4}. It is unwise to use the power law to predict modulus for strains smaller than 10^{-4}. Figure H.1.38 shows, in addition to the stiffness/strain curves, a scatter of points. These arise from applying the Palmer 1972 solution (Equation H.1.26) directly to the measured field data– inevitably, this gives a noisy result but scattered in a regular way around the curve fitted trend.

For the purpose of finding the single value of secant shear stiffness governing the pressuremeter response seen in the measured loading curve, G_{100} is required. This is the secant modulus at the maximum elastic shear strain, sometimes termed G_{min} or G_{yield}. It is probably too conservative a value for design purposes.

There is an alternative way of deriving G_S and G_T from pressuremeter unload/reload cycles, what might be described as the transformed strain approach. If the data points of an unload/reload cycle are used to derive a pressuremeter shear modulus G_P (in effect $\Delta p_c/\Delta\gamma_c$) curve then Jardine (1991) gives two empirically derived expressions for G_S and G_T. This method will not be developed in this report.

Stress Level

Figure H.1.38 is an example of a test in drained material where due to the changing mean effective stress the stiffness increases with successive loops.

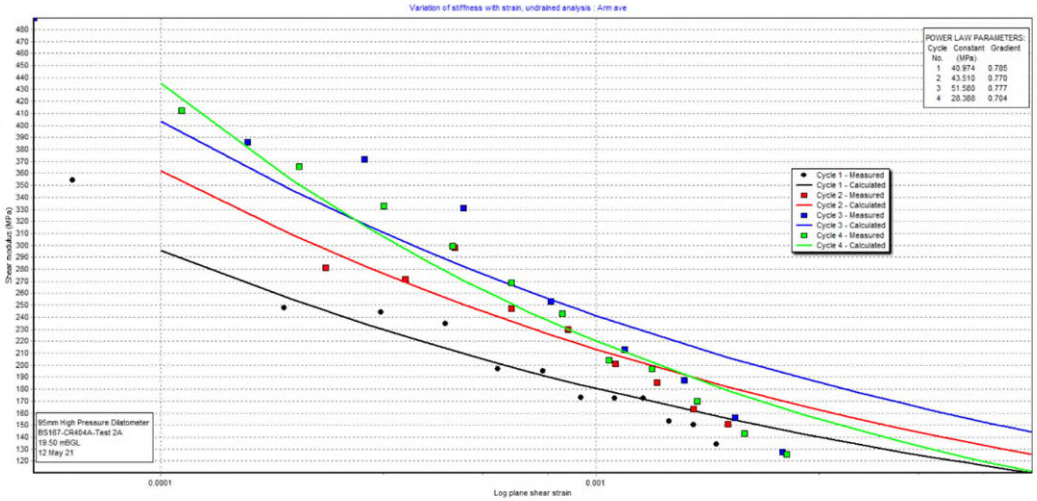


Figure H.1.38: The Effects of Stress Level on Stiffness, Drained Test (not from this contract)

There are procedures for normalising the stiffness curve to a common stress level, usually the effective in situ lateral stress. It is complex because both strain and stress dependency have to be incorporated. Figure H.1.39 shows the reloading data from five loops from a test in sand (not from this contract) plotted against log shear strain.

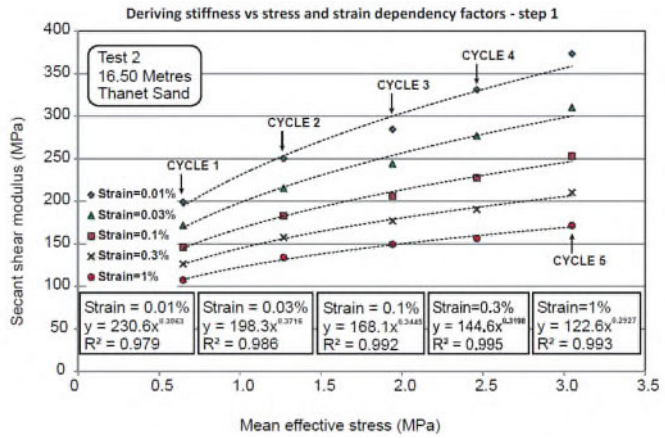


Figure H.1.39: Isolating Stress Dependency - Step 1

The cycles were taken at approximately 0.5-MPa intervals throughout the loading, and there is a requirement here to normalise the data to a common stress level.

Whittle & Liu (2013) give a method for doing so based on Bellotti *et al* (1989) but taking account of varying strain level. Their solution can be written as follows:

$$G_s = A\sigma_{av}^n$$

Equation H.1.34

Where:

$A = M_1.\ln(\gamma) + C_1$
$n = M_2.\ln(\gamma) + C_2$
σ_{av} =Plane strain mean effective stress [kPa] = $= \frac{1}{2}(\sigma_r' + \sigma_c')$

The parameters M_1, M_2 and C_1, C_2 are discovered as follows – they are presented here graphically but the process is a series of regression analyses that are carried out in practice by calculation.

1) Start by calculating the mean effective stress σ_{av} at the start of each loop. The effective radial stress p' is measured (and the peak angle of friction has to be assumed or calculated) and the calculation is as follows:

$$\sigma_{av} = \frac{\mathrm{p}'}{1 + \sin\varphi'}$$

Equation H.1.35

Where:

φ' = the peak angle of internal friction [deg]

2) For each loop, using the respective α and β values, calculate the modulus at a minimum of three strain levels, typically 10^{-4}, 10^{-3} and 10^{-2}. Plot modulus against effective stress. For each strain level there is a power law trend. Figure H.1.39 is an example, taken from Whittle & Liu (2013).

3) Take the constant terms of the three power laws and plot these against strain, similarly with the exponents. From these two trends obtain the constants and gradients of two power laws that give the parameters M_1 and C_1, and M_2 and C_2. See Figure H.1.40, which uses the results quoted in Figure H.1.39.

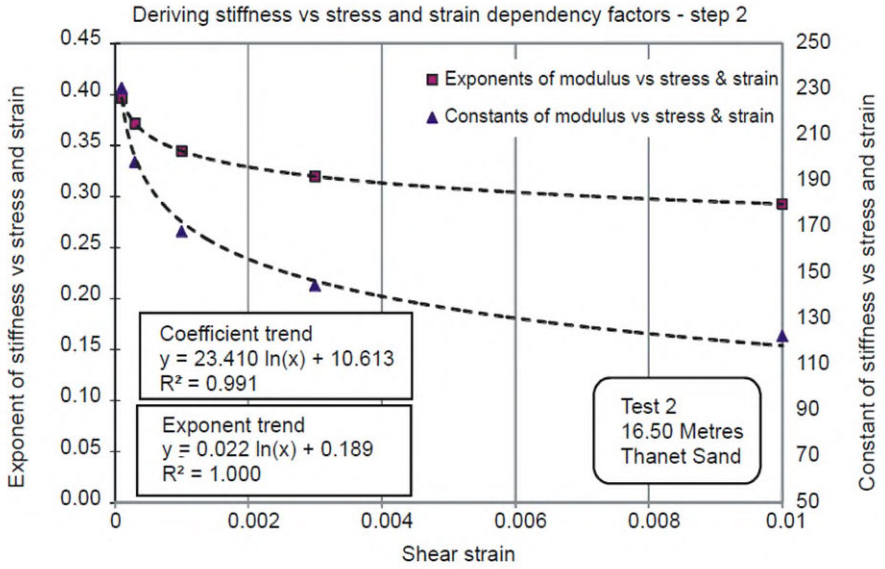


Figure H.1.40: Isolating Stress Dependency - Step 2

The example test, treated in this way in the two figures, gives the correlation coefficient for each step and as seen the agreement is good. Variations are predominantly due to the simplicity of the calculation of the mean effective stress, where one value for peak angle of internal friction is used throughout. The method is slightly dependent on the quality of the analyses that have been carried out to determine the friction angle. In addition, using the result to determine the modulus at the effective in situ stress depends on knowing that stress.

Cross Hole Anisotropy

The pressuremeter test gives values for G_{HH}, the shearing stiffness in the horizontal plane. This is directly applicable to the analysis of radial consolidation or cylindrical cavity expansion due to pile insertion. G_{VH} is applicable to all shearing which has an element of deformation in the vertical plane, such as under a footing or round an axially loaded pile.

To convert from G_{HH} to G_{VH} some relationship between the two must be assumed. Wroth *et al* (1979) suggest that anisotropy arises from two causes:

- Structural anisotropy due to the deposition of soil on well-defined planes

- Stress induced anisotropy, due to the differences in normal stress acting in different directions.

The second cause implies the stiffness in any direction will be a function of the effective in situ stress in that direction, ie a function of K_0.

It can be shown the following equation:

$$G_{HH} = \frac{E_H}{2\,(1 + \nu_{HH})}$$

Equation H.1.36

For undrained expansion we have:

$$\nu_{HH} = 1 - \frac{n}{2}$$

Equation H.1.37

Where n is given by:

$$n = \frac{E_H}{E_V} = K_0$$

Equation H.1.38

Hence:

$$E_H = (4 - n)G_{HH}$$

Equation H.1.39

And:

$$E_V = \frac{4 - n}{n} G_{HH}$$

Equation H.1.40

This is as far as argument from first principles can go, because of the additional contribution of the way the material is deposited. K_0 is likely to lie between 0.5 and 2, so from Equation H.1.39 $\frac{E_H}{G_{HH}}$ lies between 2 and 3.5. From Equation H.1.40 $\frac{E_V}{G_{HH}}$ lies between 1 and 1.75.

It is likely that G_{VH} will be linked to E_V by Poisson's ratio in a relationship of the form of Equation H.1.36. Plausible values of $\frac{E_V}{G_{VH}}$ would seem to be 2.4 to 3. Hence in a material with K_0 of 2, G_{VH} could be as low as $\frac{G_{HH}}{3}$. Simpson *et al* (1996) come to the same conclusion but find in practice heavily over-consolidated London clay gives relationships of the order of $G_{VH} \simeq 0.65 G_{HH}$. The influence of the strain range is not separately considered in these studies, and it is quite possible that the G_{100} values would be similar in all planes.

Lee & Rowe (1989) give details of the anisotropy characteristics of many clays varying from lightly over-consolidated to heavily over-consolidated. The general conclusion is $\frac{E_V}{G_{VH}}$ lies between 4 and 5, rather more than the isotropic relationship of 3. However, their paper was concerned with the impact of anisotropic stiffness properties on surface settlement. Deriving G_{VH} from E_V is therefore unsatisfactory, because although G_{VH} is insensitive to the direction of loading, E_V is not.

Analysis for Strength, Drained Loadings

Table H.1.6 is a list of the different terms used in section *Analysis for Strength, Drained Loadings* except *Carter et al (1986, adapted 2010)*.

Table H.1.6: Symbols, Unit and definition for section *Analysis for Strength, Drained Loadings* except *Carter et al (1986, adapted 2010)*

Symbol	Unit	Term or Definition
A	[-]	Constant
$c/2$	[-]	Factor representing elastic strain in the plastic region, usually ignored, it has been shown to introduce an error of 0.03% in the strain scale for a typical dense sand (Hughes et al 1977)
G	[MPa]	Shear modulus
K_a^{cv}	[-]	$(1-\sin\varphi'_{cv})/(1+\sin\varphi'_{cv})$
K_p^{cv}	[-]	Constant volume principal stress ratio= $(1+\sin\varphi'_{cv})/(1-\sin\varphi'_{cv})=1/K_a^{cv}$
N'	[-]	$(1-\sin\varphi')/(1+\sin\varphi')$
n	[-]	$(1-\sin\psi)/(1+\sin\psi)$

Symbol	Unit	Term or Definition
p'	[kPa]	Effective radial stress
p'_e	[kPa]	Maximum effective pressure reached during expansion
S	[-]	$((1+\sin\ \psi)\sin\ \varphi')/(1+\sin\ \varphi')$ (Hughes et al 1977)
ε_c	[-]	Cavity strain or circumferential strain, measured by pressuremeter at the cavity wall and is $(r-r_0)/r$
ε_e	[-]	Maximum circumferential strain reached during expansion
ε_r	[-]	Radial strain
ε_V	[-]	Volumetric strain
γ	[-]	Shear strain
σ_c	[kPa]	Circumferential stress
σ'_{H0}	[kPa]	Effective in situ lateral stress
σ_r	[kPa]	Radial stress
φ'	[deg]	Peak angle of internal friction
$\varphi'_{cv/cs}$	[deg]	Friction angle when the material is shearing at constant volume CV (or when material reached the Critical State CS)
ψ	[deg]	Dilation angle

For drained expansion tests in purely frictional material the strength is described in terms of the peak angle of internal friction and dilation. The method used is that due to Hughes *et al* (1977). The form of the shear stress: shear strain curve is simple elastic/perfectly plastic and dilation and friction are related by Rowe's dilatancy law. Although the soil response during elastic deformation is more realistically described as non-linear elastic, this has no effect on the plastic part of the curve from where strength is derived.

The technique is to plot effective pressure against cavity strain on log scales and to discover by inspection the maximum slope of the resulting curve. It is usual to only quote a single value for friction and dilation. The same assumptions have been applied by Withers *et al* (1989) to produce a solution for cavity contraction.

Manassero (1989) is a numerical solution that applies Rowe's dilatancy law as a flow rule. Elastic strains in the plastic area are ignored for simplicity.

For tests in c′ – phi material a method based on the solution of Carter *et al* (1986) is used. In such material the value for friction angle can often be identified from the Hughes analysis.

Hughes et al (1977)

In addition to the usual conditions governing the expansion of a cylindrical cavity in plane strain this analysis assumes the following:

- A simple elastic/perfectly plastic model
- The expansion is fully drained, i.e. no excess pore water pressures are allowed to develop
- Following yield the sand deforms at a constant angle of internal friction
- Volumetric and shear strains are connected by Rowe's dilatancy law (1962)

Rowe's dilatancy law can be written as follows:

$$\frac{1+\sin\varphi'}{1-\sin\varphi'} = \left[\frac{1+\sin\varphi'_{cv}}{1-\sin\varphi'_{cv}}\right]\left[\frac{1+\sin\psi}{1-\sin\psi}\right]$$

Equation H.1.41

Where:

φ' = peak angle of internal friction [deg]
φ'_{cv} = critical state of internal friction [deg]
ψ = angle of dilation [deg]

At failure, the effective pressure at the cavity wall p' is given by:

$$p' = \sigma'_{h0}[1+\sin\varphi']$$

Equation H.1.42

Following failure:

$$\ln[\,p'] = S.\ln[\frac{\varepsilon_c}{1+\varepsilon_c} + \frac{c}{2}] + A \approx \;\; S.\ln[\varepsilon_c + \frac{c}{2}] + A$$

Equation H.1.43

Where:

p' = the effective pressure at the cavity wall [kPa]

ε_c = the circumferential strain (or hoop strain) measured at the borehole wall [-]

S = $\frac{(1+\sin\psi).\sin\varphi'}{1+\sin\varphi'}$ coming from Hughes *et al* (1977).

A = a constant [-]

$\frac{c}{2}$ = factor representing elastic strain in the plastic region, usually ignored, it has been shown to introduce an error of about 0.03% in the strain scale for a typical dense sand (Hughes *et al* 1977; Appendix) [-]

Equation H.1.43 indicates that S is approximately the gradient of effective pressure p' plotted against strain ε_c, both on log scales. In order to get values for φ' and ψ it is necessary to have a value for the constant volume friction angle φ'_{cv}. Then, both $\sin\varphi'$ and $\sin\psi$ can be derived using S. Hughes *et al* gives the following pair of equations:

$$\sin\varphi' = \;[\frac{S}{1+(S-1).\sin\varphi'_{cv}}]$$

Equation H.1.44

$$\sin\psi = S + (S-1).\sin\varphi'_{cv}$$

Equation H.1.45

Where:

φ' = peak angle of internal friction [deg]
φ'_{cv} = critical state of internal friction [deg]
S = $\frac{(1+\sin\psi).\sin\varphi'}{1+\sin\varphi'}$ coming from Hughes *et al* (1977).
ψ = angle of dilation [deg]

An example of the Hughes analysis is shown in Figure H.1.41. Both the ambient pore water pressure u_0 and φ'_{cv} are required to implement the analysis. Because the expansion is drained, the membrane normally collapses at the end of the test due to water head pressure and an estimate of u_0 can often be made from this behaviour. φ'_{cv} must either be given or estimated. The analysis is sensitive to the choice of strain origin.

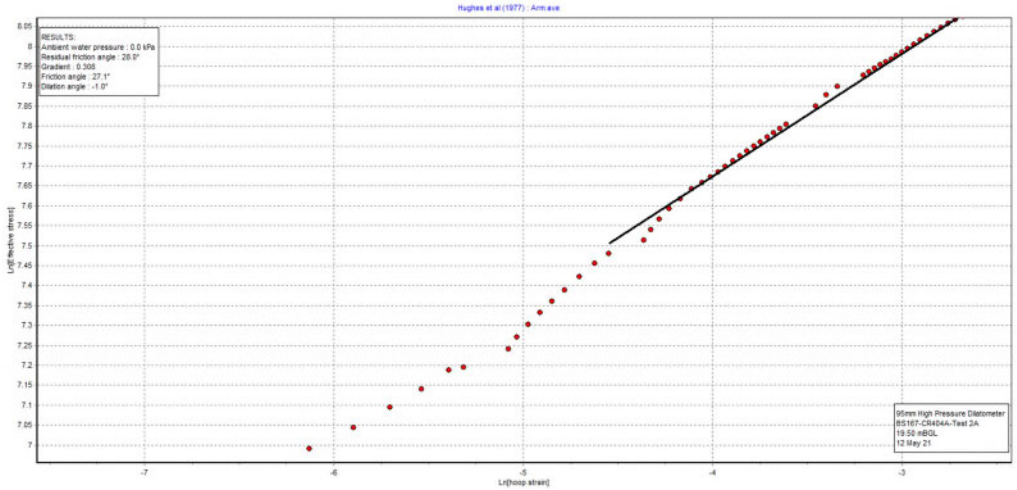


Figure H.1.41: Example of Hughes *et al* (1977) Solution Applied to Drained Test (not from this contract)

If the test shown in Figure H.1.41 was taken to a high enough cavity strain then the final part of the loading would show strain softening indicating that the peak friction angle is passed and the current internal angle is reducing towards a residual value. Curvature at relatively low strain indicates the presence of some cohesion, in which case the ultimate slope of the trend gives the best estimate of the friction angle.

Manassero (1989)

This analysis is a numerical procedure that essentially makes the same assumptions as Hughes *et al* (1977). The difference is that Rowe's dilatancy relationship is employed as a flow rule, so that the requirement for deformation at a single value of friction angle is not necessary.

The great advantage of this analysis is that it can produce a comprehensive stress/strain curve analogous to that of the Palmer (1972) analysis for an undrained expansion. The disadvantage is that the numerical method is very sensitive to even minor fluctuations in the measured data. Manassero suggests that the measured data be fitted with a polynomial function prior to implementing the numerical calculations.

The pressuremeter test provides data for the radial pressure and circumferential strain at the wall of the cavity. The radial strain ε_r at a point (i) corresponding to a measured data point of circumferential strain ε_c and effective pressure p' is as follows:

$$\varepsilon_r(i) = \left[\frac{p'(i)[\varepsilon_c(i-1) + K_a^{cv}\varepsilon_r(i-1)] - p'(i-1)\varepsilon_c(i)}{2[p'(i)(1+K_a^{cv}) - p'(i-1)]}\right] + \left[\frac{p'(i)[\varepsilon_c(i-1) - \varepsilon_r(i-1)] + p'(i-1)[\varepsilon_r(i-1)(1+K_a^{cv}) - \varepsilon_c(i)]}{2K_a^{cv}p'(i-1)}\right]$$

Equation H.1.46

Where:

ε_r = the radial strain [-]

ε_c = the circumferential (or hoop) strain at the cavity wall [-]

K_a^{cv} = $\frac{1}{K_p^{cv}}$ [-]

K_p^{cv} = the constant volume principal stress ratio coefficient = $\frac{1+\sin\varphi'_{cv}}{1-\sin\varphi'_{cv}}$ [-]

Equation H.1.46 is solved for each data point in turn knowing that the expansion starts from zero strain. Once the zero radial strain is known, volumetric strain ε_V and shear strain γ can be obtained as follows:

$$\gamma = \varepsilon_r - \varepsilon_c$$

Equation H.1.47

$$\varepsilon_V = \varepsilon_r + \varepsilon_c$$

Equation H.1.48

Where:

ε_r = the radial strain [-]
ε_c = the circumferential (or hoop) strain at the cavity wall [-]
ε_V = the volumetric strain [-]

Furthermore, assuming plane conditions and applying Rowe's theory (1962, 1972) the behaviour of a stressed particulate medium can be described as follows:

$$\frac{\sigma_r}{\sigma_c} = -K_p^{cv} \frac{d\varepsilon_c}{d\varepsilon_r}$$

Equation H.1.49

Where:

σ_r = the radial stress [kPa]
σ_c = the circumferential stress [kPa]

In principle the analysis can give a full description of the shear stress: shear strain response but as Manassero himself points out, real data are generally too noisy for use as direct input in a numerical analysis, and he suggests curve fitting the field test prior to implementing the solution.

Carter et al (1986, adapted 2010)

Table H.1.7 is a list of the different terms used only in this section *Carter et al (1986, adapted 2010)*.

Table H.1.7: Symbols, Unit and definition only for section *Carter et al (1986, adapted 2010)*

Symbol	Unit	Term or Definition
A	[-]	$T/(1+\alpha)$
B	[-]	$-Z/(1-\beta)$

Symbol	Unit	Term or Definition
C	[-]	$1 - A - B$
c	[kPa]	Drained cohesion
d	[-]	Stress exponent, describing the variation of stiffness with stress level
G	[MPa]	Shear modulus
G_s	[MPa]	Secant shear modulus
h	[-]	Exponent of a non-linear elastic power law
J	[-]	Is a scale factor to adjust for stiffness at differing stress levels
M	[-]	$(1 + \sin\psi)/(1 - \sin\psi)$
N	[-]	$(1 + \sin\varphi')/(1 - \sin\varphi')$
p	[kPa]	Effective pressure at the cavity wall and is measured by pressuremeter
p_0	[kPa]	Effective cavity reference pressure
p_{max}	[kPa]	Maximum cavity pressure at the end of loading
q_{nn}	[-]	Coefficient of a non-linear elastic power law. The first suffix is r or s denoting radial stress or shear stress intercept. The second suffix is c or s and defines the strain scale, circumferential or shear.
q_{ref}	[-]	Radial stress elastic constant at in situ or reference stress
R	[mm]	Radius of the elastic/plastic boundary
r_0	[mm]	Initial radius
r_a	[mm]	Current cavity radius
u	[mm]	Increment of radial displacement at a point in the continuum
T	[-]	$2 + Z$
Z	[-]	$2\chi/(\alpha + \beta)$
α	[-]	$1/M$
β	[-]	$1/N$

Symbol	Unit	Term or Definition
γ	[-]	$(1+\alpha)/(1-\beta) = (NM+N)/(NM-M)$
ε_c	[-]	Cavity (circumferential) strain, measured by pressuremeter and is $(r-r_0)/r$
ε_{max}	[-]	Maximum cavity strain at the end of loading
ε_R	[-]	Circumferential strain at the elastic/plastic boundary
ε_{RU}	[-]	Circumferential strain at yield during contraction
ε_S	[-]	Shear strain
ν	[-]	Poisson's ratio
σ_{AV}	[kPa]	Mean effective stress
σ_C	[kPa]	Circumferential stress at the elastic/plastic boundary
σ_R	[kPa]	Radial stress at the elastic/plastic boundary
σ_{Ru}	[kPa]	Radial stress at the cavity wall at yield in cavity contraction
σ_r	[kPa]	Radial stress
$\sigma_\emptyset$	[kPa]	Circumferential stress
τ	[kPa]	Shear stress
τ_y	[kPa]	Shear stress at first yield
χ	[-]	$[(1-\nu)-\nu(M+N)+(1-\nu)MN]/[MN]$
φ'	[deg]	Peak angle of internal friction
ψ	[deg]	Dilation angle

Carter *et al* (1986) is a closed form analytical solution for cavity expansion tests in ideal cohesive frictional material. There is an explicit small strain expression of the solution which makes a convenient basis for a curve comparison routine. What is presented here is a modified version of the solution incorporating non-linearity in the elastic phase of the test.

A power law is used to describe the non-linear response and the parameters for the power law are obtained from rebound cycles carried out during the test. Unload/reload cycles offer the means of obtaining the elastic properties of the ground independently of disturbance caused by

the process of placing the instrumentation - it is an important aspect of the methodology presented here that the analysis be constrained by the measured values of soil stiffness.

The process starts with the parameter set already obtained from the conventional analyses for cavity reference pressure, stiffness and internal angle of friction. Using the measured pressures but calculating the cavity strains according to the input parameter set, a theoretical curve is generated. This is overlaid on the measured field data. If the mis-match is significant, then certain parameters can be adjusted to improve the match. The fixed parameters are the stiffness data. The curve comparison procedure covers elastic loading, plastic loading and elastic contraction – the plastic contraction part of the test is ignored for the present. For simplicity, all stresses in the following description are effective. As does Carter *et al* the method is developed first in terms of a purely frictional material and is then modified for cohesion. The solution is presented in terms appropriate for cylindrical cavity expansion, the spherical case has been ignored.

There are two main reasons for using this procedure. With the analyses available at the present time it is difficult to separate out the contribution of cohesion and friction in a dilating material. This can be done reasonably easily with the curve comparison approach. The other reason is that the influence of cavity reference pressure on the overall curve is very obvious. Tests in material of this type are often pre-bored and there is very little that can be done to assess the cavity reference pressure when the initial part of the loading curve is dominated by disturbance effects. With this procedure implausible values are identified very easily.

Carter, Booker and Yeung (1986)

Assuming small deformations (where 10% cavity strain is considered small), Carter *et al* offer the following general solution for a cylindrical cavity expansion:

$$\frac{\mathrm{u}}{\mathrm{r}} = \varepsilon_R [A \left(\frac{\mathrm{R}}{\mathrm{r}}\right)^{1+\alpha} + B \left(\frac{\mathrm{R}}{\mathrm{r}}\right)^{1-\beta} + C]$$

Equation H.1.50

Where:

$$r_0 < \mathrm{r_a} < R$$

In terms of parameters that the pressuremeter can measure directly, circumferential strain ε_c and radial stress p at the cavity wall, this solution can be written as follows:

$$\varepsilon_c = \varepsilon_R[A\left(\frac{p}{\sigma_R}\right)^{\gamma} + B\left(\frac{p}{\sigma_R}\right) + C]$$

Equation H.1.51

Carter *et al* point out the similarity between this solution and the one offered by Hughes *et al* (1977). Using the current notation, the solution of Hughes *et al* can be written:

$$\varepsilon_c \approx \varepsilon_R\left(\frac{p}{\sigma_R}\right)^{\gamma}$$

Equation H.1.52

The omission of the linear and constant terms in Equation H.1.51 comes about because the earlier solution ignores elastic strain in the plastic region. The attraction of the earlier solution is that plotting cavity strain against radial stress on log scales gives the gradient γ which can be used to discover the approximate values of friction angle φ′ and dilation angle ψ, so it is helpful to carry out the Hughes *et al* analysis as a means of providing input parameters for the Carter *et al* solution. The Hughes log-log plot also indicates the influence of cohesion, because the data will plot a strain-softening curve rather than a straight line.

Elastic Strain and Non-linear Stiffness

In the simple elastic model the cavity strains before yield are given by:

$$\varepsilon_c = \frac{p - p_0}{2G}$$

Equation H.1.53

Where:

$$p_0 < p < \sigma_R$$

At first yield, when:

$$p = \sigma_R = p_0(1 + \sin\varphi')$$

We have:

$$\varepsilon_c = \frac{p_0 \sin\varphi'}{2G}$$

Equation H.1.54

The non-linear elastic versions of Equation H.1.53 and Equation H.1.54 are as follows:

$$\varepsilon_c = \left[\frac{p - p_0}{q_{ref}}\right]^{\frac{1}{h}}$$

Equation H.1.55

At first yield, when

$$p = \sigma_R$$

We have:

$$\varepsilon_R = \left[\left(\frac{p_0}{q_{ref}}\right)\left(\frac{N-1}{N(2h-1)+1}\right)\right]^{\frac{1}{h}}$$

Equation H.1.56

The derivation of the non-linear elastic equations are given later.

At the end of loading the cavity has a maximum pressure p_{max} and expansion ε_{max} and the first part of the final unloading is elastic with a non-linear characteristic prior to yield in extension. The elastic circumferential strain is given by:

$$\varepsilon_c = \varepsilon_{max} - \left[\frac{p_{max} - p}{J q_{ref}}\right]^{\frac{1}{h}}$$

Equation H.1.57

Where:

$$p_{max} > p > \sigma_{RU}$$

At yield in contraction when:

$p_{max} > p$ and $p = \sigma_{RU}$

We have:

$$\varepsilon_{RU} = \varepsilon_{max} - \left[\left(\frac{p_{max}}{Jq_{ref}}\right)\left(\frac{N^2 - 1}{N(2h-1) + N^2}\right)\right]^{\frac{1}{h}}$$

Equation H.1.58

The explanation of the terms q_{ref} and h and J is now presented, based on the methodology of Bolton and Whittle (1999). This solution uses a power law to describe the development of shear stress with strain for strains below the elastic/plastic threshold:

$$\tau = q_{ss}\, \varepsilon_s^h$$

Equation H.1.59

The coefficient and exponent of the power law in Equation H.1.59 can be derived from plotting reloading data from unload/reload cycles. The origins for the data are the loop turnaround points. However for the purposes of curve fitting, the trend of radial stress versus cavity strain is required. This is not shear modulus, where the data would be shear stress plotted against shear strain. Figure H.1.42 is an example (not from a test on this contract).

It is easy to manipulate the trends in Figure H.1.42 to give shear modulus. Assuming no volumetric strains are being developed whilst the material is deforming elastically, shear strain can be derived by multiplying the cavity strain values by two. Furthermore Bolton & Whittle show that the shear stress coefficient is related to the radial stress coefficient as follows:

$$q_{ss} = hq_{rs}$$

Equation H.1.60

And secant shear modulus as follows:

$$G_S = q_{ss}\,\varepsilon_s^{h-1}$$

Equation H.1.61

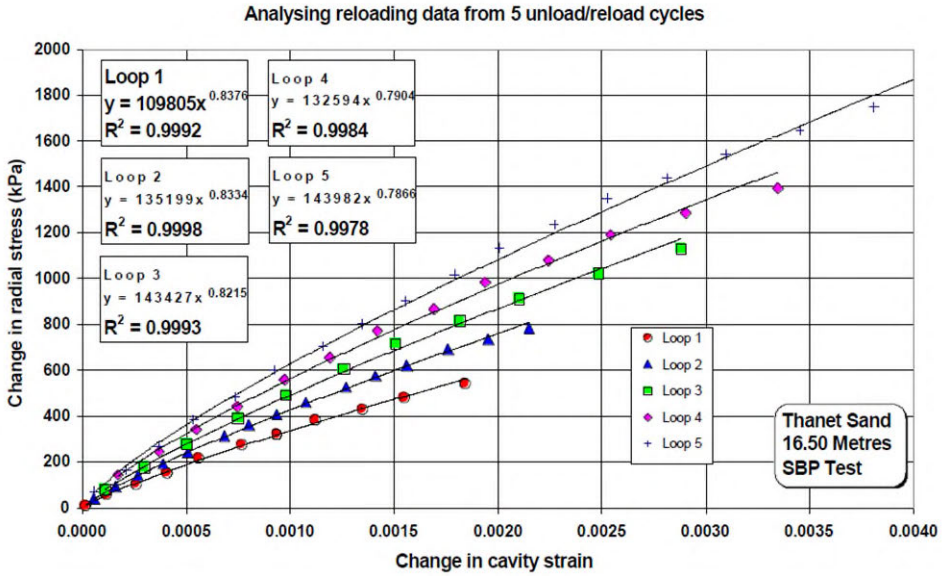


Figure H.1.42: Plotting Stiffness Curves

Manipulating Stiffness Data for Changes in Mean Effective Stress

The stiffness data represented by $\mathrm{q_{ref}}$ and h give the stress/strain response of the elastic part of the curve. It is necessary to know the cavity strain at yield when this relationship will cease, given by Equation H.1.56. Thereafter a single value of shear modulus, at yielding strain, is used implicitly by Equation H.1.51.

When the final unloading commences the shear modulus applicable to this part of the test will also depend on $\mathrm{q_{ref}}$ and h with $\mathrm{q_{ref}}$ multiplied by a scale factor decided by the increase in the mean effective stress. All that is then required to know when the elastic unloading stops and this is

given by Equation H.1.58. The yielding value of shear modulus is likely to be lower than that from simply taking the slope of the first loop in the test but probably higher than the initial slope of the virgin loading curve, which will be influenced by disturbance.

Bellotti *et al* (1989) give a procedure for converting modulus at intermediate stress levels to a reference level, the in situ mean effective stress p_0. It is based on the relationship proposed by Janbu (1963) and in terms of the nomenclature used here can be written:

$$q_{ref} = q_{rc}[\frac{p_0}{\sigma_{AV}}]^{d}$$

Equation H.1.62

Given a value of radial stress at the cavity wall p, the mean effective stress can be calculated as follows:

When $p > \sigma_R$ (unload/reload)

$$\sigma_{AV} = [\frac{p - c\cos\varphi'}{1+\sin\varphi'}]$$

Equation H.1.63

When $p < \sigma_{Ru}$ (reload/unload)

$$\sigma_{AV} = [\frac{p + c\cos\varphi'}{1-\sin\varphi'}]$$

Equation H.1.64

These two equations also incorporate the contribution of cohesion, c.

The modulus exponent d is obtained by plotting the mean effective stress against modulus and finding the best fit power law. The best correlation is obtained using q and h together as both are needed to fully describe the shape of the elastic response. Once a value for q_{ref} is obtained it is possible to predict the appropriate q value for any other part of the curve, such as the final unloading, by calculating the mean

effective stress for that point and multiplying by the ratio of that stress to the initial stress state. This is the scale factor J in Equation H.1.57 and Equation H.1.58.

Influence of Cohesion

It is surprisingly straightforward to introduce the influence of cohesion using Caquot's principle. All stresses are raised by $c \cot \varphi'$ so that Equation H.1.51 now becomes:

$$\varepsilon_c = \varepsilon_R [A \left(\frac{p + c \cot \varphi'}{\sigma_R + c \cot \varphi'} \right)^{\gamma} + B \left(\frac{p + c \cot \varphi'}{\sigma_R + c \cot \varphi'} \right) + C]$$

Equation H.1.65

If there is no cohesion then the additional terms are zero and the equations revert to the frictional only form.

Deriving the Limit Pressure

Despite being a small strain solution it is possible to use the Carter *et al* solution in its adapted form to discover the limit pressure of an infinitely large expansion. At the limit state the ratio $\frac{R}{r_a}$ of the elastic-plastic boundary to the current cavity size reaches a constant condition, which can be written as follows:

$$\frac{1}{\varepsilon_R} = \left[T \left(\frac{R}{r_a} \right)^{1+\alpha} - Z \left(\frac{R}{r_a} \right)^{1-\beta} \right] = \left[T \left(\frac{p_{lim}}{\sigma_R} \right)^{\gamma} - Z \left(\frac{p_{lim}}{\sigma_R} \right) \right]$$

Equation H.1.66

Where:

ε_R = Circumferential strain at the elastic/plastic boundary [-]
R = Radius of the elastic/plastic boundary [mm]
r_a = Current cavity radius [mm]
σ_R = Radial stress at the cavity wall at first yield [kPa]
p_{lim} = limit pressure [-]

ν = Poisson's ratio [-]
α = $1/((1+\sin\psi)/(1-\sin\psi))$ [-]
β = $1/((1+\sin(\varphi')/(1-\sin\varphi'))$ [-]
Z = $2\chi/((\alpha+\beta))$ [-]
χ = $[(1-\nu)-\nu(M+N)+(1-\nu)MN]/[MN]$ [-]
T = $2+Z$ [-]
γ = $(1+\alpha)/(1-\beta)=(NM+N)/(NM-M)$ [-]

To apply these results, Equation H.1.56 is used to discover the elastic yield strain ε_R . Now guess the ratio $\frac{p_{lim}}{\sigma_R}$ and use Equation H.1.66 within an iterative procedure to modify the guess until the known value of ε_R is obtained. Once the ratio has been identified, multiply it by the yield stress σ_R to obtain the limit pressure. This is effective limit pressure and we add to it the ambient pore water pressure to give the total limit pressure.

Deriving the Elastic Equations

Assuming the non-linear elastic response of the soil prior to yield can be described by a power law of the form $\tau = q_{ss}\,\varepsilon_s^h$ (after Bolton & Whittle 1999) and assuming that whilst the soil is deforming elastically there are no volumetric strains then it follows that the principal stresses at first yield can be written as follows:

$$\sigma_R = p_0 + \frac{\tau_y}{h}$$

Equation H.1.67

$$\sigma_C = \sigma_R - 2\tau_y$$

Equation H.1.68

where τ_y represents the mobilised shear stress at failure. For a perfectly plastic frictional material development of the plastic zone occurs at a constant stress ratio, with the radial stress the major principal stress so at yield we can write:

$$\frac{\sigma_R}{\sigma_C} = N = \frac{1+\sin(\varphi')}{1-\sin\varphi'}$$

Equation H.1.69

And so:

$$Np_0 + \frac{N}{h}\tau_y - 2N\tau_y = p_0 + \frac{\tau_y}{\mathrm{h}}$$

Equation H.1.70

Hence:

$$\frac{\tau_y}{\mathrm{h}} = p_0[\frac{N-1}{\mathrm{N(2h-1)+1}}]$$

Equation H.1.71

If substituting into Equation H.1.67:

$$\sigma_R = p_0[\frac{2Nh}{\mathrm{N(2h-1)+1}}]$$

Equation H.1.72

Alternatively, in terms of friction angle:

$$\sigma_R = p_0[1 + \frac{\sin\varphi'}{\mathrm{h} + (\mathrm{h}-1)\sin\varphi'}]$$

Equation H.1.73

The final unloading starts with the radial stress at a maximum $\mathrm{p_{max}}$ and the circumferential stress less than this at $\frac{\mathrm{p_{max}}}{\mathrm{N}}$. Yield in extension first occurs at the borehole wall when the radial stress is as follows:

$$\sigma_R = p_{max} - \frac{\tau}{\mathrm{h}}$$

Equation H.1.74

Hence, the circumferential stress will be:

$$\sigma_C = \frac{p_{max}}{N} + \tau(2 - \frac{1}{\mathrm{h}})$$

Equation H.1.75

The mobilised shear stress τ is discovered in a similar way to the elastic loading equations' noting that yield in contraction occurs with the circumferential stress being the major principal stress. $\frac{\tau}{\mathrm{h}}$ for the elastic part of the final unloading is:

$$\frac{\tau}{\mathrm{h}} = p_{max}[\frac{N^2 - 1}{\mathrm{N}(2\mathrm{h} - 1) + N^2}]$$

Equation H.1.76

The equivalent to Equation H.1.71 for the final unloading is:

$$\sigma_{Ru} = p_{max}[\frac{N^2 - 1}{\mathrm{N}(2\mathrm{h} - 1) + N^2}]$$

Equation H.1.77

$2\mathrm{Nh}$ introduces non-linearity into the elastic distribution of stress. If $\mathrm{h} = 1$, the value for linear elasticity, Equation H.1.72 and Equation H.1.77 revert to the standard equations for yield in a frictional material. Typical values for h in sand like material would be 0.6-0.8.

For a $\mathrm{c}' - \mathrm{phi}$ material the failure does not occur at a constant stress ratio but can be made to seem so if all stresses are raised by $\mathrm{c}.\cot\varphi'$.

Equation H.1.68 now becomes:

$$\frac{\sigma_r + \mathrm{c}.\cot\varphi'}{\sigma_{\emptyset} + \mathrm{c}.\cot\varphi'} = N$$

Equation H.1.78

And working this through, failure on first loading occurs when:

$$\sigma_R = (p_0 + \mathrm{c}.\cot\varphi')\left[\frac{2Nh}{\mathrm{N}(2\mathrm{h}-1)+1}\right] - \mathrm{c}.\cot\varphi'$$

Equation H.1.79

If there is no cohesion, then Equation H.1.72 and Equation H.1.79 are the same. If the material is linear elastic, $\mathrm{h} = 1$, and Equation H.1.79 reverts to the familiar Mohr-Coulomb expression for first yield.

Similarly, the expression for first yield in unloading in a $\mathrm{c}' - \mathrm{phi}$ material is obtained by taking Equation H.1.74 and Equation H.1.75 and using the argument that the failure stress ratio is given by the following equation:

$$\sigma_{Ru} = \left[\frac{p_{max}(N(2h-1)+1) - \mathrm{c}.\cot\varphi'\ (N^2 - N)}{\mathrm{N}(2\mathrm{h}-1) + \mathrm{N}^2}\right]$$

Equation H.1. 80

Example

A typical result of the curve fitting method applied to a test in chalk is given Figure H.1.43 (not from this project). This particular test shows some cohesion. The elastic range on the final unloading is predicted reasonably well, although this is not always the case.

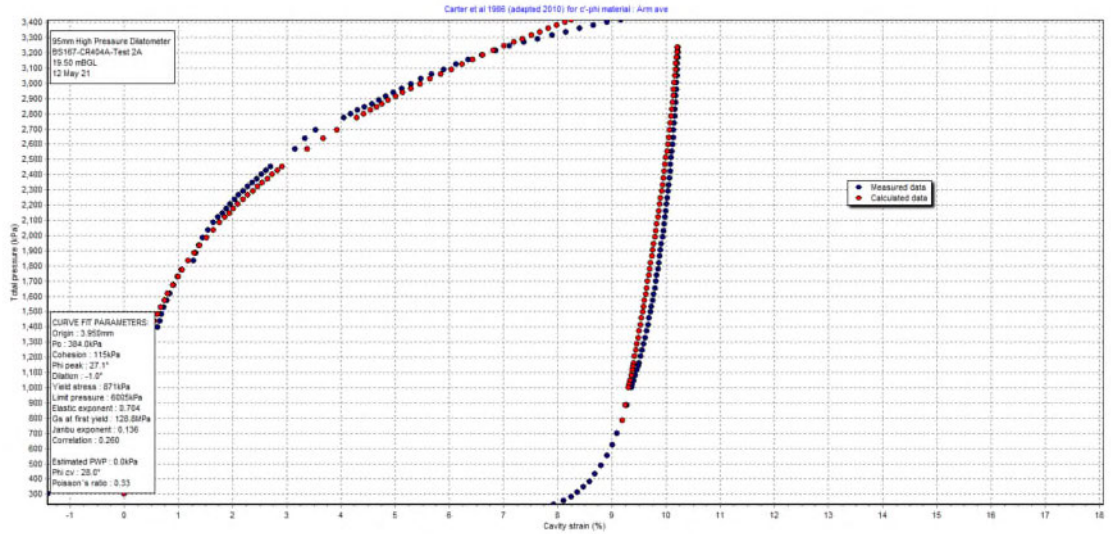


Figure H.1.43: Drained Test in Chalk, Curve Fitting Example with Cohesion (not from this contract)

The list of parameters at the bottom left hand corner includes the Janbu exponent of how stiffness varies with stress level at yield strain.

Withers, Howie, Hughes and Robertson (1989)

Withers *et al* (1989) is an analysis for the unloading of cone pressuremeter in sand. Unlike the loading, the origin for the contraction event is relatively well defined, so in principle an analysis based on contraction data are likely to lead to more certain parameters.

The solution is based on the Hughes *et al* (1977) analysis for the expansion of a pressuremeter in sand. During expansion, pressures are related to strains by the following equation:

$$p' = \sigma'_{ho}\left[\frac{2}{1+\mathrm{N}'}\right]\left[\left(\frac{G}{\sigma_{\mathrm{ho}}}\right)(1+n)\left(\frac{1+\mathrm{N}'}{1-\mathrm{N}'}\right)\varepsilon_c + \left(\frac{1-\mathrm{n}}{2}\right)\right]^{\left[\frac{1-N'}{1+n}\right]}$$

Equation H.1.81

Where:

p' = the effective radial stress at cavity wall [kPa]
N' = $\frac{1-\sin\varphi'}{1+\sin\varphi'}$ [-]
φ' = the peak angle of internal friction [-]
n = $\frac{1-\sin\psi}{1+\sin\psi}$ [-]
ψ = the peak angle of dilation of the soil [deg]
ε_c = the cavity strain [mm]
G = the shear modulus [MPa]
σ'_{ho} = the effective in situ horizontal stress [kPa]

The initial part of the contraction is elastic, ending when:

$$p' = N' p'_e$$

Equation H.1.82

Where:

p'_e = the maximum effective pressure reached during expansion [kPa]
p' = the effective radial stress at cavity wall [kPa]
N' = $\frac{1-\sin\varphi'}{1+\sin\varphi'}$ [-]

The strain at the onset of reverse plasticity will be:

$$\varepsilon_c = \varepsilon_e - [\frac{(1-N')p'_e}{2\mathrm{G}}]$$

Equation H.1.83

Where:

ε_e = the maximum strain reached [-]
ε_c = the cavity strain [-]

p'_e = the maximum pressure reached during expansion [kPa]
N = $\frac{1-\sin\varphi'}{1+\sin\varphi'}$ [-]
G = the shear modulus [MPa]

During plasticity unloading, pressures and strains are related by the following equation:

$$p' = [N' p'_e][\frac{\left[\frac{2G}{I}\right][\varepsilon_e - \varepsilon][1+nN']}{[(1-\mathrm{N}')(1+\mathrm{N}')\mathrm{n}]} - \frac{1-n}{(1+\mathrm{N}')\mathrm{n}}]^{\frac{[n(N'^2-1)]}{[nN'^2+N']}}$$

Equation H.1.84

Where:

ε_e = the maximum strain reached [-]
ε = the cavity strain [-]
p'_e = the maximum pressure reached during expansion [kPa]
N' = $\frac{1-\sin\varphi'}{1+\sin\varphi'}$ [-]
G = the shear modulus [MPa]
n = $\frac{1-\sin\psi}{1+\sin\psi}$ [-]

If $\log(\frac{\mathrm{p}'}{\mathrm{p}'_\mathrm{e}})$ is plotted against $\log([\varepsilon_\mathrm{e} - \varepsilon]/[1 + \varepsilon_\mathrm{e}])$ the slope of the straight line portion will have a gradient S as follows:

$$S = [\frac{\left(\mathrm{N}'^2-1\right)n}{\mathrm{n}\mathrm{N}'^2+\mathrm{N}'}]$$

Equation H.1.85

Where:

N' = $\frac{1-\sin\varphi'}{1+\sin\varphi'}$ [-]
n = $\frac{1-\sin\psi}{1+\sin\psi}$ [-]

In principle these equations can be used to draw the entire test curve. In practice this is generally unsuccessful, because the simple assumptions cannot capture the complex response of most granular materials. Usually there is no long straight portion. It can be imagined that after reaching failure in contraction at the peak angle of internal friction the granular material quickly falls into an ultra-loose condition. The analysis can depend, therefore, on identifying the point of maximum curvature in log log space and is not very convincing.

However, when the analysis does work it can be useful in assessing the origin for strain on the loading. Because the contraction starts from a defined origin there is no uncertainty in the strain scale. Adjusting the loading scale to give similar answers using the Hughes *et al* analysis indirectly corrects for insertion disturbance.

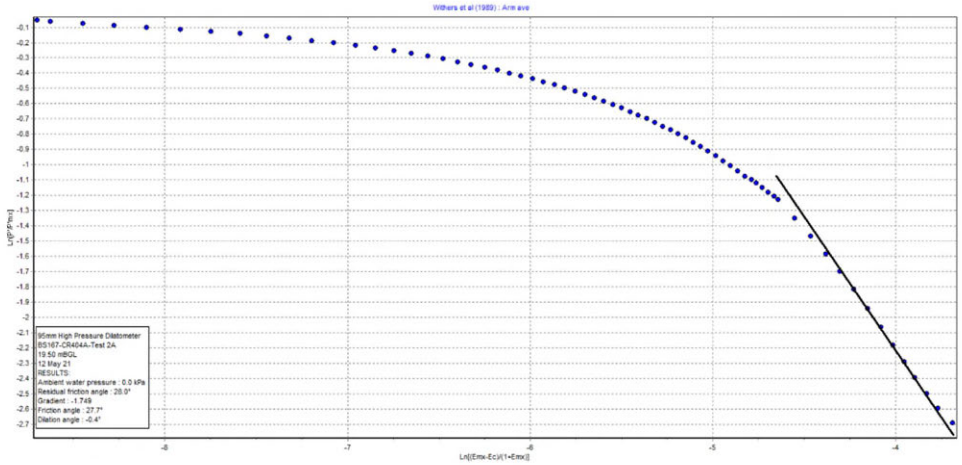


Figure H.1.44: An example of the Whiters *et al* analysis (not from this contract)

H.1.2 Schedule of Pressuremeter Testing

Table H.1.1: Schedule of Pressuremeter Testing

Exploratory Position ID	Probe	Test Number	Test Depth [m BGL]	Test Pocket Depth		Water Depth [m]	Date	Maximum Pressure [kPa]	Material	Remarks from Operator
				From [m BGL]	To [m BGL]					
MS-BH04	HPD3	2	19.50	18.00	20.70	1.50	30/09/2022	5123	Siltstone with gypsum bands	Double CHL. Both TPC's. Previous test (test one) couldn't be performed due to insufficient space in the pocket.
	HPD3	3	23.00	21.00	24.00	1.55	03/10/2022	10407	Siltstone with gypsum bands	Double CHL. Both TPC's.
	HPD3	4	26.00	24.00	27.00	1.50	04/10/2022	10378	Sandstone	Double CHL. Both TPC's.
	HPD3	5	27.90	27.00	30.00	1.40	05/10/2022	11115	Sandstone	Double CHL. Both TPC's.
	HPD3	6	34.50	33.00	36.00	1.50	07/10/2022	10466	Sandstone	Double CHL. Both TPC's. Electrical logging stopped after the end of the unloading loop. Likely a USB problem.
MS-BH10	Lilith HPD	1	17.94	16.50	19.50	1.80	19/10/2022	12833	Mudstone/gypsum	Double CHL. Both TPC's. Mixed strata, movement on all arms. Burst on final hold.
	Lilith HPD	2	22.04	21.00	24.00	1.80	20/10/2023	8058	Mudstone/gypsum	Double CHL. Both TPC's. Burst with no warning at 8-MPa on hold for second loop.
	Lilith HPD	3	27.34	25.50	28.50	1.80	21/10/2024	14484	Mudstone/gypsum	Double CHL. Both TPC's. Could have gone to higher pressure but prioritised unload data due to previous two tests bursting.
	Lilith HPD	4	31.43	30.00	33.00	1.80	25/10/2022	18011	Mudstone/gypsum	Double CHL. Both TPC's.

Exploratory Position ID	Probe	Test Number	Test Depth [m BGL]	Test Pocket Depth		Water Depth [m]	Date	Maximum Pressure [kPa]	Material	Remarks from Operator
				From [m BGL]	To [m BGL]					
	Lilith HPD	5	35.86	34.50	37.50	1.80	26/10/2022	19774	Mudstone/gypsum	Double CHL. Both TPC's.
MS-BH12	HPD3	2	22.20	21.00	24.00	1.70	05/10/2022	8361	Sandstone	Double CHL. Both TPC's. Previous test (test 1) not performed due to no recovery and unknown geology.
	Lilith HPD	4	31.05	30.00	33.00	2.90	10/10/2022	18015	Mudstone/Gypsum	Double CHL. Both TPC's. Previous test (test 3) not performed due to poor core sample. HPCP leaking at 18-MPa so terminated test slightly early.
	Lilith HPD	5	35.65	34.50	37.50	1.10	12/10/2022	19958	Mudstone/Gypsum	Double CHL. Both TPC's.
	HPD3	6	41.50	40.30	42.20	1.50	13/10/2022	13721	Mudstone	Double CHL. Both TPC's. HPCP leak.
MS-BH13	HPD3	1	18.70	17.50	20.50	1.70	19/10/2022	12065	Mudstone/gypsum	Double CHL. Both TPC's.
	HPD3	2	23.70	22.00	24.70	1.10	20/10/2022	6078	Mudstone/gypsum	Double CHL. Both TPC's. A couple of arms were moving backwards.
	HPD3	3	27.30	26.50	29.50	1.00	21/10/2022	15057	Mudstone/gypsum	Double CHL. Both TPC's.
	HPD3	4	31.70	31.00	34.00	1.30	25/10/2022	15075	Mudstone	Double CHL. Both TPC's.
	HPD3	5	37.50	35.00	38.50	1.00	27/10/2022	15436	Mudstone	Double CHL. Both TPC's.
MS-CPM12	CPM - 160101	1	2.00	N/A	N/A	N/A	10/10/2022	1479	Sand	Maximum Displacement.

Exploratory Position ID	Probe	Test Number	Test Depth [m BGL]	Test Pocket Depth		Water Depth [m]	Date	Maximum Pressure [kPa]	Material	Remarks from Operator
				From [m BGL]	To [m BGL]					
	CPM - 160101	2	4.00	N/A	N/A	N/A	10/10/2022	284	Sand	Maximum Displacement.
	CPM - 160101	3	6.00	N/A	N/A	N/A	10/10/2022	951	Sand	Maximum Displacement.
	CPM - 160101	4	8.00	N/A	N/A	N/A	10/10/2022	1885	Sand	Membrane slip.
	CPM - 160101	5	10.00	N/A	N/A	N/A	11/10/2022	2200	Sand	Maximum Displacement.
	CPM - 160101	6	12.00	N/A	N/A	N/A	11/10/2022	2246	Sand	Full drop in pressure due to membrane slip.
MS-CPM15	CPM - 160101	1	2.00	N/A	N/A	N/A	20/10/2022	953	Sand	Complete.
	CPM - 160101	2	3.80	N/A	N/A	N/A	20/10/2022	602	Sand	Rapid deflation. Membrane ruptured. One cycle.
	CPM - 160102	3	6.00	N/A	N/A	N/A	20/10/2022	1086	Sand	Complete.
	CPM - 160102	4	8.00	N/A	N/A	N/A	21/10/2022	1970	Sand	Rapid deflation. Membrane ruptured. Three cycles.
MS-CPM18	CPM - 160102	1	2.00	N/A	N/A	N/A	11/10/2022	1496	Sand	Membrane slip. Slight weep of pressure.
	CPM - 160102	2	4.00	N/A	N/A	N/A	11/10/2022	1410	Sand	Membrane slip. Slight weep of pressure.
	CPM - 160102	3	6.00	N/A	N/A	N/A	11/10/2022	1287	Sand	Maximum displacement. Good test.
	CPM - 160102	4	8.00	N/A	N/A	N/A	12/10/2022	2613	Sand	Full drop in pressure due to membrane slip.

Exploratory Position ID	Probe	Test Number	Test Depth [m BGL]	Test Pocket Depth		Water Depth [m]	Date	Maximum Pressure [kPa]	Material	Remarks from Operator
				From [m BGL]	To [m BGL]					
	CPM - 160101	5	10.00	N/A	N/A	N/A	12/10/2022	2009	Sand	Maximum displacement. Good test.

H.1.3 Calibration Reports

Title	Reference
Arm and Pressure Cells Calibration Certificates	H.1.3.1
System Stiffness Calibration Certificates	H.1.3.2
Membrane Stiffness Calibration Certificate	H.1.3.3
Calibration Reference List	H.1.3.4

H.1.3.1 Arm and Pressure Cells Calibration Certificates

Calibration Date	Operator	Instrument Type	Serial Number	Instrument Name
20/07/2022	EJS	HPD	200422	Fugro 95 HPD 3

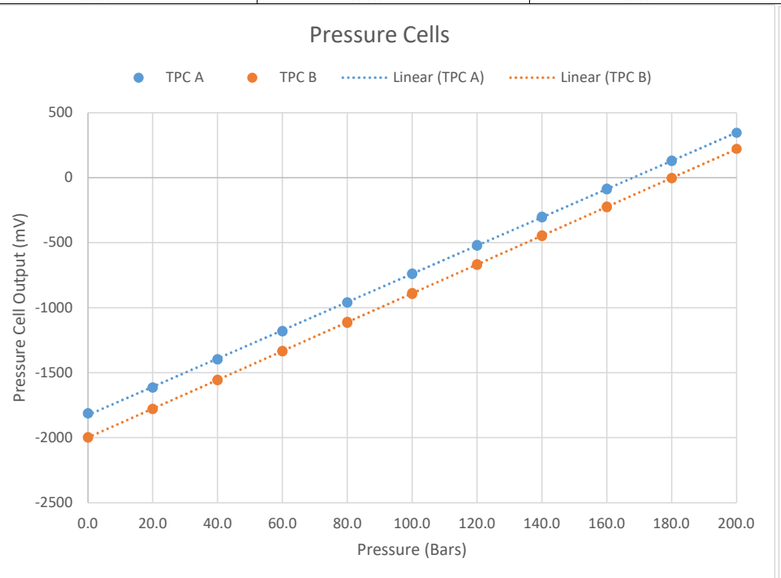
Notes:

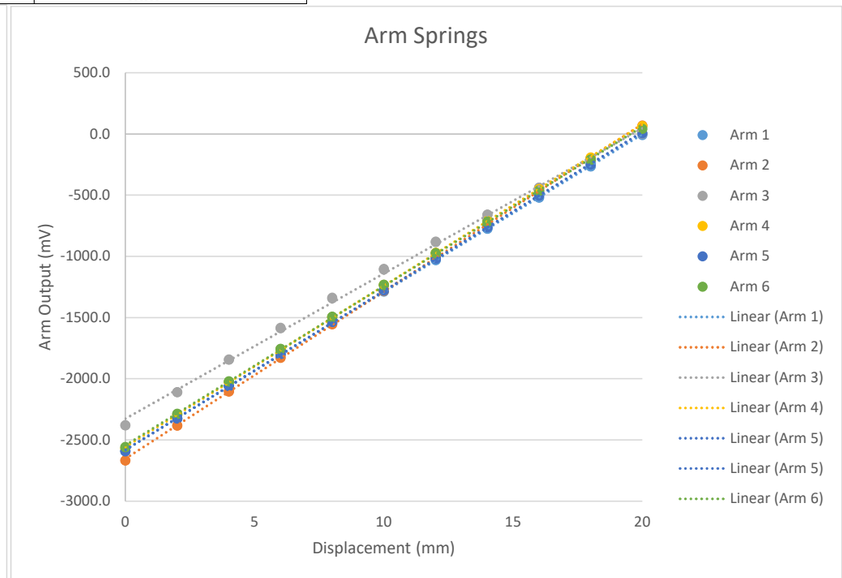
Arm Springs

mm	Arm 1	Linearity	Hysteresis	Arm 2	Linearity	Hysteresis	Arm 3	Linearity	Hysteresis	Arm 4	Linearity	Hysteresis	Arm 5	Linearity	Hysteresis	Arm 6	Linearity	Hysteresis
	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)
0	-2588.2	102.2	0.07	-2666.4	104.6	0.04	-2378.7	113.5	0.07	-2569.8	103.7	0.01	-2591.2	103.0	0.04	-2557.6	104.0	0.02
2	-2324.8	101.7	-0.04	-2380.3	102.0	0.07	-2109.4	111.8	-0.03	-2296.7	102.2	0.01	-2323.6	101.8	0.08	-2286.8	102.0	-0.04
4	-2062.5	100.8	-0.07	-2101.3	101.0	0.12	-1844.1	108.7	-0.08	-2027.4	101.4	-0.01	-2059	101.1	0.07	-2021.4	101.3	-0.07
6	-1802.5	100.2	-0.10	-1825.1	100.6	0.14	-1586.1	102.8	-0.16	-1760.3	100.4	-0.02	-1796.4	100.6	0.07	-1757.7	101.0	-0.08
8	-1544.1	99.5	-0.12	-1550	99.8	0.16	-1342.1	99.0	-0.21	-1495.7	99.9	0.00	-1534.9	99.6	0.06	-1494.9	99.8	-0.10
10	-1287.5	99.5	-0.16	-1277	99.2	0.16	-1107.1	94.5	-0.23	-1232.6	99.2	-0.02	-1276	99.4	0.05	-1235	99.5	-0.15
12	-1031	99.1	-0.14	-1005.7	98.7	0.14	-882.8	93.7	-0.19	-971.2	99.1	-0.03	-1017.6	99.1	0.04	-976	99.1	-0.13
14	-775.4	99.1	-0.14	-735.7	98.4	0.13	-660.5	93.0	-0.14	-710	98.5	-0.01	-760.1	98.9	0.03	-718.1	97.7	-0.12
16	-520	99.1	-0.12	-466.6	98.5	0.07	-439.8	93.1	-0.10	-450.4	97.7	-0.02	-503.2	98.3	0.02	-463.8	97.5	-0.16
18	-264.6	99.1	-0.06	-197.3	97.8	0.05	-218.9	93.0	-0.04	-193.1	98.0	-0.05	-247.8	97.9	0.02	-209.9	97.4	-0.05
20	-9	-98.5		70.2	-98.3		1.7	-92.5		65	-97.4		6.7	-98.1		43.5	-96.8	
18	-263	-98.5		-198.6	-98.7		-217.9	-92.5		-191.7	-98.0		-248.3	-98.2		-208.5	-96.5	
16	-516.9	-98.9		-468.6	-99.0		-437.5	-92.6		-449.9	-98.6		-503.6	-99.1		-459.6	-98.1	
14	-771.8	-99.1		-739.2	-98.9		-657.2	-93.1		-709.7	-98.9		-761	-99.1		-714.9	-99.0	
12	-1027.3	-99.4		-1009.6	-99.4		-878.2	-94.2		-970.4	-99.3		-1018.6	-99.6		-972.5	-99.4	
10	-1283.5	-99.9		-1281.4	-99.9		-1101.7	-99.2		-1232	-100.1		-1277.3	-99.7		-1231.2	-100.3	
8	-1541.1	-100.4		-1554.5	-100.3		-1337.2	-103.3		-1495.6	-100.3		-1536.4	-100.7		-1492.2	-101.2	
6	-1800	-101.1		-1828.8	-100.8		-1582.4	-109.5		-1759.9	-101.5		-1798.2	-101.1		-1755.5	-101.5	
4	-2060.7	-102.0		-2104.5	-101.6		-1842.2	-112.3		-2027.2	-102.4		-2060.8	-101.9		-2019.7	-102.2	
2	-2323.8	-103.3		-2382.3	-104.3		-2108.7	-114.4		-2296.9	-103.7		-2325.6	-102.6		-2285.8	-104.6	
0	-2590			-2667.6			-2380.3			-2570.1			-2592.2			-2558.1		
Intercept	**-2579.5**	**mV**		**-2653.0**	**mV**		**-2325.9**	**mV**		**-2556.8**	**mV**		**-2581.5**	**mV**		**-2543.1**	**mV**	
Slope	**128.9**	**mV/mm**		**136.7**	**mV/mm**		**118.7**	**mV/mm**		**131.7**	**mV/mm**		**129.9**	**mV/mm**		**130.1**	**mV/mm**	
Max Output		**mV**			**mV**			**mV**			**mV**			**mV**			**mV**	
Min Output		**mV**			**mV**			**mV**			**mV**			**mV**			**mV**	
Max Range		**mm**			**mm**			**mm**			**mm**			**mm**			**mm**	

Pressure Cells

Gauge Zero Offset:	0.0					
Bars	**TPC A**	**Linearity**	**Hysteresis**	**TPC B**	**Linearity**	**Hysteresis**
	(mV)	(%)	(%)	(mV)	(%)	(%)
0.0	-1814.4	92.4	-0.09	-1994.6	97.3	0.18
20.0	-1613.6	99.1	0.00	-1778.8	99.4	-0.09
40.0	-1398.2	99.7	-0.13	-1558.3	99.8	-0.17
60.0	-1181.6	101.3	-0.16	-1337	99.8	-0.23
80.0	-961.5	101.1	-0.18	-1115.6	100.0	-0.28
100.0	-741.8	100.7	-0.23	-893.8	100.1	-0.28
120.0	-523	99.8	-0.27	-671.7	100.5	-0.30
140.0	-306.1	99.9	-0.29	-448.8	100.2	-0.22
160.0	-89	100.1	-0.28	-226.6	100.6	-0.21
180.0	128.5	100.3	-0.13	-3.5	101.2	-0.08
200.0	346.4	99.0		220.9	100.4	
180.0	131.4	98.6		-1.7	99.3	
160.0	-82.9	99.8		-221.9	100.1	
140.0	-299.8	100.1		-443.9	99.7	
120.0	-517.2	101.1		-665	100.3	
100.0	-736.9	101.6		-887.5	100.0	
80.0	-957.7	101.4		-1109.4	100.3	
60.0	-1178.1	100.0		-1331.8	100.4	
40.0	-1395.4	100.5		-1554.6	100.1	
20.0	-1613.7	91.5		-1776.7	100.0	
0.0	-1812.5			-1998.5		
Intercept	-1825.9	mV		-1999.1	mV	
Slope	10.864	mV/Bars		11.091	mV/Bars	
Slope	108.6	mV/MPa		110.9	mV/MPa	





☑ ***Plot Arm*** ☑ ***Plot Arm*** ☑ ***Plot Arm***

☑ ***Plot Arm*** ☑ ***Plot Arm*** ☑ ***Plot Arm***

Calibration Date	Operator	Instrument Type	Serial Number	Instrument Name
20/09/2022	KGC	HPD	220826	Lilith

Notes: TPC B replaced with new style. Pressure Cals 20/09/2022; Arms calibrated 23/09/2022

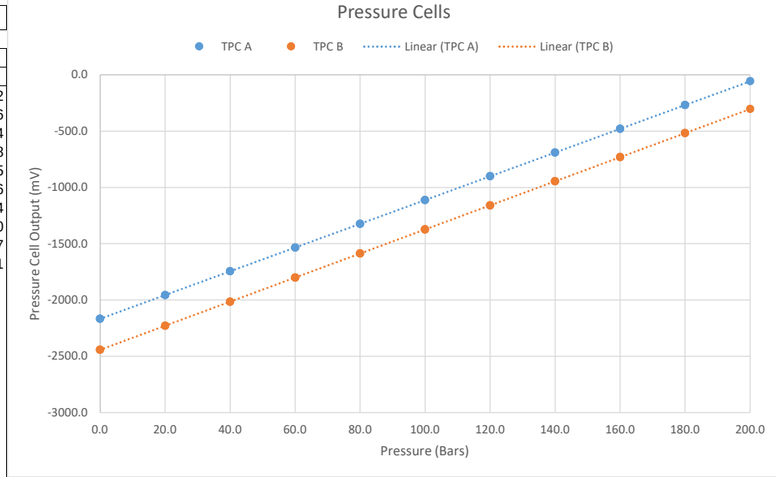
Arm Springs

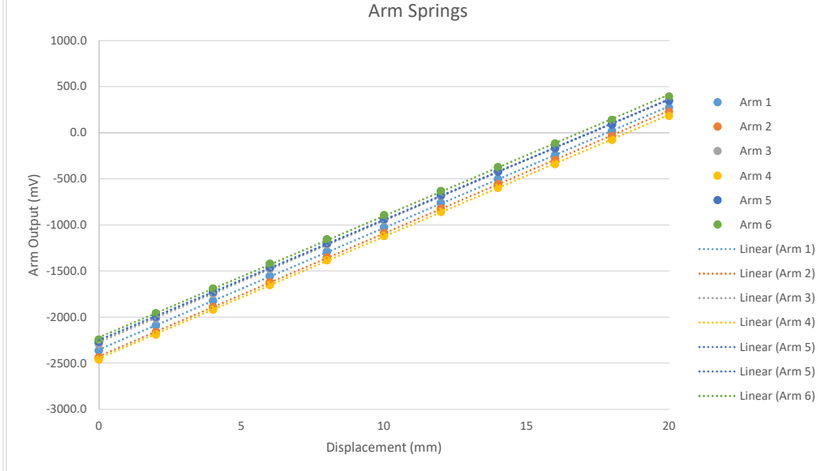
mm	Arm 1	Linearity	Hysteresis	Arm 2	Linearity	Hysteresis	Arm 3	Linearity	Hysteresis	Arm 4	Linearity	Hysteresis	Arm 5	Linearity	Hysteresis	Arm 6	Linearity	Hysteresis
	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)
0	-2362.3	102.8	-0.01	-2434.6	103.1	0.05	-2288.6	105.3	0.08	-2458.2	103.0	0.02	-2266.6	105.0	0.02	-2241.4	107.9	0.05
2	-2091.2	102.0	-0.04	-2159.9	102.2	0.04	-2010.8	102.2	-0.01	-2186.1	102.1	0.03	-1992.5	102.6	0.02	-1957.3	102.3	0.00
4	-1822.2	101.3	-0.05	-1887.7	101.3	0.10	-1741.2	101.2	0.04	-1916.4	101.5	0.02	-1724.7	101.6	0.01	-1688.0	101.4	-0.02
6	-1554.9	100.5	-0.07	-1618.0	100.6	0.08	-1474.1	100.6	0.01	-1648.2	100.6	0.02	-1459.5	100.9	-0.02	-1421.0	100.6	-0.05
8	-1289.7	99.9	-0.09	-1350.1	100.0	0.03	-1208.6	99.7	0.02	-1382.5	100.1	0.01	-1196.1	99.8	-0.03	-1156.2	99.7	-0.07
10	-1026.2	98.9	-0.09	-1083.9	99.4	0.04	-945.5	99.3	0.00	-1118.2	99.3	0.01	-935.4	99.0	-0.04	-893.7	99.5	-0.10
12	-765.4	98.7	-0.18	-819.1	98.6	0.05	-683.5	99.0	0.01	-855.9	98.2	-0.03	-676.9	98.1	-0.05	-631.6	98.4	-0.11
14	-505.0	99.0	-0.23	-556.6	98.1	-0.06	-422.2	97.3	0.00	-596.4	98.7	-0.10	-420.7	98.0	-0.09	-372.4	97.3	-0.09
16	-243.8	98.4	-0.17	-295.4	98.5	-0.08	-165.4	98.0	-0.11	-335.6	98.2	0.00	-164.9	98.0	-0.12	-116.2	97.4	-0.06
18	15.9	98.3	-0.12	-33.2	98.1	0.03	93.2	97.8	-0.02	-76.1	98.1	0.00	91.1	97.8	-0.01	140.4	96.5	-0.06
20	275.1	-97.0		228.0	-98.4		351.1	-97.5		182.9	-98.0		346.5	-97.7		394.5	-95.9	
18	19.1	-98.0		-34.0	-97.4		93.8	-97.1		-76.0	-98.3		91.3	-96.9		141.9	-97.4	
16	-239.4	-98.4		-293.4	-98.3		-162.4	-98.5		-335.7	-97.7		-161.8	-98.3		-114.5	-97.0	
14	-498.9	-99.2		-555.1	-99.6		-422.3	-99.1		-593.7	-99.0		-418.4	-98.5		-369.9	-98.2	
12	-760.6	-99.8		-820.4	-99.4		-683.7	-99.2		-855.2	-99.6		-675.6	-99.1		-628.6	-99.6	
10	-1023.9	-99.8		-1085.0	-99.9		-945.4	-100.0		-1118.4	-100.1		-934.4	-99.9		-891.0	-100.0	
8	-1287.2	-100.8		-1351.0	-101.0		-1209.1	-100.6		-1382.8	-100.6		-1195.2	-101.0		-1154.4	-100.8	
6	-1553.1	-101.5		-1620.0	-101.5		-1474.4	-101.5		-1648.6	-101.6		-1458.9	-101.9		-1419.8	-101.7	
4	-1820.9	-102.0		-1890.4	-101.6		-1742.3	-101.7		-1916.9	-102.2		-1724.9	-102.6		-1687.5	-102.5	
2	-2090.1	-103.1		-2161.0	-103.3		-2010.6	-106.1		-2186.8	-102.9		-1992.9	-105.0		-1957.3	-108.4	
0	-2362.1			-2436.0			-2290.6			-2458.7			-2267.1			-2242.7		
Intercept	**-2350.8 mV**			**-2423.3 mV**			**-2272.6 mV**			**-2446.5 mV**			**-2249.9 mV**			**-2219.1 mV**		
Slope	**131.9 mV/mm**			**133.2 mV/mm**			**131.9 mV/mm**			**132.1 mV/mm**			**130.6 mV/mm**			**131.7 mV/mm**		
Max Output	**mV**			**mV**			**mV**			**mV**			**mV**			**mV**		
Min Output	**mV**			**mV**			**mV**			**mV**			**mV**			**mV**		
Max Range	**mm**			**mm**			**mm**			**mm**			**mm**			**mm**		

Pressure Cells

Gauge Zero Offset: 0.0

Bars	TPC A	Linearity	Hysteresis	TPC B	Linearity	Hysteresis
	(mV)	(%)	(%)	(mV)	(%)	(%)
0.0	-2166.5	100.0	-0.02	-2442.3	99.9	-0.12
20.0	-1955.6	99.9	-0.01	-2228.8	99.8	-0.06
40.0	-1745.0	99.8	-0.03	-2015.5	100.0	-0.04
60.0	-1534.6	100.0	-0.03	-1801.8	99.8	-0.08
80.0	-1323.8	99.9	-0.04	-1588.5	100.1	-0.15
100.0	-1113.1	100.4	-0.06	-1374.6	100.0	-0.16
120.0	-901.5	99.8	-0.03	-1160.9	100.3	-0.14
140.0	-691.0	100.0	-0.01	-946.5	100.2	-0.10
160.0	-480.2	100.2	-0.02	-732.3	100.2	-0.07
180.0	-269.0	100.4	-0.03	-518.0	100.4	0.01
200.0	-57.3	100.1		-303.3	100.6	
180.0	-268.4	100.2		-518.3	99.4	
160.0	-479.7	100.1		-730.8	99.9	
140.0	-690.8	99.6		-944.3	99.9	
120.0	-900.8	100.1		-1157.9	99.8	
100.0	-1111.9	100.1		-1371.2	100.1	
80.0	-1323.0	100.0		-1585.2	100.5	
60.0	-1533.9	99.8		-1800.1	100.3	
40.0	-1744.3	100.1		-2014.6	99.6	
20.0	-1955.3	100.0		-2227.6	99.2	
0.0	-2166.1			-2439.7		
Intercept	-2166.5 mV			-2441.9 mV		
Slope	10.542 mV/Bars			10.689 mV/Bars		
Slope	105.4 mV/MPa			106.9 mV/MPa		





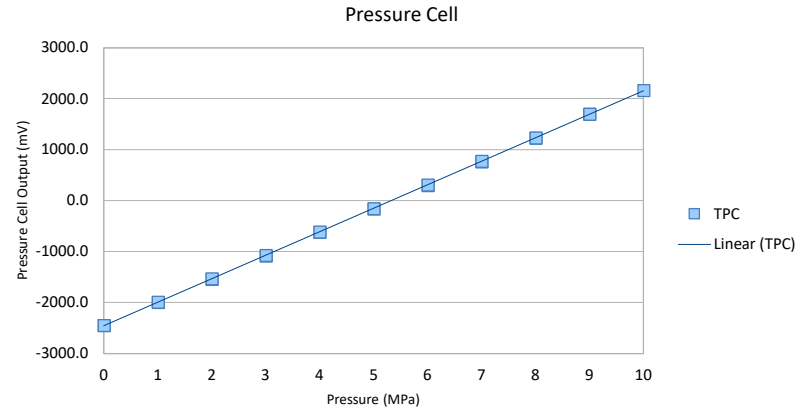
☑ ***Plot Arm 1*** ☑ ***Plot Arm 2*** ☑ ***Plot Arm 3***

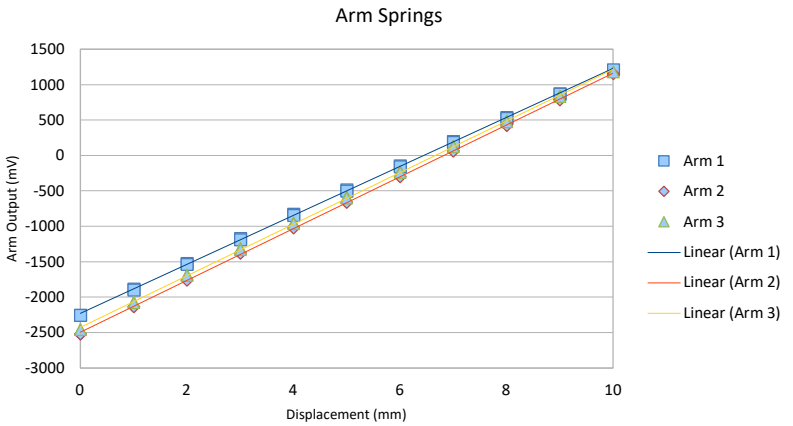
☑ ***Plot Arm 4*** ☑ ***Plot Arm 5*** ☑ ***Plot Arm 6***

Calibration Date	Operator	Instrument Type	Serial Number	Instrument Name	Interface Unit	Electronics Can
04/10/22	KGC	CPM	160101	FES 160101	enter EIU S/N	151220

Notes:

	Arm Springs									Pressure Cell			
										auge Zero Offset (Bar):		0.0	
mm	Arm 1	Linearity	Hysteresis	Arm 2	Linearity	Hysteresis	Arm 3	Linearity	Hysteresis	MPa	TPC	Linearity	Hysteresis
	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)		(mV)	(%)	(%)
0	-2252.8	107.6	0.05	-2521.3	107.3	-0.01	-2457.0	107.3	0.01	**0.00**	-2445.4	98.1	-0.04
1	-1880.6	104.8	0.40	-2128.8	104.6	0.20	-2066.5	105.7	0.22	**1.00**	-1993.3	98.7	-0.19
2	-1518.1	101.4	0.47	-1746.3	103.0	0.32	-1681.6	102.3	0.33	**2.00**	-1538.1	99.3	-0.23
3	-1167.6	99.2	0.53	-1369.5	98.3	0.35	-1309.2	100.1	0.40	**3.00**	-1080.5	99.9	-0.28
4	-824.4	99.1	0.51	-1009.8	98.2	0.32	-944.9	99.8	0.43	**4.00**	-619.8	99.7	-0.22
5	-481.6	99.0	0.48	-650.6	98.5	0.30	-581.7	99.1	0.46	**5.00**	-160.2	100.5	-0.23
6	-139.3	98.7	0.45	-290.2	98.7	0.28	-221.0	98.1	0.43	**6.00**	302.9	100.8	-0.25
7	202.0	98.0	0.41	70.8	98.6	0.28	136.2	97.3	0.36	**7.00**	767.4	100.8	-0.21
8	541.0	97.5	0.36	431.5	98.9	0.23	490.5	95.9	0.28	**8.00**	1231.9	101.3	-0.15
9	878.1	97.2	0.24	793.1	99.0	0.17	839.6	94.6	0.15	**9.00**	1699.1	101.4	-0.07
10	1214.3	99.6		1155.3	100.8		1184.1	96.1		**10.00**	2166.5	100.7	
9	869.8	98.7		786.7	99.4		834.2	97.2		**9.00**	1702.3	100.5	
8	528.6	98.6		423.1	99.1		480.2	98.1		**8.00**	1238.9	100.1	
7	187.7	99.0		60.5	98.7		123.2	98.8		**7.00**	777.3	100.5	
6	-154.8	99.3		-300.5	98.7		-236.7	99.4		**6.00**	314.2	100.6	
5	-498.2	99.5		-661.7	98.4		-598.5	99.5		**5.00**	-149.7	99.7	
4	-842.1	99.4		-1021.5	98.6		-960.6	99.7		**4.00**	-609.5	99.4	
3	-1185.9	100.8		-1382.2	102.8		-1323.7	101.6		**3.00**	-1067.6	99.7	
2	-1534.5	104.0		-1758.2	103.3		-1693.5	104.7		**2.00**	-1527.4	99.2	
1	-1894.3	104.2		-2136.2	105.2		-2074.6	105.2		**1.00**	-1984.6	99.5	
0	-2254.6			-2521.1			-2457.5			**0.00**	-2443.4		
Zero	**-2227.9 mV**			**-2493.2 mV**			**-2425.2 mV**			**Zero**	**-2453.2 mV**		
Slope	**345.8 mV/mm**			**365.8 mV/mm**			**364.1 mV/mm**			**Slope**	**461.0 mV/MPa**		
Max Outpu	**1858.4 mV**			**2295.1 mV**			**2106.7 mV**						
Max Rang	**11.8 mm**			**13.1 mm**			**12.4 mm**						

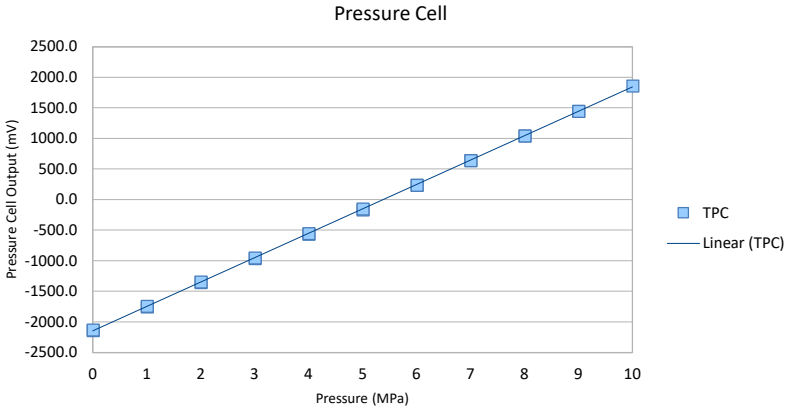


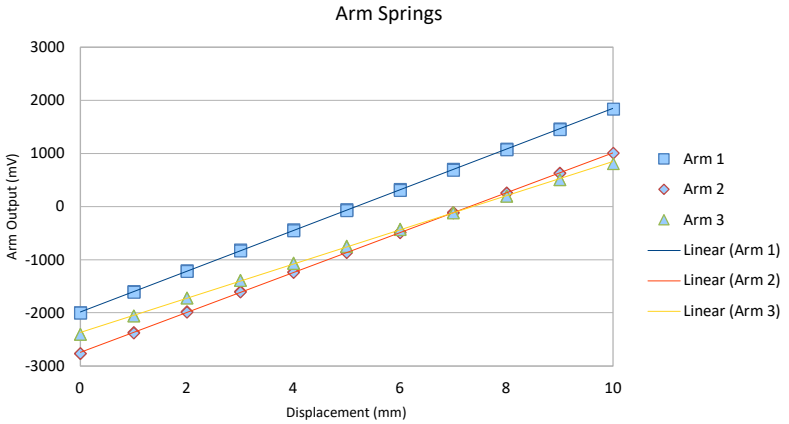


Calibration Date	Operator	Instrument Type	Serial Number	Instrument Name	Interface Unit	Electronics Can
04/10/22	KGC	CPM	160102	FES 160102	enter EIU S/N	160801

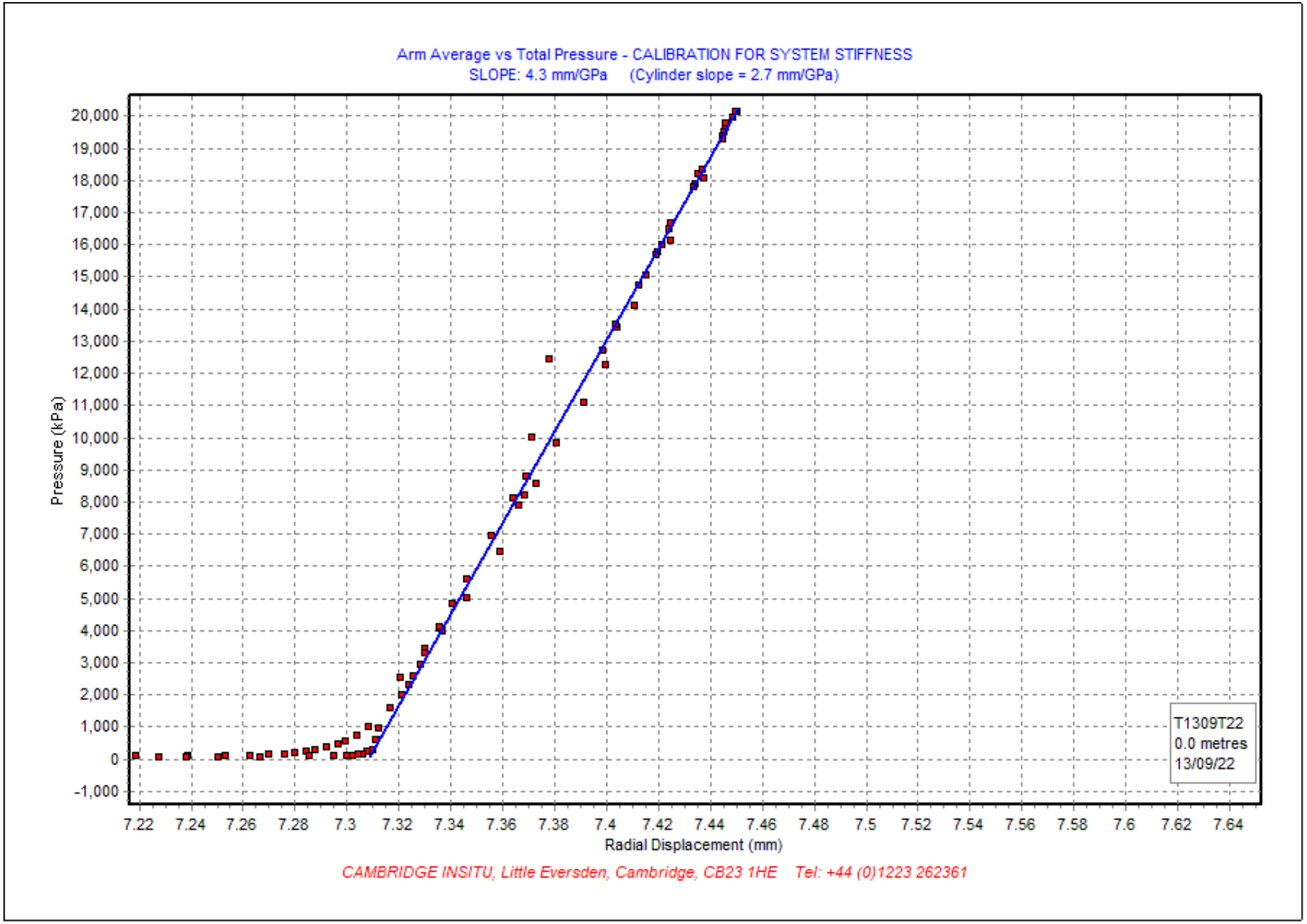
Notes: New TPC Cell

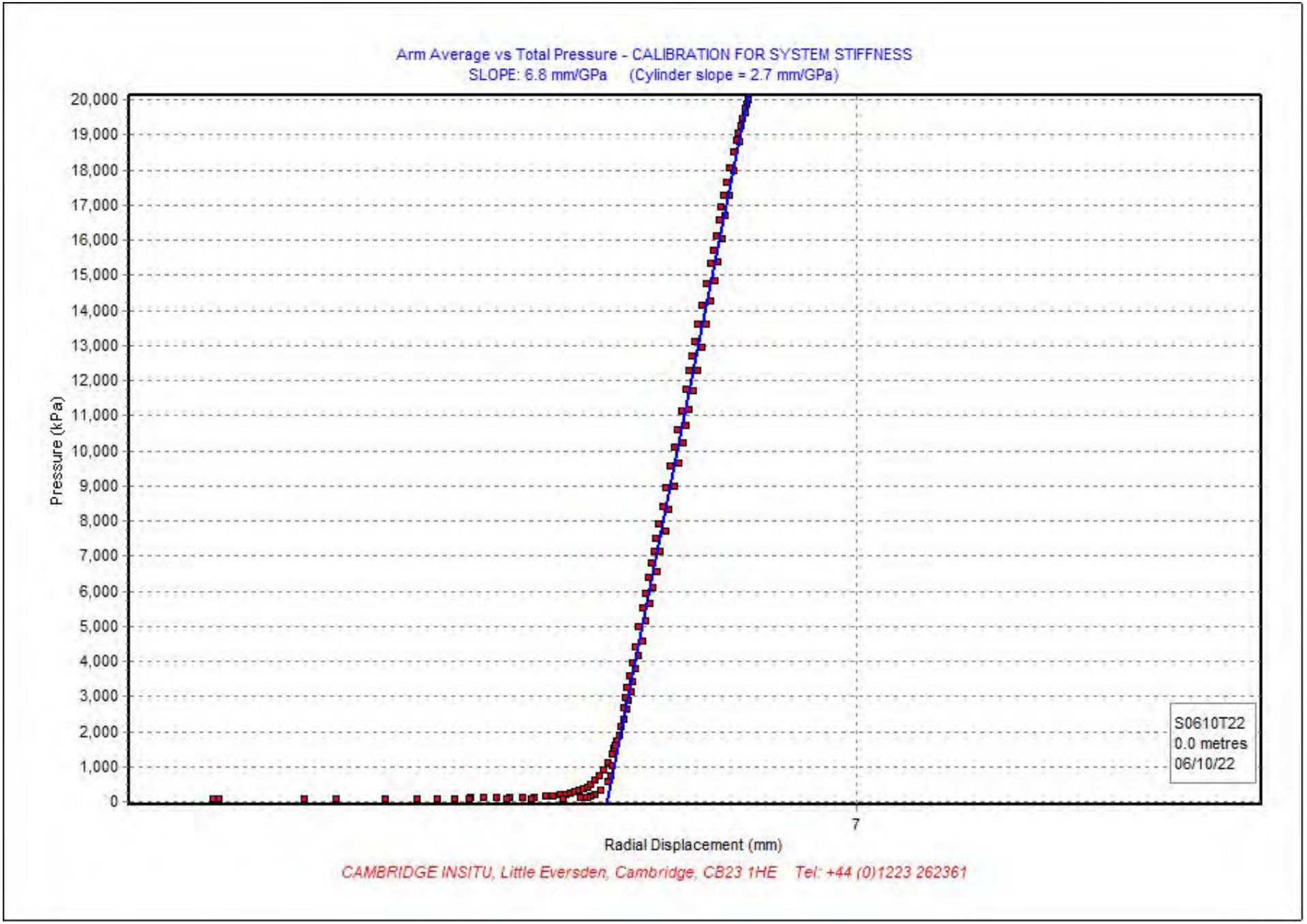
	Arm Springs									Pressure Cell			
										Gauge Zero Offset (Bar):		0.0	
mm	Arm 1	Linearity	Hysteresis	Arm 2	Linearity	Hysteresis	Arm 3	Linearity	Hysteresis	MPa	TPC	Linearity	Hysteresis
	(mV)	(%)	(%)	(mV)	(%)	(%)	(mV)	(%)	(%)		(mV)	(%)	(%)
0	-1994.2	104.0	0.10	-2764.5	105.8	0.02	-2401.2	108.0	0.03	0.00	-2138.0	97.4	-0.21
1	-1595.8	103.3	0.29	-2367.0	105.3	0.21	-2054.1	106.6	0.17	1.00	-1749.3	99.2	-0.24
2	-1200.1	101.8	0.38	-1971.2	100.0	0.29	-1711.2	102.6	0.25	2.00	-1353.6	98.8	-0.27
3	-810.1	99.5	0.48	-1595.3	98.8	0.34	-1381.3	100.9	0.30	3.00	-959.4	100.0	-0.29
4	-428.8	98.7	0.52	-1224.0	99.0	0.39	-1056.9	99.8	0.32	4.00	-560.7	100.1	-0.26
5	-50.9	99.0	0.50	-852.0	99.1	0.38	-736.1	98.7	0.35	5.00	-161.6	100.4	-0.28
6	328.5	99.0	0.50	-479.7	99.2	0.34	-418.8	98.1	0.34	6.00	238.7	100.9	-0.08
7	707.6	99.2	0.41	-106.8	99.0	0.30	-103.3	96.1	0.34	7.00	641.1	101.5	-0.05
8	1087.5	98.8	0.33	265.4	99.0	0.22	205.6	95.2	0.22	8.00	1046.0	101.5	0.06
9	1466.1	98.9	0.19	637.4	98.6	0.13	511.6	93.3	0.13	9.00	1451.0	102.6	-0.01
10	1845.0	100.8		1007.9	99.9		811.6	94.6		10.00	1860.4	102.6	
9	1458.8	100.3		632.4	99.8		507.5	96.1		9.00	1451.2	102.2	
8	1074.7	99.9		257.1	99.9		198.6	97.3		8.00	1043.7	100.4	
7	691.9	99.9		-118.3	99.5		-114.1	98.1		7.00	643.2	100.6	
6	309.3	99.1		-492.4	99.4		-429.6	98.8		6.00	241.9	98.4	
5	-70.2	98.8		-866.2	99.1		-747.3	99.5		5.00	-150.5	100.2	
4	-448.8	99.1		-1238.6	98.4		-1067.3	100.7		4.00	-550.3	99.6	
3	-828.5	100.8		-1608.3	99.5		-1391.0	102.1		3.00	-947.7	99.1	
2	-1214.6	102.4		-1982.3	104.4		-1719.3	105.8		2.00	-1343.0	99.5	
1	-1607.0	102.1		-2374.8	103.9		-2059.6	106.6		1.00	-1739.7	97.7	
0	-1998.1			-2765.3	0.0		-2402.3			0.00	-2129.5		
Zero	-1980.1 mV			-2742.5 mV			-2367.2 mV			Zero	-2145.5 mV		
Slope	383.1 mV/mm			375.9 mV/mm			321.5 mV/mm			Slope	398.9 mV/MPa		
Max Outpu	1650.8 mV			2358.0 mV			2638.8 mV						
Max Rang	9.5 mm			13.6 mm			15.6 mm						

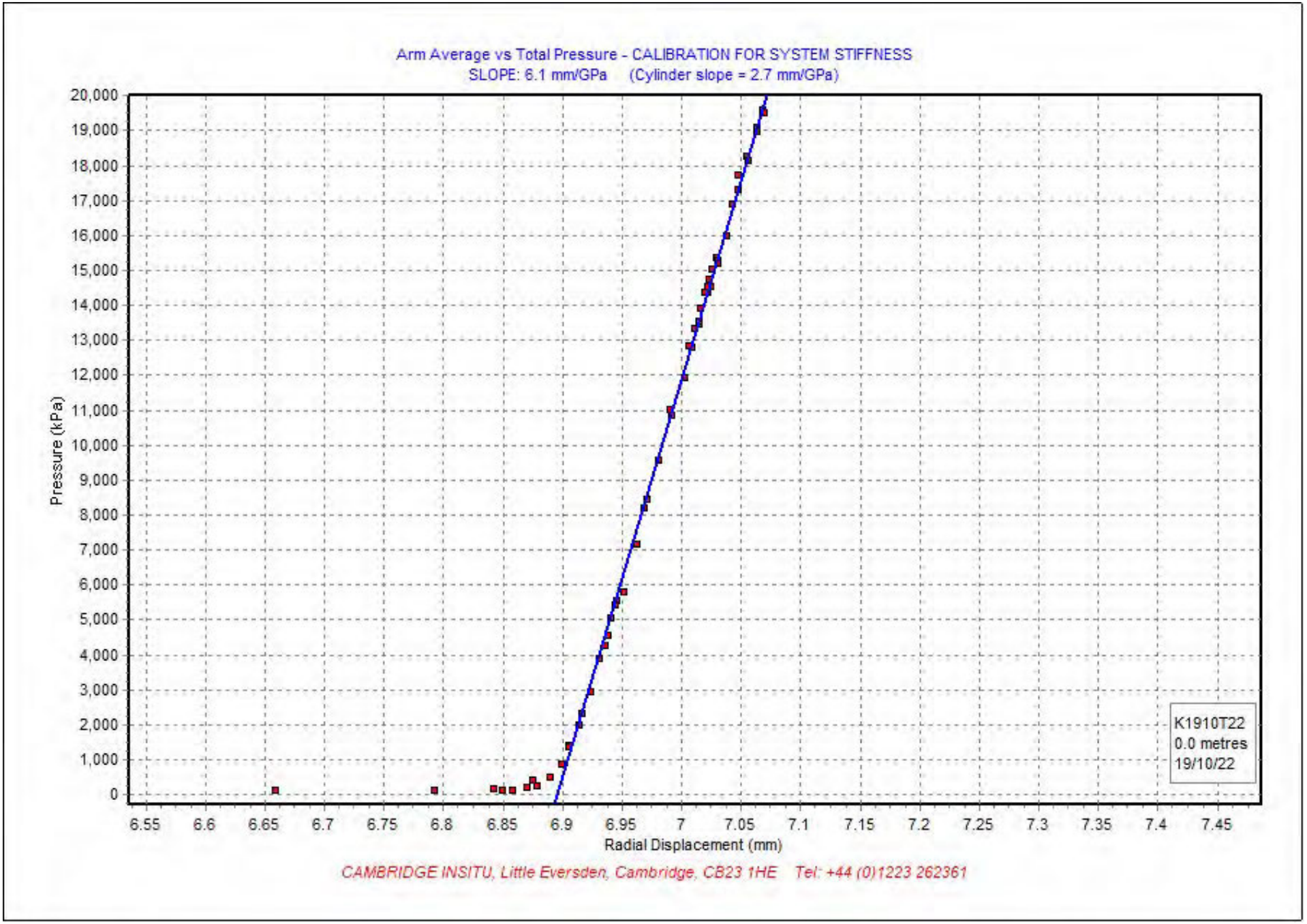


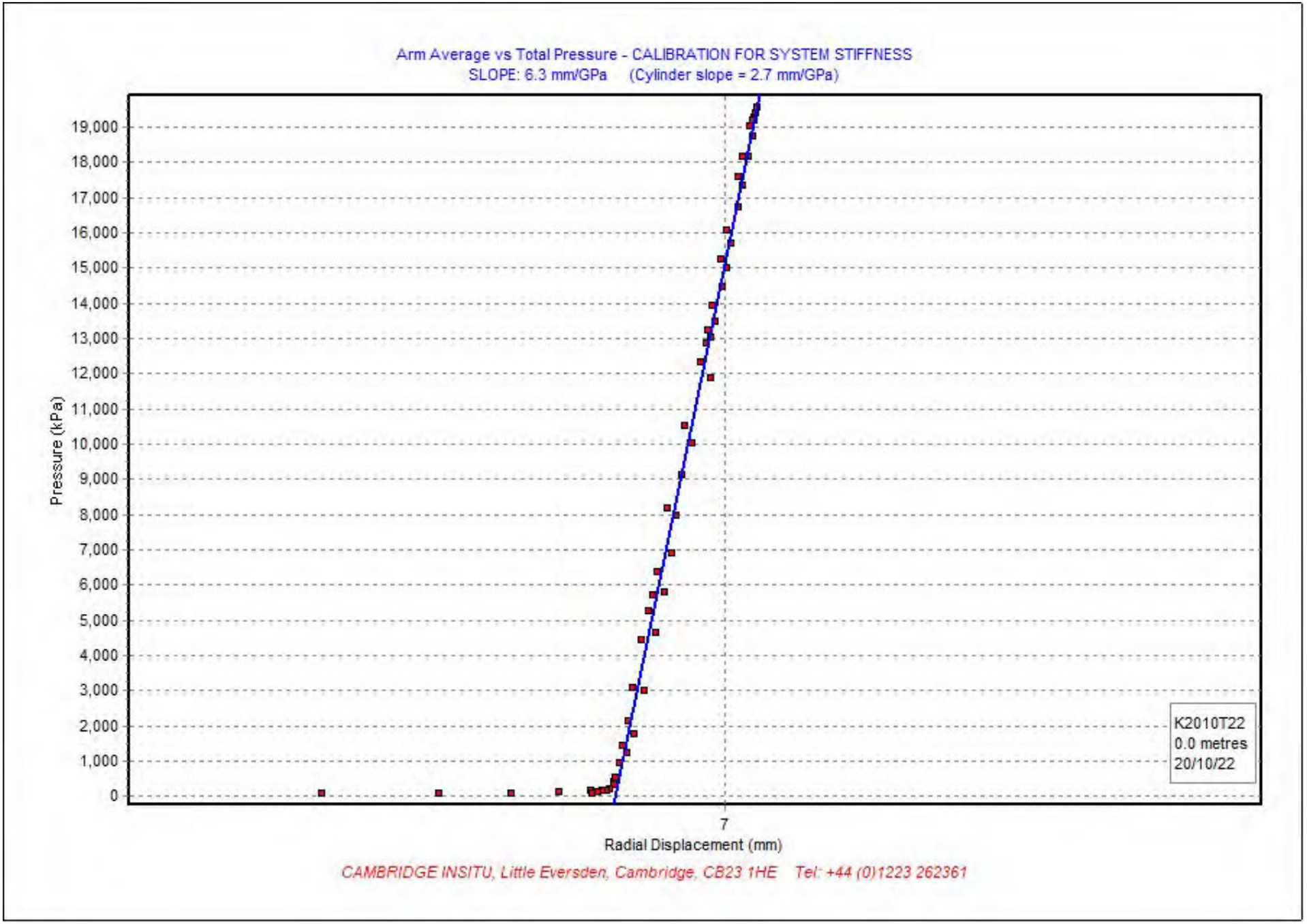


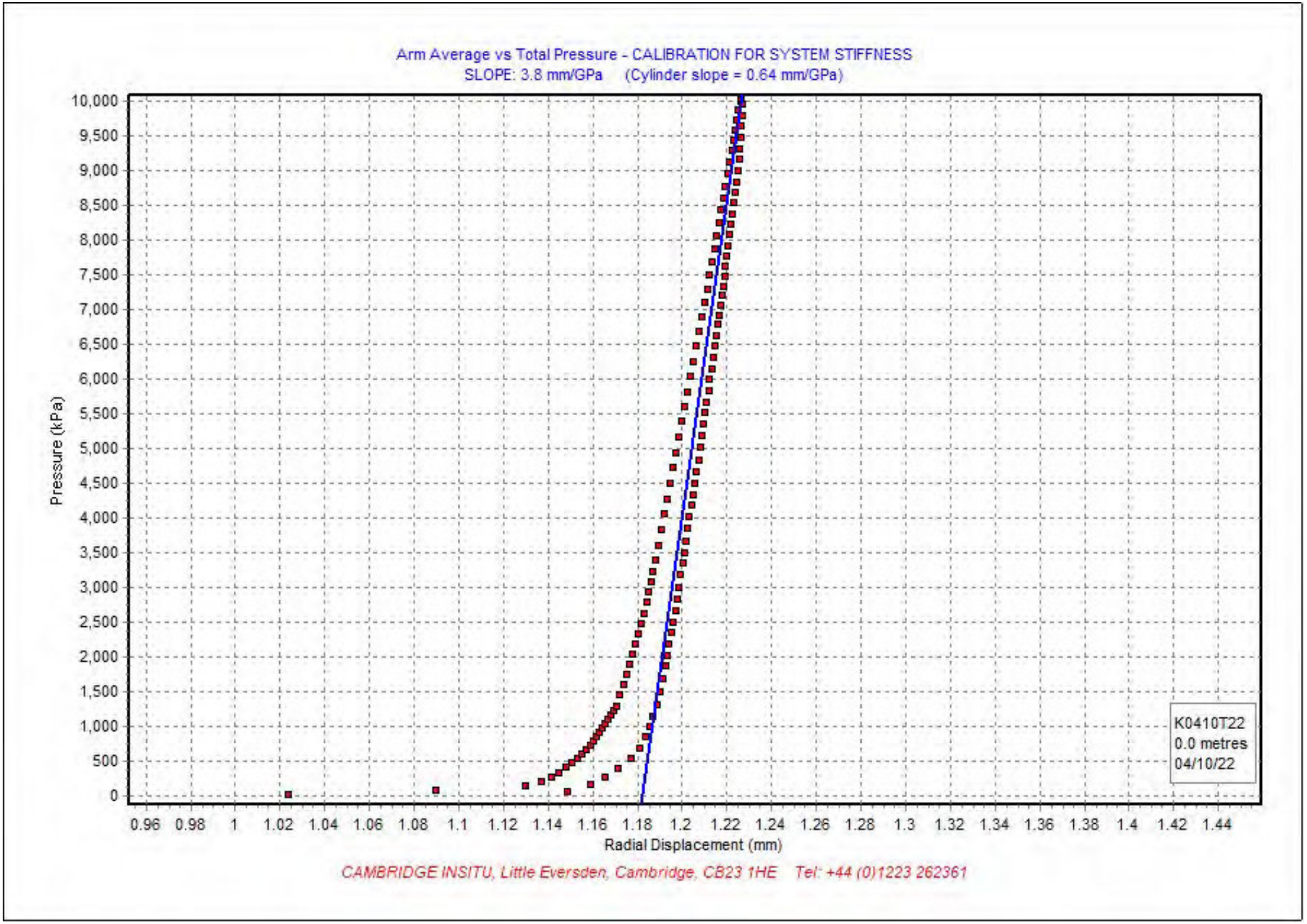
H.1.3.2 System Stiffness Calibration Certificates

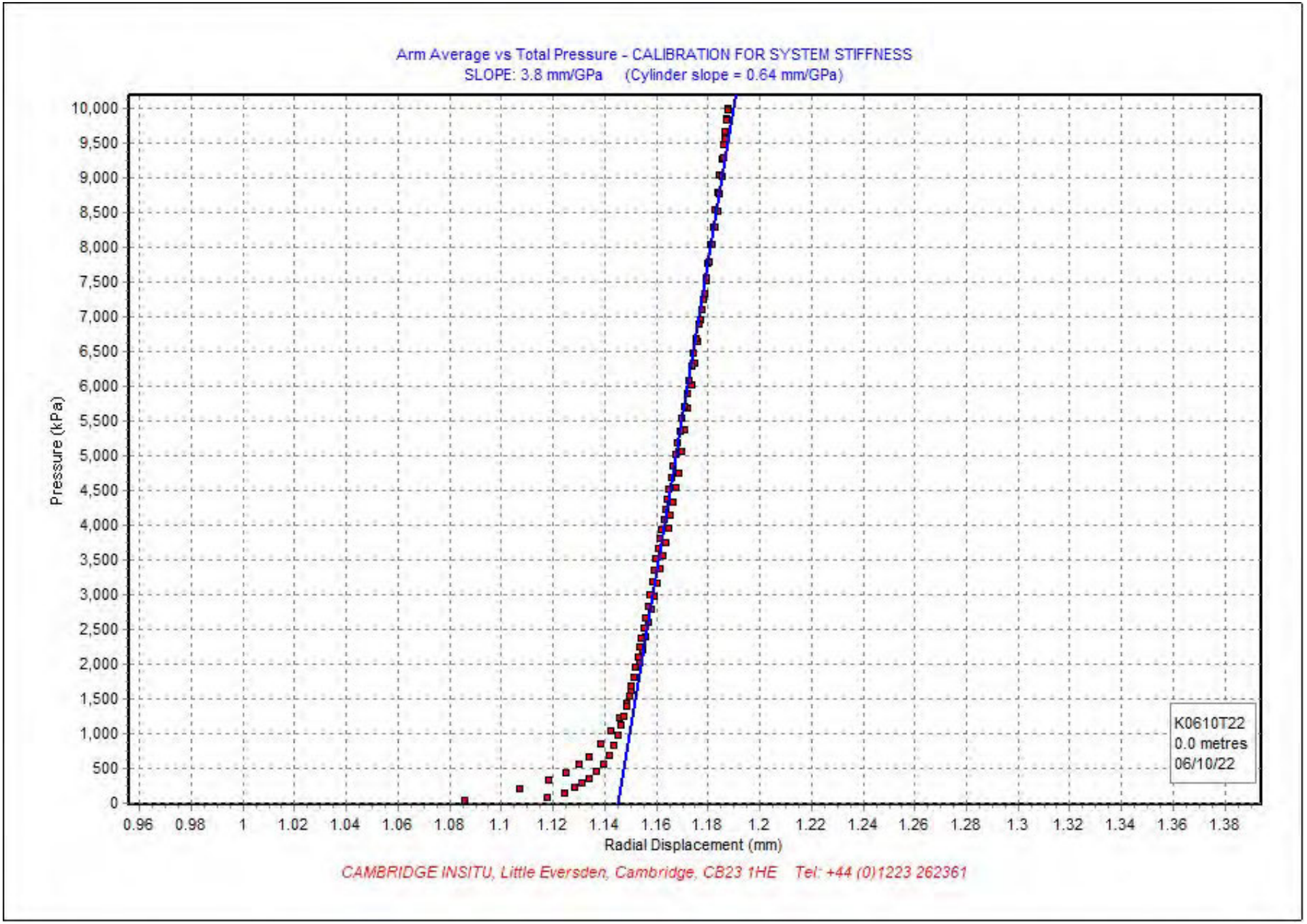

Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 4.3 mm/GPa (Cylinder slope = 2.7 mm/GPa)
Pressure (kPa)
20,000
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-1,000
7.22
7.24
7.26
7.28
7.3
7.32
7.34
7.36
7.38
7.4
7.42
7.44
7.46
7.48
7.5
7.52
7.54
7.56
7.58
7.6
7.62
7.64
Radial Displacement (mm)
T1309T22
0.0 metres
13/09/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

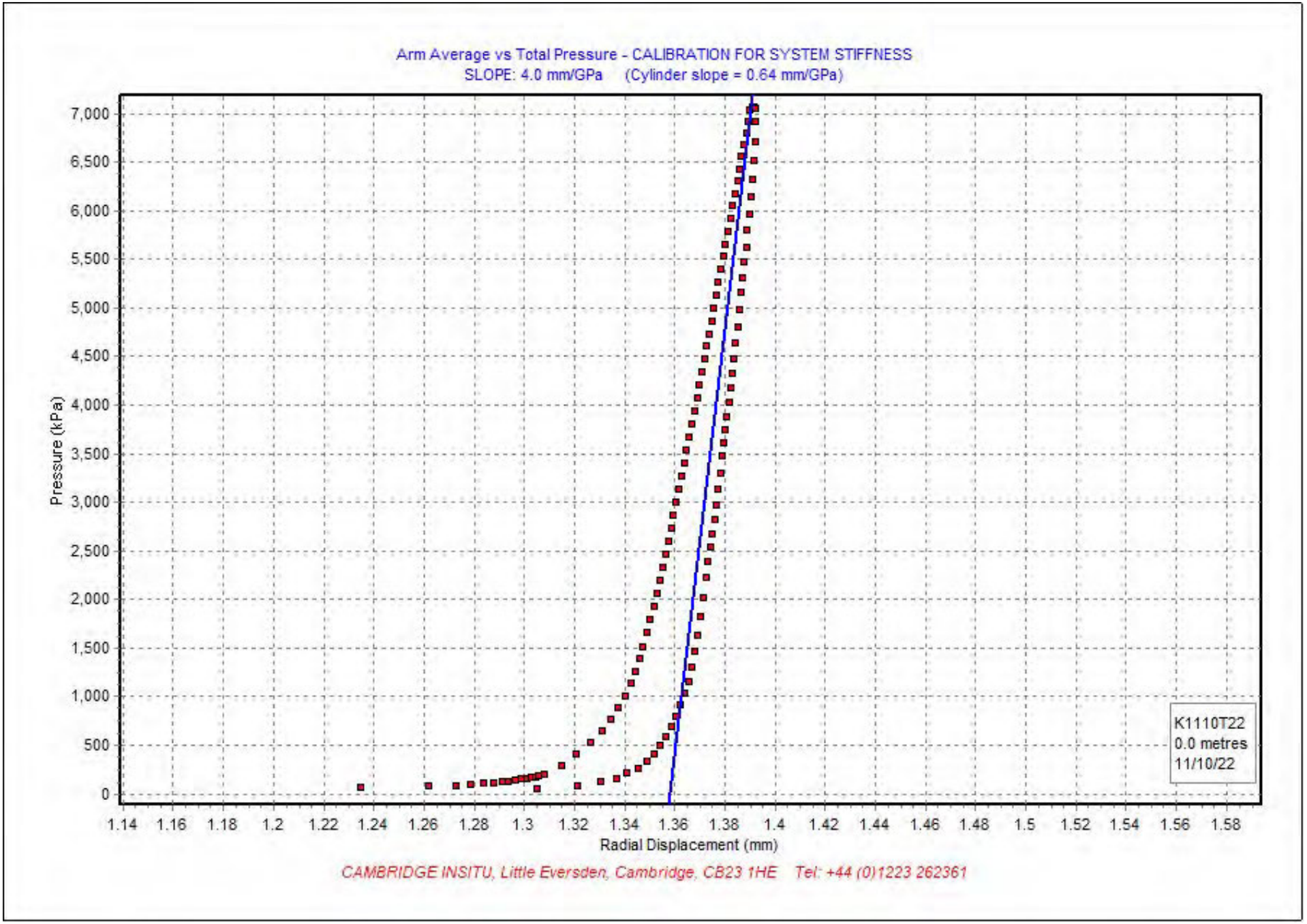

Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 6.8 mm/GPa (Cylinder slope = 2.7 mm/GPa)
Pressure (kPa)
20,000
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
7
Radial Displacement (mm)
S0610T22
0.0 metres
06/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

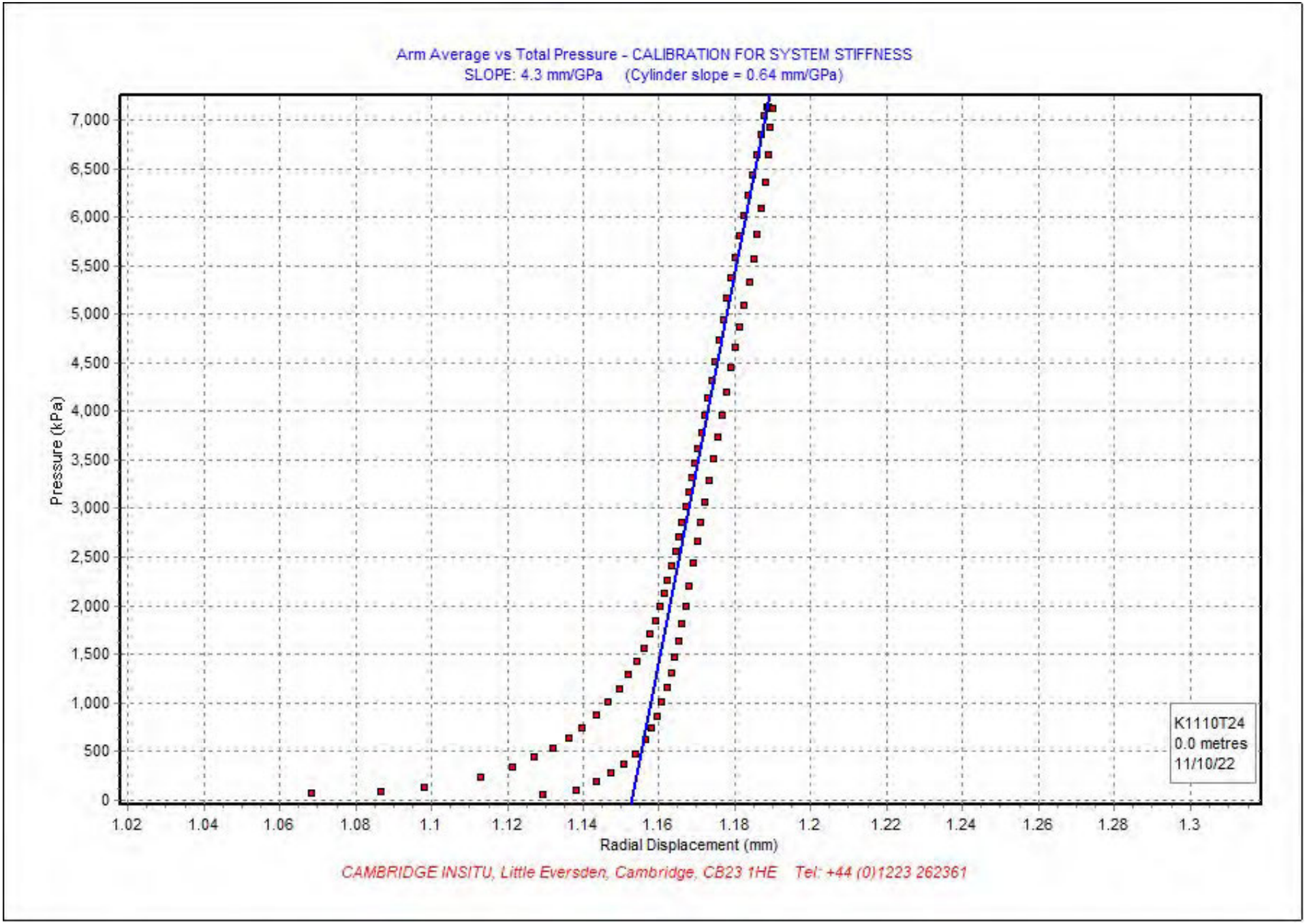

Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 6.1 mm/GPa (Cylinder slope = 2.7 mm/GPa)
Pressure (kPa)
20,000
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
6.55
6.6
6.65
6.7
6.75
6.8
6.85
6.9
6.95
7
7.05
7.1
7.15
7.2
7.25
7.3
7.35
7.4
7.45
Radial Displacement (mm)
K1910T22
0.0 metres
19/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

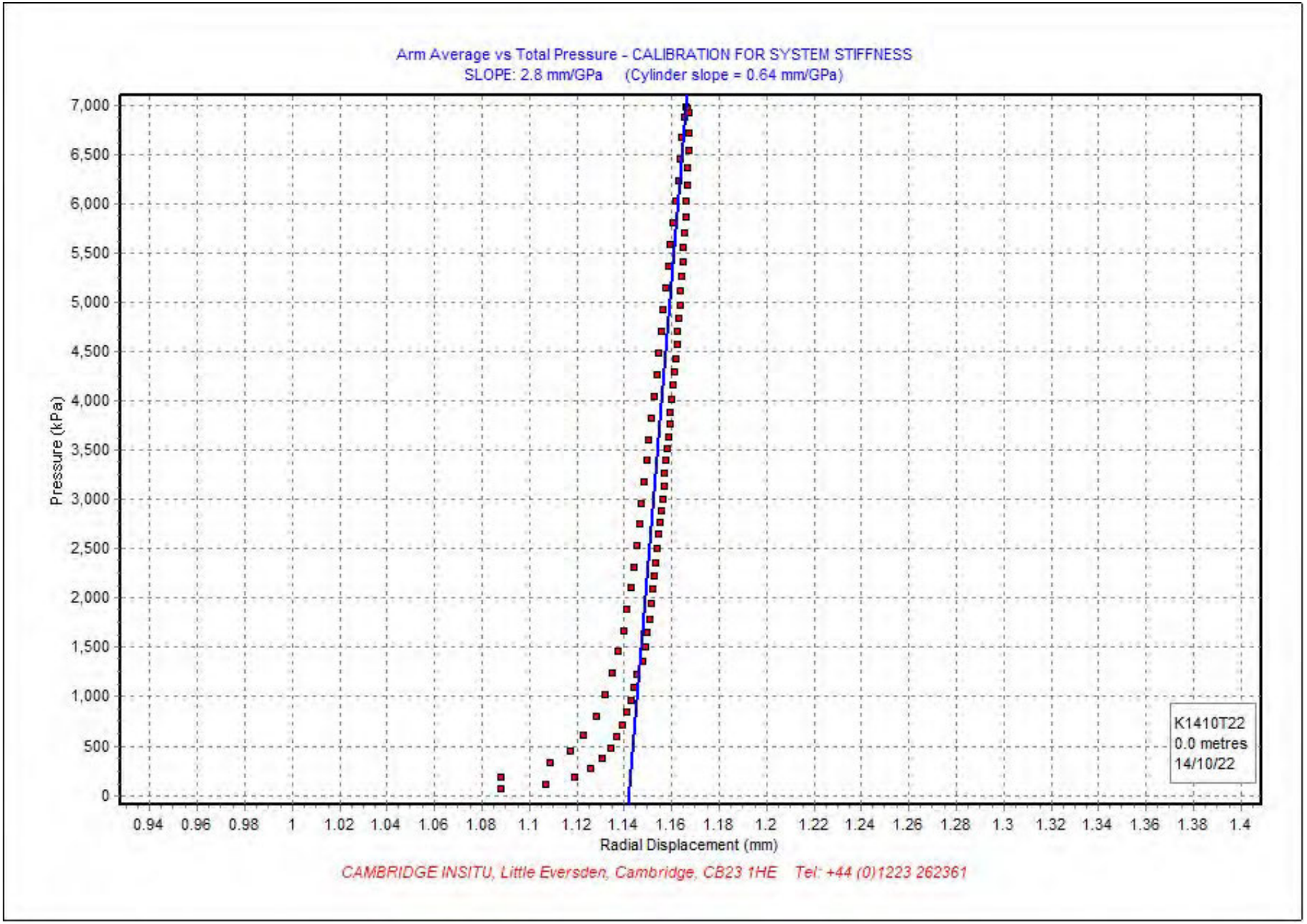

Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 6.3 mm/GPa (Cylinder slope = 2.7 mm/GPa)
Pressure (kPa)
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
7
Radial Displacement (mm)
K2010T22
0.0 metres
20/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361


Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 3.8 mm/GPa (Cylinder slope = 0.64 mm/GPa)
Pressure (kPa)
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
0.96 0.98 1 1.02 1.04 1.06 1.08 1.1 1.12 1.14 1.16 1.18 1.2 1.22 1.24 1.26 1.28 1.3 1.32 1.34 1.36 1.38 1.4 1.42 1.44
Radial Displacement (mm)
K0410T22
0.0 metres
04/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

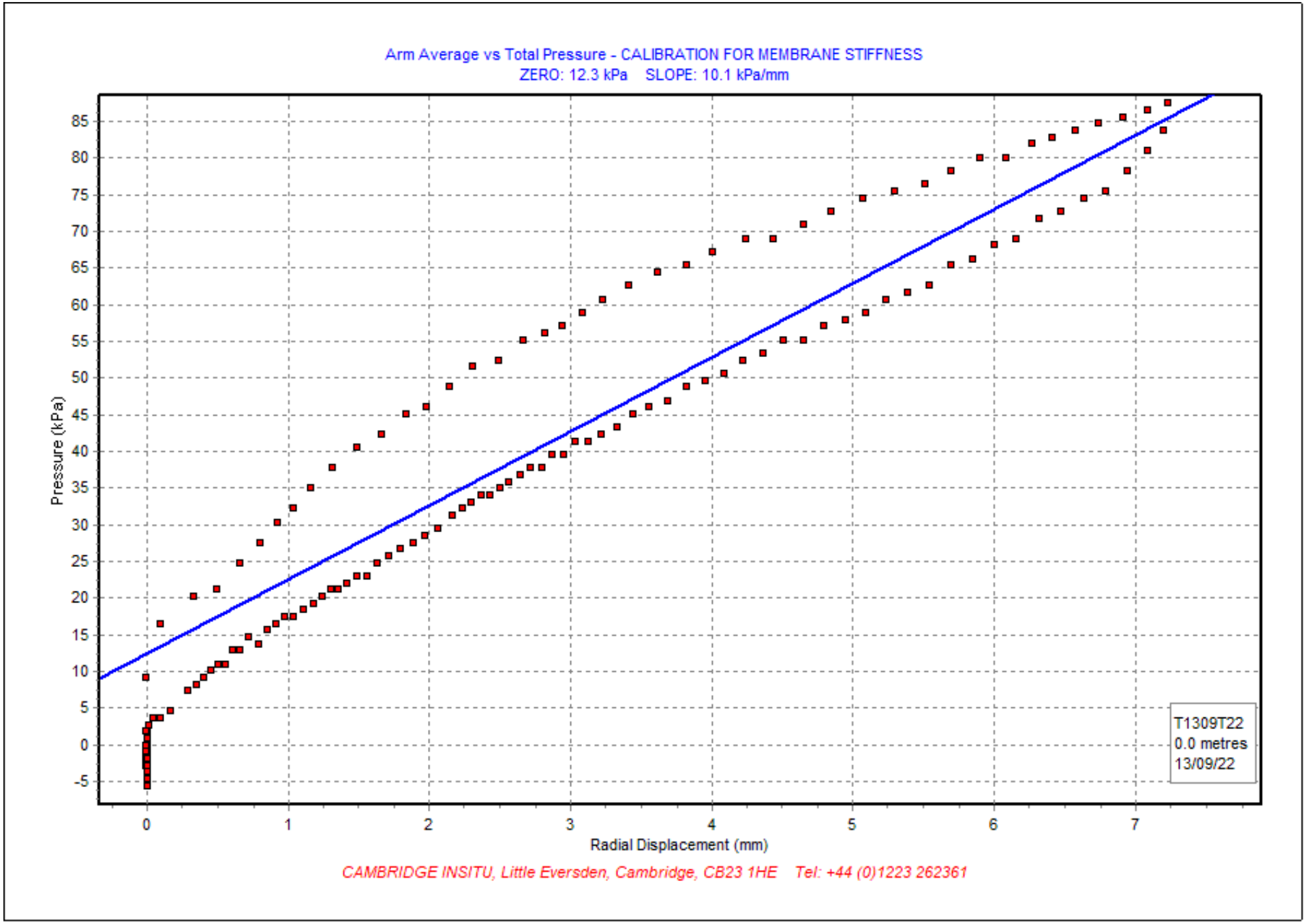

Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 3.8 mm/GPa (Cylinder slope = 0.64 mm/GPa)
Pressure (kPa)
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
0.96
0.98
1
1.02
1.04
1.06
1.08
1.1
1.12
1.14
1.16
1.18
1.2
1.22
1.24
1.26
1.28
1.3
1.32
1.34
1.36
1.38
Radial Displacement (mm)
K0610T22
0.0 metres
06/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

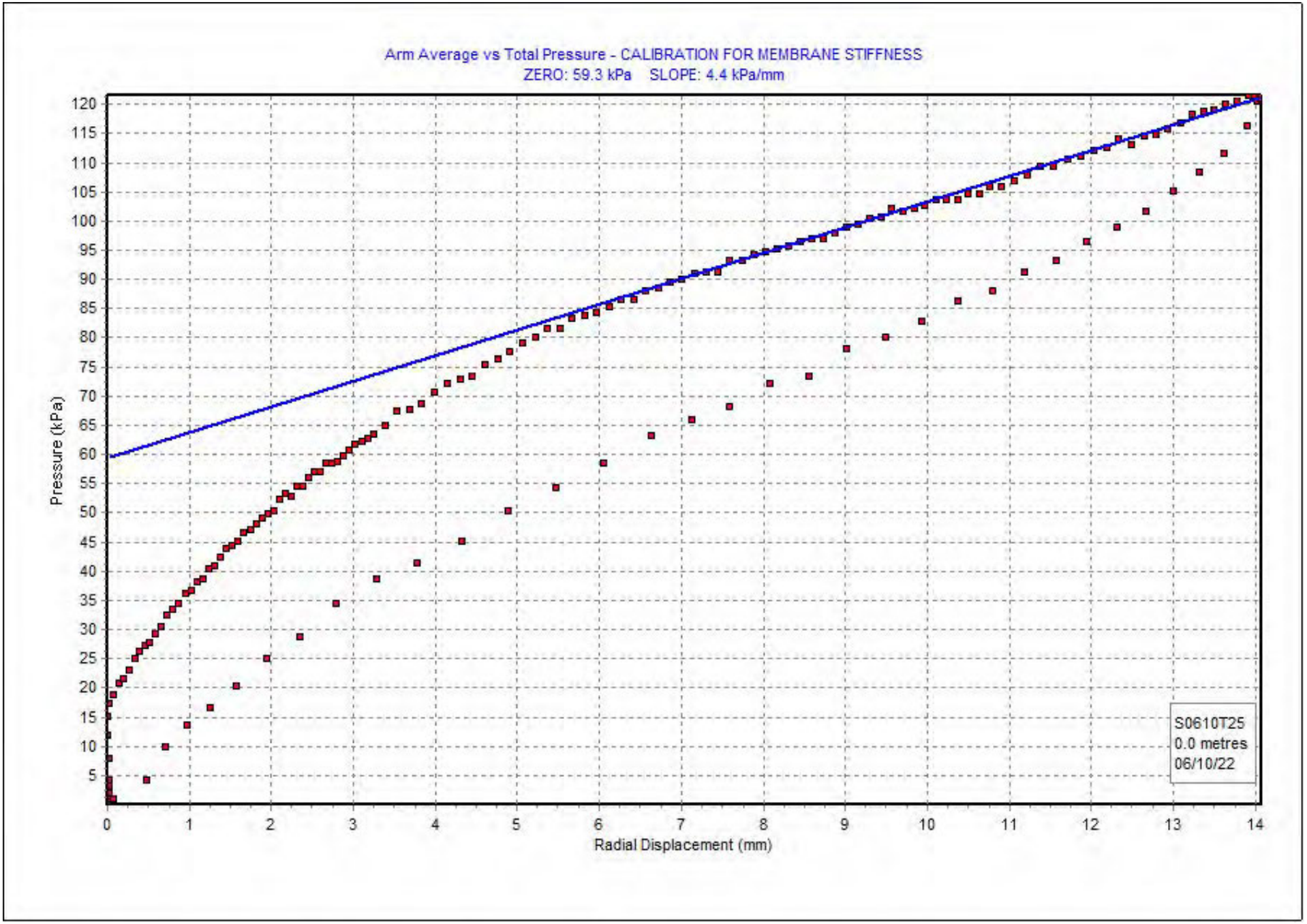

Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 4.0 mm/GPa (Cylinder slope = 0.64 mm/GPa)
Pressure (kPa)
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1.14 1.16 1.18 1.2 1.22 1.24 1.26 1.28 1.3 1.32 1.34 1.36 1.38 1.4 1.42 1.44 1.46 1.48 1.5 1.52 1.54 1.56 1.58
Radial Displacement (mm)
K1110T22
0.0 metres
11/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

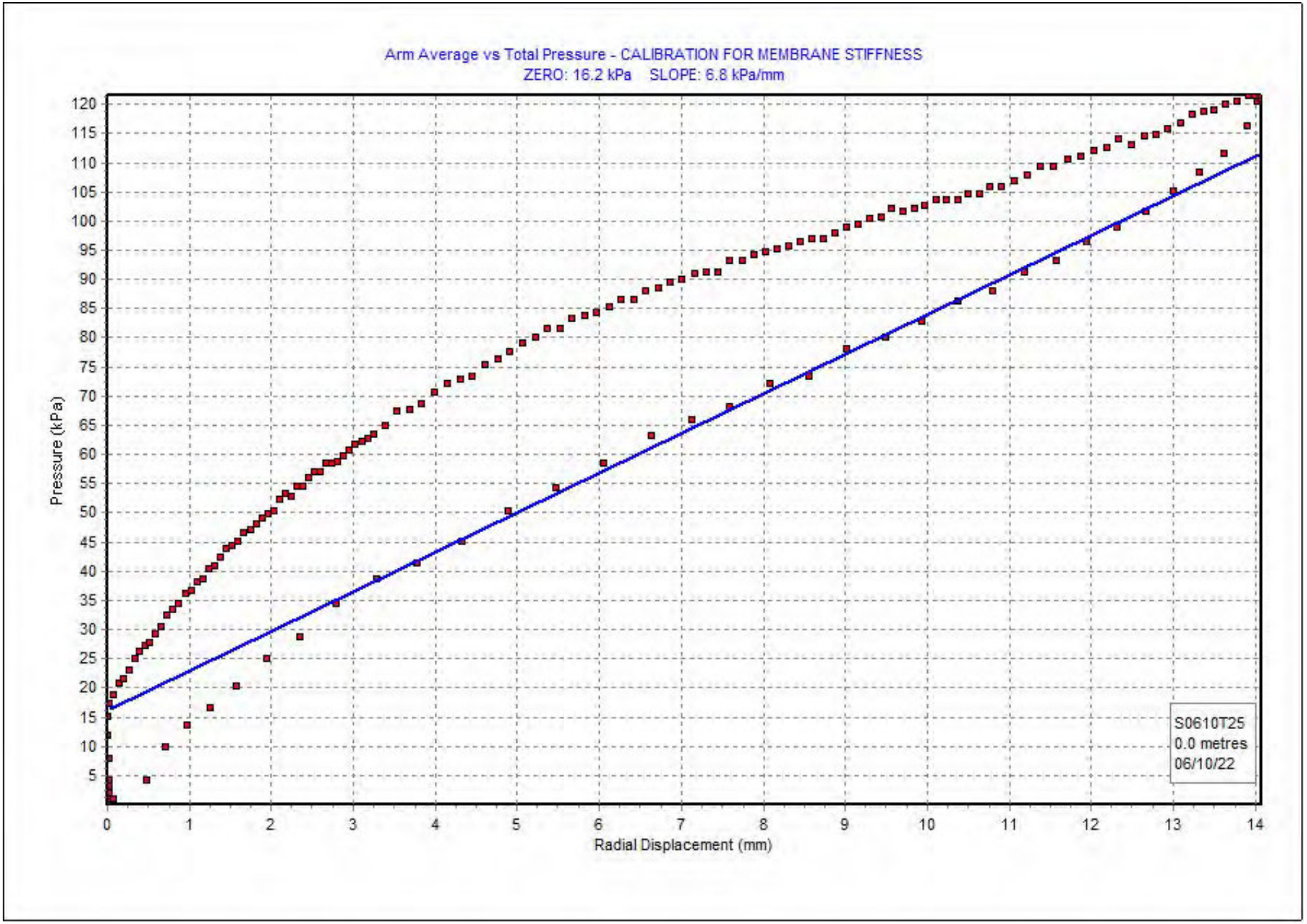

Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 4.3 mm/GPa (Cylinder slope = 0.64 mm/GPa)
Pressure (kPa)
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1.02
1.04
1.06
1.08
1.1
1.12
1.14
1.16
1.18
1.2
1.22
1.24
1.26
1.28
1.3
Radial Displacement (mm)
K1110T24
0.0 metres
11/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

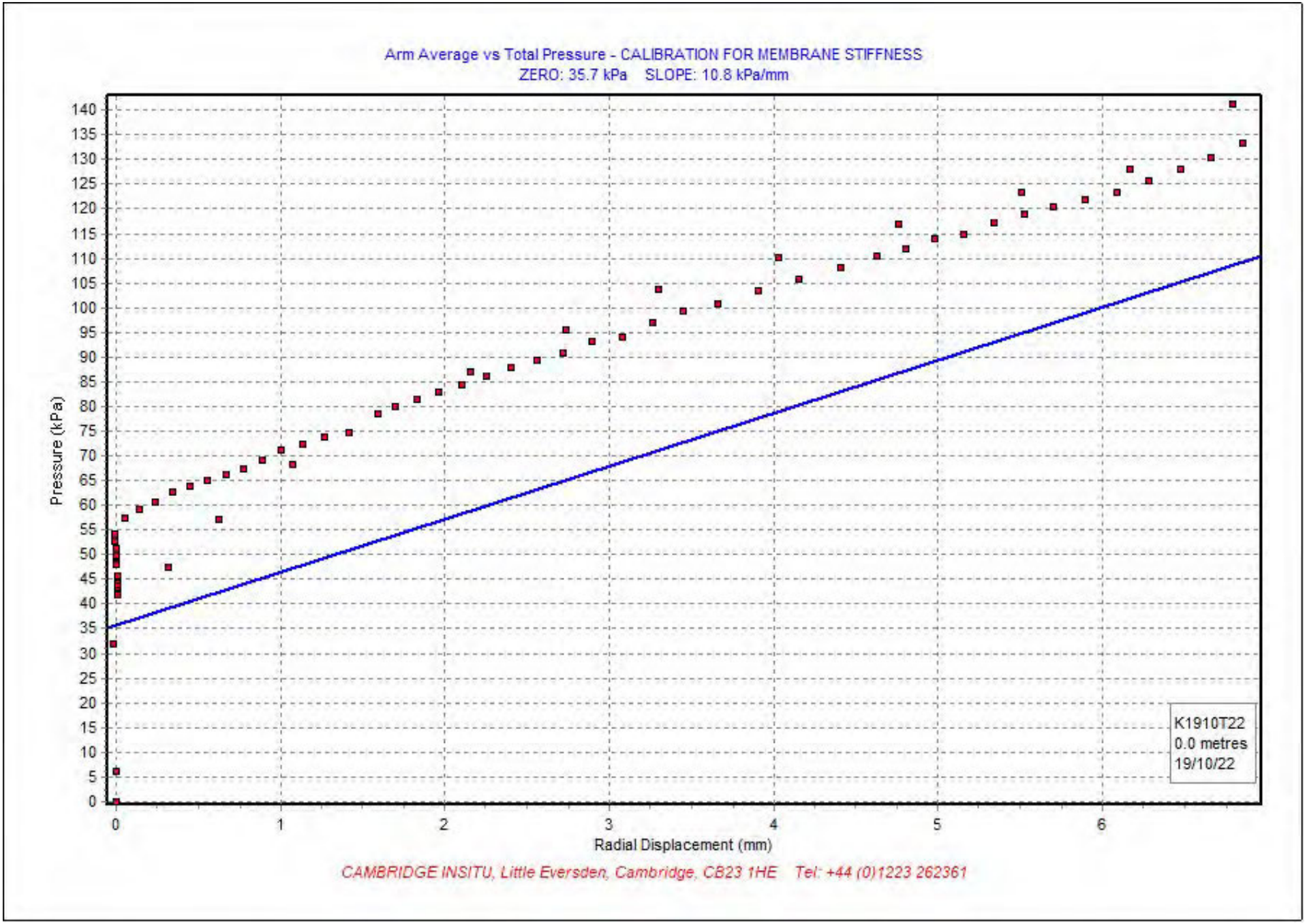

Arm Average vs Total Pressure - CALIBRATION FOR SYSTEM STIFFNESS
SLOPE: 2.8 mm/GPa (Cylinder slope = 0.64 mm/GPa)
Pressure (kPa)
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
0.94 0.96 0.98 1 1.02 1.04 1.06 1.08 1.1 1.12 1.14 1.16 1.18 1.2 1.22 1.24 1.26 1.28 1.3 1.32 1.34 1.36 1.38 1.4
Radial Displacement (mm)
K1410T22
0.0 metres
14/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

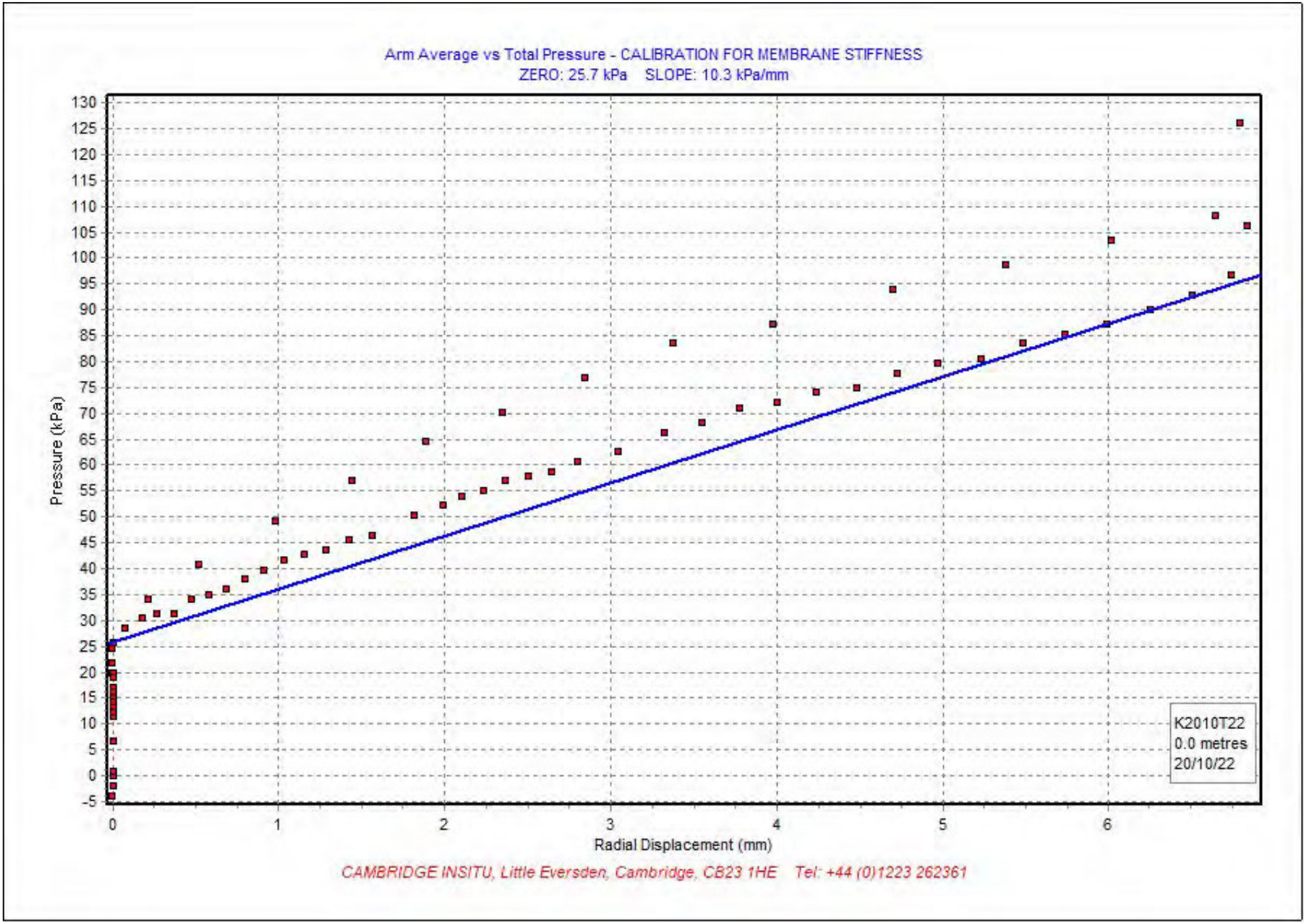
H.1.3.3 Membrane Stiffness Calibration Certificate

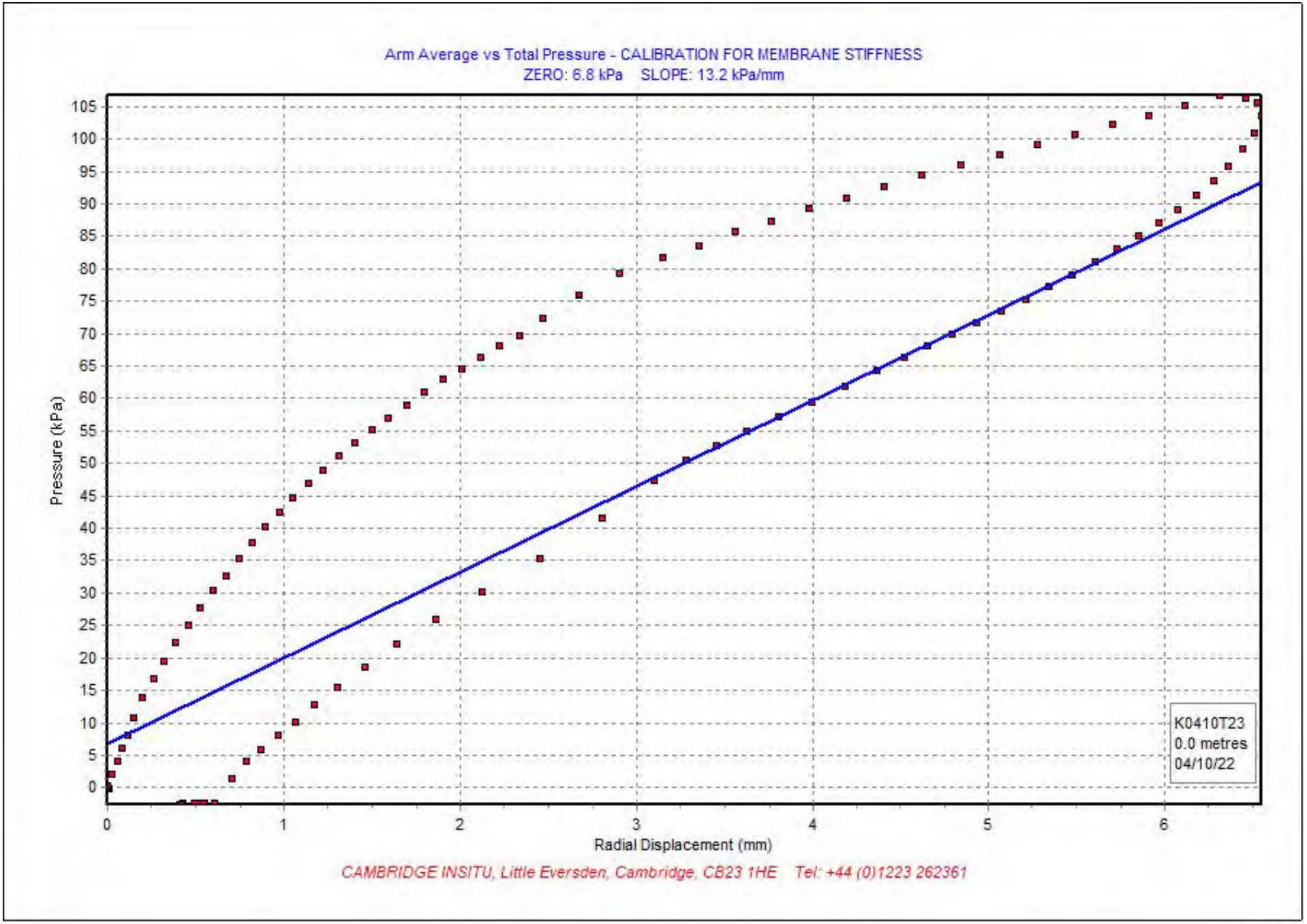

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 12.3 kPa SLOPE: 10.1 kPa/mm
Pressure (kPa)
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
0
1
2
3
4
5
6
7
Radial Displacement (mm)
T1309T22
0.0 metres
13/09/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

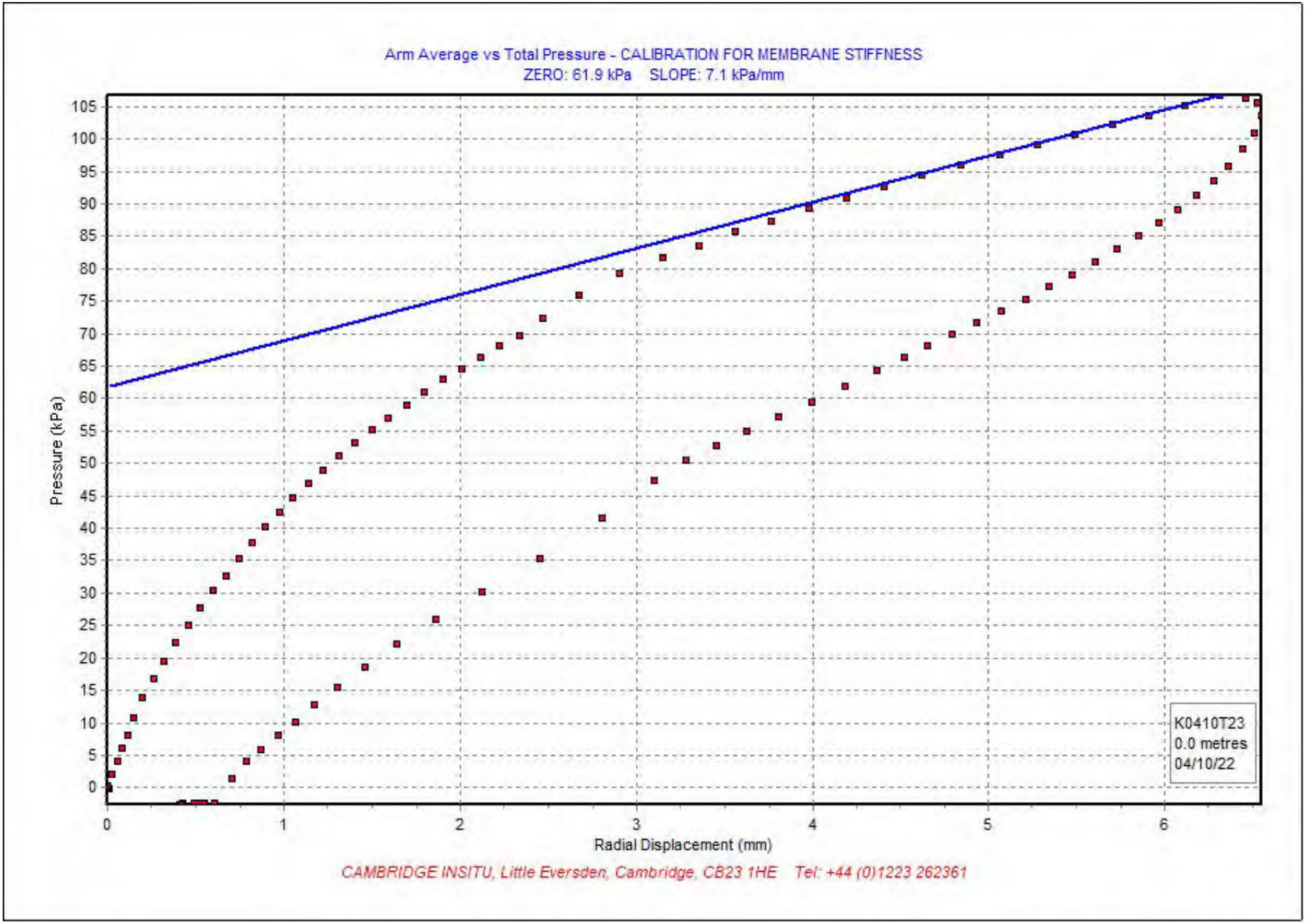

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 59.3 kPa SLOPE: 4.4 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
S0610T25
0.0 metres
06/10/22

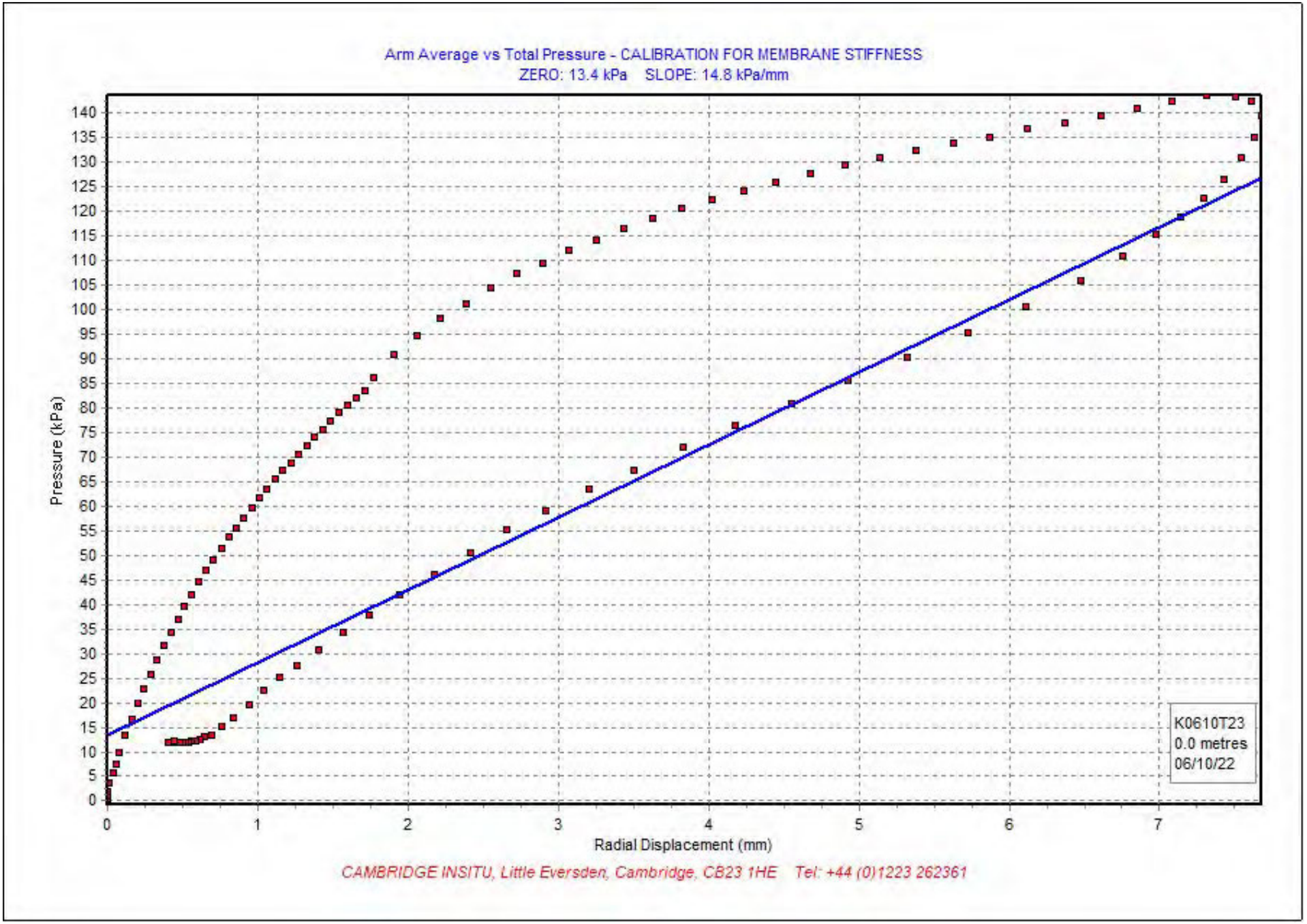

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 16.2 kPa SLOPE: 6.8 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
S0610T25
0.0 metres
06/10/22

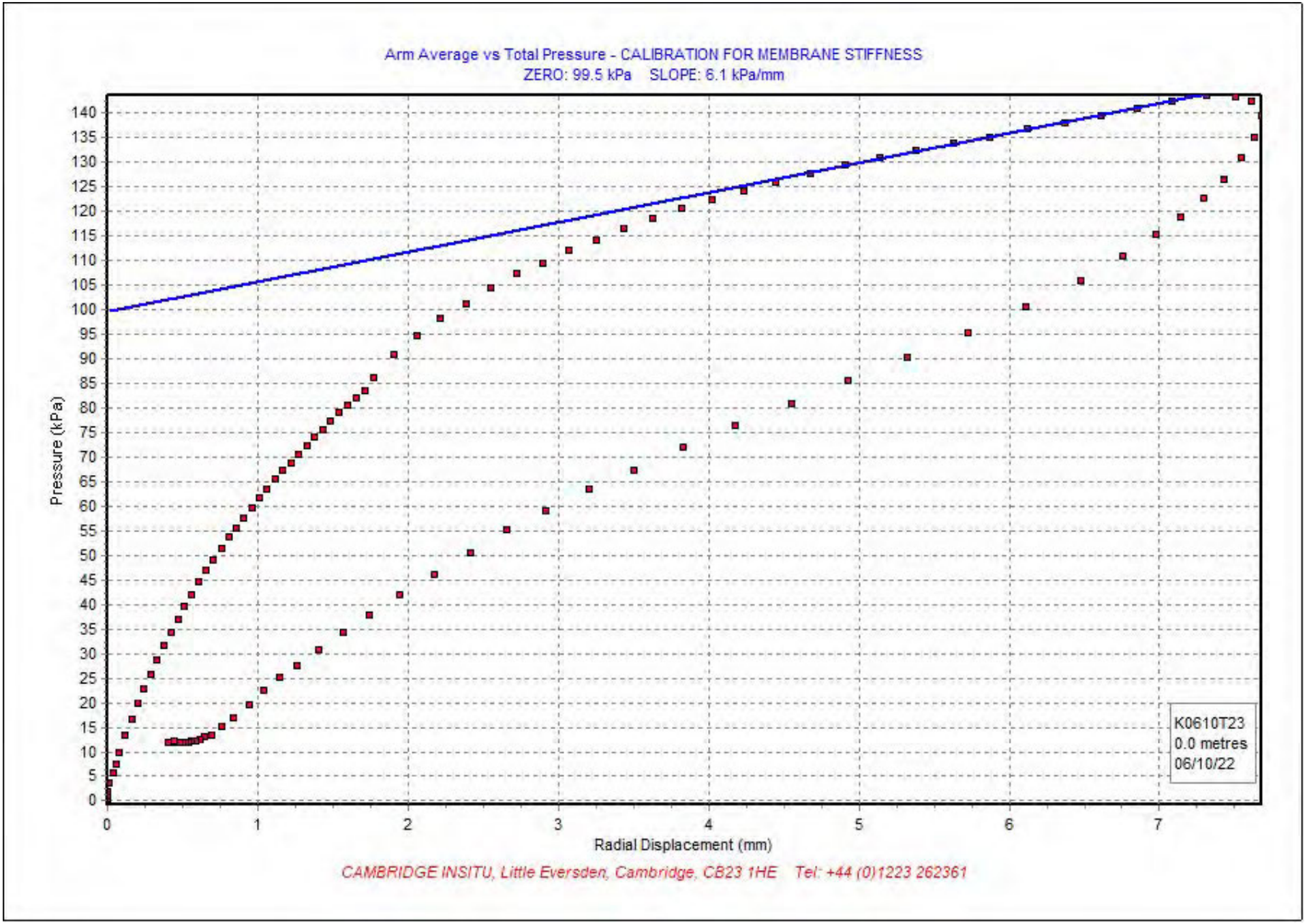

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 35.7 kPa SLOPE: 10.8 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K1910T22
0.0 metres
19/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

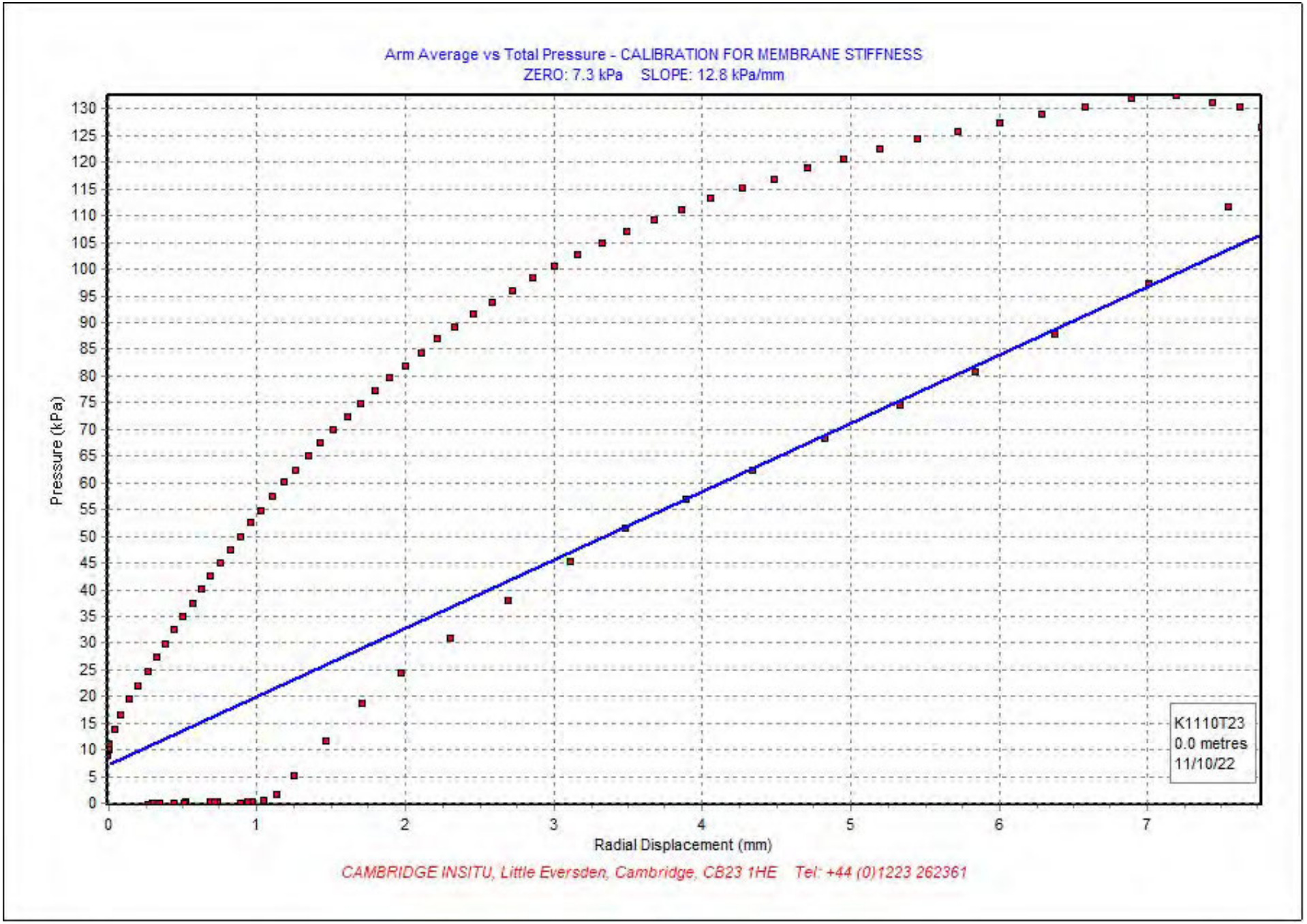

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 25.7 kPa SLOPE: 10.3 kPa/mm
Pressure (kPa)
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
0
1
2
3
4
5
6
Radial Displacement (mm)
K2010T22
0.0 metres
20/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

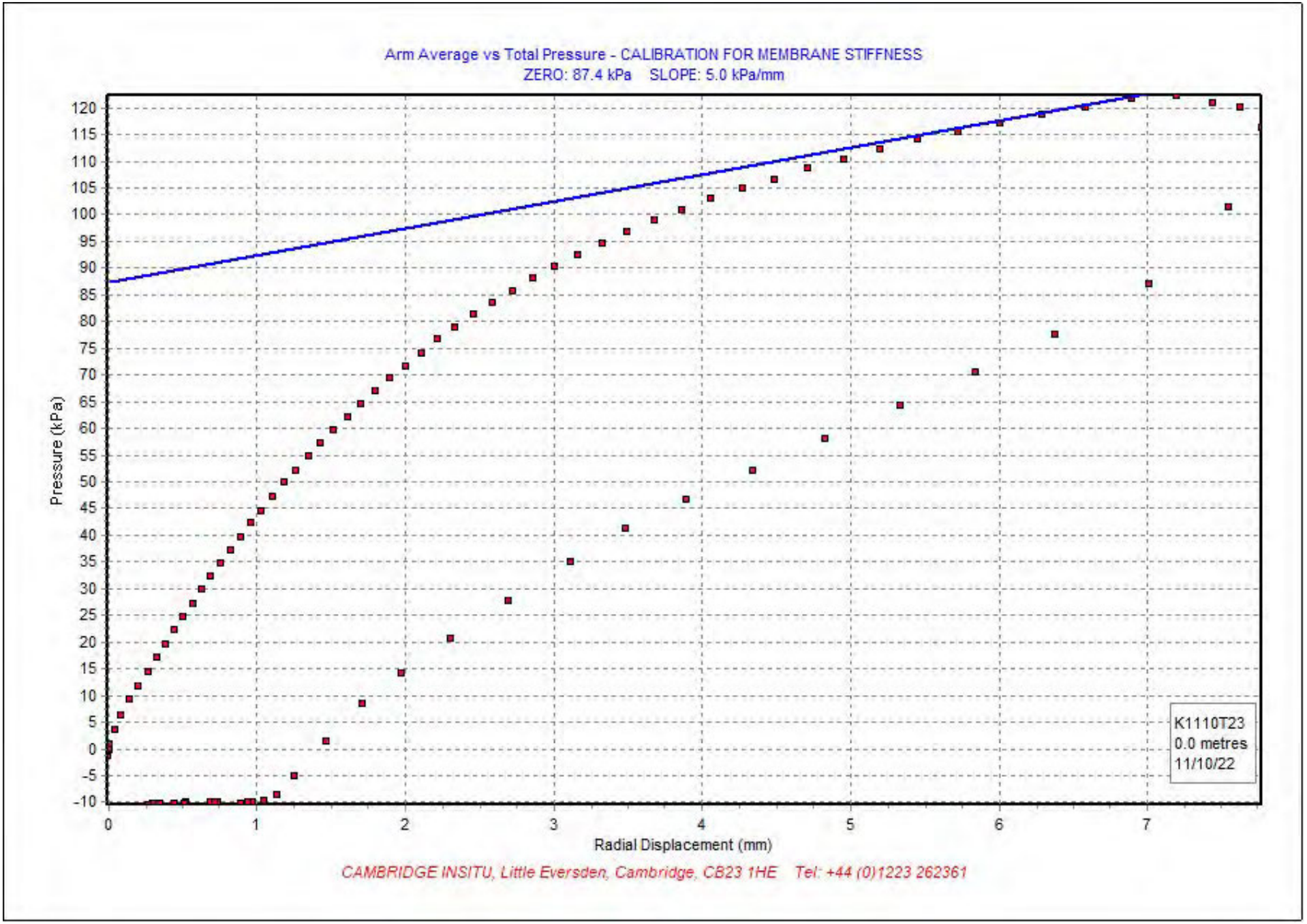

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 6.8 kPa SLOPE: 13.2 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K0410T23
0.0 metres
04/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

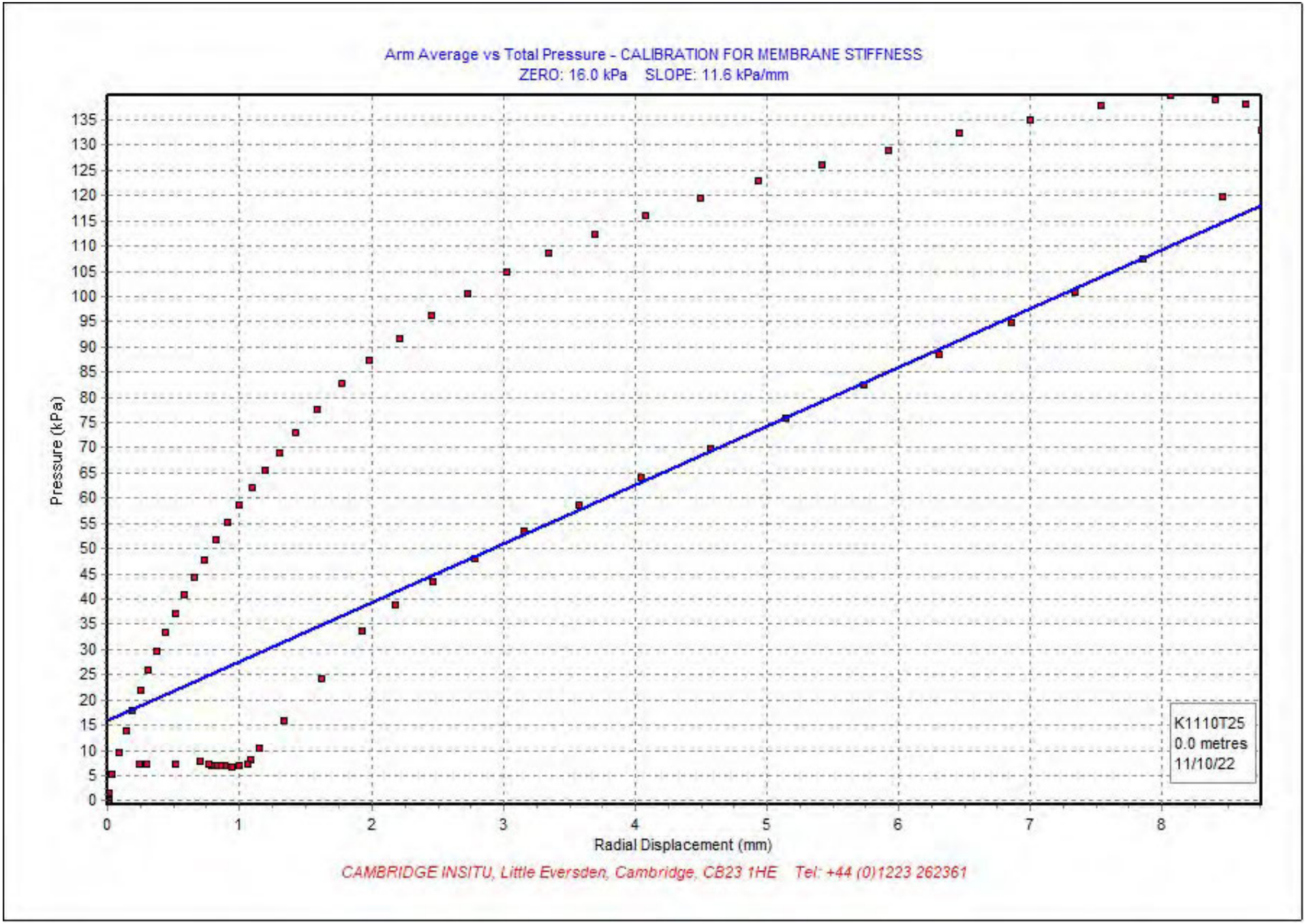

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 61.9 kPa SLOPE: 7.1 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K0410T23
0.0 metres
04/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

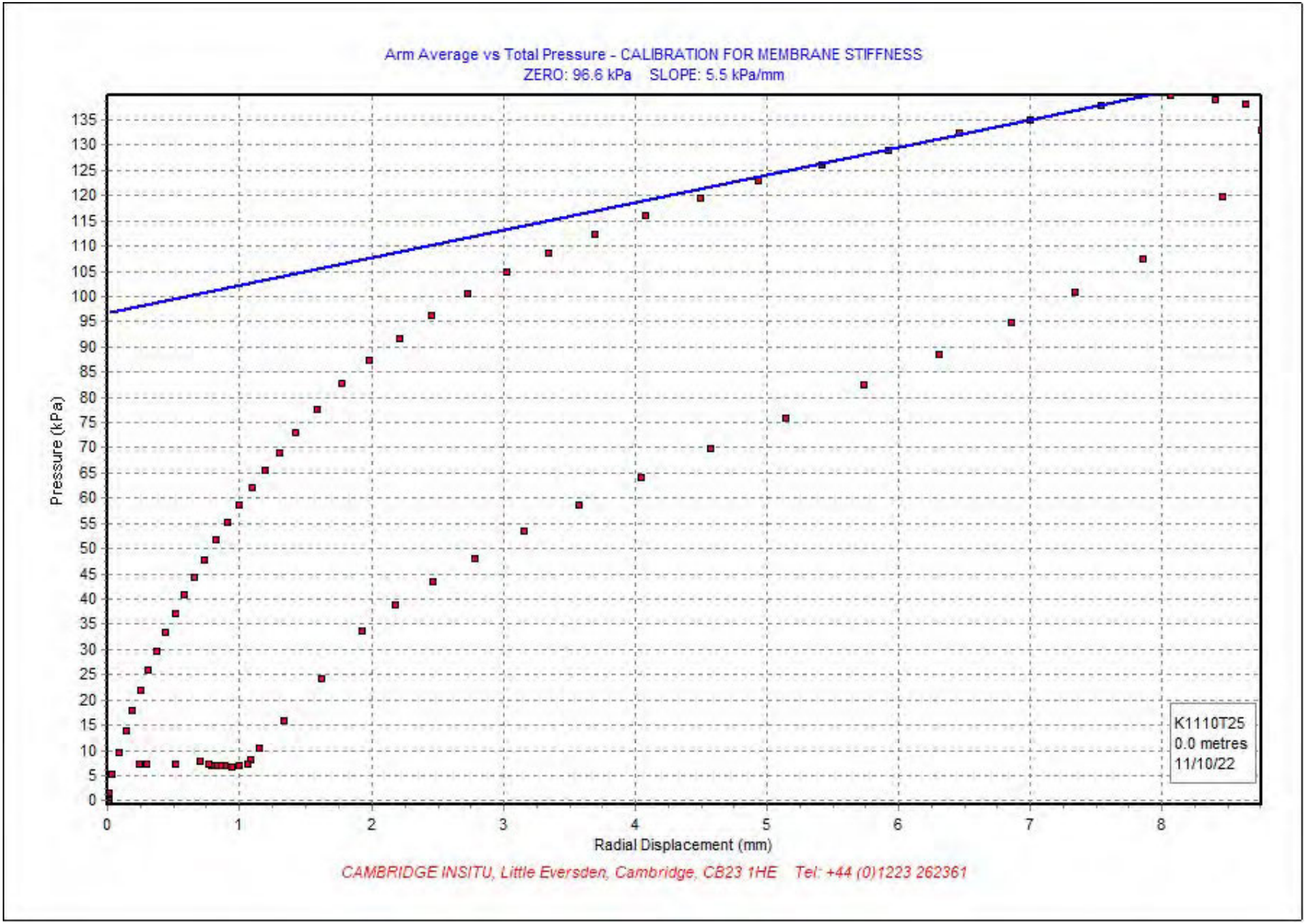

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 13.4 kPa SLOPE: 14.8 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K0610T23
0.0 metres
06/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

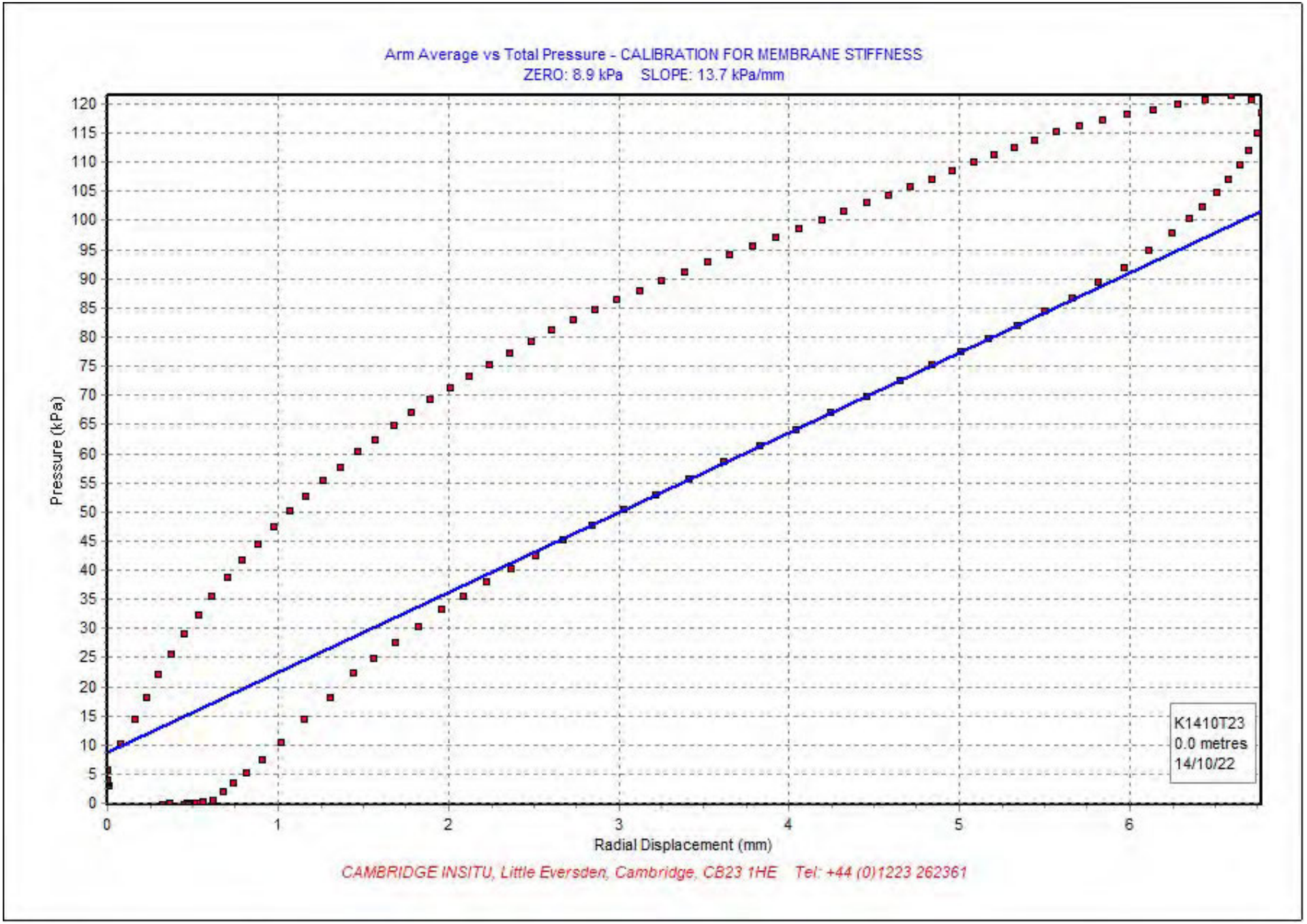

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 99.5 kPa SLOPE: 6.1 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K0610T23
0.0 metres
06/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

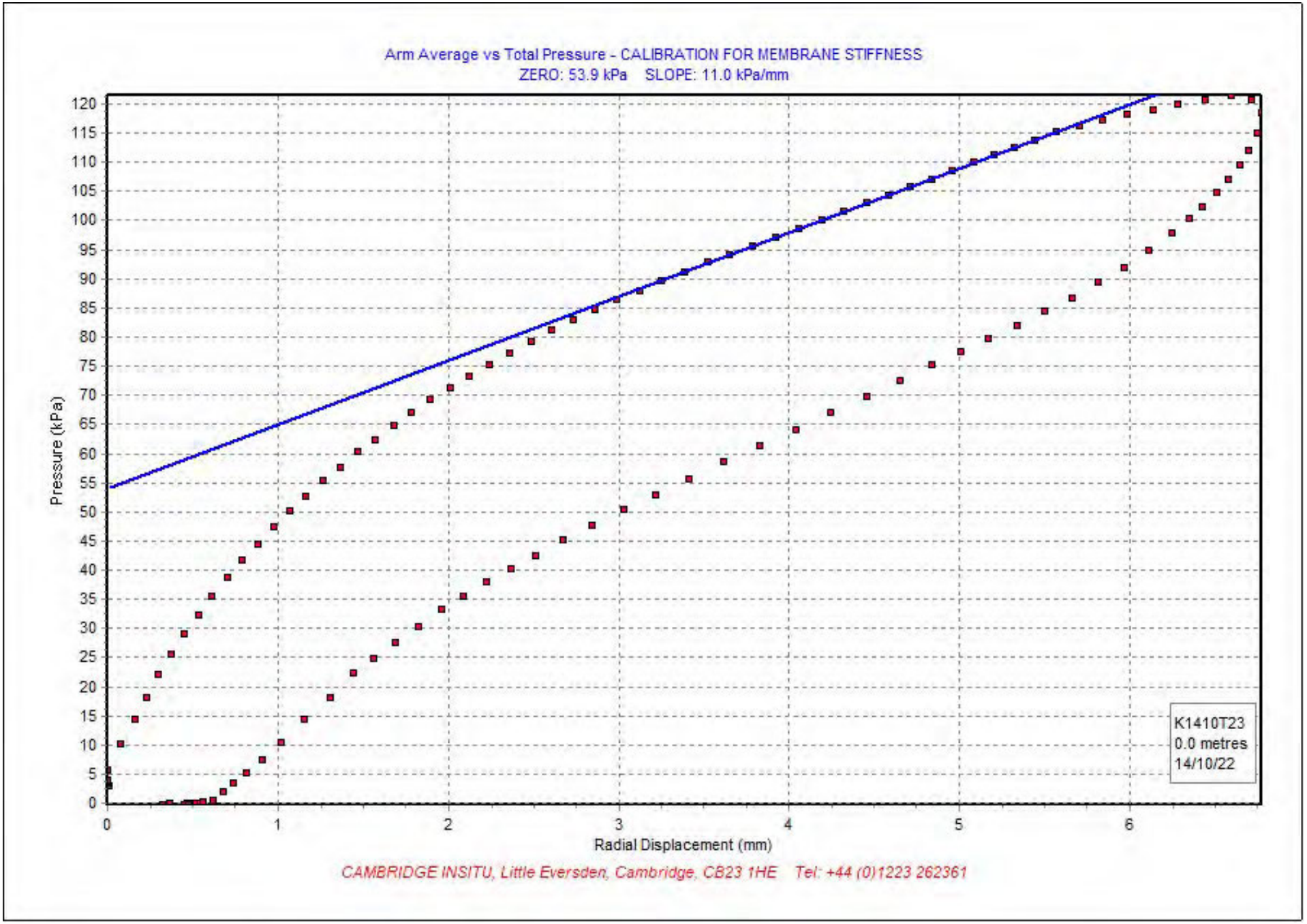

Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 7.3 kPa SLOPE: 12.8 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K1110T23
0.0 metres
11/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361


Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 87.4 kPa SLOPE: 5.0 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K1110T23
0.0 metres
11/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361


Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 16.0 kPa SLOPE: 11.6 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K1110T25
0.0 metres
11/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361


Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 96.6 kPa SLOPE: 5.5 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K1110T25
0.0 metres
11/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361


Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 8.9 kPa SLOPE: 13.7 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K1410T23
0.0 metres
14/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361


Arm Average vs Total Pressure - CALIBRATION FOR MEMBRANE STIFFNESS
ZERO: 53.9 kPa SLOPE: 11.0 kPa/mm
Pressure (kPa)
Radial Displacement (mm)
K1410T23
0.0 metres
14/10/22
CAMBRIDGE INSITU, Little Eversden, Cambridge, CB23 1HE Tel: +44 (0)1223 262361

H.1.3.4 Calibration Reference List

Table 0.1: Calibration Reference List

Exploratory Position ID	Probe	Type of Pressuremeter Test	Test Number	Test Depth [m BGL]	Test Pocket Depth		Arms and Pressure Cells Calibration No.	System Stiffness Calibration No.	Membrane Stiffness Calibration No.
					From [m BGL]	To [m BGL]			
MS-BH04	HPD3	HPD	2	19.50	18.00	20.70	20/07/2022	T1309T22	T1309T22
	HPD3	HPD	3	23.00	21.00	24.00	20/07/2022	T1309T22	T1309T22
	HPD3	HPD	4	26.00	24.00	27.00	20/07/2022	T1309T22	T1309T22
	HPD3	HPD	5	27.90	27.00	30.00	20/07/2022	T1309T22	T1309T22
	HPD3	HPD	6	34.50	33.00	36.00	20/07/2022	T1309T22	T1309T22
MS-BH10	Lilith HPD	HPD	1	17.94	16.50	19.50	20/09/2022	S0610T22	S0610T25
	Lilith HPD	HPD	2	22.04	21.00	24.00	20/09/2022	K1910T22	K1910T22
	Lilith HPD	HPD	3	27.34	25.50	28.50	20/09/2022	K2010T22	K2010T22
	Lilith HPD	HPD	4	31.43	30.00	33.00	20/09/2022	K2010T22	K2010T22
	Lilith HPD	HPD	5	35.86	34.50	37.50	20/09/2022	K2010T22	K2010T22
MS-BH12	HPD3	HPD	2	22.20	21.00	24.00	20/07/2022	T1309T22	T1309T22
	Lilith HPD	HPD	4	31.05	30.00	33.00	20/09/2022	S0610T22	S0610T25
	Lilith HPD	HPD	5	35.65	34.50	37.50	20/09/2022	S0610T22	S0610T25
	HPD3	HPD	6	41.50	40.30	42.20	20/07/2022	T1309T22	T1309T22
MS-BH13	HPD3	HPD	1	18.70	17.50	20.50	20/07/2022	T1309T22	T1309T22
	HPD3	HPD	2	23.70	22.00	24.70	20/07/2022	T1309T22	T1309T22
	HPD3	HPD	3	27.30	26.50	29.50	20/07/2022	T1309T22	T1309T22
	HPD3	HPD	4	31.70	31.00	34.00	20/07/2022	T1309T22	T1309T22

Exploratory Position ID	Probe	Type of Pressuremeter Test	Test Number	Test Depth [m BGL]	Test Pocket Depth		Arms and Pressure Cells Calibration No.	System Stiffness Calibration No.	Membrane Stiffness Calibration No.
					From [m BGL]	To [m BGL]			
	HPD3	HPD	5	37.50	35.00	38.50	20/07/2022	T1309T22	T1309T22
MS-CPM12	CPM - 160101	CPM	1	2.00	N/A	N/A	04/10/2022	K0410T23	K0410T22
	CPM - 160101	CPM	2	4.00	N/A	N/A	04/10/2022	K0410T23	K0410T22
	CPM - 160101	CPM	3	6.00	N/A	N/A	04/10/2022	K0410T23	K0410T22
	CPM - 160101	CPM	4	8.00	N/A	N/A	04/10/2022	K0410T23	K0410T22
	CPM - 160101	CPM	5	10.00	N/A	N/A	04/10/2022	K0410T23	K0410T22
	CPM - 160101	CPM	6	12.00	N/A	N/A	04/10/2022	K0410T23	K0410T22
MS-CPM15	CPM - 160101	CPM	1	2.00	N/A	N/A	04/10/2022	K1410T23	K1410T22
	CPM - 160101	CPM	2	3.80	N/A	N/A	04/10/2022	K1410T23	K1410T22
	CPM - 160102	CPM	3	6.00	N/A	N/A	04/10/2022	K0610T23	K0610T22
	CPM - 160102	CPM	4	8.00	N/A	N/A	04/10/2022	K0610T23	K0610T22
MS-CPM18	CPM - 160102	CPM	1	2.00	N/A	N/A	04/10/2022	K0610T23	K0610T22
	CPM - 160102	CPM	2	4.00	N/A	N/A	04/10/2022	K0610T23	K0610T22

Exploratory Position ID	Probe	Type of Pressuremeter Test	Test Number	Test Depth [m BGL]	Test Pocket Depth		Arms and Pressure Cells Calibration No.	System Stiffness Calibration No.	Membrane Stiffness Calibration No.
					From [m BGL]	To [m BGL]			
	CPM - 160102	CPM	3	6.00	N/A	N/A	04/10/2022	K1110T25	K1110T24
	CPM - 160102	CPM	4	8.00	N/A	N/A	04/10/2022	K1110T25	K1110T24
	CPM - 160101	CPM	5	10.00	N/A	N/A	04/10/2022	K1110T23	K1110T22

H.1.4 Pressuremeter Test Results

Title	Reference
Summary Tables of Results	
■ Initial Stress State	H.1.4.1
■ Parameters for Strength	H.1.4.2
■ Linear Interpretation of Unload/Reload Cycles	H.1.4.3
■ Non-Linear Interpretation of Unload/Reload Cycles	H.1.4.4
■ Analyst's Comments	H.1.4.5
■ Graphical Plots Referenced by Position ID	H.1.4.6
■ References	H.1.4.7

H.1.4.1 Initial Stress State

Table 0.2: Initial Stress State

Exploratory Position ID	Test No.	Test Depths	Cavity Diameter	Total In Situ Lateral Stress (best estimate)	Total In Situ Lateral Stress (Marsland and Randoplh)	Ambient pore water pressure for derived parameters	Applied Ambient Pore water Pressure for software analysis	Overburden Stress	Coefficient of Earth Pressure at rest	Total In Situ Lateral Stress coming from lift off analysis (lift off stress)
		(m BGL)	$\emptyset$	P_{0-BE}	$P_{0-M\&R}$	u_0	u_0	σ_{v0}	k_0	$P_{0-Lift\ off}$
			[mm]	[kPa]	[kPa]	[kPa]	[kPa]	[kPa]	[-]	[kPa]
MS-BH04	2	19.50	103.82	590	N/A	176.6	132.0	448.5	1.52	N/A
	3	23.00	103.28	505	N/A	210.4	218.0	529.0	0.92	N/A
	4	26.00	105.36	1000	N/A	240.3	190.0	598.0	2.12	N/A
	5	27.90	103.10	750	1495	260.0	230.0	641.7	1.28	N/A
	6	34.50	103.56	1000	N/A	323.7	282.0	793.5	1.44	N/A
MS-BH10	1	17.94	102.06	750	748	158.3	158.0	412.6	2.33	N/A
	2	22.04	103.14	500	N/A	198.6	201.0	506.9	0.98	N/A
	3	27.34	103.48	1250	N/A	250.5	299.0	628.8	2.64	N/A
	4	31.43	103.20	1125	N/A	290.7	291.0	722.9	1.93	N/A
	5	35.86	103.58	1500	1491	334.1	350.0	824.8	2.38	N/A
MS-BH12	2	22.20	105.62	798	748	201.1	162.0	510.6	1.93	N/A
	4	31.05	99.98	825	N/A	276.2	276.0	714.2	1.25	N/A
	5	35.65	104.62	1500	N/A	338.9	339.0	820.0	2.41	N/A

Exploratory Position ID	Test No.	Test Depths	Cavity Diameter	Total In Situ Lateral Stress (best estimate)	Total In Situ Lateral Stress (Marsland and Randoplh)	Ambient pore water pressure for derived parameters	Applied Ambient Pore water Pressure for software analysis	Overburden Stress	Coefficient of Earth Pressure at rest	Total In Situ Lateral Stress coming from lift off analysis (lift off stress)
		(m BGL)	Ø	P_{0-BE}	$P_{0-M\&R}$	u_0	u_0	σ_{v0}	k_0	$P_{0-Lift\ off}$
			[mm]	[kPa]	[kPa]	[kPa]	[kPa]	[kPa]	[-]	[kPa]
	6	41.50	105.20	1250	N/A	392.4	392.0	954.5	1.53	N/A
MS-BH13	1	18.70	108.70	648	504	166.8	165.0	430.1	1.83	N/A
	2	23.70	104.32	500	N/A	221.7	222.0	545.1	0.86	N/A
	3	27.30	105.32	800	N/A	258.0	258.0	627.9	1.47	N/A
	4	31.70	107.18	1250	N/A	298.2	298.0	729.1	2.21	N/A
	5	37.50	106.84	1002	N/A	358.1	358.0	862.5	1.28	N/A
MS-CPM12	1	2.00	47.14	110	N/A	19.6	0.0	46.0	3.43	110
	2	4.00	47.00	0	N/A	39.2	14.7	92.0	-0.74	45
	3	6.00	47.00	110	N/A	58.9	49.0	138.0	0.65	110
	4	8.00	47.02	129	N/A	78.5	54.0	184.0	0.48	129
	5	10.00	47.00	N/A	N/A	98.1	73.6	230.0	-0.74	N/A
	6	12.00	47.00	321	N/A	117.7	93.2	276.0	1.28	321
MS-CPM15	1	2.00	46.94	39	N/A	19.6	N/A	46.0	0.73	39
	2	3.80	47.24	120	N/A	37.3	N/A	87.4	1.65	120
	3	6.00	47.00	223	N/A	58.9	55.0	138.0	2.07	223

Exploratory Position ID	Test No.	Test Depths	Cavity Diameter	Total In Situ Lateral Stress (best estimate)	Total In Situ Lateral Stress (Marsland and Randoplh)	Ambient pore water pressure for derived parameters	Applied Ambient Pore water Pressure for software analysis	Overburden Stress	Coefficient of Earth Pressure at rest	Total In Situ Lateral Stress coming from lift off analysis (lift off stress)
		(m BGL)	Ø	P_{0-BE}	$P_{0-M\&R}$	u_0	u_0	σ_{v0}	k_0	$P_{0-Lift\ off}$
			[mm]	[kPa]	[kPa]	[kPa]	[kPa]	[kPa]	[-]	[kPa]
	4	8.00	47.02	185	N/A	78.5	71.0	184.0	1.01	185
MS-CPM18	1	2.00	47.00	37	N/A	19.6	2.0	46.0	0.66	37
	2	4.00	47.00	114	N/A	39.2	19.6	92.0	1.42	144
	3	6.00	46.98	256	N/A	58.9	39.2	138.0	2.49	256
	4	8.00	47.00	163	N/A	78.5	58.9	184.0	0.80	163
	5	10.00	46.96	397	N/A	98.1	78.5	230.0	2.27	397

Notes:

Ø and P_0 define the coordinate of displacement and pressure where in situ conditions have been restored after coring the pocket.
In the absence of further information P_0 is considered the best estimate of the total in situ horizontal stress (σ_{h0}).
u_0 values presented in this table have been calculated from water level readings made on site but cross-checked against membrane collapsing pressure readings.
σ_{v0} assumes a uniform increase with depth of 20-kPa/m.

k_0 is calculated with the following assumptions:

- σ_{h0} equals to the total in situ horizontal stress ($P_{0-best\ estimate}$);
- σ_{v0} assumes a uniform increase with depth of 20-kPa/m.
- u_0 taken from water level readings on site.

H.1.4.2 Parameters for Strength

Table 0.3: Parameters for Strength

Exploratory Hole Reference	Test No.	Test Depths	Results								
			Drained Cohesion	Undrained Shear Strength	Total Limit Pressure	Observed Yield Stress	Calculated Yield Stress	Peak Angle of Internal Friction	Peak Dilation Angle	Constant Volume Friction Angle	Rigidity Index
		(mBGL)	c	c_u	p_{lim}	p_{f-obs}	p_{f-calc}	φ'	ψ	φ'_{cv}	I_r
			[kPa]	[kPa]	[kPa]	[kPa]	[kPa]	[deg]	[deg]	[deg]	[-]
MS-BH04	2	19.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3	23.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	26.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	27.90	N/A	N/A	N/A	7514	N/A	N/A	N/A	N/A	N/A
	6	34.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MS-BH10	1	17.94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	22.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3	27.34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	31.43	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	35.86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MS-BH12	2	22.20	219	N/A	75696	3428	1435	52.3	23.4	35.0	N/A
	4	31.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	35.65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6	41.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MS-BH13	1	18.70	835	N/A	79985	4463	1508	57.0	30.7	35.0	N/A

Exploratory Hole Reference	Test No.	Test Depths (mBGL)	Results								
			Drained Cohesion c [kPa]	Undrained Shear Strength c_u [kPa]	Total Limit Pressure p_{lim} [kPa]	Observed Yield Stress p_{f-obs} [kPa]	Calculated Yield Stress p_{f-calc} [kPa]	Peak Angle of Internal Friction φ' [deg]	Peak Dilation Angle ψ [deg]	Constant Volume Friction Angle φ'_{cv} [deg]	Rigidity Index I_r [-]
	2	23.70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3	27.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	31.70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	37.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MS-CPM12	1	2.00	N/A	N/A	N/A	N/A	N/A	23.5	-4.9	28.0	N/A
	2	4.00	N/A	N/A	N/A	N/A	N/A	23.6	-6.0	29.0	N/A
	3	6.00	N/A	N/A	N/A	N/A	N/A	28.3	-0.8	29.0	N/A
	4	8.00	N/A	N/A	N/A	N/A	N/A	27.2	-2.0	29.0	N/A
	5	10.00	N/A	N/A	N/A	N/A	N/A	28.4	-0.6	29.0	N/A
	6	12.00	N/A	N/A	N/A	N/A	N/A	37.9	10.6	29.0	N/A
MS-CPM15	1	2.00	N/A	N/A	N/A	N/A	N/A	33.0	3.6	30.0	N/A
	2	3.80	N/A	N/A	N/A	N/A	N/A	30.4	0.4	30.0	N/A
	3	6.00	N/A	N/A	N/A	N/A	N/A	21.5	-6.0	27.0	N/A
	4	8.00	N/A	N/A	N/A	N/A	N/A	31.8	2.1	30.0	N/A
MS-CPM18	1	2.00	N/A	N/A	N/A	N/A	N/A	25.1	-4.4	29.0	N/A
	2	4.00	N/A	N/A	N/A	N/A	N/A	25.6	-3.8	29.0	N/A
	3	6.00	N/A	N/A	N/A	N/A	N/A	26.7	-2.6	29.0	N/A

Exploratory Hole Reference	Test No.	Test Depths	Results								
			Drained Cohesion	Undrained Shear Strength	Total Limit Pressure	Observed Yield Stress	Calculated Yield Stress	Peak Angle of Internal Friction	Peak Dilation Angle	Constant Volume Friction Angle	Rigidity Index
		(mBGL)	c	c_u	p_{lim}	p_{f-obs}	p_{f-calc}	φ'	ψ	φ'_{cv}	I_r
			[kPa]	[kPa]	[kPa]	[kPa]	[kPa]	[deg]	[deg]	[deg]	[-]
	4	8.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	10.00	N/A	N/A	N/A	N/A	N/A	24.0	-5.6	29.0	N/A

Notes:

c is drained cohesion and is obtained after performing the curve fitting procedure for a drained test.

c_u is undrained shear strength from the slope of a plot of the natural log of the current shear strain versus total pressure, coming from the Gibson and Anderson (1961) analysis

p_{lim} is obtained from performing the curve modelling of a pressuremeter test.

p_f can be observed or calculated from the curve fitting results. For pre-bored tests the observed values tend to be higher.

φ' is peak angle of internal friction from Hughes et al (1977) analysis or from Whiters et al (1989) analysis.

ψ is peak dilation angle from Hughes et al (1977) analysis for the loading phase or Withers et al (1989) analysis.

φ'_{cv} constant volume friction angle. When the material shear at constant volume at usually largestrains. φ'_{cv}must either be given or estimated. In this report an estimation for φ'_{cv} have been taken.

I_r is applicable only when undrained analysis was performed, it is the ratio of shear modulus at yield to undrained shear strength.

H.1.4.3 Linear Interpretation of Unload/Reload Cycles

Table 0.4: Linear Interpretation of Unload/Reload Cycles

Exploratory Hole Reference	Test No.	Test Depth	Results									
			Initial Shear Modulus	Secant Shear Modulus at yield	Loop No.	Unload/Reload Shear Modulus	Drained Young's Modulus	Cavity Strain Ordinate	Pressure Ordinate	Change of Shear Strain	Change of Radial Stress
		(m BGL)	G_i	G_y		G_{ur}	E'	ε_C	P_C	$\Delta\gamma_C$	ΔP_C
			[MPa]	[MPa]		[MPa]	[MPa]	[%]	[kPa]	[%]	[kPa]
MS-BH04	2	19.50	475	N/A	1	520	1382	-0.034	1192	0.077	402
					2	1329	3535	0.276	2280	0.042	558
					3	2168	5767	0.510	3862	0.040	861
					4	1491	3965	0.484	2736	0.104	1556
	3	23.00	1160	N/A	1	1008	2682	-0.027	1161	0.037	373
					2	1955	5201	0.097	2345	0.037	732
					3	2897	7705	0.252	4745	0.052	1497
					4	3029	8058	0.411	7117	0.081	2445
					5	2723	7242	0.429	5502	0.119	3230
	4	26.00	1316	N/A	1	534	1420	-0.121	1151	0.057	306
					2	1707	4540	0.044	2201	0.026	437
					3	3045	8098	0.186	4527	0.040	1207
					4	3365	8951	0.317	6927	0.060	2009
					5	3002	7985	0.338	5528	0.104	3117
	5	27.90	934	N/A	1	1377	3662	0.503	2251	0.047	654
					2	2645	7036	0.699	4682	0.054	1429
					3	2895	7699	0.883	7000	0.071	2043

Exploratory Hole Reference	Test No.	Test Depth	Results									
			Initial Shear Modulus	Secant Shear Modulus at yield	Loop No.	Unload/Reload Shear Modulus	Drained Young's Modulus	Cavity Strain Ordinate	Pressure Ordinate	Change of Shear Strain	Change of Radial Stress
		(m BGL)	G_i	G_y		G_{ur}	E'	ε_C	P_C	$\Delta\gamma_C$	ΔP_C
			[MPa]	[MPa]		[MPa]	[MPa]	[%]	[kPa]	[%]	[kPa]
					4	2713	7216	0.931	5233	0.097	2631
	6	34.50	681	N/A	1	900	2394	-0.026	1504	0.045	401
					2	1753	4662	0.157	3115	0.058	1014
					3	2205	5864	0.381	5527	0.095	2092
					4	2770	7368	0.621	7447	0.047	1297
					5	2223	5913	0.600	5744	0.121	2694
MS-BH10	1	17.94	753	N/A	1	1421	3779	0.512	2499	0.057	815
					2	2101	5588	0.716	4985	0.074	1549
					3	2295	6104	0.982	7547	0.114	2606
	2	22.04	843	N/A	1	2749	7312	0.457	3412	0.039	1077
	3	26.74	564	N/A	1	1412	3755	0.001	2328	0.041	579
					2	2225	5919	0.176	4048	0.043	954
					3	2641	7025	0.355	5692	0.058	1533
					4	2872	7640	0.627	8194	0.086	2462
					5	2678	7124	0.881	6315	0.103	2767
	4	31.43	1385	N/A	1	1420	3778	-0.016	2358	0.037	530
					2	2830	7527	0.142	4671	0.046	1311
					3	3615	9616	0.257	7112	0.051	1852
					4	3786	10071	0.377	9292	0.048	1806

Exploratory Hole Reference	Test No.	Test Depth	Results									
			Initial Shear Modulus	Secant Shear Modulus at yield	Loop No.	Unload/Reload Shear Modulus	Drained Young's Modulus	Cavity Strain Ordinate	Pressure Ordinate	Change of Shear Strain	Change of Radial Stress
		(m BGL)	G_i	G_y		G_{ur}	E'	ε_C	P_C	$\Delta\gamma_C$	ΔP_C
			[MPa]	[MPa]		[MPa]	[MPa]	[%]	[kPa]	[%]	[kPa]
					5	3698	9838	0.538	8102	0.113	4197
	5	35.86	1412	N/A	1	1903	5062	0.061	3117	0.040	768
					2	3072	8171	0.202	6323	0.048	1471
					3	3514	9346	0.362	9513	0.072	2542
					4	3291	8754	0.519	12302	0.119	3919
					5	3004	7991	0.614	8960	0.156	4691
MS-BH12	2	22.20	321	731	1	671	1784	-0.009	1591	0.078	521
					2	1329	3536	0.442	3193	0.082	1091
					3	1637	4353	0.912	4706	0.092	1503
					4	1381	3673	1.396	4234	0.177	2445
	4	31.05	572	N/A	1	1600	4257	-0.036	2332	0.030	476
					2	2390	6356	0.523	4505	0.034	812
					3	3175	8444	0.961	7839	0.055	1735
					4	3423	9106	1.385	11927	0.070	2398
					5	2771	7370	1.457	7037	0.141	3901
	5	35.65	3096	N/A	1	2880	7661	-0.002	4031	0.037	1073
					2	5401	14366	0.099	7899	0.037	2004
					3	6398	17018	0.213	12161	0.051	3241
					4	4748	12630	0.230	7050	0.079	3729

Exploratory Hole Reference	Test No.	Test Depth	Results									
			Initial Shear Modulus	Secant Shear Modulus at yield	Loop No.	Unload/Reload Shear Modulus	Drained Young's Modulus	Cavity Strain Ordinate	Pressure Ordinate	Change of Shear Strain	Change of Radial Stress
		(m BGL)	G_i	G_y		G_{ur}	E'	ε_C	P_C	$\Delta\gamma_C$	ΔP_C
			[MPa]	[MPa]		[MPa]	[MPa]	[%]	[kPa]	[%]	[kPa]
	6	41.50	1245	N/A	1	2149	5717	0.544	2967	0.025	538
					2	3726	9912	0.774	5909	0.025	930
					3	4557	12122	0.957	9685	0.028	1255
					4	3779	10052	0.934	6111	0.084	3194
MS-BH13	1	18.70	130	418	1	367	977	-0.952	1171	0.089	326
					2	978	2600	0.363	3149	0.094	919
					3	1253	3333	1.249	4696	0.115	1444
					4	1475	3923	2.890	7995	0.177	2610
					5	1242	3304	3.515	5453	0.251	3119
	2	23.70	400	N/A	1	925	2461	0.767	1956	0.055	509
					2	2055	5465	1.153	3878	0.044	914
					3	1535	4083	1.180	2622	0.084	1297
	3	27.30	979	N/A	1	1864	4959	0.656	3120	0.018	337
					2	2505	6663	0.825	4780	0.027	669
					3	3027	8053	1.020	7179	0.026	791
					4	2687	7146	1.326	7565	0.120	3219
	4	31.70	478	N/A	1	1733	4609	0.422	2689	0.036	628
					2	2413	6419	0.826	5370	0.052	1257
					3	2691	7158	1.257	8639	0.079	2131

Exploratory Hole Reference	Test No.	Test Depth	Results									
			Initial Shear Modulus	Secant Shear Modulus at yield	Loop No.	Unload/Reload Shear Modulus	Drained Young's Modulus	Cavity Strain Ordinate	Pressure Ordinate	Change of Shear Strain	Change of Radial Stress
		(m BGL)	G_i	G_y		G_{ur}	E'	ε_C	P_C	$\Delta\gamma_C$	ΔP_C
			[MPa]	[MPa]		[MPa]	[MPa]	[%]	[kPa]	[%]	[kPa]
					4	2374	6314	1.550	6534	0.132	3126
	5	37.50	873	N/A	1	1142	3038	0.083	2352	0.064	733
					2	1987	5286	0.334	4644	0.068	1348
					3	2359	6274	0.594	8104	0.117	2753
					4	2035	5414	0.785	6769	0.185	3773
MS-CPM12	1	2.00	N/A	95.8	1	56	149	4.728	764	0.425	239
					2	57	153	10.823	1004	0.509	293
					3	61	163	20.257	1091	0.471	290
					4	57	151	31.650	794	0.741	421
	2	4.00	N/A	15.2	1	9	24	5.488	147	0.589	53
					2	8	22	9.223	171	0.705	58
					3	9	24	18.117	205	0.603	56
					4	5	14	28.797	130	1.083	56
	3	6.00	N/A	48.2	1	27	73	5.724	617	0.822	225
					2	28	74	11.716	676	0.769	216
					3	31	83	21.577	724	0.666	209
					4	17	44	29.323	484	1.961	328
	4	8.00	N/A	76.5	1	73	193	3.285	1298	0.589	429
					2	72	191	7.475	1492	0.643	463

Exploratory Hole Reference	Test No.	Test Depth	Results									
			Initial Shear Modulus	Secant Shear Modulus at yield	Loop No.	Unload/Reload Shear Modulus	Drained Young's Modulus	Cavity Strain Ordinate	Pressure Ordinate	Change of Shear Strain	Change of Radial Stress
		(m BGL)	G_i	G_y		G_{ur}	E'	ε_C	P_C	$\Delta\gamma_C$	ΔP_C
			[MPa]	[MPa]		[MPa]	[MPa]	[%]	[kPa]	[%]	[kPa]
					3	47	125	7.867	837	1.119	528
	5	10.00	N/A	123.3	1	65	174	5.228	1097	0.618	405
					2	65	173	10.125	1381	0.680	444
					3	78	207	21.180	1627	0.669	523
					4	64	170	29.143	973	0.798	512
	6	12.00	N/A	N/A	1	71	189	4.402	1181	0.627	447
					2	79	209	7.917	1433	0.613	483
					3	81	215	13.847	1676	0.603	490
MS-CPM15	1	2.00	N/A	N/A	1	26	70	6.424	386	0.499	132
					2	28	73	12.820	528	0.458	126
					3	34	91	21.630	697	0.744	255
	2	3.80	N/A	N/A	1	21	56	6.192	391	0.829	177
	3	6.00	N/A	N/A	1	35	92	4.149	591	0.626	218
					2	38	100	9.974	732	0.541	203
					3	38	102	17.938	790	0.682	263
	4	8.00	N/A	N/A	1	47	124	3.311	537	0.437	205
					2	59	157	7.275	855	0.479	284
					3	67	177	12.514	1178	0.592	396
MS-CPM18	1	2.00	N/A	150	1	51	135	3.909	654	0.471	240

Exploratory Hole Reference	Test No.	Test Depth	Results									
			Initial Shear Modulus	Secant Shear Modulus at yield	Loop No.	Unload/Reload Shear Modulus	Drained Young's Modulus	Cavity Strain Ordinate	Pressure Ordinate	Change of Shear Strain	Change of Radial Stress
		(m BGL)	G_i	G_y		G_{ur}	E'	ε_C	P_C	$\Delta\gamma_C$	ΔP_C
			[MPa]	[MPa]		[MPa]	[MPa]	[%]	[kPa]	[%]	[kPa]
					2	50	134	8.954	909	0.553	279
					3	59	157	17.999	1057	0.560	332
					4	65	174	29.528	678	0.458	300
	2	4.00	N/A	119	1	46	123	3.718	682	0.540	250
					2	45	118	8.892	890	0.735	328
					3	55	147	25.416	1068	0.533	296
					4	47	124	31.343	631	0.729	342
	3	6.00	N/A	77	1	30	80	4.154	597	0.788	238
					2	32	86	11.571	792	0.827	267
					3	33	89	20.978	904	0.930	310
					4	29	77	30.494	560	0.873	254
	4	8.00	N/A	N/A	1	82	217	3.922	1004	0.443	361
					2	95	253	8.283	1564	0.489	465
					3	93	248	11.982	1830	0.535	500
	5	10.00	N/A	198	1	62	165	3.842	1098	0.536	333
					2	58	155	8.174	1312	0.706	412
					3	63	167	14.245	1447	0.699	440
					4	49	129	25.191	903	0.851	414

Notes:

Exploratory Hole Reference	Test No.	Test Depth	Results									
			Initial Shear Modulus	Secant Shear Modulus at yield	Loop No.	Unload/Reload Shear Modulus	Drained Young's Modulus	Cavity Strain Ordinate	Pressure Ordinate	Change of Shear Strain	Change of Radial Stress
		(m BGL)	G_i	G_y		G_{ur}	E'	ε_C	P_C	$\Delta\gamma_C$	ΔP_C
			[MPa]	[MPa]		[MPa]	[MPa]	[%]	[kPa]	[%]	[kPa]

G_i is obtained from the initial slope of the loading curve.

G_y is derived from the curve fitting procedures

G_{ur} is modulus obtained by taking the slope of the chord bisecting a cycle of unloading and reloading. This can only be shear modulus if the material response is linear elastic.

E is Young's modulus assuming Poisson's ratio of 0.33.

ε_C and P_C are the cavity strain and pressure ordinates of the mid-point of the cycle. If the strain ordinate is negative, then it indicates that the cycle has been taken too early in the expansion to be valid.

$\Delta\gamma_C$ and ΔP_C are the changes of shear strain and radial stress during the unload/reload cycle.

H.1.4.4 Non-Linear Interpretation of Unload/Reload Cycles

Table 0.5: Non-Linear Interpretation of Unload/Reload Cycles

Exploratory Hole Reference	Test No.	Test Depths (m BGL)	Loop No.	Results								
				Shear Stress Intercept	Elastic Exponent	Secant Shear Modulus at given Shear Strain (γ)			Secant Young's Modulus at given Axial Strain (γ_a)		
						$\gamma = 10^{-4}$	$\gamma = 10^{-3}$	$\gamma = 10^{-2}$	$\gamma_a = 10^{-4}$	$\gamma_a = 10^{-3}$	$\gamma_a = 10^{-2}$
				α	β	G_S			E'_S		
				[MPa]	[-]	[MPa]			[MPa]		
MS-BH04	2	19.50	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3	23.00	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	26.00	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	27.90	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Exploratory Hole Reference	Test No.	Test Depths (m BGL)	Loop No.	Results								
				Shear Stress Intercept α [MPa]	Elastic Exponent β [-]	Secant Shear Modulus at given Shear Strain (γ) G_S [MPa]			Secant Young's Modulus at given Axial Strain (γ_a) E'_S [MPa]		
						$\gamma = 10^{-4}$	$\gamma = 10^{-3}$	$\gamma = 10^{-2}$	$\gamma_a = 10^{-4}$	$\gamma_a = 10^{-3}$	$\gamma_a = 10^{-2}$
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	6	34.50	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MS-BH10	1	17.94	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	22.04	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3	26.74	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	31.43	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Exploratory Hole Reference	Test No.	Test Depths (m BGL)	Loop No.	Results								
				Shear Stress Intercept α [MPa]	Elastic Exponent β [-]	Secant Shear Modulus at given Shear Strain (γ) G_S [MPa]			Secant Young's Modulus at given Axial Strain (γ_a) E'_S [MPa]		
						$\gamma = 10^{-4}$	$\gamma = 10^{-3}$	$\gamma = 10^{-2}$	$\gamma_a = 10^{-4}$	$\gamma_a = 10^{-3}$	$\gamma_a = 10^{-2}$
			5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	35.86	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MS-BH12	2	22.20	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	31.05	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	35.65	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Exploratory Hole Reference	Test No.	Test Depths (m BGL)	Loop No.	Results								
				Shear Stress Intercept α [MPa]	Elastic Exponent β [-]	Secant Shear Modulus at given Shear Strain (γ) G_S [MPa]			Secant Young's Modulus at given Axial Strain (γ_a) E'_S [MPa]		
						$\gamma = 10^{-4}$	$\gamma = 10^{-3}$	$\gamma = 10^{-2}$	$\gamma_a = 10^{-4}$	$\gamma_a = 10^{-3}$	$\gamma_a = 10^{-2}$
	6	41.50	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MS-BH13	1	18.70	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	2	23.70	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	3	27.30	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	4	31.70	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Exploratory Hole Reference	Test No.	Test Depths (m BGL)	Loop No.	Results								
				Shear Stress Intercept α [MPa]	Elastic Exponent β [-]	Secant Shear Modulus at given Shear Strain (γ) G_S [MPa]			Secant Young's Modulus at given Axial Strain (γ_a) E'_S [MPa]		
						$\gamma = 10^{-4}$	$\gamma = 10^{-3}$	$\gamma = 10^{-2}$	$\gamma_a = 10^{-4}$	$\gamma_a = 10^{-3}$	$\gamma_a = 10^{-2}$
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	5	37.50	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MS-CPM12	1	2.00	1	17.744	0.810	102	66	43	272	175	113
			2	11.110	0.736	126	69	37	336	183	100
			3	11.905	0.728	146	78	42	388	207	111
			4	14.242	0.744	151	83	46	400	222	123
	2	4.00	1	1.879	0.737	21	12	6	56	31	17
			2	1.385	0.696	23	11	6	61	30	15
			3	0.878	0.622	29	12	5	76	32	13
			4	0.661	0.595	28	11	4	73	29	11
	3	6.00	1	3.606	0.651	90	40	18	239	107	48
			2	4.003	0.666	87	40	19	231	107	50
			3	3.599	0.644	96	42	19	254	112	49
			4	2.671	0.603	103	41	17	275	110	44
	4	8.00	1	13.925	0.722	180	95	50	479	253	133
			2	11.405	0.695	189	94	46	503	249	124

Exploratory Hole Reference	Test No.	Test Depths (m BGL)	Loop No.	Results								
				Shear Stress Intercept α [MPa]	Elastic Exponent β [-]	Secant Shear Modulus at given Shear Strain (γ) G_S [MPa]			Secant Young's Modulus at given Axial Strain (γ_a) E'_S [MPa]		
						$\gamma = 10^{-4}$	$\gamma = 10^{-3}$	$\gamma = 10^{-2}$	$\gamma_a = 10^{-4}$	$\gamma_a = 10^{-3}$	$\gamma_a = 10^{-2}$
			3	7.271	0.651	181	81	36	481	216	96
	5	10.00	1	19.042	0.790	132	81	50	350	216	133
			2	24.708	0.823	126	84	56	336	223	148
			3	25.491	0.802	158	100	63	420	266	169
			4	13.781	0.721	180	95	50	479	252	132
	6	12.00	1	10.641	0.689	187	91	45	496	243	119
			2	14.925	0.724	190	100	53	504	267	142
			3	16.623	0.734	193	104	57	512	278	151
MS-CPM15	1	2.00	1	3.818	0.678	74	35	17	197	94	45
			2	3.214	0.693	54	27	13	145	71	35
			3	4.593	0.644	122	54	24	324	143	63
	2	3.80	1	3.418	0.695	57	28	14	151	75	37
	3	6.00	1	3.863	0.636	110	48	21	294	127	55
			2	3.322	0.614	116	48	20	309	127	52
			3	4.605	0.645	121	53	24	322	142	63
	4	8.00	1	40.162	0.959	59	53	49	156	142	129
			2	35.230	0.909	81	66	54	217	176	142
			3	23.815	0.821	124	82	54	329	218	144
MS-CPM18	1	2.00	1	6.954	0.691	120	59	29	319	156	77

Exploratory Hole Reference	Test No.	Test Depths (m BGL)	Loop No.	Results								
				Shear Stress Intercept α [MPa]	Elastic Exponent β [-]	Secant Shear Modulus at given Shear Strain (γ) G_S [MPa]			Secant Young's Modulus at given Axial Strain (γ_a) E'_S [MPa]		
						$\gamma = 10^{-4}$	$\gamma = 10^{-3}$	$\gamma = 10^{-2}$	$\gamma_a = 10^{-4}$	$\gamma_a = 10^{-3}$	$\gamma_a = 10^{-2}$
			2	11.262	0.753	110	62	35	291	165	93
			3	15.349	0.769	129	76	44	343	201	118
			4	15.086	0.767	129	75	44	343	201	117
	2	4.00	1	7.572	0.711	108	56	29	288	148	76
			2	8.806	0.724	112	59	31	298	158	83
			3	12.822	0.749	129	73	41	344	193	108
			4	8.532	0.700	135	68	34	360	180	90
	3	6.00	1	2.663	0.599	107	42	17	285	113	45
			2	3.031	0.600	121	48	19	321	128	51
			3	3.406	0.604	131	53	21	348	140	56
			4	3.711	0.625	117	49	21	312	132	56
	4	8.00	1	10.998	0.693	186	92	45	495	244	120
			2	10.984	0.669	232	108	50	616	288	134
			3	17.580	0.726	219	117	62	583	310	165
	5	10.00	1	15.995	0.772	131	77	46	347	206	122
			2	16.697	0.784	122	74	45	325	197	120
			3	19.068	0.794	127	79	49	338	210	131
			4	13.769	0.751	136	77	43	363	205	115

Notes:

Exploratory Hole Reference	Test No.	Test Depths	Loop No.	Results						
				Shear Stress Intercept	Elastic Exponent	Secant Shear Modulus at given Shear Strain (γ)			Secant Young's Modulus at given Axial Strain (γ_a)		
						$\gamma = 10^{-4}$	$\gamma = 10^{-3}$	$\gamma = 10^{-2}$	$\gamma_a = 10^{-4}$	$\gamma_a = 10^{-3}$	$\gamma_a = 10^{-2}$
		(m BGL)		α	β	G_S			E'_S		
				[MPa]	[-]	[MPa]			[MPa]		

α and β are obtained from the reloading curve on logarithmic scale.

$\mathbf{G_S}$ is calculated for three levels of plane shear strain by applying the Bolton and Whittle (1999) relationship.

E'_S is derived in a similar way but using axial or invariant strain (γ_a) and assuming a Poisson's ratio of 0.33.

H.1.4.5 Analyst's Comments

Table 0.6: Analysts' Comments

Exploratory Hole Reference	Probe	Type of Test	Test No.	Test Depth (m BGL)	Date	Maximum Pressure [kPa]	Material	Comments from analyst
MS-BH04	HPD3	HPD	2	19.50	30/09/2022	5123	Siltstone with gypsum bands	All displacement is elastic. Unable to identify signs of yield. No indications of shear failure but some indications of fracturing. Po best estimate 590-kPa based on fracture initiation. First cycle should be ignored.
	HPD3	HPD	3	23.00	03/10/2022	10407	Siltstone with gypsum bands	Insufficient expansion for appropriate curve modelling. No shear failure. Shear modulus from loops are greater than 1-GPa - no non-linear stiffness analysis. First fracture at 1009-kPa? This would mean Po cannot exceed 505-kPa. First cycle should be ignored.
	HPD3	HPD	4	26.00	04/10/2022	10378	Sandstone	Insufficient expansion for appropriate curve modelling. No non-linear stiffness analysis as the mid-point through cycles give a shear modulus value greater than 1-GPa. Po best estimate 1000-kPa. First cycle should be ignored.
	HPD3	HPD	5	27.90	05/10/2022	11115	Sandstone	Insufficient expansion for appropriate curve modelling. Material response is elastic. First signs of fracturing at 1500-kPa, therefore Po cannot exceed 750-kPa.
	HPD3	HPD	6	34.50	07/10/2022	10466	Sandstone	Operators' laptop stopped the logging process during the unloading due to a fault therefore limited contraction data, Po based on observation and is subjective. No discernible yield. First cycle too early to be representative, later cycles too stiff for non-linear interpretation. Variation is likely to reflect stress dependency.
MS-BH10	Lilith HPD	HPD	1	17.94	19/10/2022	12833	Mudstone/gypsum	Mixed strata, movement on all arms. Burst on final hold. No contraction data.

Exploratory Hole Reference	Probe	Type of Test	Test No.	Test Depth (m BGL)	Date	Maximum Pressure [kPa]	Material	Comments from analyst
	Lilith HPD	HPD	2	22.04	20/10/2023	8058	Mudstone/gypsum	Membrane rupture at 8049-kPa. No contraction data or curve modelling. No signs of yield visible. No shear failure. Clear fracture at 1-MPa so Po no more than 500-kPa.
	Lilith HPD	HPD	3	27.34	21/10/2024	14484	Mudstone/gypsum	No non-linear stiffness analysis as cycles are greater than 1-GPa. No shear failure - creep data seems to show that the curvature is due to accumulated steps of tensile failure. Po best estimate 1250-kPa?
	Lilith HPD	HPD	4	31.43	25/10/2022	18011	Mudstone/gypsum	Hard to determine where the first fracture forms. It appears to be around 2250-kPa which would mean Po can't exceed 1125-kPa? No non-linear stiffness analysis as cycles are greater than 1-GPa. No shear failure, just multiple tensile failures. First cycle not representative.
	Lilith HPD	HPD	5	35.86	26/10/2022	19774	Mudstone/gypsum	Fails in tension, not shear. Po best estimate 1500-kPa. Non-linear stiffness analysis inappropriate due to cycles being greater than 1-GPa.
MS-BH12	HPD3	HPD	2	22.20	05/10/2022	8361	Sandstone	Curve modelling attempted but expansion is limited.
	Lilith HPD	HPD	4	31.05	10/10/2022	18015	Mudstone/Gypsum	Curvature is likely to be due to accumulated steps of tensile failure. Test is dominated by fracture development giving 'V' shaped cycles. No non-linear stiffness analysis. Curve modelling not appropriate. First cycle not representative.
	Lilith HPD	HPD	5	35.65	12/10/2022	19958	Mudstone/Gypsum	All response is elastic. First cycle is not representative. Possible fracture at 3-MPa sets Po. at 1.5-MPa. Multiple fractures thereafter.
	HPD3	HPD	6	41.50	13/10/2022	13721	Mudstone	All response is elastic with some minor fracturing. First signs of fracture at 2500-kPa suggests Po cannot exceed 1250-kPa. Cycles slightly 'V' formed suggesting open fracture influence.

Exploratory Hole Reference	Probe	Type of Test	Test No.	Test Depth (m BGL)	Date	Maximum Pressure [kPa]	Material	Comments from analyst
MS-BH13	HPD3	HPD	1	18.70	19/10/2022	12065	Mudstone/gypsum	First cycle not representative. It is difficult to be sure, but the overall movement seems too great to be just tensile failure alone. Curve modelling attempted but no confidence in the results.
	HPD3	HPD	2	23.70	20/10/2022	6078	Mudstone/gypsum	Test ended early to prevent membrane rupture as arms 5 and 4 coming back on themselves. Anisotropic expansion. No shear failure. Clear fracture at 1-MPa.
	HPD3	HPD	3	27.30	21/10/2022	15057	Mudstone/gypsum	No shear failure. No non-linear stiffness analysis as cycles are more than 1-GPa. Apparent fracture at 1.6-MPa.
	HPD3	HPD	4	31.70	25/10/2022	15075	Mudstone	Test is dominated by fracture development. First fracture at 2500-kPa means Po cannot exceed 1250-kPa. All movement is elastic.
	HPD3	HPD	5	37.50	27/10/2022	15436	Mudstone	No obvious early fracture so Po is a guess. No shear failure, all movement is elastic.
MS-CPM12	CPM - 160101	CPM	1	2.00	10/10/2022	1479	Sand	Test seems to be affected by significant creep. Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.
	CPM - 160101	CPM	2	4.00	10/10/2022	284	Sand	Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.
	CPM - 160101	CPM	3	6.00	10/10/2022	951	Sand	Test is affected by significant creep. Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.
	CPM - 160101	CPM	4	8.00	10/10/2022	1885	Sand	Membrane slipped during the test. Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.

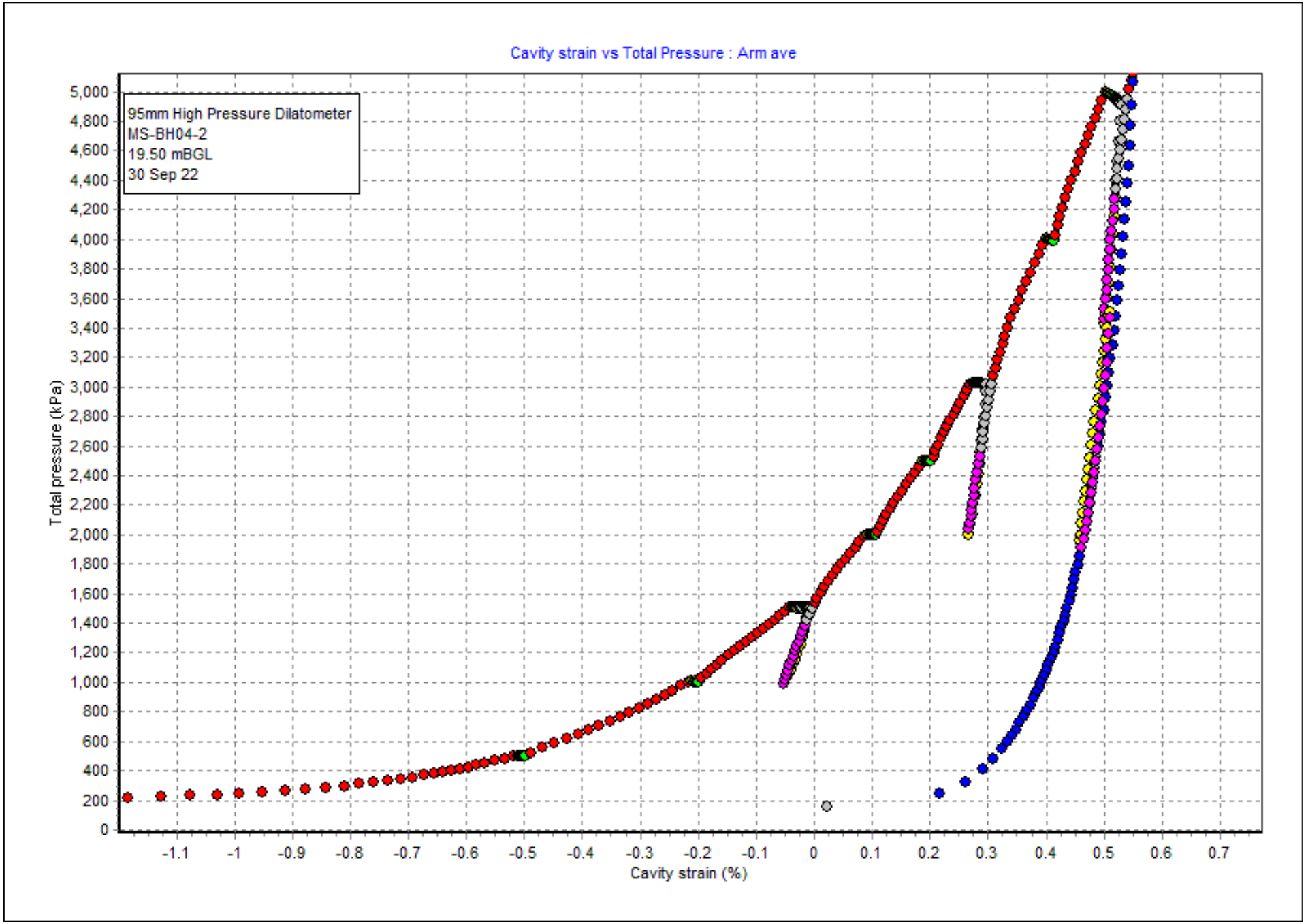
Exploratory Hole Reference	Probe	Type of Test	Test No.	Test Depth (m BGL)	Date	Maximum Pressure [kPa]	Material	Comments from analyst
	CPM - 160101	CPM	5	10.00	11/10/2022	2200	Sand	Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.
	CPM - 160101	CPM	6	12.00	11/10/2022	2246	Sand	Full drop in pressure due to membrane slip. Questionable Withers analysis. Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.
MS-CPM15	CPM - 160101	CPM	1	2.00	20/10/2022	953	Sand	Arm 3 is noisy.
	CPM - 160101	CPM	2	3.80	20/10/2022	602	Sand	Rapid deflation - membrane ruptured, only one cycle completed. Suspect lantern was damaged prior to test. Still with a slight noise problem.
	CPM - 160102	CPM	3	6.00	20/10/2022	1086	Sand	Test is conducted under constant volume conditions.
	CPM - 160102	CPM	4	8.00	21/10/2022	1970	Sand	Pre-pushed position. Rapid deflation - membrane ruptured.
MS-CPM18	CPM - 160102	CPM	1	2.00	11/10/2022	1496	Sand	Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.
	CPM - 160102	CPM	2	4.00	11/10/2022	1410	Sand	Membrane on probe slipped which led to slight weep in pressure. Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.
	CPM - 160102	CPM	3	6.00	11/10/2022	1287	Sand	Maximum displacement. Good test. Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.

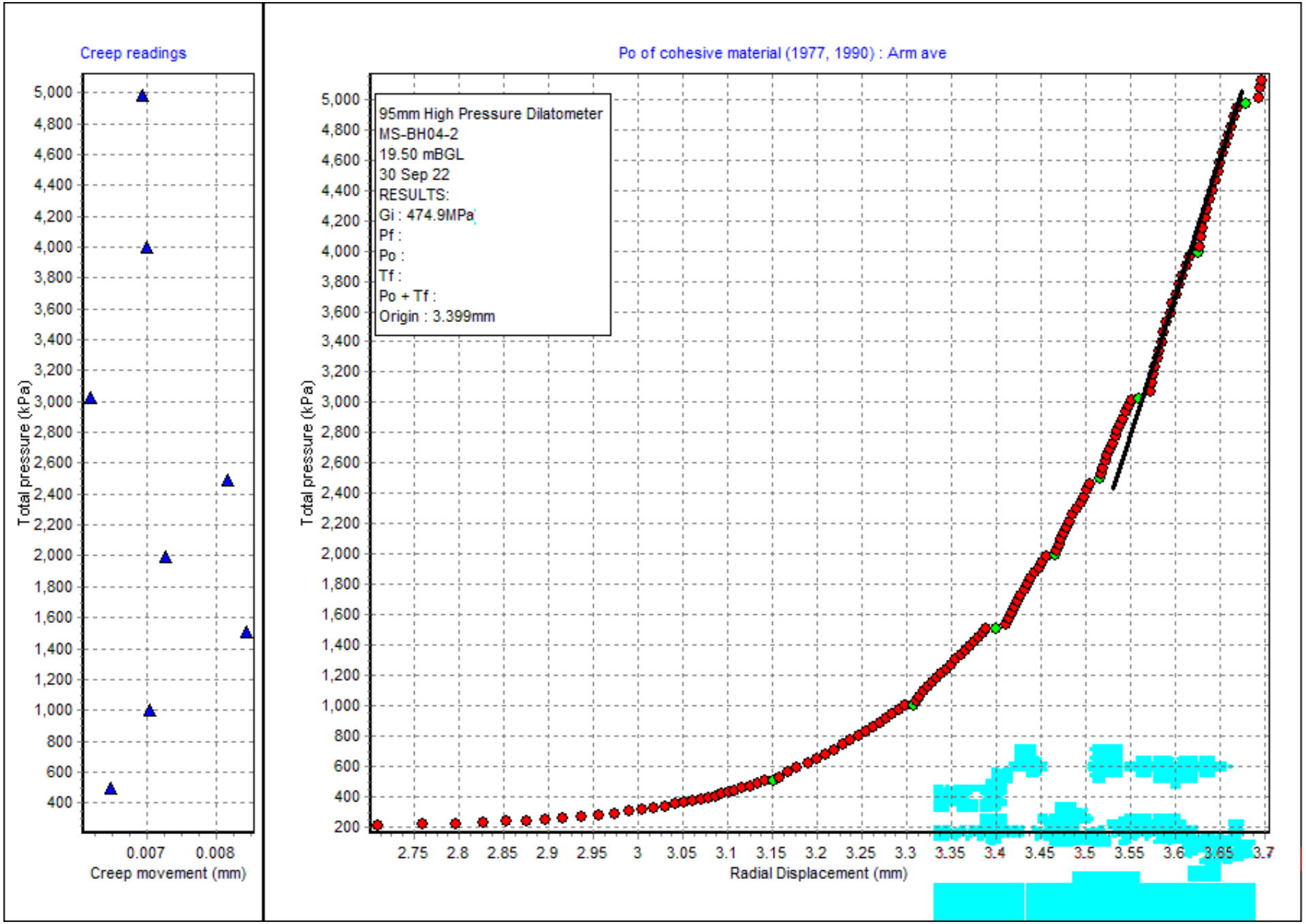
Exploratory Hole Reference	Probe	Type of Test	Test No.	Test Depth (m BGL)	Date	Maximum Pressure [kPa]	Material	Comments from analyst
	CPM - 160102	CPM	4	8.00	12/10/2022	2613	Sand	Membrane on probe slipped which led to a full drop in pressure. Withers analysis is not possible. Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.
	CPM - 160101	CPM	5	10.00	12/10/2022	2009	Sand	Maximum displacement. Not sure Po values are credible, but it's fair to argue that the maximum pressure reached is a reasonable approximation of the limit pressure of the sand.

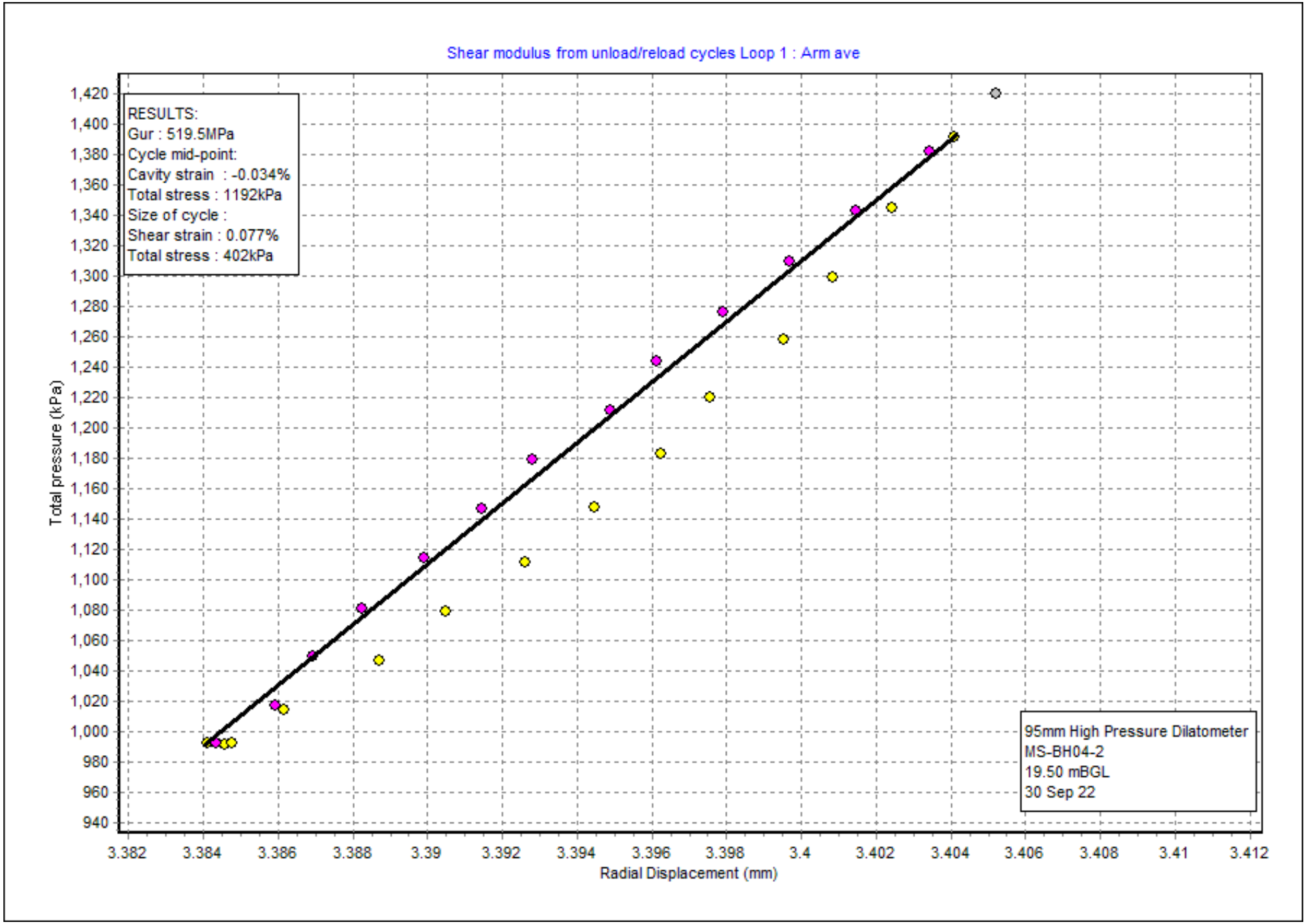
Notes:

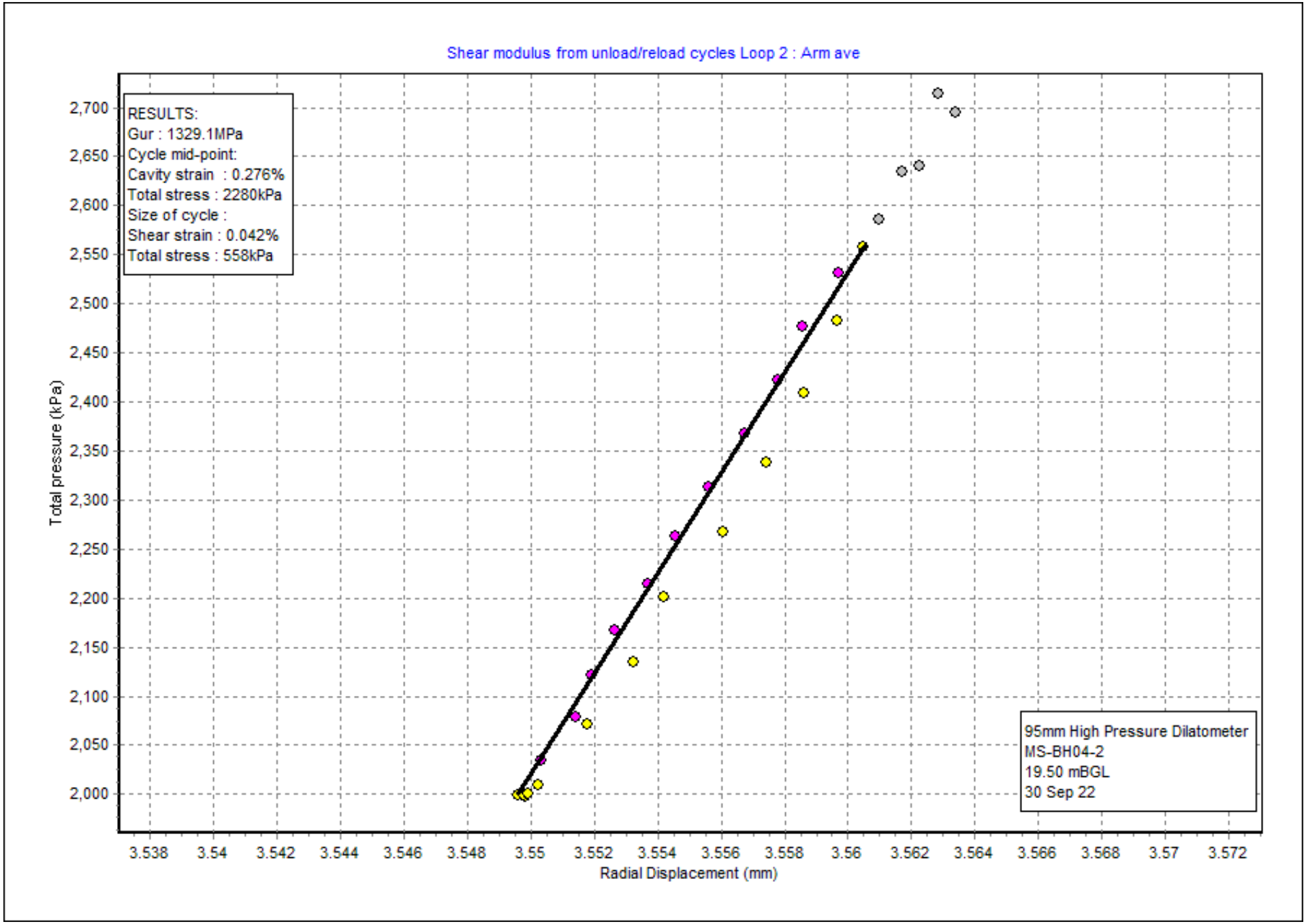
P_0 define the coordinate of displacement and pressure where in situ conditions have been restored after coring the pocket.
In the absence of further information P_0 is considered the best estimate of the total in situ horizontal stress (σ_{h0}).

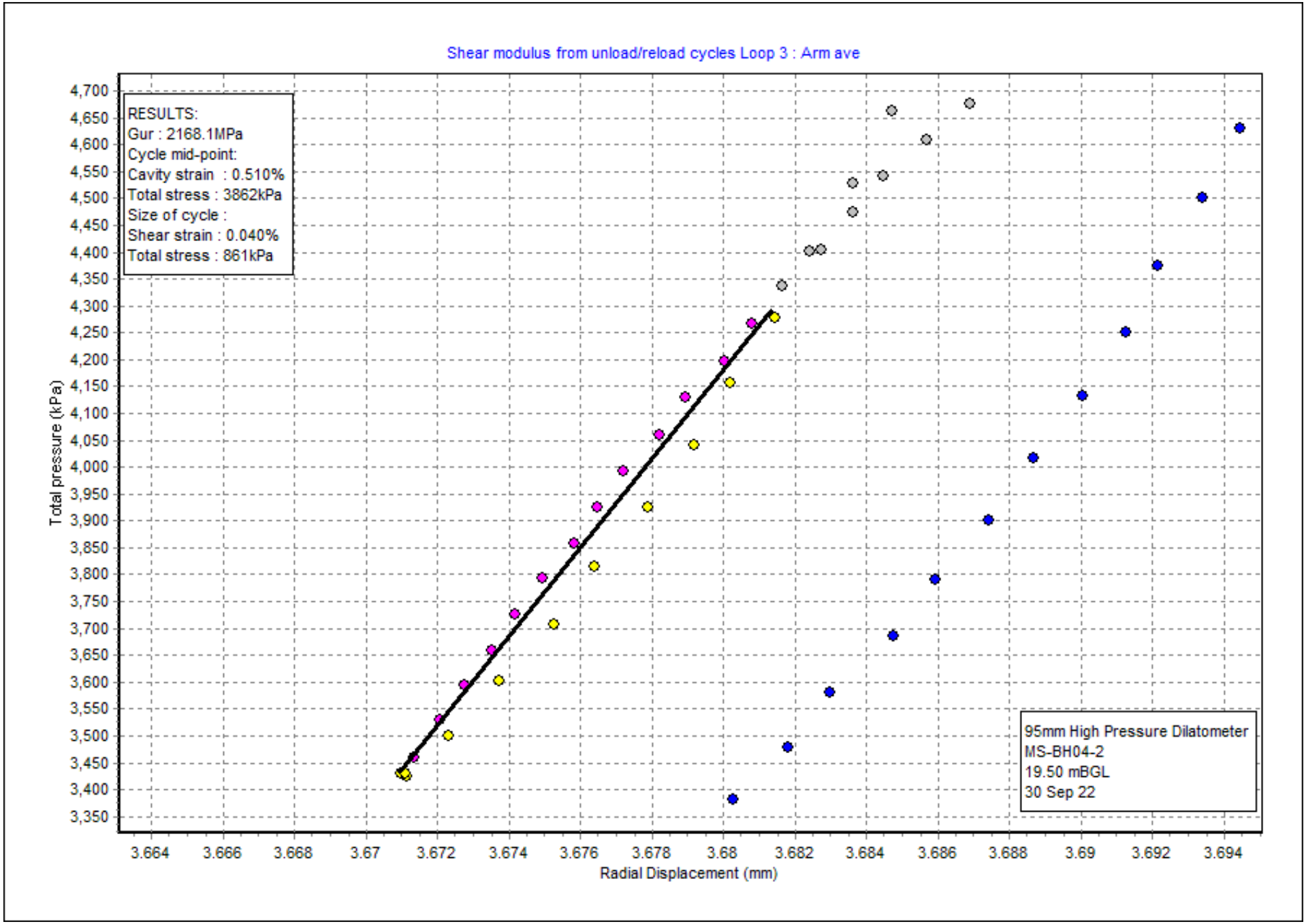
H.1.4.6 Graphical Plots Referenced by Position ID

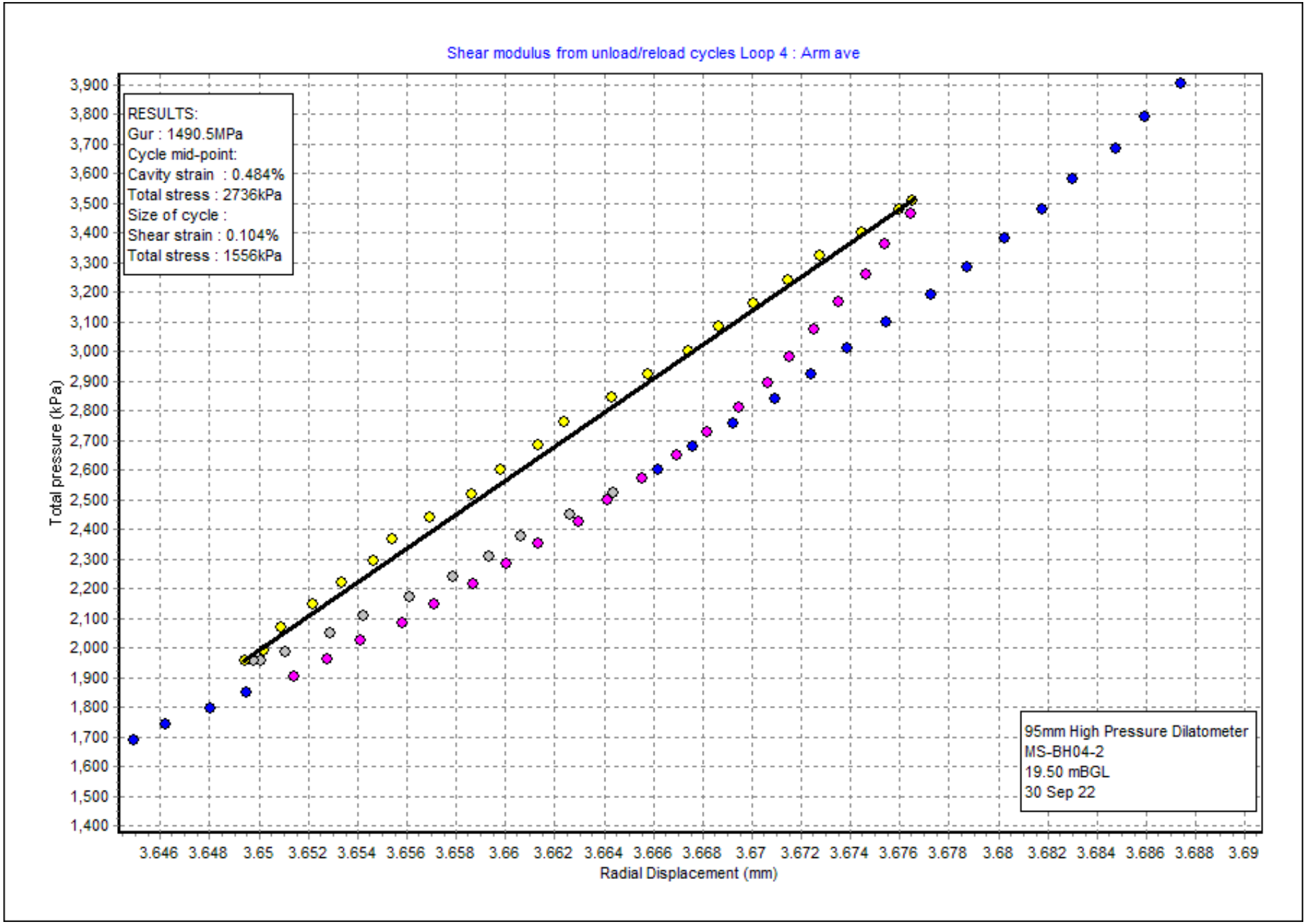

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH04-2
19.50 mBGL
30 Sep 22
Total pressure (kPa)
5,000
4,800
4,600
4,400
4,200
4,000
3,800
3,600
3,400
3,200
3,000
2,800
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
-1.1
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Cavity strain (%)

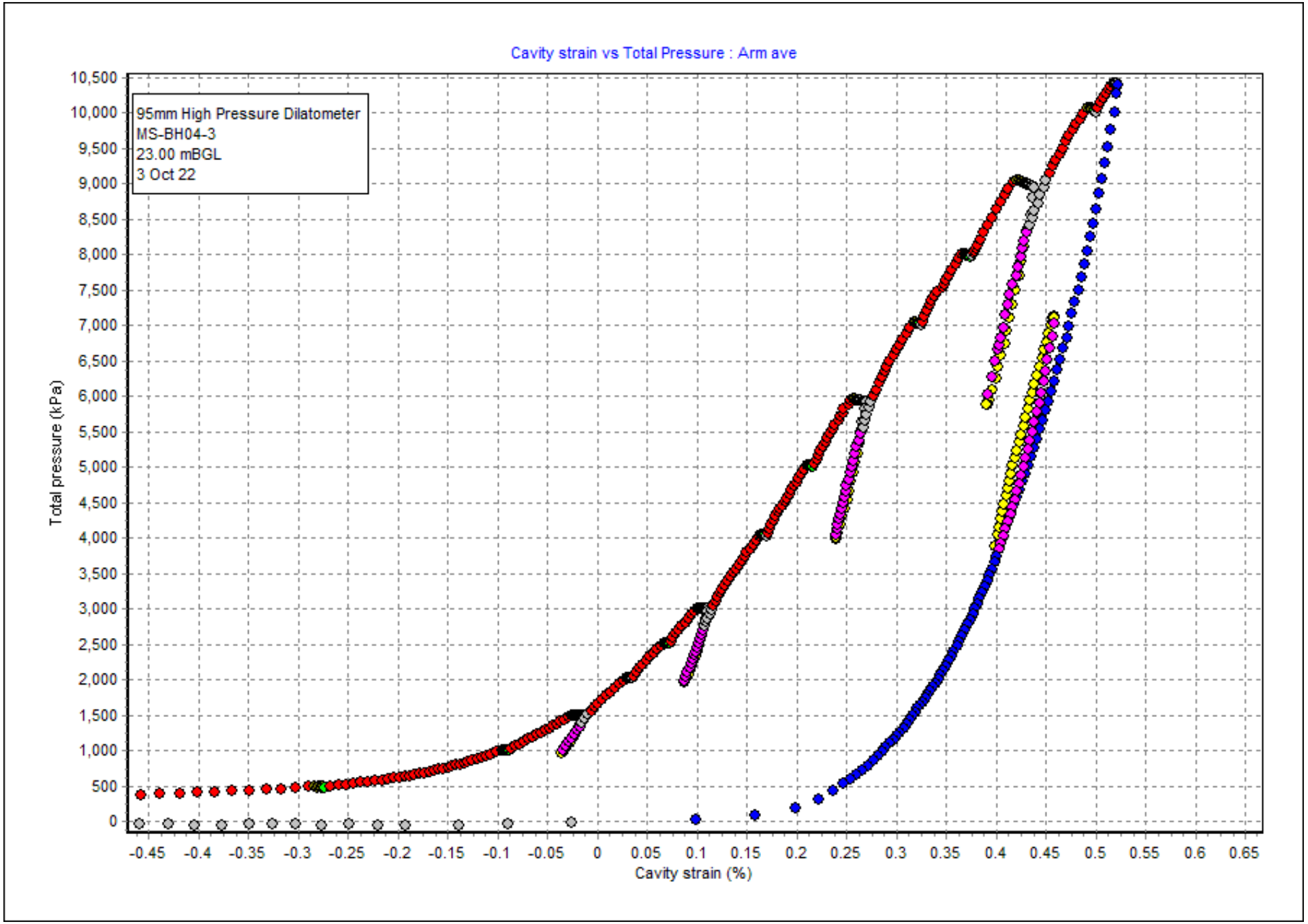

Creep readings
Total pressure (kPa)
5,000
4,800
4,600
4,400
4,200
4,000
3,800
3,600
3,400
3,200
3,000
2,800
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
0.007
0.008
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH04-2
19.50 mBGL
30 Sep 22
RESULTS:
Gi : 474.9MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.399mm
Total pressure (kPa)
200
400
600
800
1,000
1,200
1,400
1,600
1,800
2,000
2,200
2,400
2,600
2,800
3,000
3,200
3,400
3,600
3,800
4,000
4,200
4,400
4,600
4,800
5,000
2.75
2.8
2.85
2.9
2.95
3
3.05
3.1
3.15
3.2
3.25
3.3
3.35
3.4
3.45
3.5
3.55
3.6
3.65
3.7
Radial Displacement (mm)

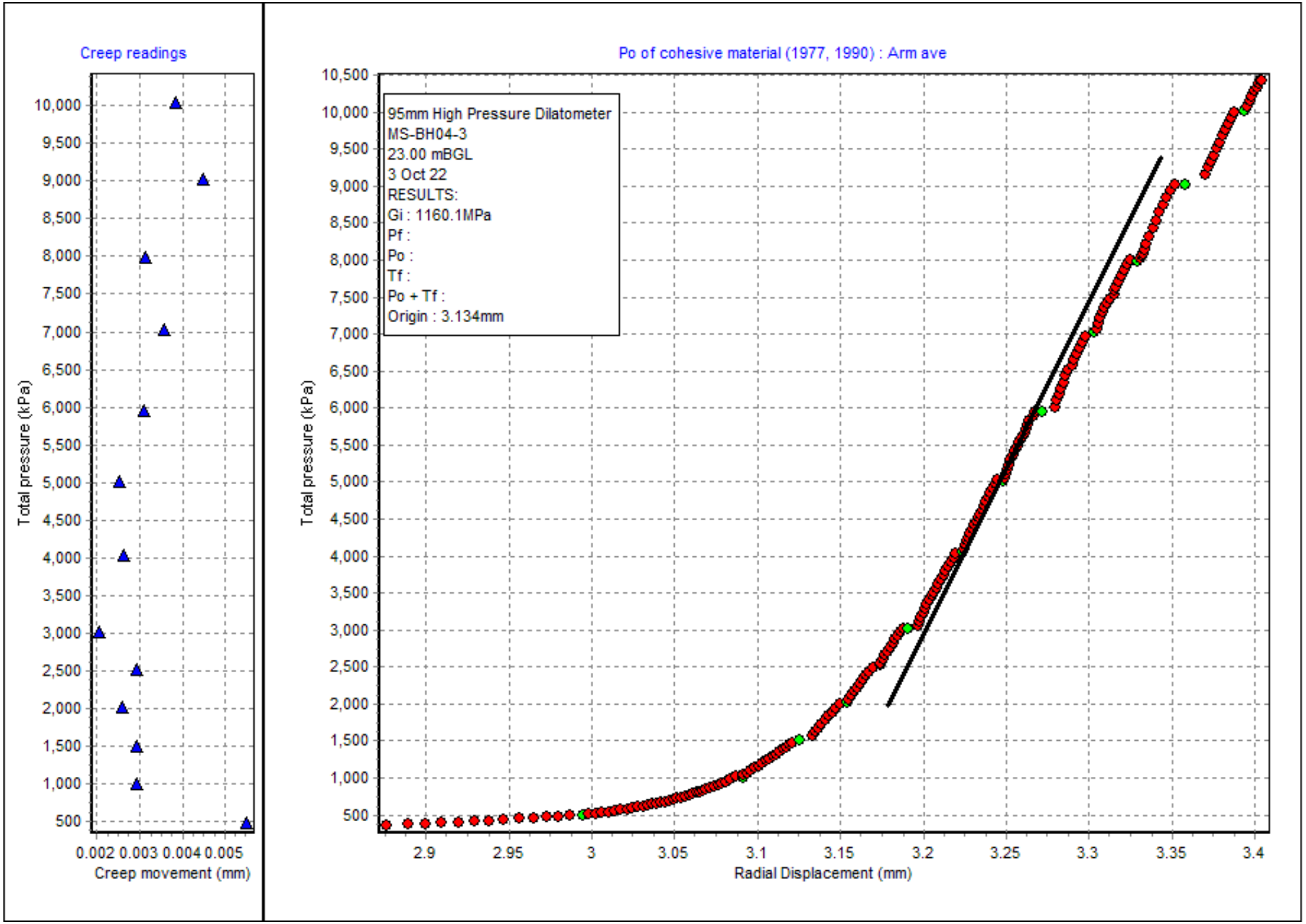

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 519.5MPa
Cycle mid-point:
Cavity strain : -0.034%
Total stress : 1192kPa
Size of cycle :
Shear strain : 0.077%
Total stress : 402kPa
95mm High Pressure Dilatometer
MS-BH04-2
19.50 mBGL
30 Sep 22
Total pressure (kPa)
Radial Displacement (mm)
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
3.382
3.384
3.386
3.388
3.39
3.392
3.394
3.396
3.398
3.4
3.402
3.404
3.406
3.408
3.41
3.412

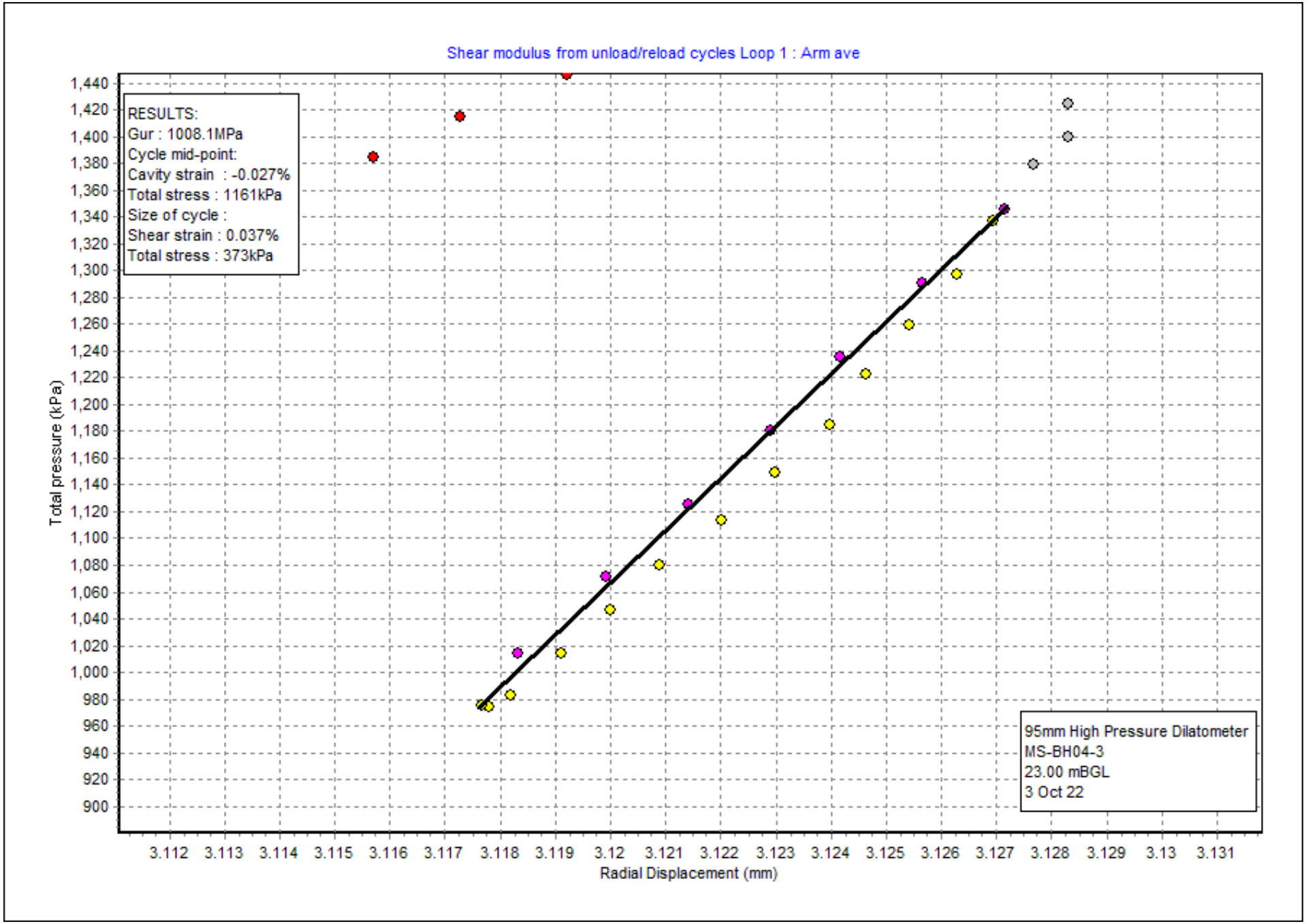

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 1329.1MPa
Cycle mid-point:
Cavity strain : 0.276%
Total stress : 2280kPa
Size of cycle :
Shear strain : 0.042%
Total stress : 558kPa
95mm High Pressure Dilatometer
MS-BH04-2
19.50 mBGL
30 Sep 22
Total pressure (kPa)
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
2,050
2,000
3.538
3.54
3.542
3.544
3.546
3.548
3.55
3.552
3.554
3.556
3.558
3.56
3.562
3.564
3.566
3.568
3.57
3.572
Radial Displacement (mm)

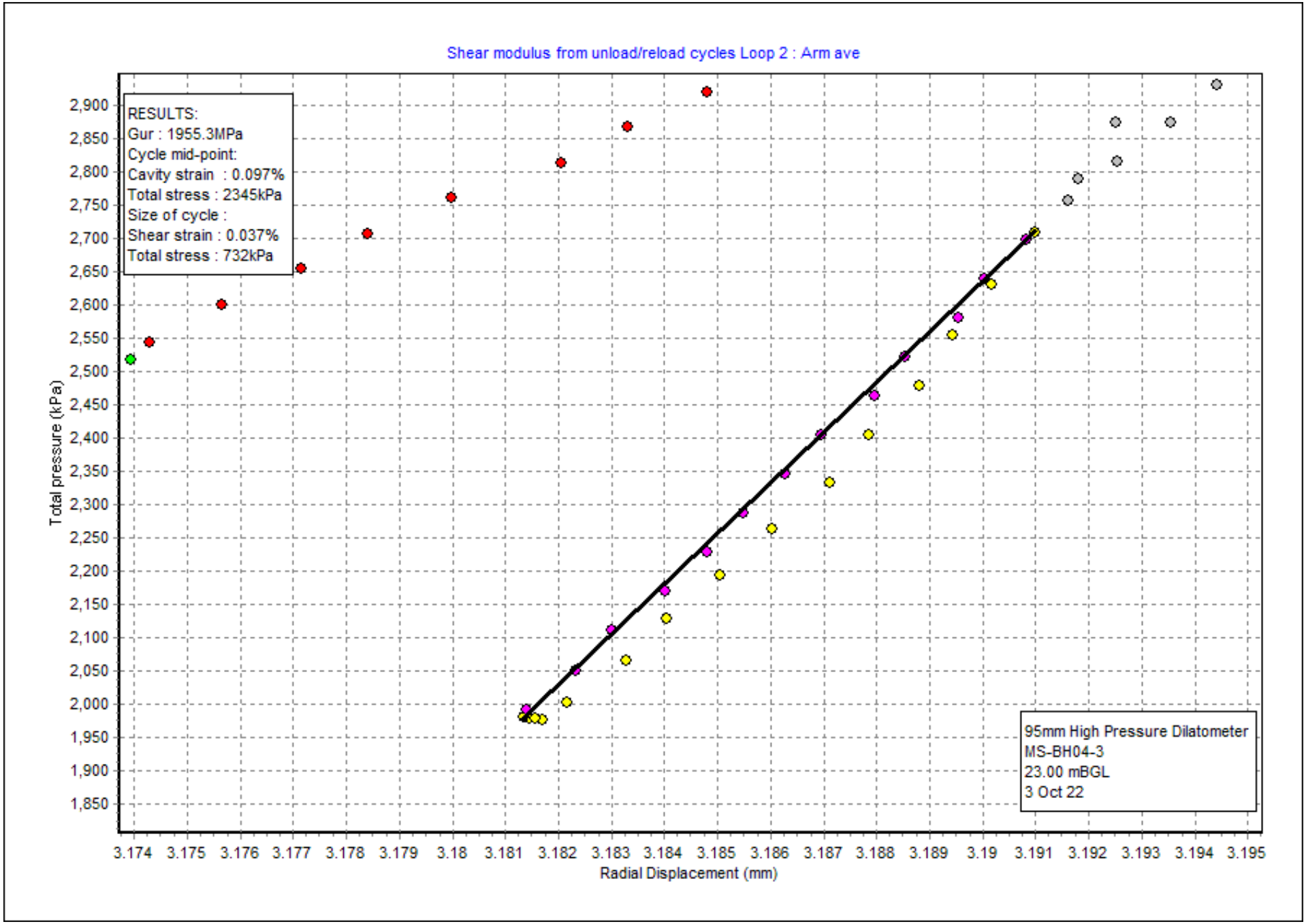

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 2168.1MPa
Cycle mid-point:
Cavity strain : 0.510%
Total stress : 3862kPa
Size of cycle :
Shear strain : 0.040%
Total stress : 861kPa
95mm High Pressure Dilatometer
MS-BH04-2
19.50 mBGL
30 Sep 22
Total pressure (kPa)
Radial Displacement (mm)
4,700
4,650
4,600
4,550
4,500
4,450
4,400
4,350
4,300
4,250
4,200
4,150
4,100
4,050
4,000
3,950
3,900
3,850
3,800
3,750
3,700
3,650
3,600
3,550
3,500
3,450
3,400
3,350
3.664
3.666
3.668
3.67
3.672
3.674
3.676
3.678
3.68
3.682
3.684
3.686
3.688
3.69
3.692
3.694

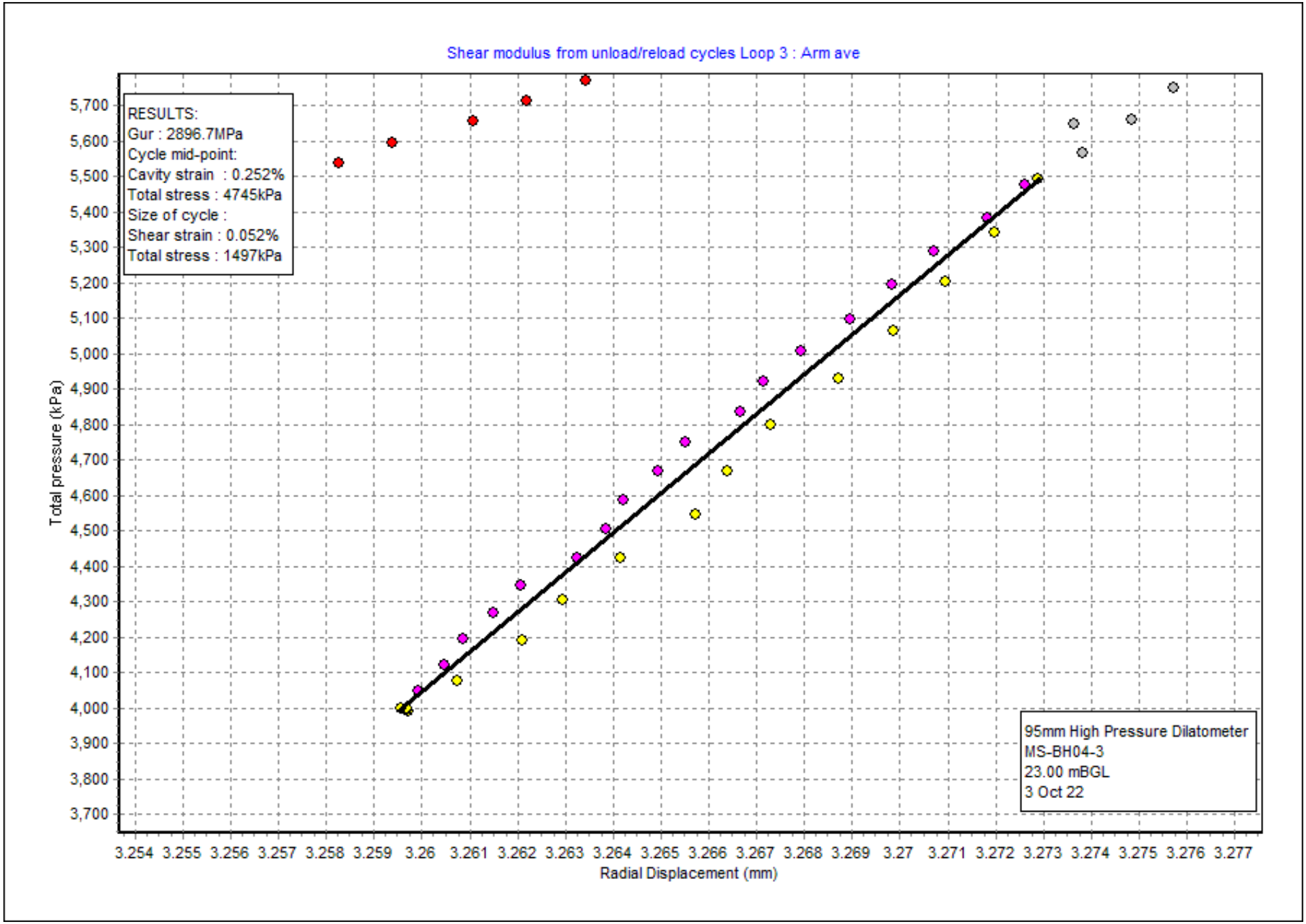

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 1490.5MPa
Cycle mid-point:
Cavity strain : 0.484%
Total stress : 2736kPa
Size of cycle :
Shear strain : 0.104%
Total stress : 1556kPa
95mm High Pressure Dilatometer
MS-BH04-2
19.50 mBGL
30 Sep 22
Total pressure (kPa)
Radial Displacement (mm)
3,900
3,800
3,700
3,600
3,500
3,400
3,300
3,200
3,100
3,000
2,900
2,800
2,700
2,600
2,500
2,400
2,300
2,200
2,100
2,000
1,900
1,800
1,700
1,600
1,500
1,400
3.646 3.648 3.65 3.652 3.654 3.656 3.658 3.66 3.662 3.664 3.666 3.668 3.67 3.672 3.674 3.676 3.678 3.68 3.682 3.684 3.686 3.688 3.69

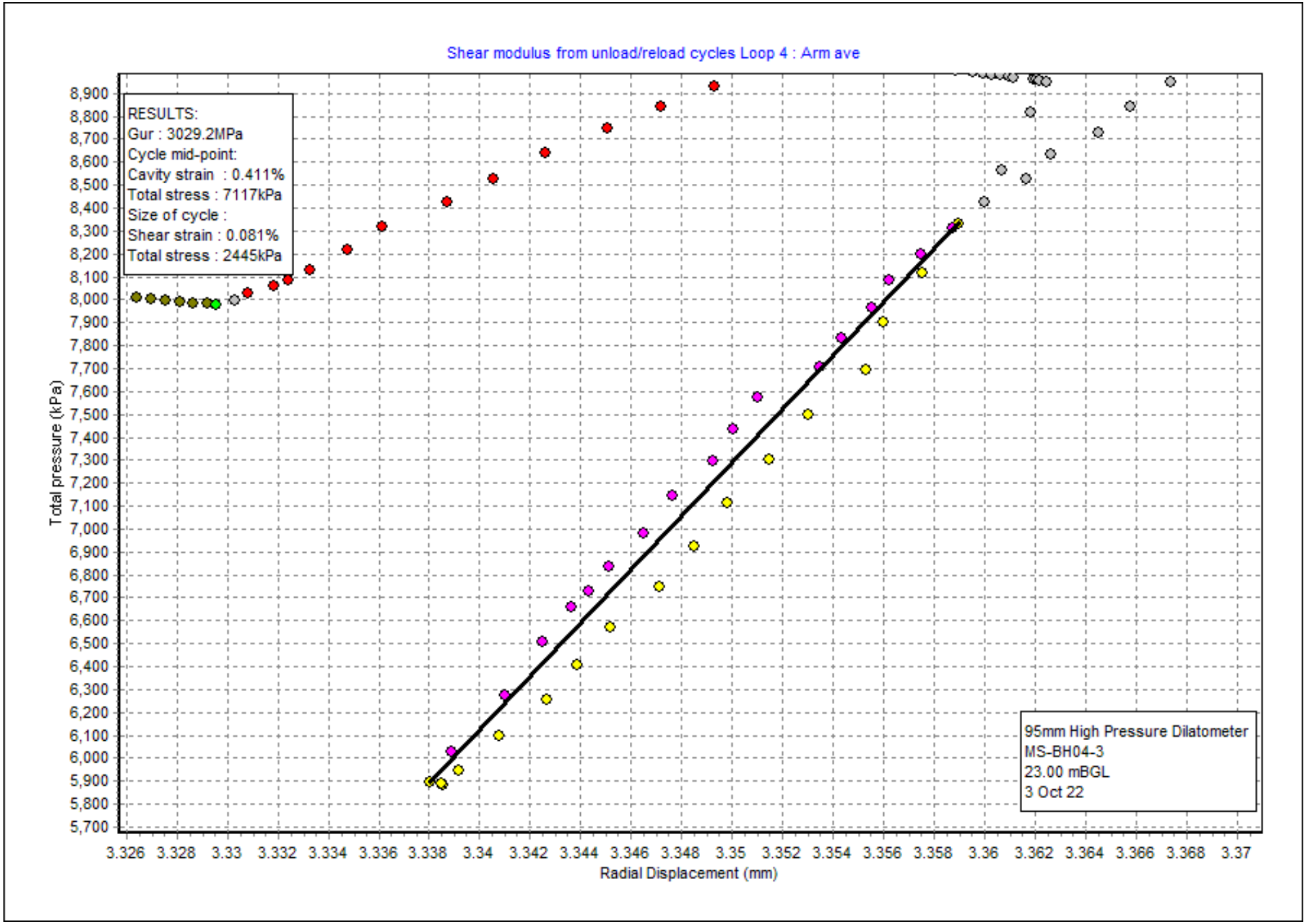

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH04-3
23.00 mBGL
3 Oct 22
Total pressure (kPa)
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-0.45 -0.4 -0.35 -0.3 -0.25 -0.2 -0.15 -0.1 -0.05 0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65
Cavity strain (%)

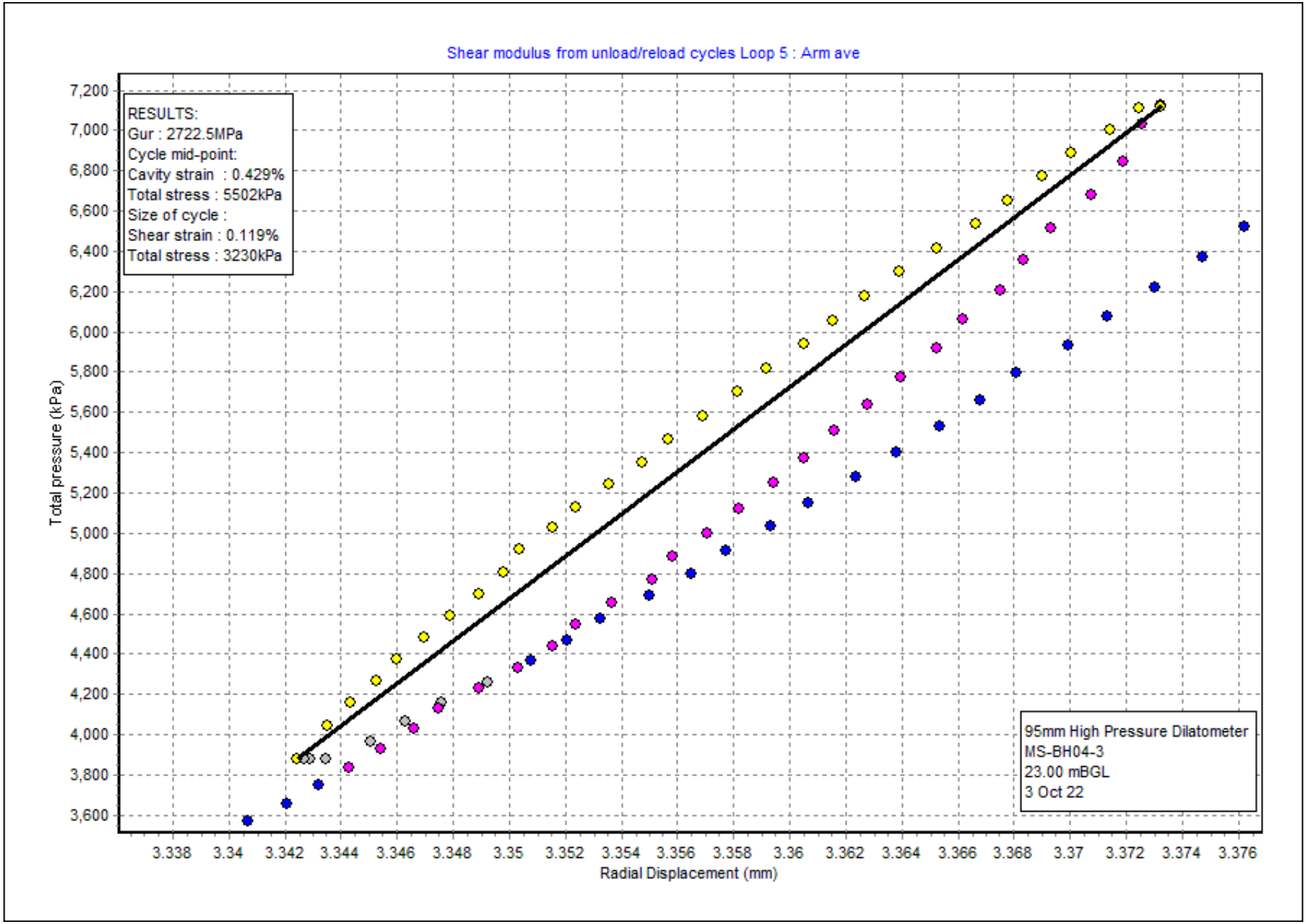

Creep readings
Total pressure (kPa)
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0.002 0.003 0.004 0.005
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH04-3
23.00 mBGL
3 Oct 22
RESULTS:
Gi : 1160.1MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.134mm
Total pressure (kPa)
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
2.9
2.95
3
3.05
3.1
3.15
3.2
3.25
3.3
3.35
3.4
Radial Displacement (mm)

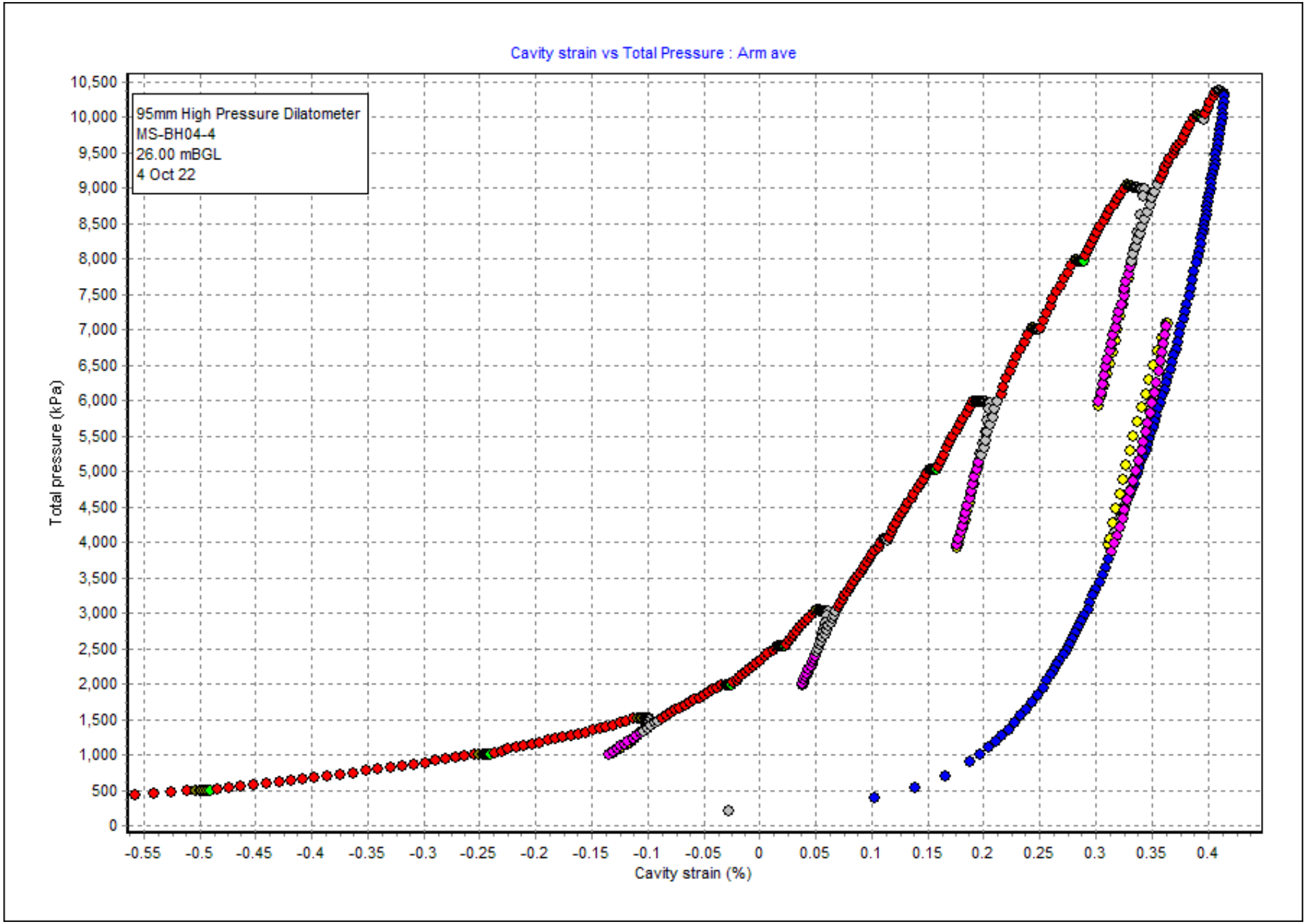

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1008.1MPa
Cycle mid-point:
Cavity strain : -0.027%
Total stress : 1161kPa
Size of cycle :
Shear strain : 0.037%
Total stress : 373kPa
95mm High Pressure Dilatometer
MS-BH04-3
23.00 mBGL
3 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
3.112
3.113
3.114
3.115
3.116
3.117
3.118
3.119
3.12
3.121
3.122
3.123
3.124
3.125
3.126
3.127
3.128
3.129
3.13
3.131

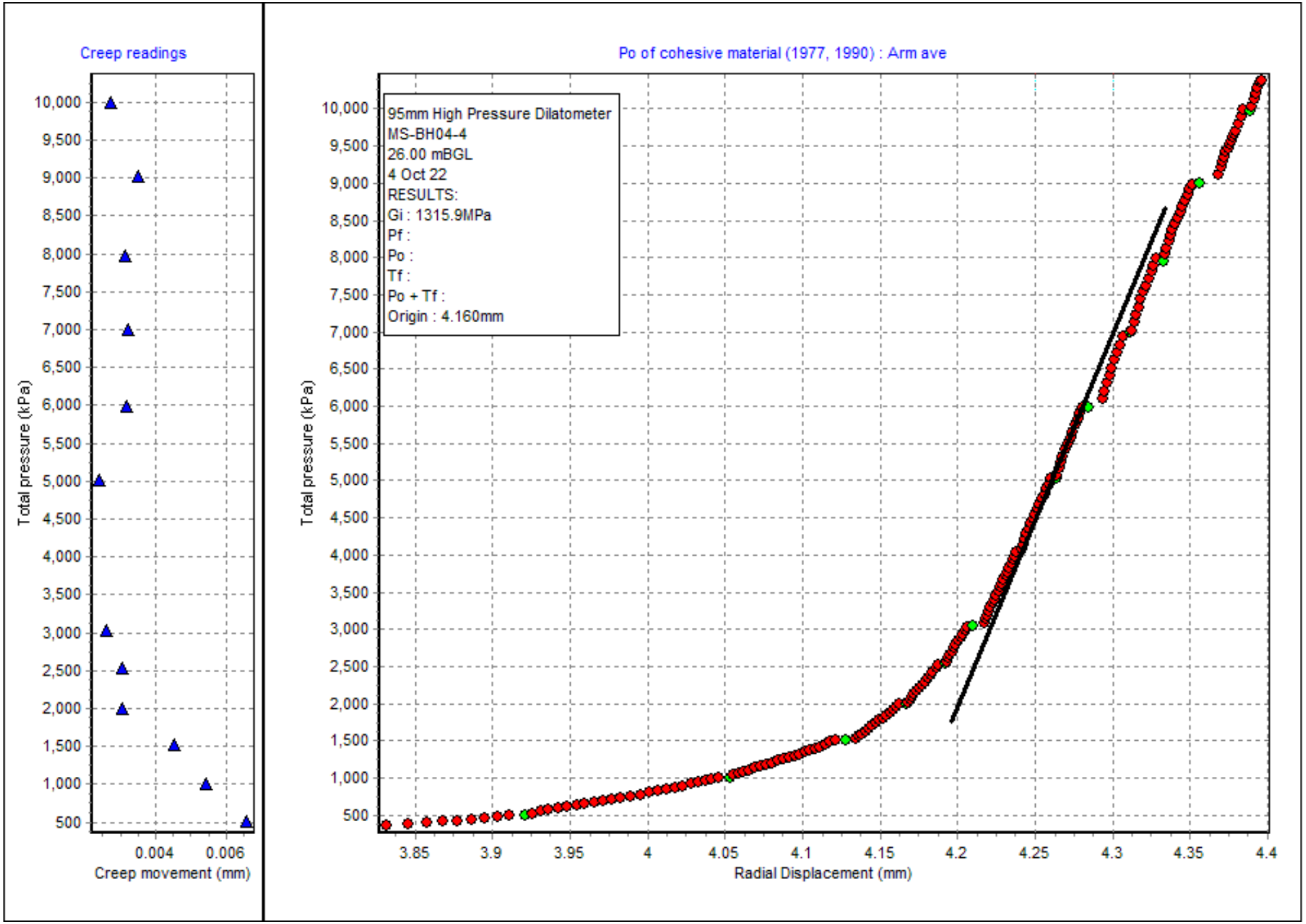

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 1955.3MPa
Cycle mid-point:
Cavity strain : 0.097%
Total stress : 2345kPa
Size of cycle :
Shear strain : 0.037%
Total stress : 732kPa
95mm High Pressure Dilatometer
MS-BH04-3
23.00 mBGL
3 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
2,900
2,850
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
3.174
3.175
3.176
3.177
3.178
3.179
3.18
3.181
3.182
3.183
3.184
3.185
3.186
3.187
3.188
3.189
3.19
3.191
3.192
3.193
3.194
3.195

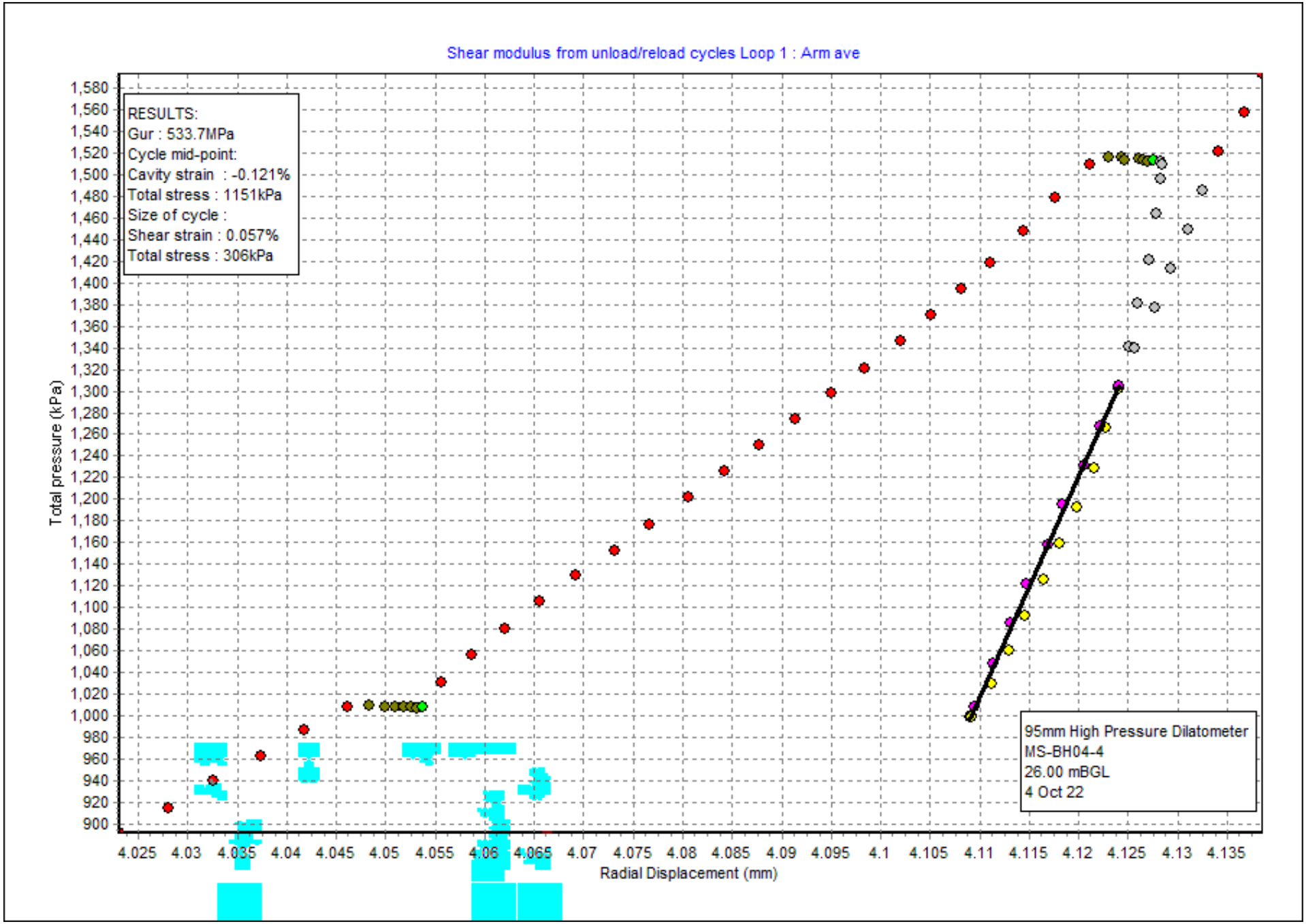

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 2896.7MPa
Cycle mid-point:
Cavity strain : 0.252%
Total stress : 4745kPa
Size of cycle :
Shear strain : 0.052%
Total stress : 1497kPa
95mm High Pressure Dilatometer
MS-BH04-3
23.00 mBGL
3 Oct 22
Total pressure (kPa)
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
3,800
3,700
3.254 3.255 3.256 3.257 3.258 3.259 3.26 3.261 3.262 3.263 3.264 3.265 3.266 3.267 3.268 3.269 3.27 3.271 3.272 3.273 3.274 3.275 3.276 3.277
Radial Displacement (mm)

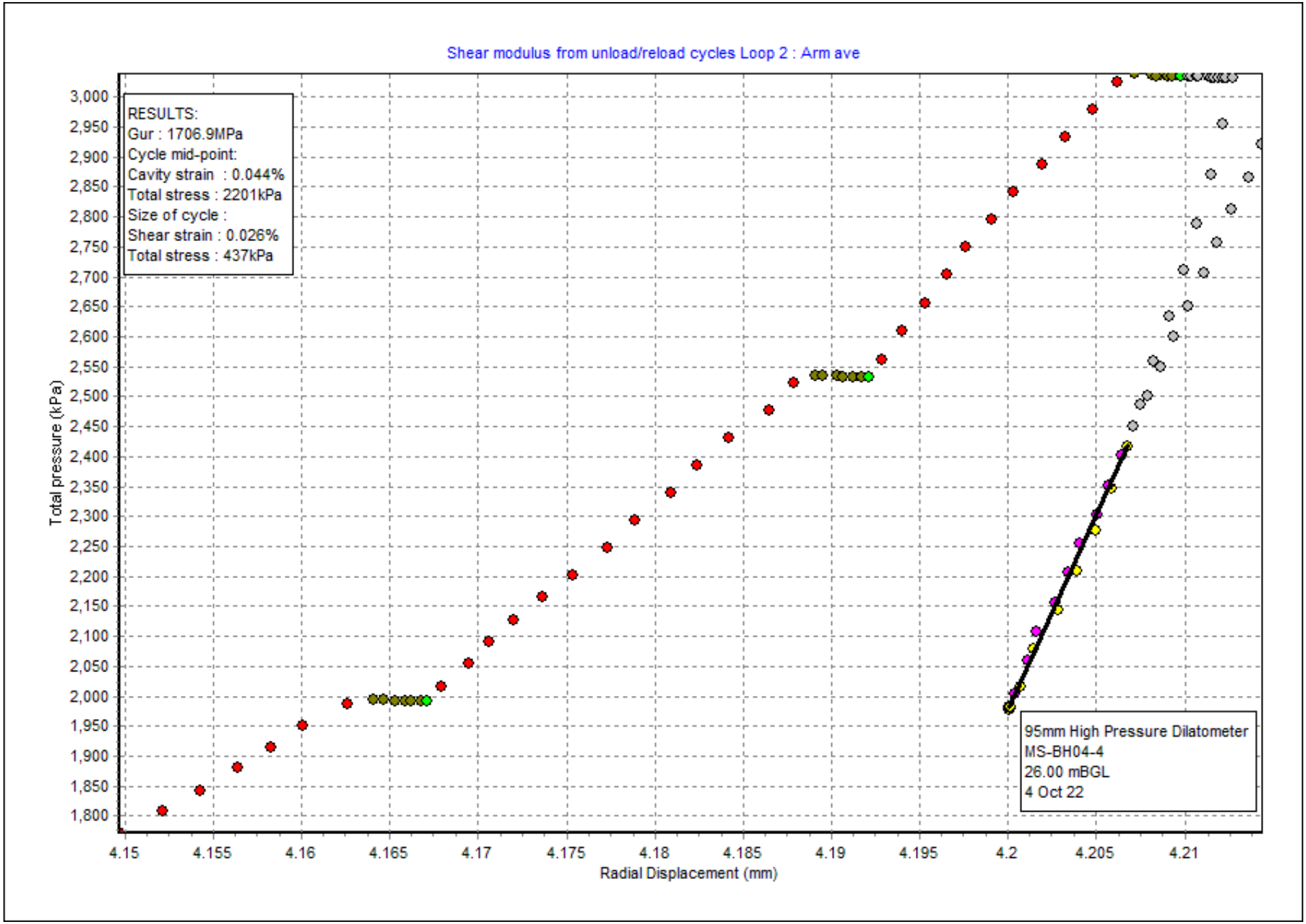

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 3029.2MPa
Cycle mid-point:
Cavity strain : 0.411%
Total stress : 7117kPa
Size of cycle :
Shear strain : 0.081%
Total stress : 2445kPa
95mm High Pressure Dilatometer
MS-BH04-3
23.00 mBGL
3 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
8,900
8,800
8,700
8,600
8,500
8,400
8,300
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
6,800
6,700
6,600
6,500
6,400
6,300
6,200
6,100
6,000
5,900
5,800
5,700
3.326 3.328 3.33 3.332 3.334 3.336 3.338 3.34 3.342 3.344 3.346 3.348 3.35 3.352 3.354 3.356 3.358 3.36 3.362 3.364 3.366 3.368 3.37

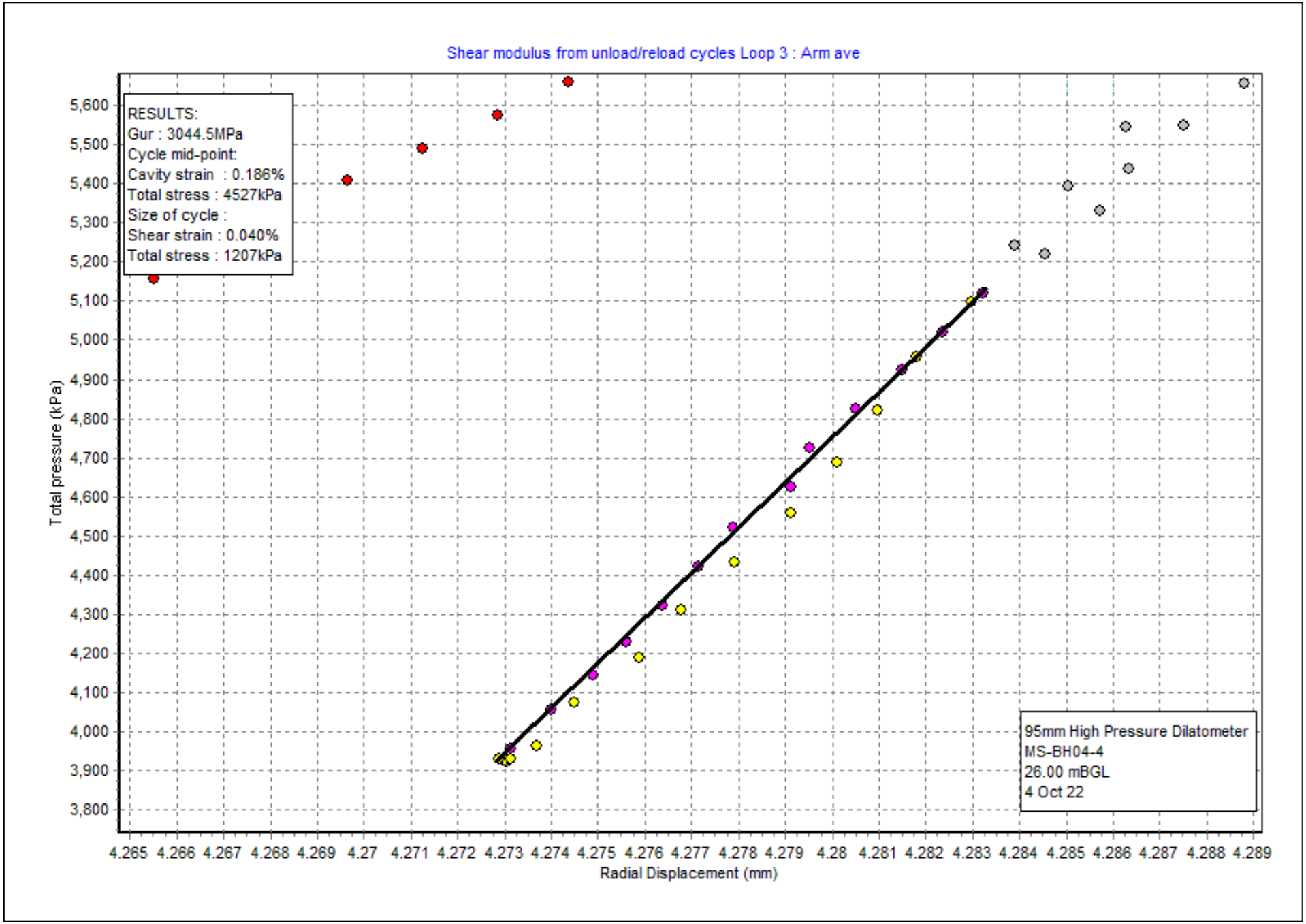

Shear modulus from unload/reload cycles Loop 5 : Arm ave
RESULTS:
Gur : 2722.5MPa
Cycle mid-point:
Cavity strain : 0.429%
Total stress : 5502kPa
Size of cycle :
Shear strain : 0.119%
Total stress : 3230kPa
95mm High Pressure Dilatometer
MS-BH04-3
23.00 mBGL
3 Oct 22
Total pressure (kPa)
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4,000
3,800
3,600
3.338
3.34
3.342
3.344
3.346
3.348
3.35
3.352
3.354
3.356
3.358
3.36
3.362
3.364
3.366
3.368
3.37
3.372
3.374
3.376
Radial Displacement (mm)

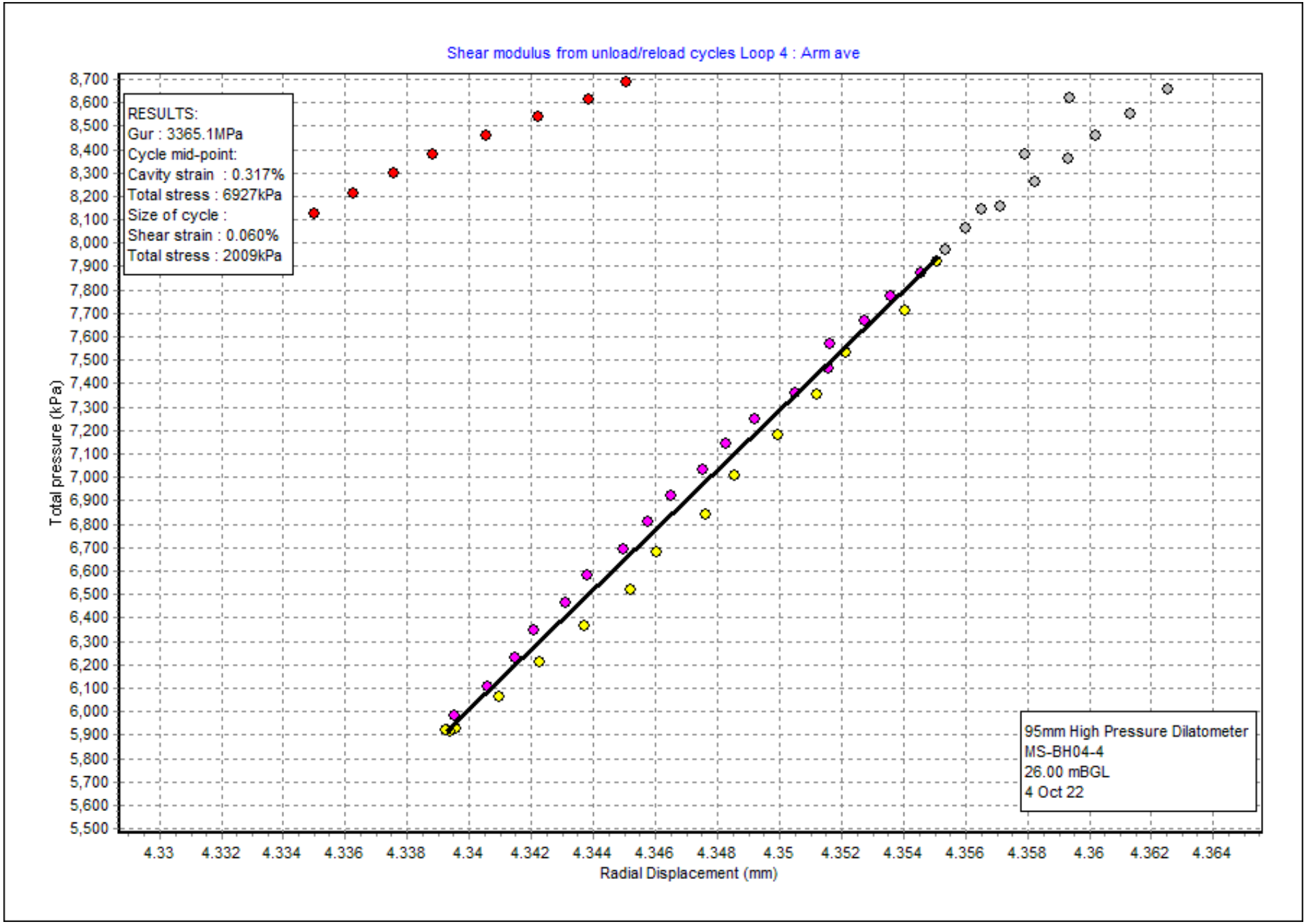

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH04-4
26.00 mBGL
4 Oct 22
Total pressure (kPa)
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-0.55
-0.5
-0.45
-0.4
-0.35
-0.3
-0.25
-0.2
-0.15
-0.1
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
Cavity strain (%)

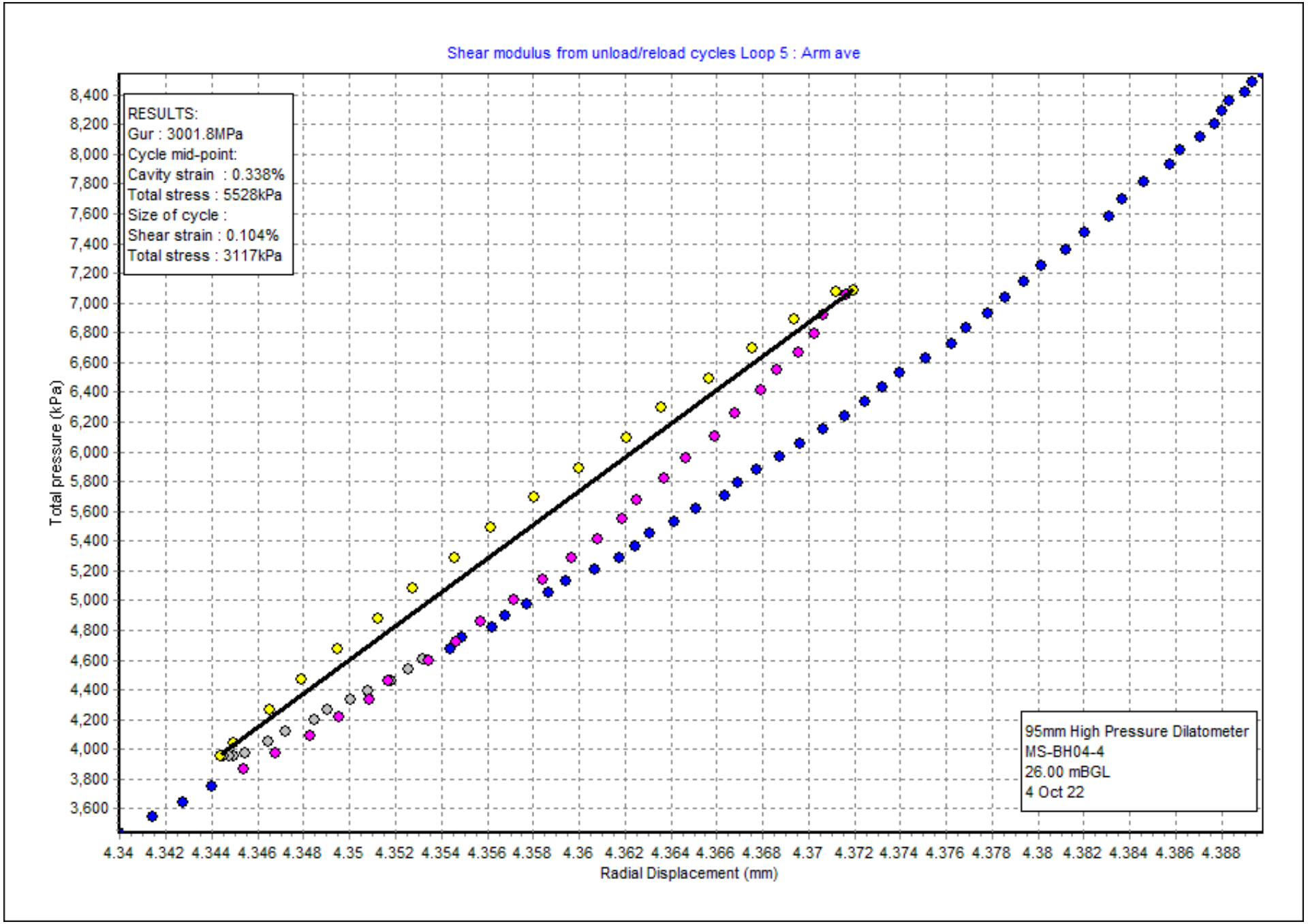

Creep readings
Total pressure (kPa)
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0.004
0.006
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH04-4
26.00 mBGL
4 Oct 22
RESULTS:
Gi : 1315.9MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 4.160mm
Total pressure (kPa)
3.85
3.9
3.95
4
4.05
4.1
4.15
4.2
4.25
4.3
4.35
4.4
Radial Displacement (mm)

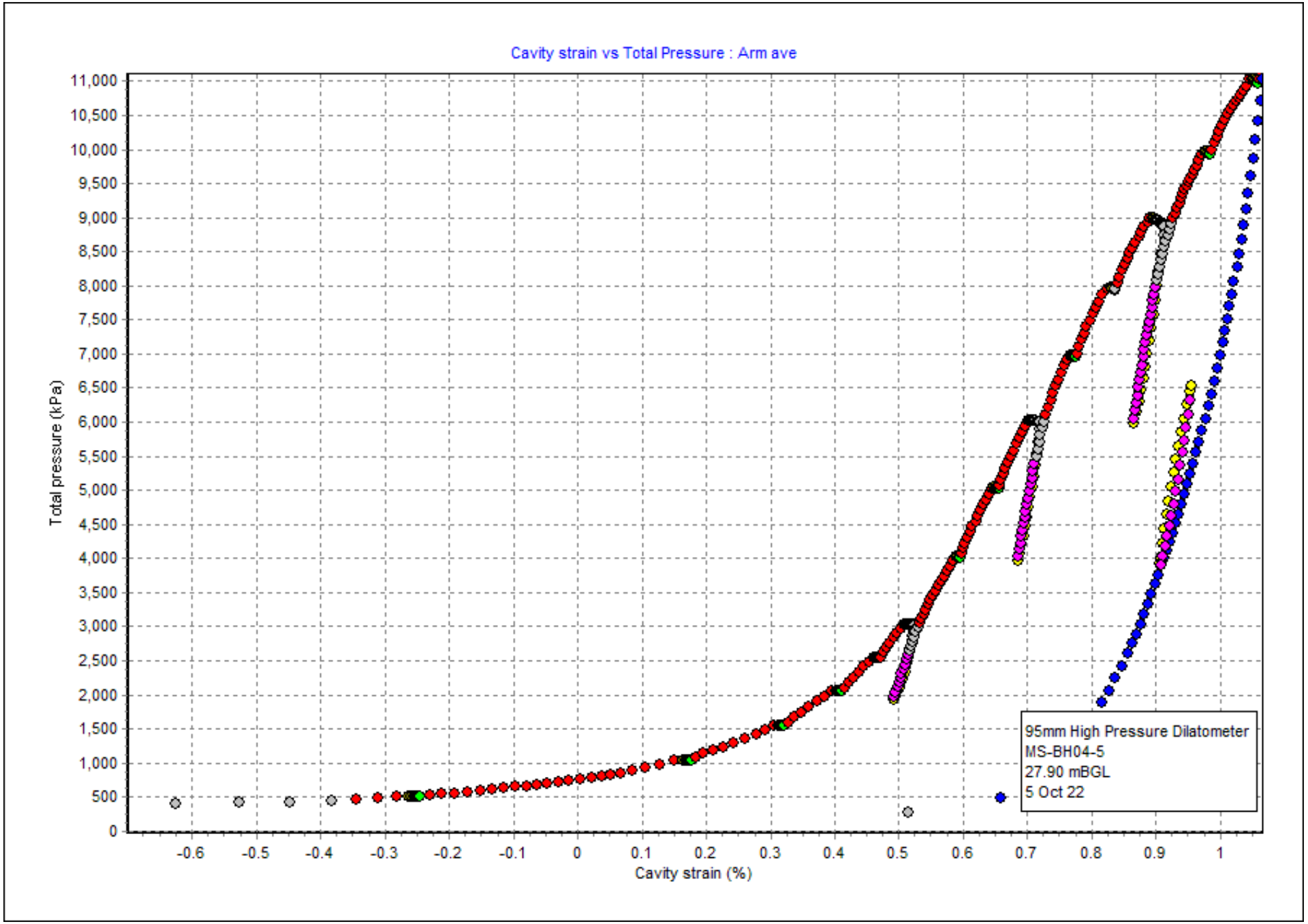

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 533.7MPa
Cycle mid-point:
Cavity strain : -0.121%
Total stress : 1151kPa
Size of cycle :
Shear strain : 0.057%
Total stress : 306kPa
95mm High Pressure Dilatometer
MS-BH04-4
26.00 mBGL
4 Oct 22
Total pressure (kPa)
Radial Displacement (mm)

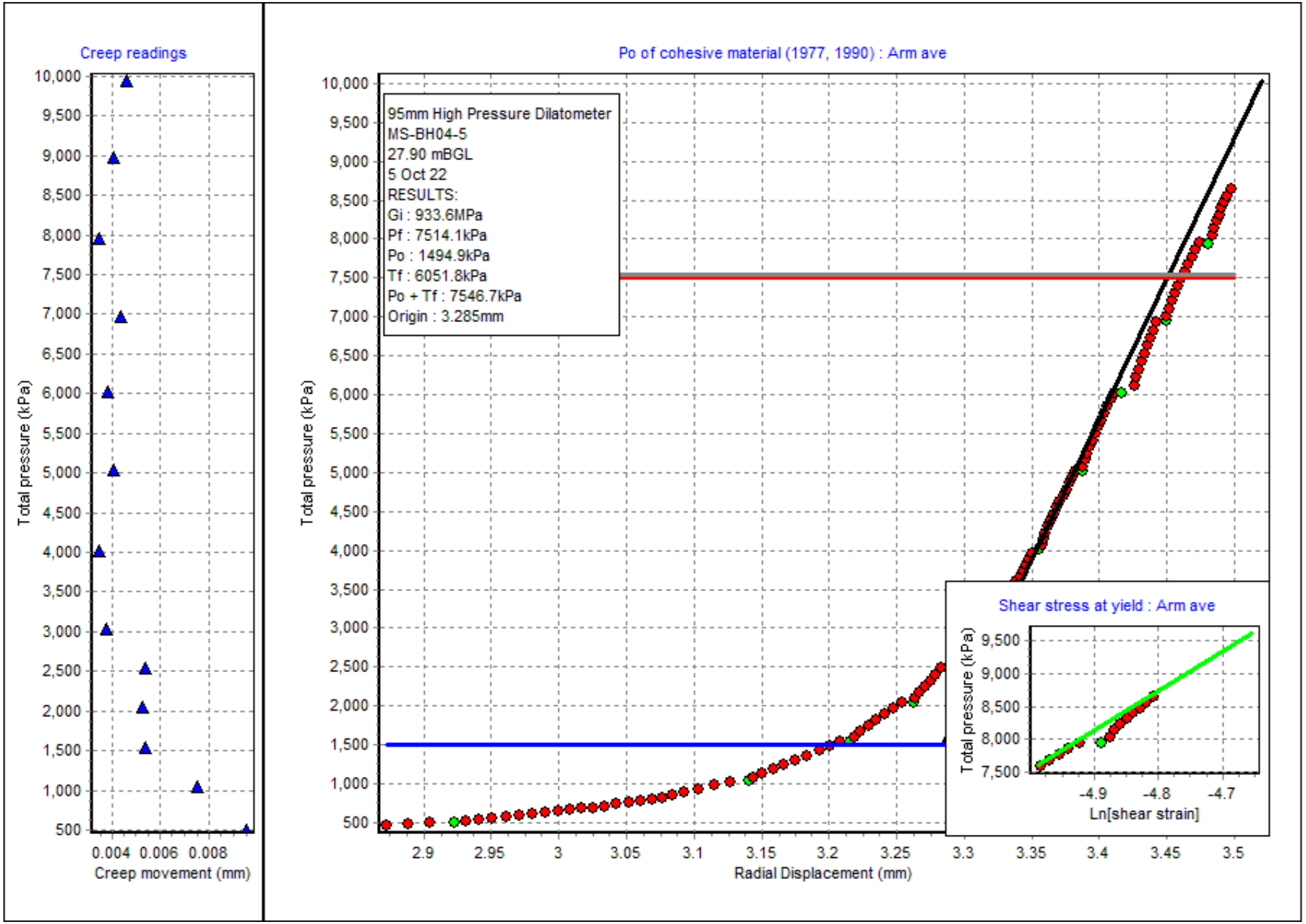

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 1706.9MPa
Cycle mid-point:
Cavity strain : 0.044%
Total stress : 2201kPa
Size of cycle :
Shear strain : 0.026%
Total stress : 437kPa
95mm High Pressure Dilatometer
MS-BH04-4
26.00 mBGL
4 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,000
2,950
2,900
2,850
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
1,800
4.15
4.155
4.16
4.165
4.17
4.175
4.18
4.185
4.19
4.195
4.2
4.205
4.21

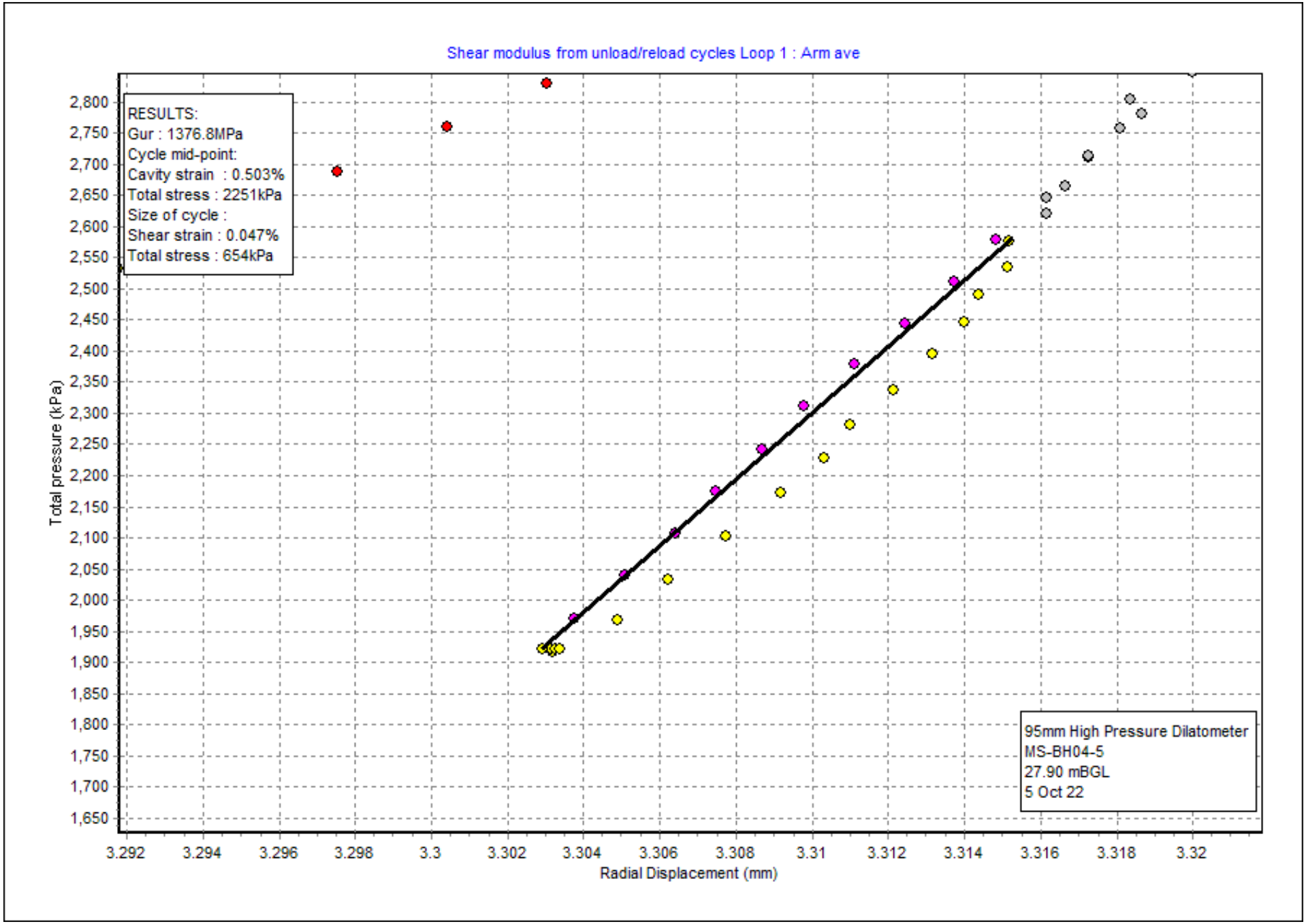

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 3044.5MPa
Cycle mid-point:
Cavity strain : 0.186%
Total stress : 4527kPa
Size of cycle :
Shear strain : 0.040%
Total stress : 1207kPa
95mm High Pressure Dilatometer
MS-BH04-4
26.00 mBGL
4 Oct 22
Total pressure (kPa)
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
3,800
4.265 4.266 4.267 4.268 4.269 4.27 4.271 4.272 4.273 4.274 4.275 4.276 4.277 4.278 4.279 4.28 4.281 4.282 4.283 4.284 4.285 4.286 4.287 4.288 4.289
Radial Displacement (mm)

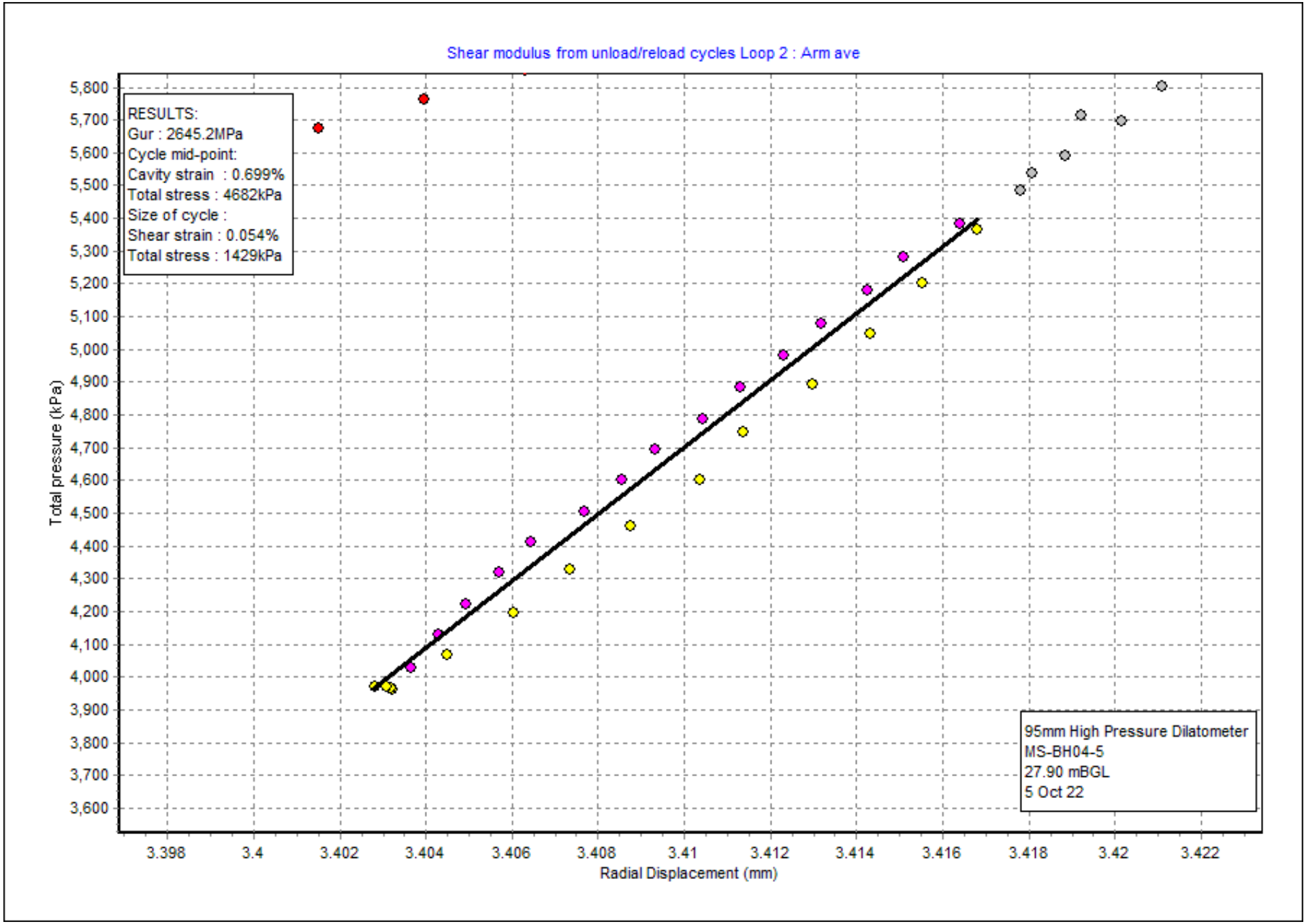

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 3365.1MPa
Cycle mid-point:
Cavity strain : 0.317%
Total stress : 6927kPa
Size of cycle :
Shear strain : 0.060%
Total stress : 2009kPa
95mm High Pressure Dilatometer
MS-BH04-4
26.00 mBGL
4 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
8,700
8,600
8,500
8,400
8,300
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
6,800
6,700
6,600
6,500
6,400
6,300
6,200
6,100
6,000
5,900
5,800
5,700
5,600
5,500
4.33
4.332
4.334
4.336
4.338
4.34
4.342
4.344
4.346
4.348
4.35
4.352
4.354
4.356
4.358
4.36
4.362
4.364

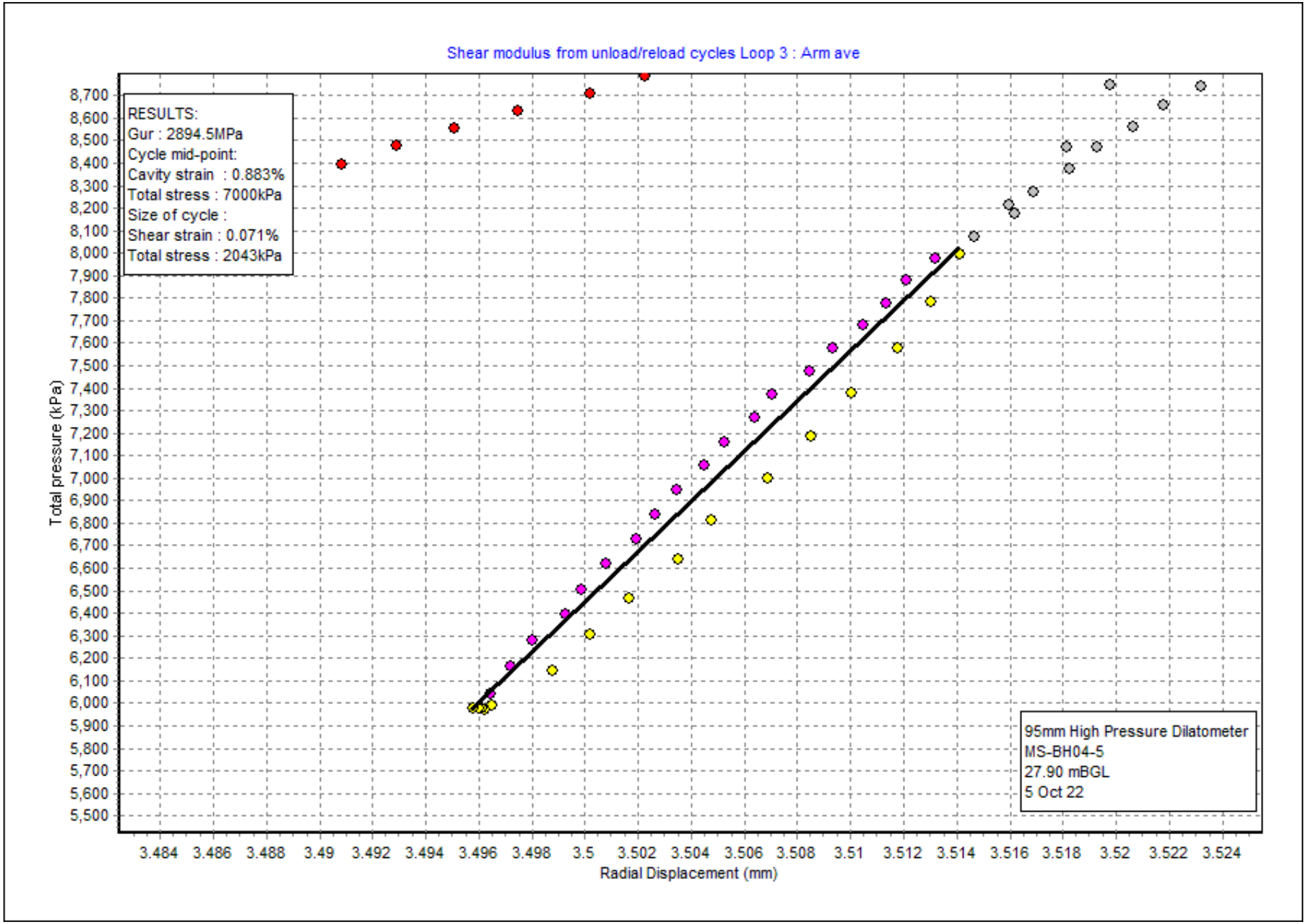

Shear modulus from unload/reload cycles Loop 5 : Arm ave
RESULTS:
Gur : 3001.8MPa
Cycle mid-point:
Cavity strain : 0.338%
Total stress : 5528kPa
Size of cycle :
Shear strain : 0.104%
Total stress : 3117kPa
95mm High Pressure Dilatometer
MS-BH04-4
26.00 mBGL
4 Oct 22
Total pressure (kPa)
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4,000
3,800
3,600
4.34 4.342 4.344 4.346 4.348 4.35 4.352 4.354 4.356 4.358 4.36 4.362 4.364 4.366 4.368 4.37 4.372 4.374 4.376 4.378 4.38 4.382 4.384 4.386 4.388
Radial Displacement (mm)

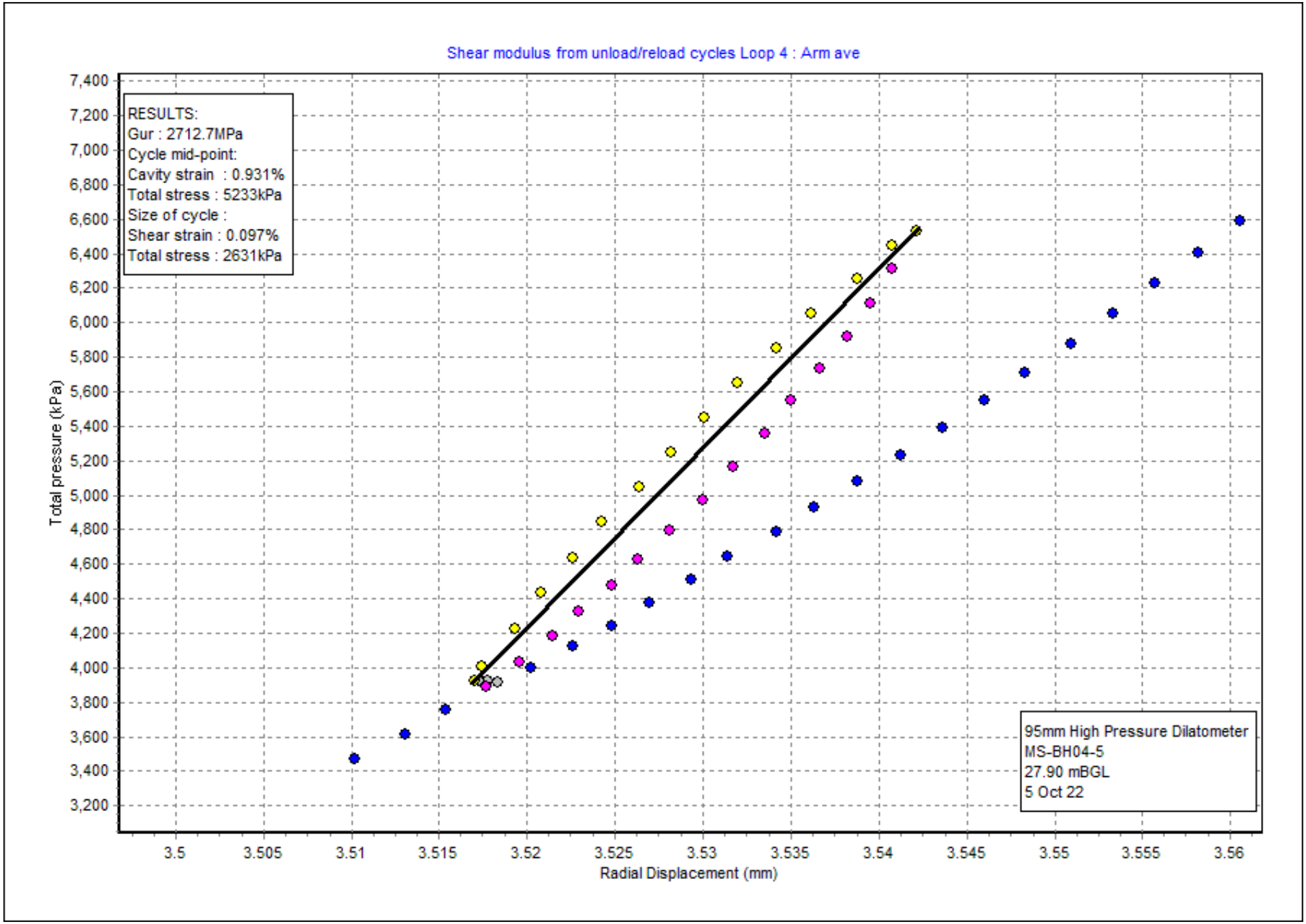

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-0.6
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Cavity strain (%)
95mm High Pressure Dilatometer
MS-BH04-5
27.90 mBGL
5 Oct 22

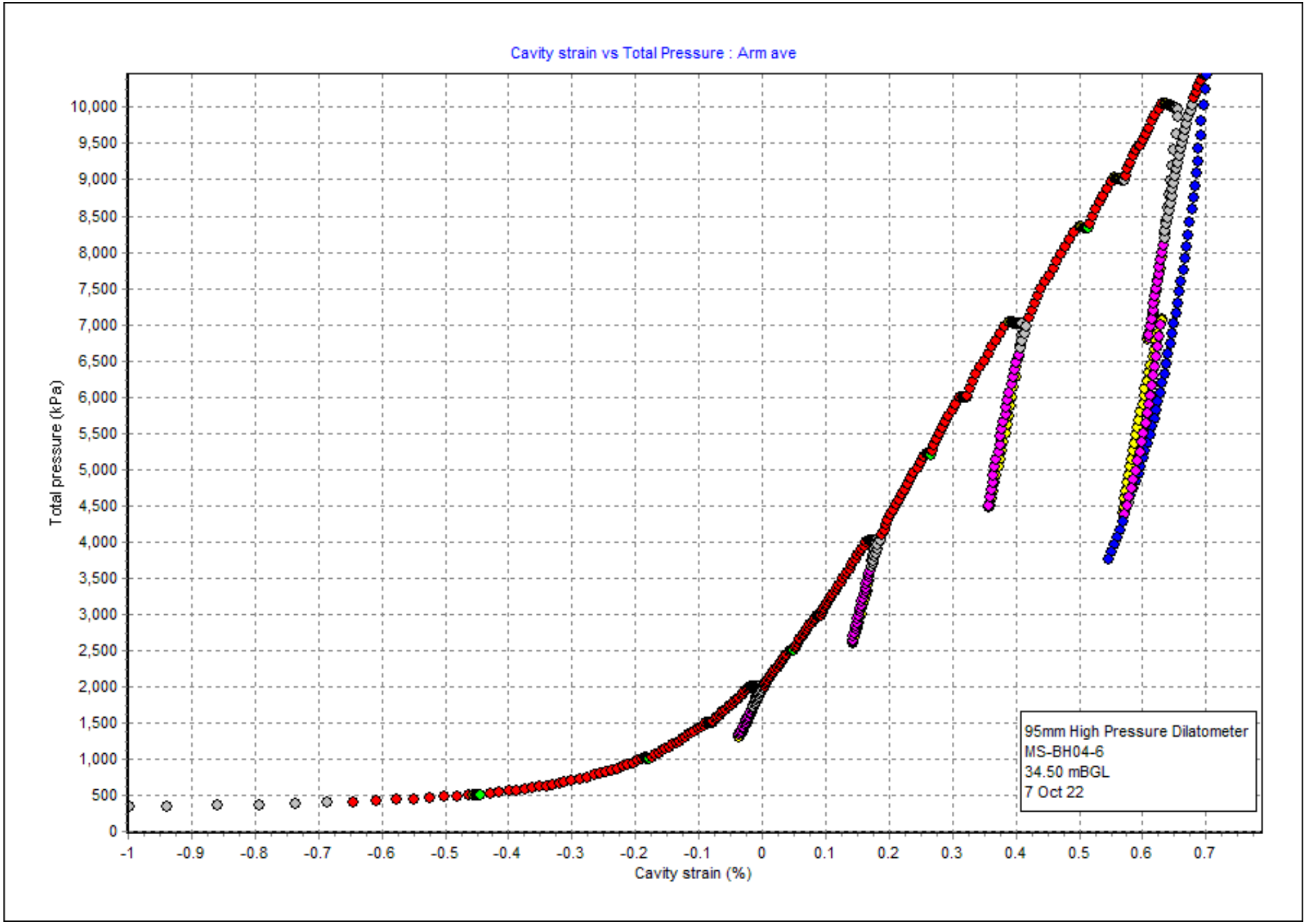

Creep readings
Total pressure (kPa)
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0.004
0.006
0.008
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH04-5
27.90 mBGL
5 Oct 22
RESULTS:
Gi : 933.6MPa
Pf : 7514.1kPa
Po : 1494.9kPa
Tf : 6051.8kPa
Po + Tf : 7546.7kPa
Origin : 3.285mm
Total pressure (kPa)
2.9
2.95
3
3.05
3.1
3.15
3.2
3.25
3.3
3.35
3.4
3.45
3.5
Radial Displacement (mm)
Shear stress at yield : Arm ave
Total pressure (kPa)
9,500
9,000
8,500
8,000
7,500
-4.9
-4.8
-4.7
Ln[shear strain]

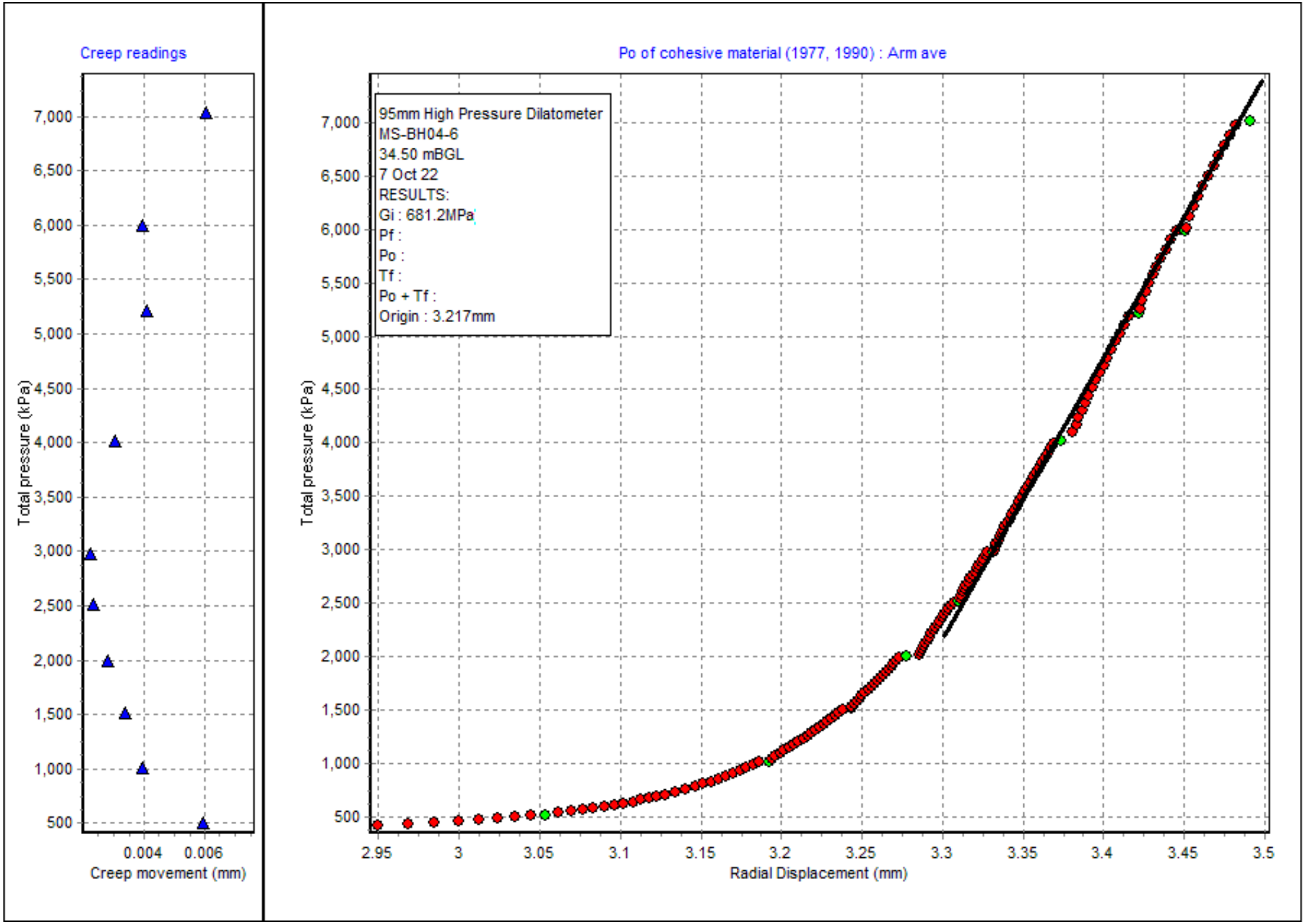

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1376.8MPa
Cycle mid-point:
Cavity strain : 0.503%
Total stress : 2251kPa
Size of cycle :
Shear strain : 0.047%
Total stress : 654kPa
95mm High Pressure Dilatometer
MS-BH04-5
27.90 mBGL
5 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
1,800
1,750
1,700
1,650
3.292
3.294
3.296
3.298
3.3
3.302
3.304
3.306
3.308
3.31
3.312
3.314
3.316
3.318
3.32

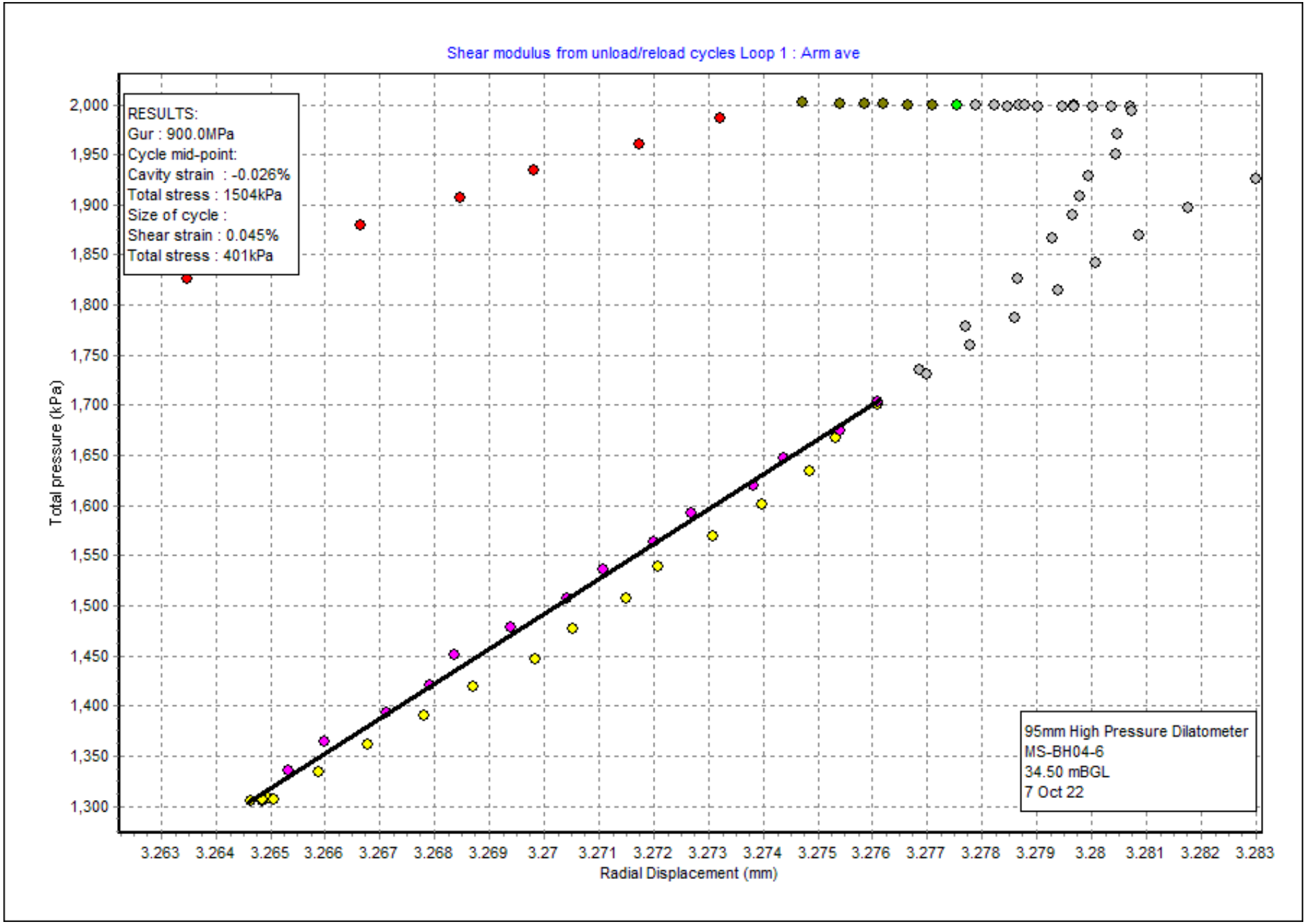

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 2645.2MPa
Cycle mid-point:
Cavity strain : 0.699%
Total stress : 4682kPa
Size of cycle :
Shear strain : 0.054%
Total stress : 1429kPa
95mm High Pressure Dilatometer
MS-BH04-5
27.90 mBGL
5 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
3,800
3,700
3,600
3.398
3.4
3.402
3.404
3.406
3.408
3.41
3.412
3.414
3.416
3.418
3.42
3.422

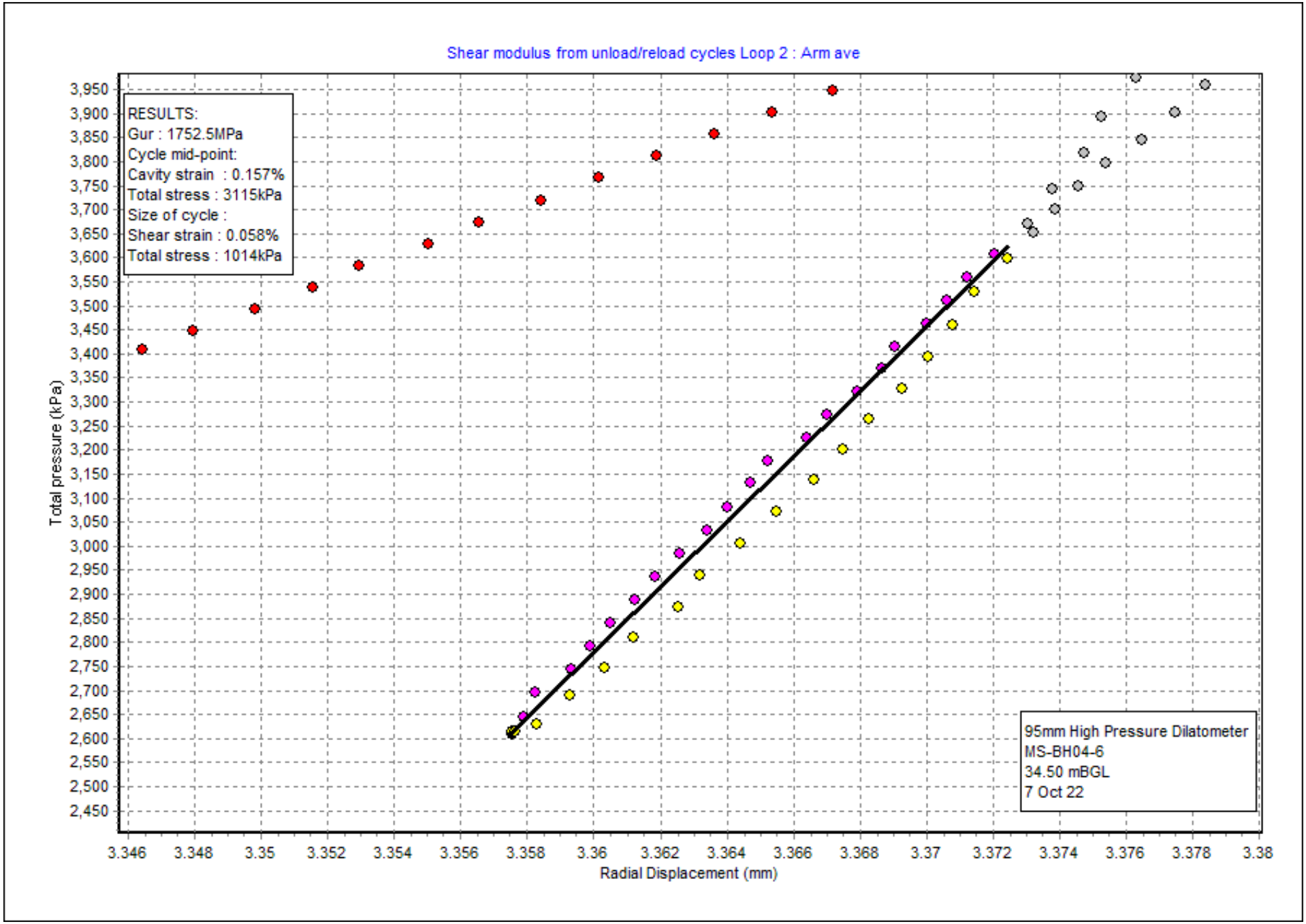

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 2894.5MPa
Cycle mid-point:
Cavity strain : 0.883%
Total stress : 7000kPa
Size of cycle :
Shear strain : 0.071%
Total stress : 2043kPa
95mm High Pressure Dilatometer
MS-BH04-5
27.90 mBGL
5 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
8,700
8,600
8,500
8,400
8,300
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
6,800
6,700
6,600
6,500
6,400
6,300
6,200
6,100
6,000
5,900
5,800
5,700
5,600
5,500
3.484
3.486
3.488
3.49
3.492
3.494
3.496
3.498
3.5
3.502
3.504
3.506
3.508
3.51
3.512
3.514
3.516
3.518
3.52
3.522
3.524

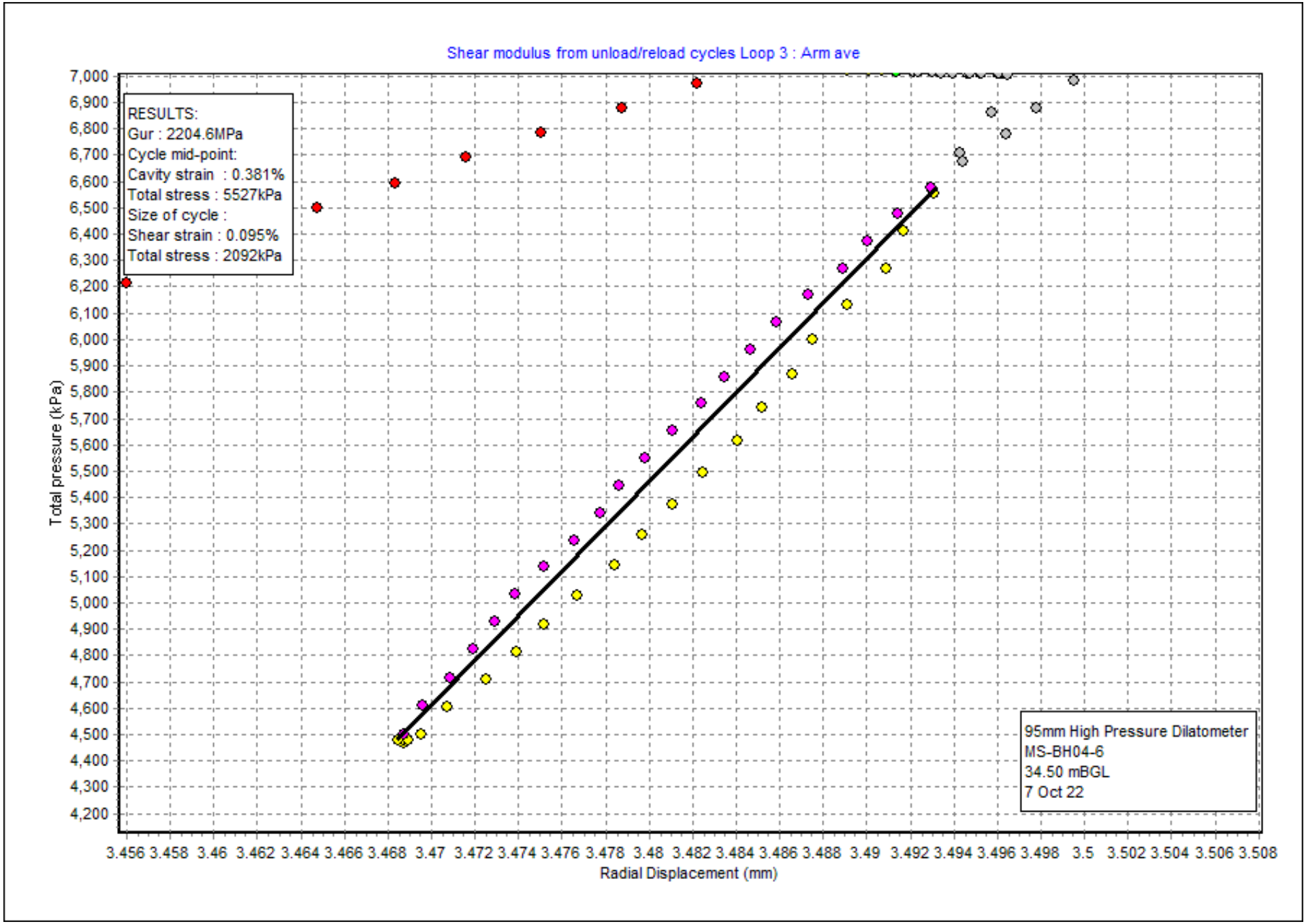

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 2712.7MPa
Cycle mid-point:
Cavity strain : 0.931%
Total stress : 5233kPa
Size of cycle :
Shear strain : 0.097%
Total stress : 2631kPa
95mm High Pressure Dilatometer
MS-BH04-5
27.90 mBGL
5 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4,000
3,800
3,600
3,400
3,200
3.5
3.505
3.51
3.515
3.52
3.525
3.53
3.535
3.54
3.545
3.55
3.555
3.56

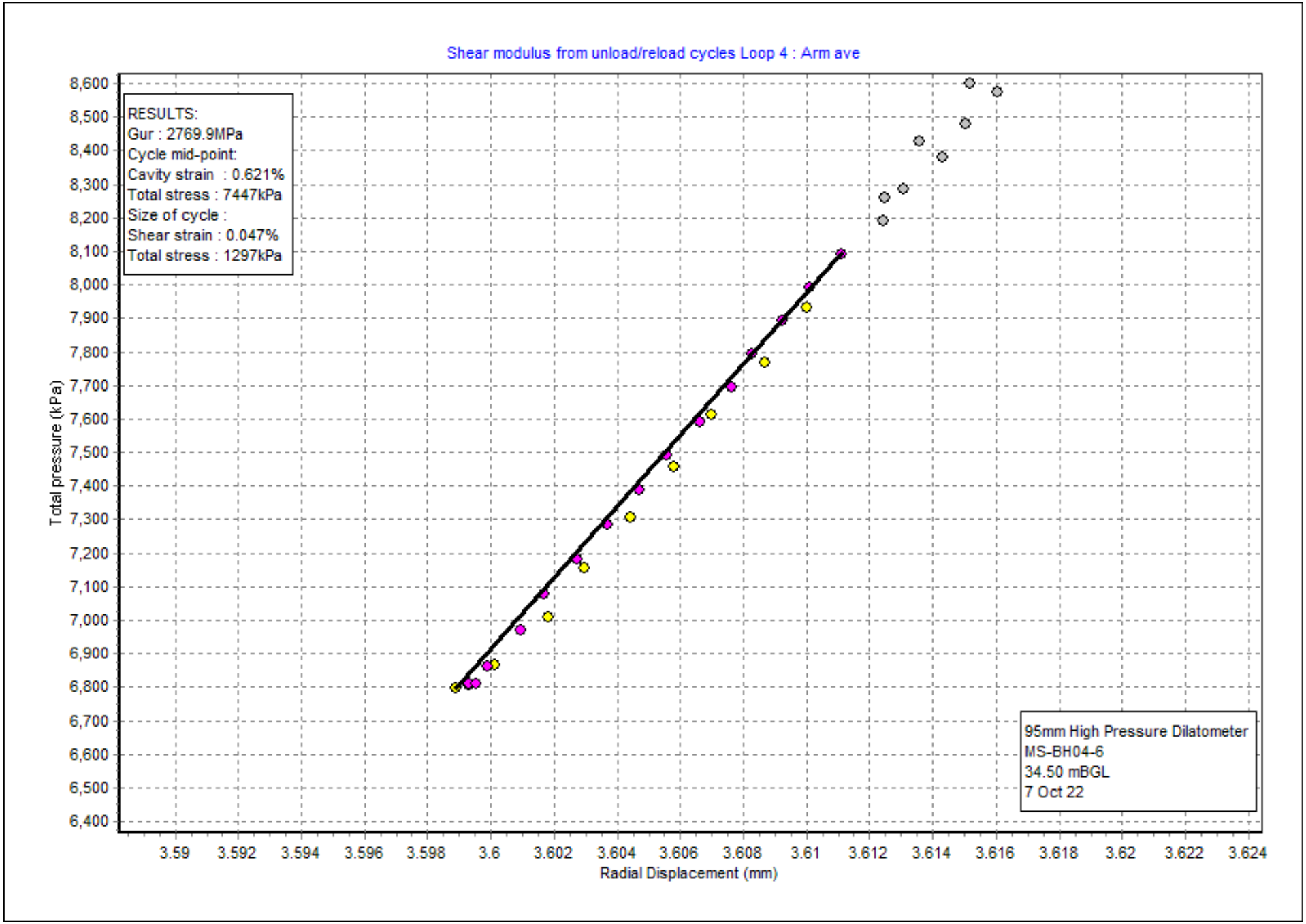

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Cavity strain (%)
95mm High Pressure Dilatometer
MS-BH04-6
34.50 mBGL
7 Oct 22

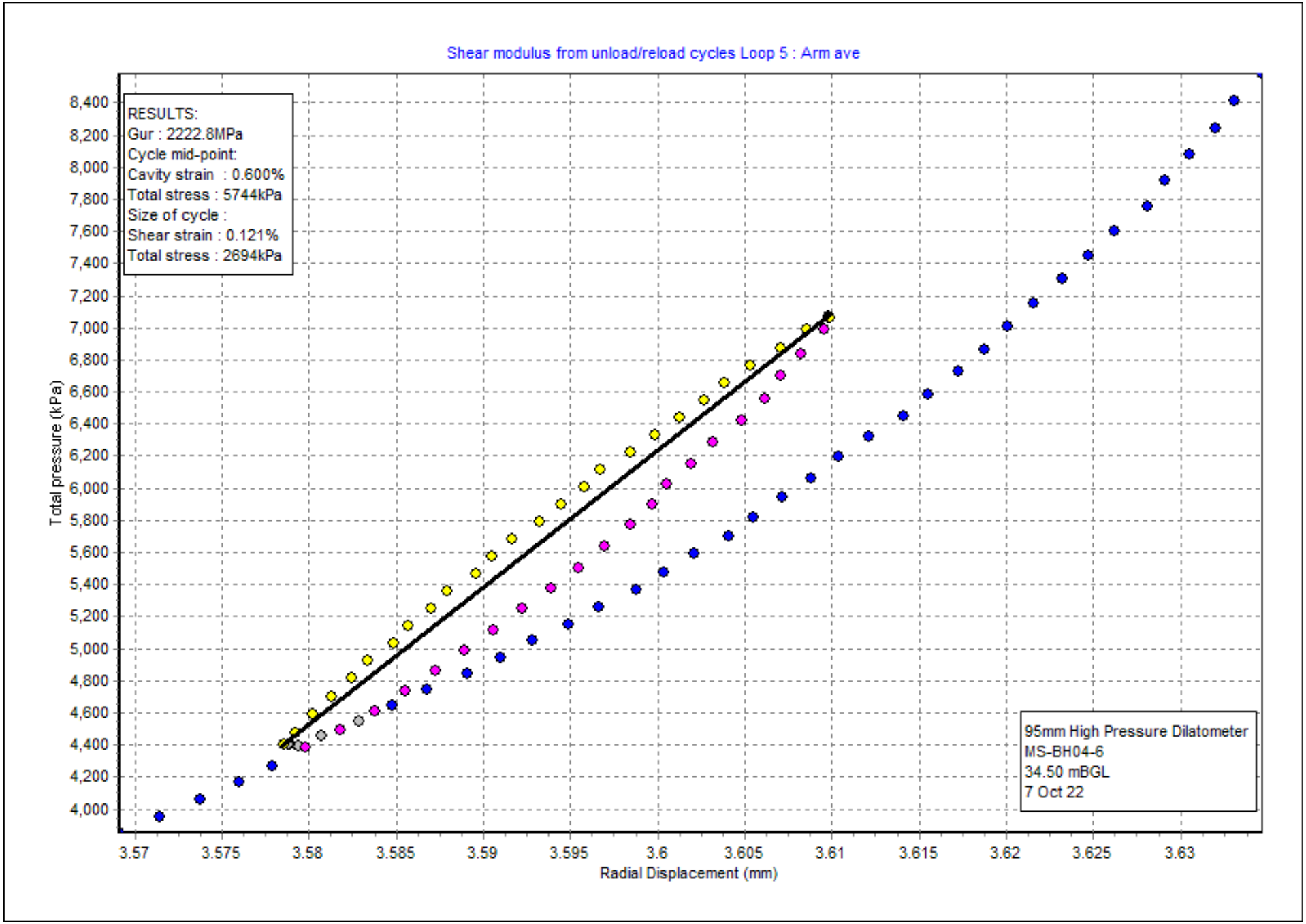

Creep readings
Total pressure (kPa)
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0.004
0.006
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH04-6
34.50 mBGL
7 Oct 22
RESULTS:
Gi : 681.2MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.217mm
Total pressure (kPa)
2.95
3
3.05
3.1
3.15
3.2
3.25
3.3
3.35
3.4
3.45
3.5
Radial Displacement (mm)

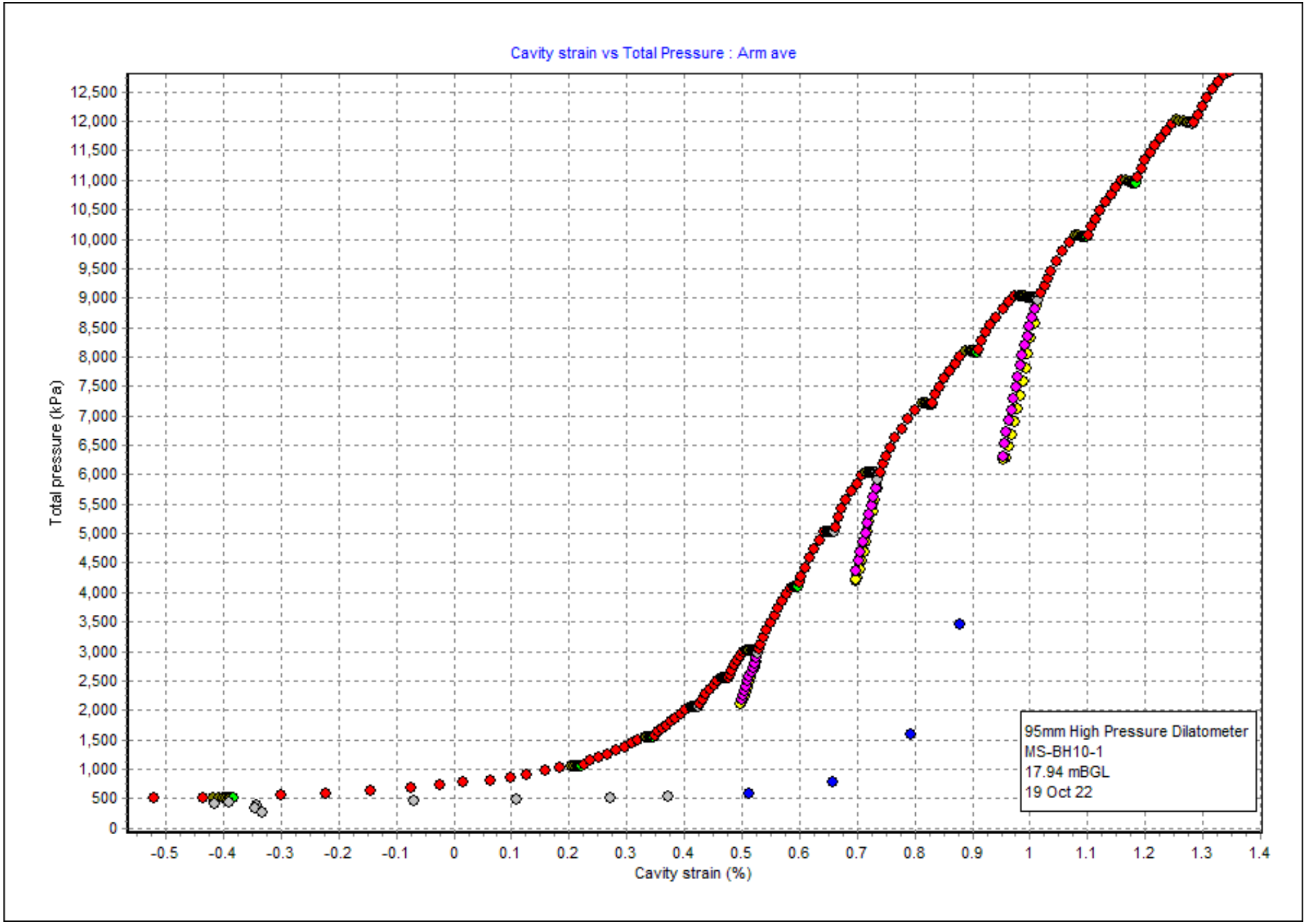

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 900.0MPa
Cycle mid-point:
Cavity strain : -0.026%
Total stress : 1504kPa
Size of cycle :
Shear strain : 0.045%
Total stress : 401kPa
95mm High Pressure Dilatometer
MS-BH04-6
34.50 mBGL
7 Oct 22
Total pressure (kPa)
2,000
1,950
1,900
1,850
1,800
1,750
1,700
1,650
1,600
1,550
1,500
1,450
1,400
1,350
1,300
3.263
3.264
3.265
3.266
3.267
3.268
3.269
3.27
3.271
3.272
3.273
3.274
3.275
3.276
3.277
3.278
3.279
3.28
3.281
3.282
3.283
Radial Displacement (mm)

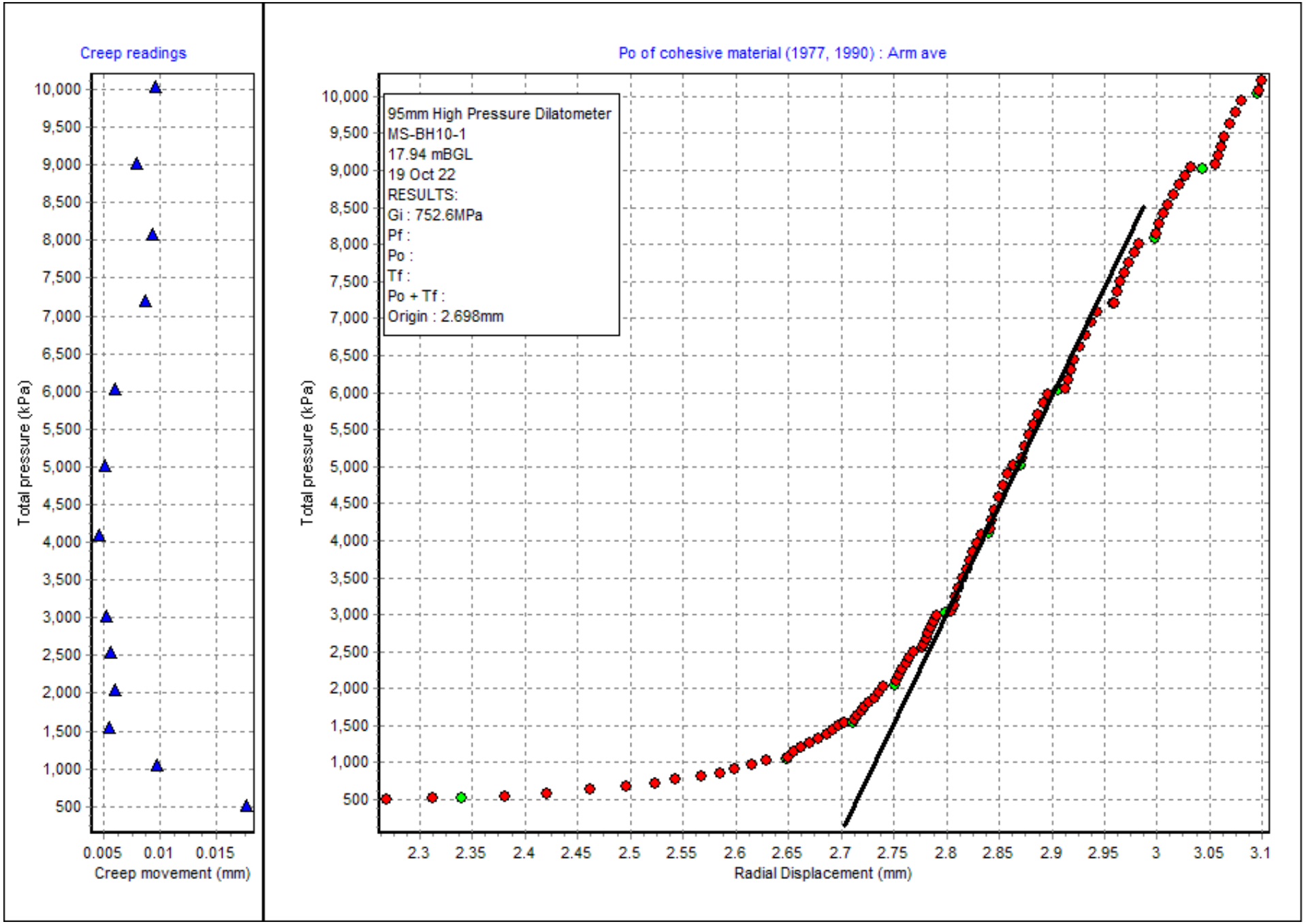

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 1752.5MPa
Cycle mid-point:
Cavity strain : 0.157%
Total stress : 3115kPa
Size of cycle :
Shear strain : 0.058%
Total stress : 1014kPa
95mm High Pressure Dilatometer
MS-BH04-6
34.50 mBGL
7 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,950
3,900
3,850
3,800
3,750
3,700
3,650
3,600
3,550
3,500
3,450
3,400
3,350
3,300
3,250
3,200
3,150
3,100
3,050
3,000
2,950
2,900
2,850
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
3.346
3.348
3.35
3.352
3.354
3.356
3.358
3.36
3.362
3.364
3.366
3.368
3.37
3.372
3.374
3.376
3.378
3.38

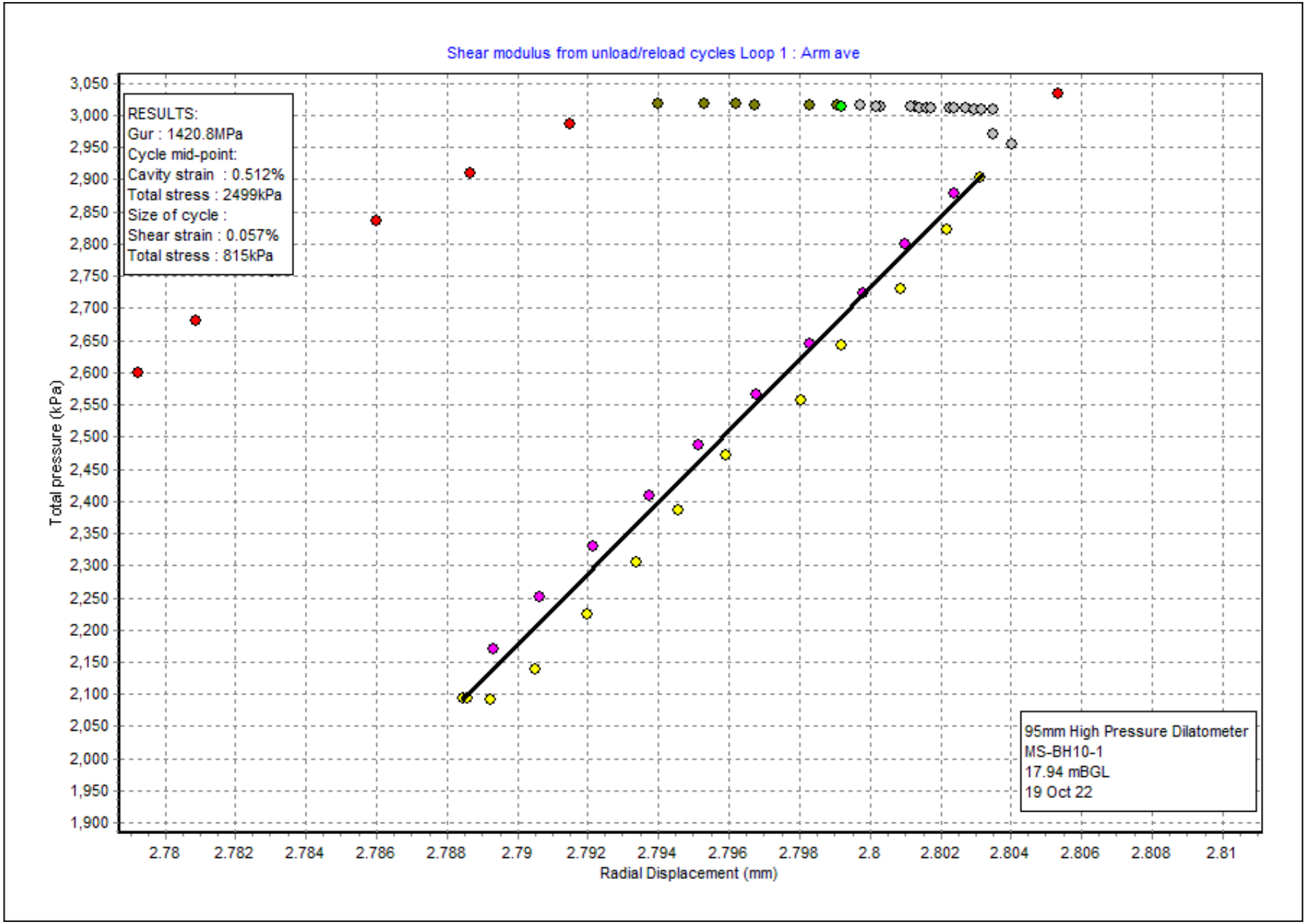

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 2204.6MPa
Cycle mid-point:
Cavity strain : 0.381%
Total stress : 5527kPa
Size of cycle :
Shear strain : 0.095%
Total stress : 2092kPa
95mm High Pressure Dilatometer
MS-BH04-6
34.50 mBGL
7 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
7,000
6,900
6,800
6,700
6,600
6,500
6,400
6,300
6,200
6,100
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
3.456 3.458 3.46 3.462 3.464 3.466 3.468 3.47 3.472 3.474 3.476 3.478 3.48 3.482 3.484 3.486 3.488 3.49 3.492 3.494 3.496 3.498 3.5 3.502 3.504 3.506 3.508

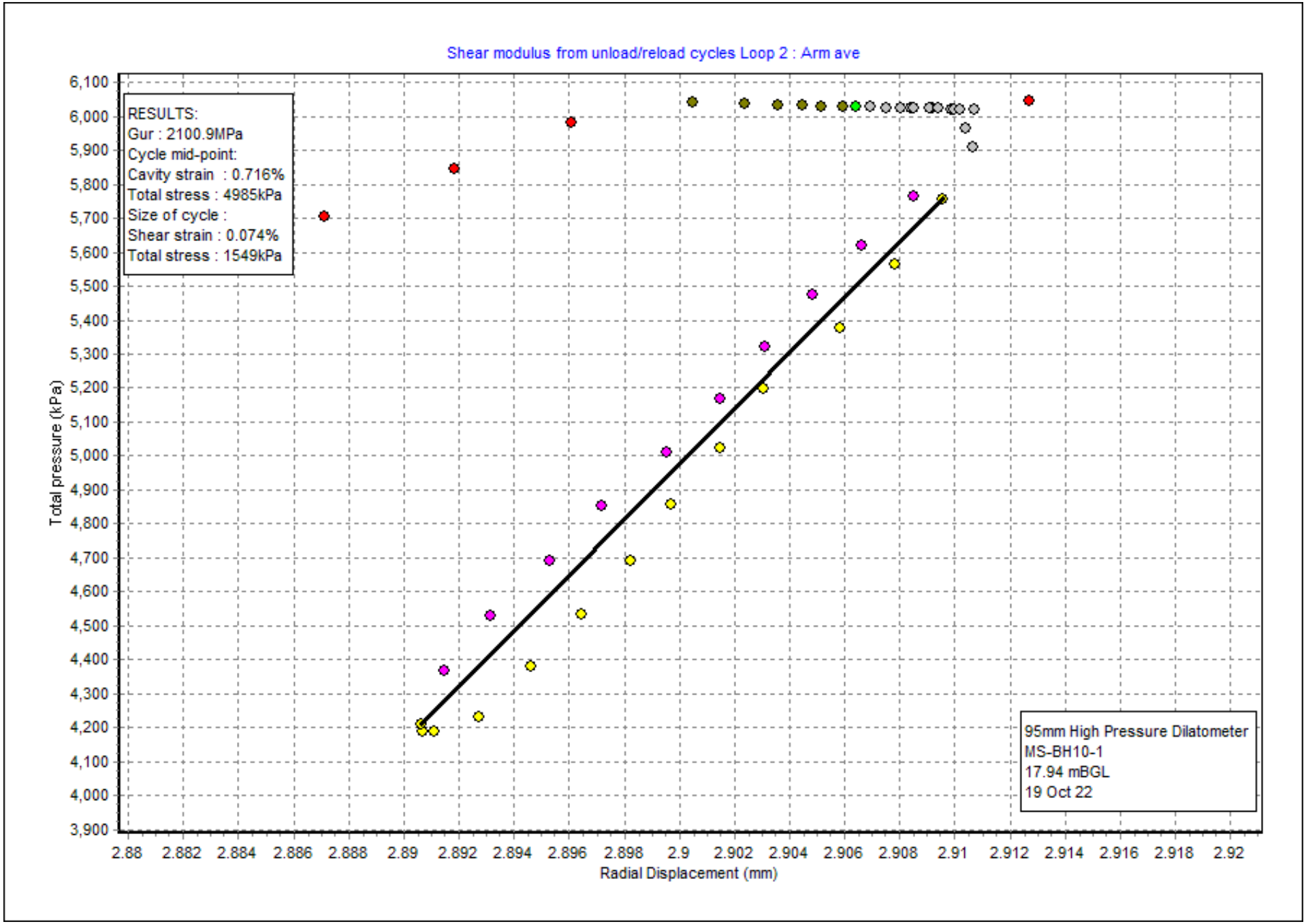

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 2769.9MPa
Cycle mid-point:
Cavity strain : 0.621%
Total stress : 7447kPa
Size of cycle :
Shear strain : 0.047%
Total stress : 1297kPa
95mm High Pressure Dilatometer
MS-BH04-6
34.50 mBGL
7 Oct 22
Total pressure (kPa)
8,600
8,500
8,400
8,300
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
6,800
6,700
6,600
6,500
6,400
Radial Displacement (mm)
3.59
3.592
3.594
3.596
3.598
3.6
3.602
3.604
3.606
3.608
3.61
3.612
3.614
3.616
3.618
3.62
3.622
3.624

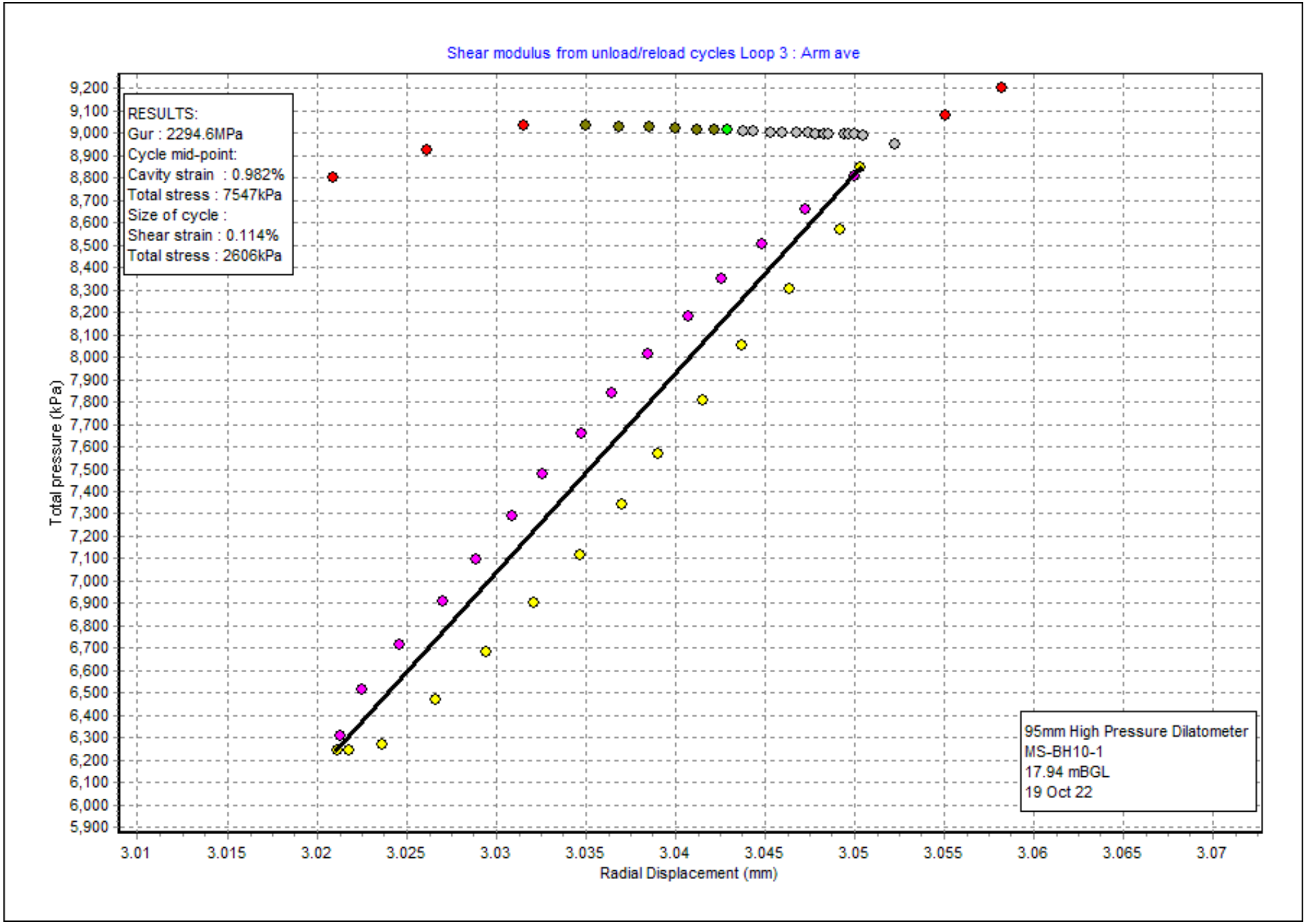

Shear modulus from unload/reload cycles Loop 5 : Arm ave
RESULTS:
Gur : 2222.8MPa
Cycle mid-point:
Cavity strain : 0.600%
Total stress : 5744kPa
Size of cycle :
Shear strain : 0.121%
Total stress : 2694kPa
95mm High Pressure Dilatometer
MS-BH04-6
34.50 mBGL
7 Oct 22
Total pressure (kPa)
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4,000
3.57
3.575
3.58
3.585
3.59
3.595
3.6
3.605
3.61
3.615
3.62
3.625
3.63
Radial Displacement (mm)

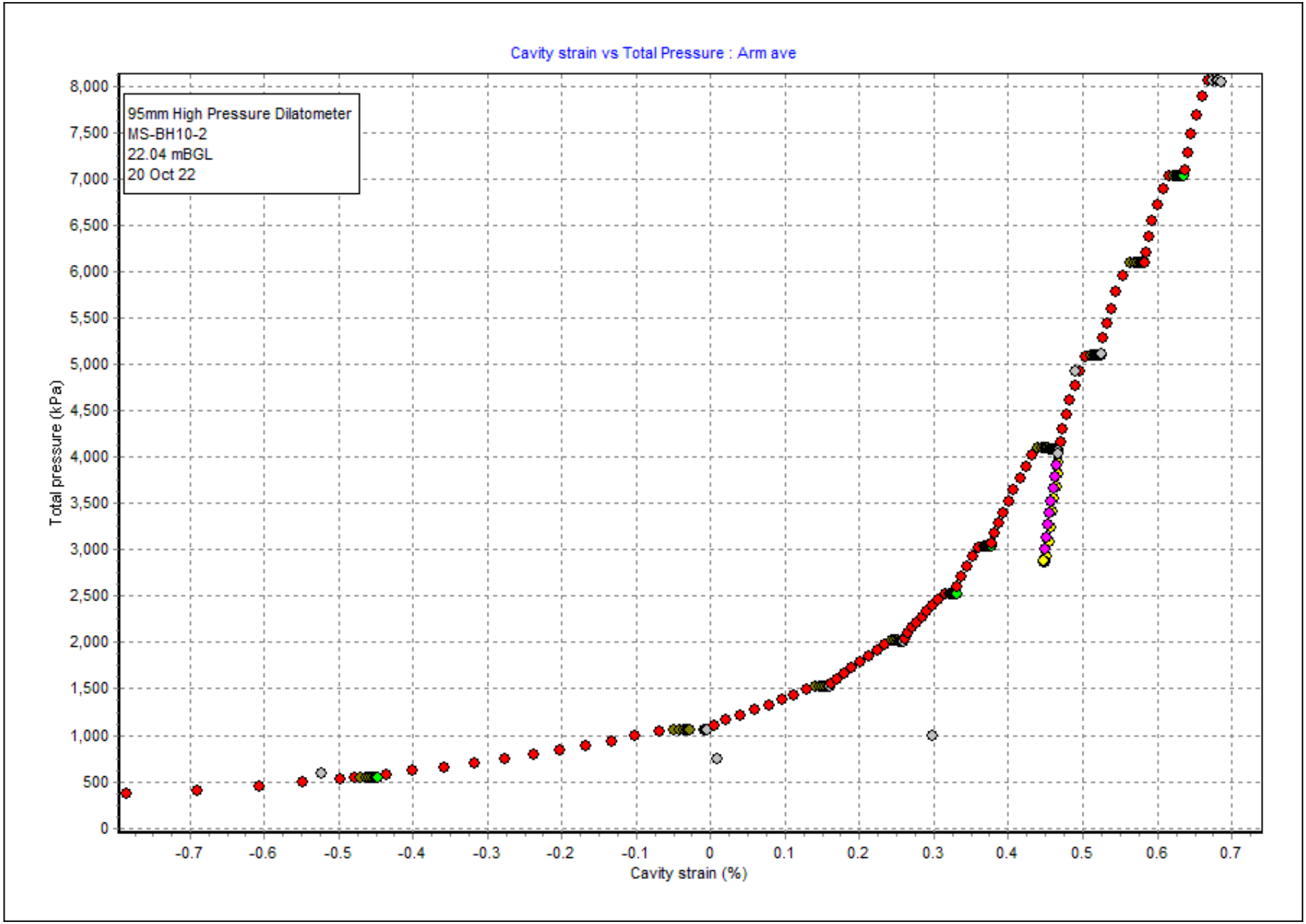

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
Cavity strain (%)
95mm High Pressure Dilatometer
MS-BH10-1
17.94 mBGL
19 Oct 22

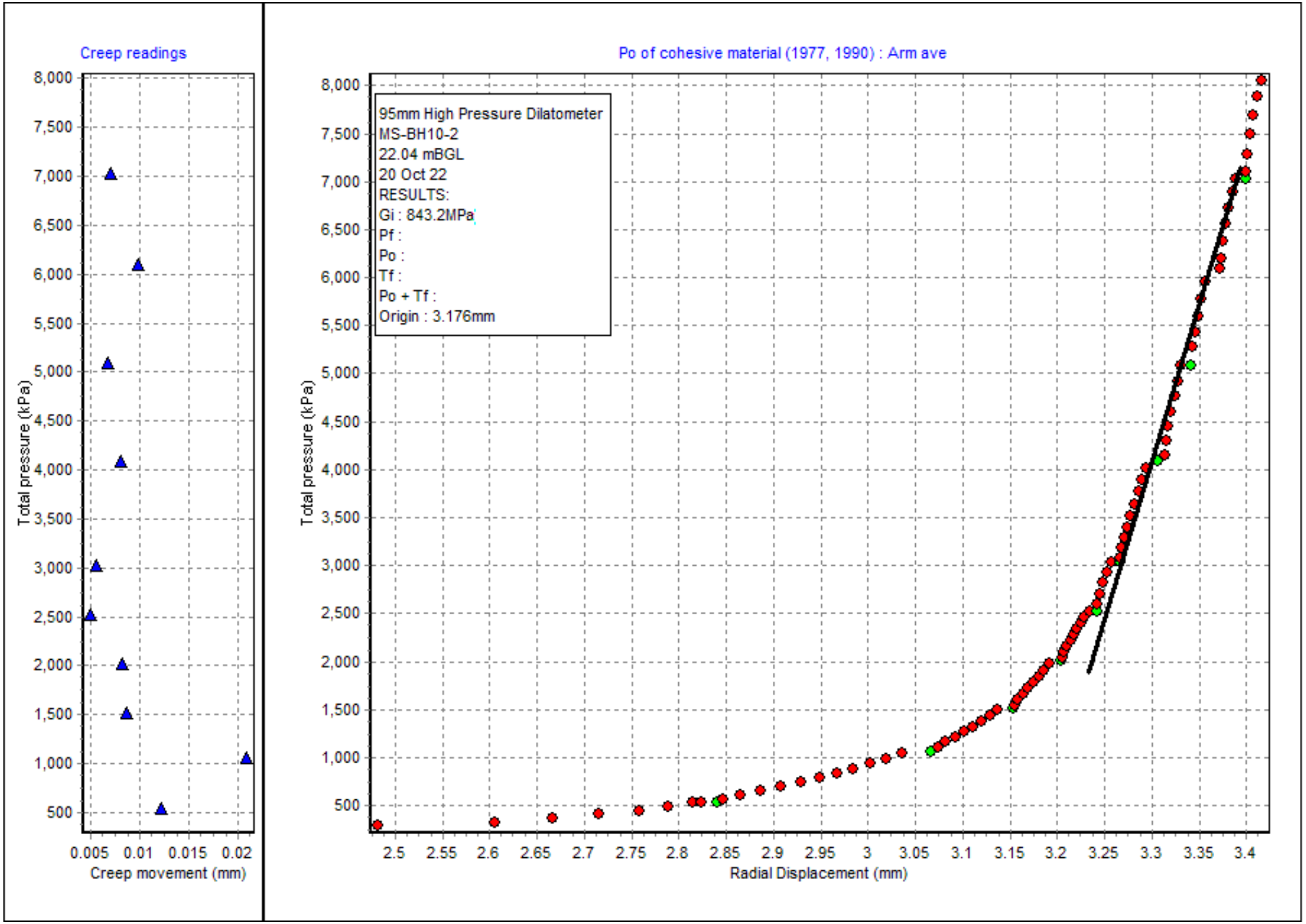

Creep readings
Total pressure (kPa)
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0.005
0.01
0.015
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH10-1
17.94 mBGL
19 Oct 22
RESULTS:
Gi : 752.6MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 2.698mm
Total pressure (kPa)
2.3
2.35
2.4
2.45
2.5
2.55
2.6
2.65
2.7
2.75
2.8
2.85
2.9
2.95
3
3.05
3.1
Radial Displacement (mm)

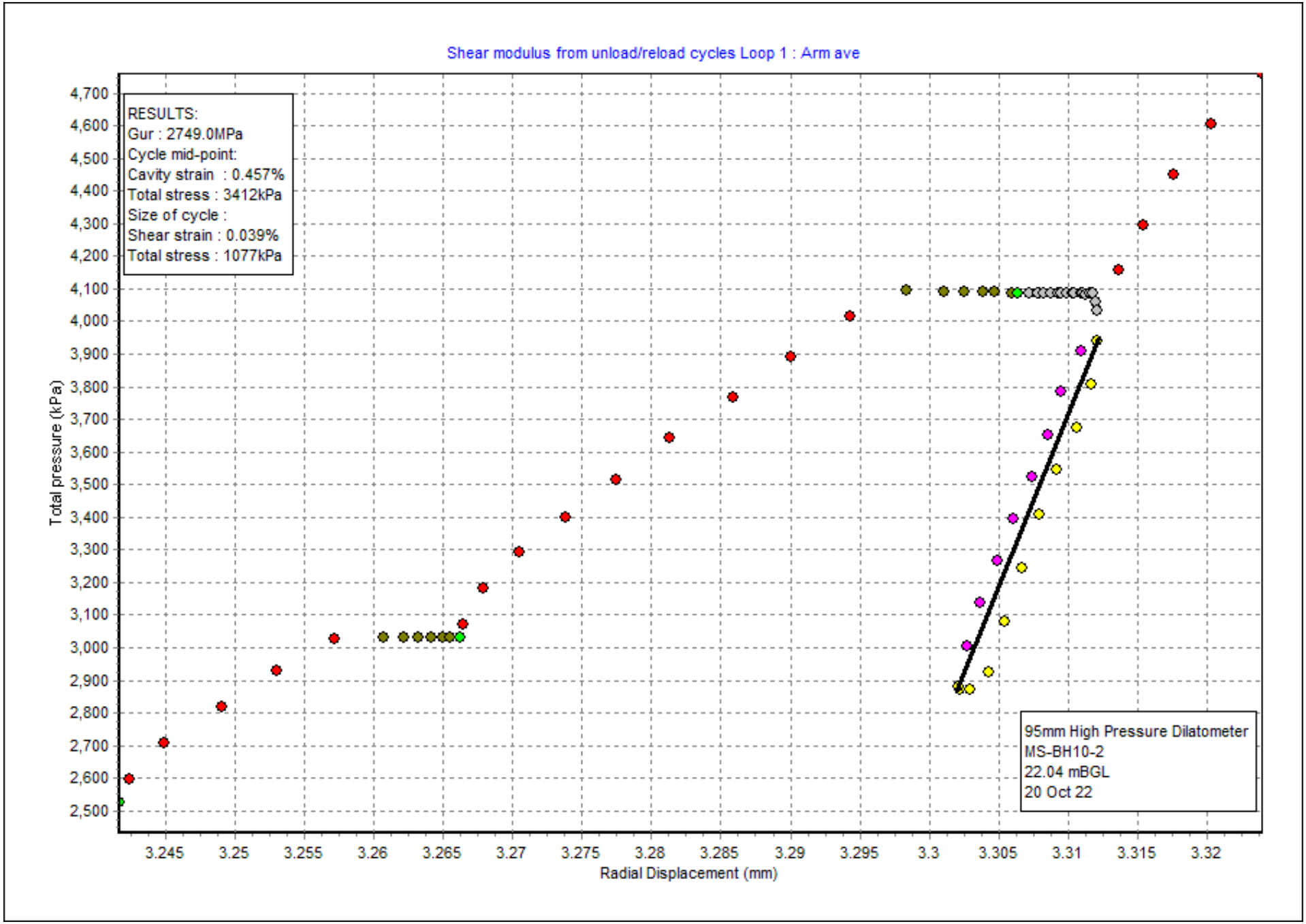

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1420.8MPa
Cycle mid-point:
Cavity strain : 0.512%
Total stress : 2499kPa
Size of cycle :
Shear strain : 0.057%
Total stress : 815kPa
95mm High Pressure Dilatometer
MS-BH10-1
17.94 mBGL
19 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,050
3,000
2,950
2,900
2,850
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
2.78
2.782
2.784
2.786
2.788
2.79
2.792
2.794
2.796
2.798
2.8
2.802
2.804
2.806
2.808
2.81

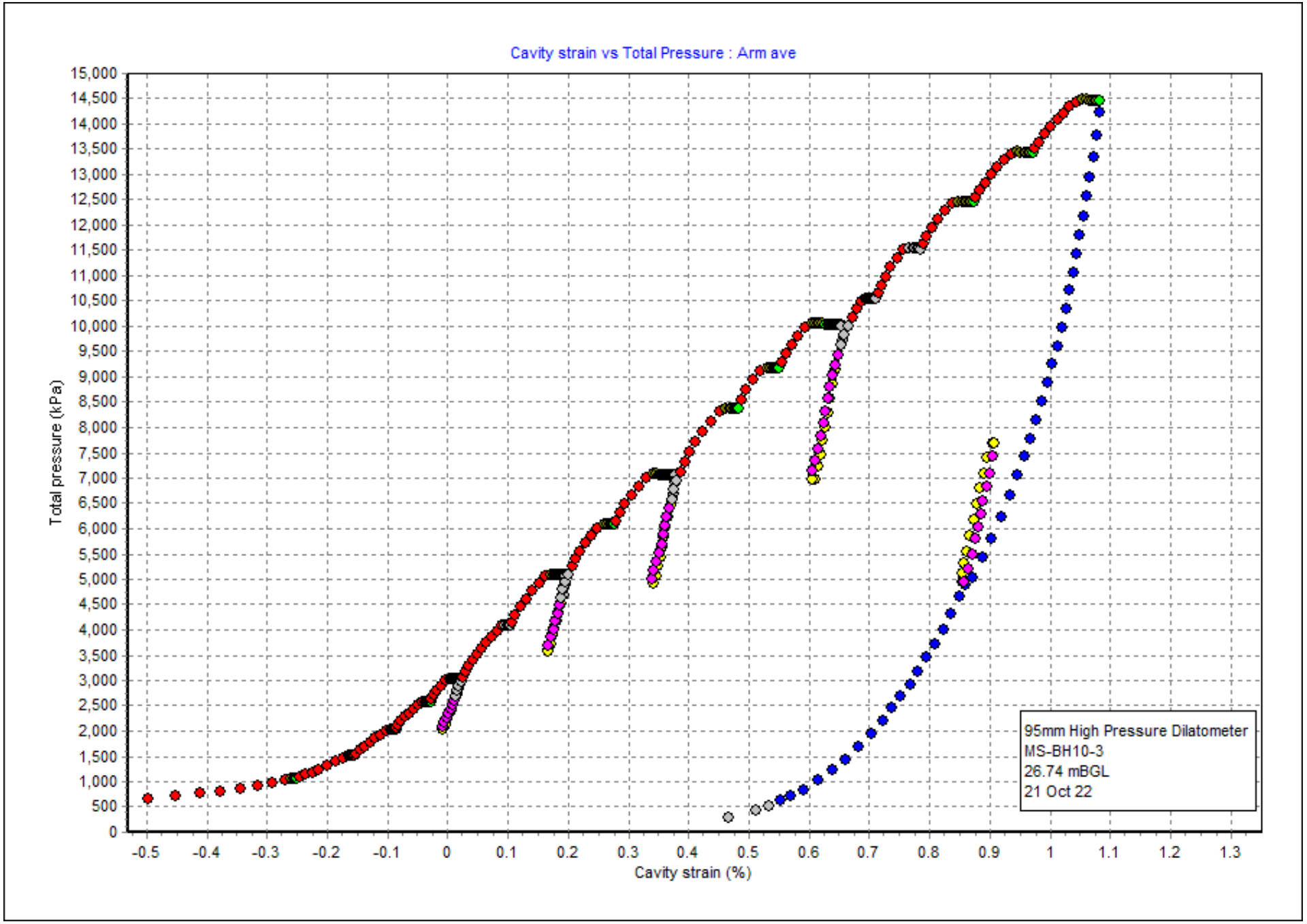

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 2100.9MPa
Cycle mid-point:
Cavity strain : 0.716%
Total stress : 4985kPa
Size of cycle :
Shear strain : 0.074%
Total stress : 1549kPa
95mm High Pressure Dilatometer
MS-BH10-1
17.94 mBGL
19 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
6,100
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
2.88
2.882
2.884
2.886
2.888
2.89
2.892
2.894
2.896
2.898
2.9
2.902
2.904
2.906
2.908
2.91
2.912
2.914
2.916
2.918
2.92

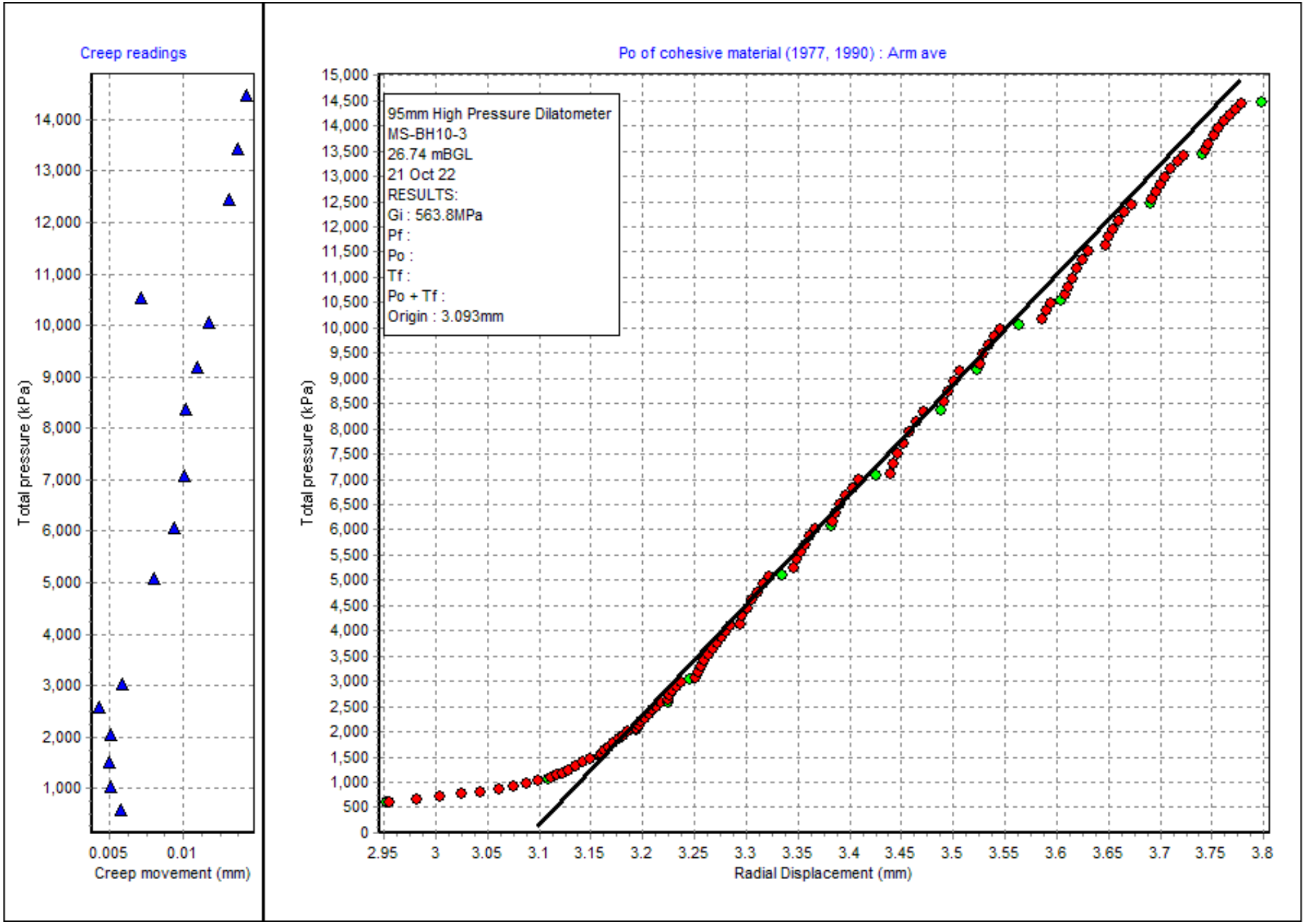

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 2294.6MPa
Cycle mid-point:
Cavity strain : 0.982%
Total stress : 7547kPa
Size of cycle :
Shear strain : 0.114%
Total stress : 2606kPa
95mm High Pressure Dilatometer
MS-BH10-1
17.94 mBGL
19 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
9,200
9,100
9,000
8,900
8,800
8,700
8,600
8,500
8,400
8,300
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
6,800
6,700
6,600
6,500
6,400
6,300
6,200
6,100
6,000
5,900
3.01
3.015
3.02
3.025
3.03
3.035
3.04
3.045
3.05
3.055
3.06
3.065
3.07

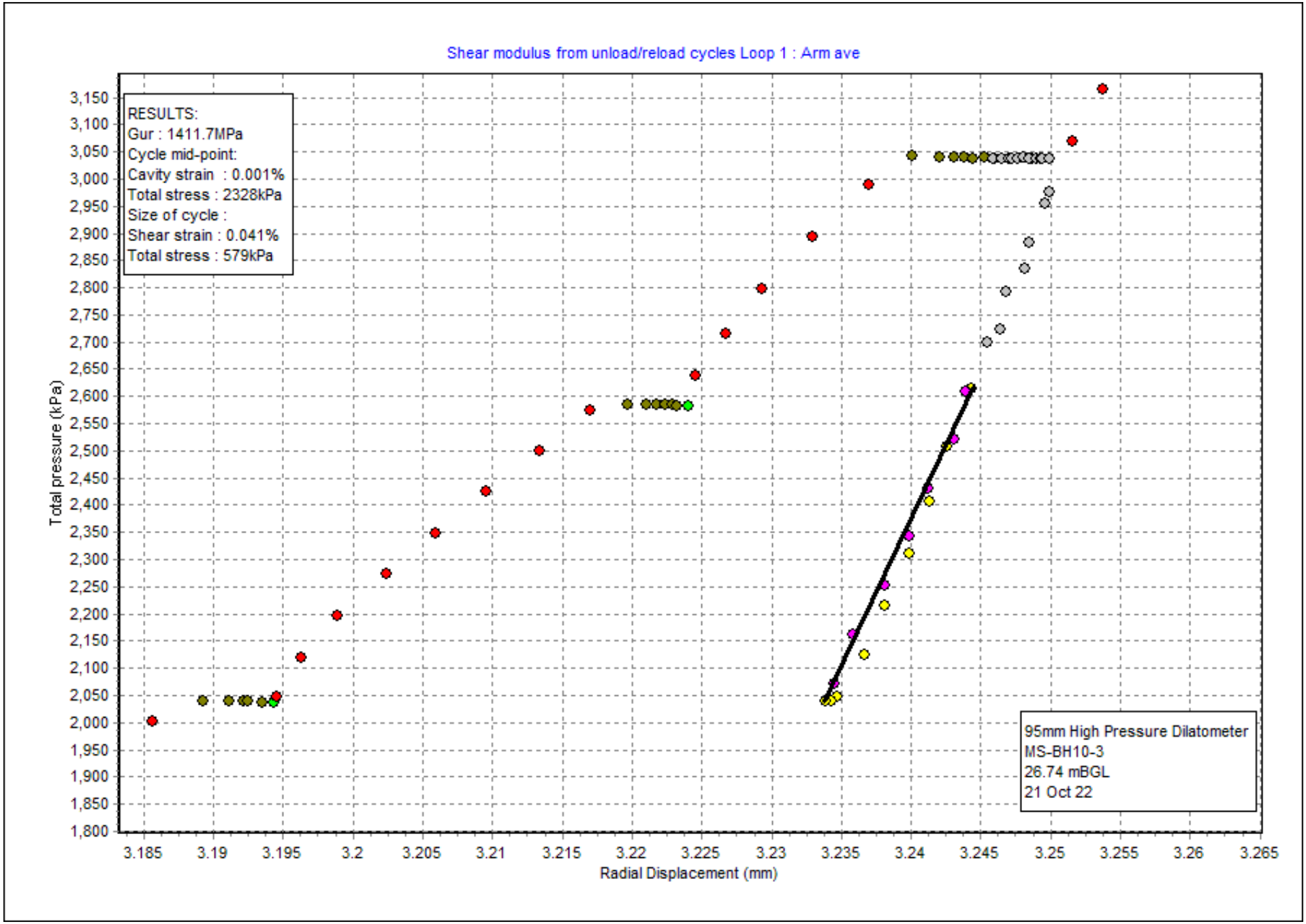

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH10-2
22.04 mBGL
20 Oct 22
Total pressure (kPa)
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-0.7
-0.6
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Cavity strain (%)

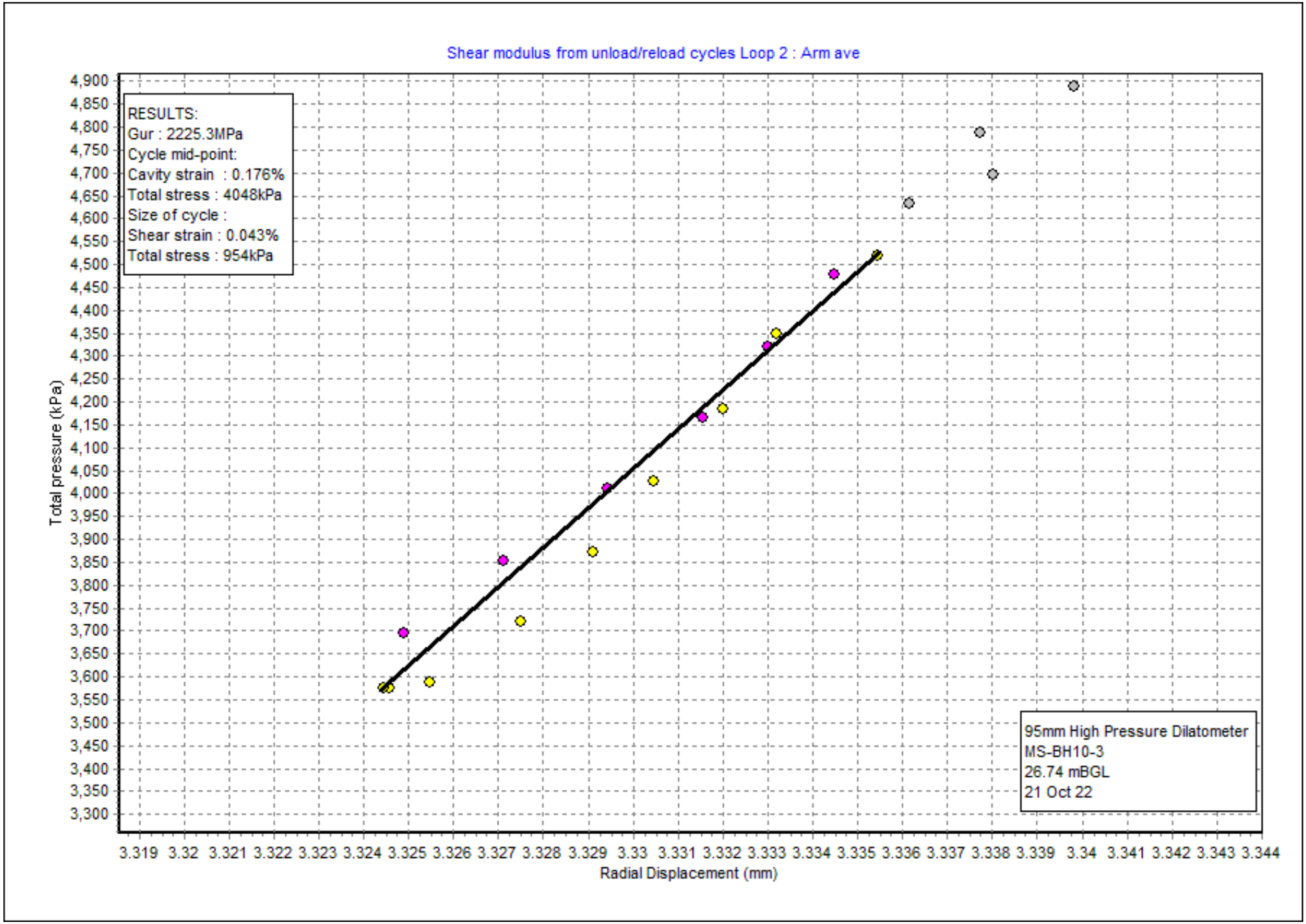

Creep readings
Total pressure (kPa)
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0.005
0.01
0.015
0.02
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH10-2
22.04 mBGL
20 Oct 22
RESULTS:
Gi : 843.2MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.176mm
Total pressure (kPa)
2.5
2.55
2.6
2.65
2.7
2.75
2.8
2.85
2.9
2.95
3
3.05
3.1
3.15
3.2
3.25
3.3
3.35
3.4
Radial Displacement (mm)

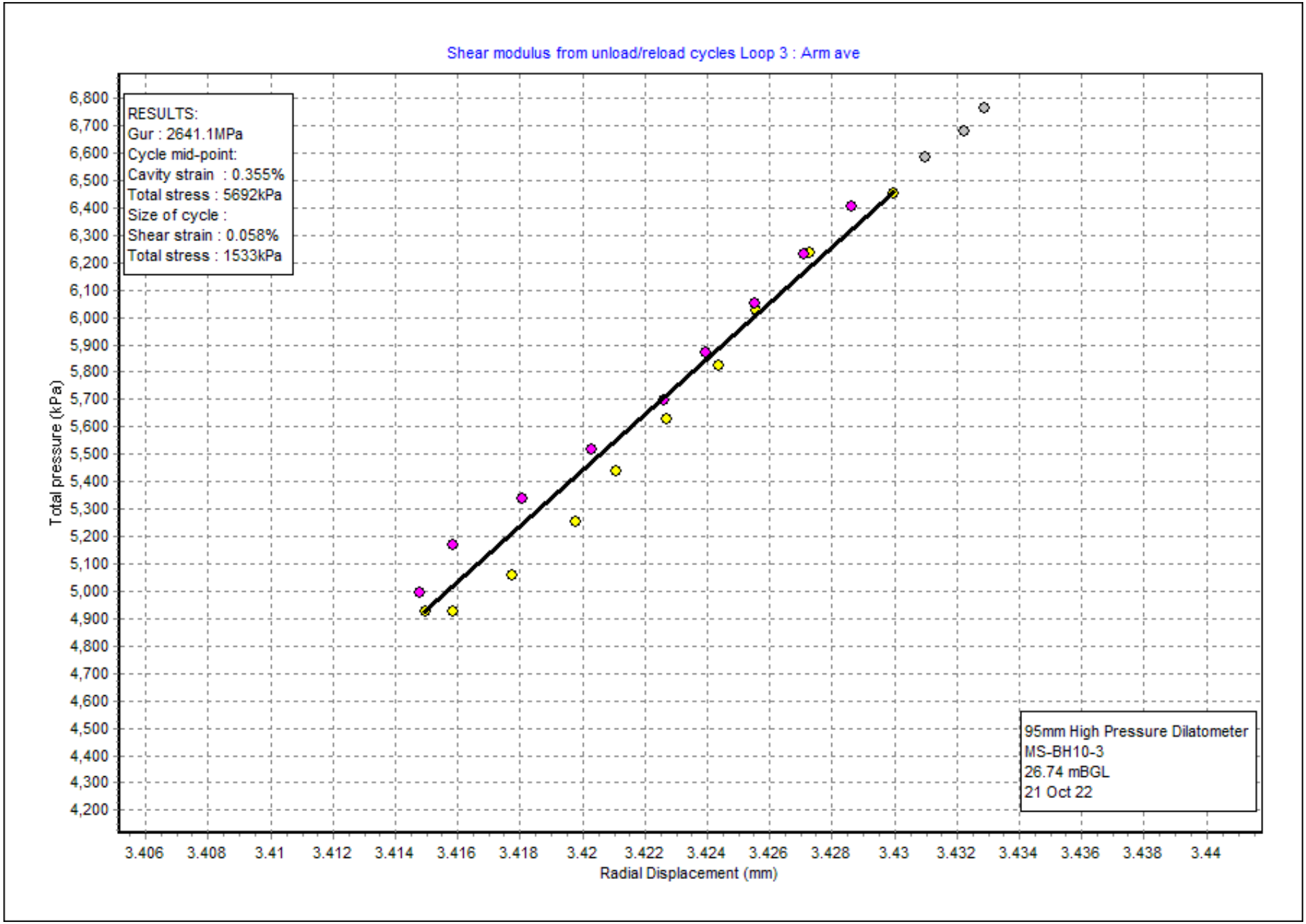

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 2749.0MPa
Cycle mid-point:
Cavity strain : 0.457%
Total stress : 3412kPa
Size of cycle :
Shear strain : 0.039%
Total stress : 1077kPa
95mm High Pressure Dilatometer
MS-BH10-2
22.04 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
3,800
3,700
3,600
3,500
3,400
3,300
3,200
3,100
3,000
2,900
2,800
2,700
2,600
2,500
3.245
3.25
3.255
3.26
3.265
3.27
3.275
3.28
3.285
3.29
3.295
3.3
3.305
3.31
3.315
3.32

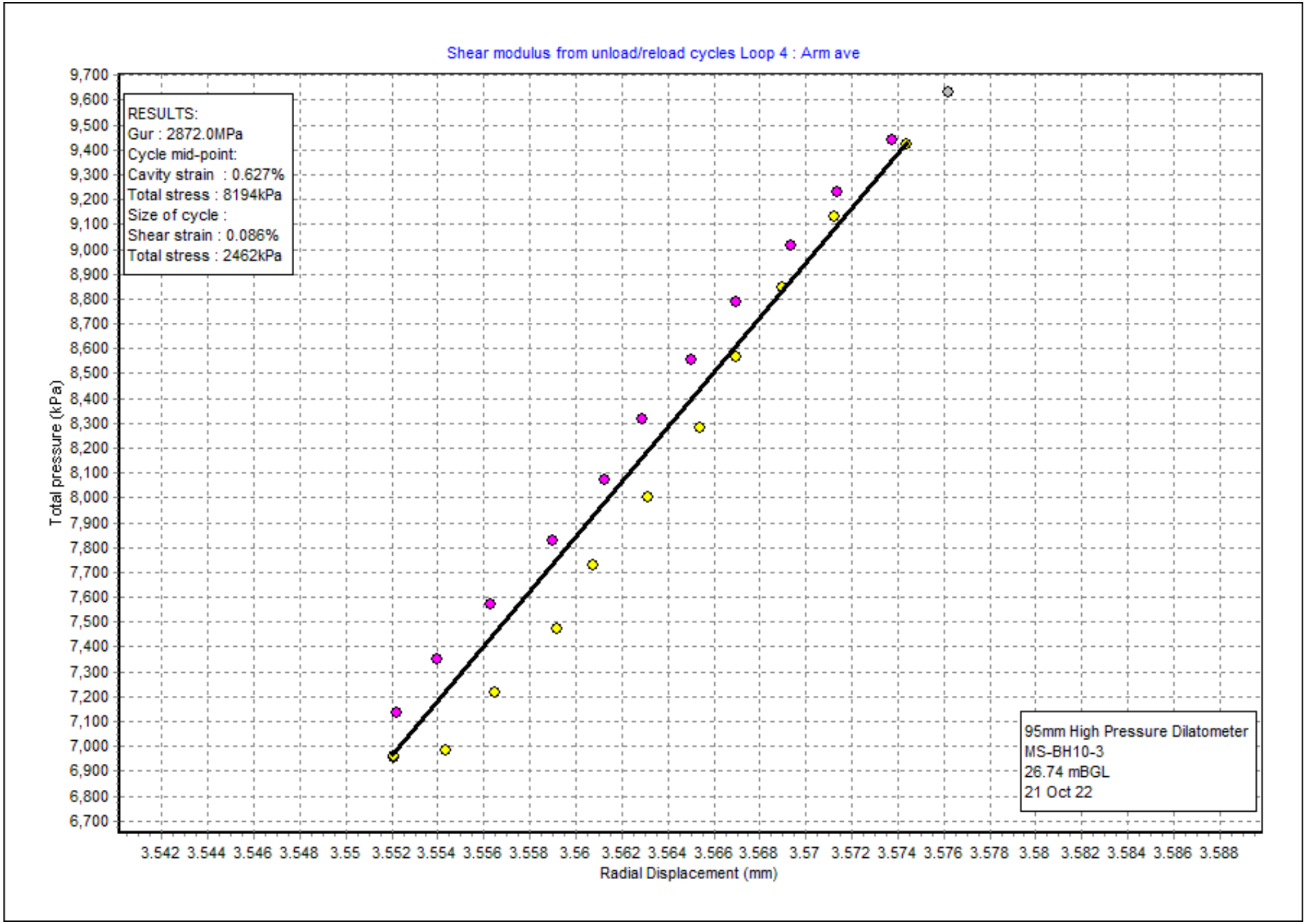

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
Cavity strain (%)
95mm High Pressure Dilatometer
MS-BH10-3
26.74 mBGL
21 Oct 22

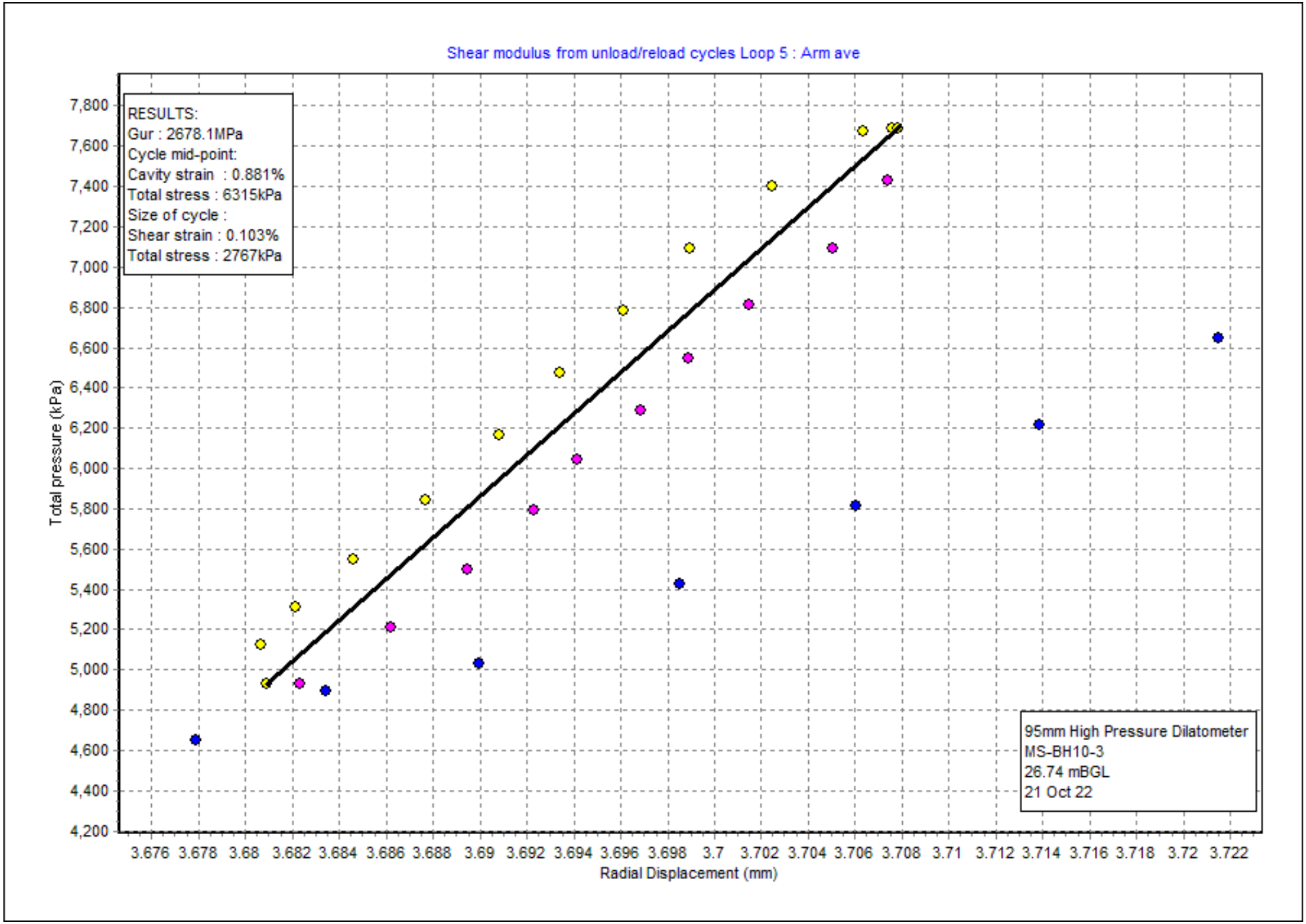

Creep readings
Total pressure (kPa)
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0.005
0.01
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH10-3
26.74 mBGL
21 Oct 22
RESULTS:
Gi : 563.8MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.093mm
Total pressure (kPa)
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
2.95
3
3.05
3.1
3.15
3.2
3.25
3.3
3.35
3.4
3.45
3.5
3.55
3.6
3.65
3.7
3.75
3.8
Radial Displacement (mm)

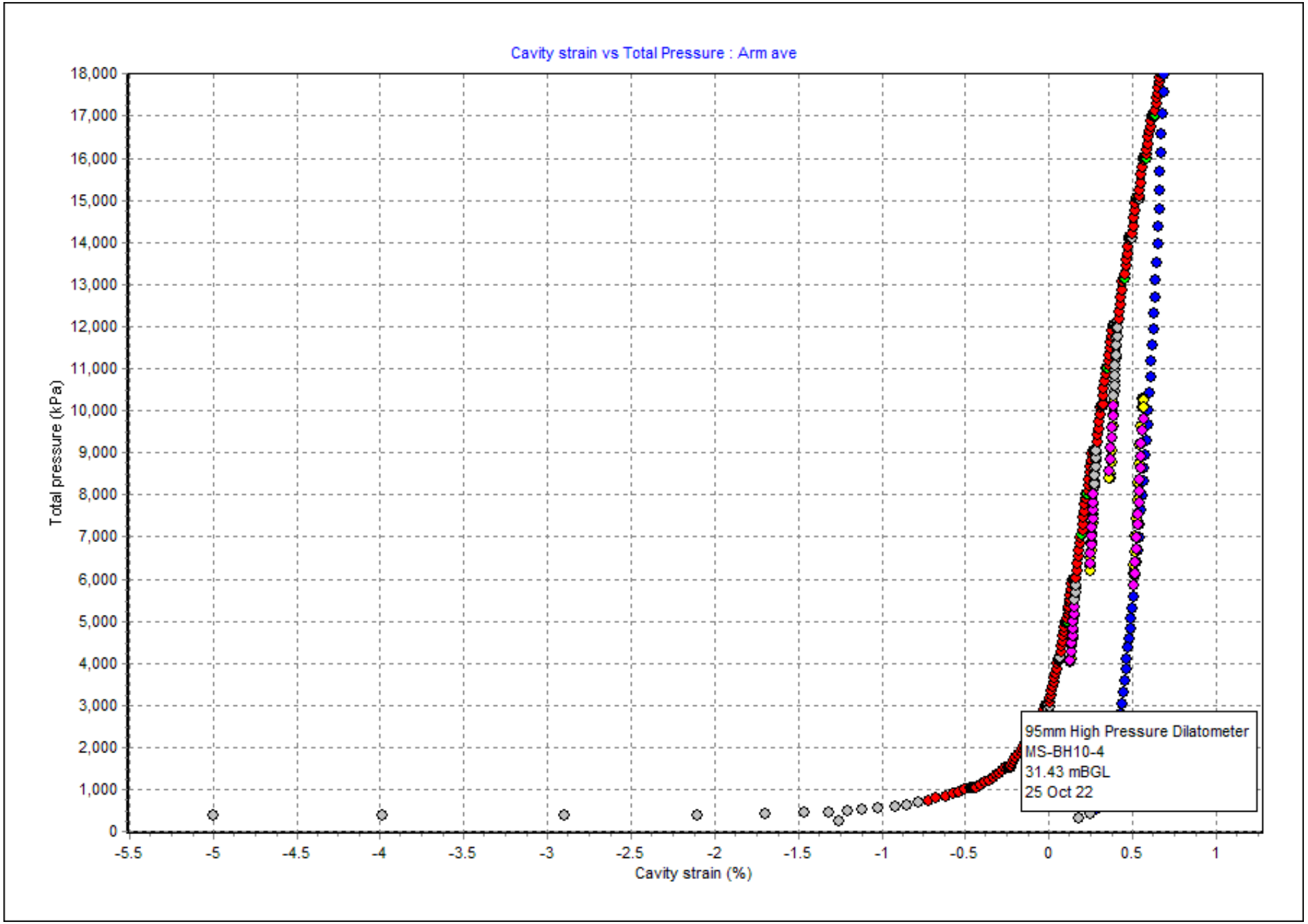

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1411.7MPa
Cycle mid-point:
Cavity strain : 0.001%
Total stress : 2328kPa
Size of cycle :
Shear strain : 0.041%
Total stress : 579kPa
95mm High Pressure Dilatometer
MS-BH10-3
26.74 mBGL
21 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,150
3,100
3,050
3,000
2,950
2,900
2,850
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
1,800
3.185
3.19
3.195
3.2
3.205
3.21
3.215
3.22
3.225
3.23
3.235
3.24
3.245
3.25
3.255
3.26
3.265

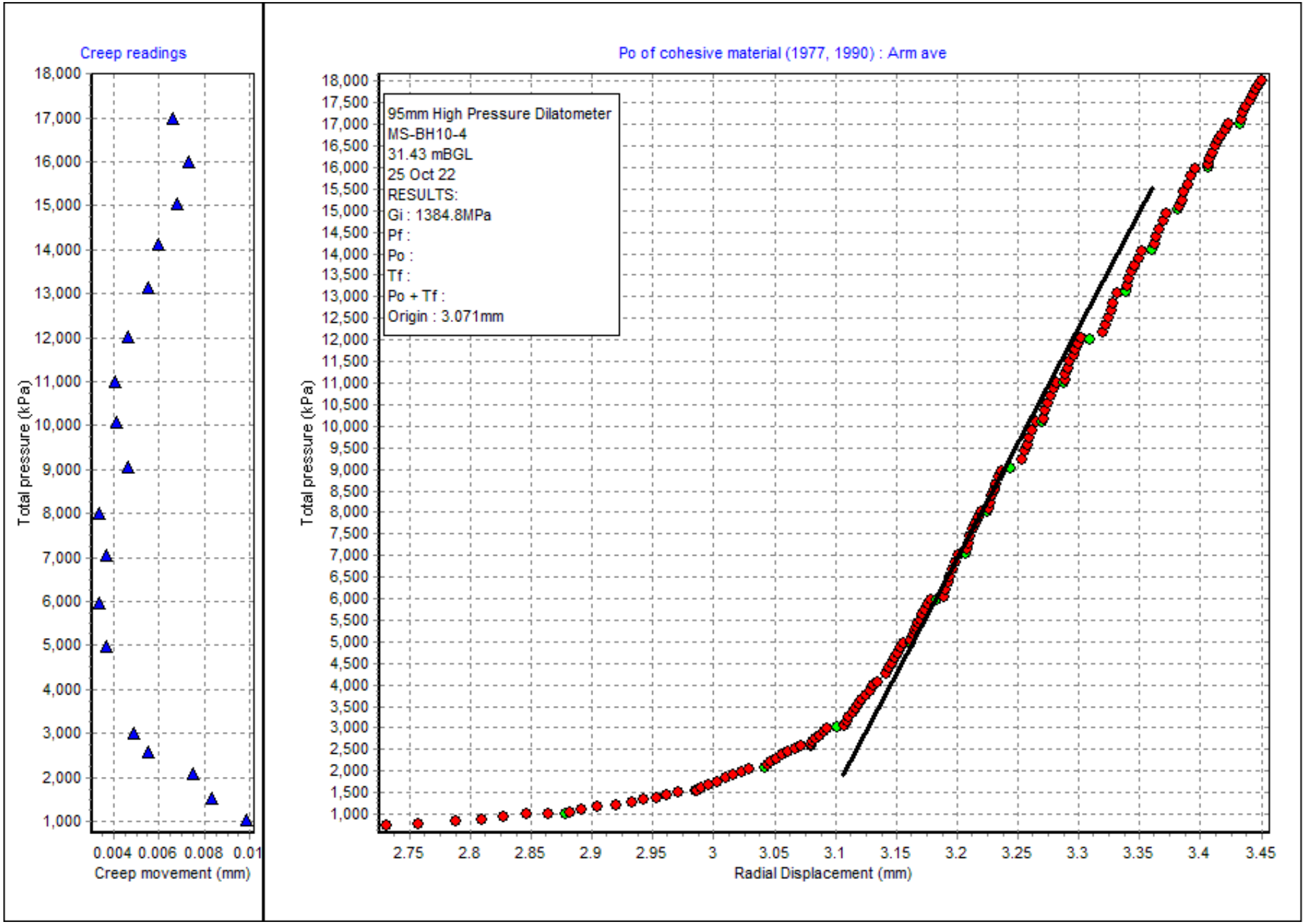

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 2225.3MPa
Cycle mid-point:
Cavity strain : 0.176%
Total stress : 4048kPa
Size of cycle :
Shear strain : 0.043%
Total stress : 954kPa
95mm High Pressure Dilatometer
MS-BH10-3
26.74 mBGL
21 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
4,900 4,850 4,800 4,750 4,700 4,650 4,600 4,550 4,500 4,450 4,400 4,350 4,300 4,250 4,200 4,150 4,100 4,050 4,000 3,950 3,900 3,850 3,800 3,750 3,700 3,650 3,600 3,550 3,500 3,450 3,400 3,350 3,300
3.319 3.32 3.321 3.322 3.323 3.324 3.325 3.326 3.327 3.328 3.329 3.33 3.331 3.332 3.333 3.334 3.335 3.336 3.337 3.338 3.339 3.34 3.341 3.342 3.343 3.344

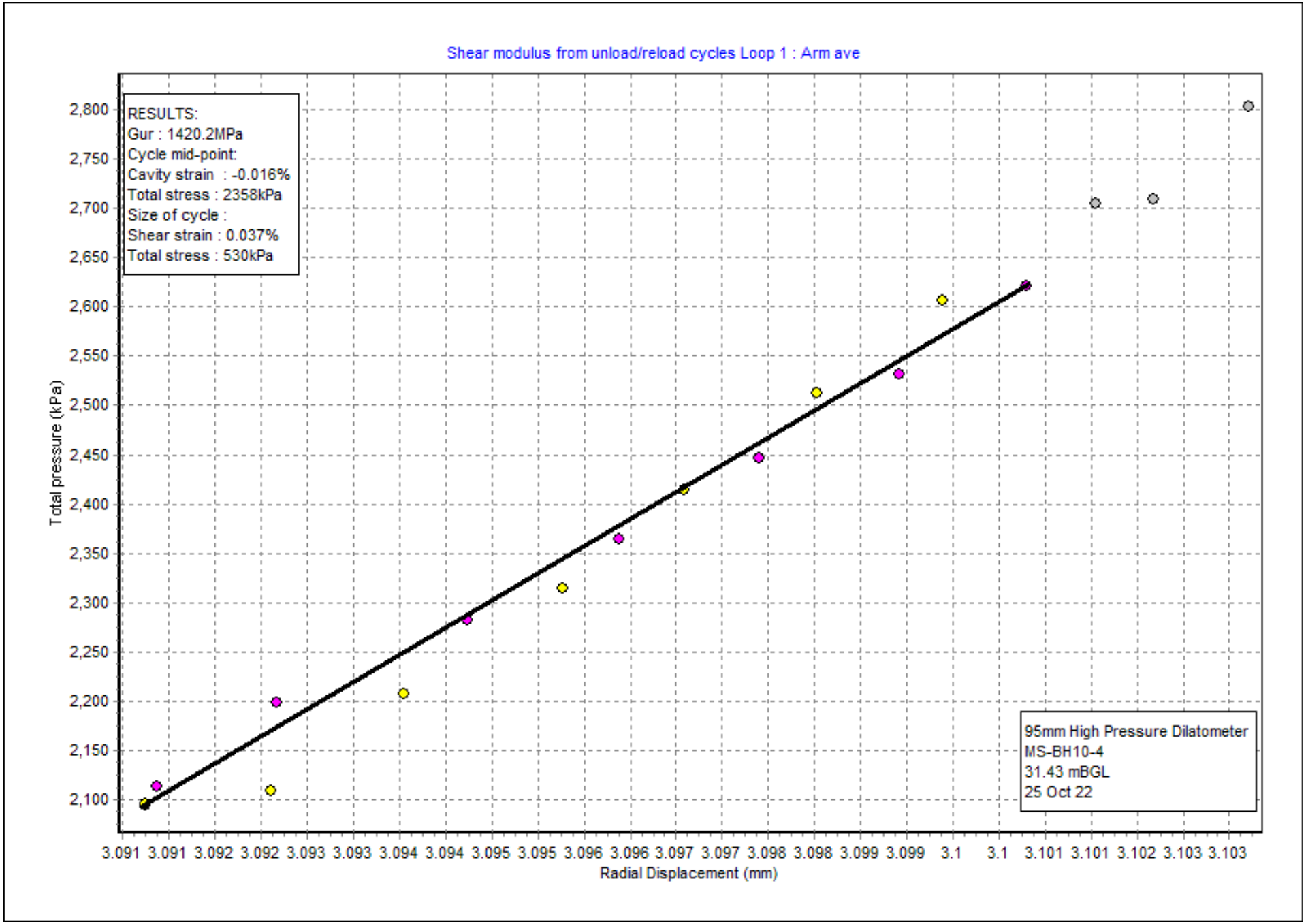

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 2641.1MPa
Cycle mid-point:
Cavity strain : 0.355%
Total stress : 5692kPa
Size of cycle :
Shear strain : 0.058%
Total stress : 1533kPa
95mm High Pressure Dilatometer
MS-BH10-3
26.74 mBGL
21 Oct 22
Total pressure (kPa)
6,800
6,700
6,600
6,500
6,400
6,300
6,200
6,100
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
3.406
3.408
3.41
3.412
3.414
3.416
3.418
3.42
3.422
3.424
3.426
3.428
3.43
3.432
3.434
3.436
3.438
3.44
Radial Displacement (mm)

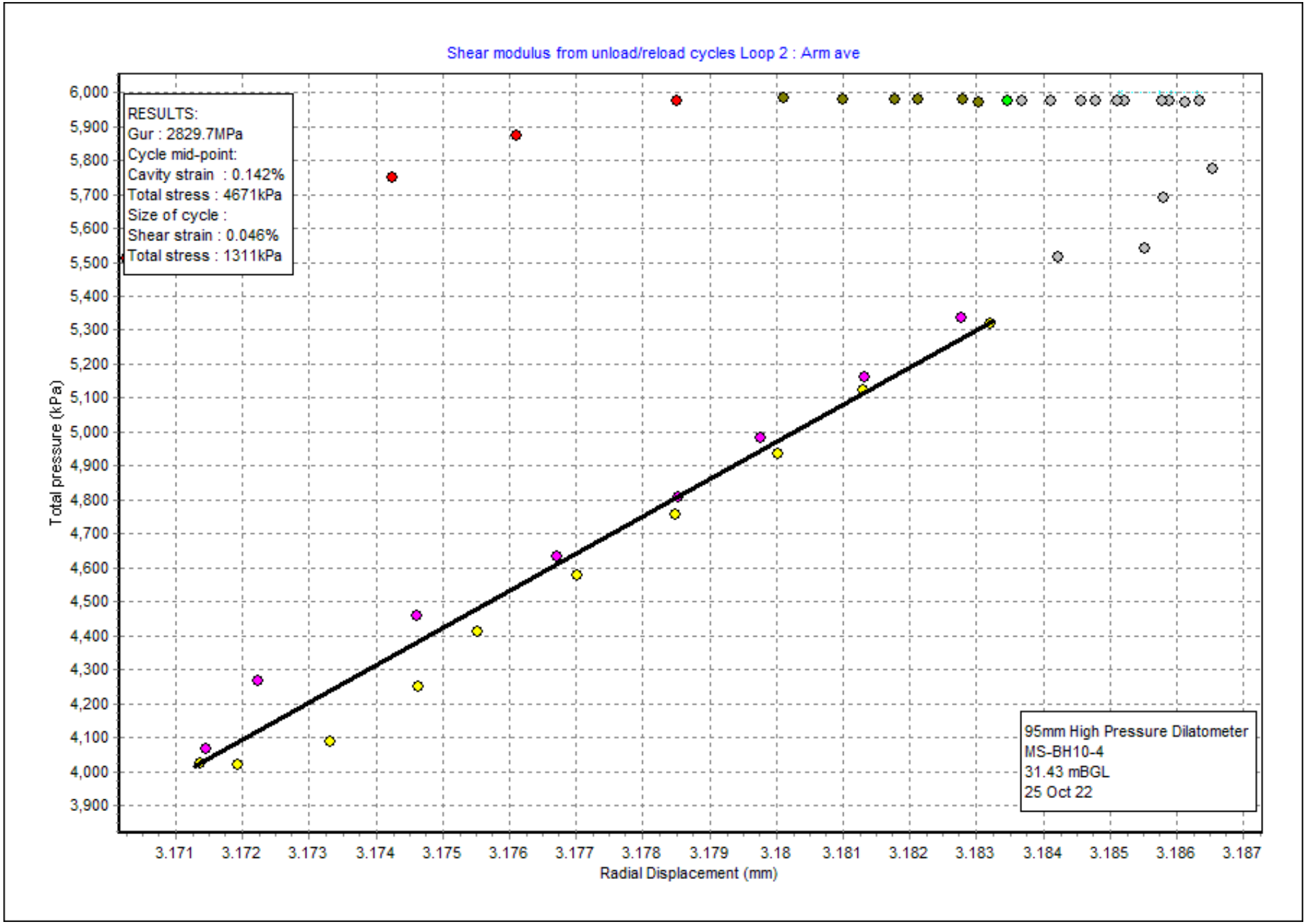

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 2872.0MPa
Cycle mid-point:
Cavity strain : 0.627%
Total stress : 8194kPa
Size of cycle :
Shear strain : 0.086%
Total stress : 2462kPa
95mm High Pressure Dilatometer
MS-BH10-3
26.74 mBGL
21 Oct 22
Total pressure (kPa)
9,700
9,600
9,500
9,400
9,300
9,200
9,100
9,000
8,900
8,800
8,700
8,600
8,500
8,400
8,300
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
6,800
6,700
3.542 3.544 3.546 3.548 3.55 3.552 3.554 3.556 3.558 3.56 3.562 3.564 3.566 3.568 3.57 3.572 3.574 3.576 3.578 3.58 3.582 3.584 3.586 3.588
Radial Displacement (mm)

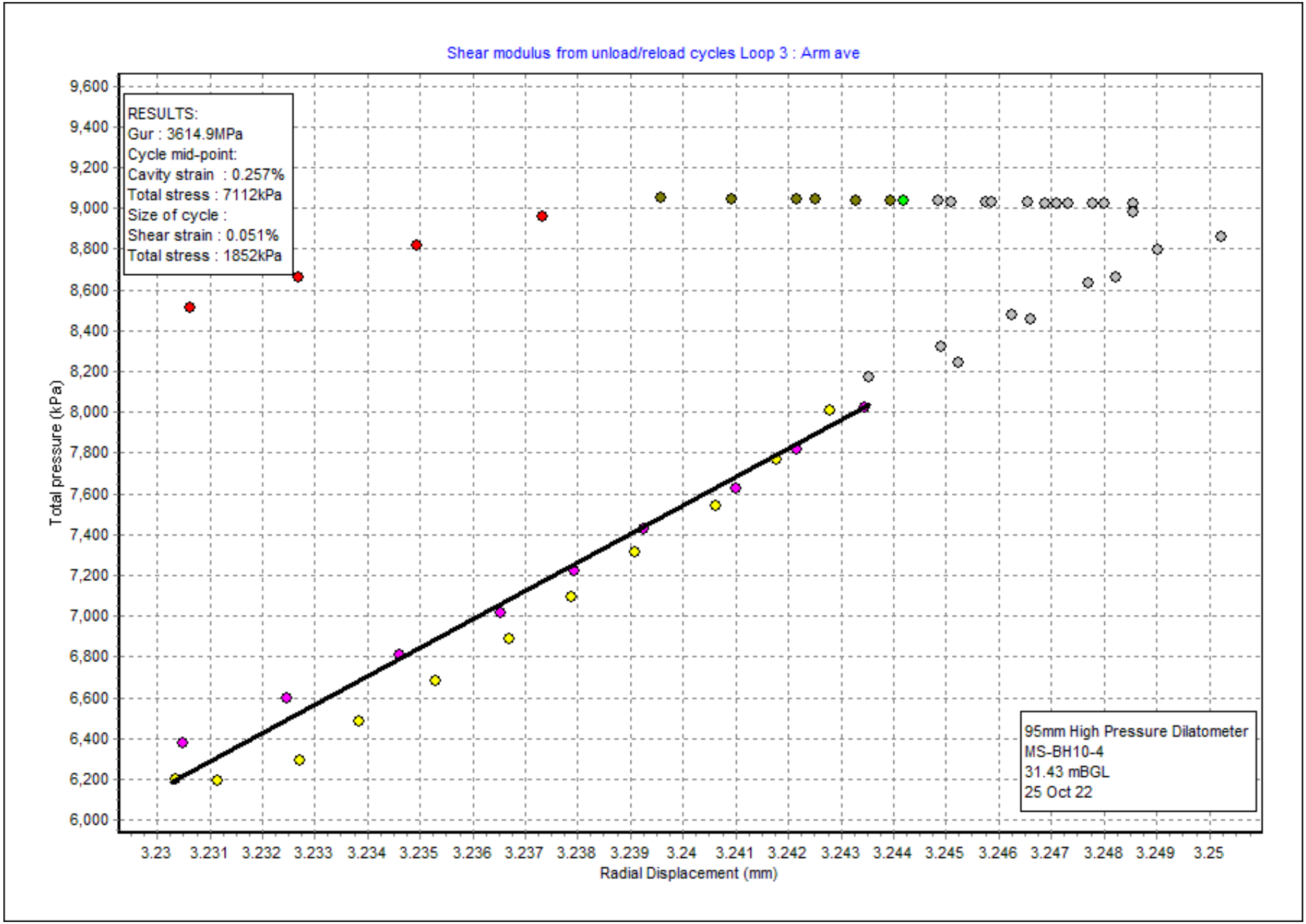

Shear modulus from unload/reload cycles Loop 5 : Arm ave
RESULTS:
Gur : 2678.1MPa
Cycle mid-point:
Cavity strain : 0.881%
Total stress : 6315kPa
Size of cycle :
Shear strain : 0.103%
Total stress : 2767kPa
95mm High Pressure Dilatometer
MS-BH10-3
26.74 mBGL
21 Oct 22
Total pressure (kPa)
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
3.676 3.678 3.68 3.682 3.684 3.686 3.688 3.69 3.692 3.694 3.696 3.698 3.7 3.702 3.704 3.706 3.708 3.71 3.712 3.714 3.716 3.718 3.72 3.722
Radial Displacement (mm)

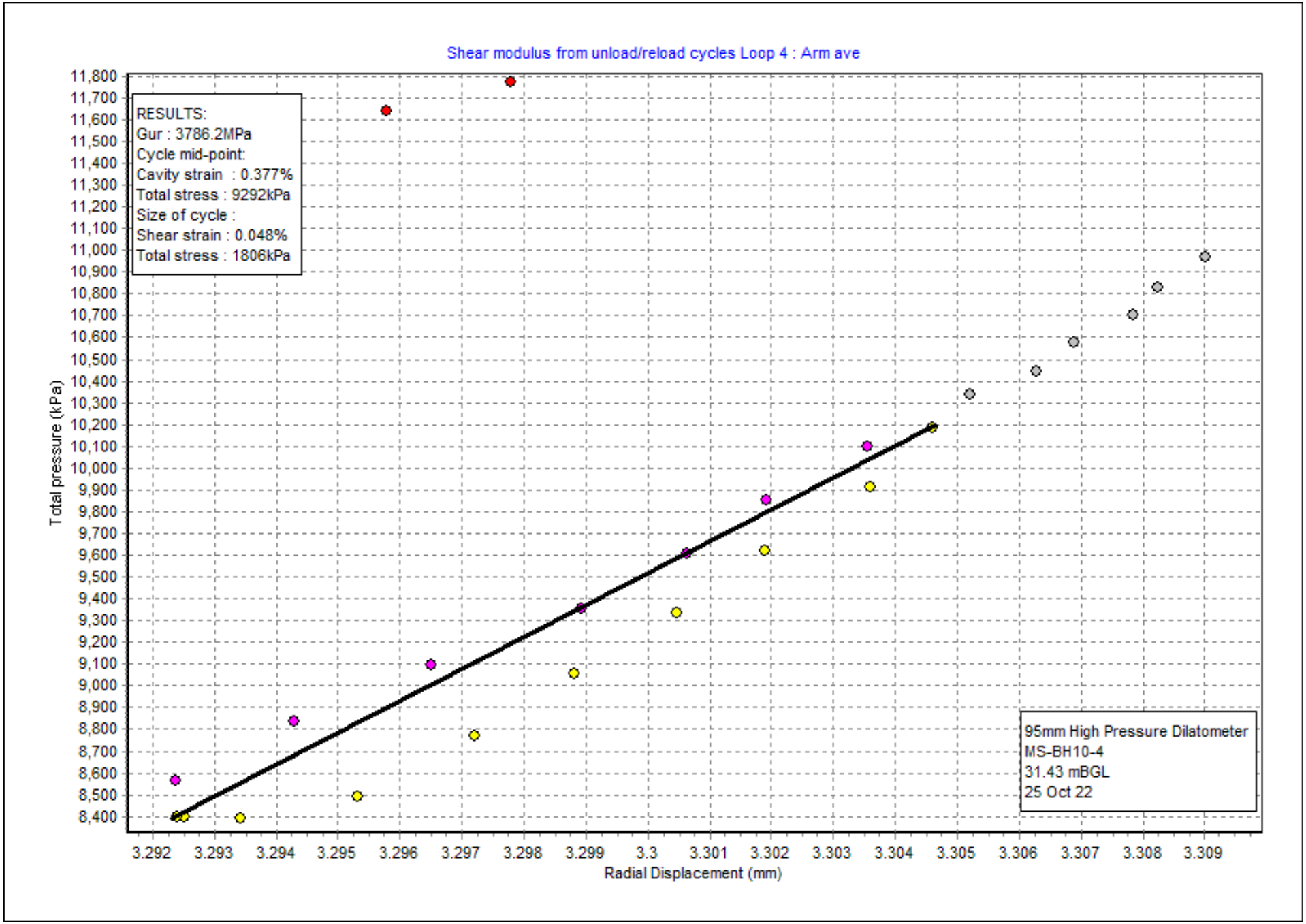

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-5.5
-5
-4.5
-4
-3.5
-3
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
Cavity strain (%)
95mm High Pressure Dilatometer
MS-BH10-4
31.43 mBGL
25 Oct 22

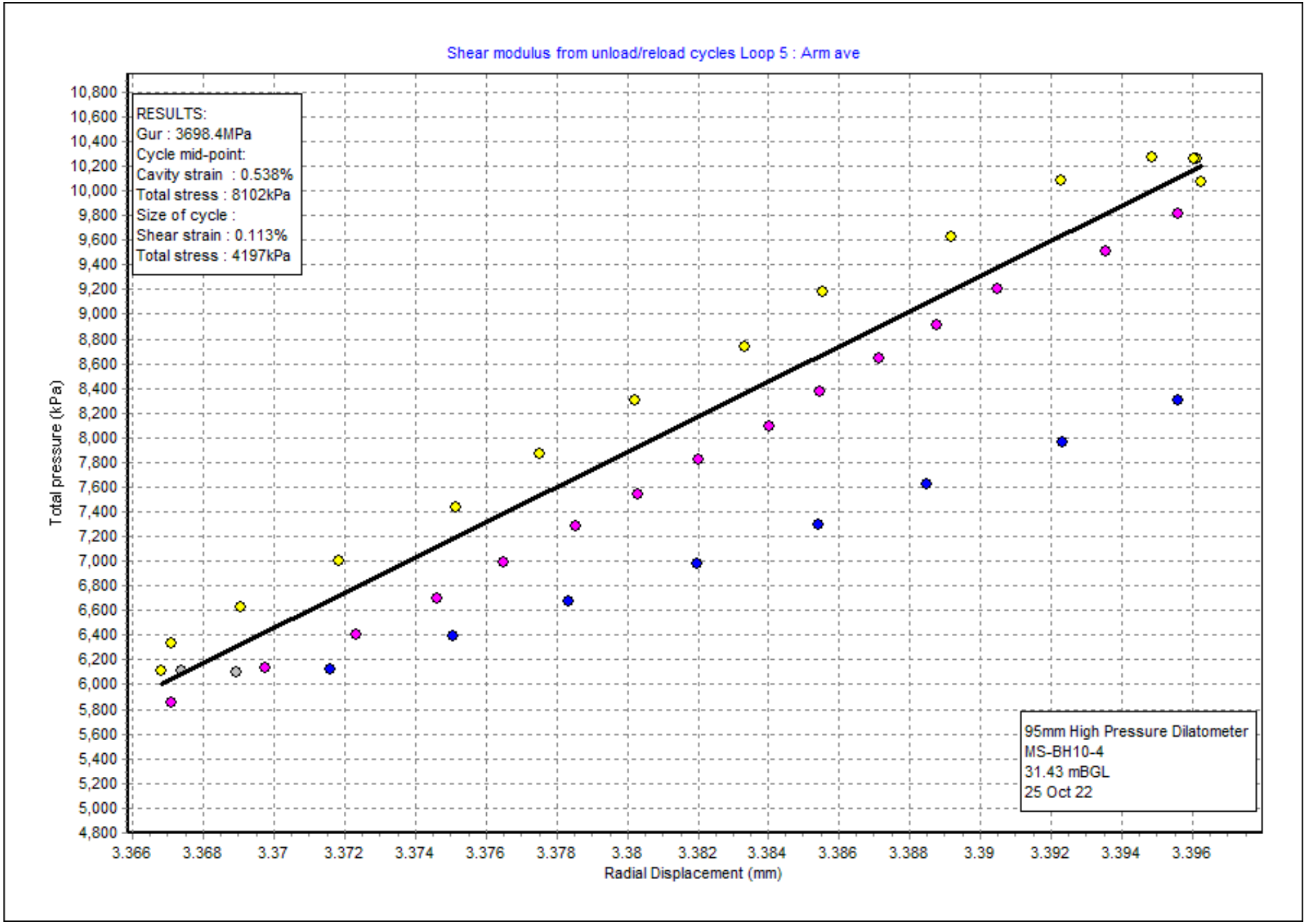

Creep readings
Total pressure (kPa)
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0.004 0.006 0.008 0.01
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH10-4
31.43 mBGL
25 Oct 22
RESULTS:
Gi : 1384.8MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.071mm
Total pressure (kPa)
18,000
17,500
17,000
16,500
16,000
15,500
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
2.75 2.8 2.85 2.9 2.95 3 3.05 3.1 3.15 3.2 3.25 3.3 3.35 3.4 3.45
Radial Displacement (mm)

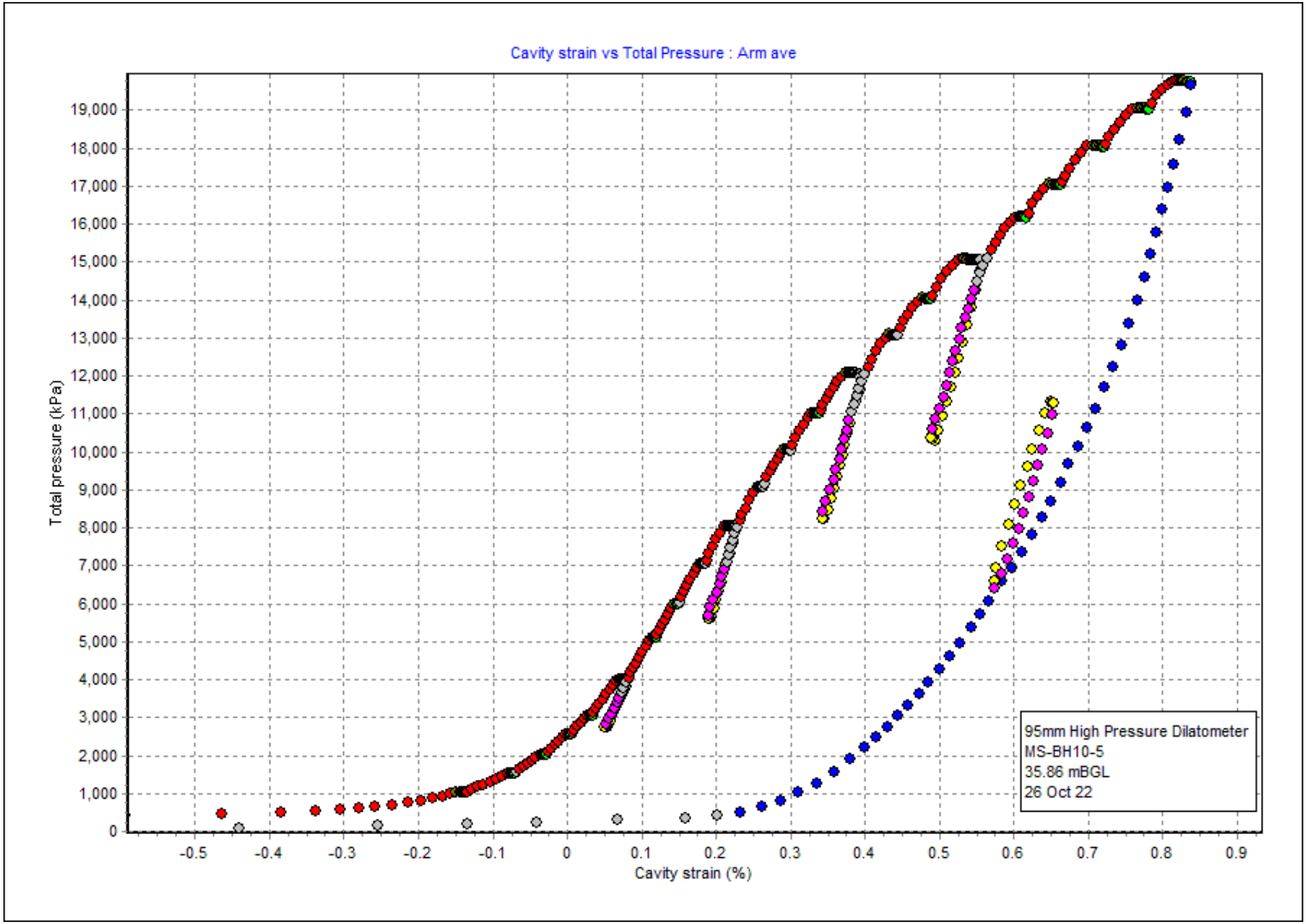

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1420.2MPa
Cycle mid-point:
Cavity strain : -0.016%
Total stress : 2358kPa
Size of cycle :
Shear strain : 0.037%
Total stress : 530kPa
95mm High Pressure Dilatometer
MS-BH10-4
31.43 mBGL
25 Oct 22
Total pressure (kPa)
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
3.091 3.091 3.092 3.092 3.093 3.093 3.094 3.094 3.095 3.095 3.096 3.096 3.097 3.097 3.098 3.098 3.099 3.099 3.1 3.1 3.101 3.101 3.102 3.103 3.103
Radial Displacement (mm)

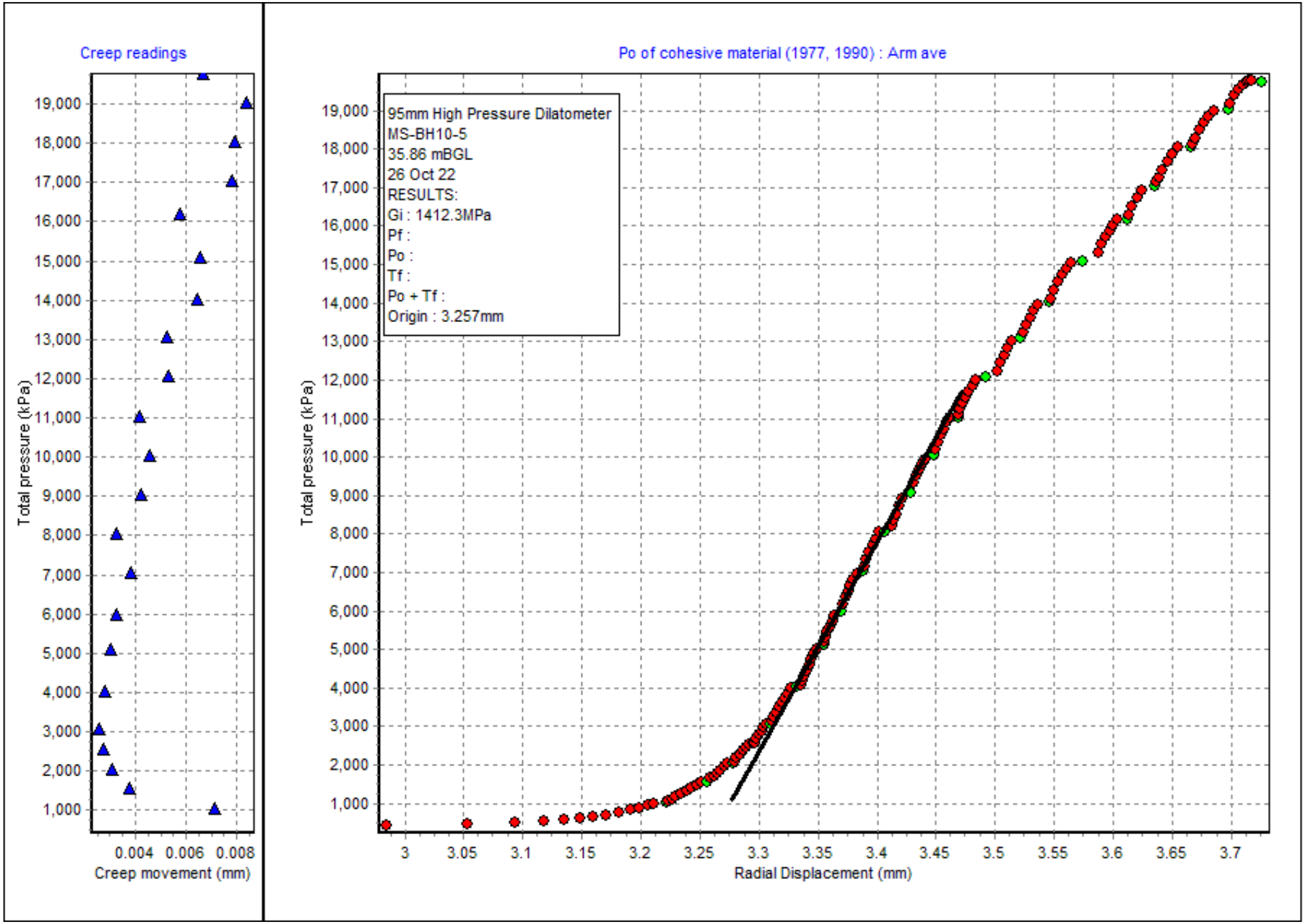

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 2829.7MPa
Cycle mid-point:
Cavity strain : 0.142%
Total stress : 4671kPa
Size of cycle :
Shear strain : 0.046%
Total stress : 1311kPa
95mm High Pressure Dilatometer
MS-BH10-4
31.43 mBGL
25 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
3.171
3.172
3.173
3.174
3.175
3.176
3.177
3.178
3.179
3.18
3.181
3.182
3.183
3.184
3.185
3.186
3.187

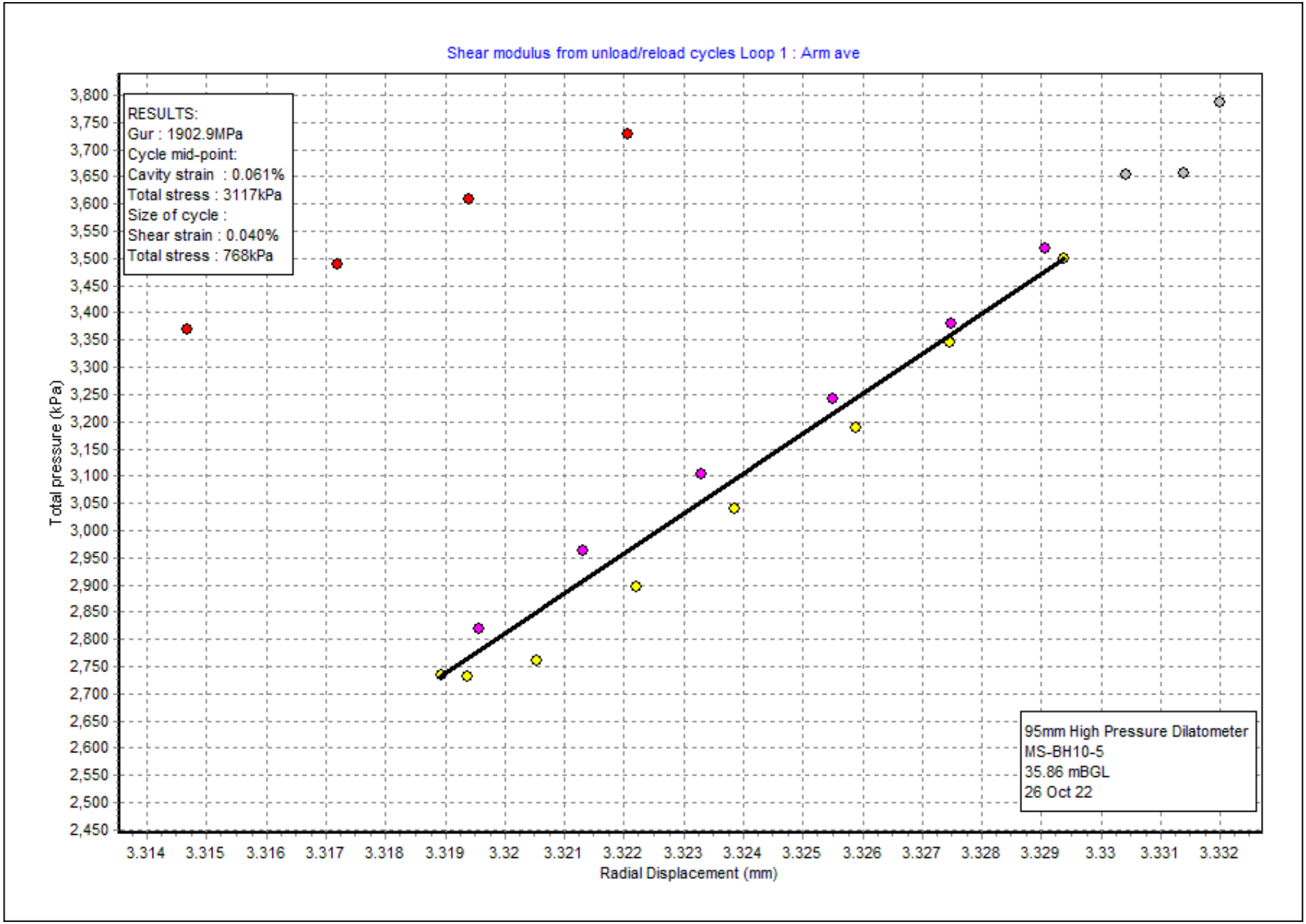

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 3614.9MPa
Cycle mid-point:
Cavity strain : 0.257%
Total stress : 7112kPa
Size of cycle :
Shear strain : 0.051%
Total stress : 1852kPa
95mm High Pressure Dilatometer
MS-BH10-4
31.43 mBGL
25 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
3.23
3.231
3.232
3.233
3.234
3.235
3.236
3.237
3.238
3.239
3.24
3.241
3.242
3.243
3.244
3.245
3.246
3.247
3.248
3.249
3.25

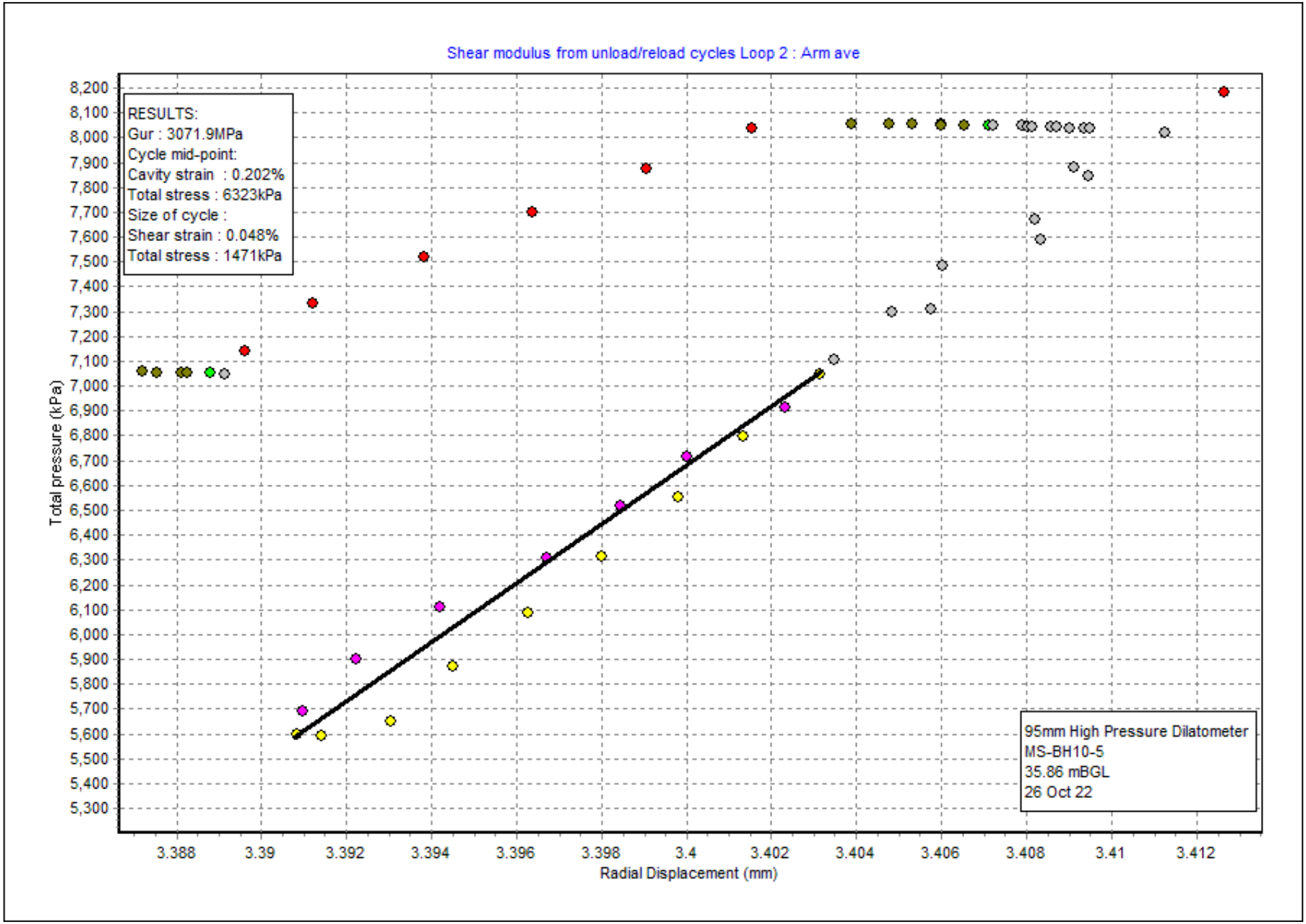

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 3786.2MPa
Cycle mid-point:
Cavity strain : 0.377%
Total stress : 9292kPa
Size of cycle :
Shear strain : 0.048%
Total stress : 1806kPa
95mm High Pressure Dilatometer
MS-BH10-4
31.43 mBGL
25 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
11,800
11,700
11,600
11,500
11,400
11,300
11,200
11,100
11,000
10,900
10,800
10,700
10,600
10,500
10,400
10,300
10,200
10,100
10,000
9,900
9,800
9,700
9,600
9,500
9,400
9,300
9,200
9,100
9,000
8,900
8,800
8,700
8,600
8,500
8,400
3.292
3.293
3.294
3.295
3.296
3.297
3.298
3.299
3.3
3.301
3.302
3.303
3.304
3.305
3.306
3.307
3.308
3.309

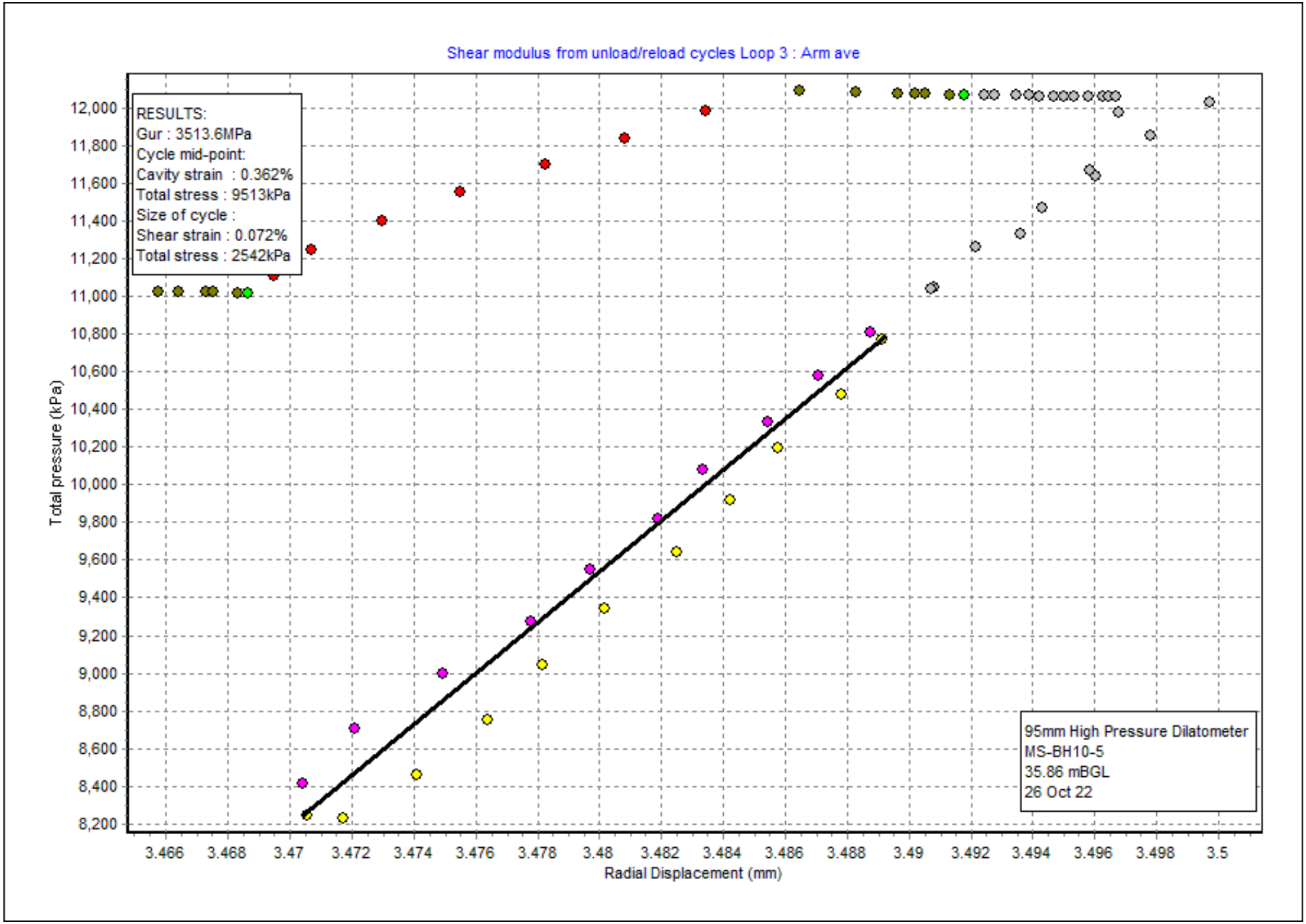

Shear modulus from unload/reload cycles Loop 5 : Arm ave
RESULTS:
Gur : 3698.4MPa
Cycle mid-point:
Cavity strain : 0.538%
Total stress : 8102kPa
Size of cycle :
Shear strain : 0.113%
Total stress : 4197kPa
95mm High Pressure Dilatometer
MS-BH10-4
31.43 mBGL
25 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
10,800
10,600
10,400
10,200
10,000
9,800
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
3.366
3.368
3.37
3.372
3.374
3.376
3.378
3.38
3.382
3.384
3.386
3.388
3.39
3.392
3.394
3.396

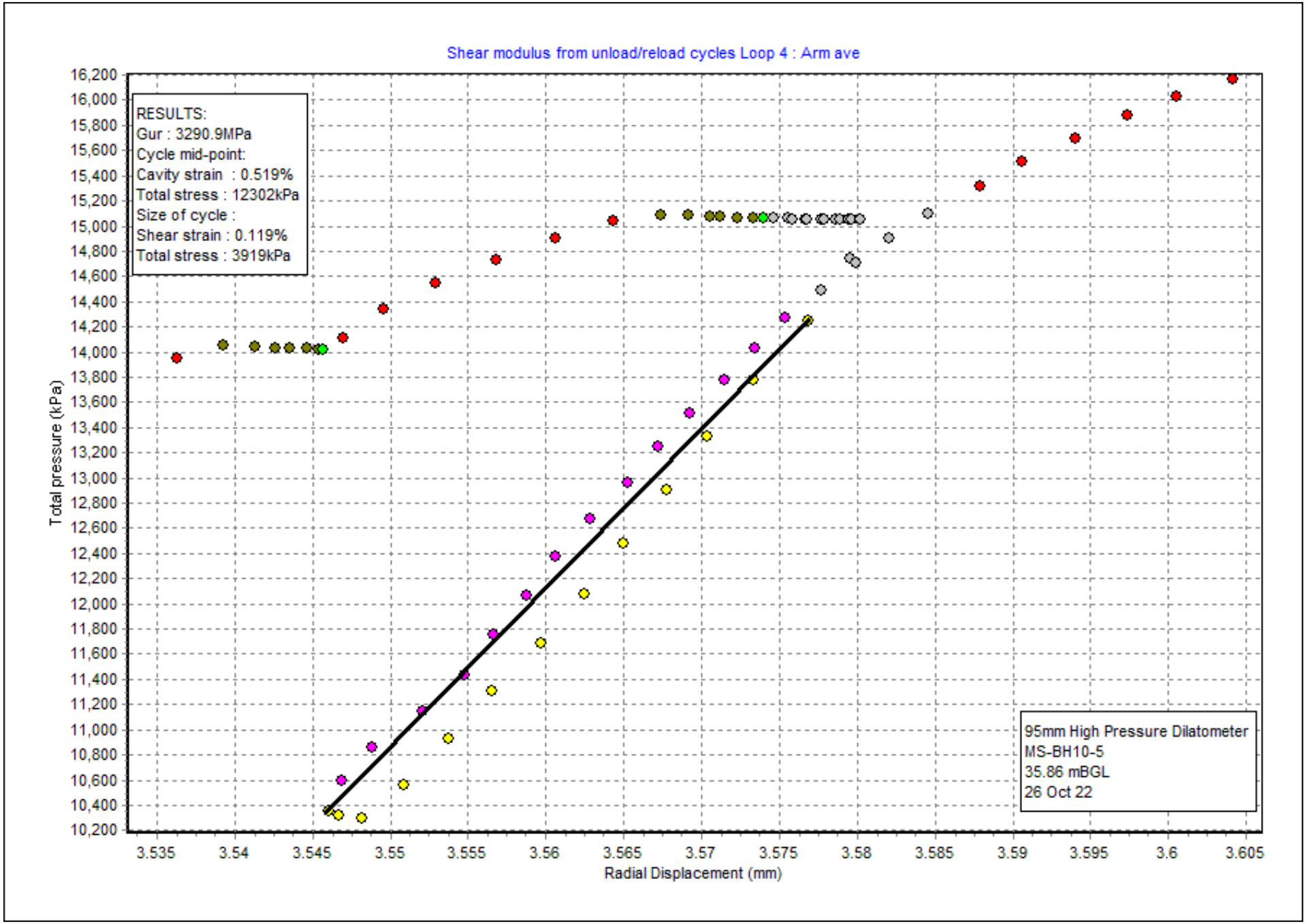

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
Cavity strain (%)
95mm High Pressure Dilatometer
MS-BH10-5
35.86 mBGL
26 Oct 22

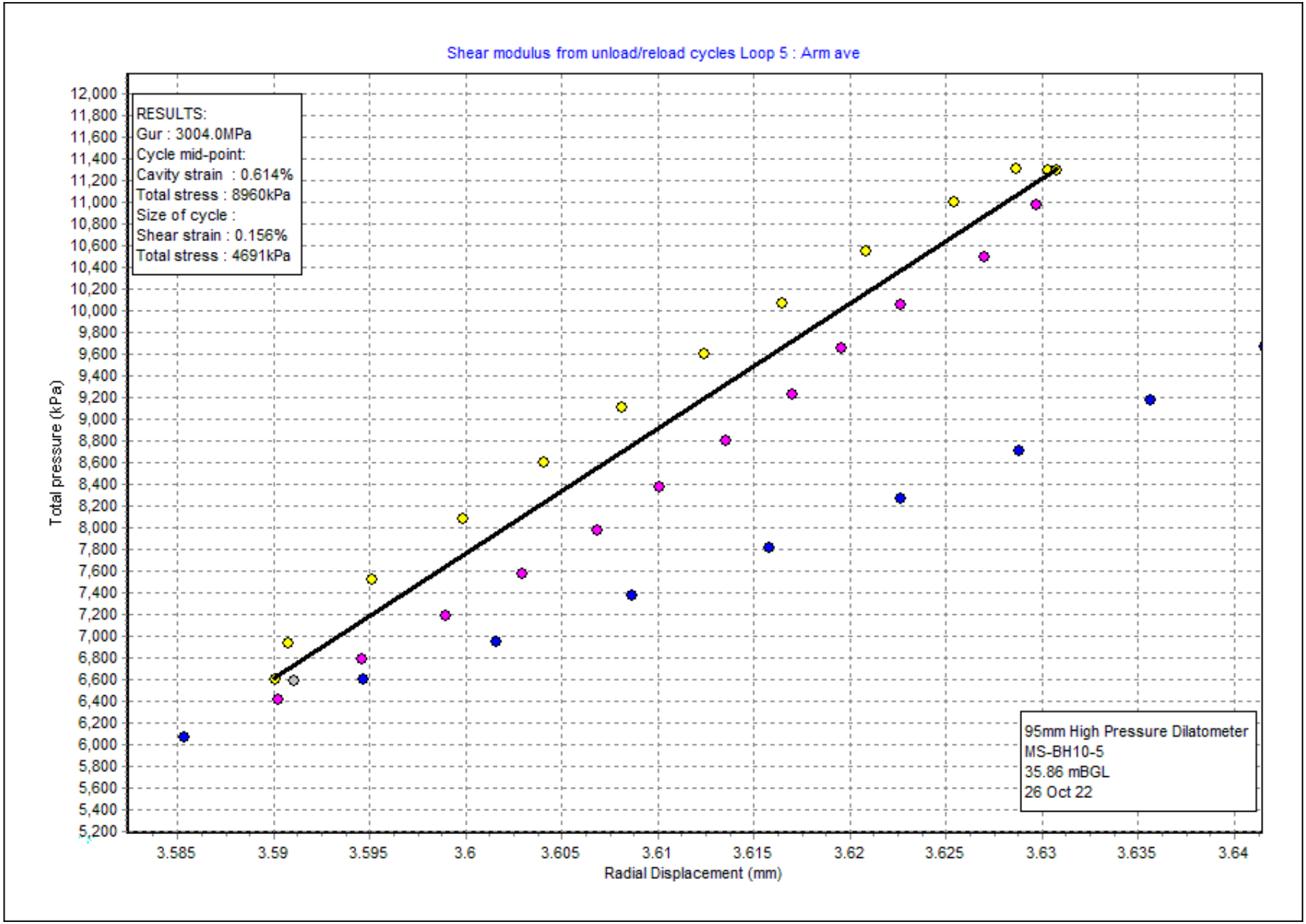

Creep readings
Total pressure (kPa)
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0.004
0.006
0.008
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH10-5
35.86 mBGL
26 Oct 22
RESULTS:
Gi : 1412.3MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.257mm
Total pressure (kPa)
3
3.05
3.1
3.15
3.2
3.25
3.3
3.35
3.4
3.45
3.5
3.55
3.6
3.65
3.7
Radial Displacement (mm)

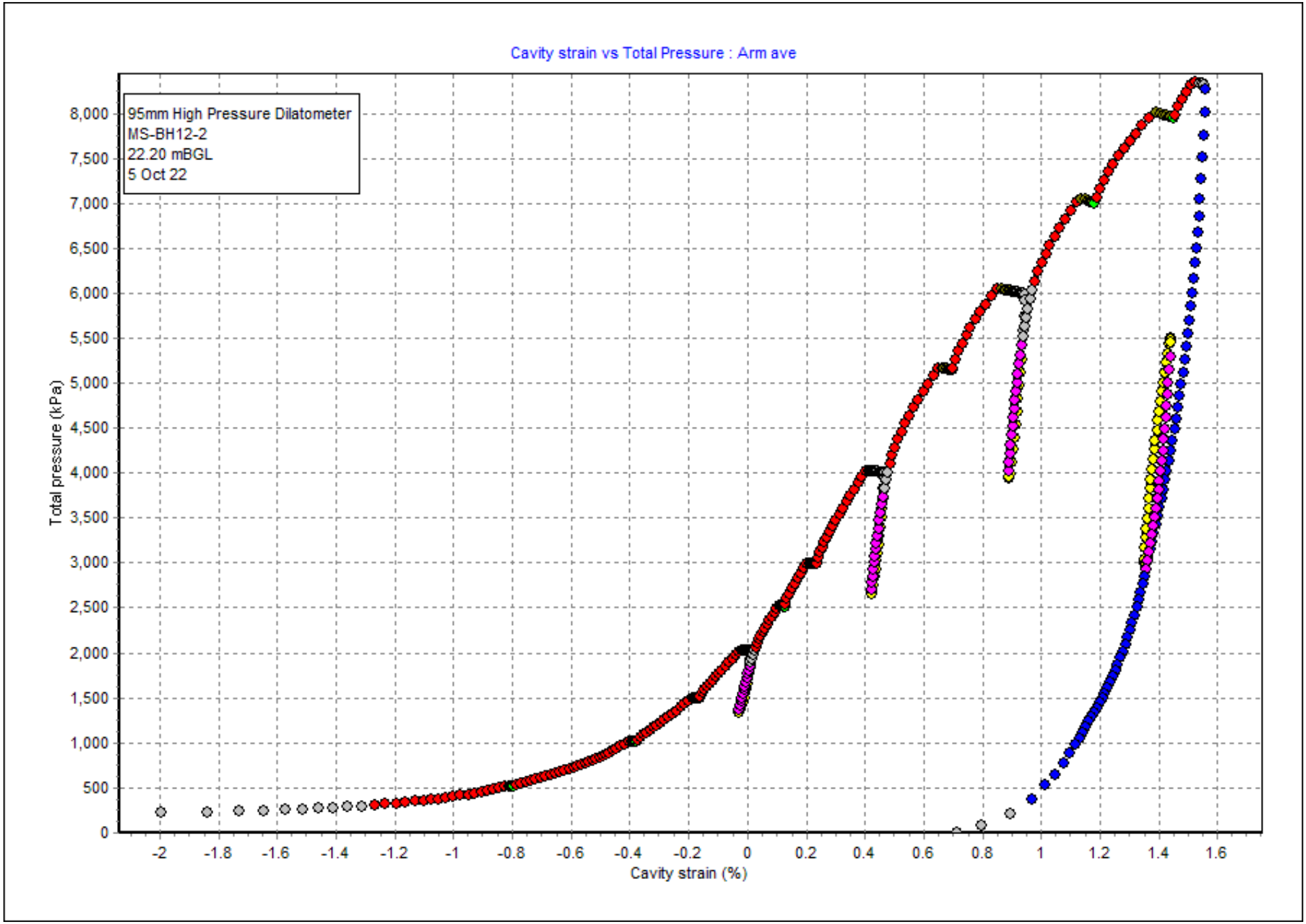

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1902.9MPa
Cycle mid-point:
Cavity strain : 0.061%
Total stress : 3117kPa
Size of cycle :
Shear strain : 0.040%
Total stress : 768kPa
95mm High Pressure Dilatometer
MS-BH10-5
35.86 mBGL
26 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,800
3,750
3,700
3,650
3,600
3,550
3,500
3,450
3,400
3,350
3,300
3,250
3,200
3,150
3,100
3,050
3,000
2,950
2,900
2,850
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
3.314
3.315
3.316
3.317
3.318
3.319
3.32
3.321
3.322
3.323
3.324
3.325
3.326
3.327
3.328
3.329
3.33
3.331
3.332

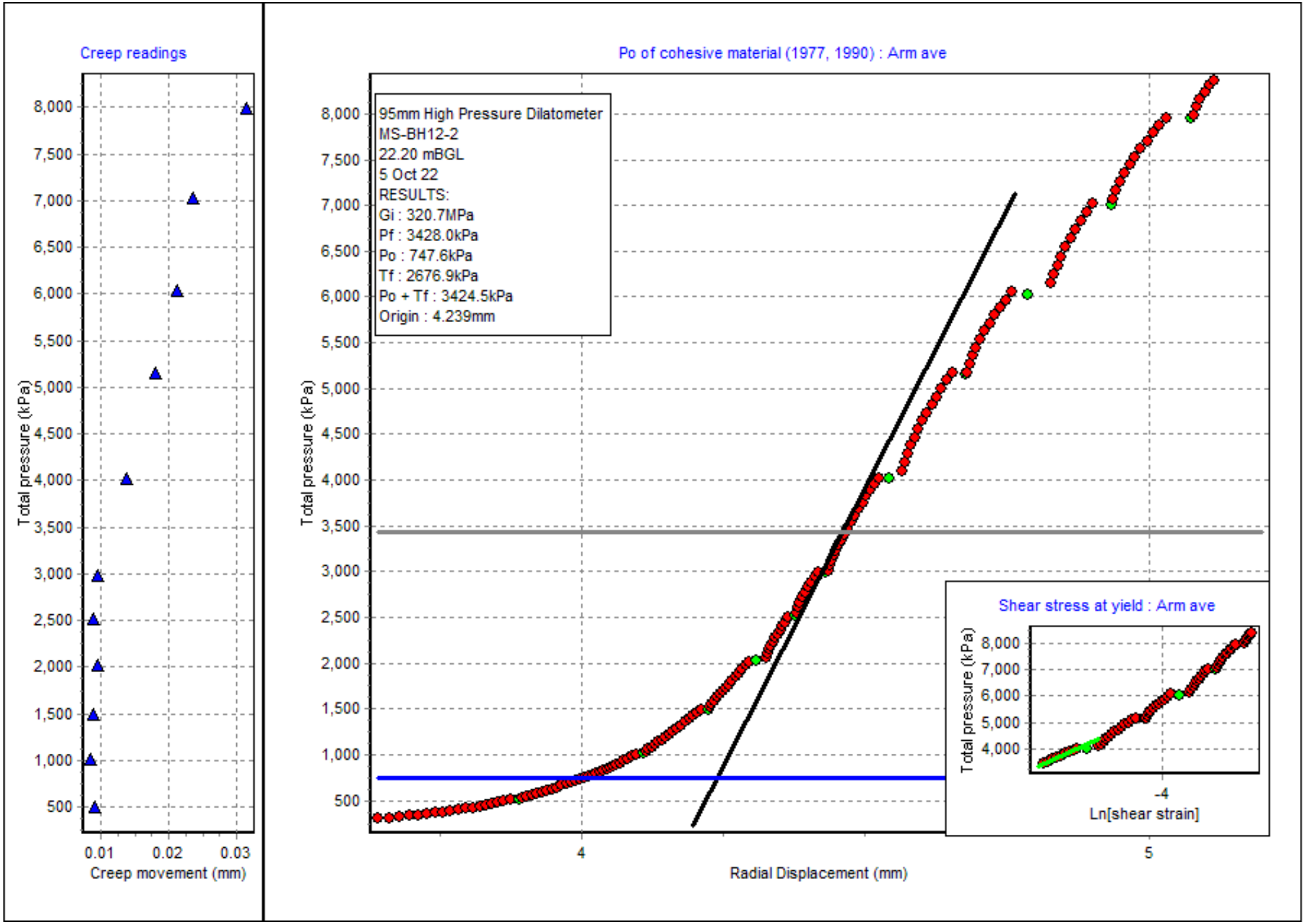

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 3071.9MPa
Cycle mid-point:
Cavity strain : 0.202%
Total stress : 6323kPa
Size of cycle :
Shear strain : 0.048%
Total stress : 1471kPa
95mm High Pressure Dilatometer
MS-BH10-5
35.86 mBGL
26 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
6,800
6,700
6,600
6,500
6,400
6,300
6,200
6,100
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
3.388
3.39
3.392
3.394
3.396
3.398
3.4
3.402
3.404
3.406
3.408
3.41
3.412

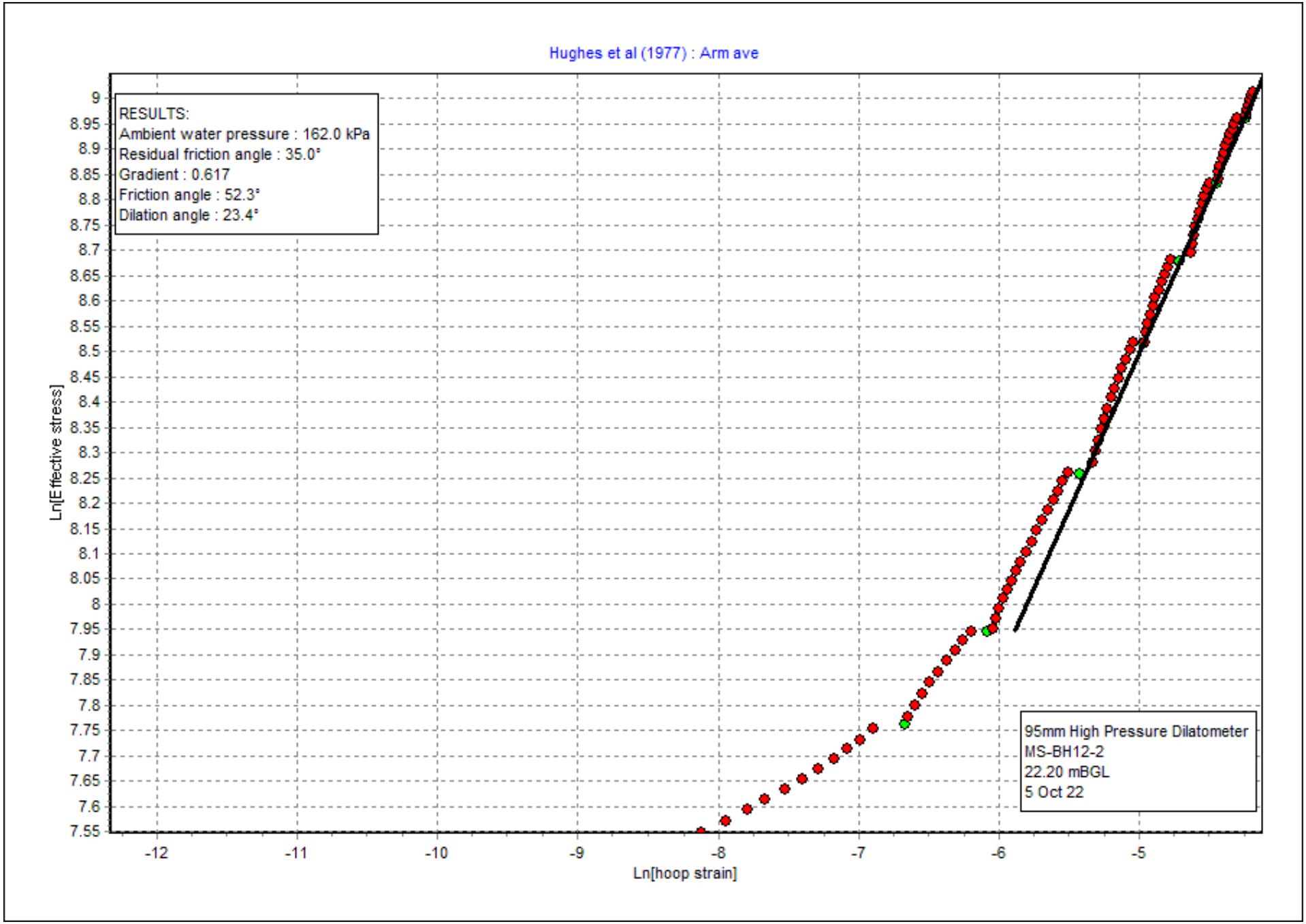

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 3513.6MPa
Cycle mid-point:
Cavity strain : 0.362%
Total stress : 9513kPa
Size of cycle :
Shear strain : 0.072%
Total stress : 2542kPa
95mm High Pressure Dilatometer
MS-BH10-5
35.86 mBGL
26 Oct 22
Total pressure (kPa)
12,000
11,800
11,600
11,400
11,200
11,000
10,800
10,600
10,400
10,200
10,000
9,800
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
3.466
3.468
3.47
3.472
3.474
3.476
3.478
3.48
3.482
3.484
3.486
3.488
3.49
3.492
3.494
3.496
3.498
3.5
Radial Displacement (mm)

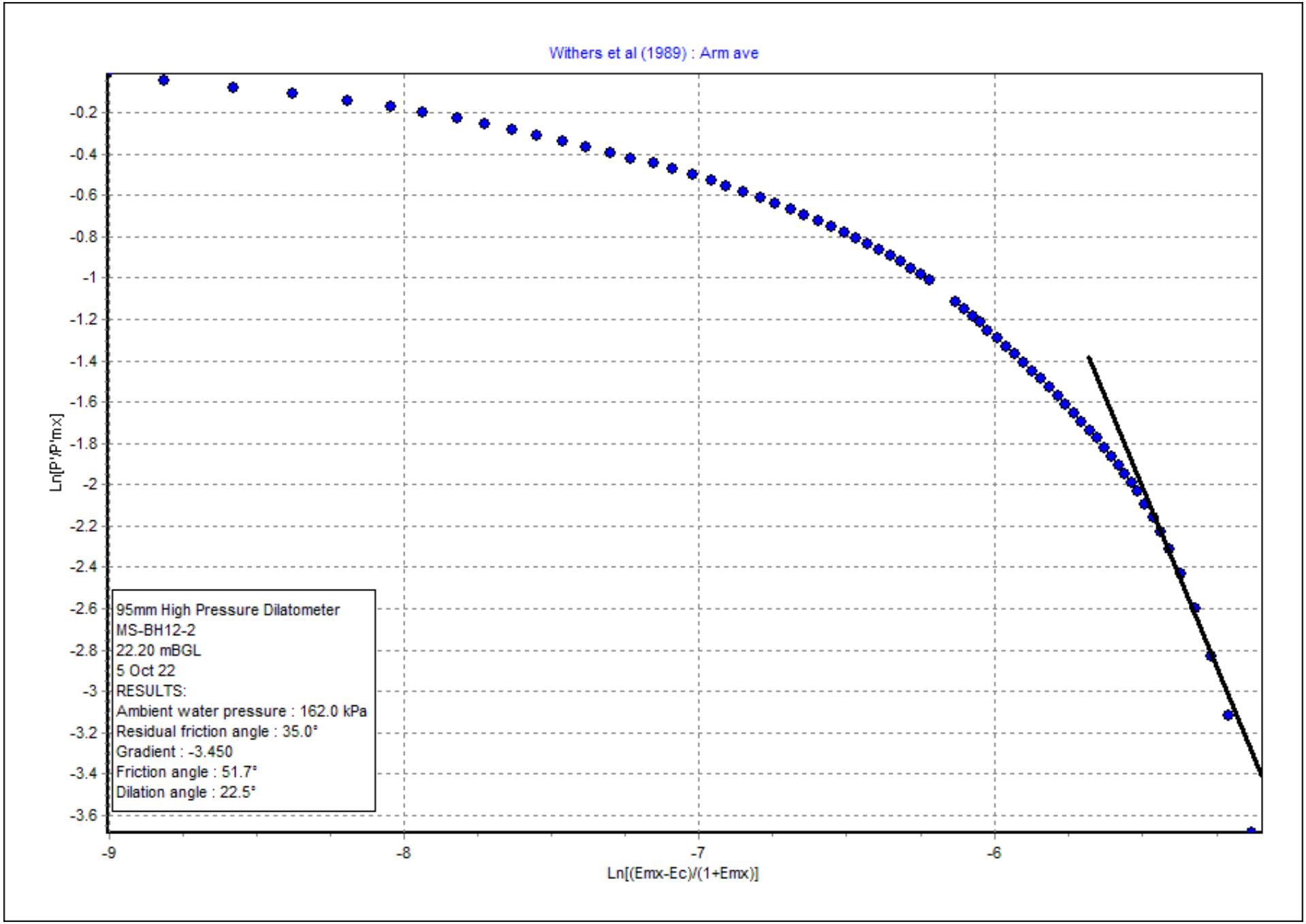

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 3290.9MPa
Cycle mid-point:
Cavity strain : 0.519%
Total stress : 12302kPa
Size of cycle :
Shear strain : 0.119%
Total stress : 3919kPa
95mm High Pressure Dilatometer
MS-BH10-5
35.86 mBGL
26 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
16,200
16,000
15,800
15,600
15,400
15,200
15,000
14,800
14,600
14,400
14,200
14,000
13,800
13,600
13,400
13,200
13,000
12,800
12,600
12,400
12,200
12,000
11,800
11,600
11,400
11,200
11,000
10,800
10,600
10,400
10,200
3.535
3.54
3.545
3.55
3.555
3.56
3.565
3.57
3.575
3.58
3.585
3.59
3.595
3.6
3.605

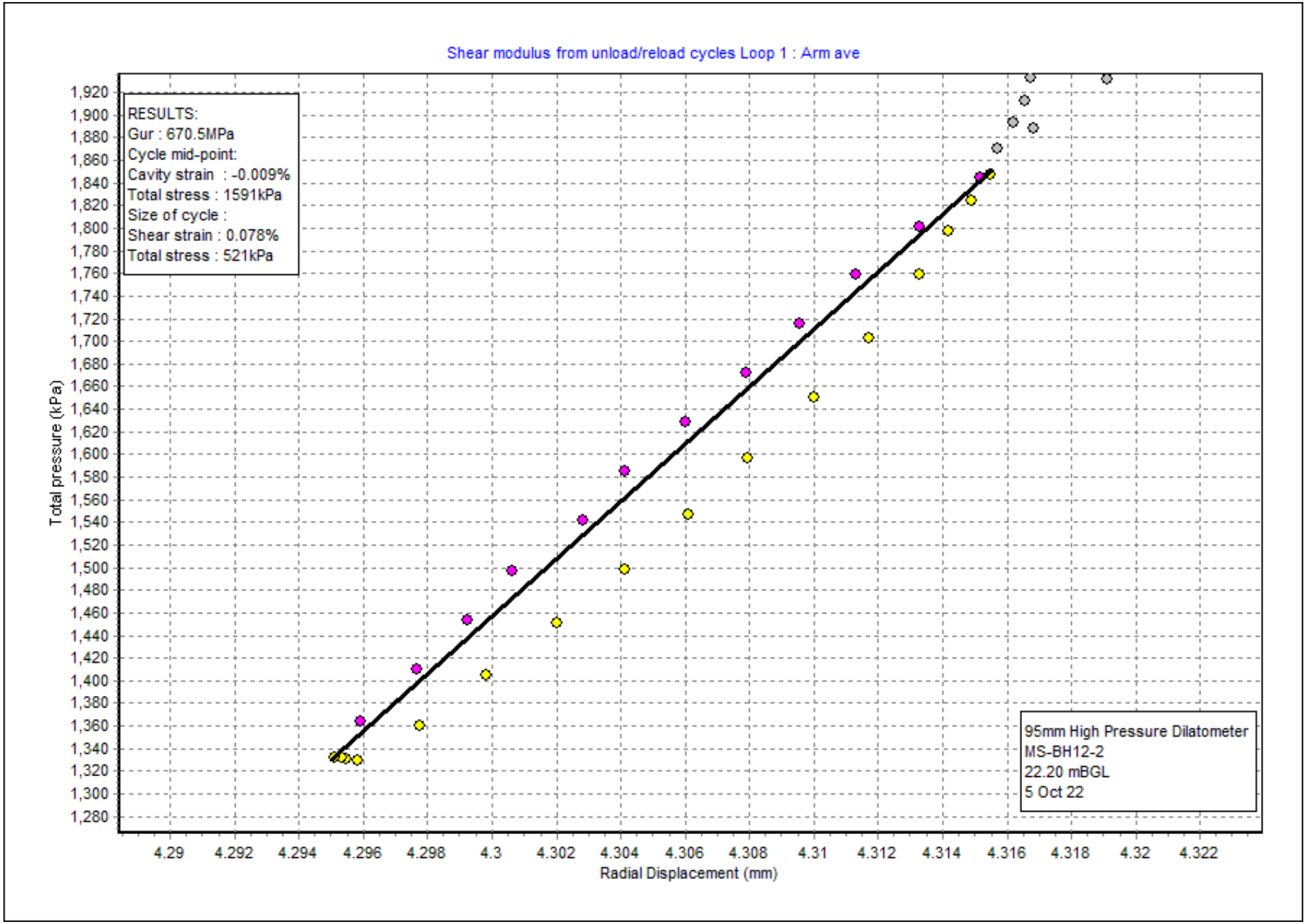

Shear modulus from unload/reload cycles Loop 5 : Arm ave
RESULTS:
Gur : 3004.0MPa
Cycle mid-point:
Cavity strain : 0.614%
Total stress : 8960kPa
Size of cycle :
Shear strain : 0.156%
Total stress : 4691kPa
95mm High Pressure Dilatometer
MS-BH10-5
35.86 mBGL
26 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
12,000
11,800
11,600
11,400
11,200
11,000
10,800
10,600
10,400
10,200
10,000
9,800
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
3.585
3.59
3.595
3.6
3.605
3.61
3.615
3.62
3.625
3.63
3.635
3.64

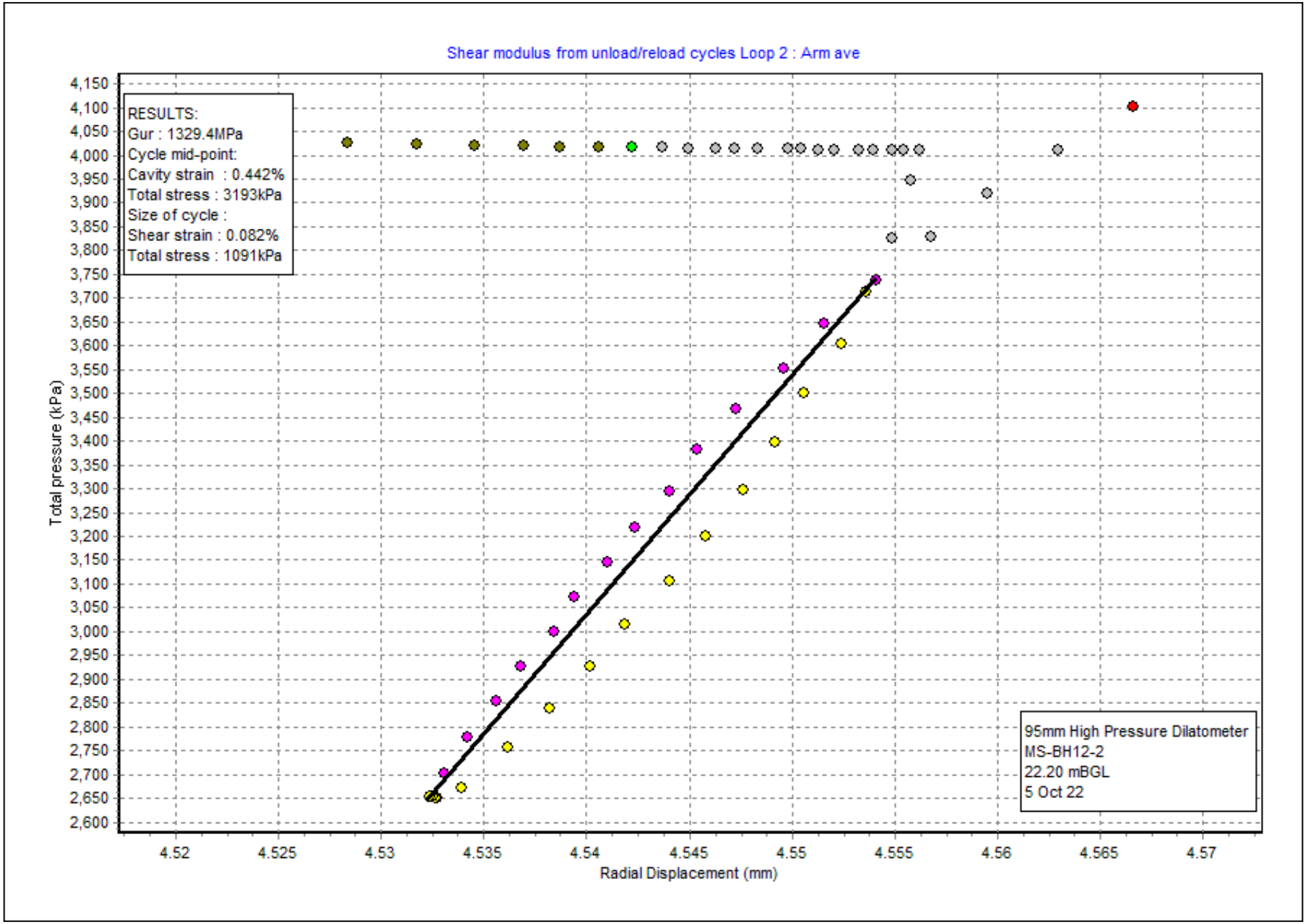

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
Total pressure (kPa)
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-2
-1.8
-1.6
-1.4
-1.2
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
Cavity strain (%)

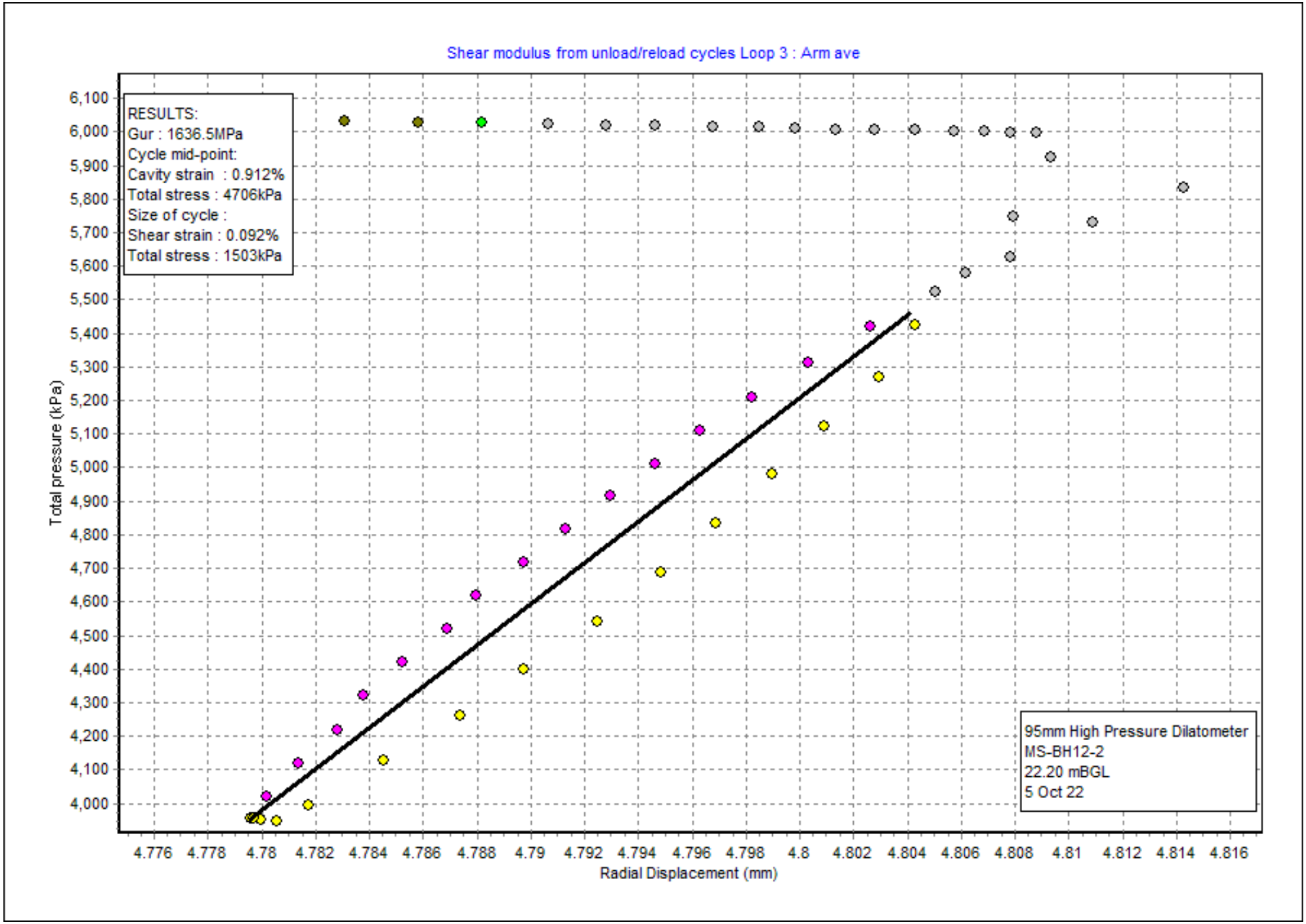

Creep readings
Total pressure (kPa)
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0.01
0.02
0.03
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
RESULTS:
Gi : 320.7MPa
Pf : 3428.0kPa
Po : 747.6kPa
Tf : 2676.9kPa
Po + Tf : 3424.5kPa
Origin : 4.239mm
Total pressure (kPa)
4
5
Radial Displacement (mm)
Shear stress at yield : Arm ave
Total pressure (kPa)
8,000
7,000
6,000
5,000
4,000
-4
Ln[shear strain]

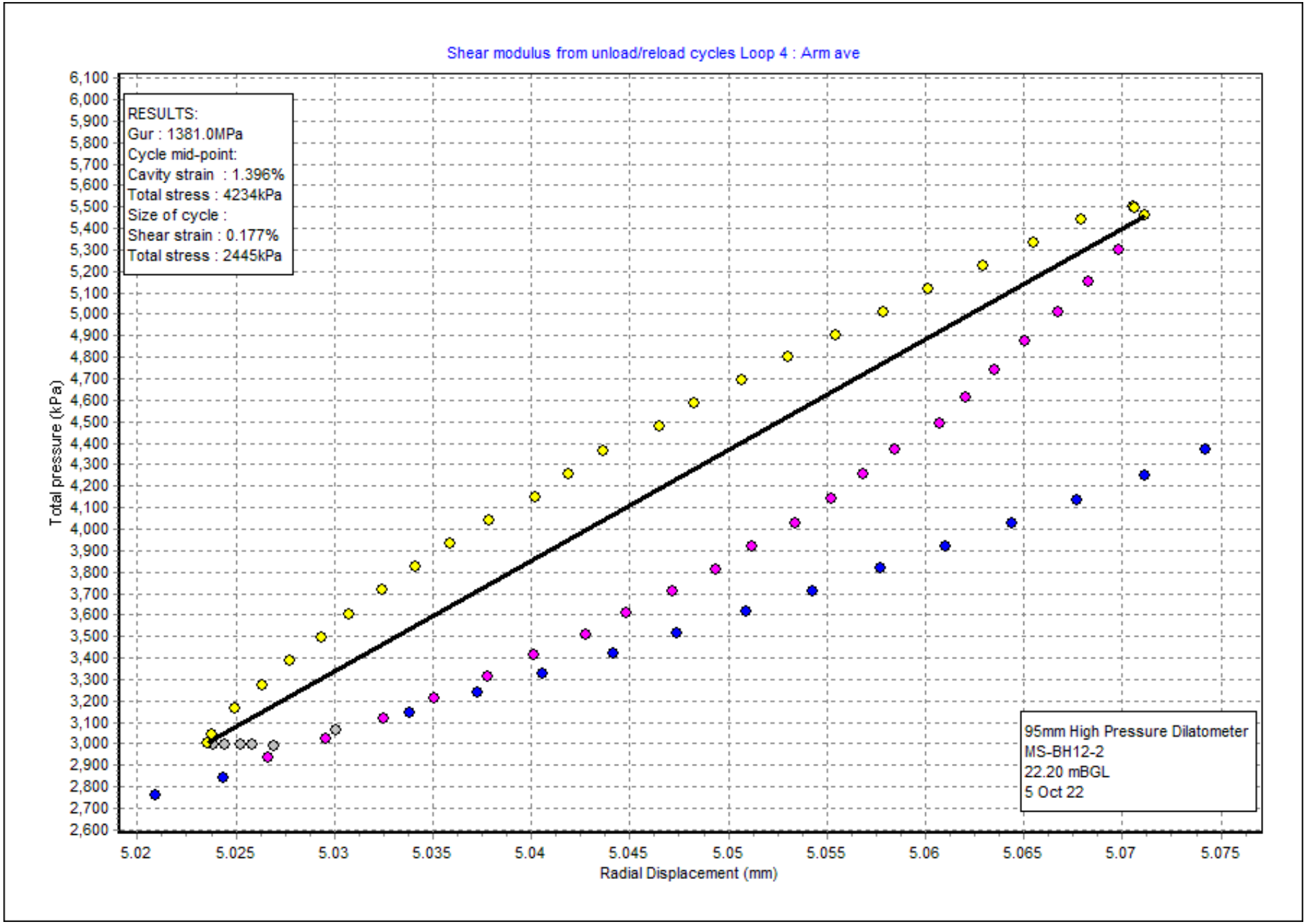

Hughes et al (1977) : Arm ave
RESULTS:
Ambient water pressure : 162.0 kPa
Residual friction angle : 35.0°
Gradient : 0.617
Friction angle : 52.3°
Dilation angle : 23.4°
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
Ln[Effective stress]
Ln[hoop strain]
9
8.95
8.9
8.85
8.8
8.75
8.7
8.65
8.6
8.55
8.5
8.45
8.4
8.35
8.3
8.25
8.2
8.15
8.1
8.05
8
7.95
7.9
7.85
7.8
7.75
7.7
7.65
7.6
7.55
-12
-11
-10
-9
-8
-7
-6
-5

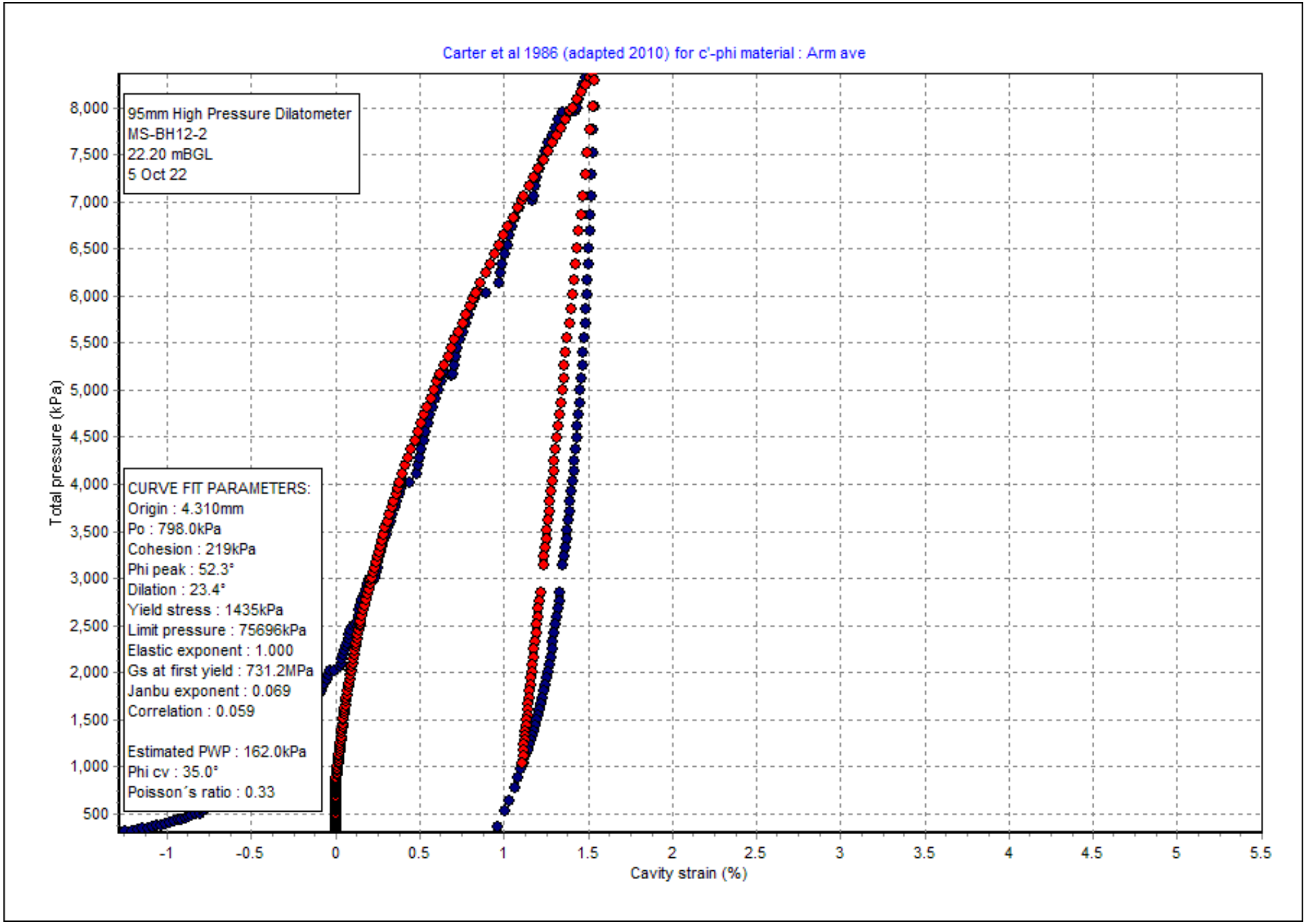

Withers et al (1989) : Arm ave
-0.2
-0.4
-0.6
-0.8
-1
-1.2
-1.4
-1.6
-1.8
-2
-2.2
-2.4
-2.6
-2.8
-3
-3.2
-3.4
-3.6
Ln[P'/P'mx]
-9
-8
-7
-6
Ln[(Emx-Ec)/(1+Emx)]
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
RESULTS:
Ambient water pressure : 162.0 kPa
Residual friction angle : 35.0°
Gradient : -3.450
Friction angle : 51.7°
Dilation angle : 22.5°

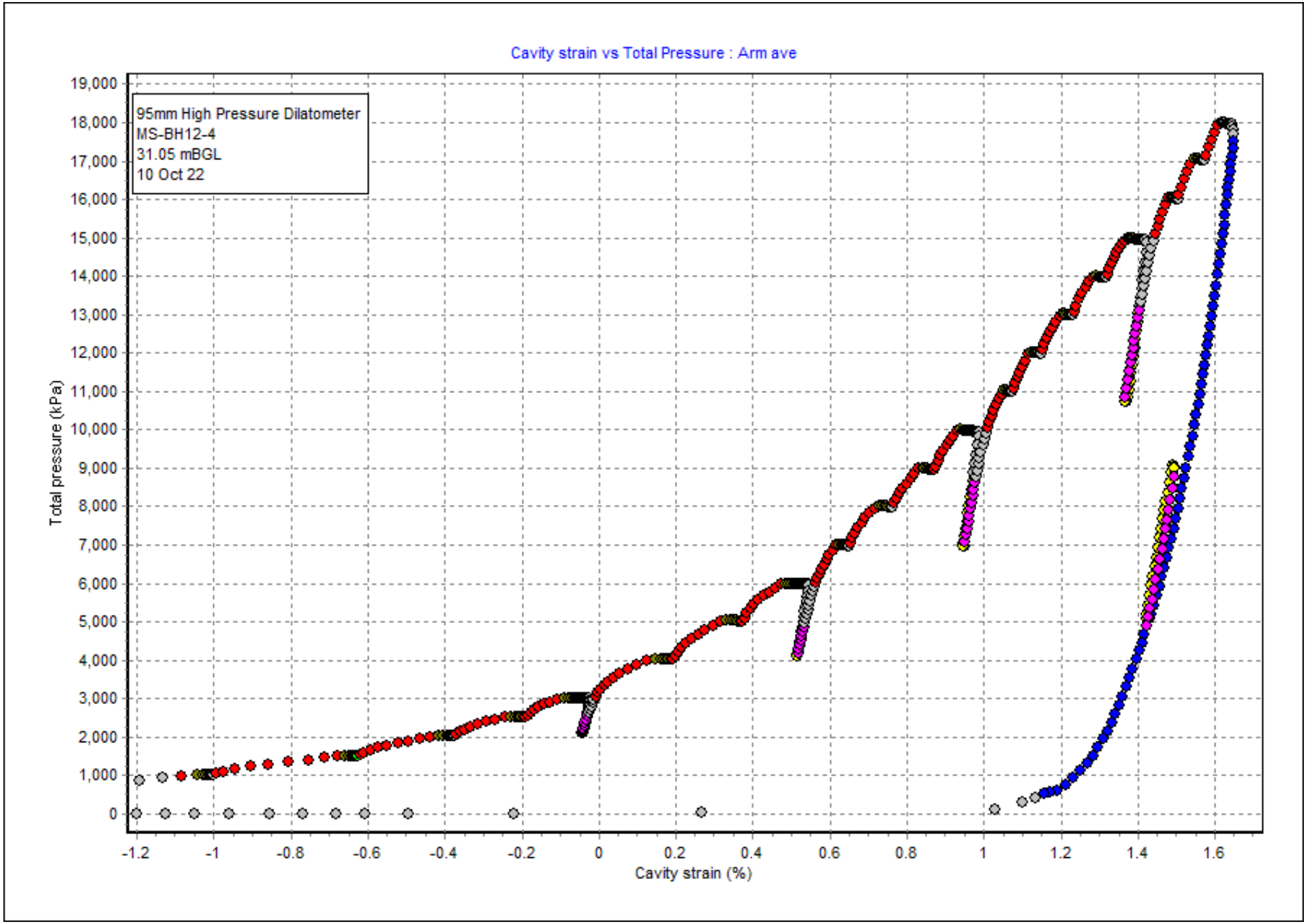

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 670.5MPa
Cycle mid-point:
Cavity strain : -0.009%
Total stress : 1591kPa
Size of cycle :
Shear strain : 0.078%
Total stress : 521kPa
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,920
1,900
1,880
1,860
1,840
1,820
1,800
1,780
1,760
1,740
1,720
1,700
1,680
1,660
1,640
1,620
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
4.29
4.292
4.294
4.296
4.298
4.3
4.302
4.304
4.306
4.308
4.31
4.312
4.314
4.316
4.318
4.32
4.322

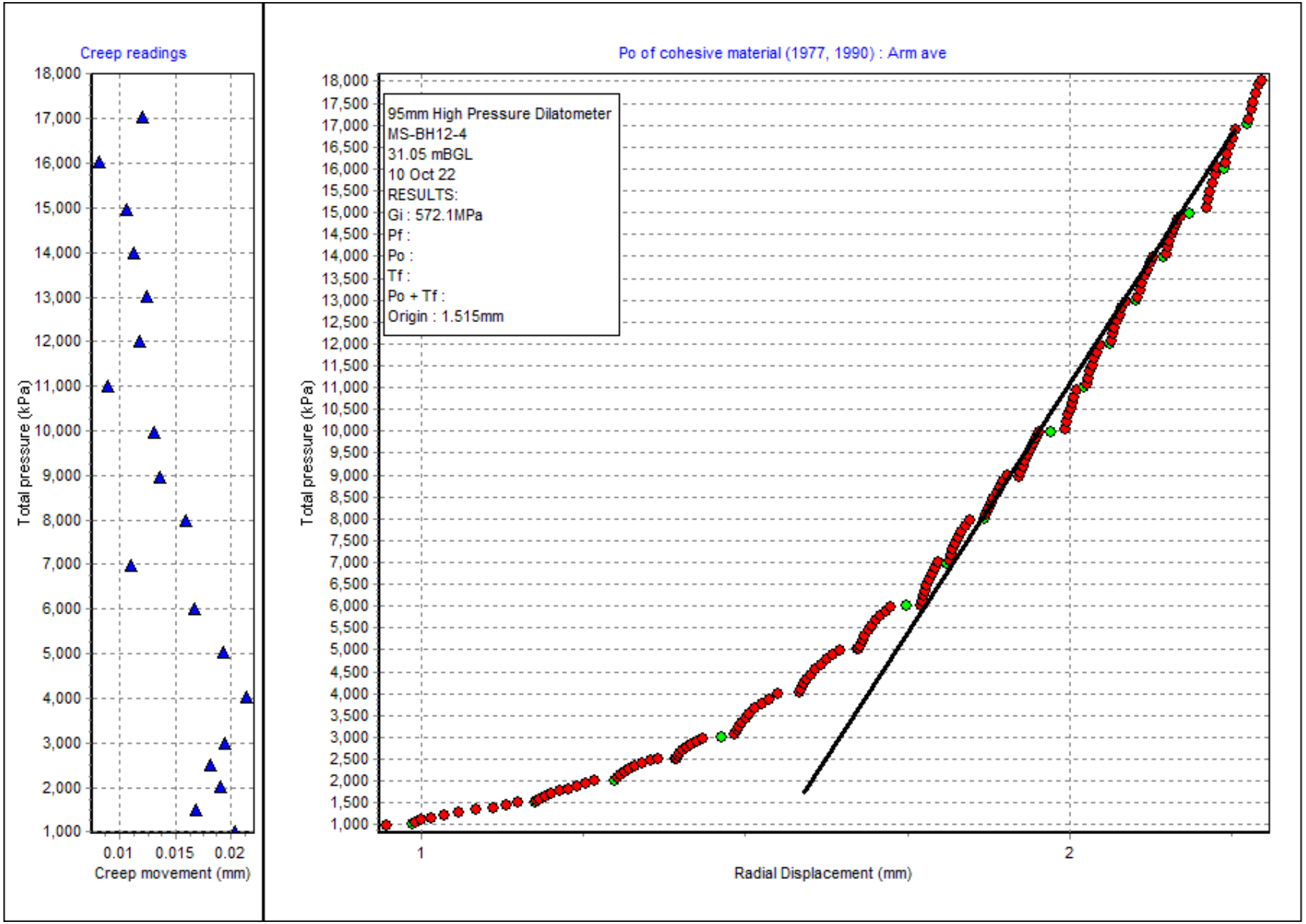

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 1329.4MPa
Cycle mid-point:
Cavity strain : 0.442%
Total stress : 3193kPa
Size of cycle :
Shear strain : 0.082%
Total stress : 1091kPa
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
4,150
4,100
4,050
4,000
3,950
3,900
3,850
3,800
3,750
3,700
3,650
3,600
3,550
3,500
3,450
3,400
3,350
3,300
3,250
3,200
3,150
3,100
3,050
3,000
2,950
2,900
2,850
2,800
2,750
2,700
2,650
2,600
4.52
4.525
4.53
4.535
4.54
4.545
4.55
4.555
4.56
4.565
4.57

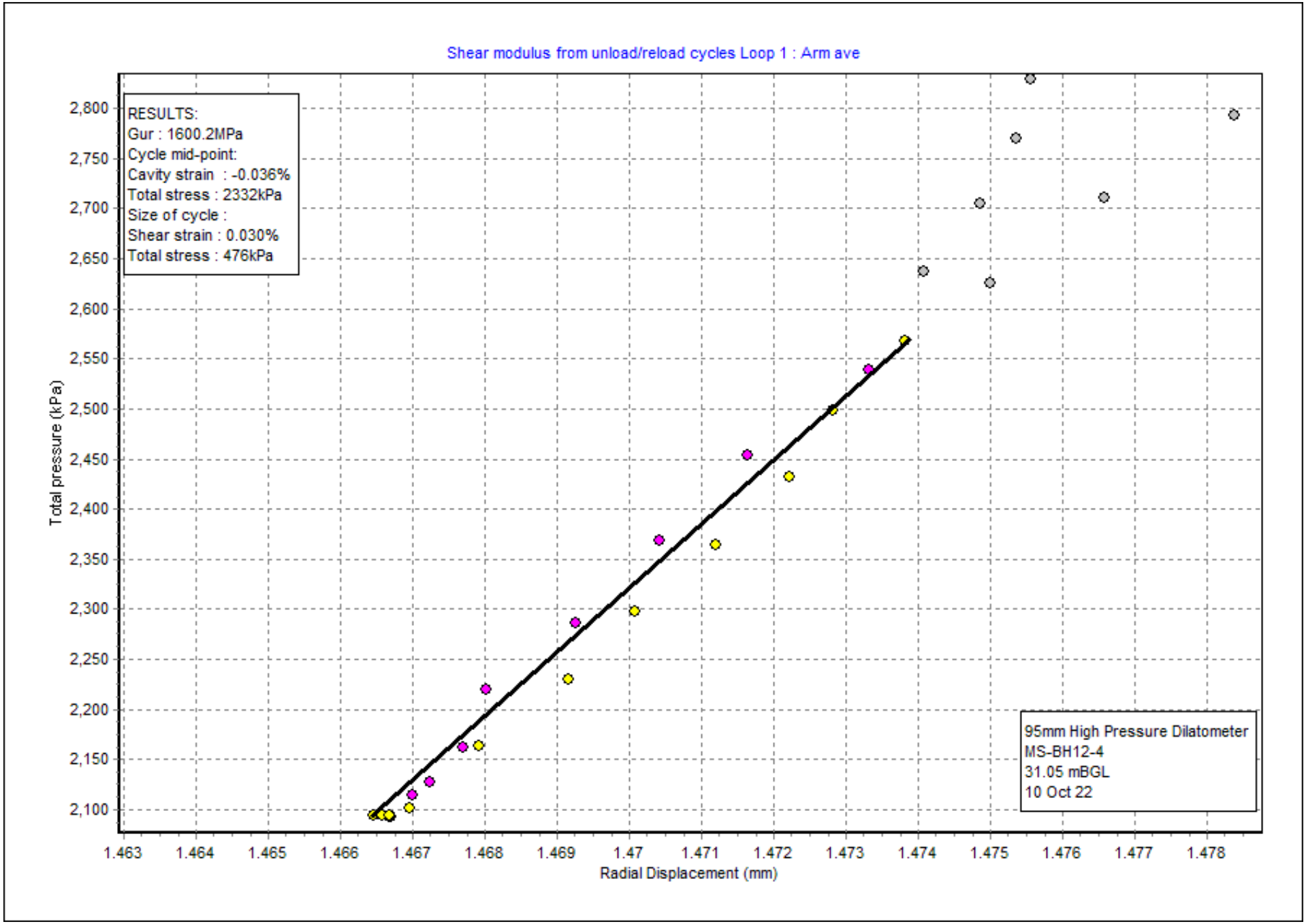

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 1636.5MPa
Cycle mid-point:
Cavity strain : 0.912%
Total stress : 4706kPa
Size of cycle :
Shear strain : 0.092%
Total stress : 1503kPa
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
Total pressure (kPa)
6,100
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
Radial Displacement (mm)
4.776
4.778
4.78
4.782
4.784
4.786
4.788
4.79
4.792
4.794
4.796
4.798
4.8
4.802
4.804
4.806
4.808
4.81
4.812
4.814
4.816

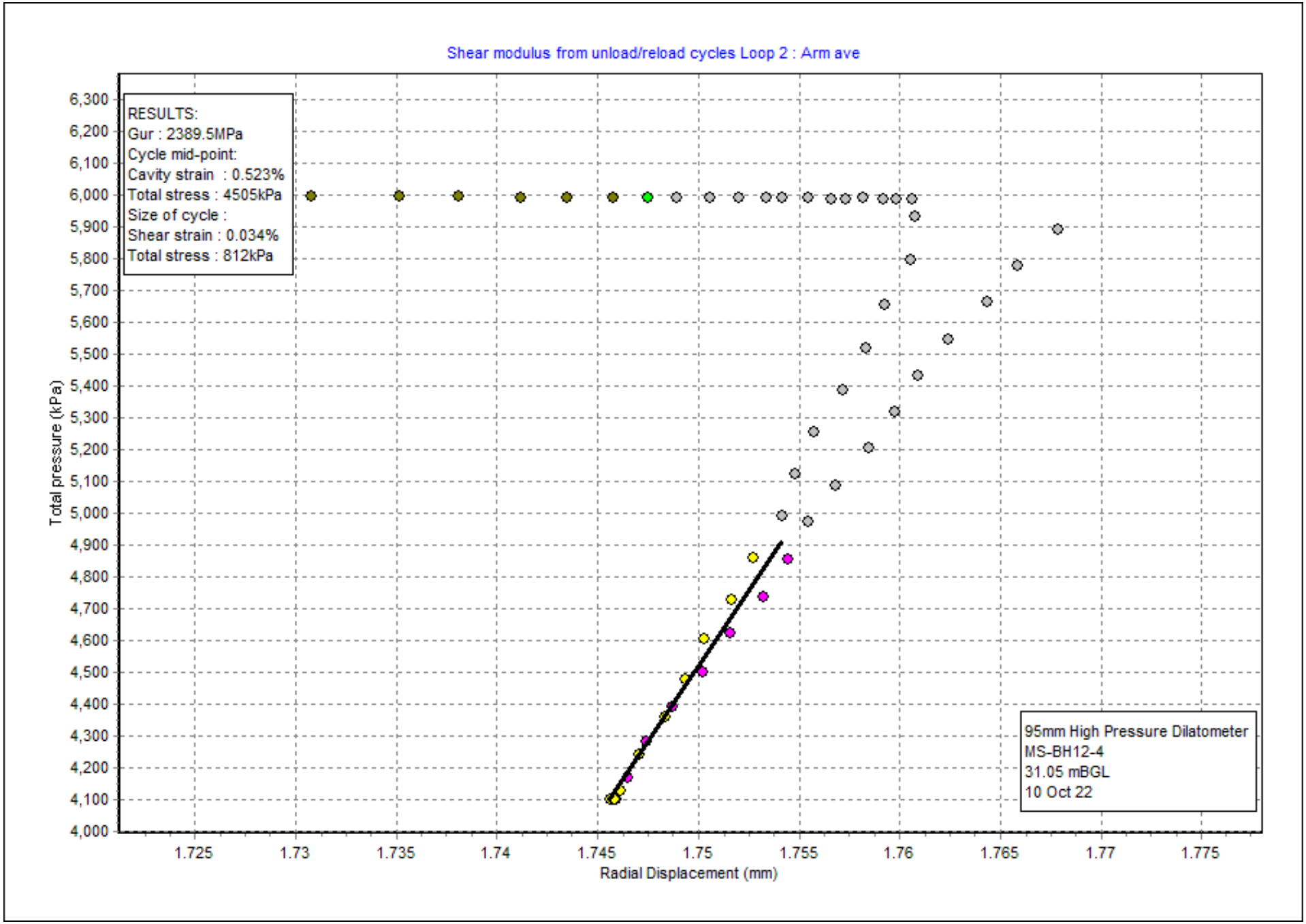

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 1381.0MPa
Cycle mid-point:
Cavity strain : 1.396%
Total stress : 4234kPa
Size of cycle :
Shear strain : 0.177%
Total stress : 2445kPa
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
6,100
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
3,800
3,700
3,600
3,500
3,400
3,300
3,200
3,100
3,000
2,900
2,800
2,700
2,600
5.02
5.025
5.03
5.035
5.04
5.045
5.05
5.055
5.06
5.065
5.07
5.075

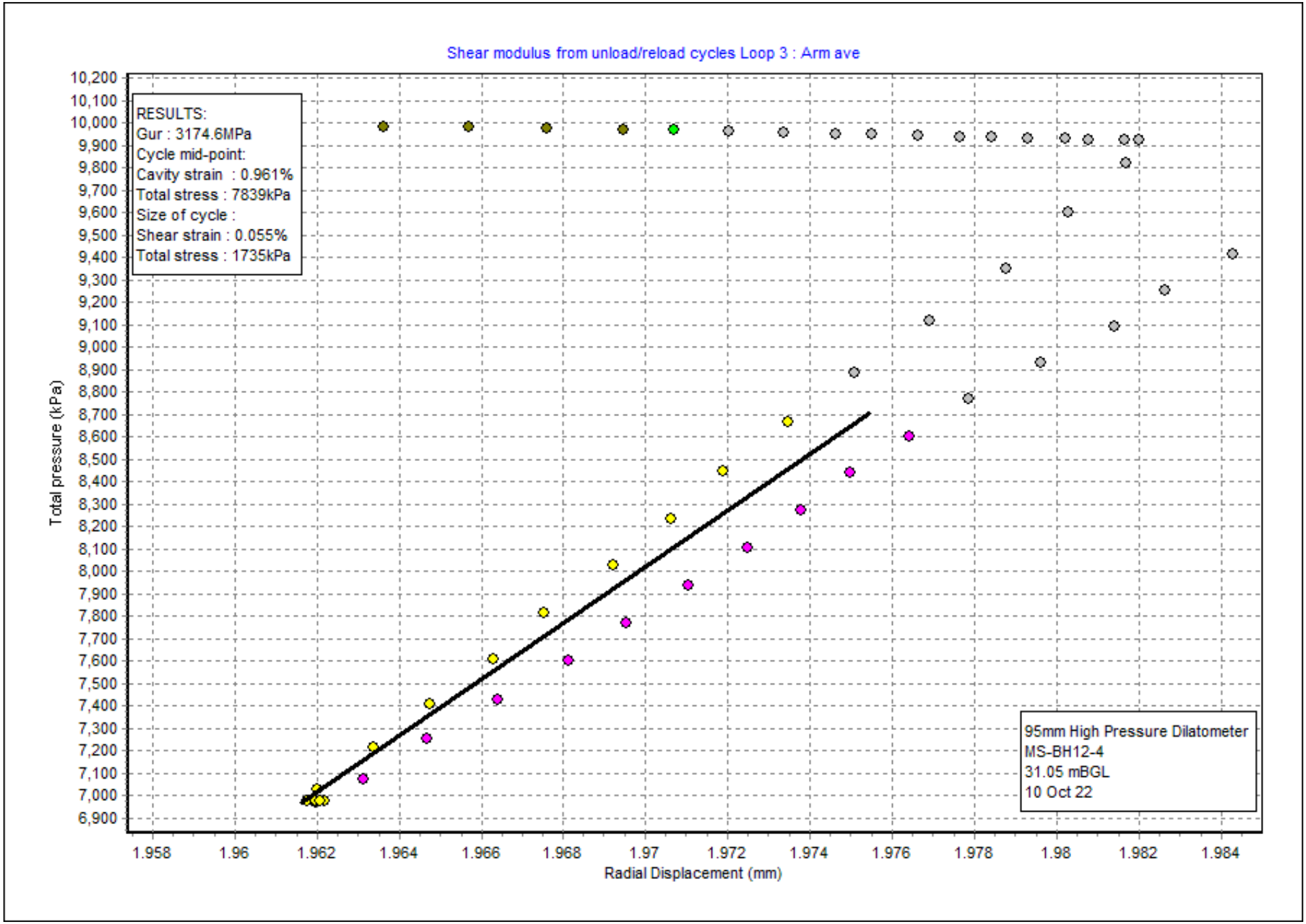

Carter et al 1986 (adapted 2010) for c'-phi material : Arm ave
95mm High Pressure Dilatometer
MS-BH12-2
22.20 mBGL
5 Oct 22
CURVE FIT PARAMETERS:
Origin : 4.310mm
Po : 798.0kPa
Cohesion : 219kPa
Phi peak : 52.3°
Dilation : 23.4°
Yield stress : 1435kPa
Limit pressure : 75696kPa
Elastic exponent : 1.000
Gs at first yield : 731.2MPa
Janbu exponent : 0.069
Correlation : 0.059
Estimated PWP : 162.0kPa
Phi cv : 35.0°
Poisson´s ratio : 0.33
Total pressure (kPa)
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
Cavity strain (%)

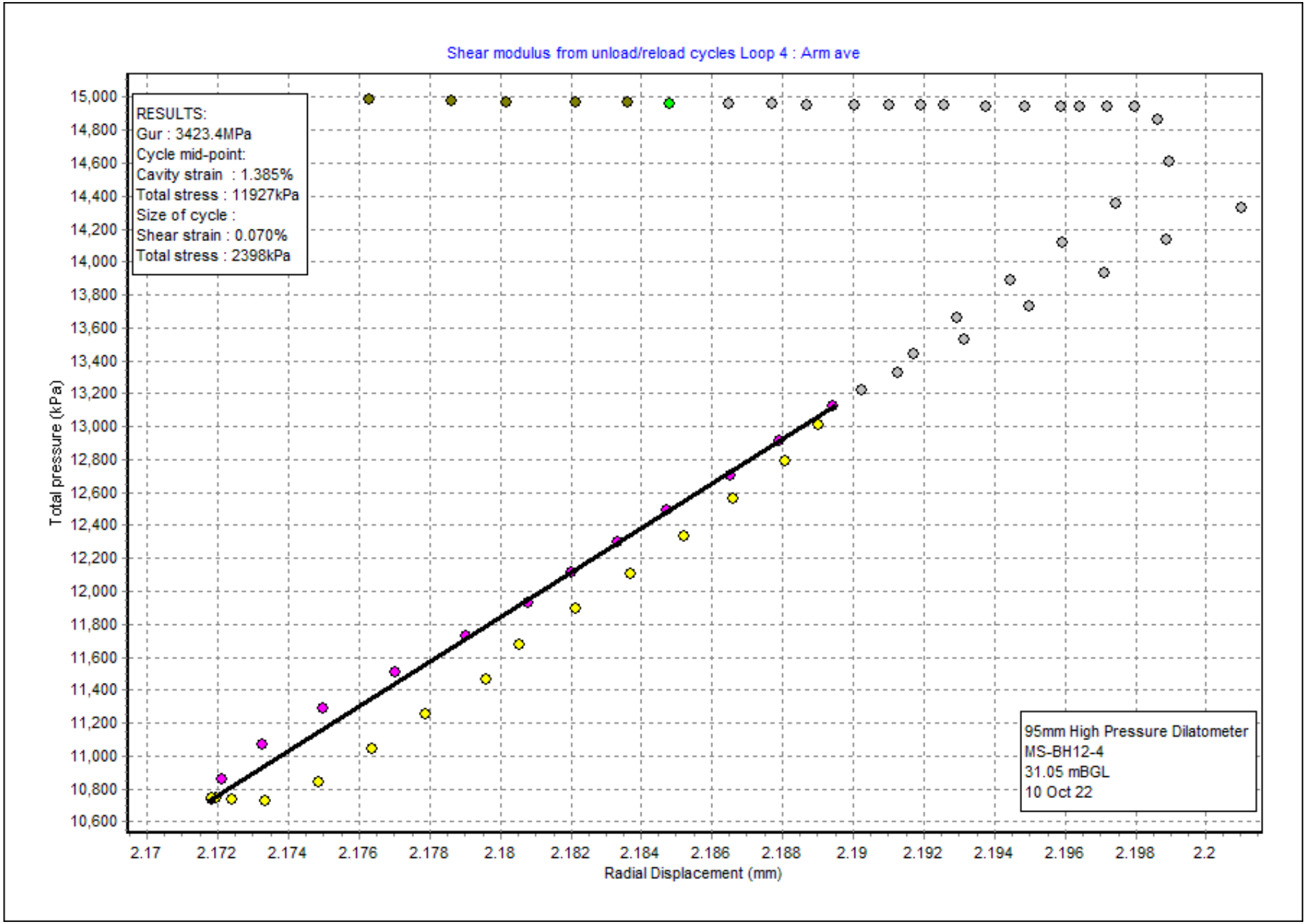

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH12-4
31.05 mBGL
10 Oct 22
Total pressure (kPa)
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-1.2
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
Cavity strain (%)

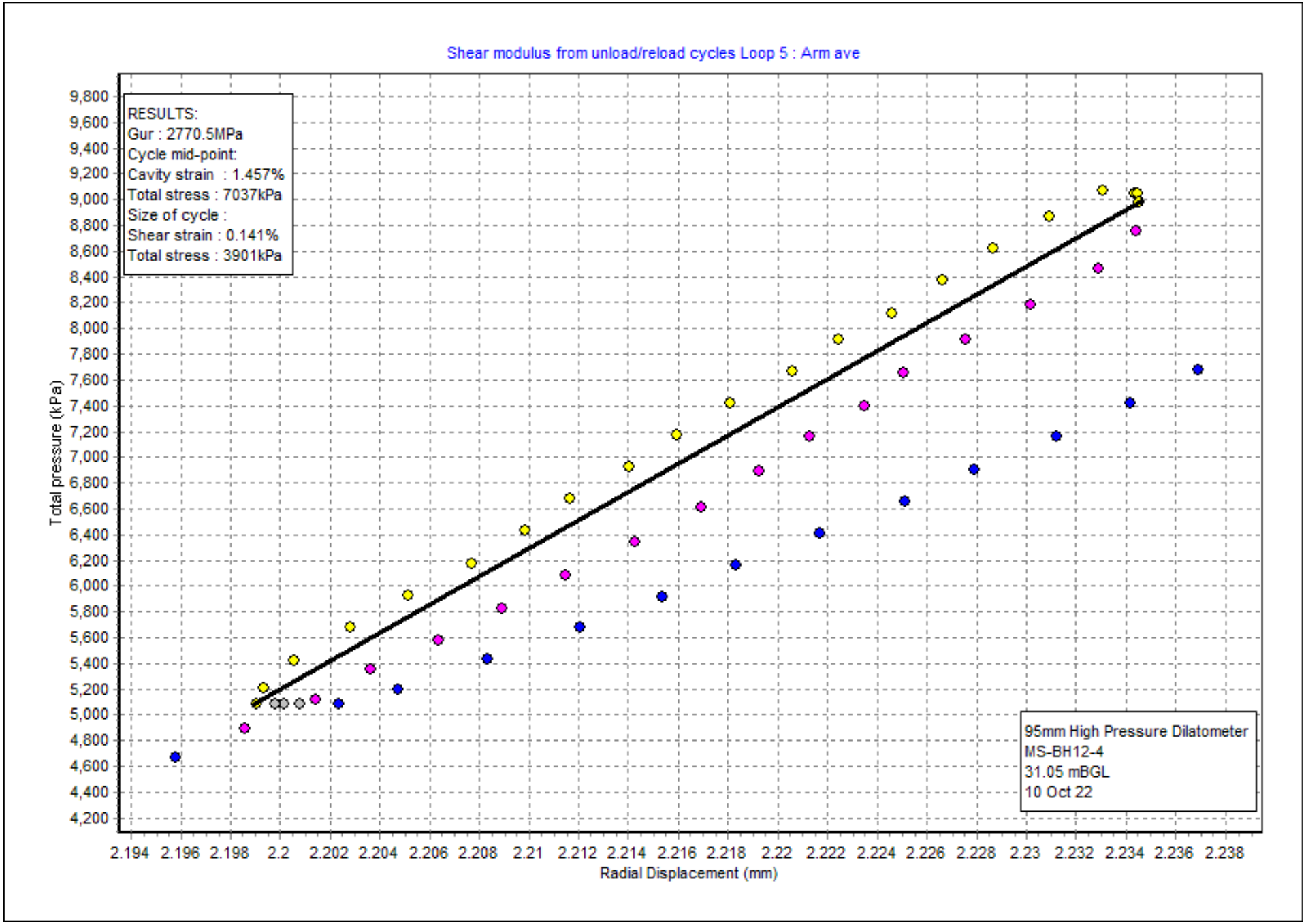

Creep readings
Total pressure (kPa)
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0.01
0.015
0.02
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH12-4
31.05 mBGL
10 Oct 22
RESULTS:
Gi : 572.1MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 1.515mm
Total pressure (kPa)
18,000
17,500
17,000
16,500
16,000
15,500
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
1
2
Radial Displacement (mm)

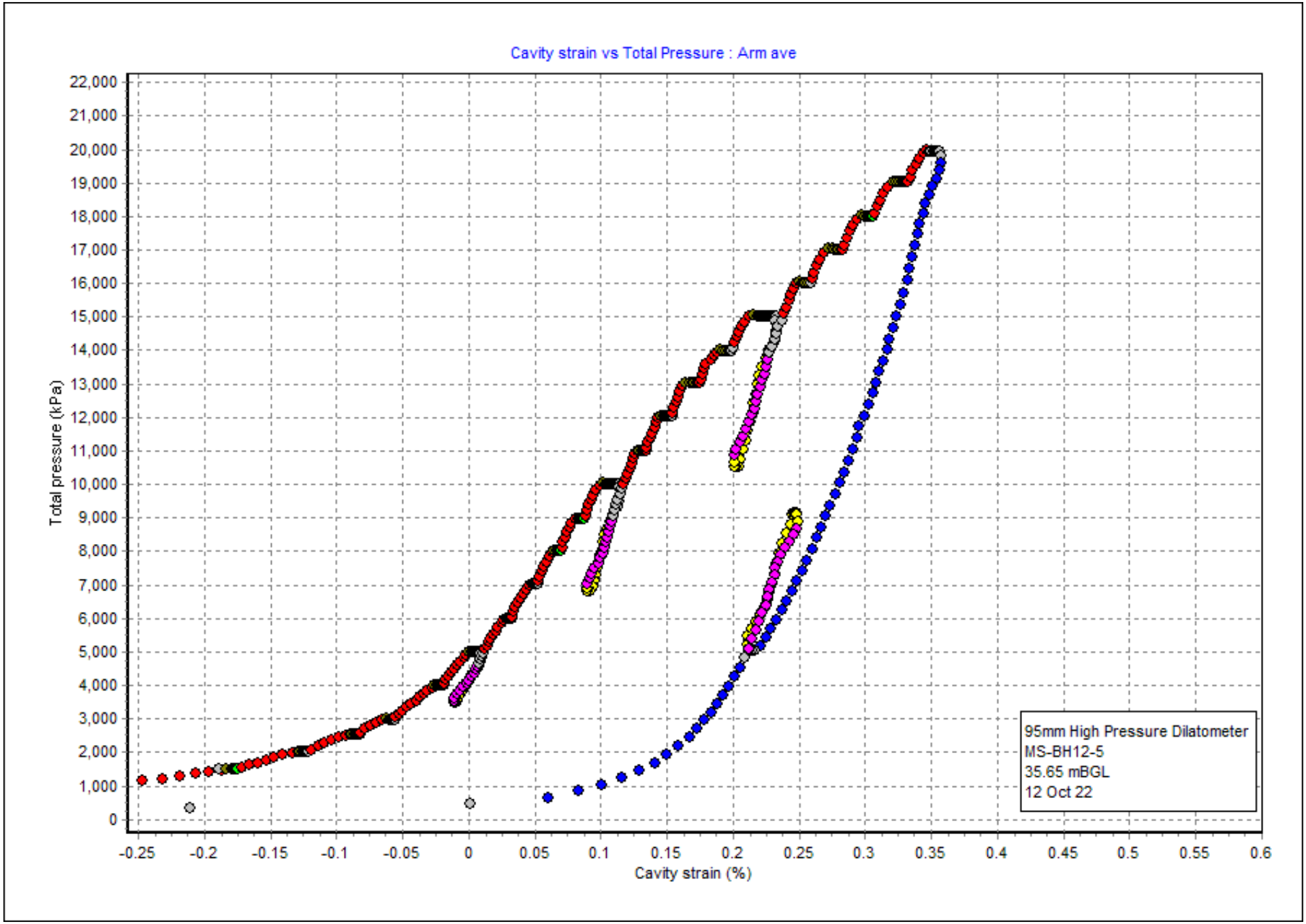

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1600.2MPa
Cycle mid-point:
Cavity strain : -0.036%
Total stress : 2332kPa
Size of cycle :
Shear strain : 0.030%
Total stress : 476kPa
95mm High Pressure Dilatometer
MS-BH12-4
31.05 mBGL
10 Oct 22
Total pressure (kPa)
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
Radial Displacement (mm)
1.463
1.464
1.465
1.466
1.467
1.468
1.469
1.47
1.471
1.472
1.473
1.474
1.475
1.476
1.477
1.478

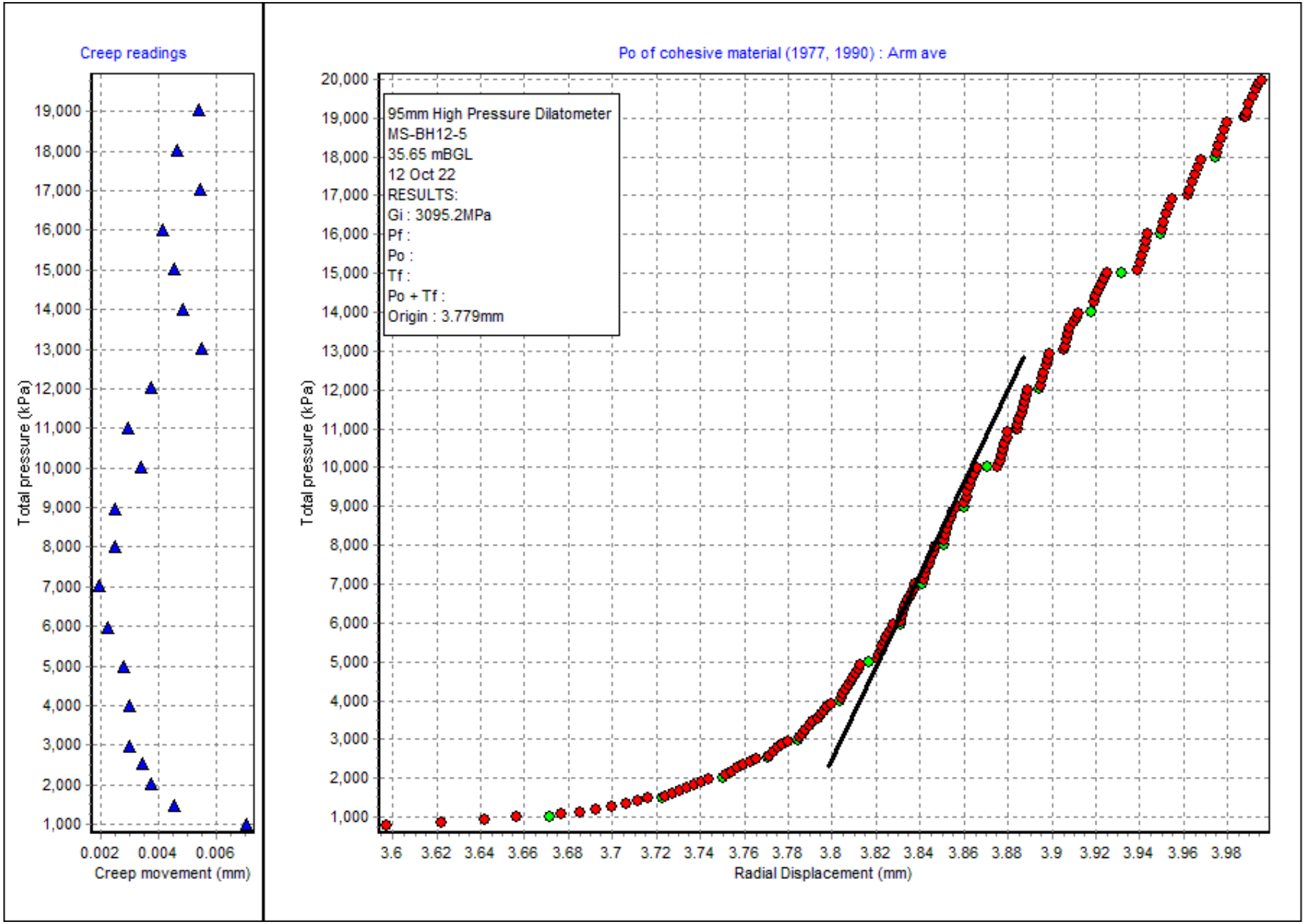

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 2389.5MPa
Cycle mid-point:
Cavity strain : 0.523%
Total stress : 4505kPa
Size of cycle :
Shear strain : 0.034%
Total stress : 812kPa
95mm High Pressure Dilatometer
MS-BH12-4
31.05 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
6,300
6,200
6,100
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
1.725
1.73
1.735
1.74
1.745
1.75
1.755
1.76
1.765
1.77
1.775

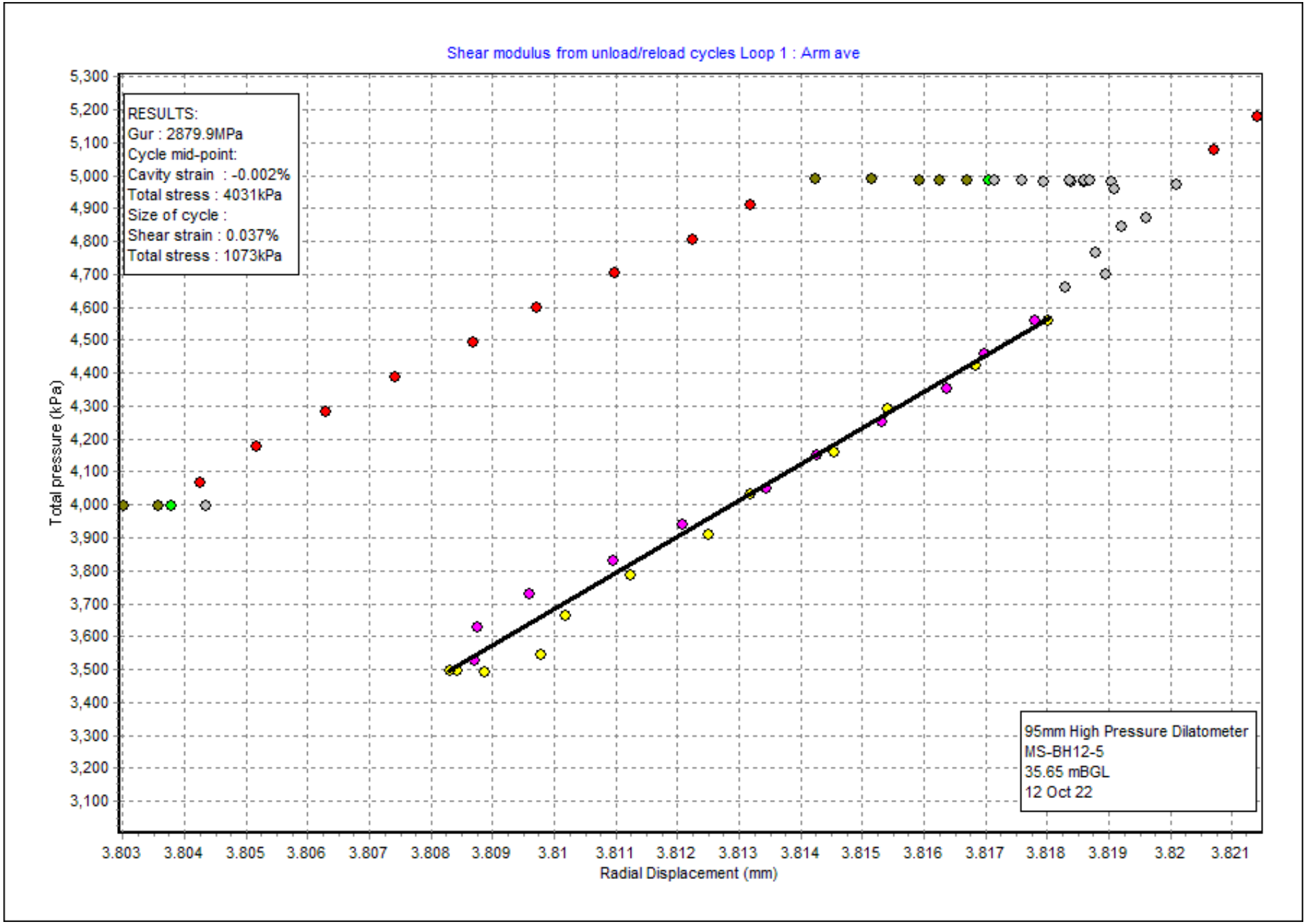

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 3174.6MPa
Cycle mid-point:
Cavity strain : 0.961%
Total stress : 7839kPa
Size of cycle :
Shear strain : 0.055%
Total stress : 1735kPa
95mm High Pressure Dilatometer
MS-BH12-4
31.05 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
10,200
10,100
10,000
9,900
9,800
9,700
9,600
9,500
9,400
9,300
9,200
9,100
9,000
8,900
8,800
8,700
8,600
8,500
8,400
8,300
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
1.958
1.96
1.962
1.964
1.966
1.968
1.97
1.972
1.974
1.976
1.978
1.98
1.982
1.984

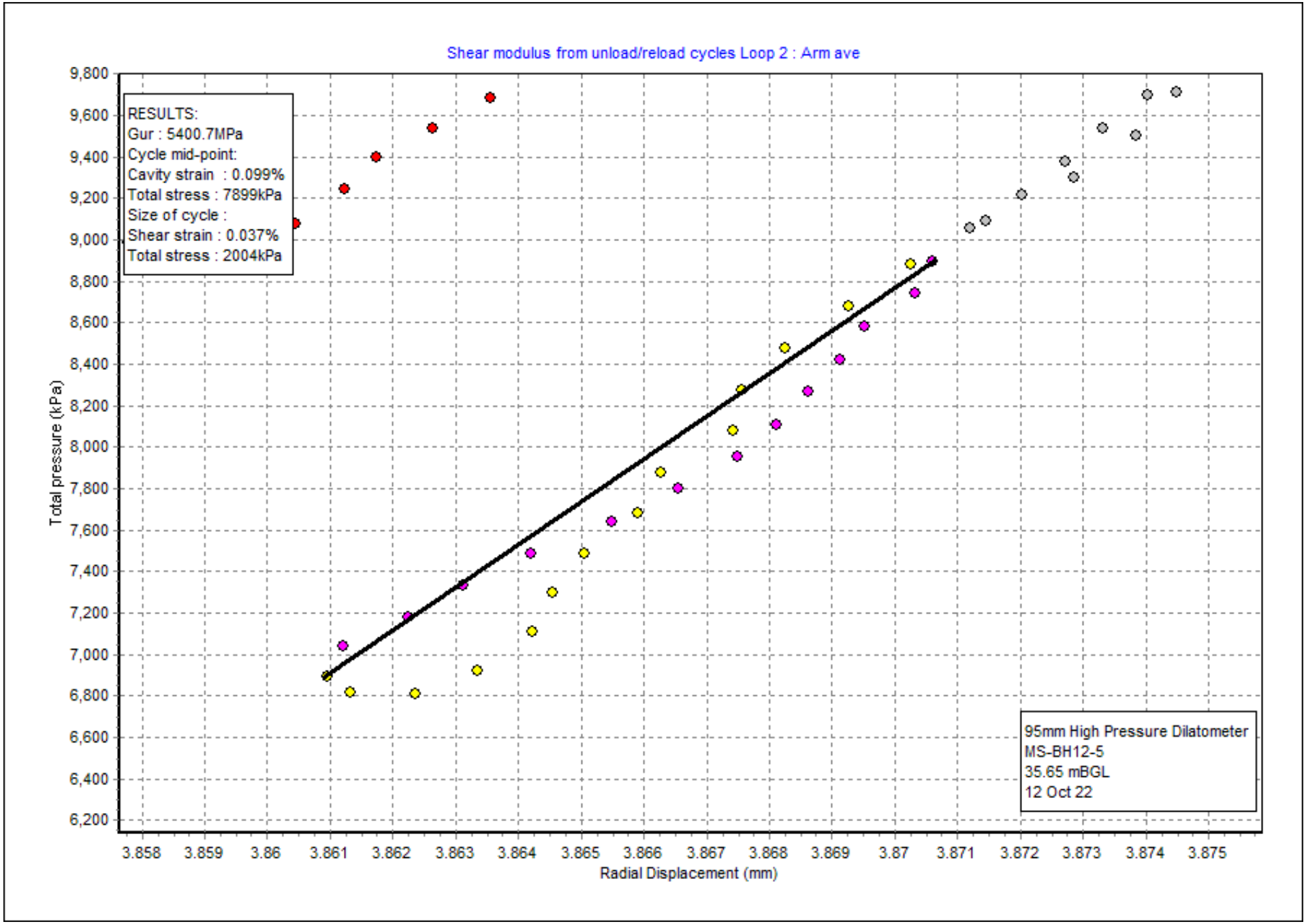

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 3423.4MPa
Cycle mid-point:
Cavity strain : 1.385%
Total stress : 11927kPa
Size of cycle :
Shear strain : 0.070%
Total stress : 2398kPa
95mm High Pressure Dilatometer
MS-BH12-4
31.05 mBGL
10 Oct 22
Total pressure (kPa)
15,000
14,800
14,600
14,400
14,200
14,000
13,800
13,600
13,400
13,200
13,000
12,800
12,600
12,400
12,200
12,000
11,800
11,600
11,400
11,200
11,000
10,800
10,600
2.17
2.172
2.174
2.176
2.178
2.18
2.182
2.184
2.186
2.188
2.19
2.192
2.194
2.196
2.198
2.2
Radial Displacement (mm)

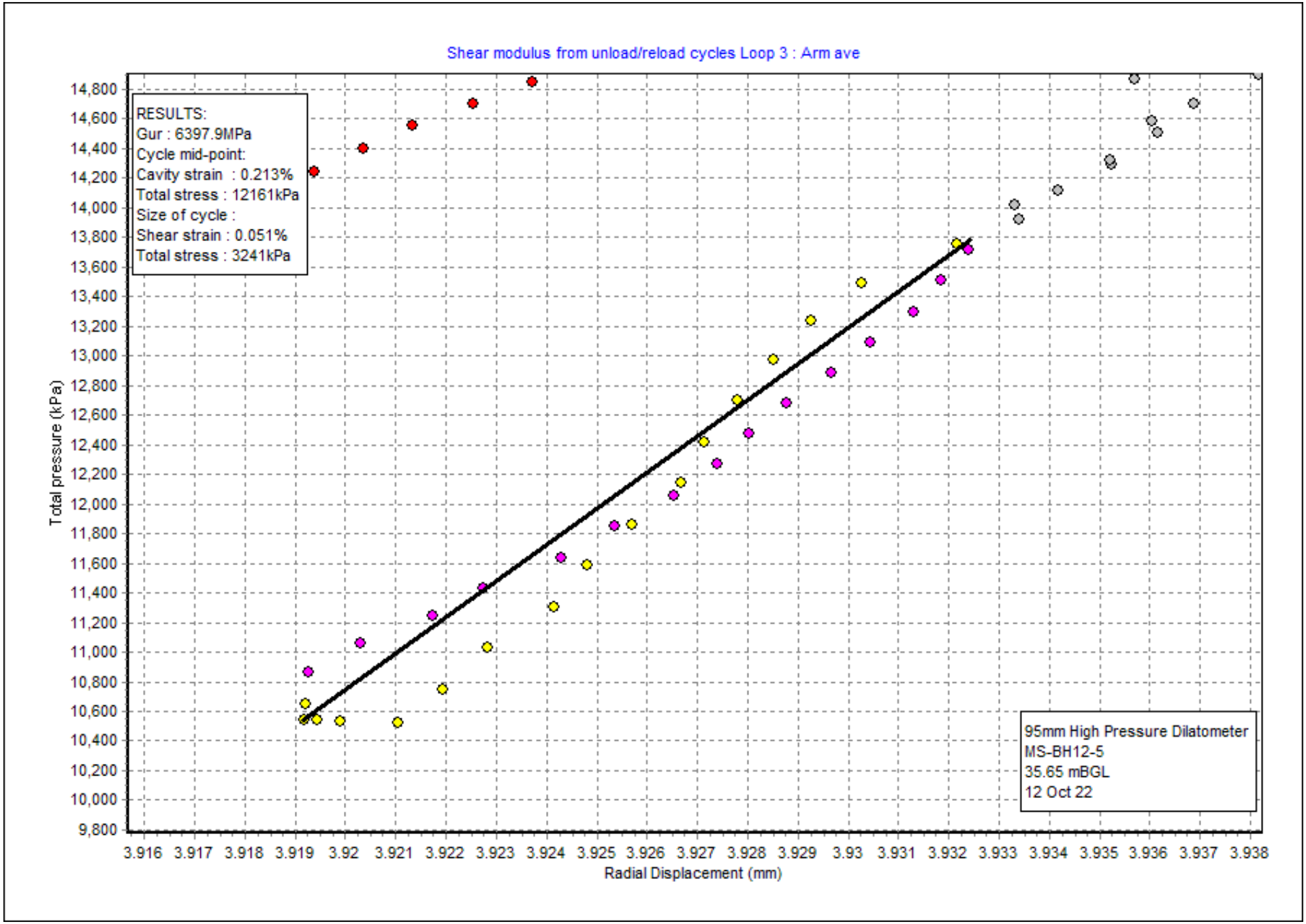

Shear modulus from unload/reload cycles Loop 5 : Arm ave
RESULTS:
Gur : 2770.5MPa
Cycle mid-point:
Cavity strain : 1.457%
Total stress : 7037kPa
Size of cycle :
Shear strain : 0.141%
Total stress : 3901kPa
95mm High Pressure Dilatometer
MS-BH12-4
31.05 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
9,800
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
2.194
2.196
2.198
2.2
2.202
2.204
2.206
2.208
2.21
2.212
2.214
2.216
2.218
2.22
2.222
2.224
2.226
2.228
2.23
2.232
2.234
2.236
2.238

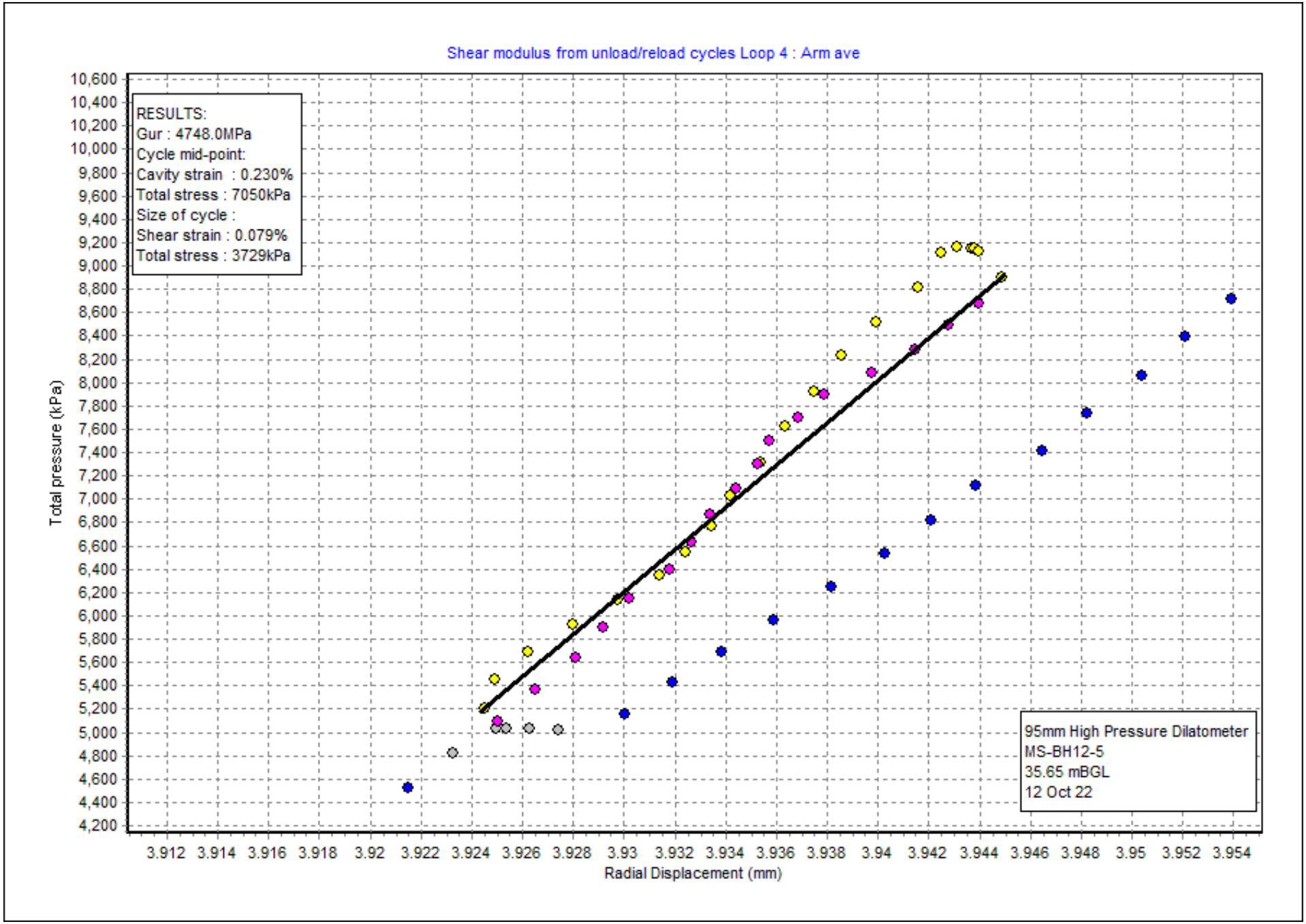

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
22,000
21,000
20,000
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
-0.25
-0.2
-0.15
-0.1
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
Cavity strain (%)
95mm High Pressure Dilatometer
MS-BH12-5
35.65 mBGL
12 Oct 22

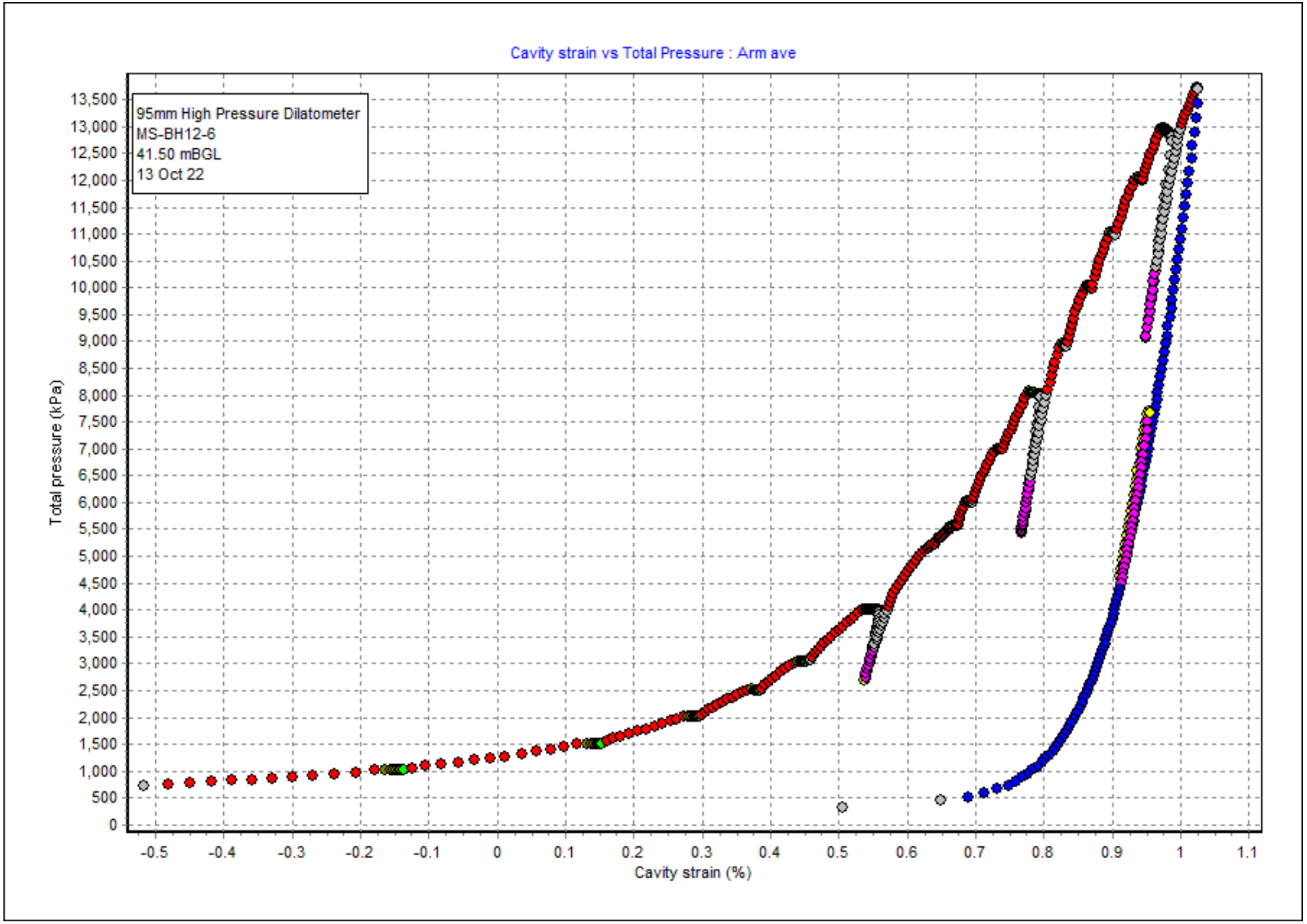

Creep readings
Total pressure (kPa)
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0.002
0.004
0.006
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH12-5
35.65 mBGL
12 Oct 22
RESULTS:
Gi : 3095.2MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.779mm
Total pressure (kPa)
20,000
19,000
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
3.6
3.62
3.64
3.66
3.68
3.7
3.72
3.74
3.76
3.78
3.8
3.82
3.84
3.86
3.88
3.9
3.92
3.94
3.96
3.98
Radial Displacement (mm)

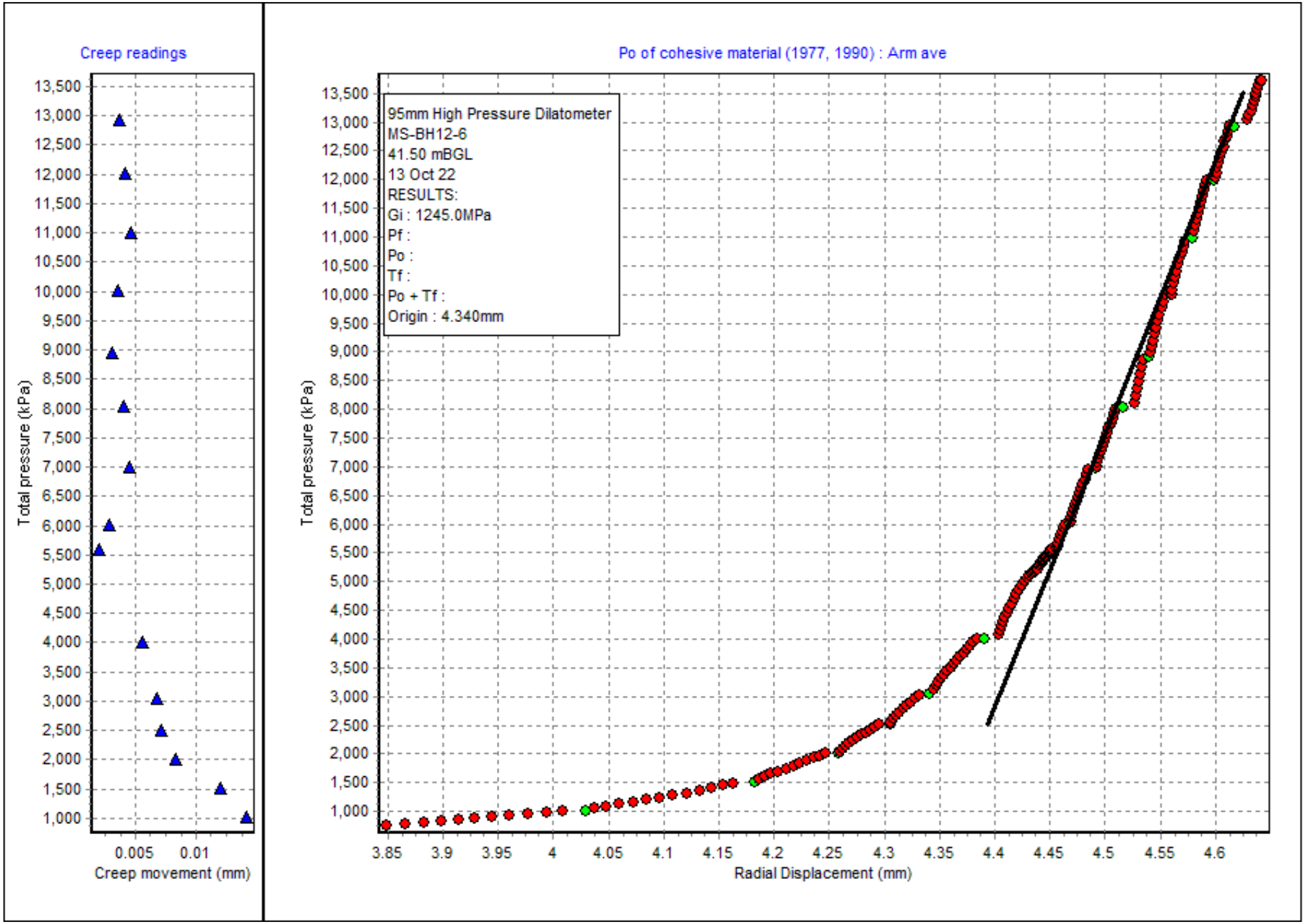

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 2879.9MPa
Cycle mid-point:
Cavity strain : -0.002%
Total stress : 4031kPa
Size of cycle :
Shear strain : 0.037%
Total stress : 1073kPa
95mm High Pressure Dilatometer
MS-BH12-5
35.65 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
3,800
3,700
3,600
3,500
3,400
3,300
3,200
3,100
3.803
3.804
3.805
3.806
3.807
3.808
3.809
3.81
3.811
3.812
3.813
3.814
3.815
3.816
3.817
3.818
3.819
3.82
3.821

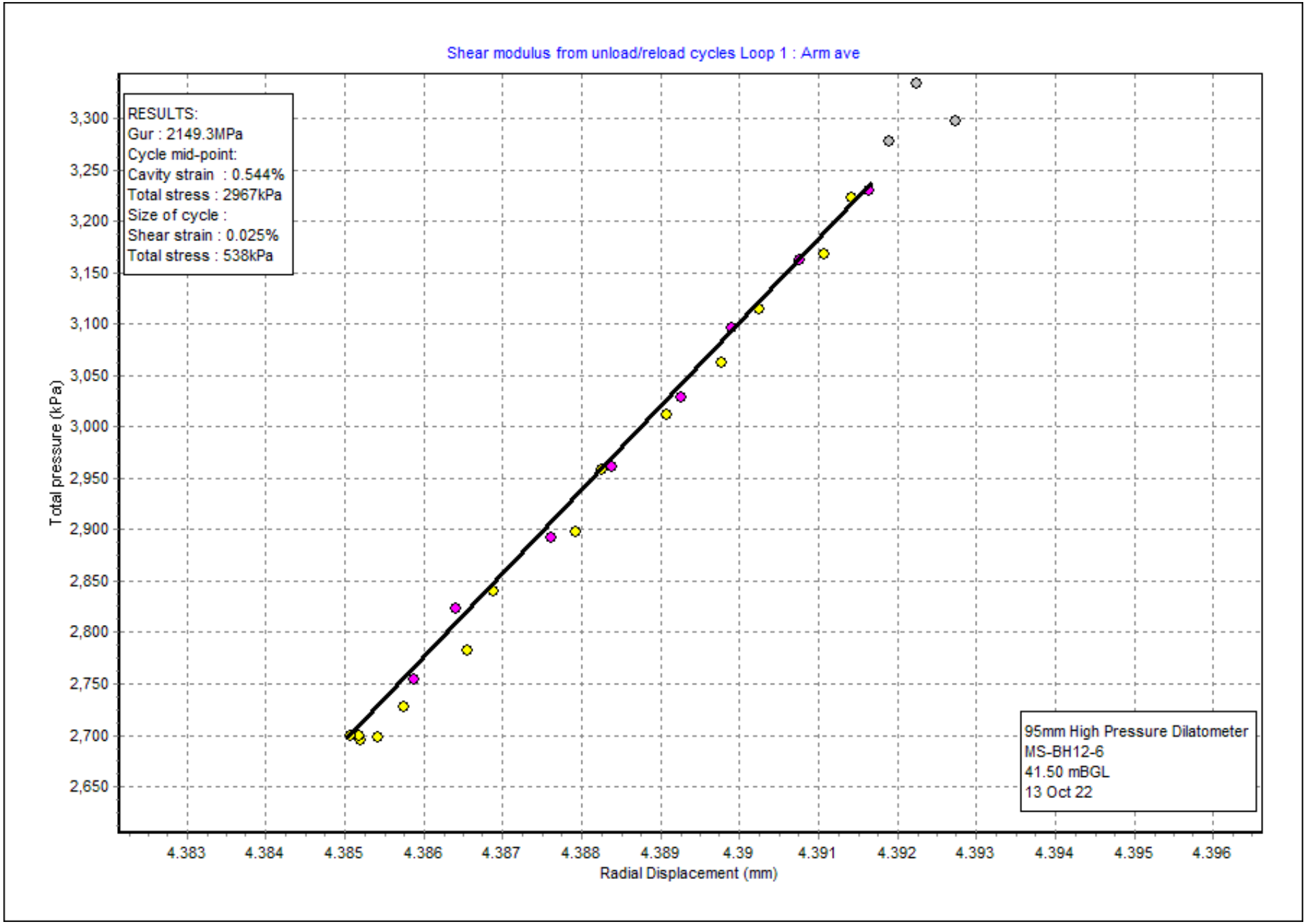

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 5400.7MPa
Cycle mid-point:
Cavity strain : 0.099%
Total stress : 7899kPa
Size of cycle :
Shear strain : 0.037%
Total stress : 2004kPa
95mm High Pressure Dilatometer
MS-BH12-5
35.65 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
9,800
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
3.858
3.859
3.86
3.861
3.862
3.863
3.864
3.865
3.866
3.867
3.868
3.869
3.87
3.871
3.872
3.873
3.874
3.875

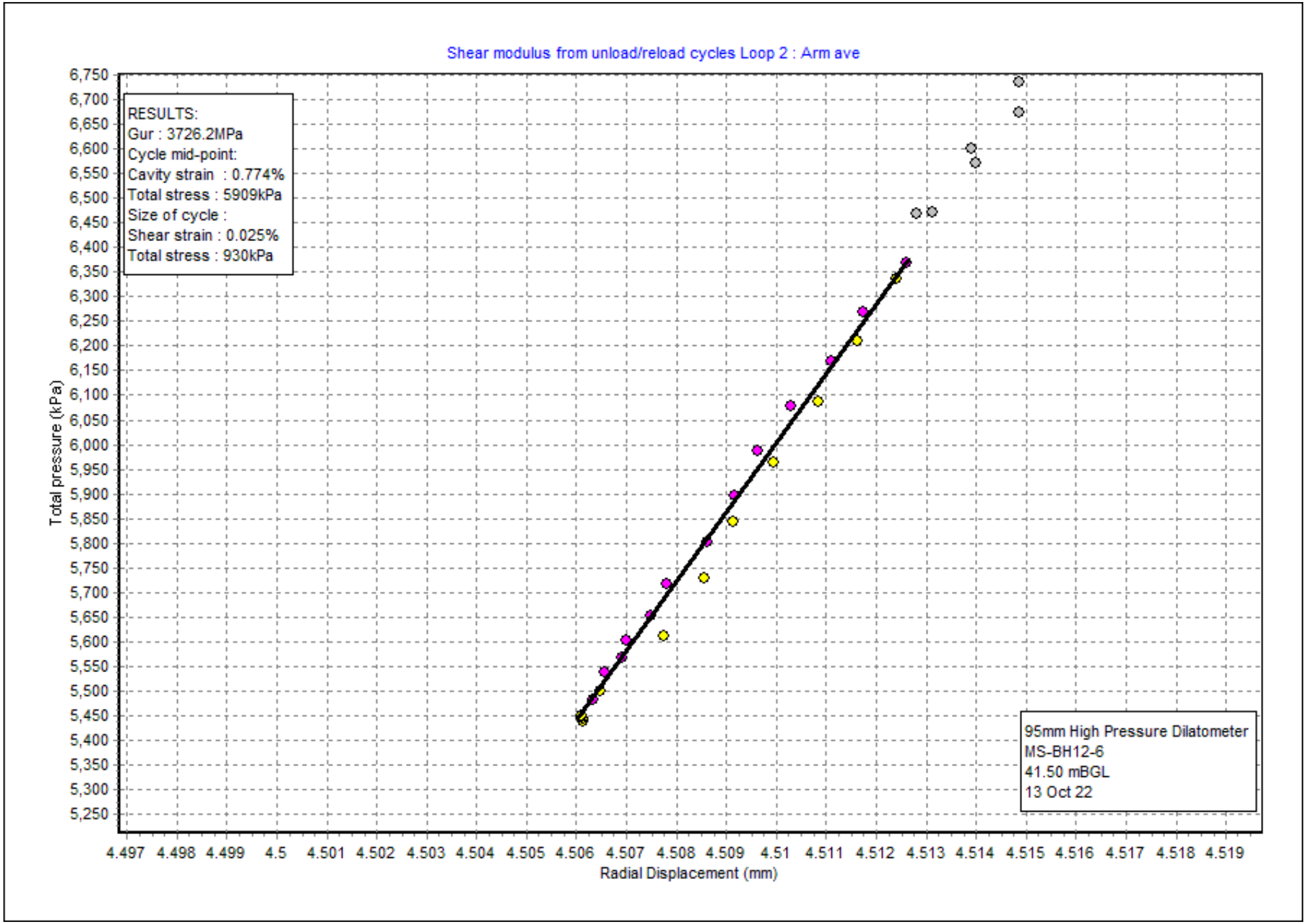

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 6397.9MPa
Cycle mid-point:
Cavity strain : 0.213%
Total stress : 12161kPa
Size of cycle :
Shear strain : 0.051%
Total stress : 3241kPa
95mm High Pressure Dilatometer
MS-BH12-5
35.65 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
14,800
14,600
14,400
14,200
14,000
13,800
13,600
13,400
13,200
13,000
12,800
12,600
12,400
12,200
12,000
11,800
11,600
11,400
11,200
11,000
10,800
10,600
10,400
10,200
10,000
9,800
3.916
3.917
3.918
3.919
3.92
3.921
3.922
3.923
3.924
3.925
3.926
3.927
3.928
3.929
3.93
3.931
3.932
3.933
3.934
3.935
3.936
3.937
3.938

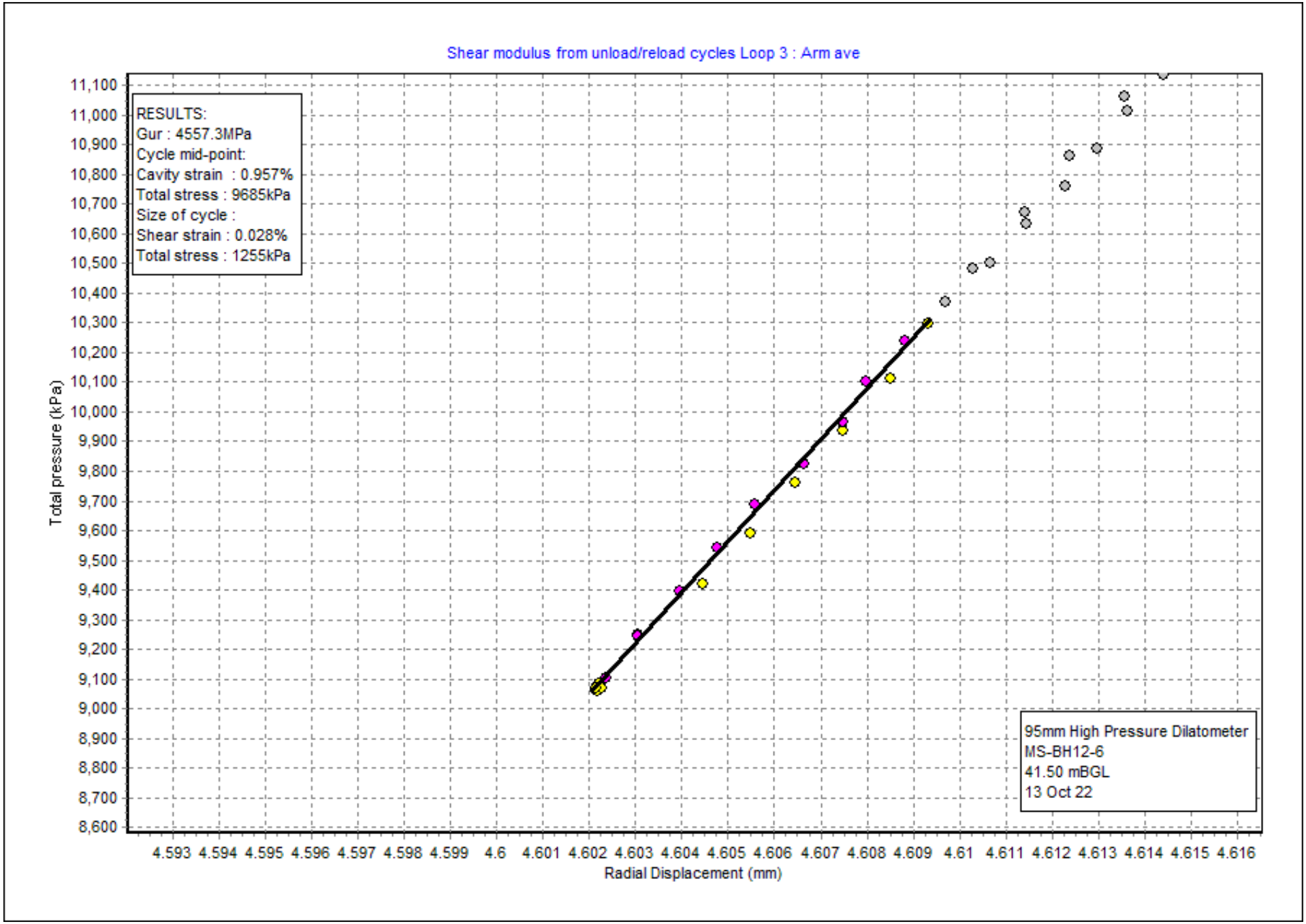

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 4748.0MPa
Cycle mid-point:
Cavity strain : 0.230%
Total stress : 7050kPa
Size of cycle :
Shear strain : 0.079%
Total stress : 3729kPa
95mm High Pressure Dilatometer
MS-BH12-5
35.65 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
10,600
10,400
10,200
10,000
9,800
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
3.912 3.914 3.916 3.918 3.92 3.922 3.924 3.926 3.928 3.93 3.932 3.934 3.936 3.938 3.94 3.942 3.944 3.946 3.948 3.95 3.952 3.954

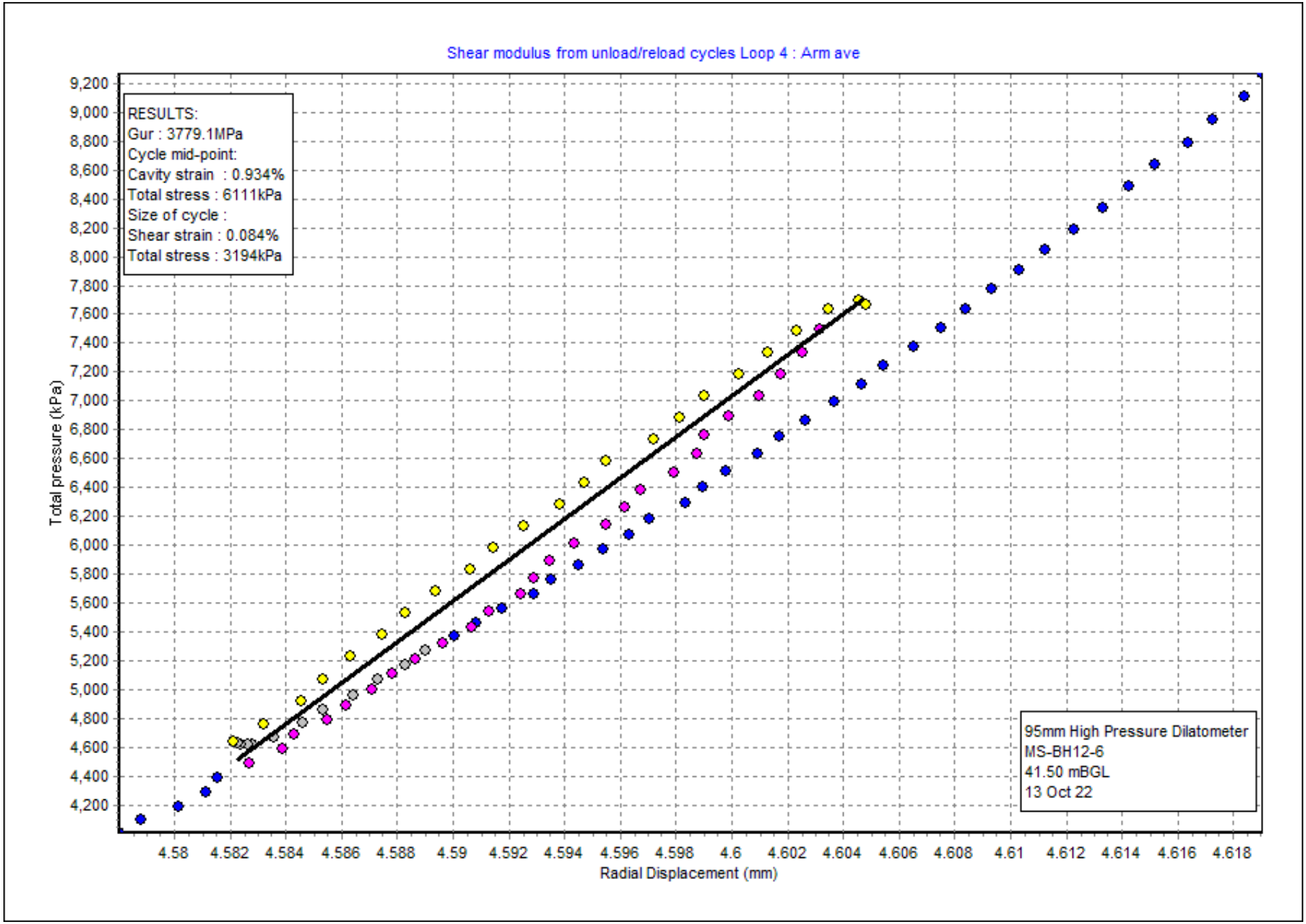

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH12-6
41.50 mBGL
13 Oct 22
Total pressure (kPa)
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
Cavity strain (%)

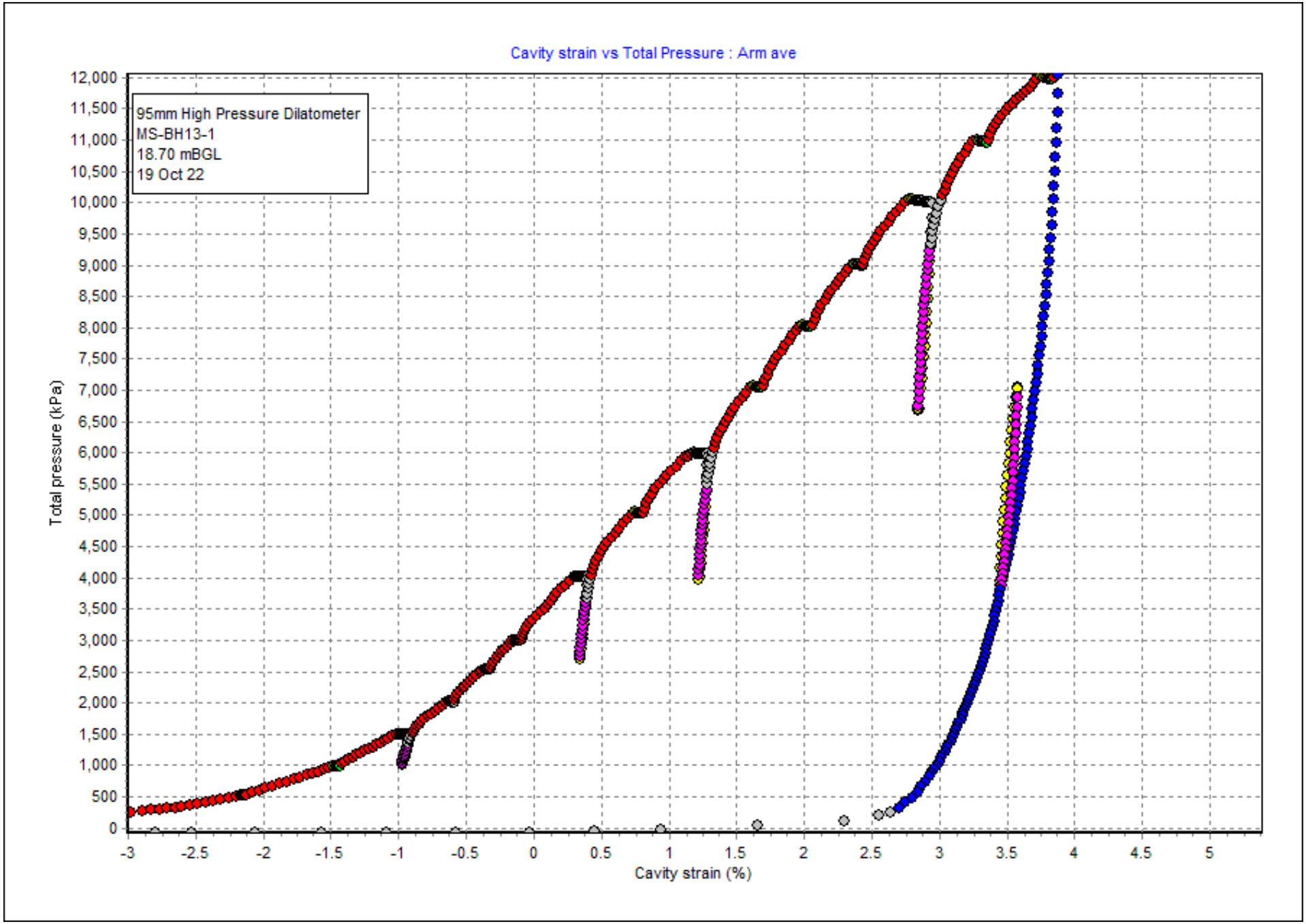

Creep readings
Total pressure (kPa)
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
0.005
0.01
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH12-6
41.50 mBGL
13 Oct 22
RESULTS:
Gi : 1245.0MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 4.340mm
Total pressure (kPa)
3.85
3.9
3.95
4
4.05
4.1
4.15
4.2
4.25
4.3
4.35
4.4
4.45
4.5
4.55
4.6
Radial Displacement (mm)

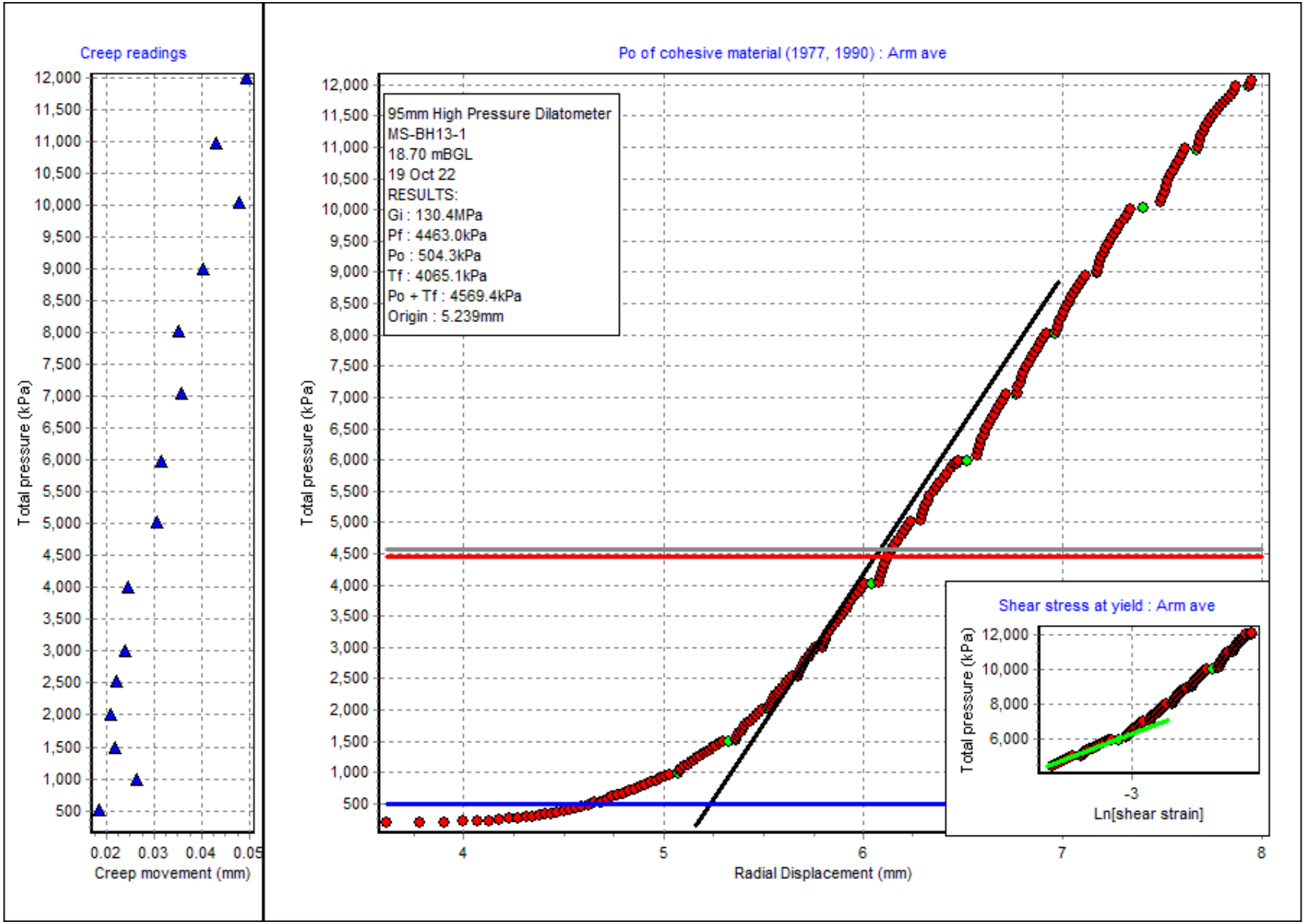

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 2149.3MPa
Cycle mid-point:
Cavity strain : 0.544%
Total stress : 2967kPa
Size of cycle :
Shear strain : 0.025%
Total stress : 538kPa
95mm High Pressure Dilatometer
MS-BH12-6
41.50 mBGL
13 Oct 22
Total pressure (kPa)
3,300
3,250
3,200
3,150
3,100
3,050
3,000
2,950
2,900
2,850
2,800
2,750
2,700
2,650
4.383
4.384
4.385
4.386
4.387
4.388
4.389
4.39
4.391
4.392
4.393
4.394
4.395
4.396
Radial Displacement (mm)

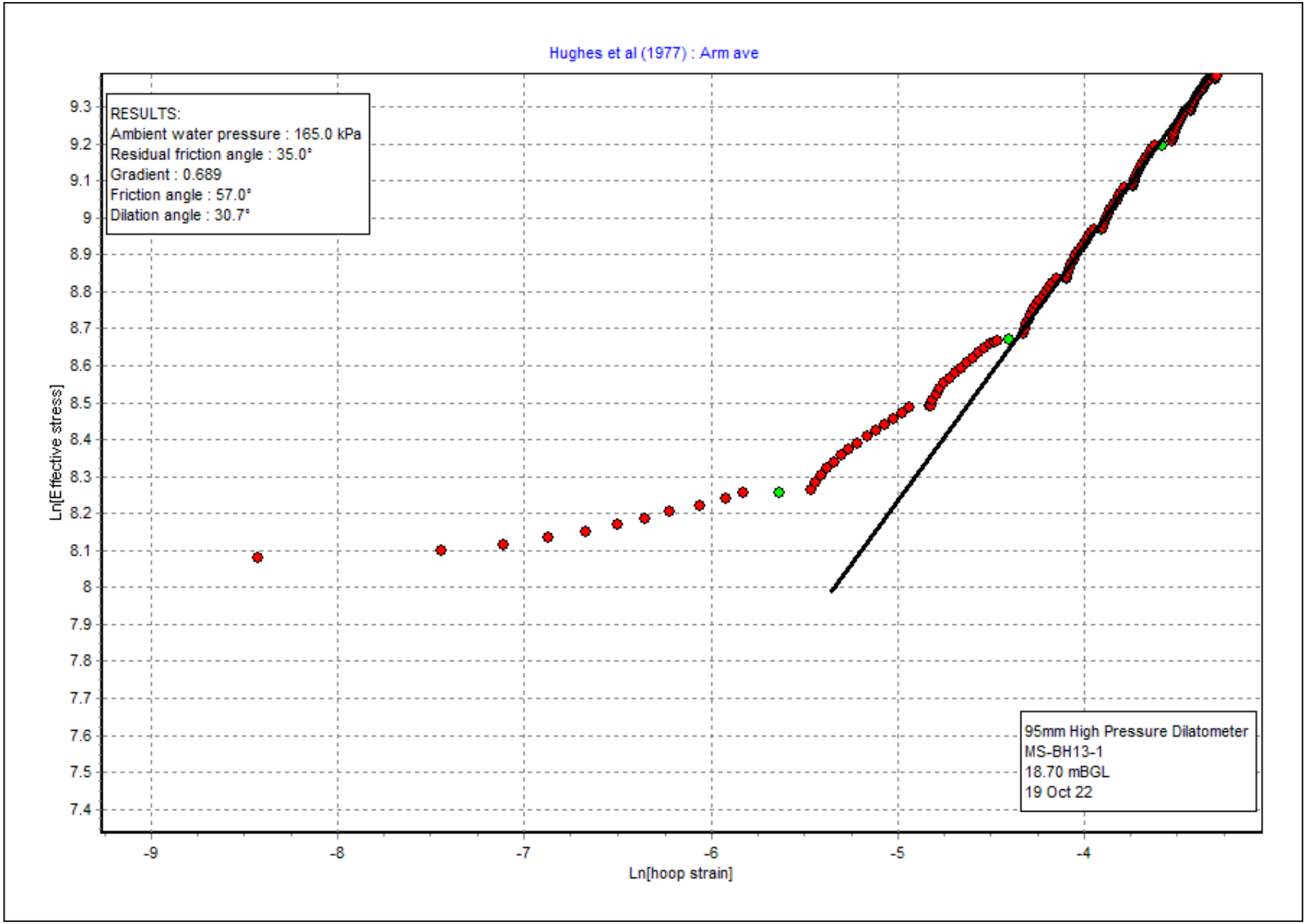

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 3726.2MPa
Cycle mid-point:
Cavity strain : 0.774%
Total stress : 5909kPa
Size of cycle :
Shear strain : 0.025%
Total stress : 930kPa
95mm High Pressure Dilatometer
MS-BH12-6
41.50 mBGL
13 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
6,750
6,700
6,650
6,600
6,550
6,500
6,450
6,400
6,350
6,300
6,250
6,200
6,150
6,100
6,050
6,000
5,950
5,900
5,850
5,800
5,750
5,700
5,650
5,600
5,550
5,500
5,450
5,400
5,350
5,300
5,250
4.497 4.498 4.499 4.5 4.501 4.502 4.503 4.504 4.505 4.506 4.507 4.508 4.509 4.51 4.511 4.512 4.513 4.514 4.515 4.516 4.517 4.518 4.519

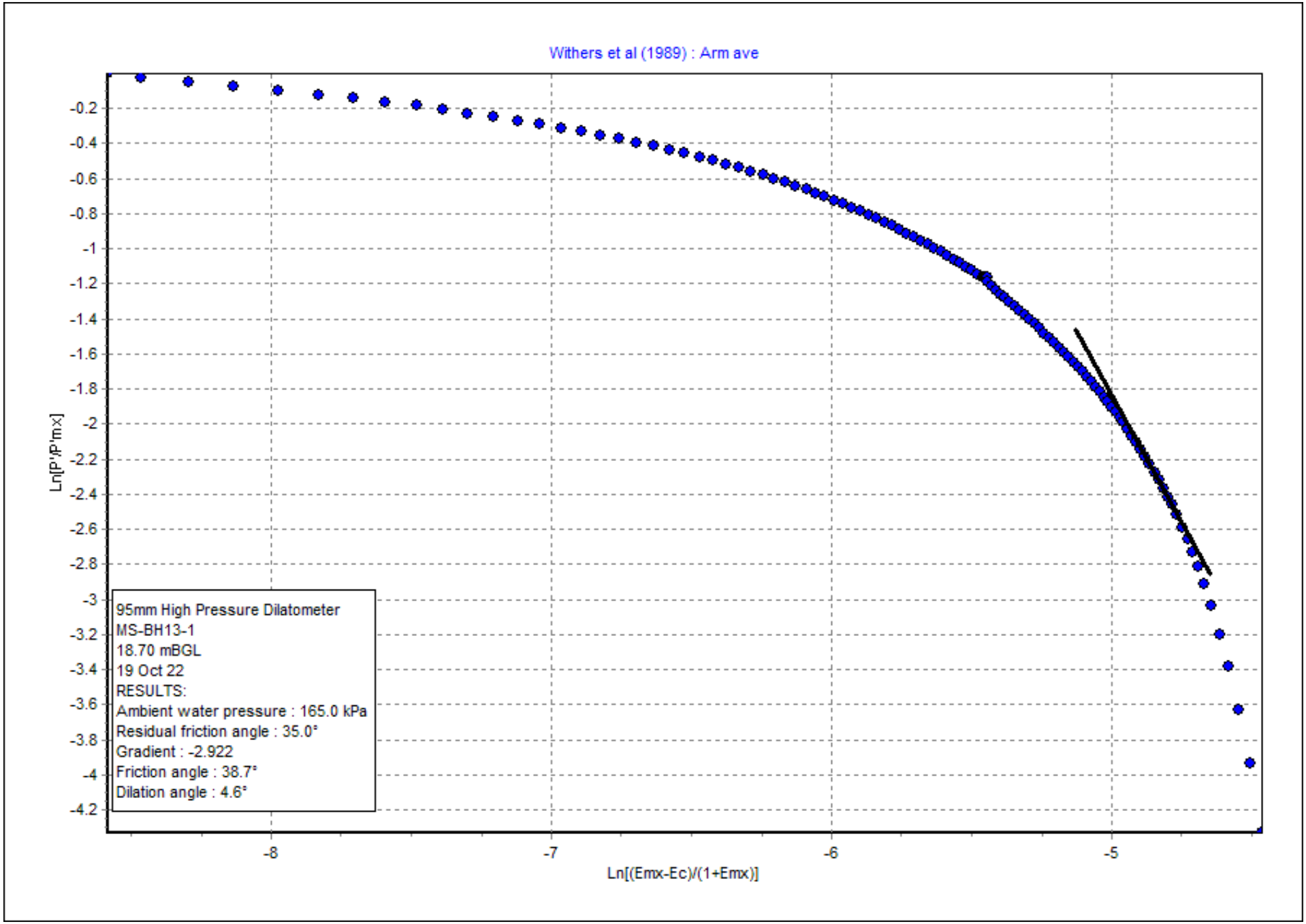

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 4557.3MPa
Cycle mid-point:
Cavity strain : 0.957%
Total stress : 9685kPa
Size of cycle :
Shear strain : 0.028%
Total stress : 1255kPa
95mm High Pressure Dilatometer
MS-BH12-6
41.50 mBGL
13 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
11,100
11,000
10,900
10,800
10,700
10,600
10,500
10,400
10,300
10,200
10,100
10,000
9,900
9,800
9,700
9,600
9,500
9,400
9,300
9,200
9,100
9,000
8,900
8,800
8,700
8,600
4.593 4.594 4.595 4.596 4.597 4.598 4.599 4.6 4.601 4.602 4.603 4.604 4.605 4.606 4.607 4.608 4.609 4.61 4.611 4.612 4.613 4.614 4.615 4.616

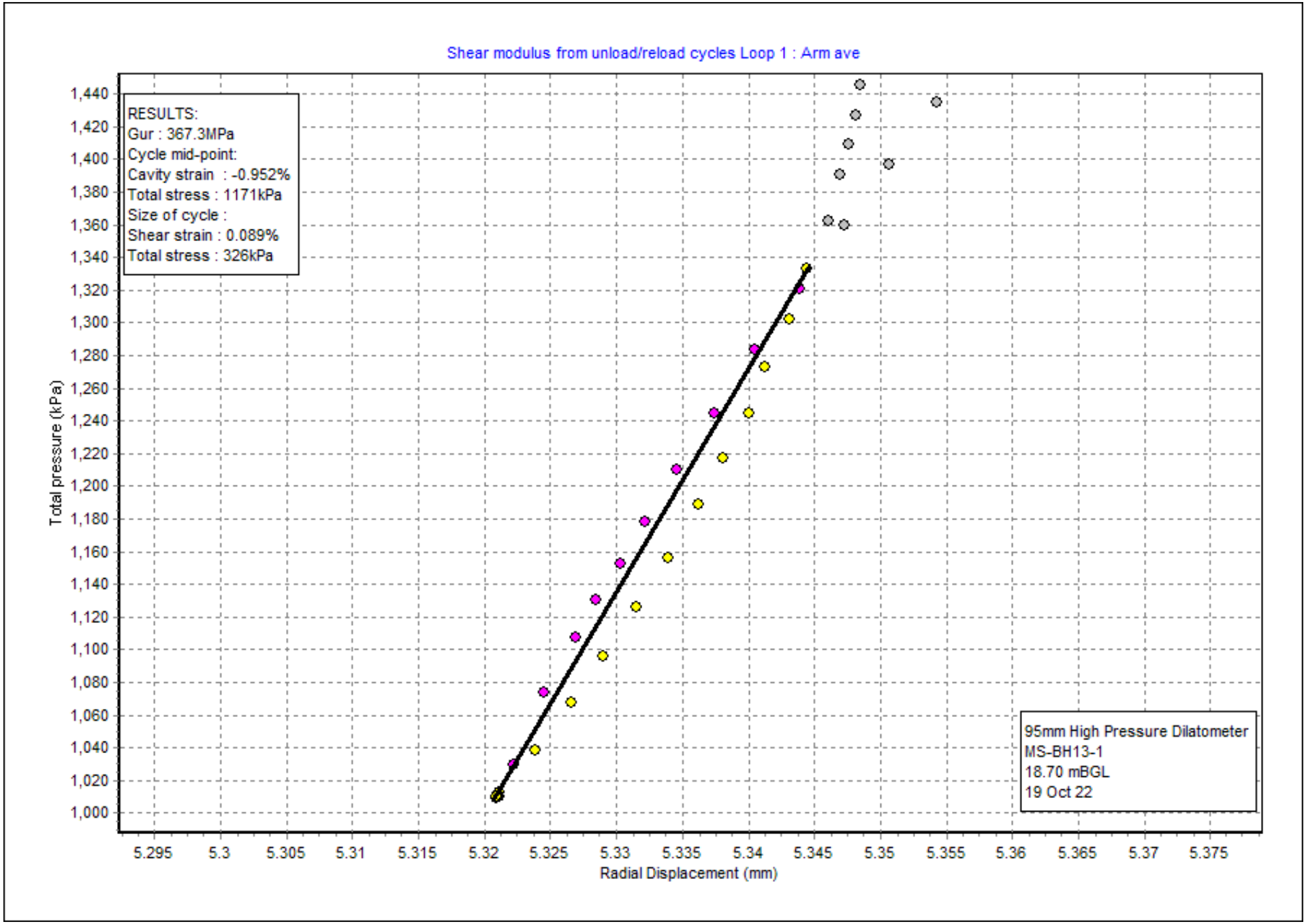

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 3779.1MPa
Cycle mid-point:
Cavity strain : 0.934%
Total stress : 6111kPa
Size of cycle :
Shear strain : 0.084%
Total stress : 3194kPa
95mm High Pressure Dilatometer
MS-BH12-6
41.50 mBGL
13 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4.58
4.582
4.584
4.586
4.588
4.59
4.592
4.594
4.596
4.598
4.6
4.602
4.604
4.606
4.608
4.61
4.612
4.614
4.616
4.618

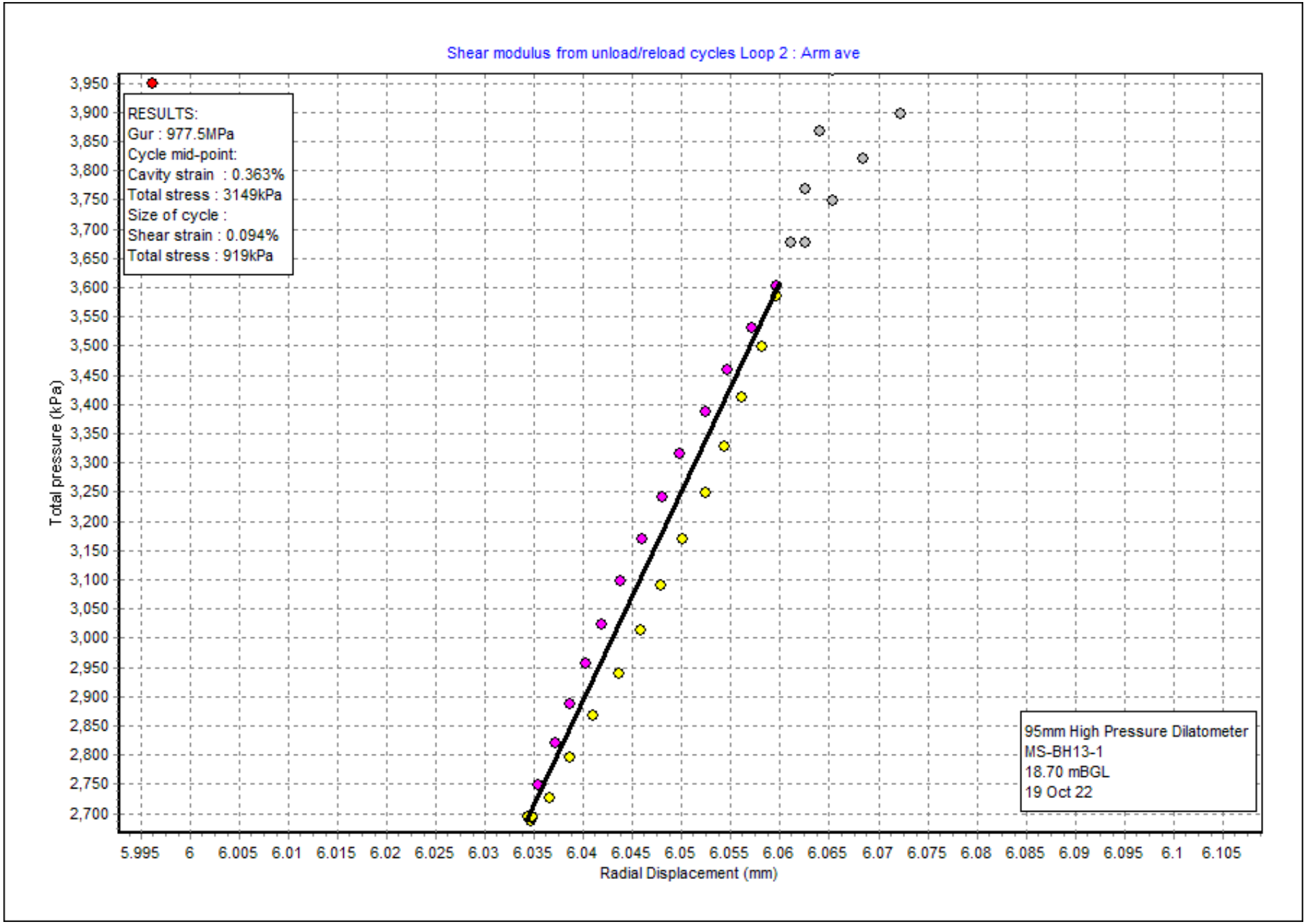

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
Total pressure (kPa)
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-3
-2.5
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Cavity strain (%)

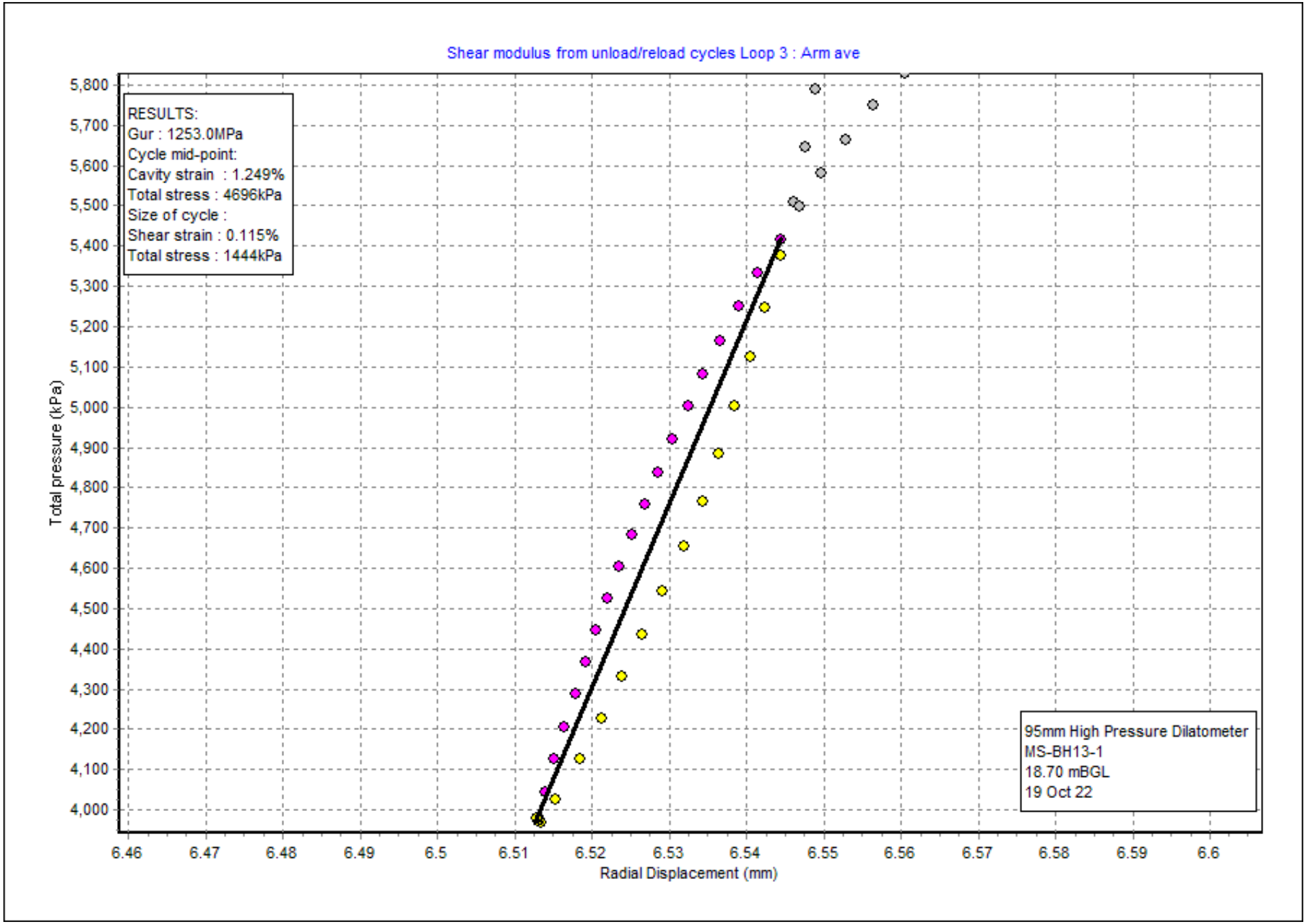

Creep readings
Total pressure (kPa)
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
RESULTS:
Gi : 130.4MPa
Pf : 4463.0kPa
Po : 504.3kPa
Tf : 4065.1kPa
Po + Tf : 4569.4kPa
Origin : 5.239mm
Total pressure (kPa)
Radial Displacement (mm)
Shear stress at yield : Arm ave
Total pressure (kPa)
Ln[shear strain]

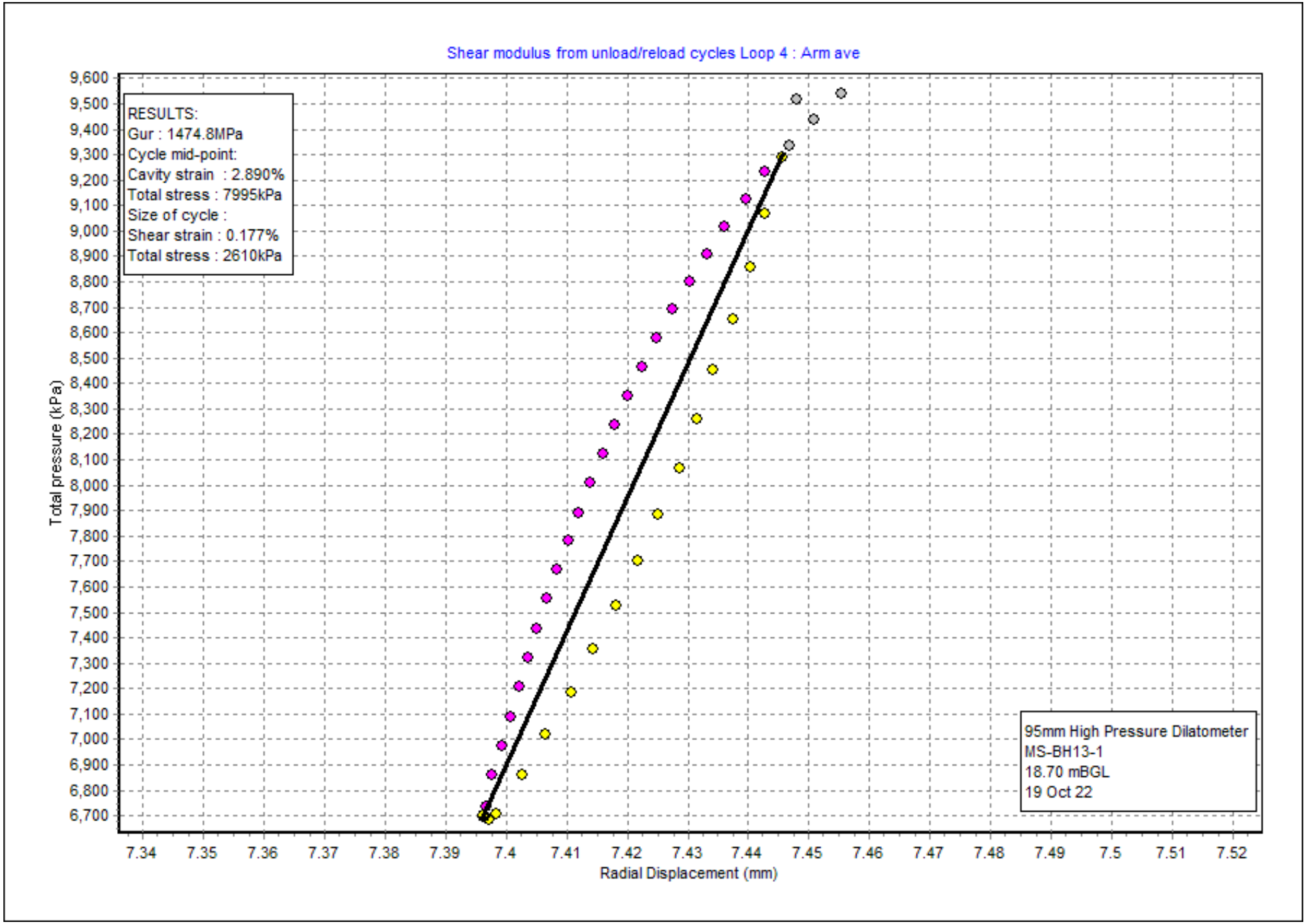

Hughes et al (1977) : Arm ave
RESULTS:
Ambient water pressure : 165.0 kPa
Residual friction angle : 35.0°
Gradient : 0.689
Friction angle : 57.0°
Dilation angle : 30.7°
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
Ln[Effective stress]
Ln[hoop strain]
9.3
9.2
9.1
9
8.9
8.8
8.7
8.6
8.5
8.4
8.3
8.2
8.1
8
7.9
7.8
7.7
7.6
7.5
7.4
-9
-8
-7
-6
-5
-4

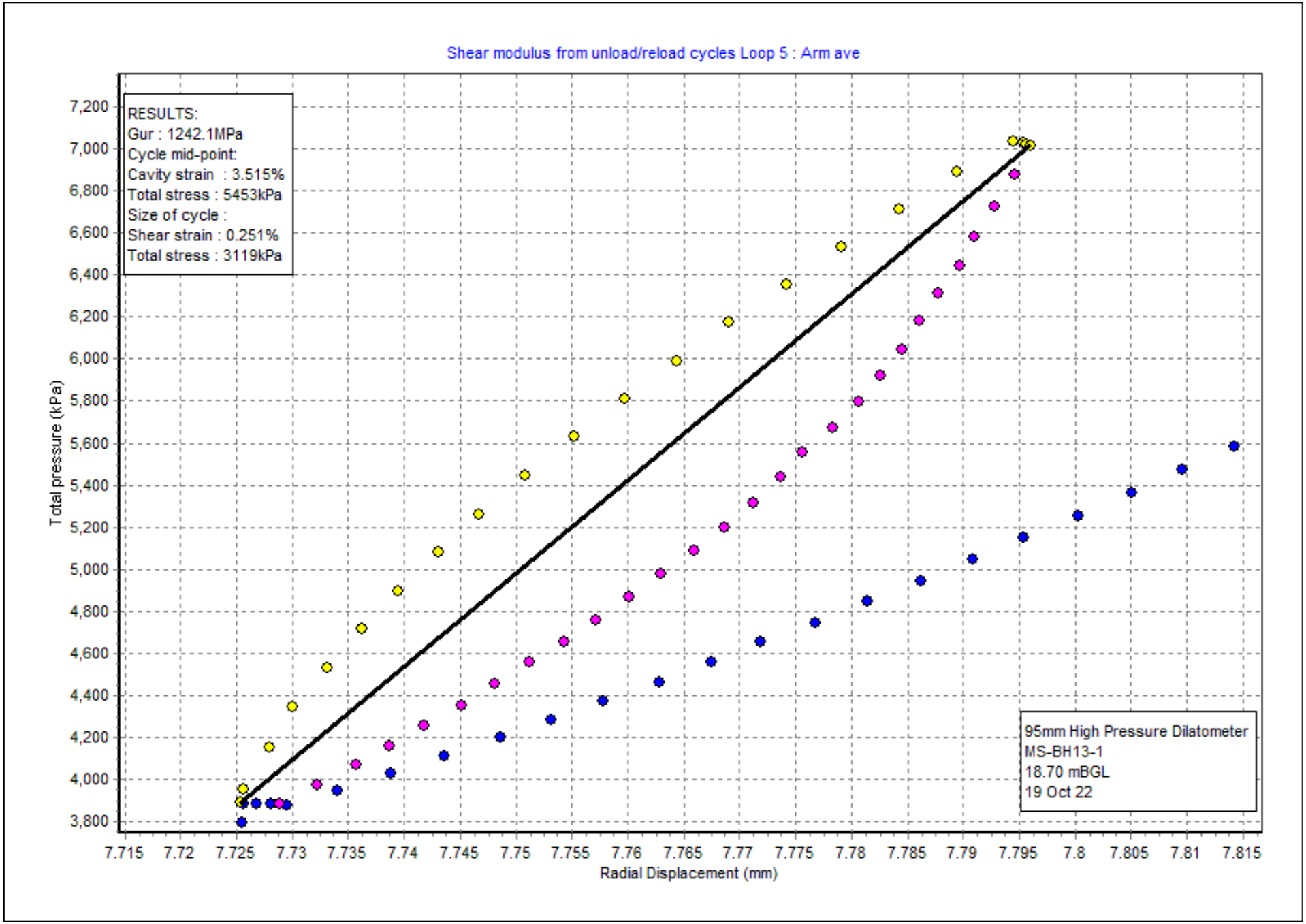

Withers et al (1989) : Arm ave
-0.2
-0.4
-0.6
-0.8
-1
-1.2
-1.4
-1.6
-1.8
-2
-2.2
-2.4
-2.6
-2.8
-3
-3.2
-3.4
-3.6
-3.8
-4
-4.2
Ln[P'/P'mx]
-8
-7
-6
-5
Ln[(Emx-Ec)/(1+Emx)]
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
RESULTS:
Ambient water pressure : 165.0 kPa
Residual friction angle : 35.0°
Gradient : -2.922
Friction angle : 38.7°
Dilation angle : 4.6°

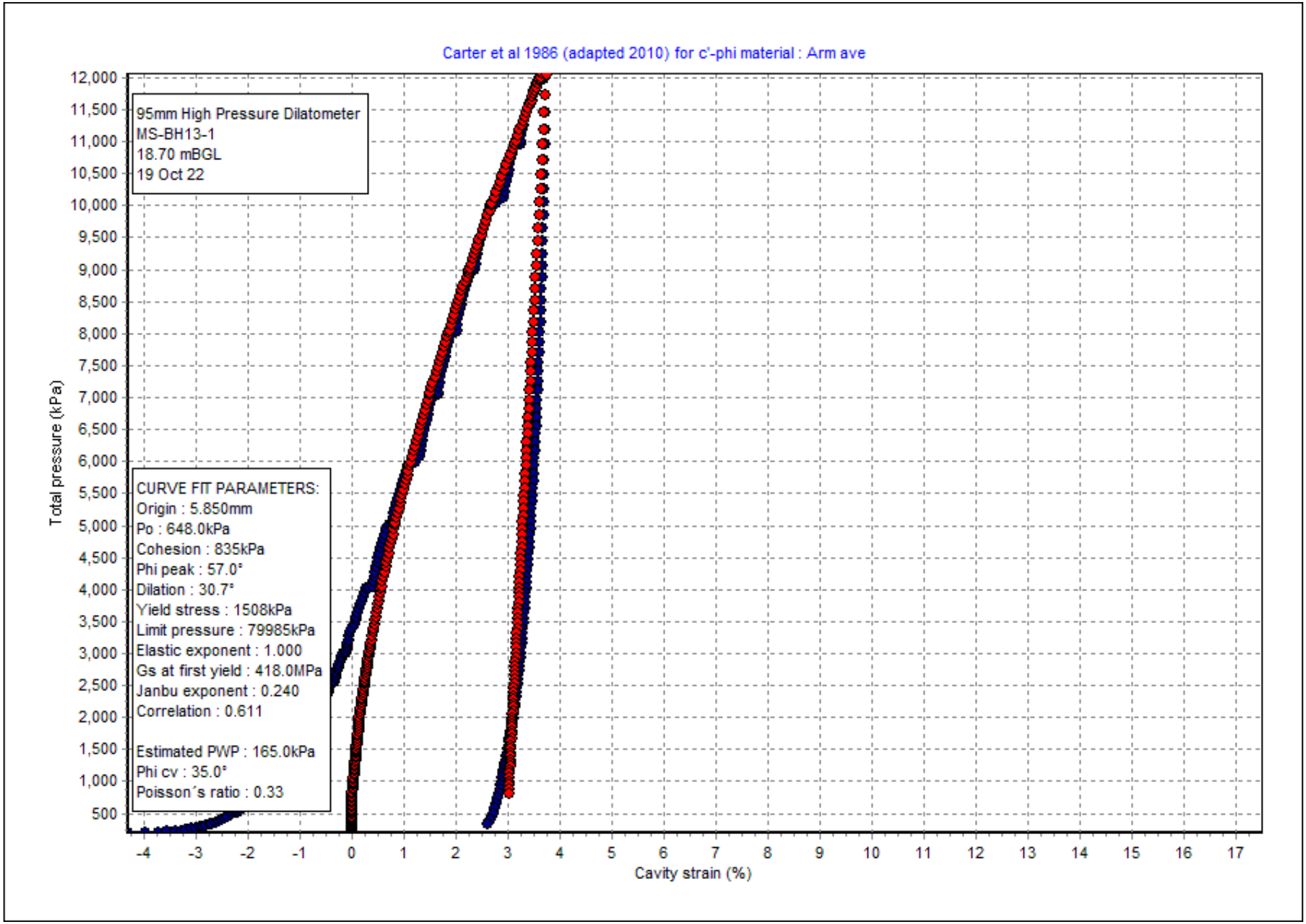

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 367.3MPa
Cycle mid-point:
Cavity strain : -0.952%
Total stress : 1171kPa
Size of cycle :
Shear strain : 0.089%
Total stress : 326kPa
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
Total pressure (kPa)
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
Radial Displacement (mm)
5.295
5.3
5.305
5.31
5.315
5.32
5.325
5.33
5.335
5.34
5.345
5.35
5.355
5.36
5.365
5.37
5.375

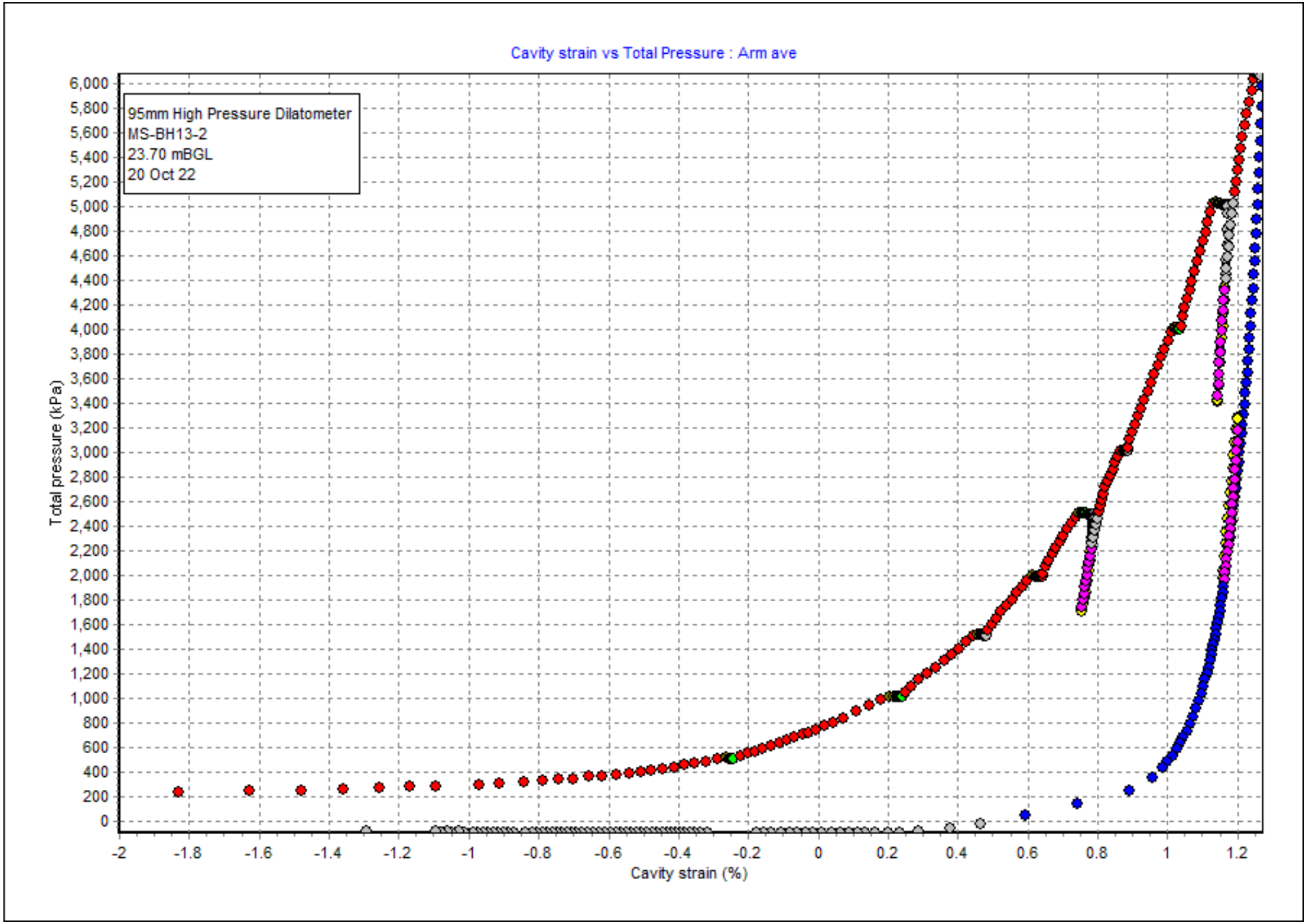

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 977.5MPa
Cycle mid-point:
Cavity strain : 0.363%
Total stress : 3149kPa
Size of cycle :
Shear strain : 0.094%
Total stress : 919kPa
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,950
3,900
3,850
3,800
3,750
3,700
3,650
3,600
3,550
3,500
3,450
3,400
3,350
3,300
3,250
3,200
3,150
3,100
3,050
3,000
2,950
2,900
2,850
2,800
2,750
2,700
5.995
6
6.005
6.01
6.015
6.02
6.025
6.03
6.035
6.04
6.045
6.05
6.055
6.06
6.065
6.07
6.075
6.08
6.085
6.09
6.095
6.1
6.105

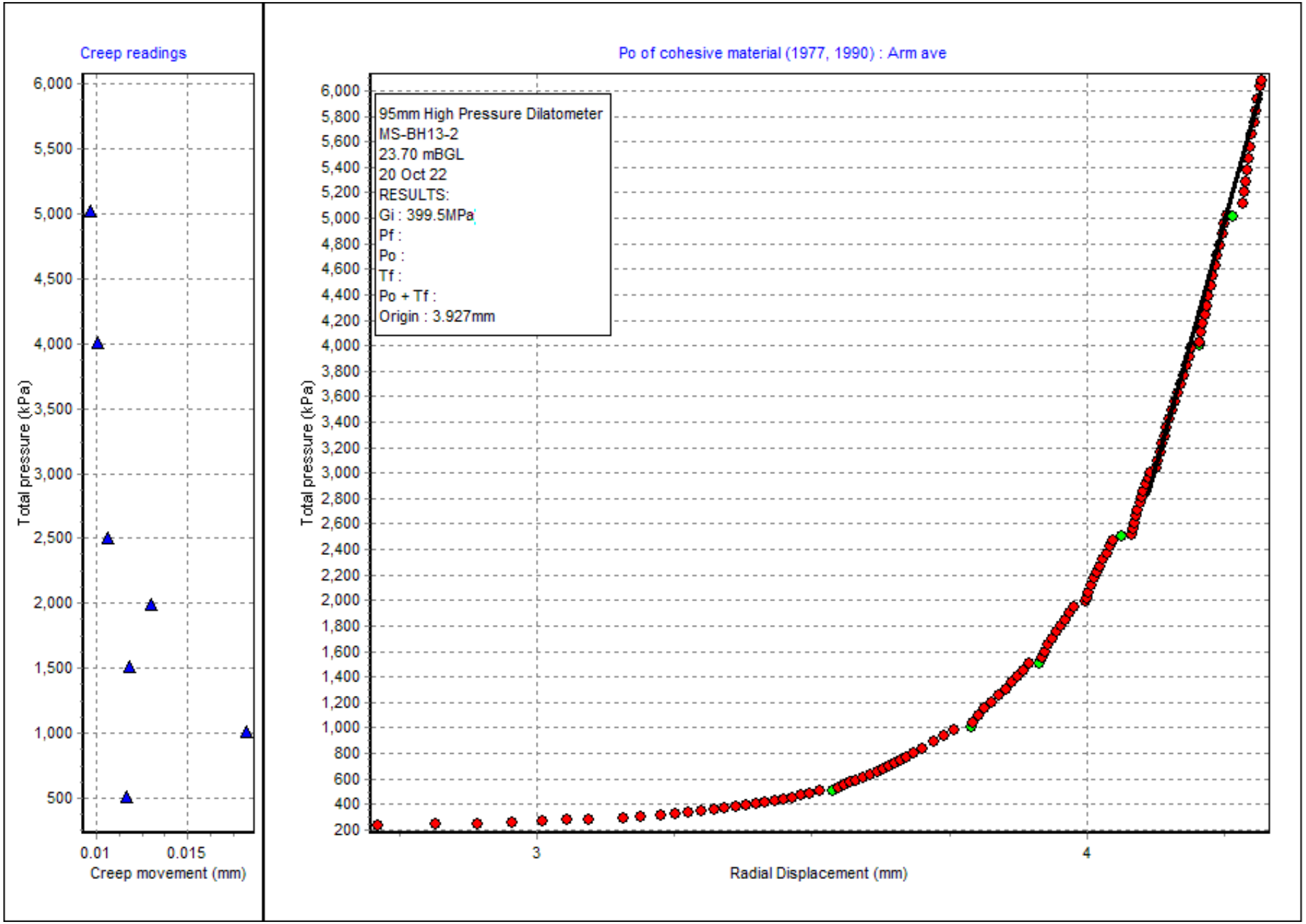

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 1253.0MPa
Cycle mid-point:
Cavity strain : 1.249%
Total stress : 4696kPa
Size of cycle :
Shear strain : 0.115%
Total stress : 1444kPa
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
6.46
6.47
6.48
6.49
6.5
6.51
6.52
6.53
6.54
6.55
6.56
6.57
6.58
6.59
6.6

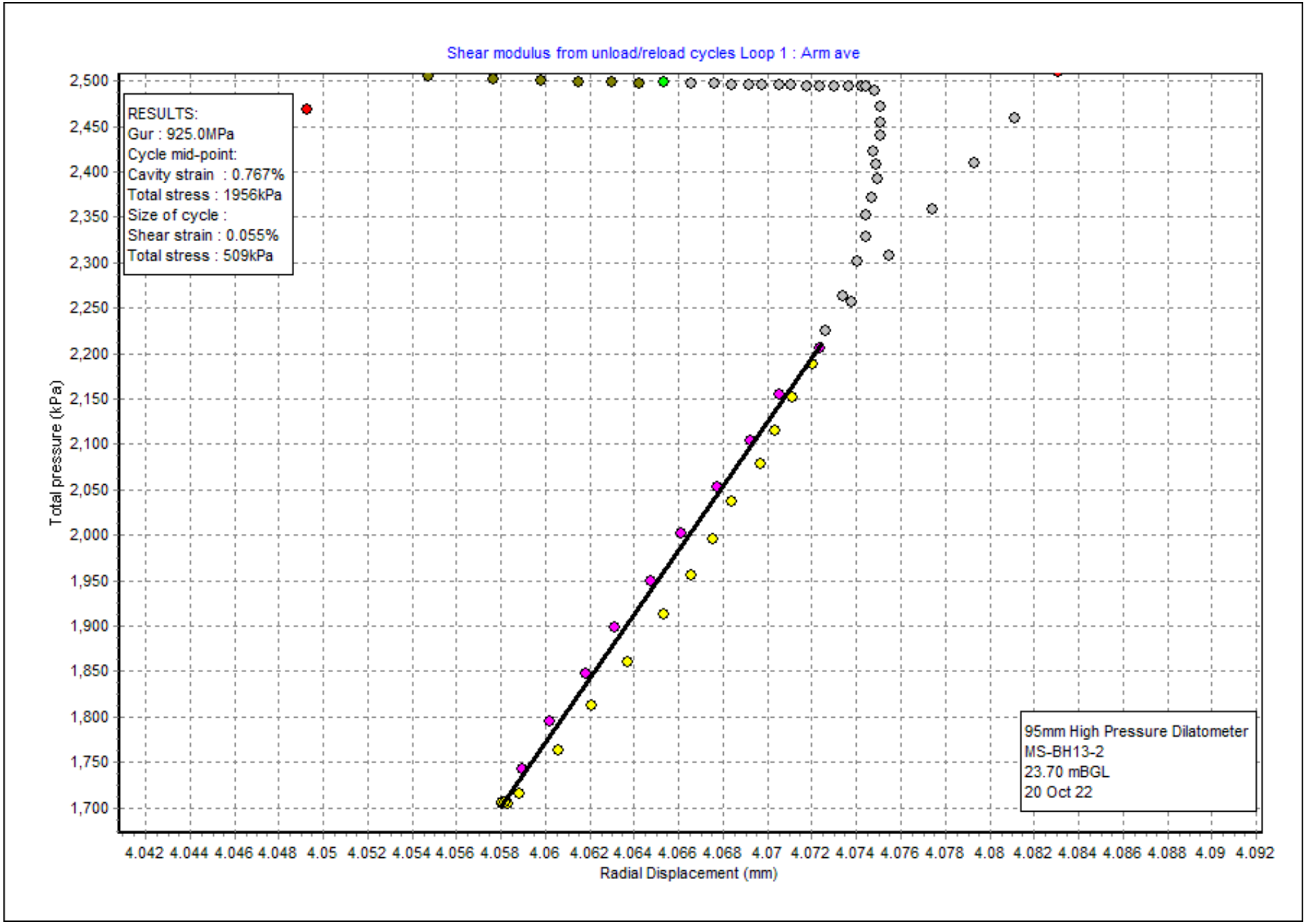

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 1474.8MPa
Cycle mid-point:
Cavity strain : 2.890%
Total stress : 7995kPa
Size of cycle :
Shear strain : 0.177%
Total stress : 2610kPa
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
9,600
9,500
9,400
9,300
9,200
9,100
9,000
8,900
8,800
8,700
8,600
8,500
8,400
8,300
8,200
8,100
8,000
7,900
7,800
7,700
7,600
7,500
7,400
7,300
7,200
7,100
7,000
6,900
6,800
6,700
7.34
7.35
7.36
7.37
7.38
7.39
7.4
7.41
7.42
7.43
7.44
7.45
7.46
7.47
7.48
7.49
7.5
7.51
7.52

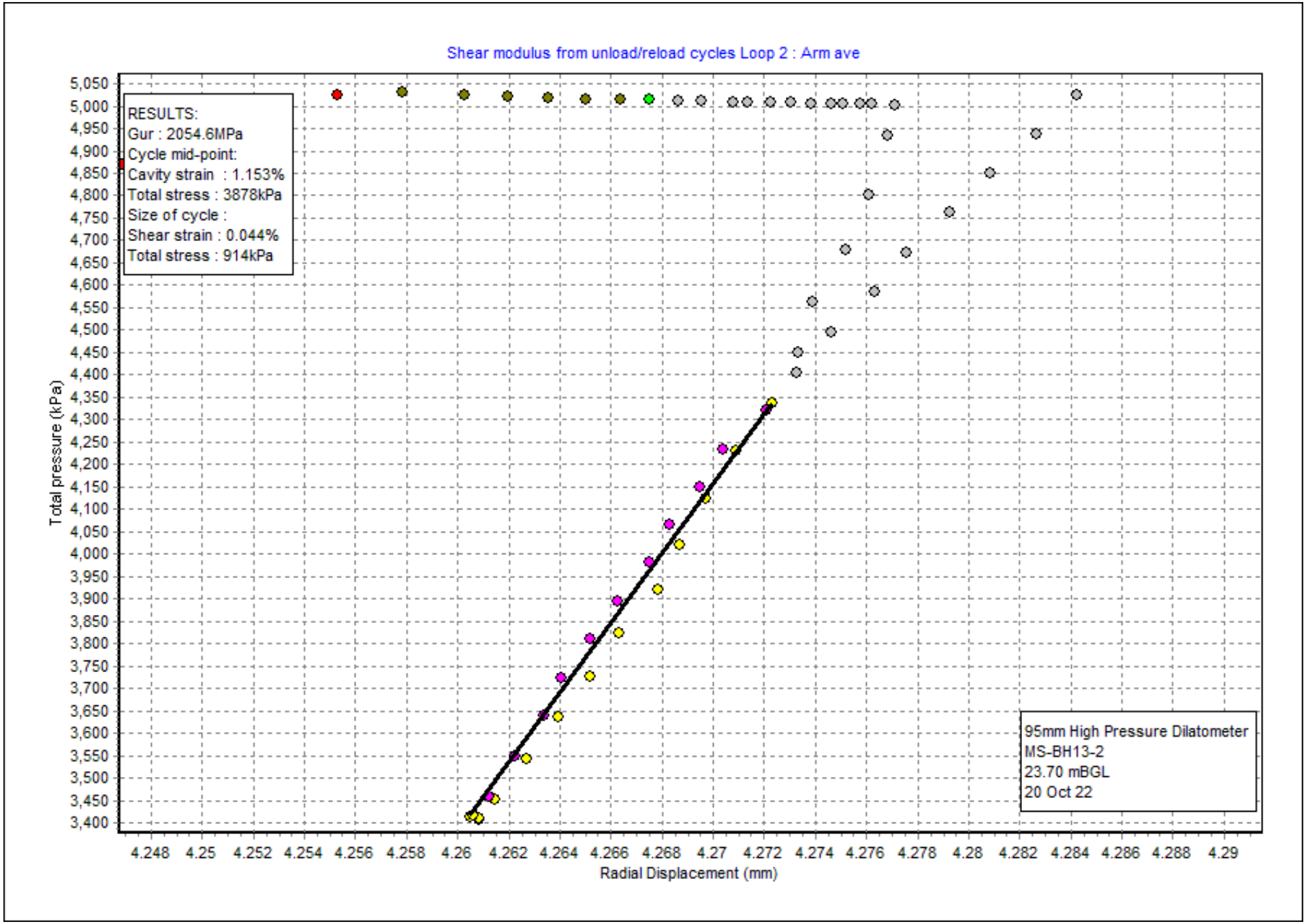

Shear modulus from unload/reload cycles Loop 5 : Arm ave
RESULTS:
Gur : 1242.1MPa
Cycle mid-point:
Cavity strain : 3.515%
Total stress : 5453kPa
Size of cycle :
Shear strain : 0.251%
Total stress : 3119kPa
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4,000
3,800
7.715
7.72
7.725
7.73
7.735
7.74
7.745
7.75
7.755
7.76
7.765
7.77
7.775
7.78
7.785
7.79
7.795
7.8
7.805
7.81
7.815

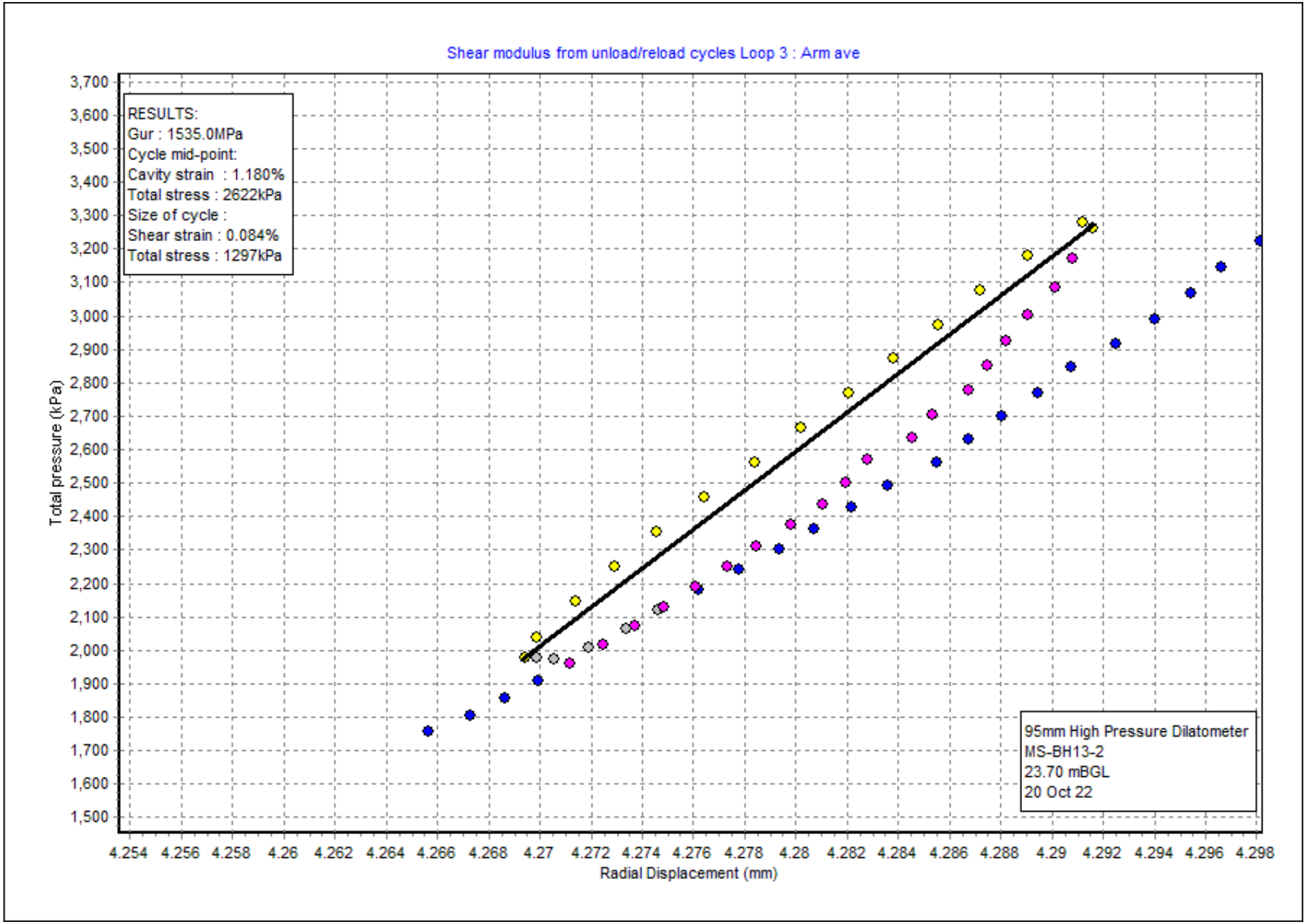

Carter et al 1986 (adapted 2010) for c'-phi material : Arm ave
95mm High Pressure Dilatometer
MS-BH13-1
18.70 mBGL
19 Oct 22
CURVE FIT PARAMETERS:
Origin : 5.850mm
Po : 648.0kPa
Cohesion : 835kPa
Phi peak : 57.0°
Dilation : 30.7°
Yield stress : 1508kPa
Limit pressure : 79985kPa
Elastic exponent : 1.000
Gs at first yield : 418.0MPa
Janbu exponent : 0.240
Correlation : 0.611
Estimated PWP : 165.0kPa
Phi cv : 35.0°
Poisson´s ratio : 0.33
Total pressure (kPa)
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
Cavity strain (%)

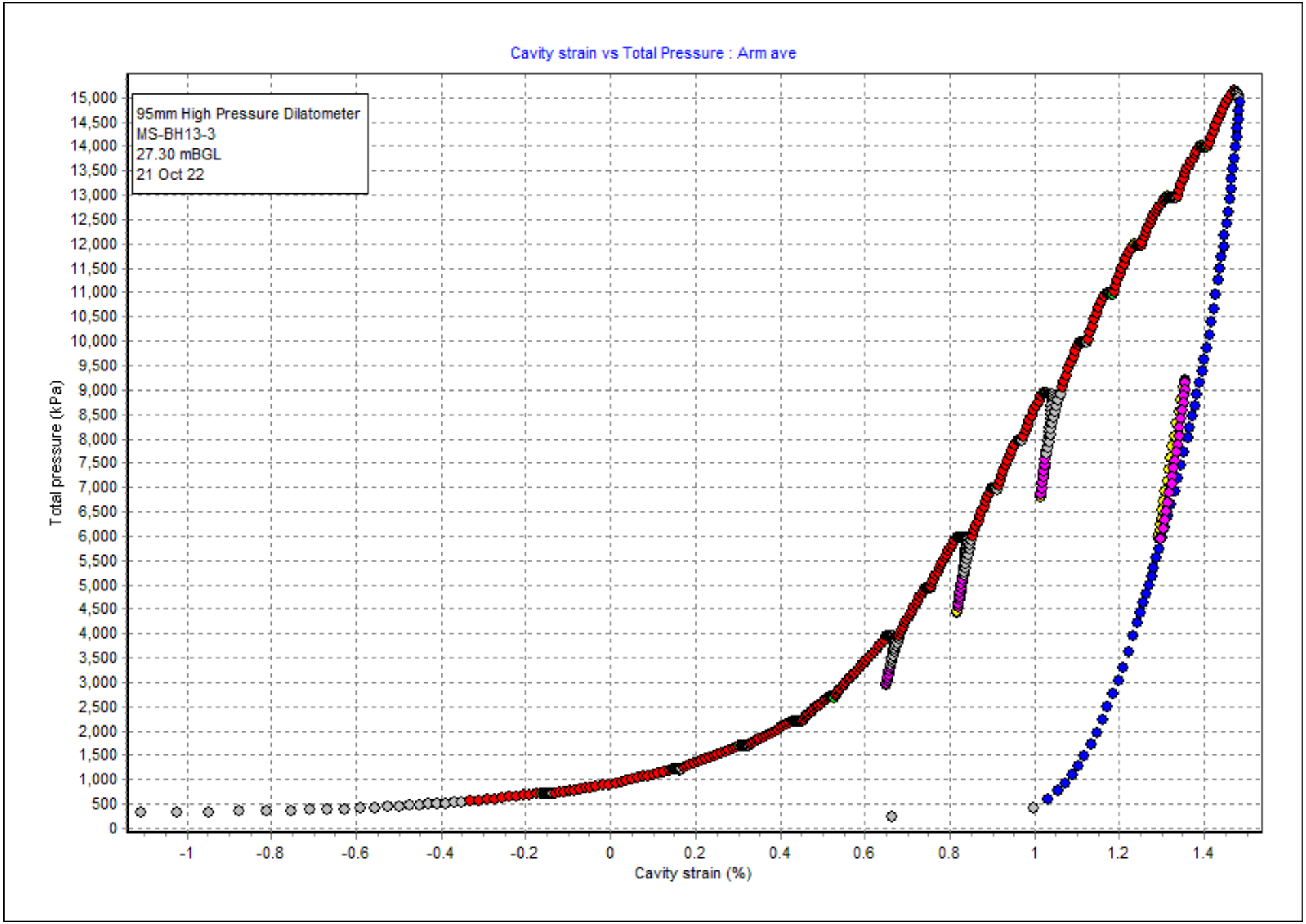

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH13-2
23.70 mBGL
20 Oct 22
Total pressure (kPa)
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4,000
3,800
3,600
3,400
3,200
3,000
2,800
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
-2
-1.8
-1.6
-1.4
-1.2
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
Cavity strain (%)

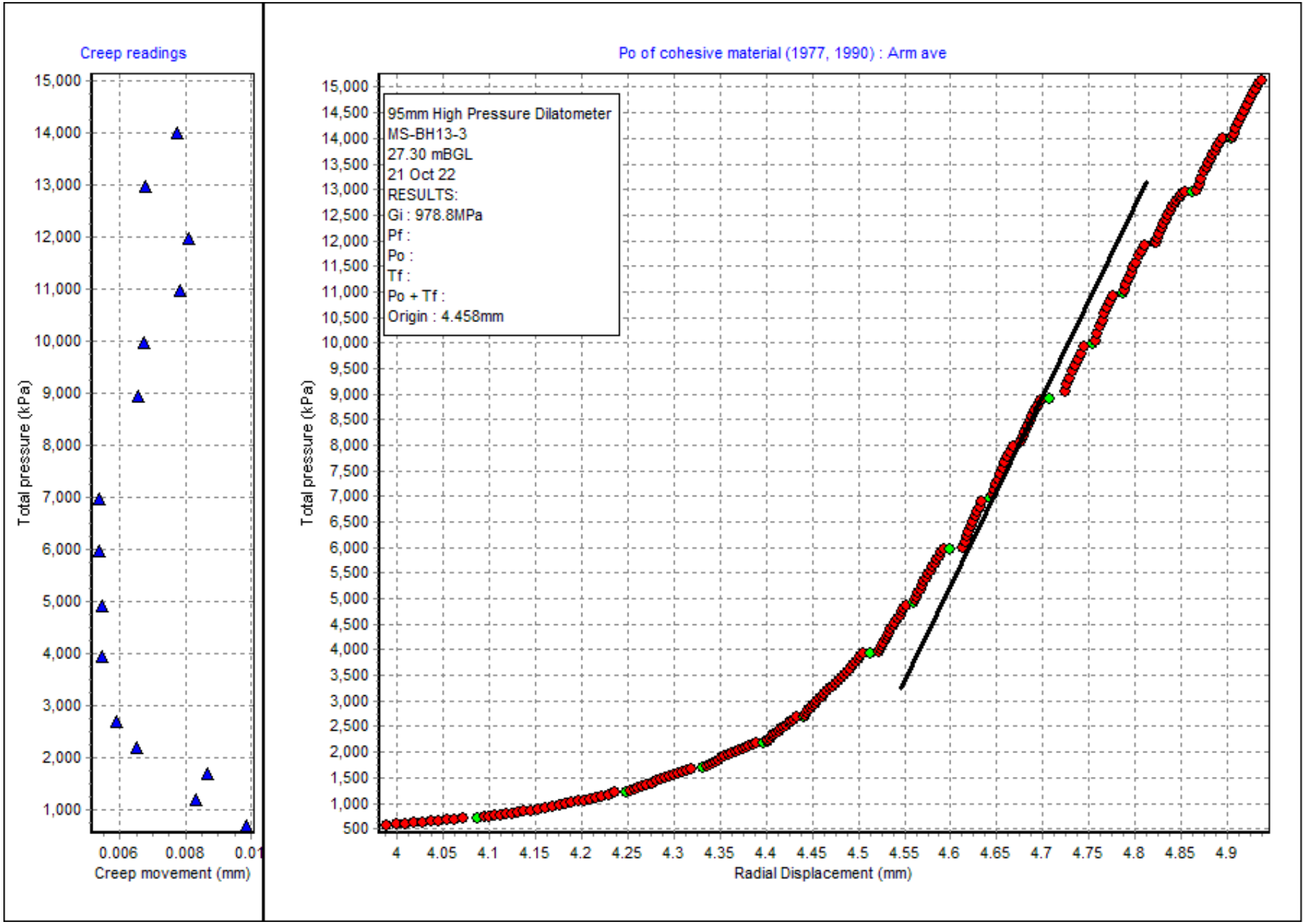

Creep readings
Total pressure (kPa)
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0.01
0.015
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH13-2
23.70 mBGL
20 Oct 22
RESULTS:
Gi : 399.5MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 3.927mm
Total pressure (kPa)
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4,000
3,800
3,600
3,400
3,200
3,000
2,800
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
3
4
Radial Displacement (mm)

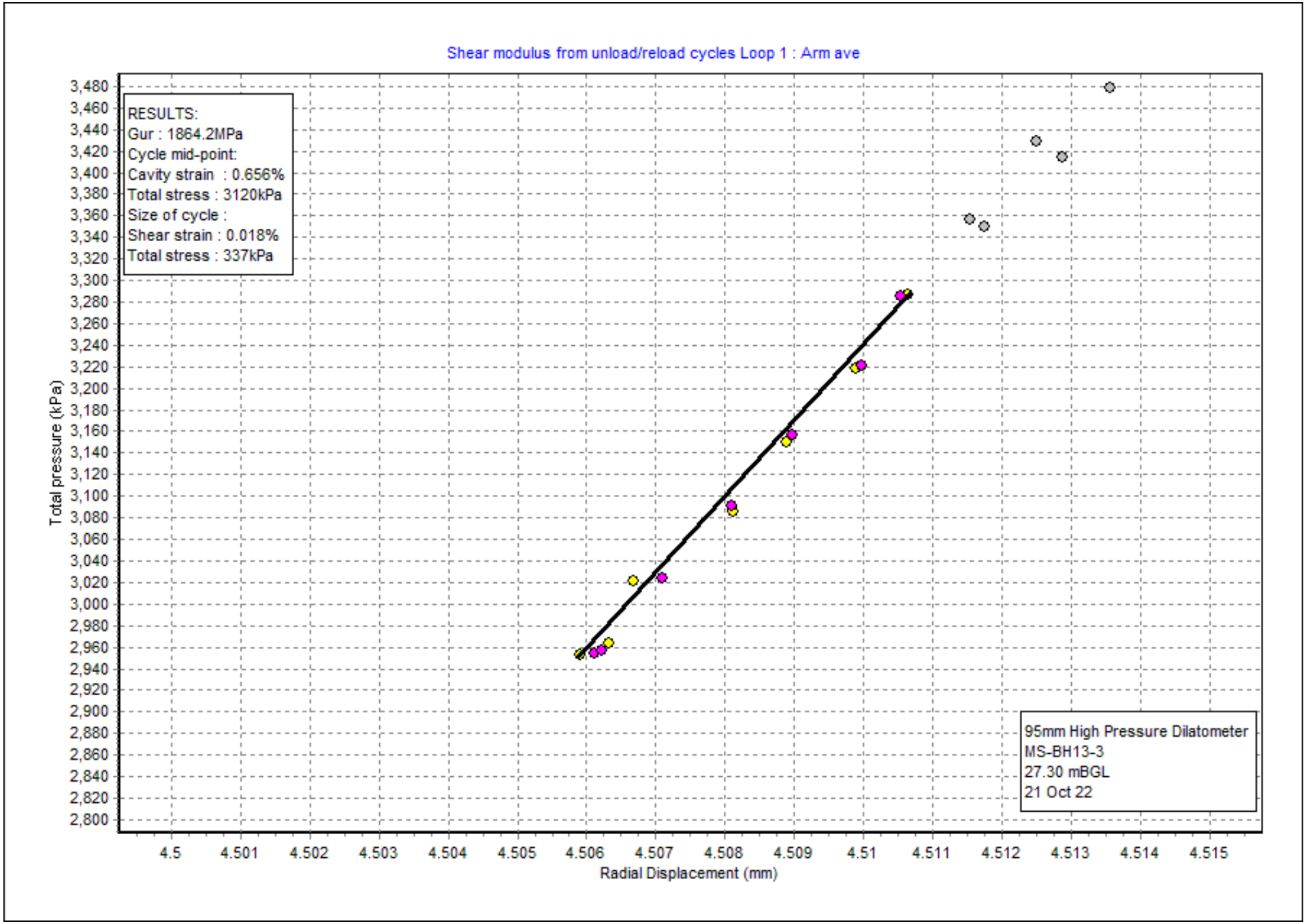

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 925.0MPa
Cycle mid-point:
Cavity strain : 0.767%
Total stress : 1956kPa
Size of cycle :
Shear strain : 0.055%
Total stress : 509kPa
95mm High Pressure Dilatometer
MS-BH13-2
23.70 mBGL
20 Oct 22
Total pressure (kPa)
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
1,800
1,750
1,700
4.042 4.044 4.046 4.048 4.05 4.052 4.054 4.056 4.058 4.06 4.062 4.064 4.066 4.068 4.07 4.072 4.074 4.076 4.078 4.08 4.082 4.084 4.086 4.088 4.09 4.092
Radial Displacement (mm)

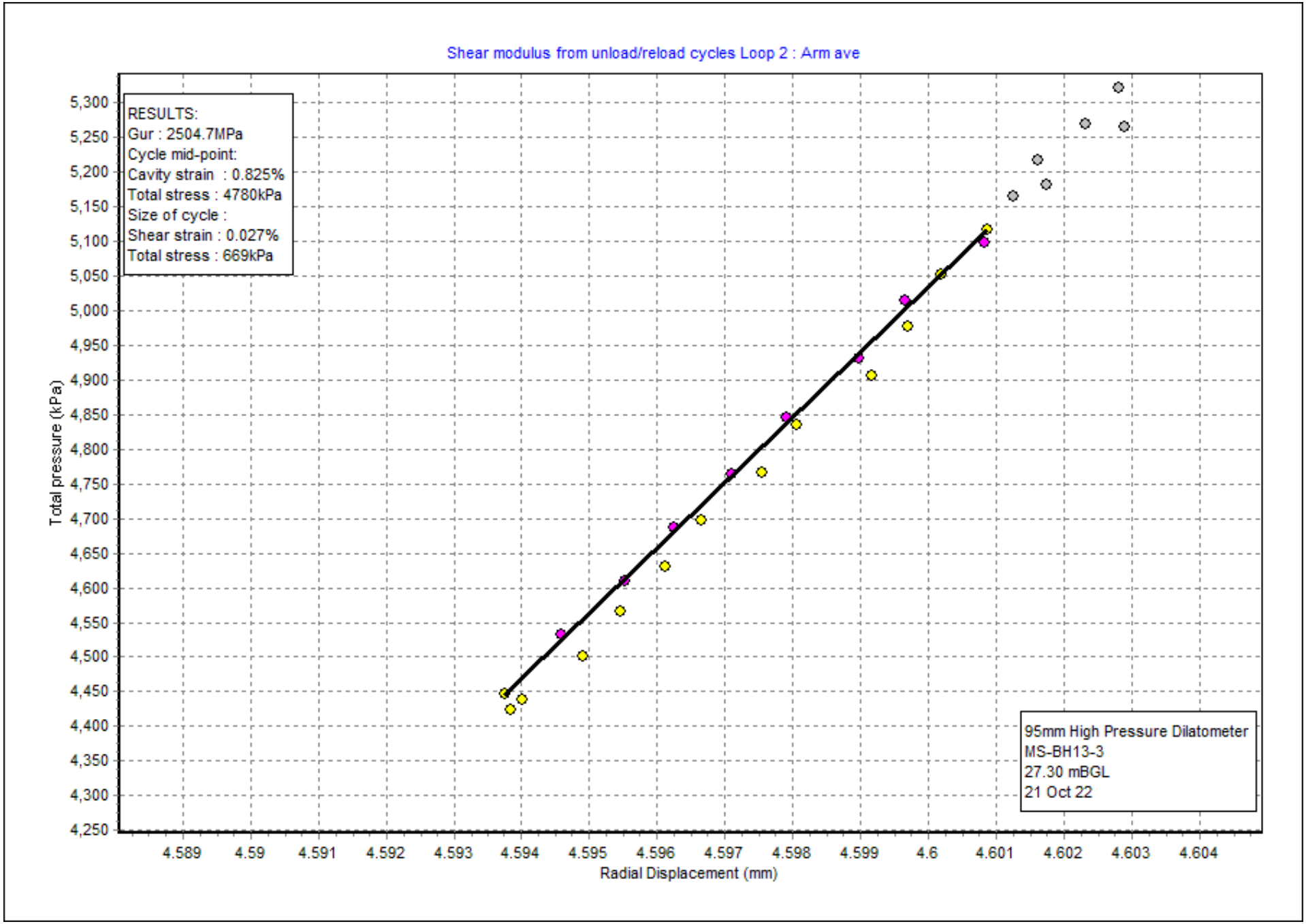

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 2054.6MPa
Cycle mid-point:
Cavity strain : 1.153%
Total stress : 3878kPa
Size of cycle :
Shear strain : 0.044%
Total stress : 914kPa
95mm High Pressure Dilatometer
MS-BH13-2
23.70 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
5,050
5,000
4,950
4,900
4,850
4,800
4,750
4,700
4,650
4,600
4,550
4,500
4,450
4,400
4,350
4,300
4,250
4,200
4,150
4,100
4,050
4,000
3,950
3,900
3,850
3,800
3,750
3,700
3,650
3,600
3,550
3,500
3,450
3,400
4.248
4.25
4.252
4.254
4.256
4.258
4.26
4.262
4.264
4.266
4.268
4.27
4.272
4.274
4.276
4.278
4.28
4.282
4.284
4.286
4.288
4.29


Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 1535.0MPa
Cycle mid-point:
Cavity strain : 1.180%
Total stress : 2622kPa
Size of cycle :
Shear strain : 0.084%
Total stress : 1297kPa
95mm High Pressure Dilatometer
MS-BH13-2
23.70 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,700
3,600
3,500
3,400
3,300
3,200
3,100
3,000
2,900
2,800
2,700
2,600
2,500
2,400
2,300
2,200
2,100
2,000
1,900
1,800
1,700
1,600
1,500
4.254 4.256 4.258 4.26 4.262 4.264 4.266 4.268 4.27 4.272 4.274 4.276 4.278 4.28 4.282 4.284 4.286 4.288 4.29 4.292 4.294 4.296 4.298


Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH13-3
27.30 mBGL
21 Oct 22
Total pressure (kPa)
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
Cavity strain (%)


Creep readings
Total pressure (kPa)
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0.006
0.008
0.01
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH13-3
27.30 mBGL
21 Oct 22
RESULTS:
Gi : 978.8MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 4.458mm
Total pressure (kPa)
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
4
4.05
4.1
4.15
4.2
4.25
4.3
4.35
4.4
4.45
4.5
4.55
4.6
4.65
4.7
4.75
4.8
4.85
4.9
Radial Displacement (mm)


Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1864.2MPa
Cycle mid-point:
Cavity strain : 0.656%
Total stress : 3120kPa
Size of cycle :
Shear strain : 0.018%
Total stress : 337kPa
95mm High Pressure Dilatometer
MS-BH13-3
27.30 mBGL
21 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,480
3,460
3,440
3,420
3,400
3,380
3,360
3,340
3,320
3,300
3,280
3,260
3,240
3,220
3,200
3,180
3,160
3,140
3,120
3,100
3,080
3,060
3,040
3,020
3,000
2,980
2,960
2,940
2,920
2,900
2,880
2,860
2,840
2,820
2,800
4.5
4.501
4.502
4.503
4.504
4.505
4.506
4.507
4.508
4.509
4.51
4.511
4.512
4.513
4.514
4.515


Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 2504.7MPa
Cycle mid-point:
Cavity strain : 0.825%
Total stress : 4780kPa
Size of cycle :
Shear strain : 0.027%
Total stress : 669kPa
95mm High Pressure Dilatometer
MS-BH13-3
27.30 mBGL
21 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
5,300
5,250
5,200
5,150
5,100
5,050
5,000
4,950
4,900
4,850
4,800
4,750
4,700
4,650
4,600
4,550
4,500
4,450
4,400
4,350
4,300
4,250
4.589
4.59
4.591
4.592
4.593
4.594
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4.596
4.597
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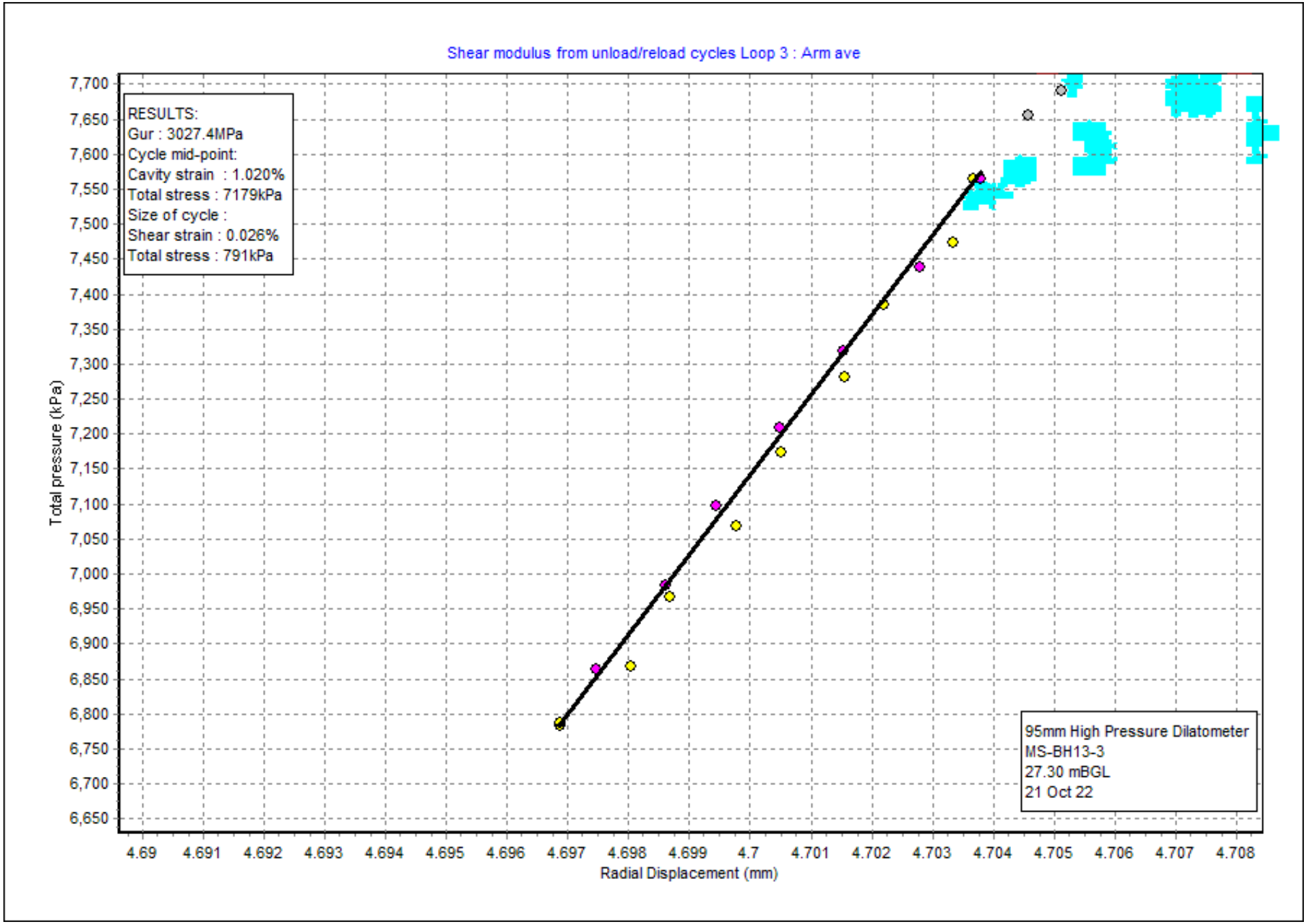
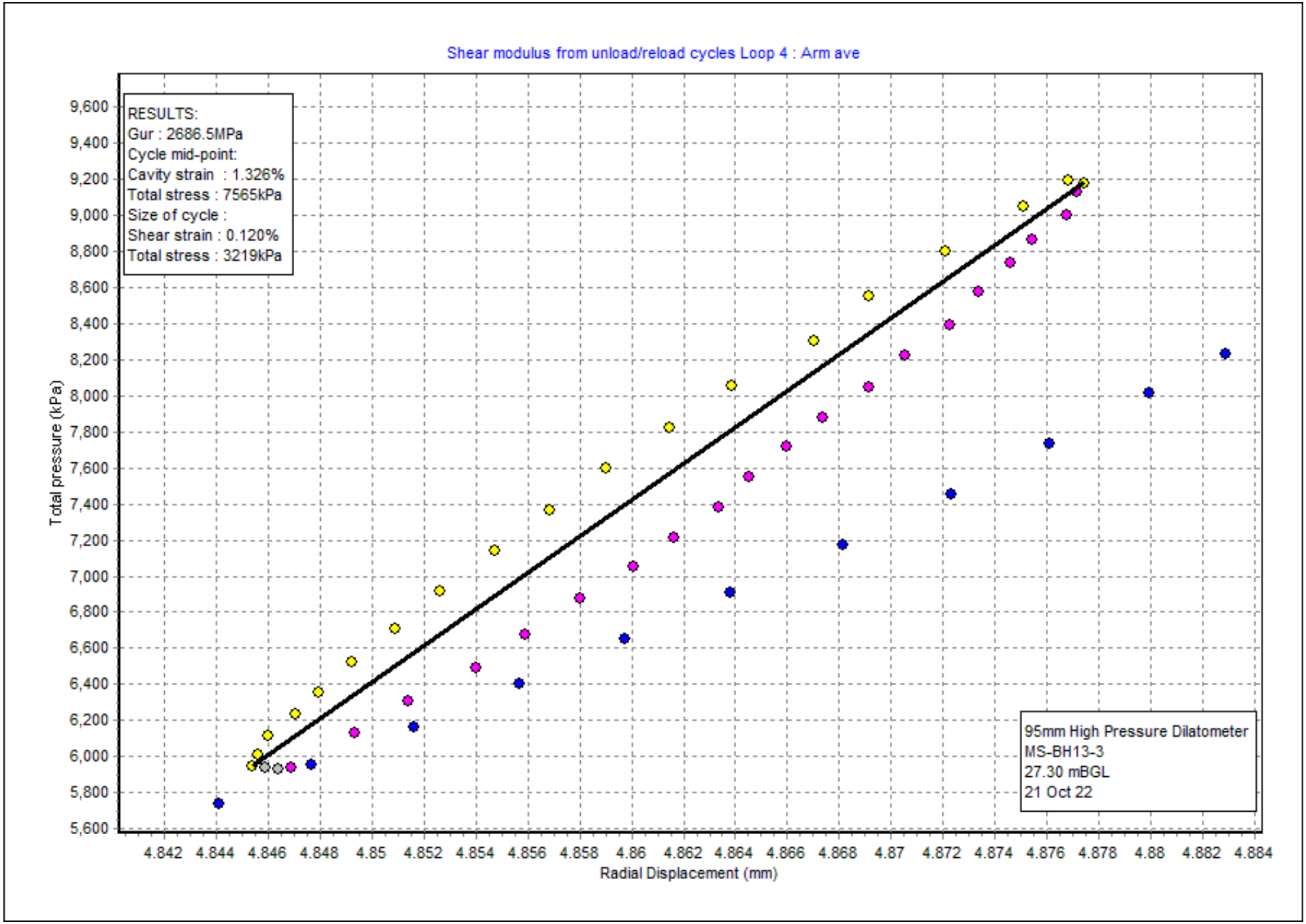
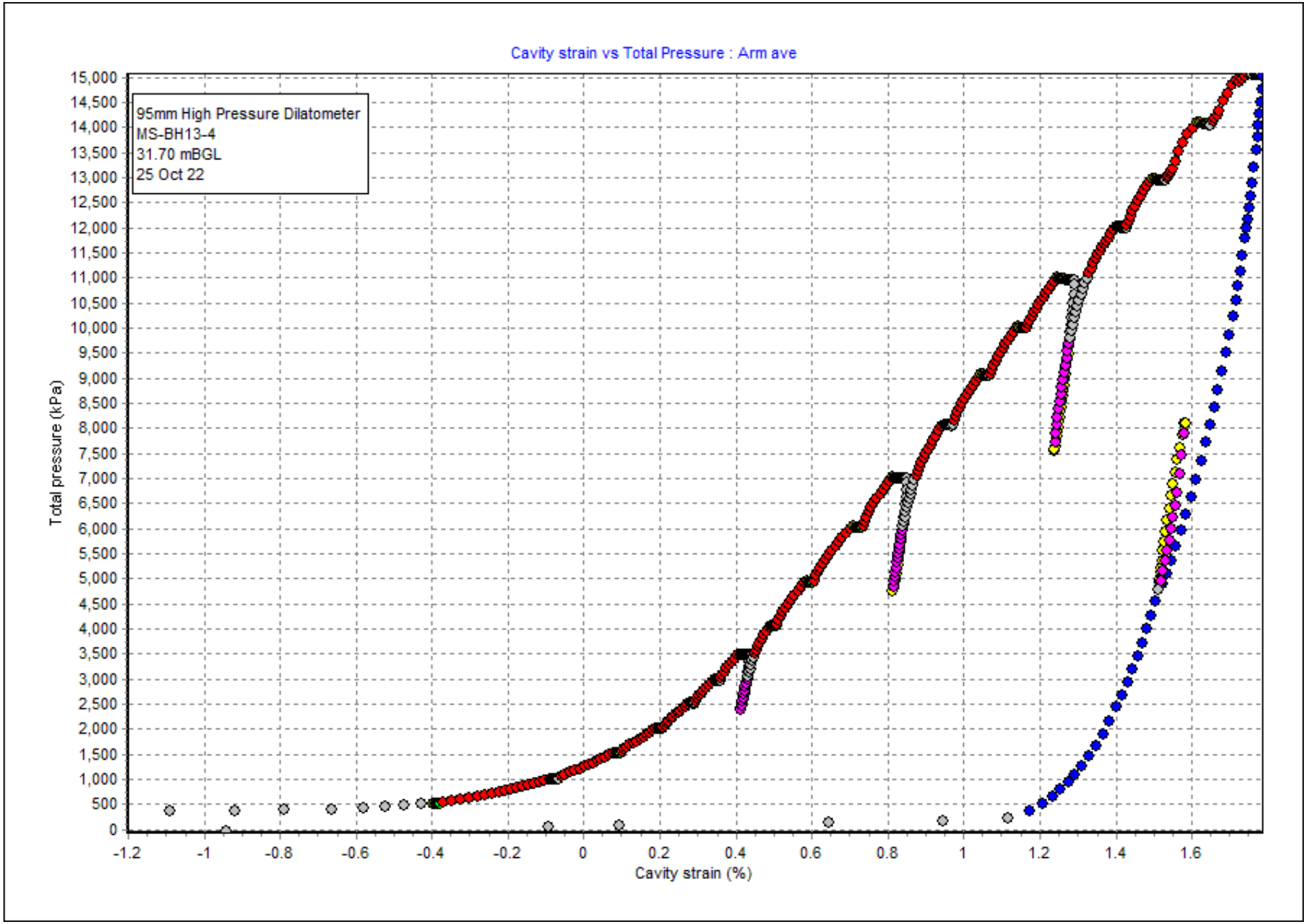
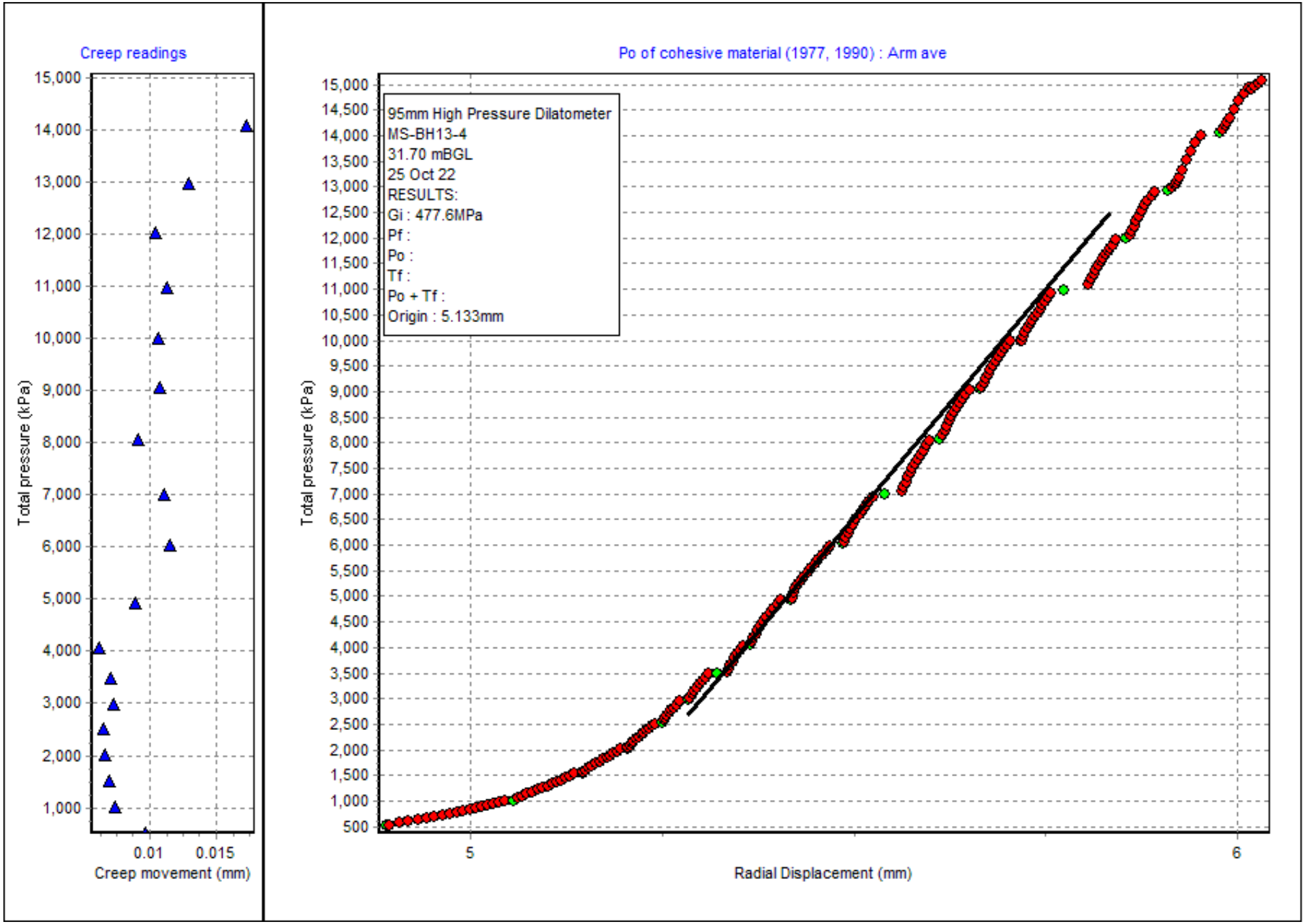
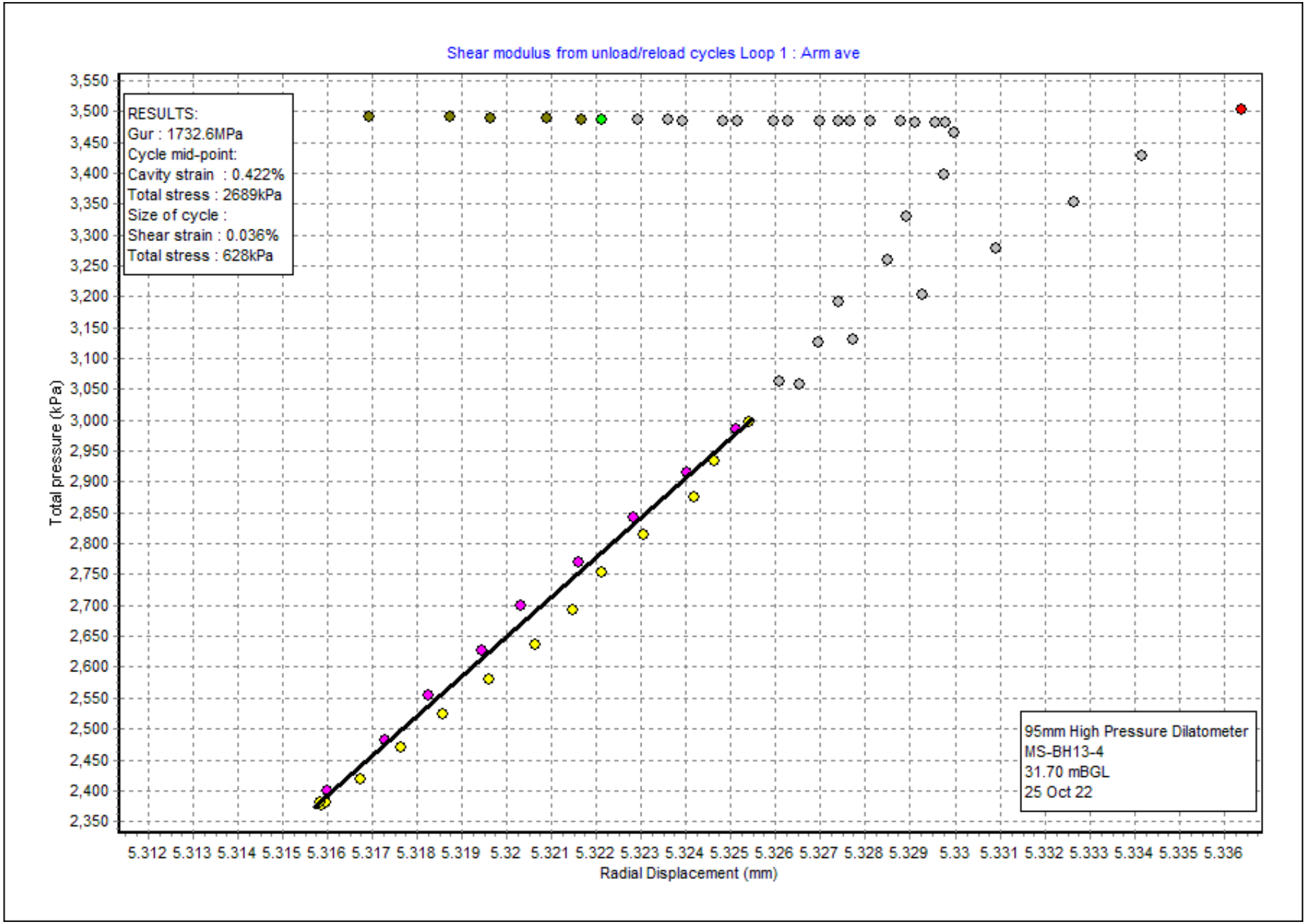
4.599
4.6
4.601
4.602
4.603
4.604

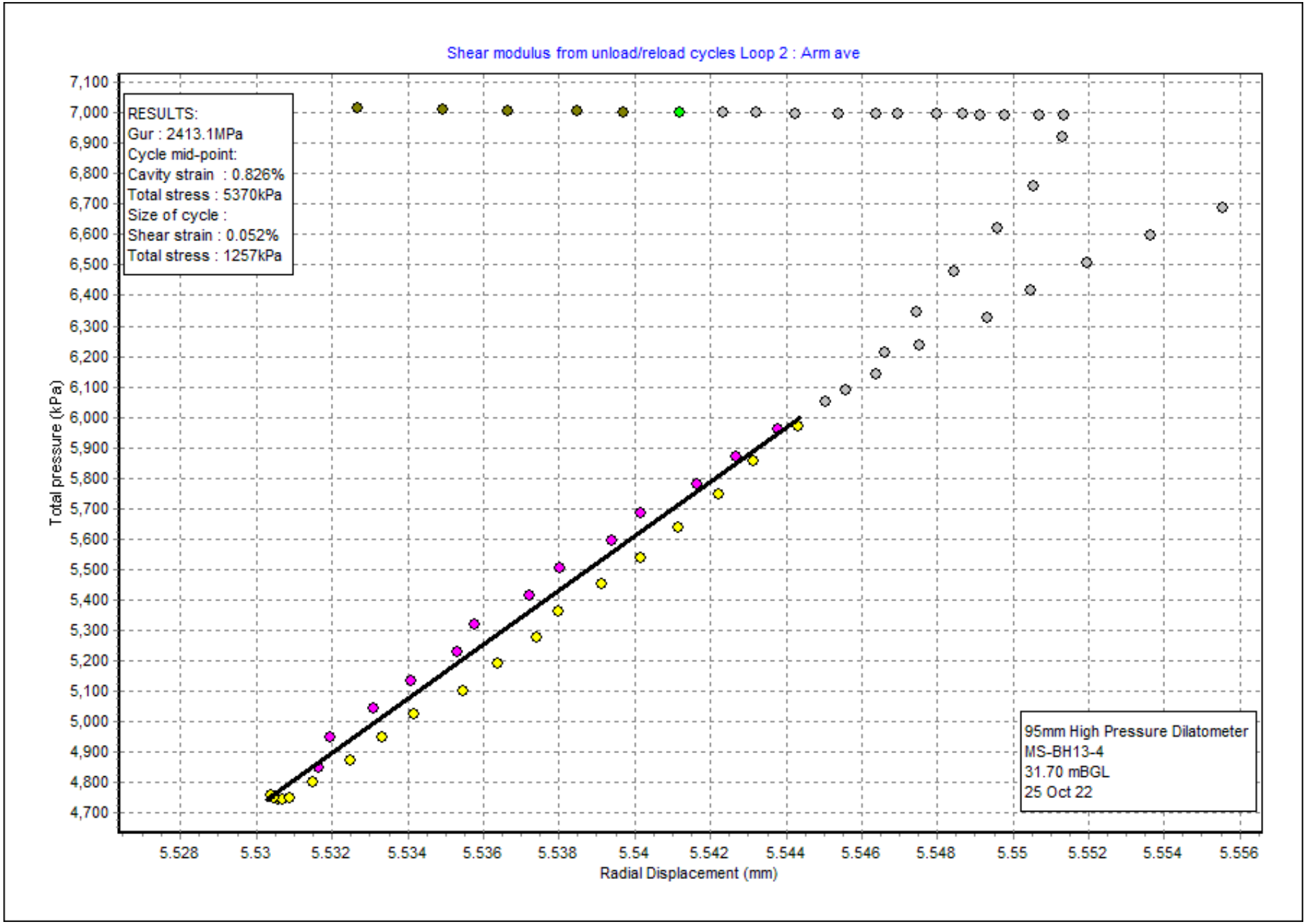

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 3027.4MPa
Cycle mid-point:
Cavity strain : 1.020%
Total stress : 7179kPa
Size of cycle :
Shear strain : 0.026%
Total stress : 791kPa
95mm High Pressure Dilatometer
MS-BH13-3
27.30 mBGL
21 Oct 22
Total pressure (kPa)
7,700
7,650
7,600
7,550
7,500
7,450
7,400
7,350
7,300
7,250
7,200
7,150
7,100
7,050
7,000
6,950
6,900
6,850
6,800
6,750
6,700
6,650
Radial Displacement (mm)
4.69
4.691
4.692
4.693
4.694
4.695
4.696
4.697
4.698
4.699
4.7
4.701
4.702
4.703
4.704
4.705
4.706
4.707
4.708

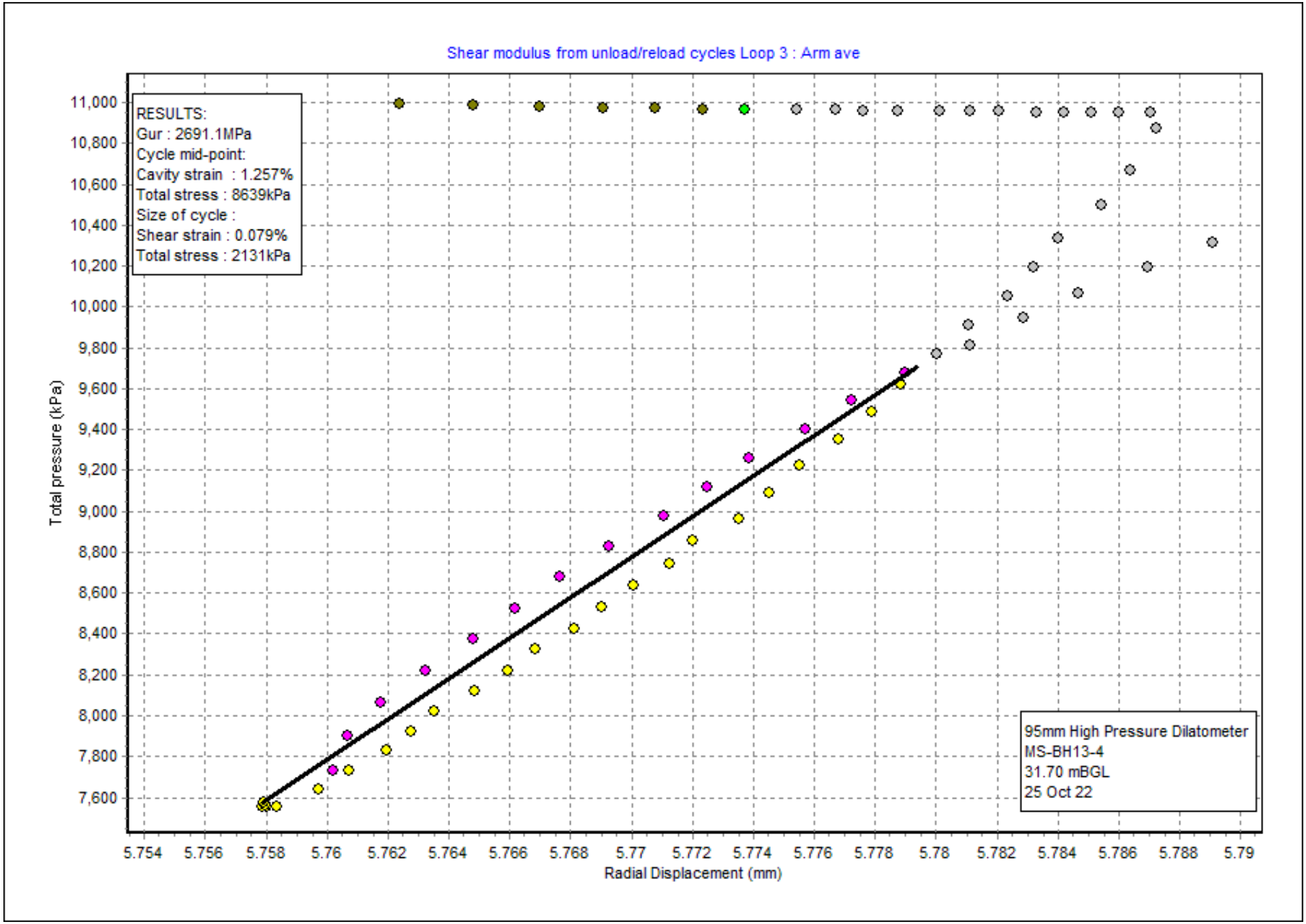

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 2686.5MPa
Cycle mid-point:
Cavity strain : 1.326%
Total stress : 7565kPa
Size of cycle :
Shear strain : 0.120%
Total stress : 3219kPa
95mm High Pressure Dilatometer
MS-BH13-3
27.30 mBGL
21 Oct 22
Total pressure (kPa)
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
4.842 4.844 4.846 4.848 4.85 4.852 4.854 4.856 4.858 4.86 4.862 4.864 4.866 4.868 4.87 4.872 4.874 4.876 4.878 4.88 4.882 4.884
Radial Displacement (mm)

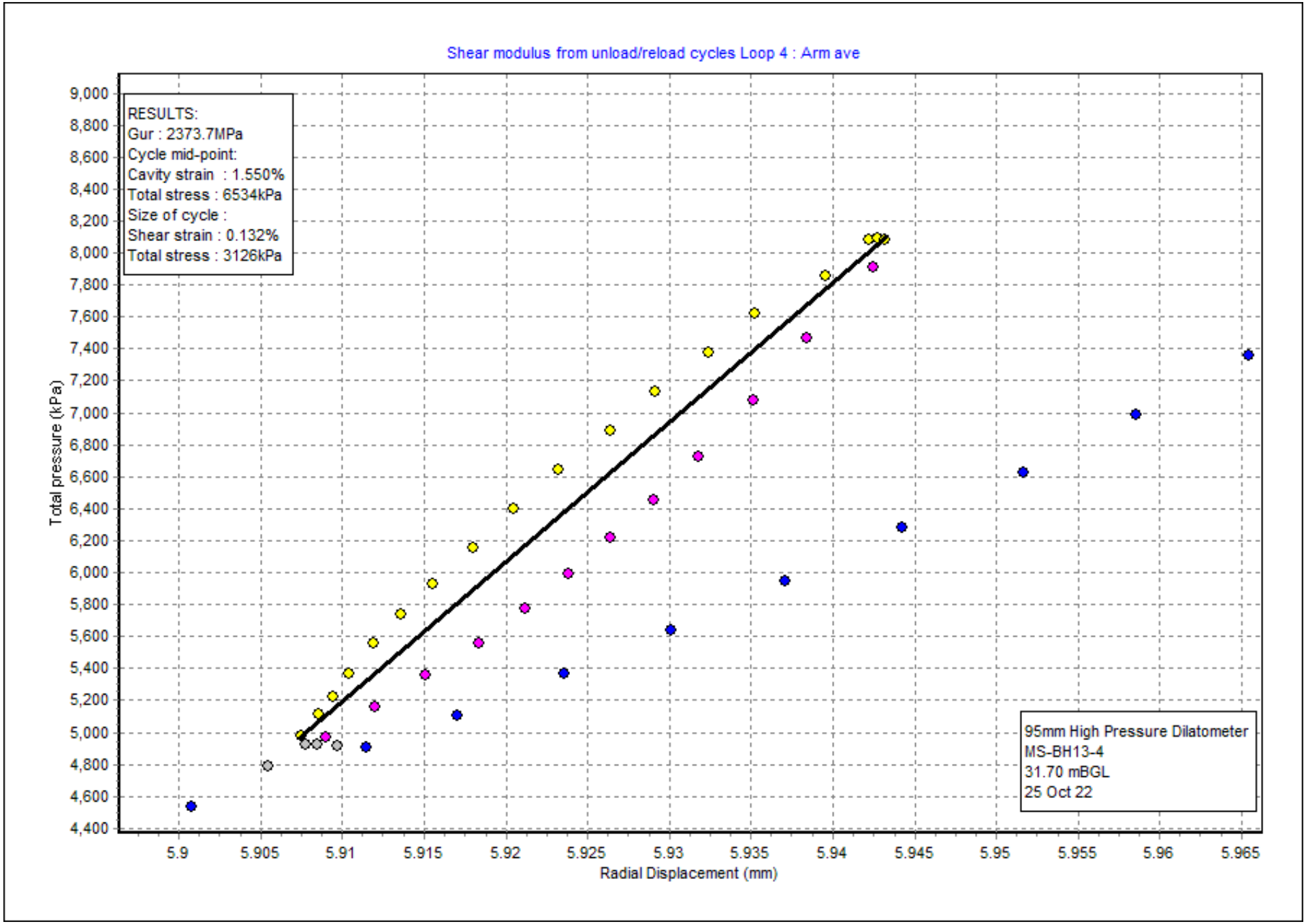

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH13-4
31.70 mBGL
25 Oct 22
Total pressure (kPa)
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-1.2
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
Cavity strain (%)

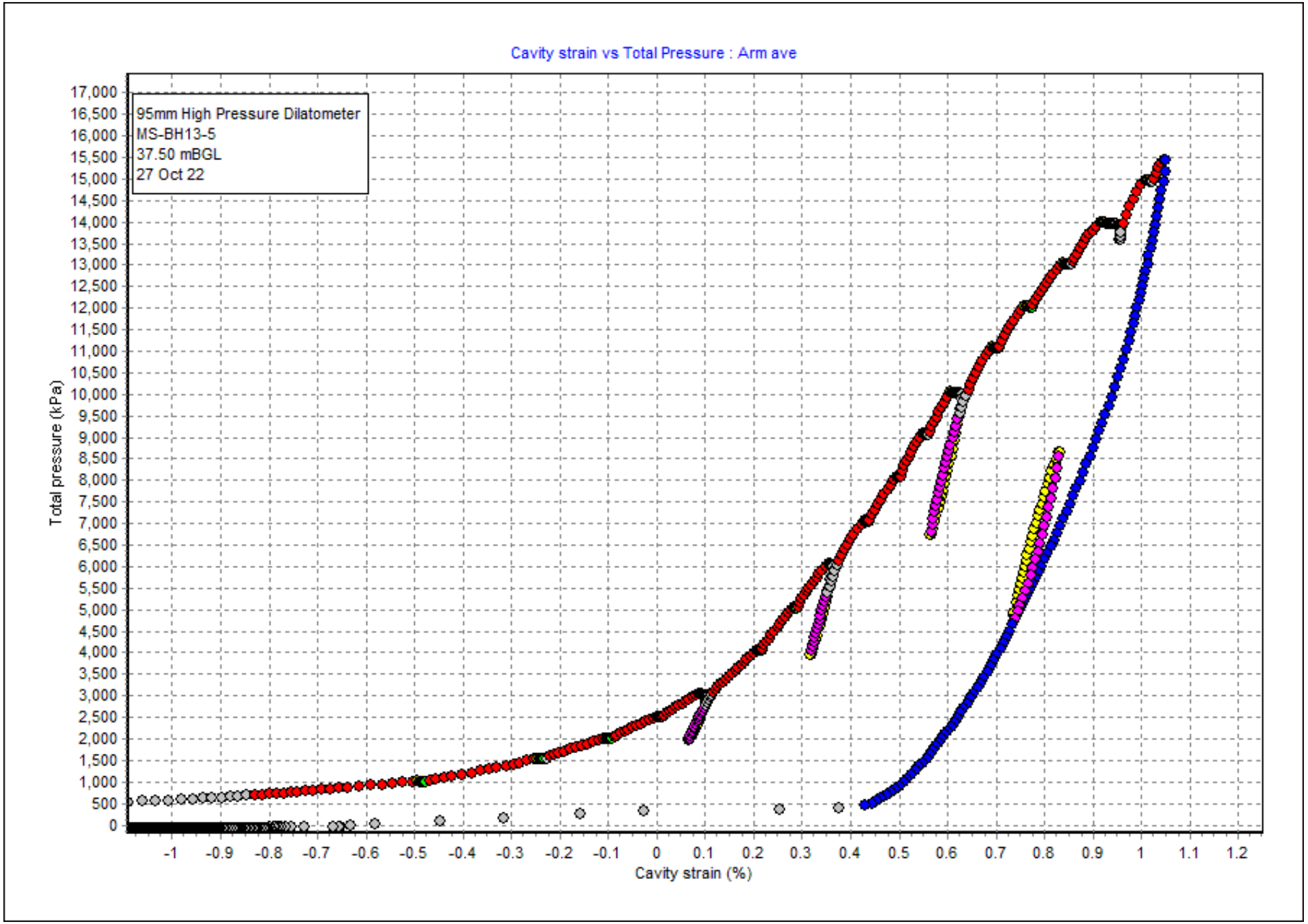

Creep readings
Total pressure (kPa)
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0.01
0.015
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH13-4
31.70 mBGL
25 Oct 22
RESULTS:
Gi : 477.6MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 5.133mm
Total pressure (kPa)
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
5
6
Radial Displacement (mm)

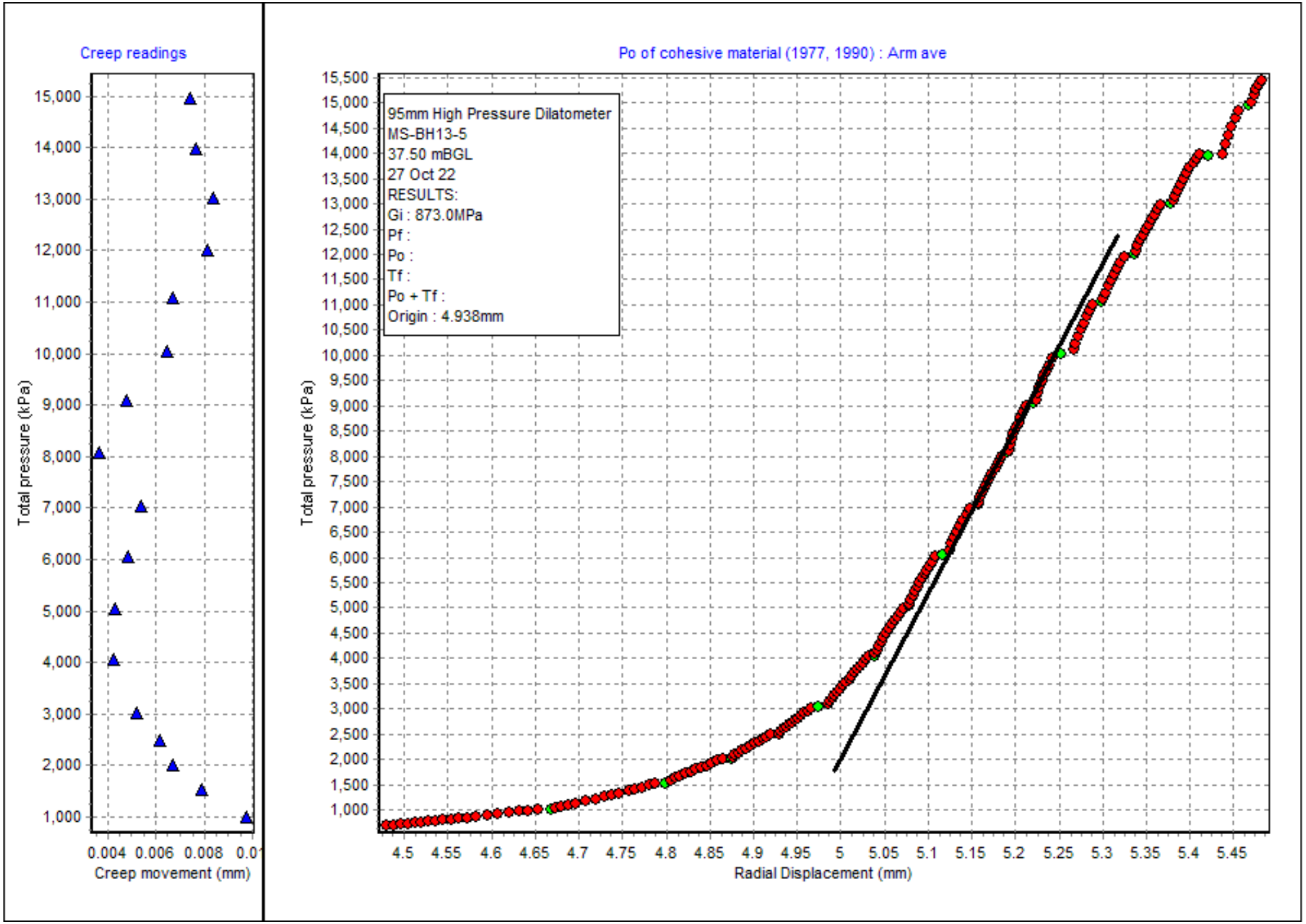

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1732.6MPa
Cycle mid-point:
Cavity strain : 0.422%
Total stress : 2689kPa
Size of cycle :
Shear strain : 0.036%
Total stress : 628kPa
95mm High Pressure Dilatometer
MS-BH13-4
31.70 mBGL
25 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
3,550
3,500
3,450
3,400
3,350
3,300
3,250
3,200
3,150
3,100
3,050
3,000
2,950
2,900
2,850
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
5.312 5.313 5.314 5.315 5.316 5.317 5.318 5.319 5.32 5.321 5.322 5.323 5.324 5.325 5.326 5.327 5.328 5.329 5.33 5.331 5.332 5.333 5.334 5.335 5.336

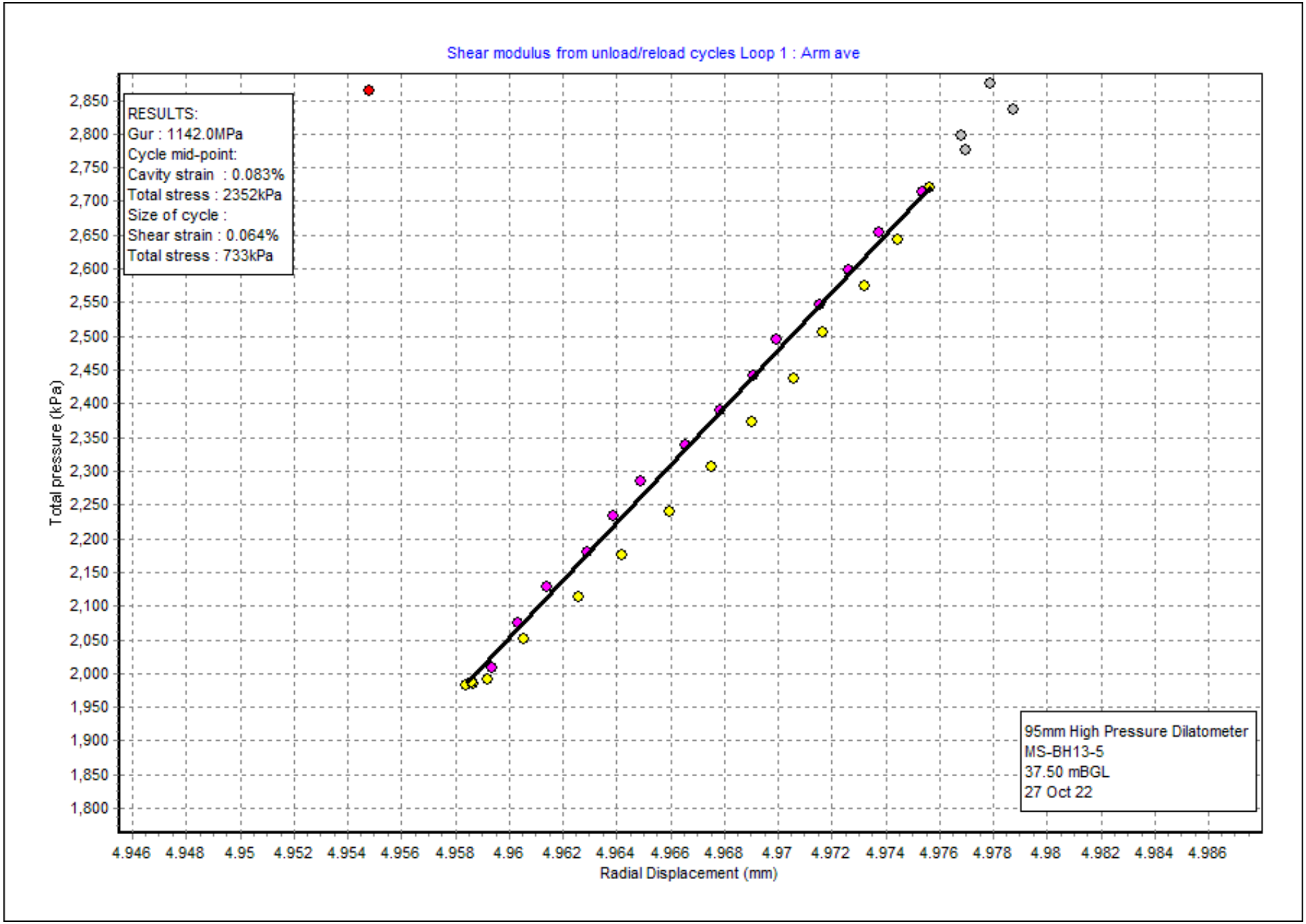

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 2413.1MPa
Cycle mid-point:
Cavity strain : 0.826%
Total stress : 5370kPa
Size of cycle :
Shear strain : 0.052%
Total stress : 1257kPa
95mm High Pressure Dilatometer
MS-BH13-4
31.70 mBGL
25 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
7,100
7,000
6,900
6,800
6,700
6,600
6,500
6,400
6,300
6,200
6,100
6,000
5,900
5,800
5,700
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
5.528
5.53
5.532
5.534
5.536
5.538
5.54
5.542
5.544
5.546
5.548
5.55
5.552
5.554
5.556

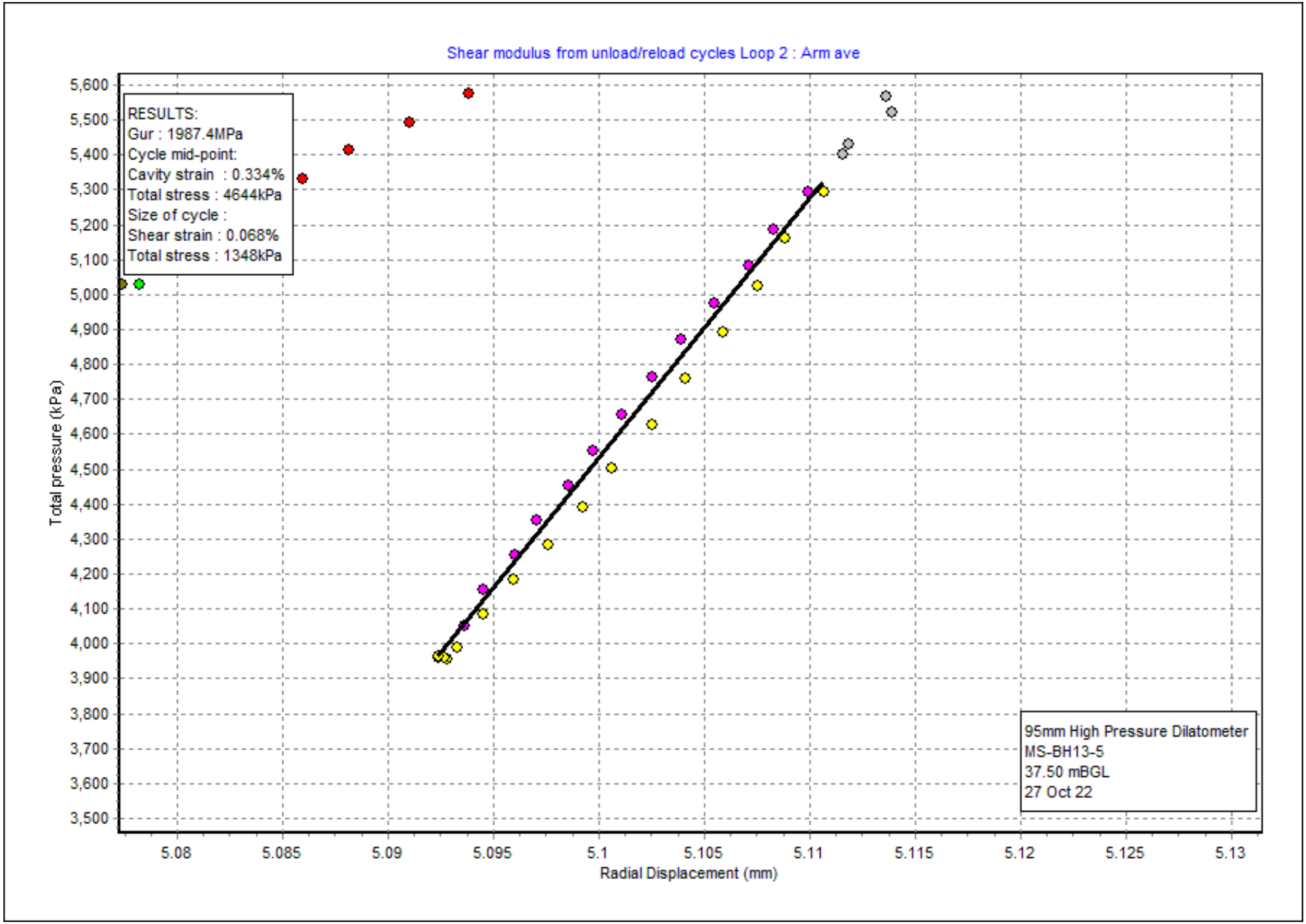

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 2691.1MPa
Cycle mid-point:
Cavity strain : 1.257%
Total stress : 8639kPa
Size of cycle :
Shear strain : 0.079%
Total stress : 2131kPa
95mm High Pressure Dilatometer
MS-BH13-4
31.70 mBGL
25 Oct 22
Total pressure (kPa)
11,000
10,800
10,600
10,400
10,200
10,000
9,800
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
5.754
5.756
5.758
5.76
5.762
5.764
5.766
5.768
5.77
5.772
5.774
5.776
5.778
5.78
5.782
5.784
5.786
5.788
5.79
Radial Displacement (mm)

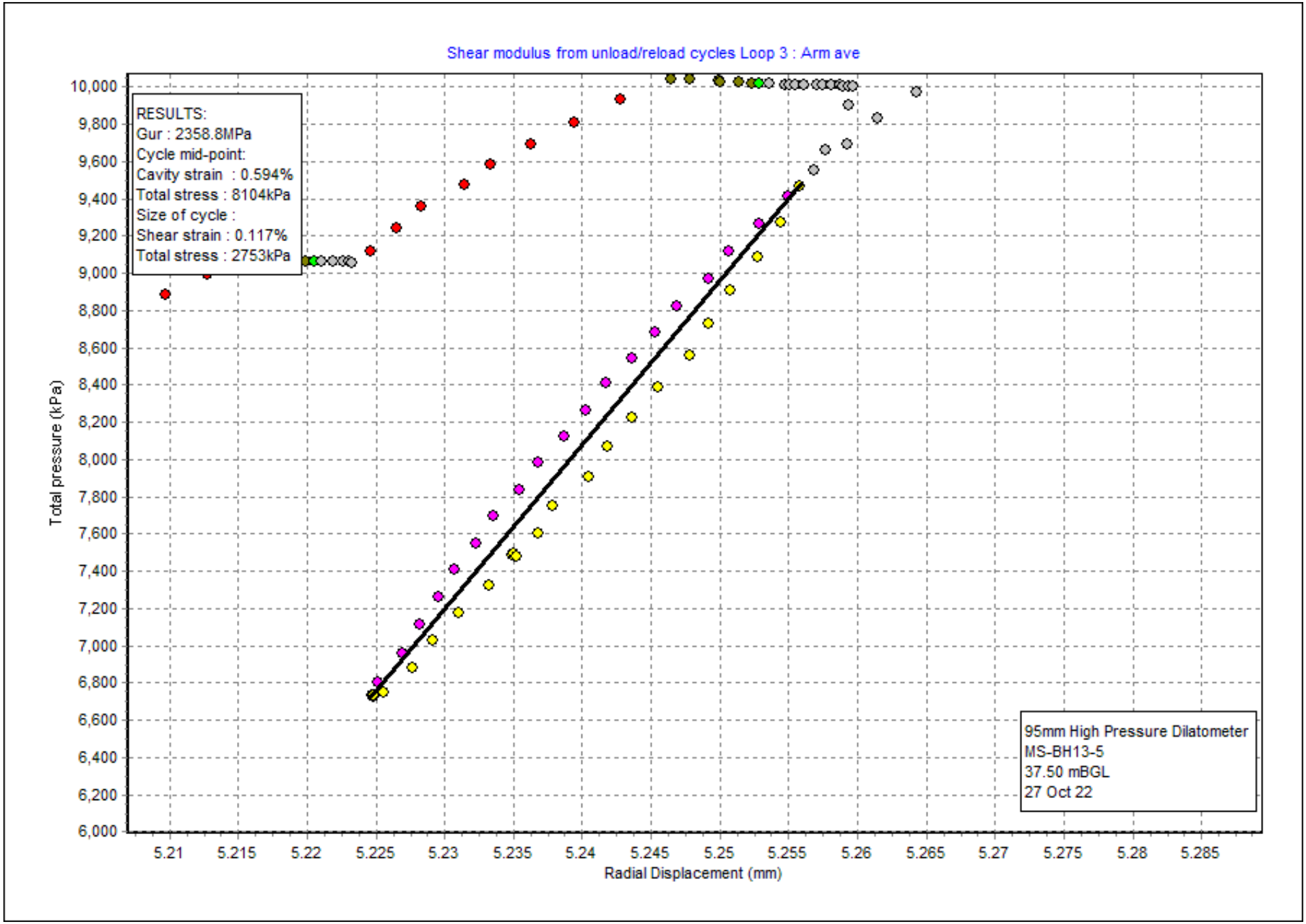

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 2373.7MPa
Cycle mid-point:
Cavity strain : 1.550%
Total stress : 6534kPa
Size of cycle :
Shear strain : 0.132%
Total stress : 3126kPa
95mm High Pressure Dilatometer
MS-BH13-4
31.70 mBGL
25 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
5.9
5.905
5.91
5.915
5.92
5.925
5.93
5.935
5.94
5.945
5.95
5.955
5.96
5.965

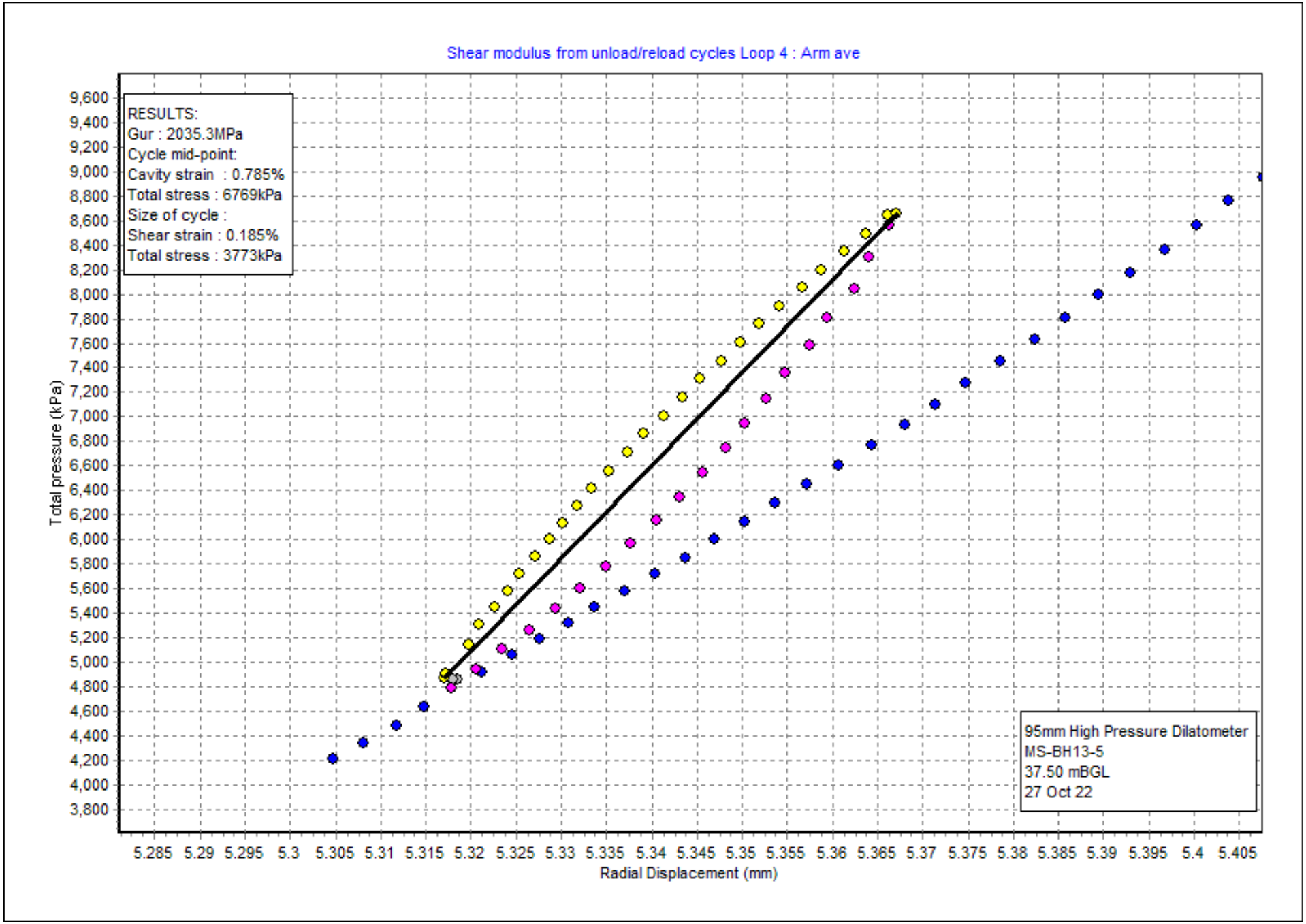

Cavity strain vs Total Pressure : Arm ave
95mm High Pressure Dilatometer
MS-BH13-5
37.50 mBGL
27 Oct 22
Total pressure (kPa)
17,000
16,500
16,000
15,500
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-1
-0.9
-0.8
-0.7
-0.6
-0.5
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
Cavity strain (%)

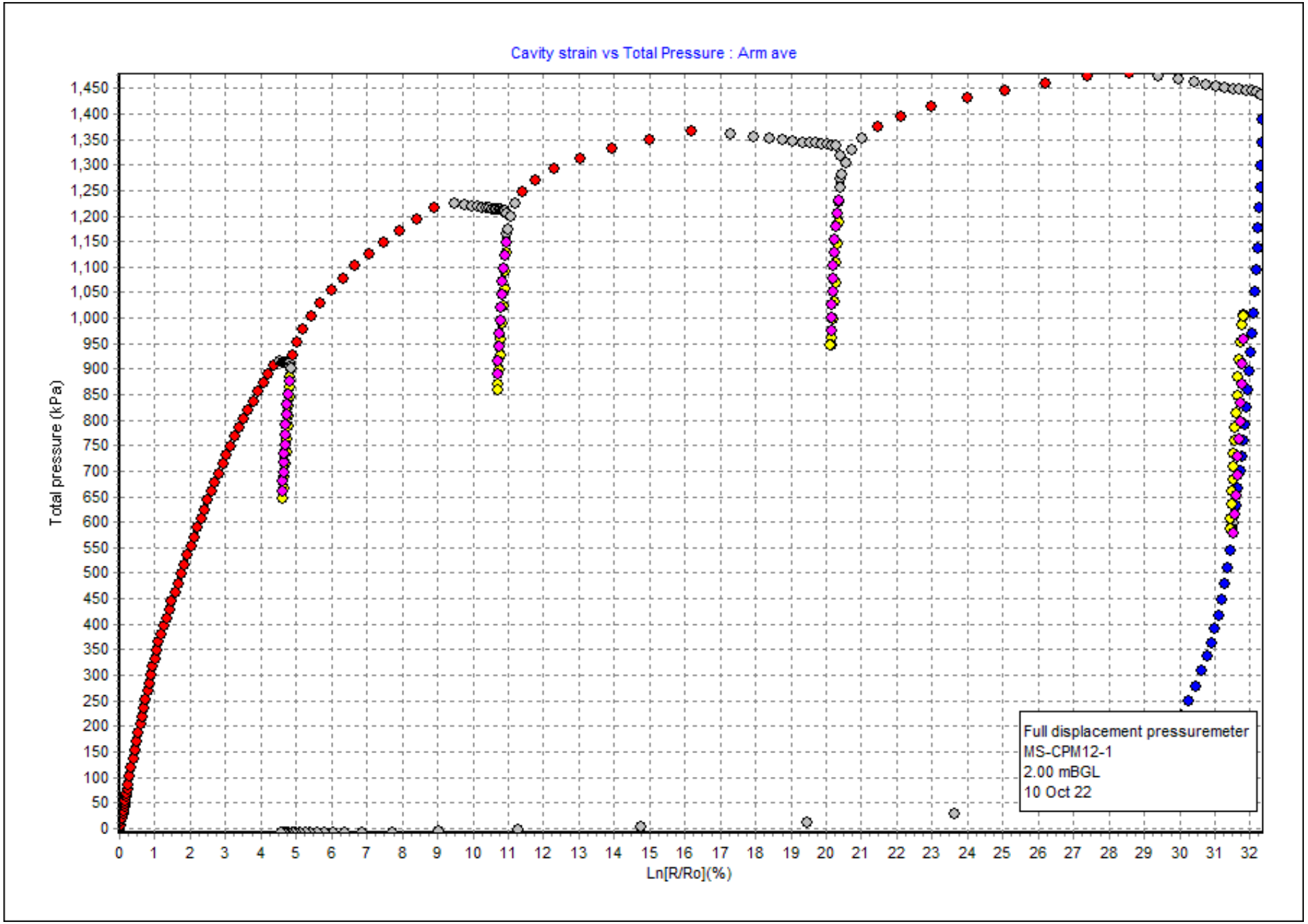

Creep readings
Total pressure (kPa)
15,000
14,000
13,000
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0.004
0.006
0.008
Creep movement (mm)
Po of cohesive material (1977, 1990) : Arm ave
95mm High Pressure Dilatometer
MS-BH13-5
37.50 mBGL
27 Oct 22
RESULTS:
Gi : 873.0MPa
Pf :
Po :
Tf :
Po + Tf :
Origin : 4.938mm
Total pressure (kPa)
15,500
15,000
14,500
14,000
13,500
13,000
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
4.5
4.55
4.6
4.65
4.7
4.75
4.8
4.85
4.9
4.95
5
5.05
5.1
5.15
5.2
5.25
5.3
5.35
5.4
5.45
Radial Displacement (mm)

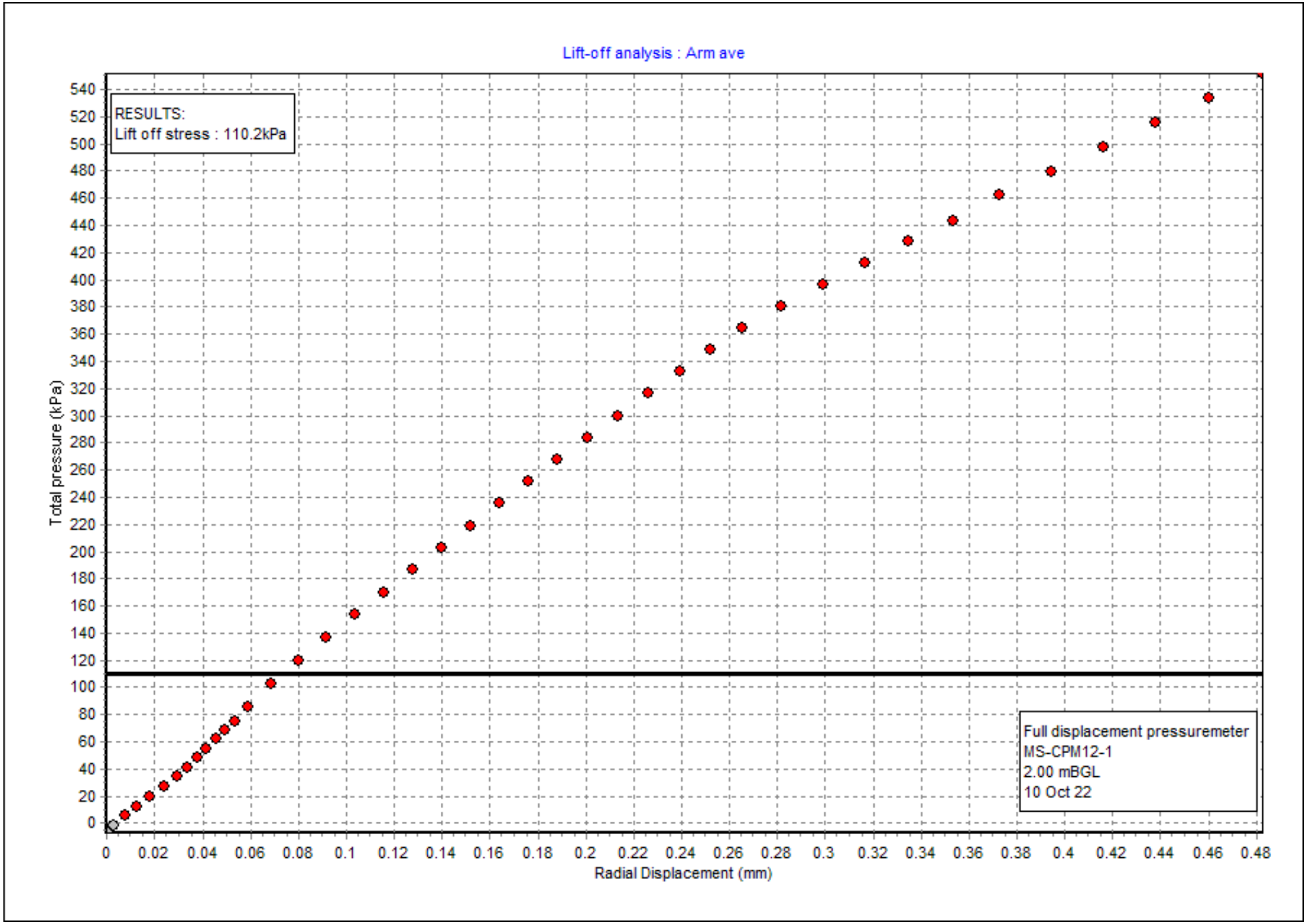

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 1142.0MPa
Cycle mid-point:
Cavity strain : 0.083%
Total stress : 2352kPa
Size of cycle :
Shear strain : 0.064%
Total stress : 733kPa
95mm High Pressure Dilatometer
MS-BH13-5
37.50 mBGL
27 Oct 22
Total pressure (kPa)
2,850
2,800
2,750
2,700
2,650
2,600
2,550
2,500
2,450
2,400
2,350
2,300
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
1,800
4.946
4.948
4.95
4.952
4.954
4.956
4.958
4.96
4.962
4.964
4.966
4.968
4.97
4.972
4.974
4.976
4.978
4.98
4.982
4.984
4.986
Radial Displacement (mm)

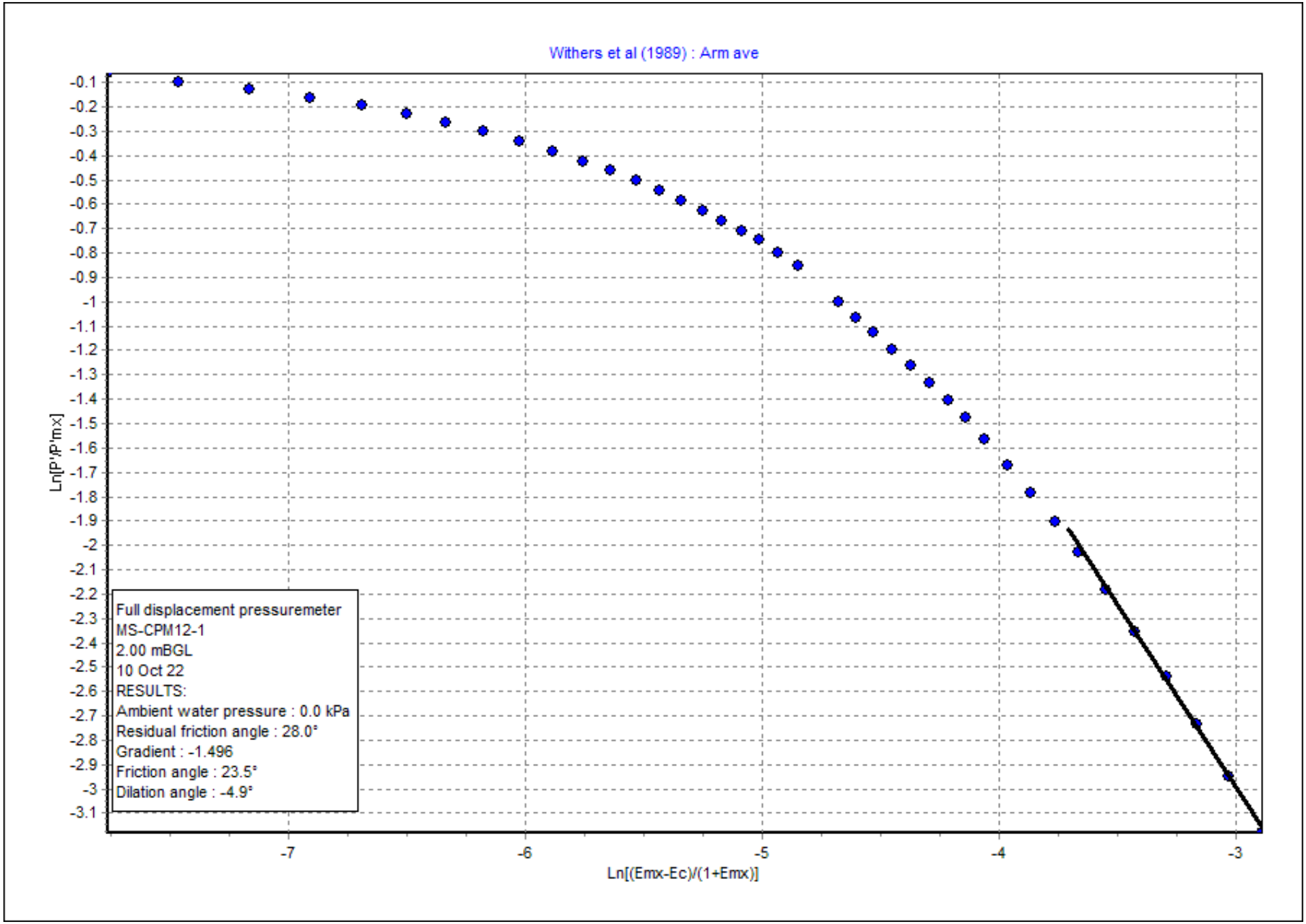

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 1987.4MPa
Cycle mid-point:
Cavity strain : 0.334%
Total stress : 4644kPa
Size of cycle :
Shear strain : 0.068%
Total stress : 1348kPa
95mm High Pressure Dilatometer
MS-BH13-5
37.50 mBGL
27 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
5,600
5,500
5,400
5,300
5,200
5,100
5,000
4,900
4,800
4,700
4,600
4,500
4,400
4,300
4,200
4,100
4,000
3,900
3,800
3,700
3,600
3,500
5.08
5.085
5.09
5.095
5.1
5.105
5.11
5.115
5.12
5.125
5.13

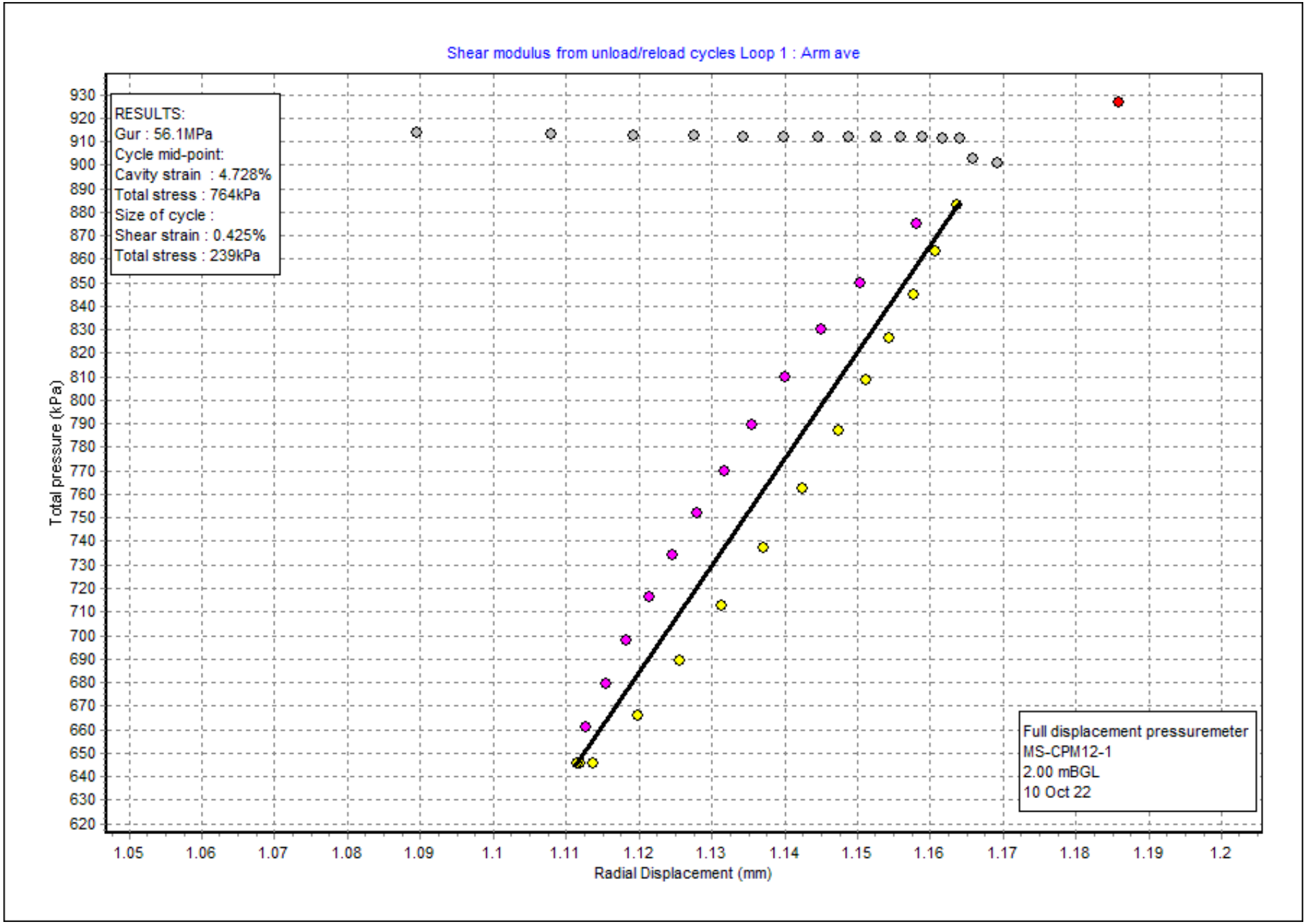

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 2358.8MPa
Cycle mid-point:
Cavity strain : 0.594%
Total stress : 8104kPa
Size of cycle :
Shear strain : 0.117%
Total stress : 2753kPa
95mm High Pressure Dilatometer
MS-BH13-5
37.50 mBGL
27 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
10,000
9,800
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5.21
5.215
5.22
5.225
5.23
5.235
5.24
5.245
5.25
5.255
5.26
5.265
5.27
5.275
5.28
5.285

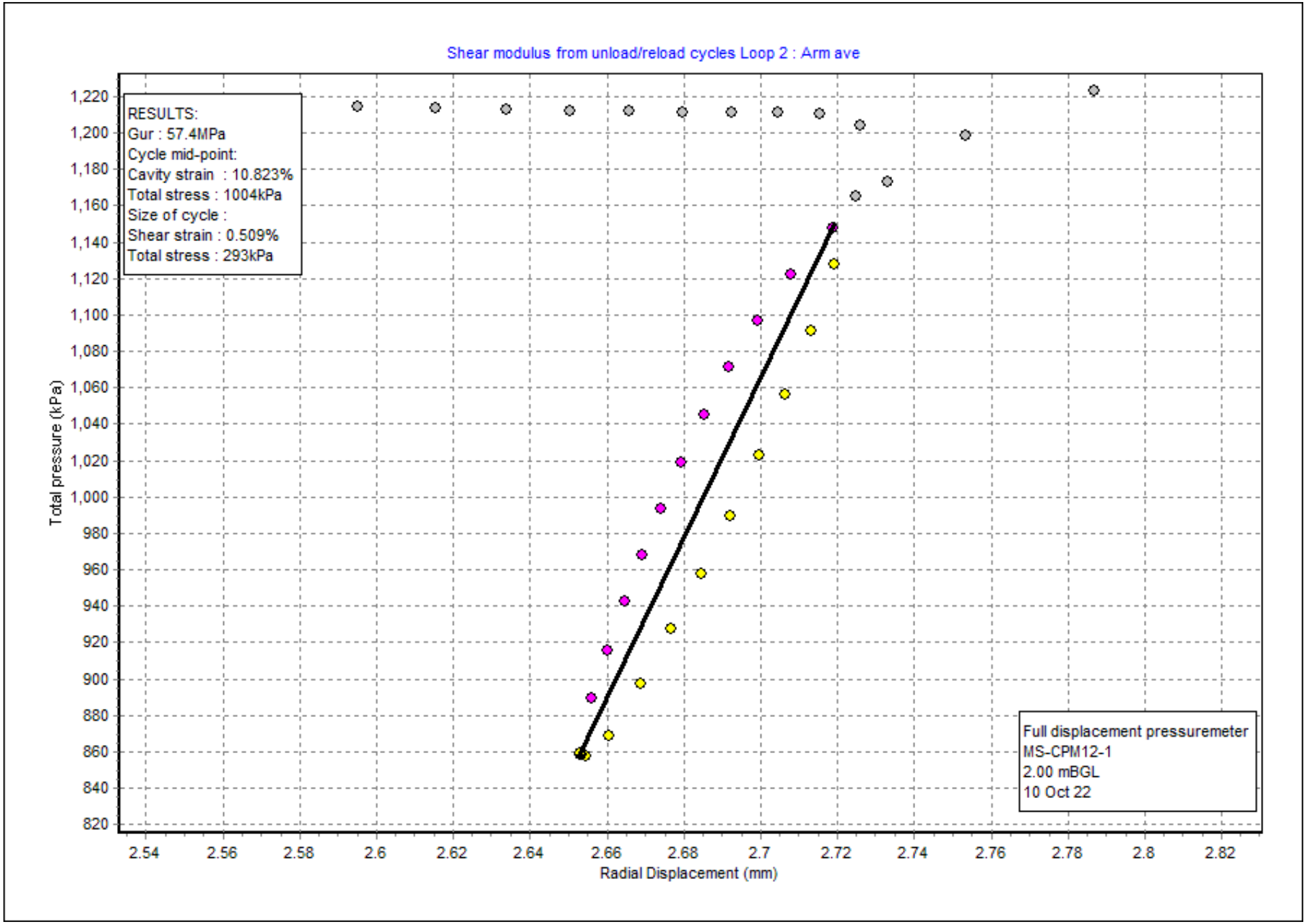

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 2035.3MPa
Cycle mid-point:
Cavity strain : 0.785%
Total stress : 6769kPa
Size of cycle :
Shear strain : 0.185%
Total stress : 3773kPa
95mm High Pressure Dilatometer
MS-BH13-5
37.50 mBGL
27 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
9,600
9,400
9,200
9,000
8,800
8,600
8,400
8,200
8,000
7,800
7,600
7,400
7,200
7,000
6,800
6,600
6,400
6,200
6,000
5,800
5,600
5,400
5,200
5,000
4,800
4,600
4,400
4,200
4,000
3,800
5.285 5.29 5.295 5.3 5.305 5.31 5.315 5.32 5.325 5.33 5.335 5.34 5.345 5.35 5.355 5.36 5.365 5.37 5.375 5.38 5.385 5.39 5.395 5.4 5.405

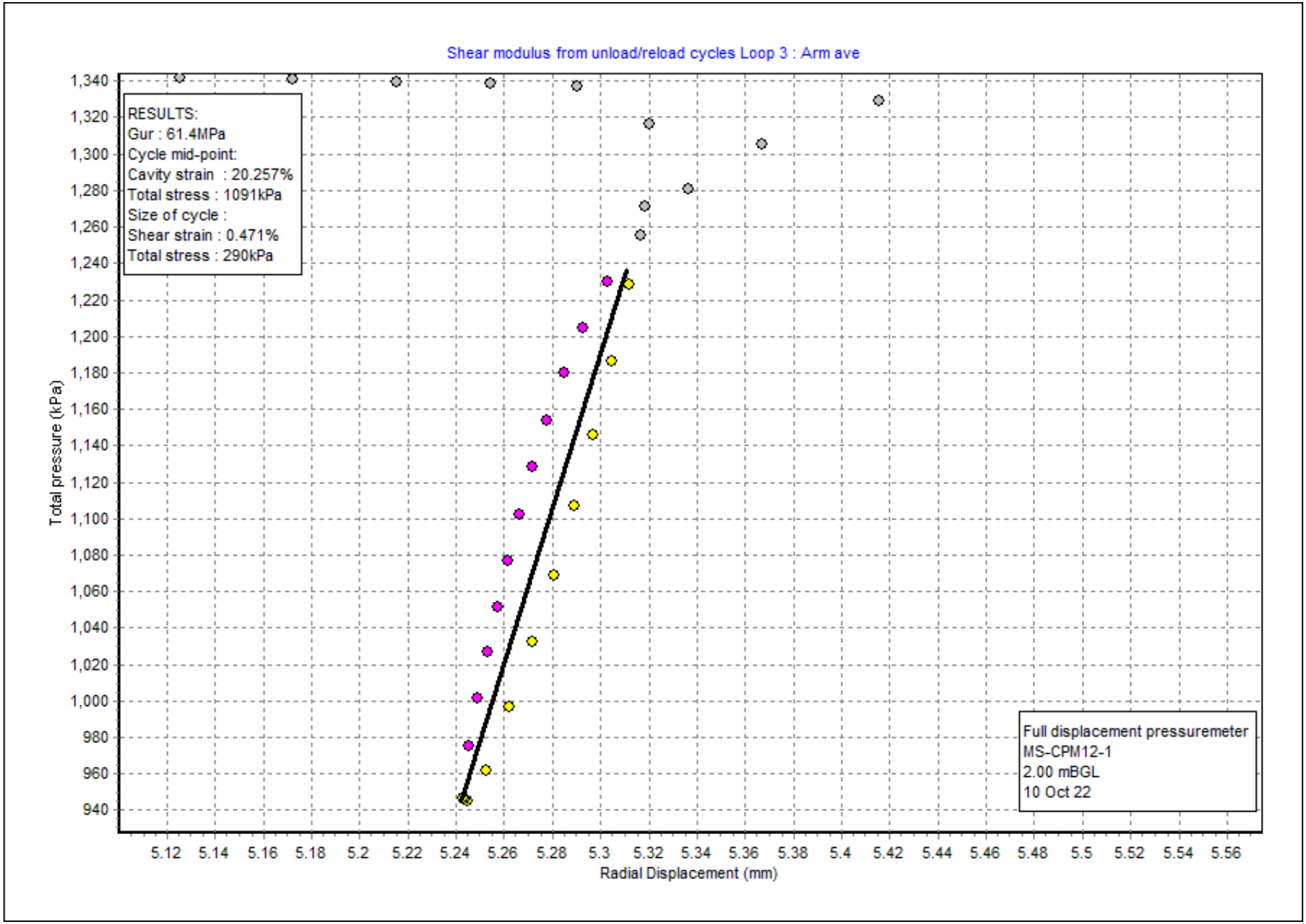

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22

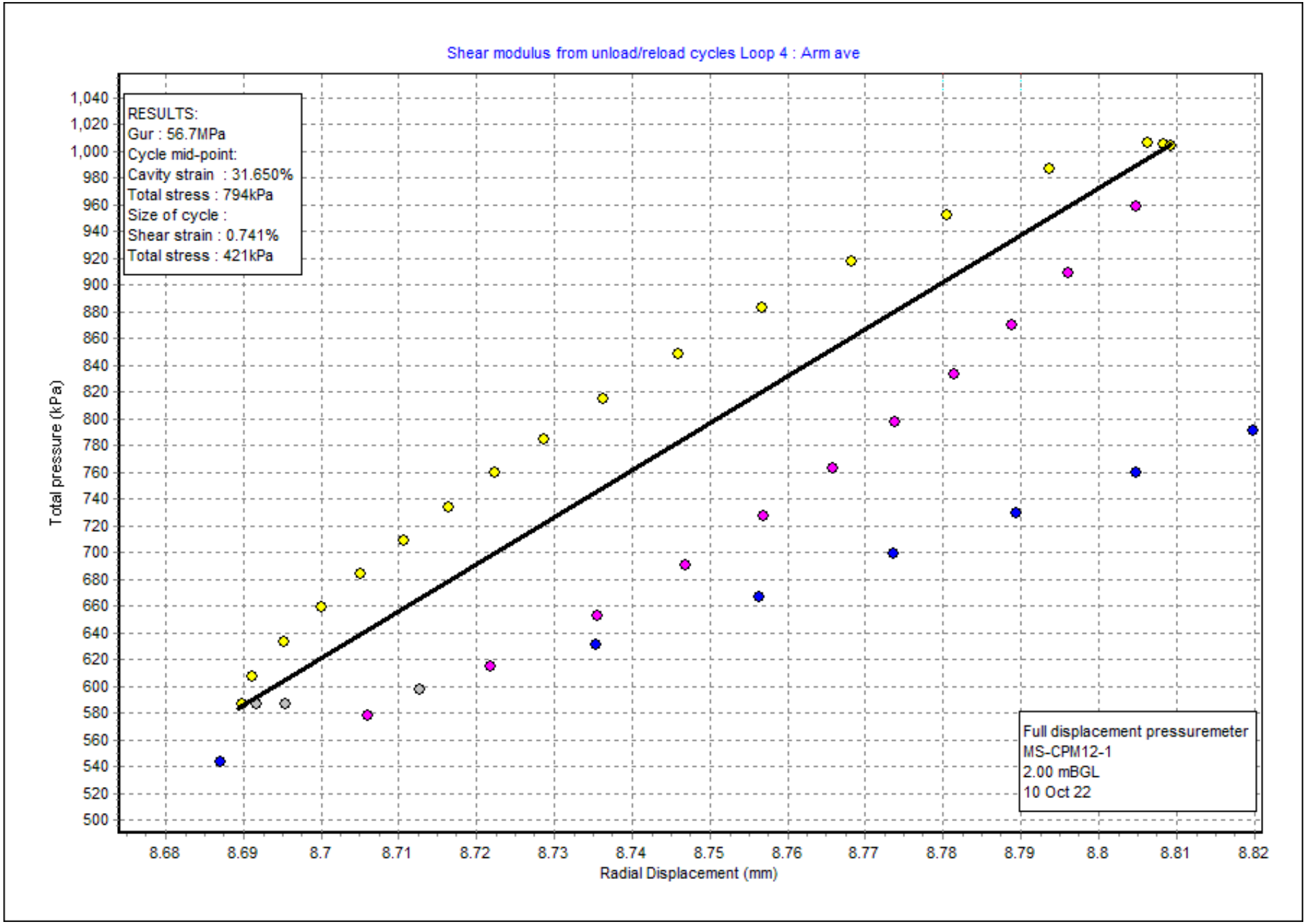

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 110.2kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22

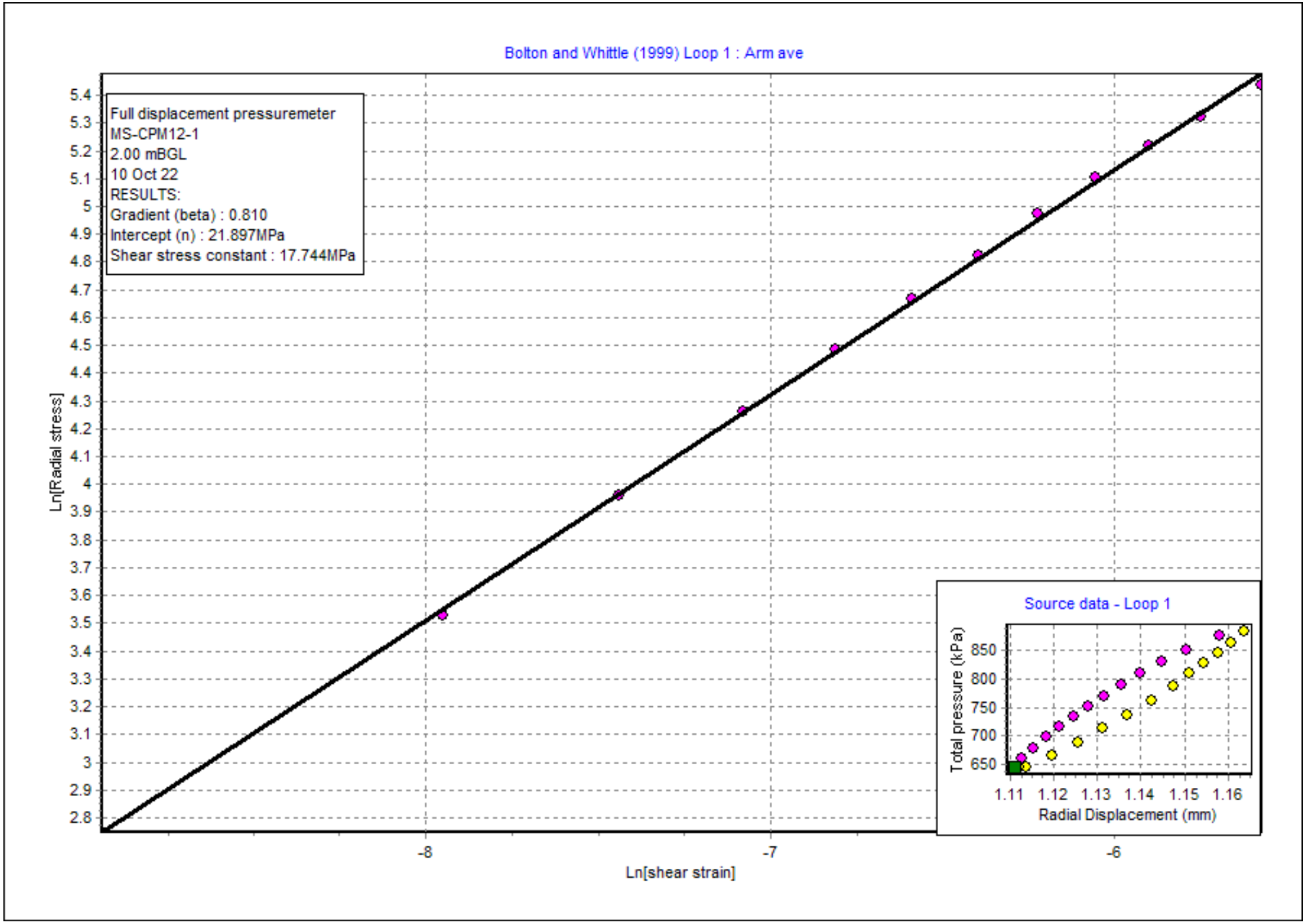

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
RESULTS:
Ambient water pressure : 0.0 kPa
Residual friction angle : 28.0°
Gradient : -1.496
Friction angle : 23.5°
Dilation angle : -4.9°

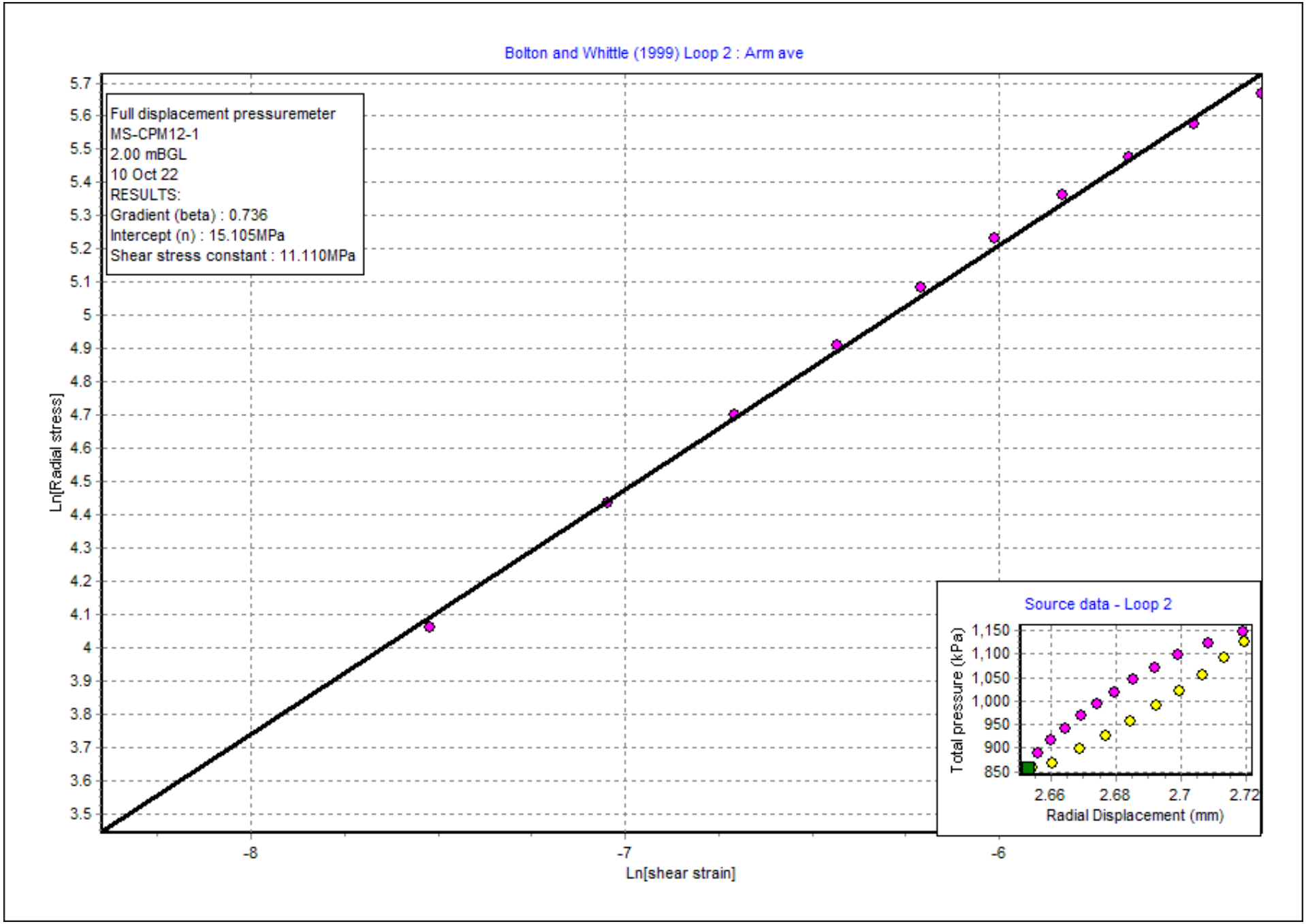

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 56.1MPa
Cycle mid-point:
Cavity strain : 4.728%
Total stress : 764kPa
Size of cycle :
Shear strain : 0.425%
Total stress : 239kPa
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
1.05
1.06
1.07
1.08
1.09
1.1
1.11
1.12
1.13
1.14
1.15
1.16
1.17
1.18
1.19
1.2

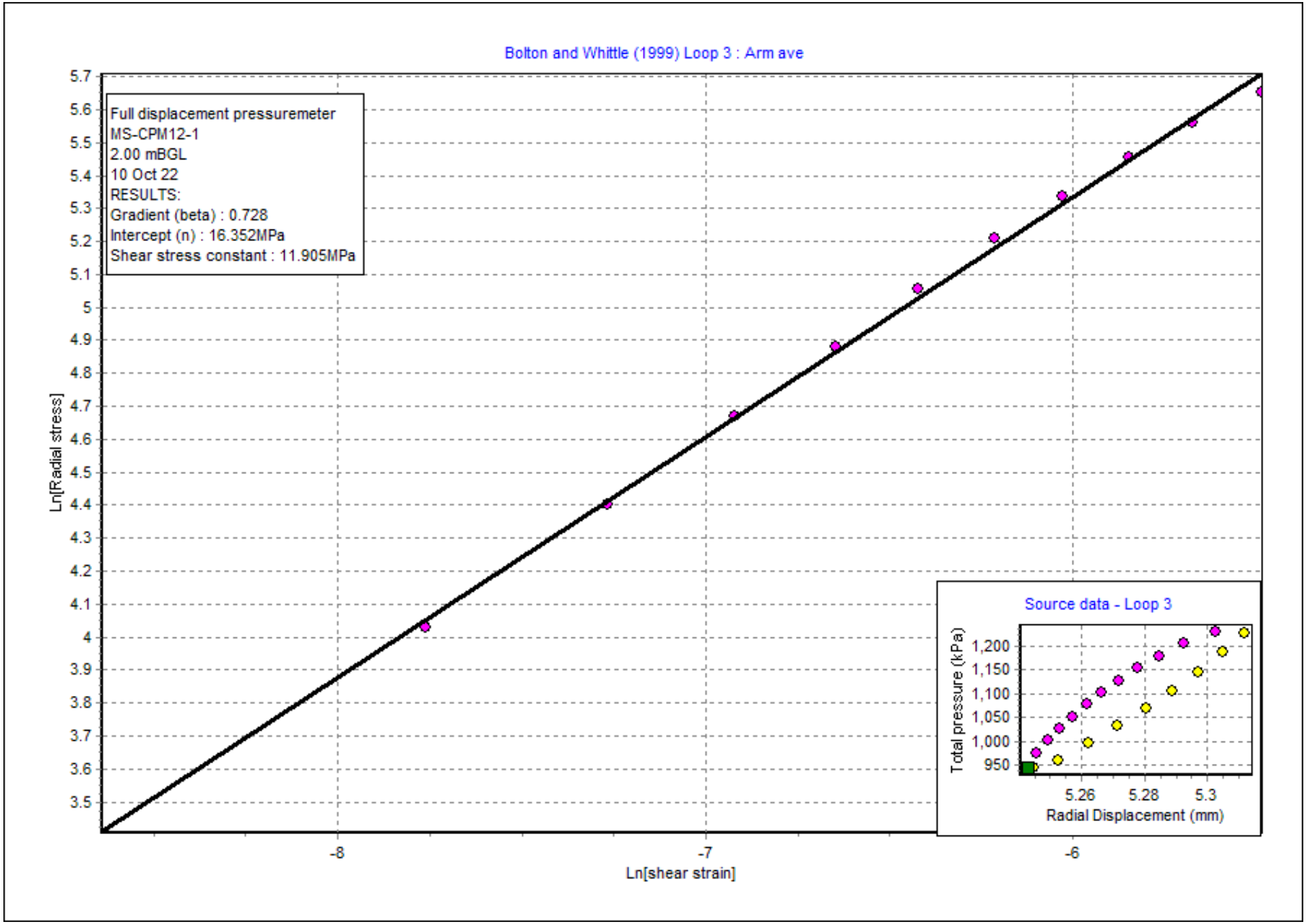

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 57.4MPa
Cycle mid-point:
Cavity strain : 10.823%
Total stress : 1004kPa
Size of cycle :
Shear strain : 0.509%
Total stress : 293kPa
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
2.54
2.56
2.58
2.6
2.62
2.64
2.66
2.68
2.7
2.72
2.74
2.76
2.78
2.8
2.82

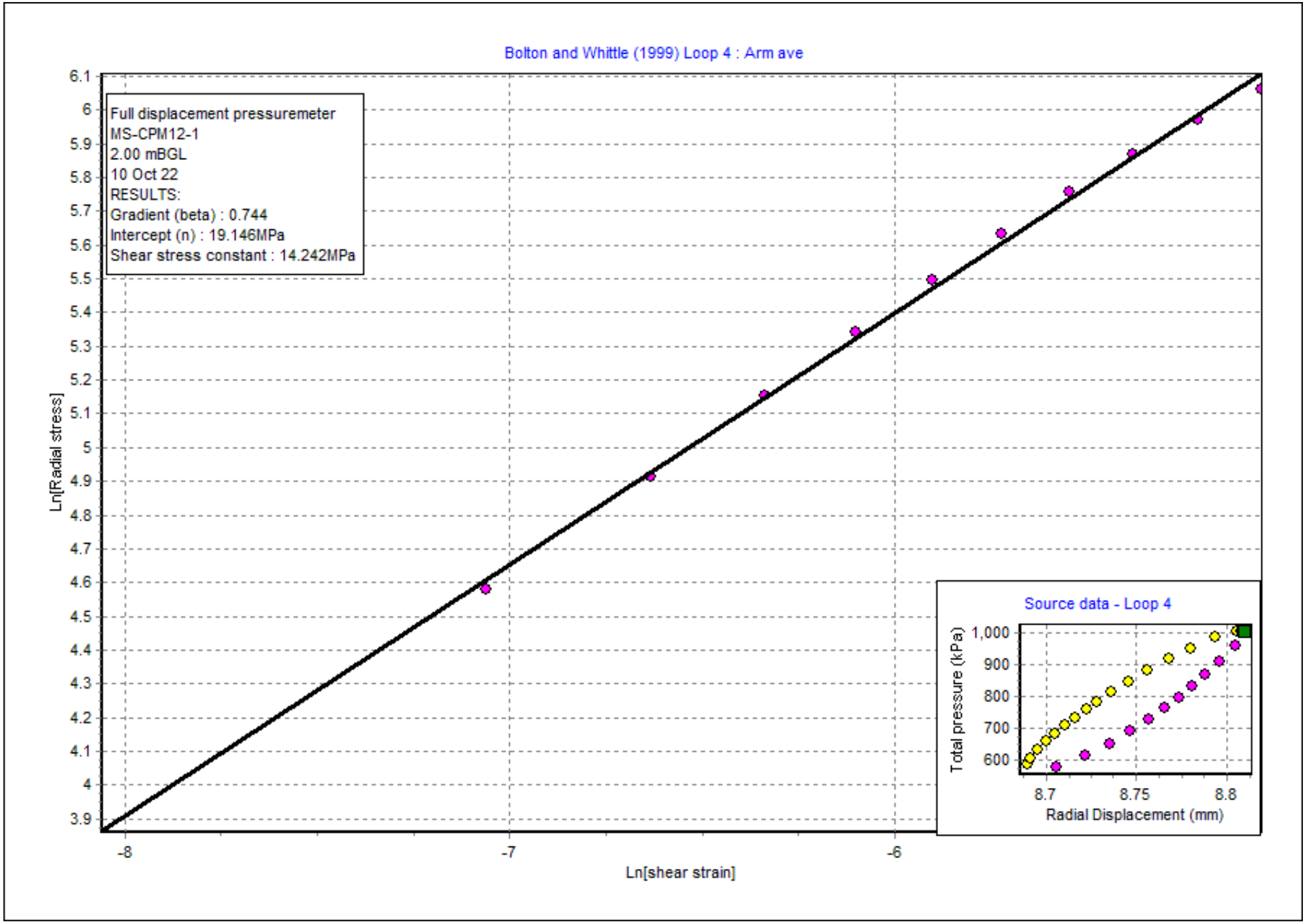

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 61.4MPa
Cycle mid-point:
Cavity strain : 20.257%
Total stress : 1091kPa
Size of cycle :
Shear strain : 0.471%
Total stress : 290kPa
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
Total pressure (kPa)
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
5.12
5.14
5.16
5.18
5.2
5.22
5.24
5.26
5.28
5.3
5.32
5.34
5.36
5.38
5.4
5.42
5.44
5.46
5.48
5.5
5.52
5.54
5.56
Radial Displacement (mm)

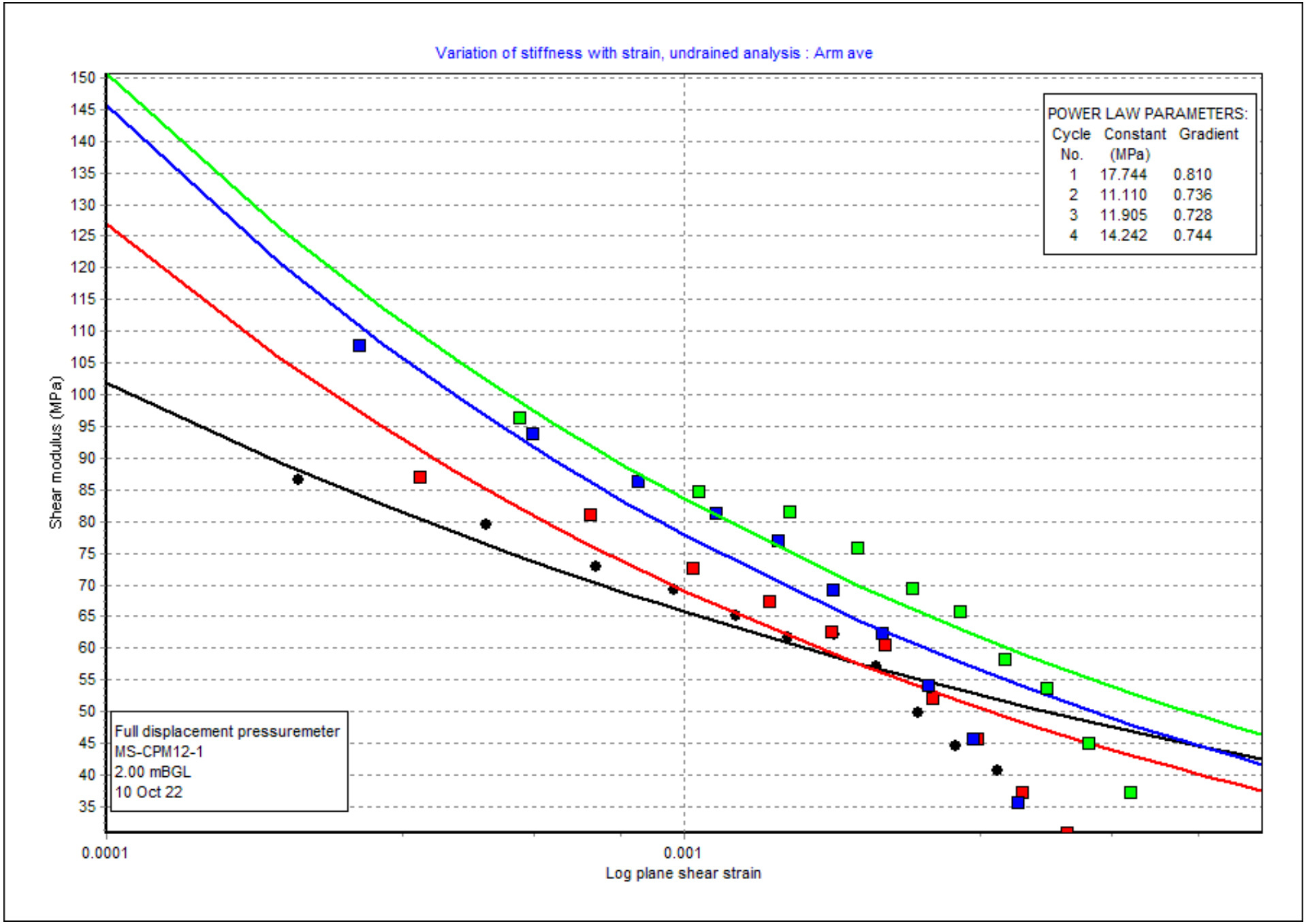

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 56.7MPa
Cycle mid-point:
Cavity strain : 31.650%
Total stress : 794kPa
Size of cycle :
Shear strain : 0.741%
Total stress : 421kPa
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
800
780
760
740
720
700
680
660
640
620
600
580
560
540
520
500
8.68
8.69
8.7
8.71
8.72
8.73
8.74
8.75
8.76
8.77
8.78
8.79
8.8
8.81
8.82

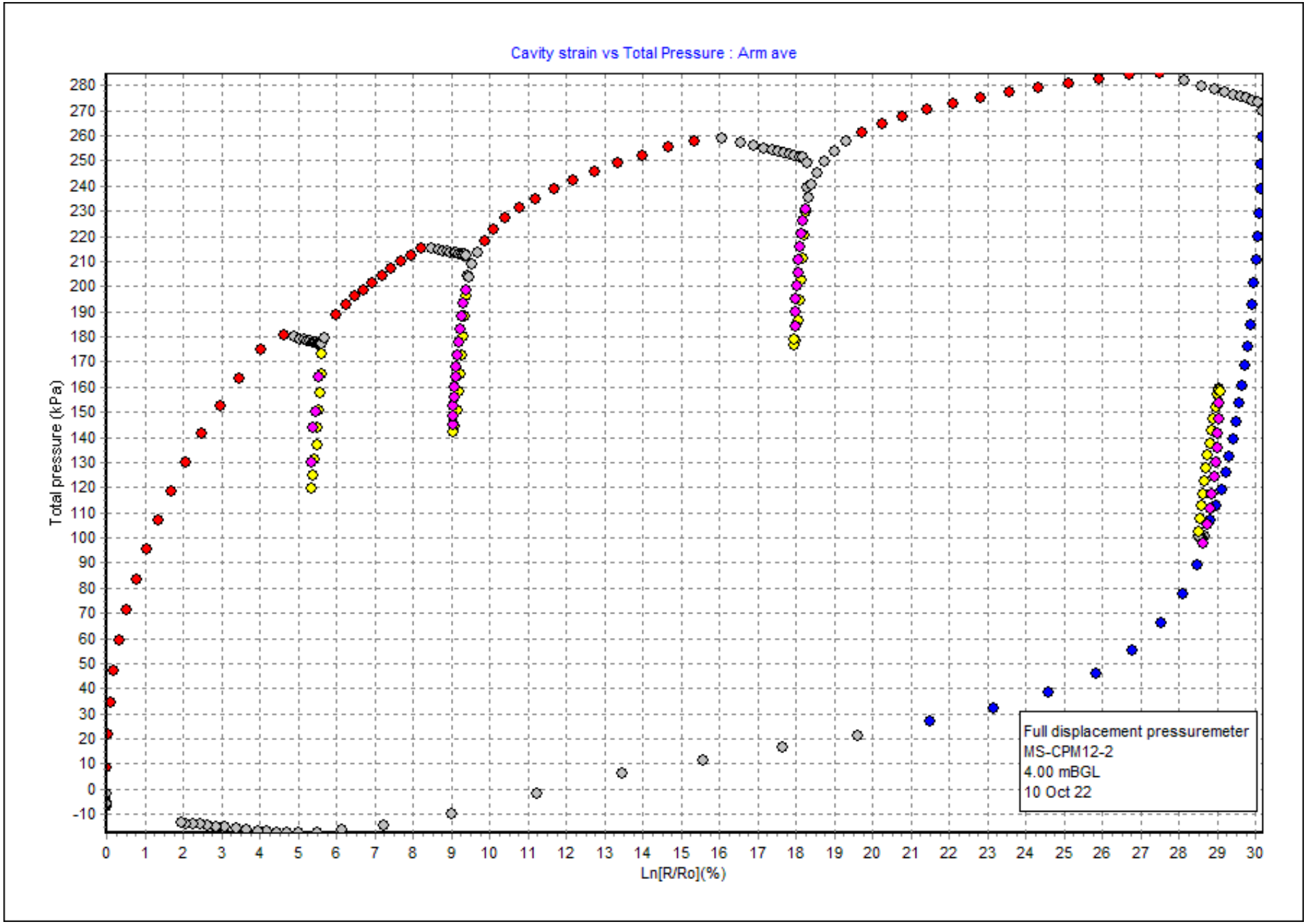

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.810
Intercept (n) : 21.897MPa
Shear stress constant : 17.744MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

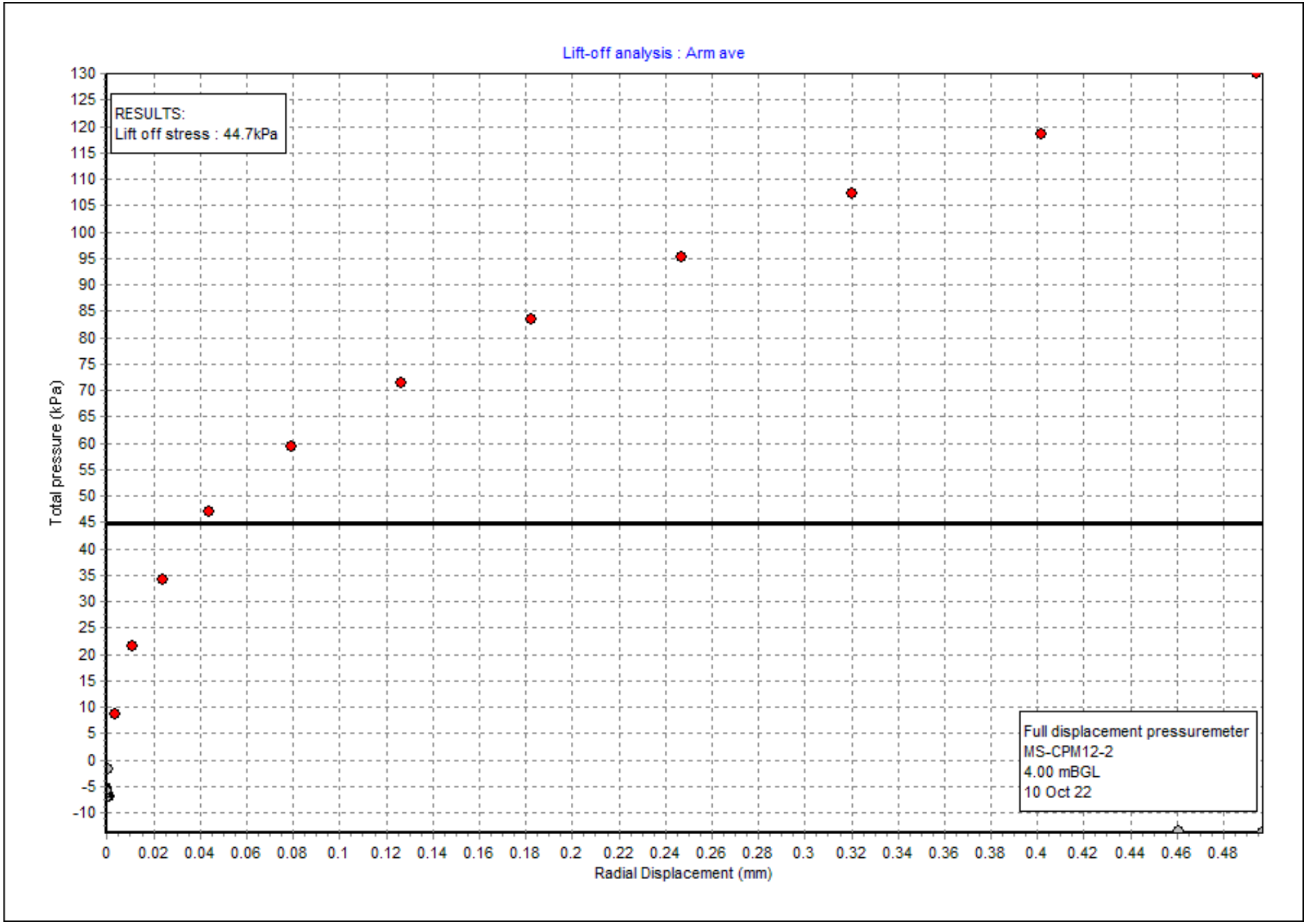

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.736
Intercept (n) : 15.105MPa
Shear stress constant : 11.110MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

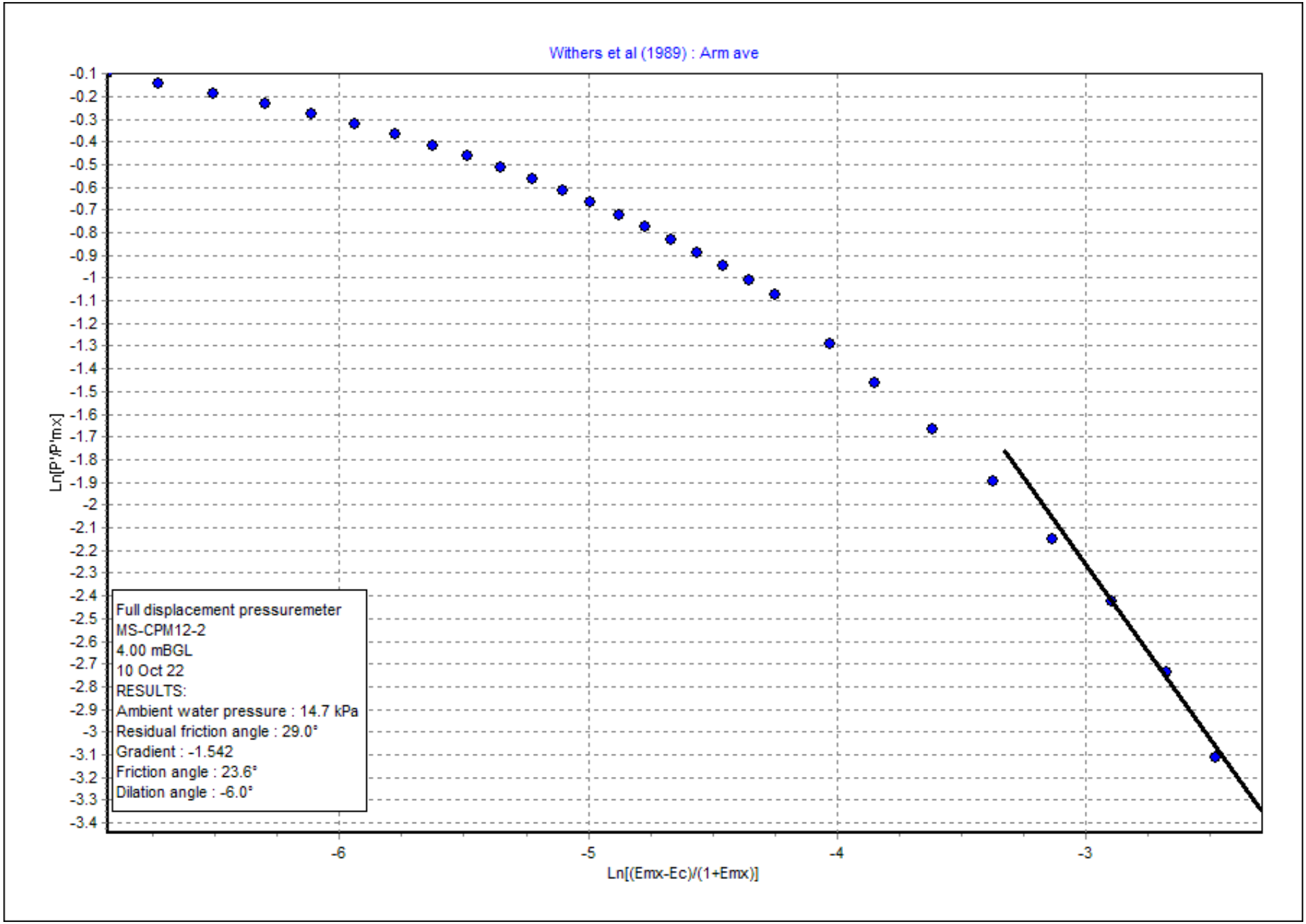

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.728
Intercept (n) : 16.352MPa
Shear stress constant : 11.905MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

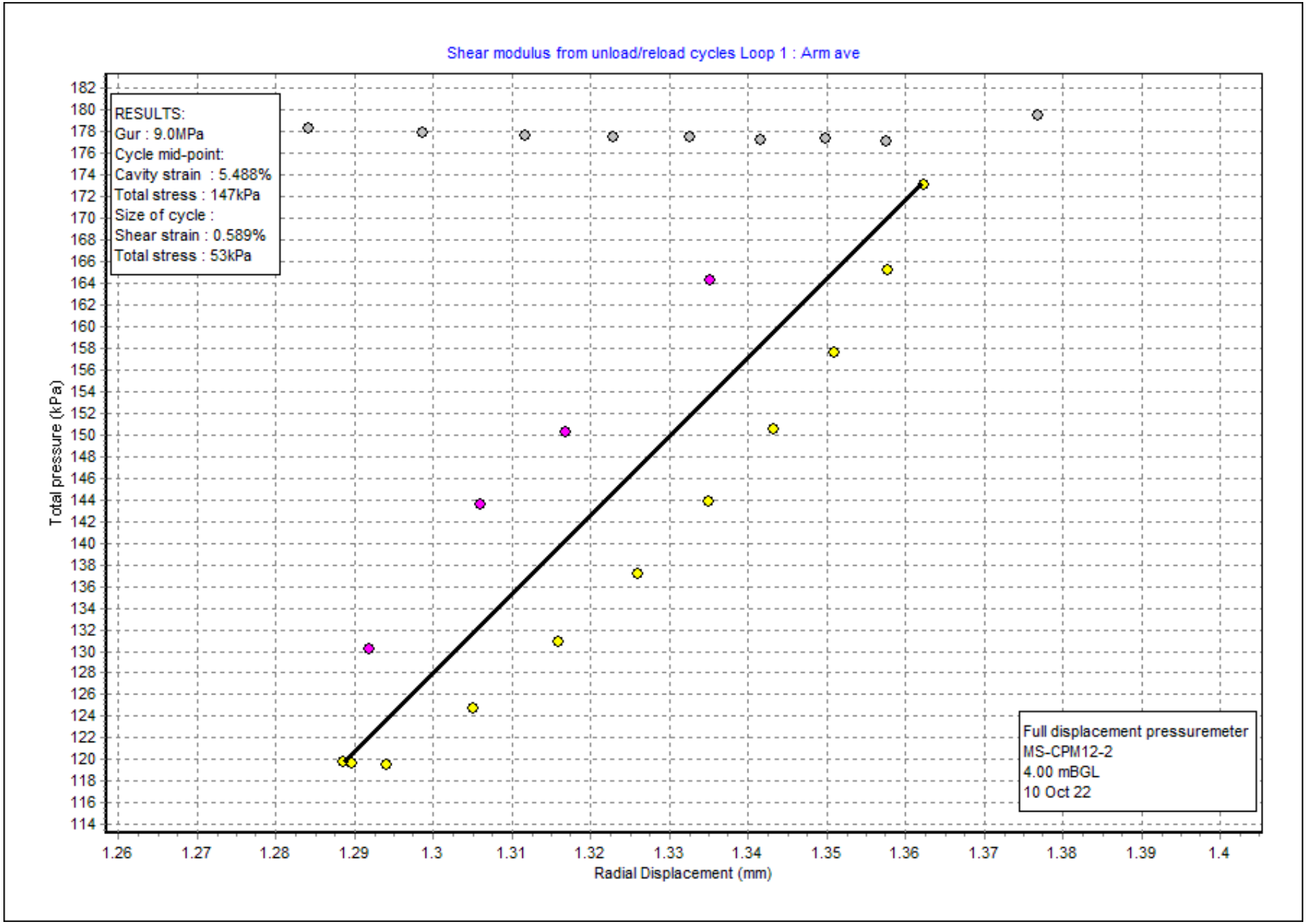

Bolton and Whittle (1999) Loop 4 : Arm ave
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.744
Intercept (n) : 19.146MPa
Shear stress constant : 14.242MPa
Ln[Radial stress]
Ln[shear strain]
6.1
6
5.9
5.8
5.7
5.6
5.5
5.4
5.3
5.2
5.1
5
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4
3.9
-8
-7
-6
Source data - Loop 4
Total pressure (kPa)
1,000
900
800
700
600
8.7
8.75
8.8
Radial Displacement (mm)

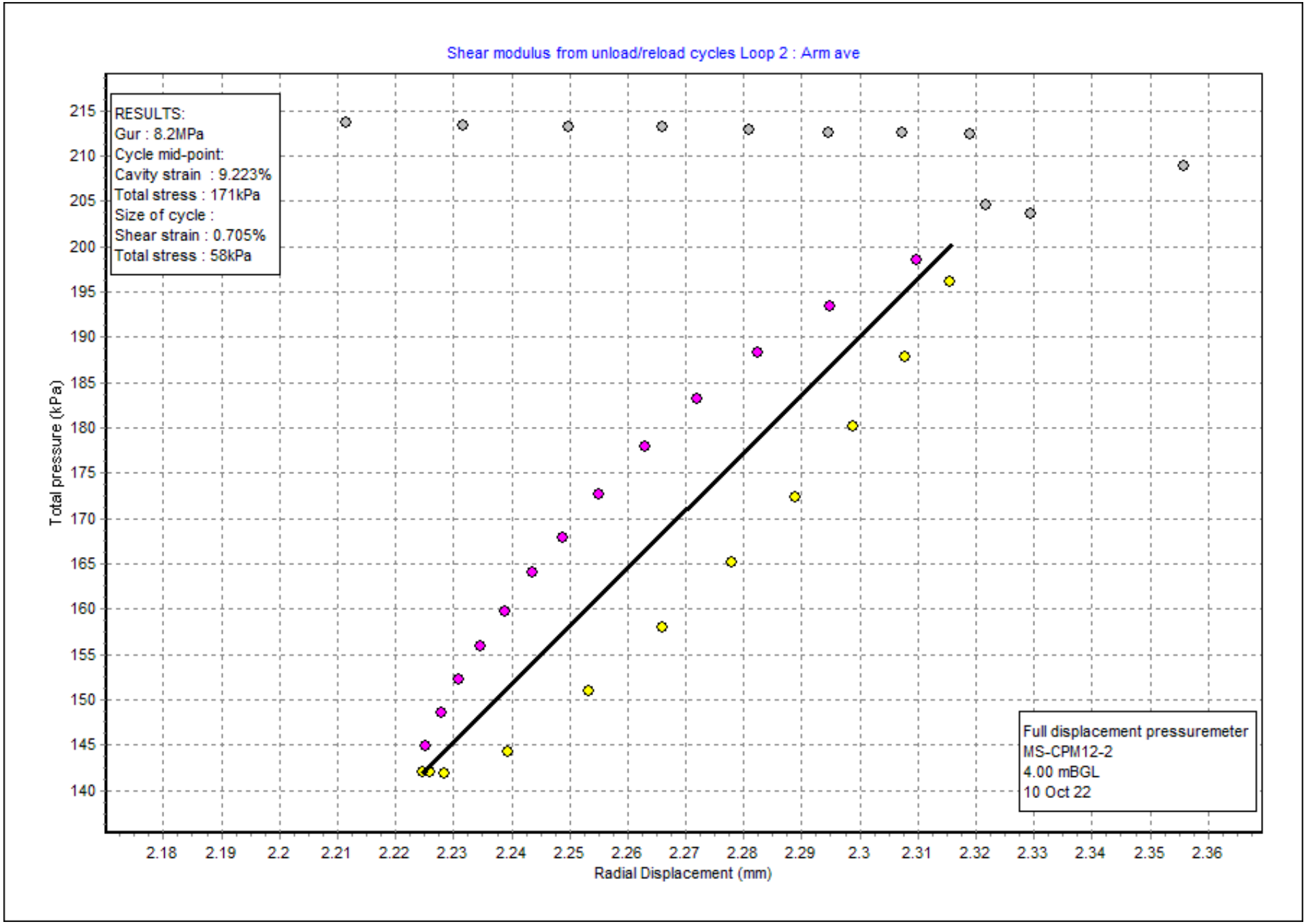

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 17.744 | 0.810
2 | 11.110 | 0.736
3 | 11.905 | 0.728
4 | 14.242 | 0.744
Full displacement pressuremeter
MS-CPM12-1
2.00 mBGL
10 Oct 22
Shear modulus (MPa)
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
0.0001
0.001
Log plane shear strain

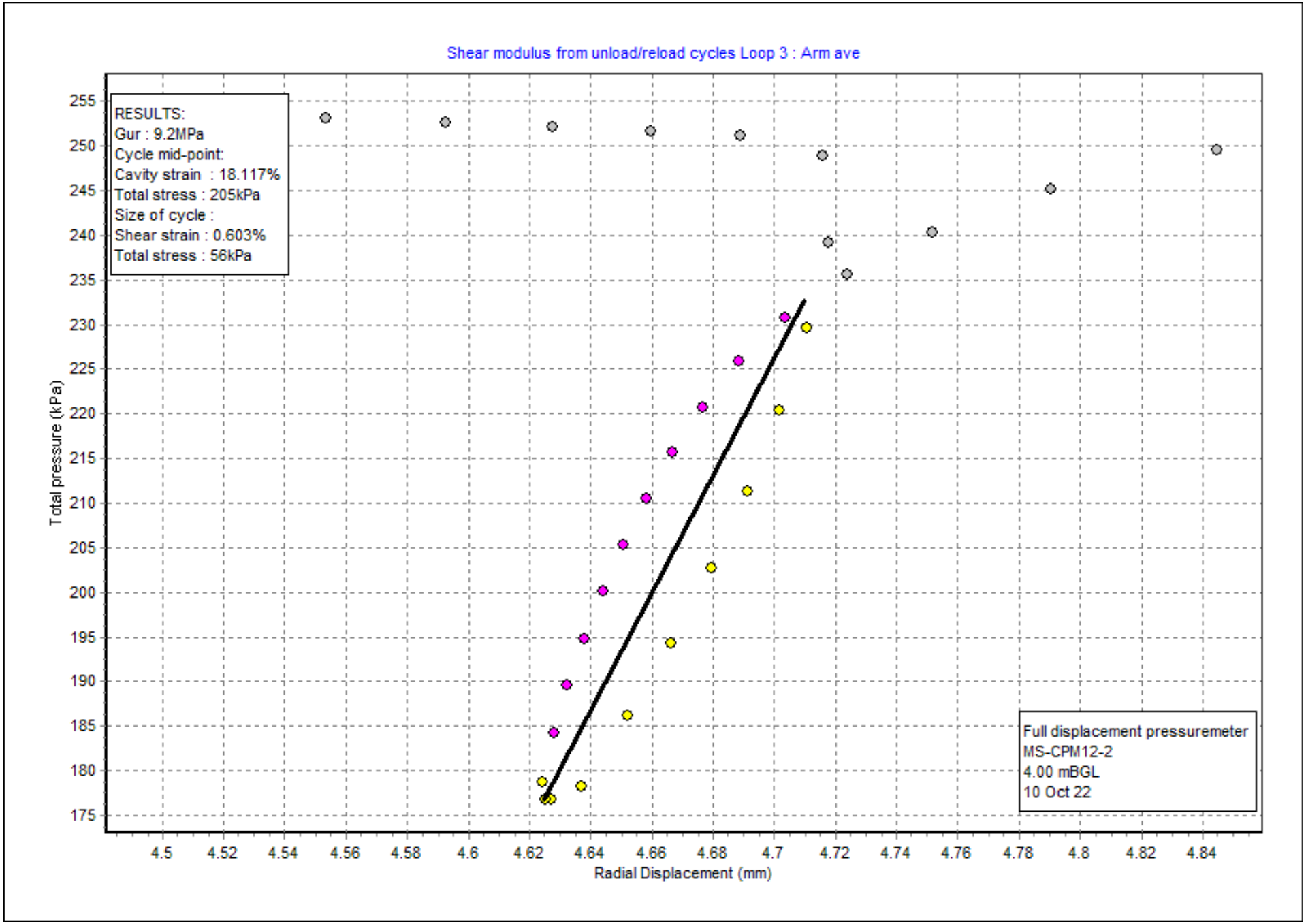

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22

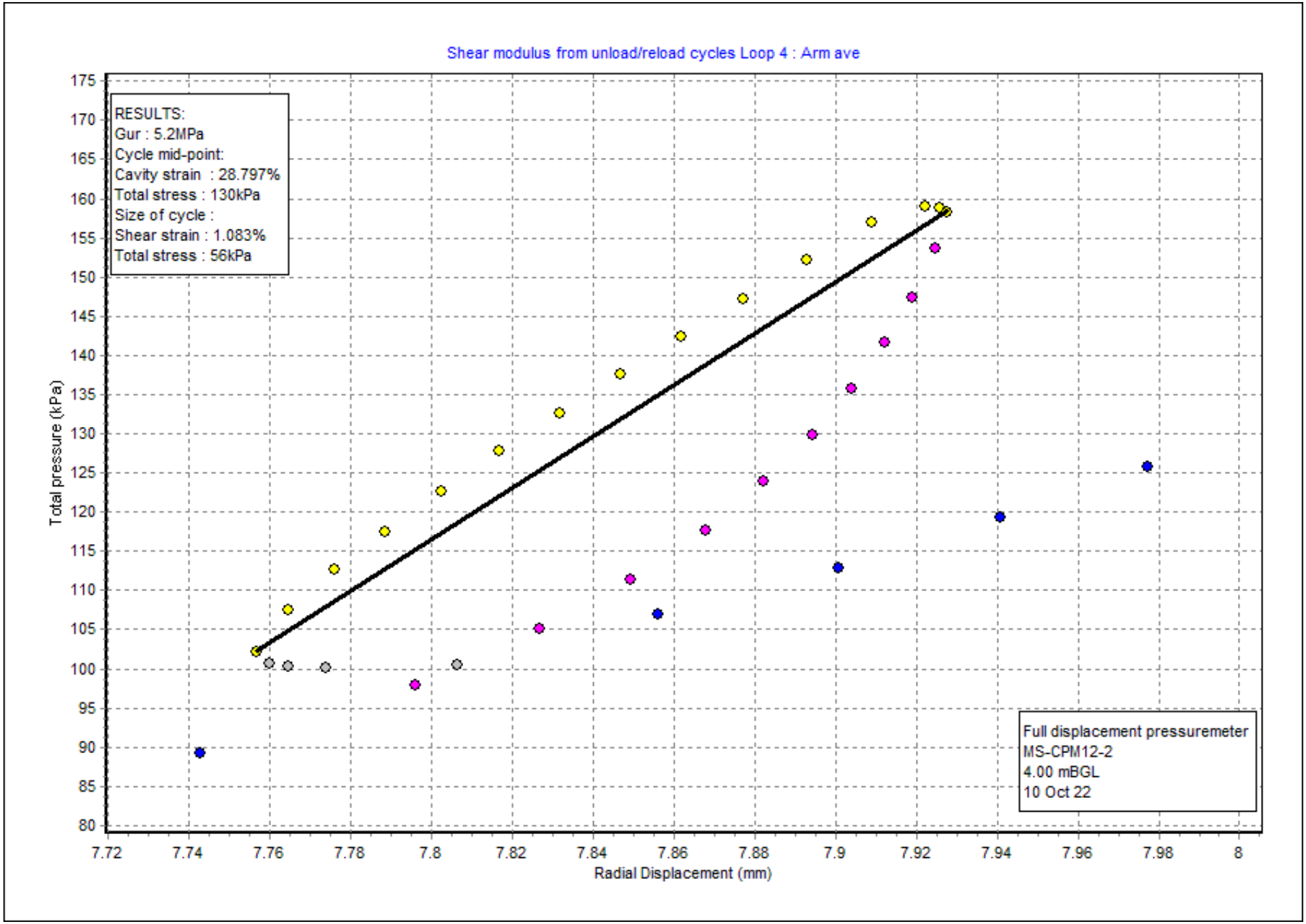

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 44.7kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22

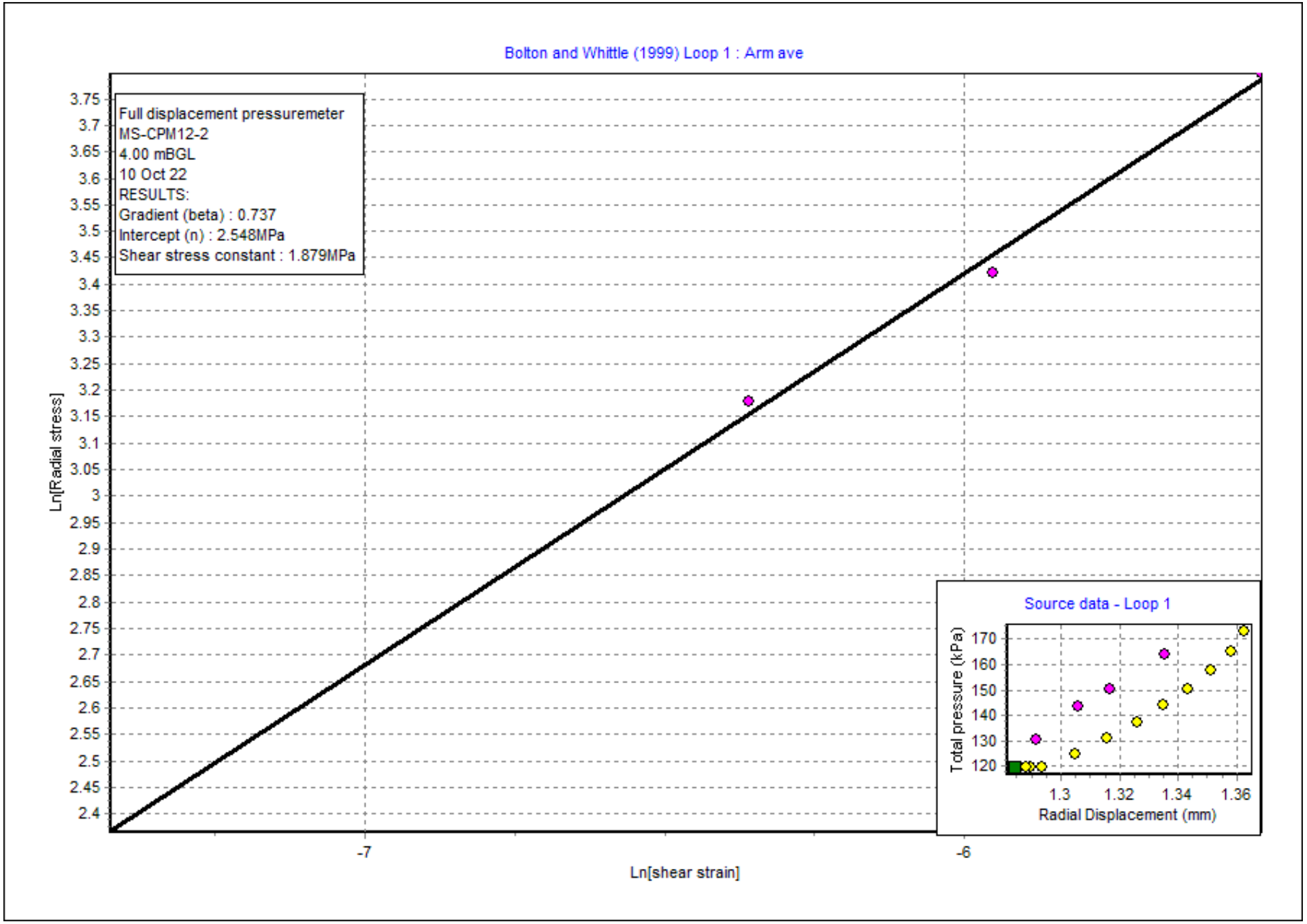

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
RESULTS:
Ambient water pressure : 14.7 kPa
Residual friction angle : 29.0°
Gradient : -1.542
Friction angle : 23.6°
Dilation angle : -6.0°

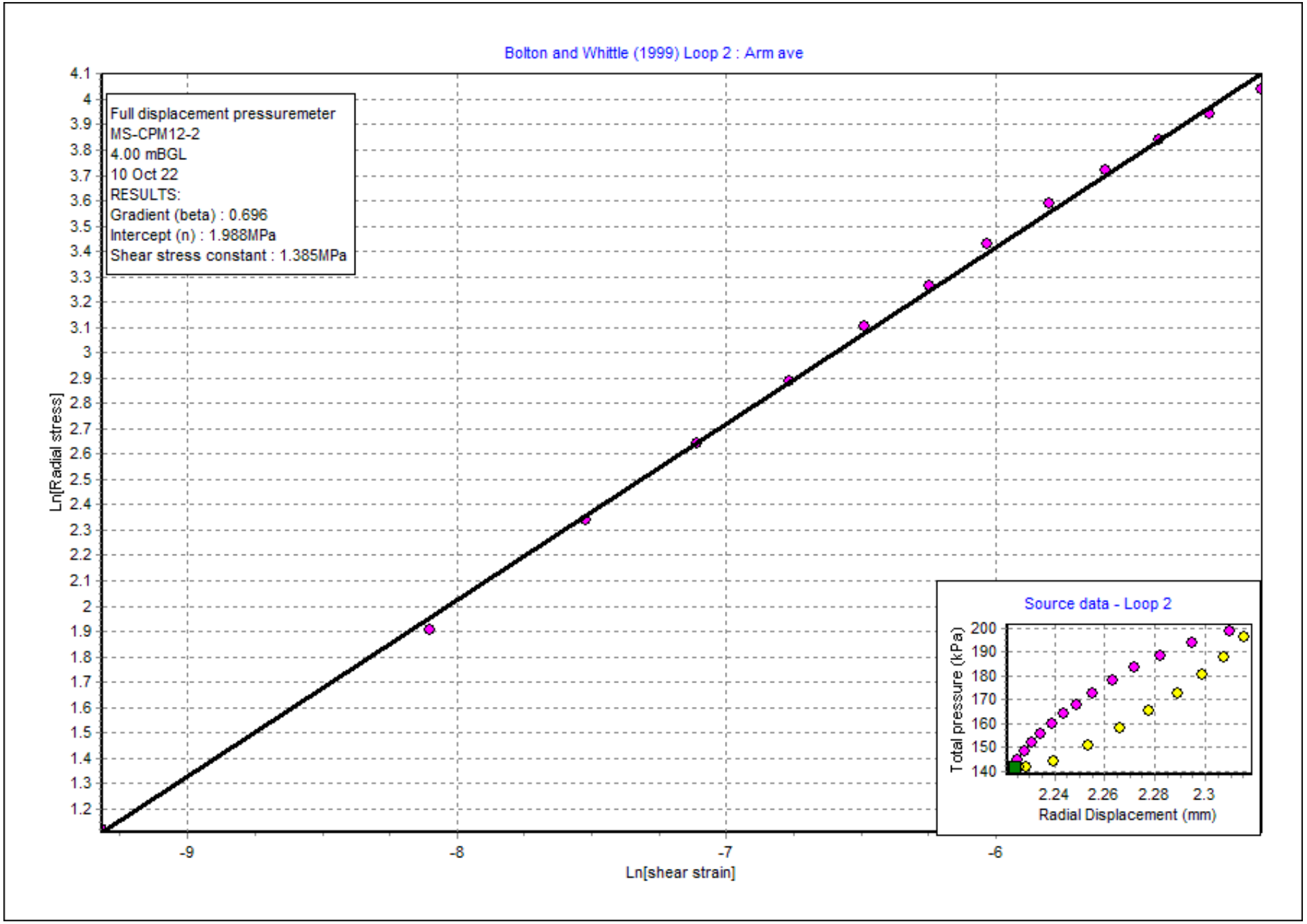

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 9.0MPa
Cycle mid-point:
Cavity strain : 5.488%
Total stress : 147kPa
Size of cycle :
Shear strain : 0.589%
Total stress : 53kPa
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
182
180
178
176
174
172
170
168
166
164
162
160
158
156
154
152
150
148
146
144
142
140
138
136
134
132
130
128
126
124
122
120
118
116
114
1.26
1.27
1.28
1.29
1.3
1.31
1.32
1.33
1.34
1.35
1.36
1.37
1.38
1.39
1.4

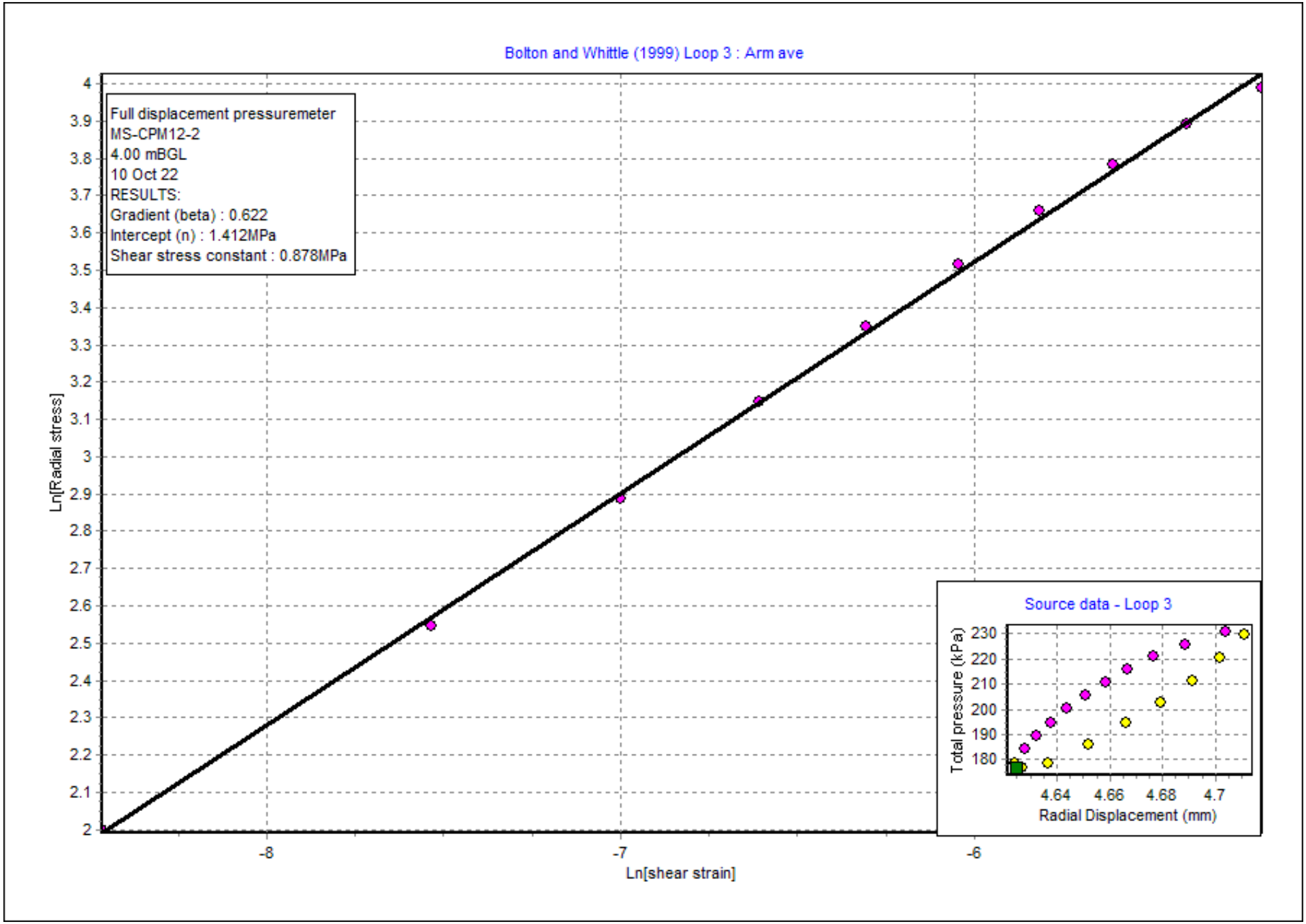

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 8.2MPa
Cycle mid-point:
Cavity strain : 9.223%
Total stress : 171kPa
Size of cycle :
Shear strain : 0.705%
Total stress : 58kPa
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
215
210
205
200
195
190
185
180
175
170
165
160
155
150
145
140
2.18
2.19
2.2
2.21
2.22
2.23
2.24
2.25
2.26
2.27
2.28
2.29
2.3
2.31
2.32
2.33
2.34
2.35
2.36

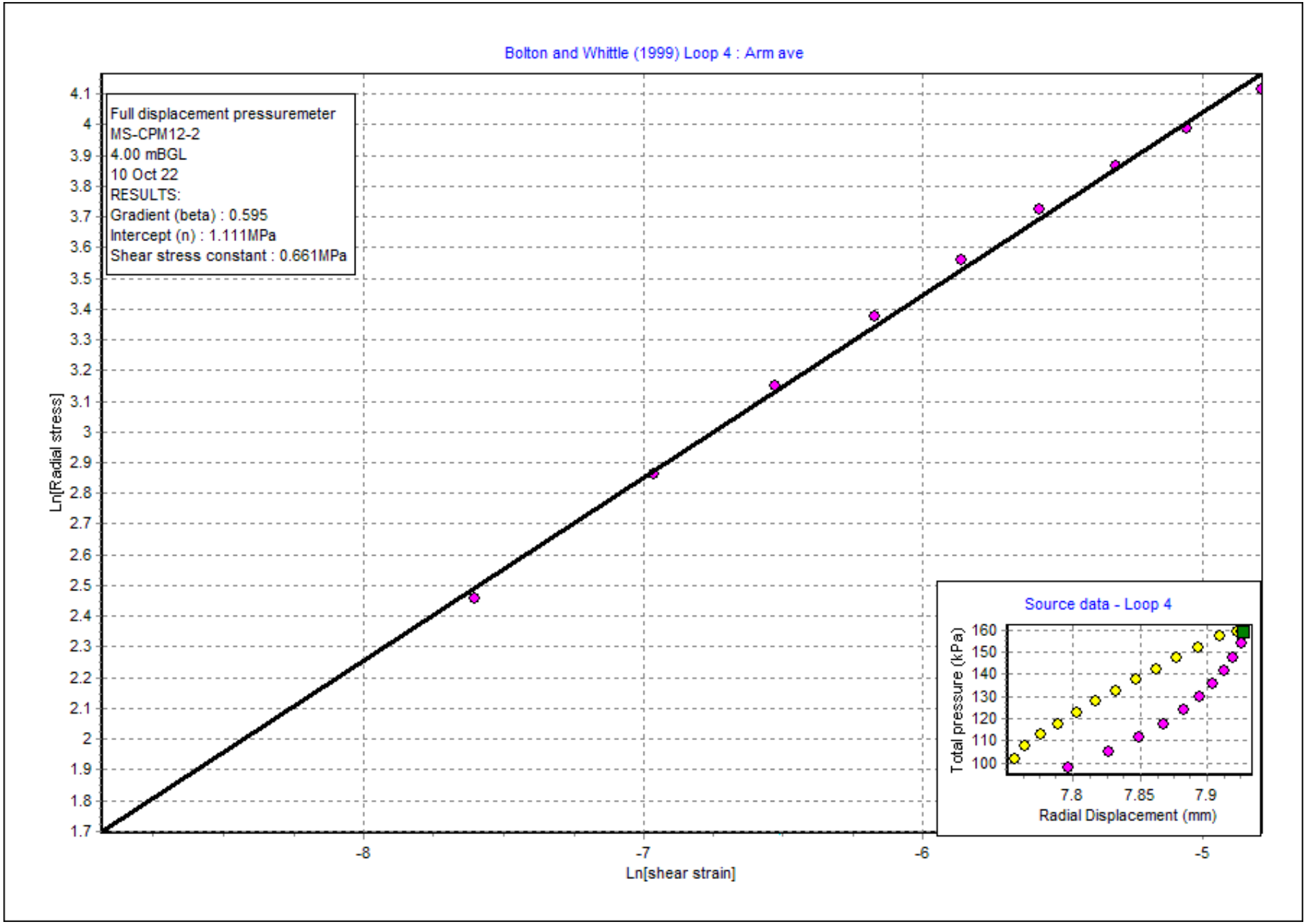

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 9.2MPa
Cycle mid-point:
Cavity strain : 18.117%
Total stress : 205kPa
Size of cycle :
Shear strain : 0.603%
Total stress : 56kPa
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
255
250
245
240
235
230
225
220
215
210
205
200
195
190
185
180
175
4.5
4.52
4.54
4.56
4.58
4.6
4.62
4.64
4.66
4.68
4.7
4.72
4.74
4.76
4.78
4.8
4.82
4.84

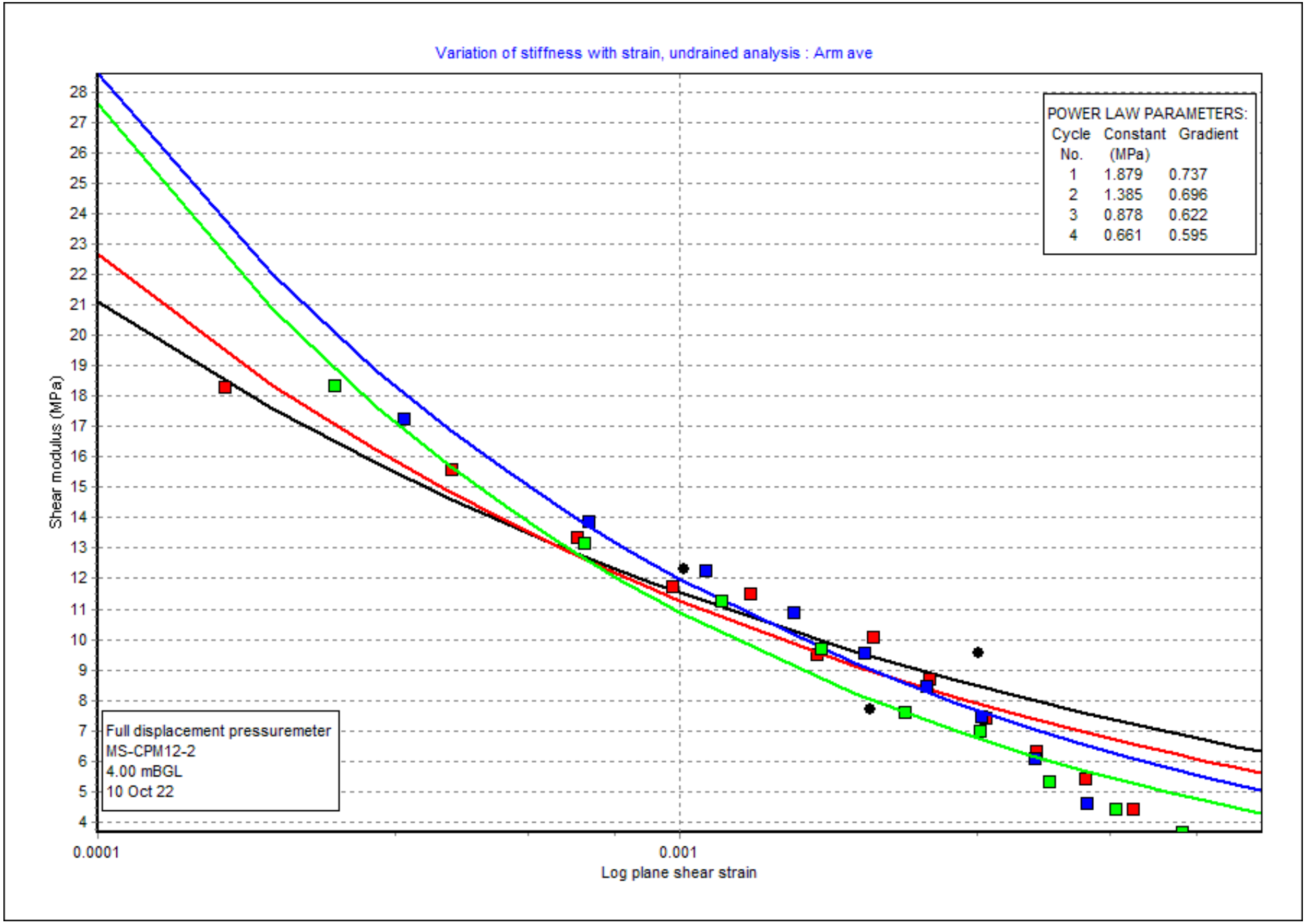

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 5.2MPa
Cycle mid-point:
Cavity strain : 28.797%
Total stress : 130kPa
Size of cycle :
Shear strain : 1.083%
Total stress : 56kPa
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
175
170
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
7.72
7.74
7.76
7.78
7.8
7.82
7.84
7.86
7.88
7.9
7.92
7.94
7.96
7.98
8

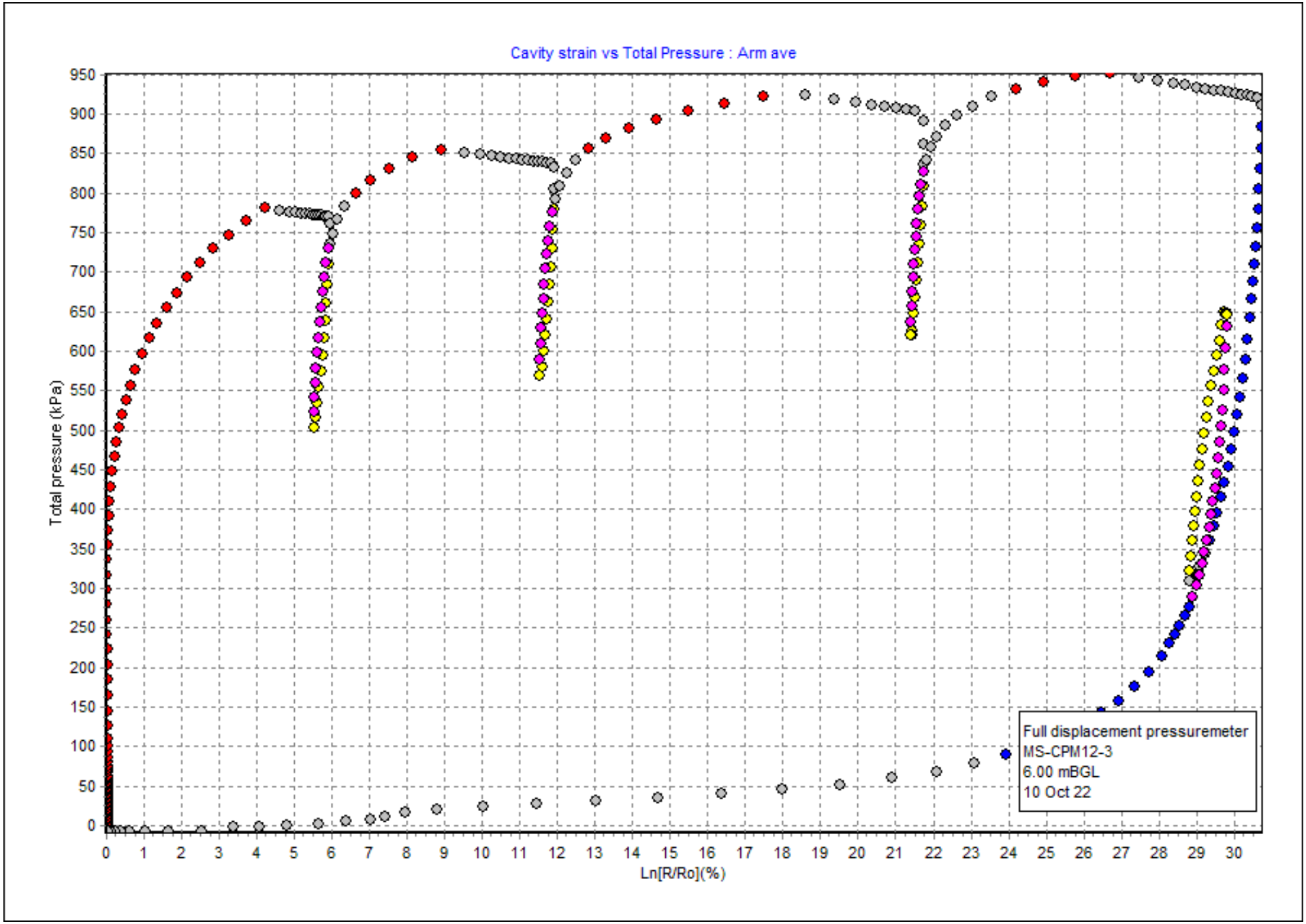

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.737
Intercept (n) : 2.548MPa
Shear stress constant : 1.879MPa
Ln[Radial stress]
Ln[shear strain]
-7
-6
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

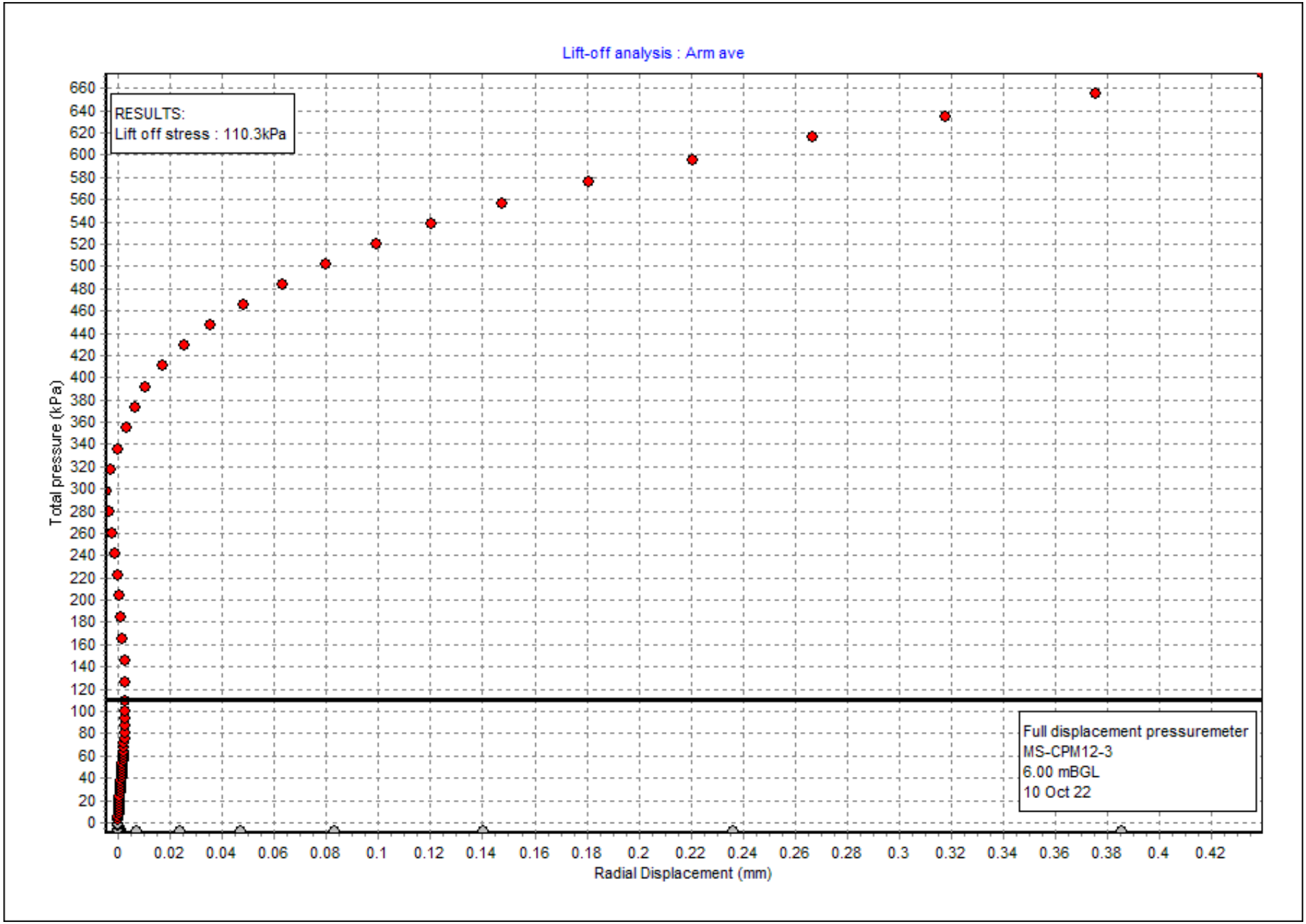

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.696
Intercept (n) : 1.988MPa
Shear stress constant : 1.385MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

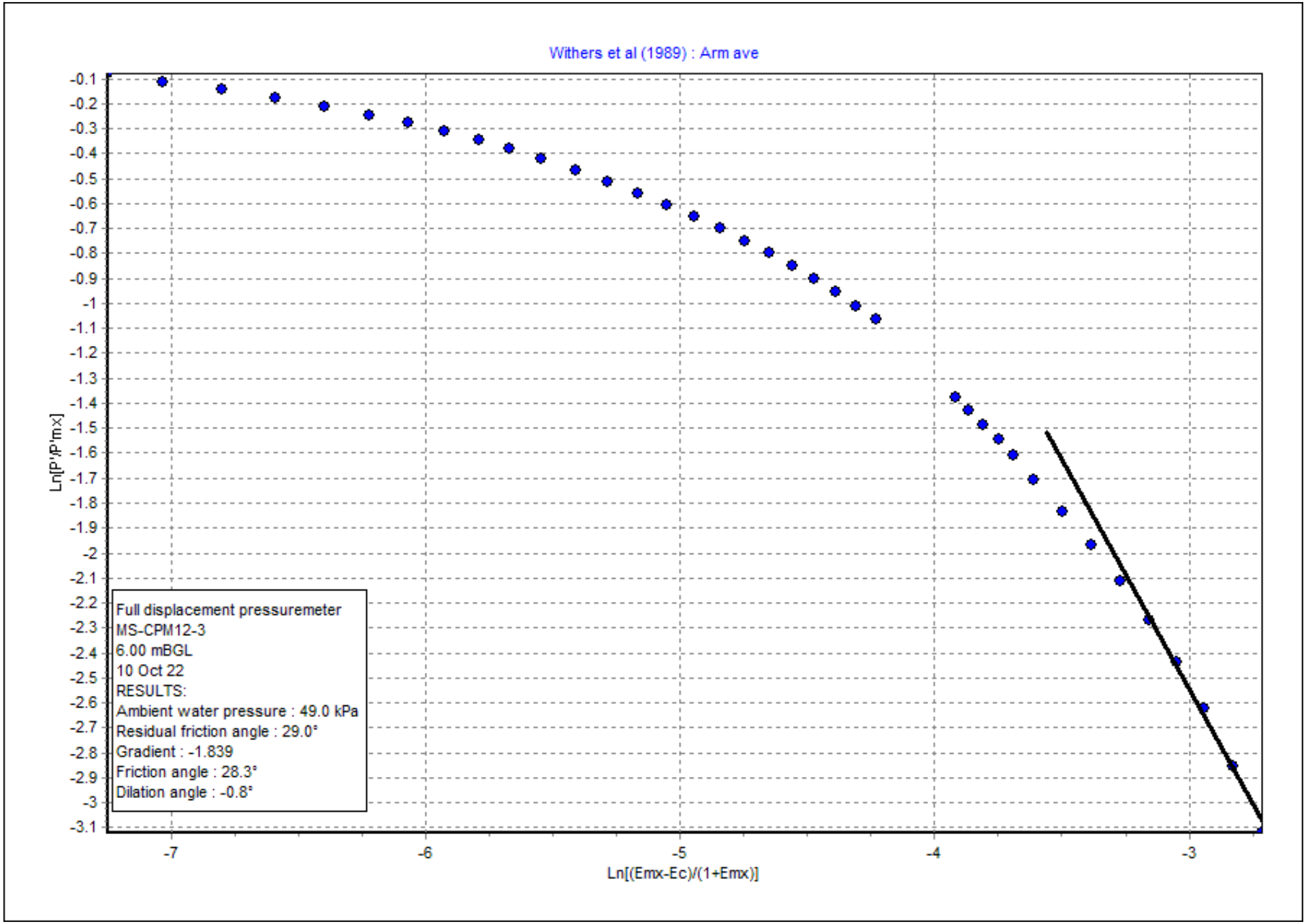

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.622
Intercept (n) : 1.412MPa
Shear stress constant : 0.878MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

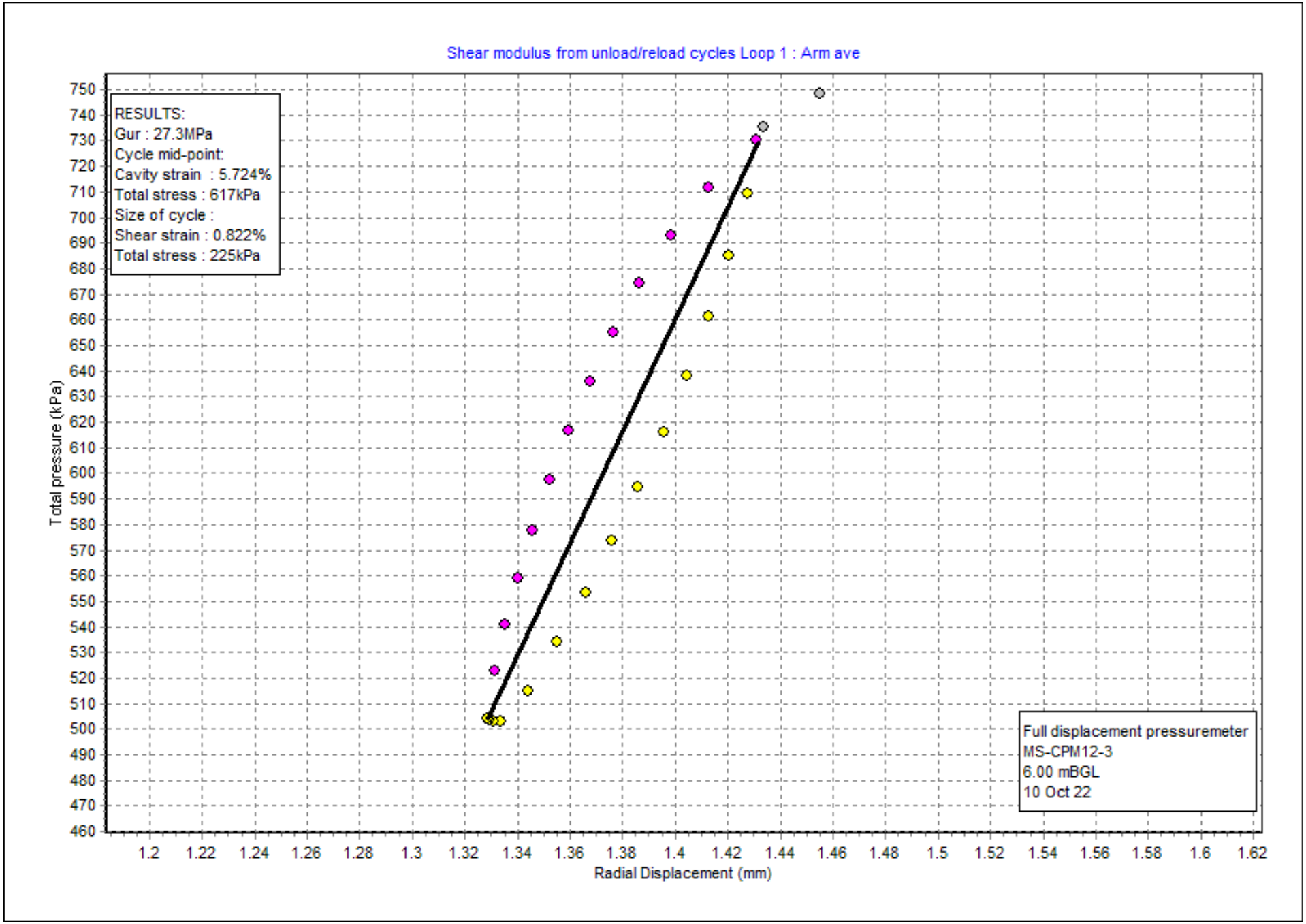

Bolton and Whittle (1999) Loop 4 : Arm ave
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.595
Intercept (n) : 1.111MPa
Shear stress constant : 0.661MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 4
Total pressure (kPa)
Radial Displacement (mm)

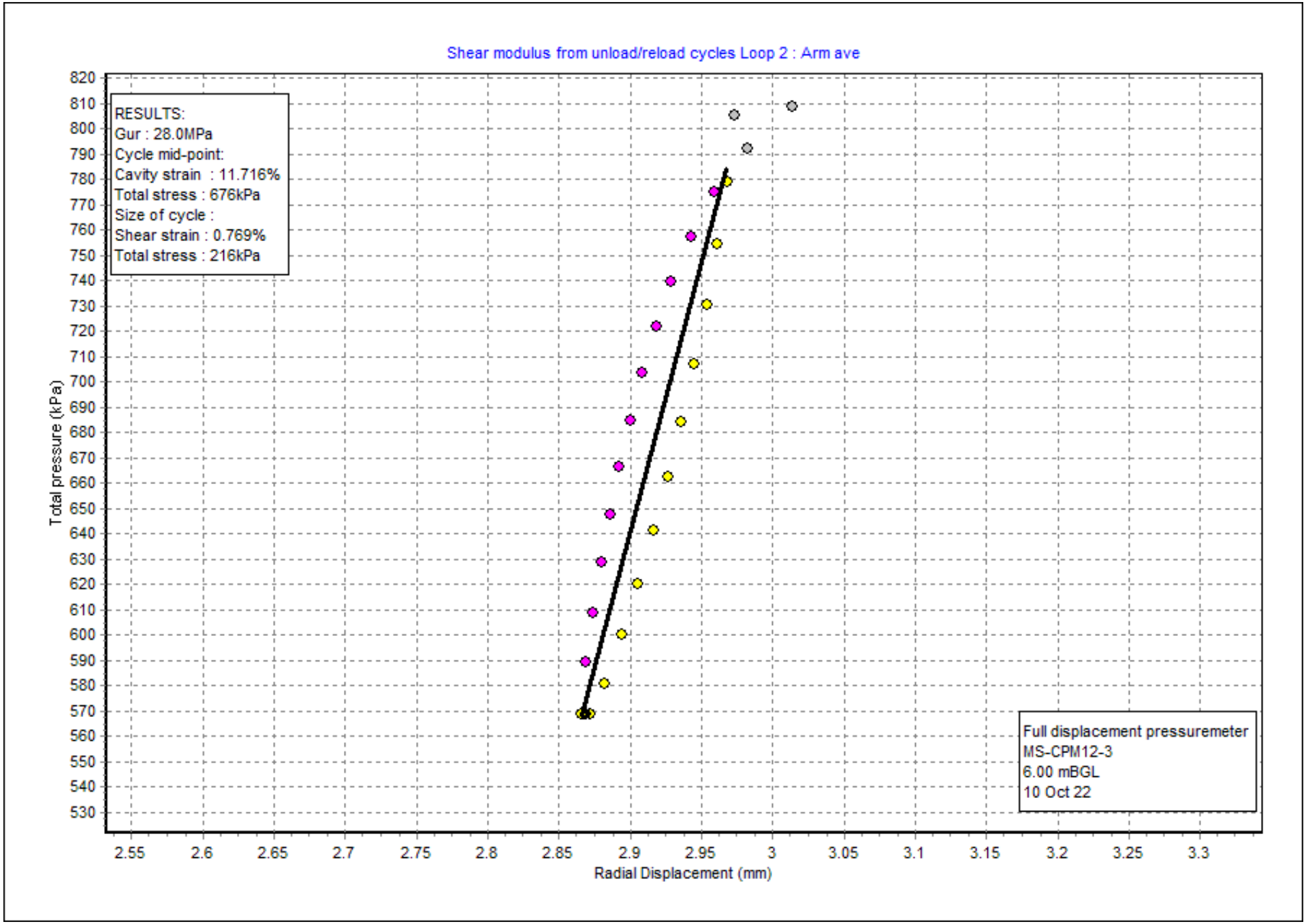

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 1.879 | 0.737
2 | 1.385 | 0.696
3 | 0.878 | 0.622
4 | 0.661 | 0.595
Full displacement pressuremeter
MS-CPM12-2
4.00 mBGL
10 Oct 22
Shear modulus (MPa)
Log plane shear strain
0.0001
0.001
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4

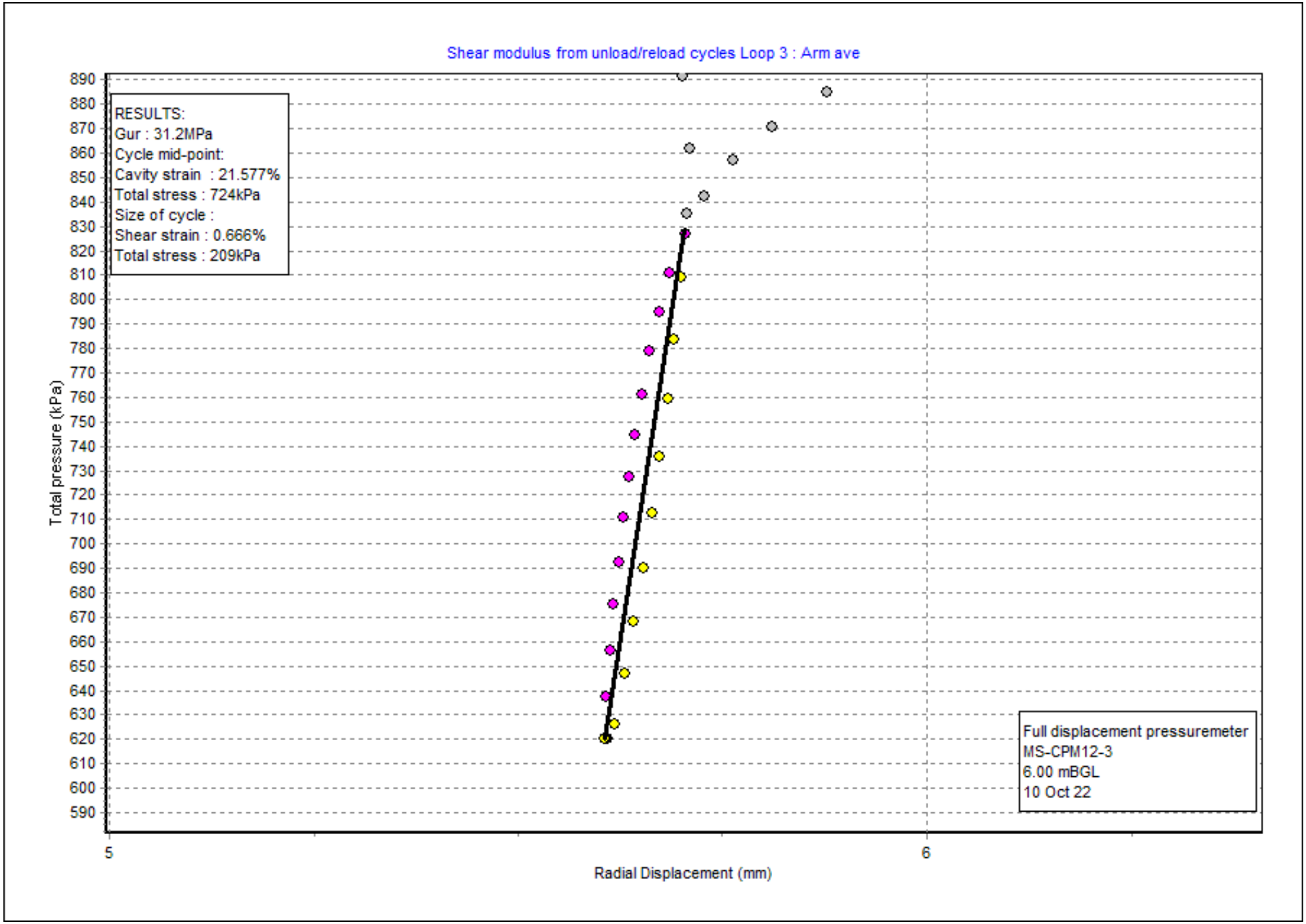

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22

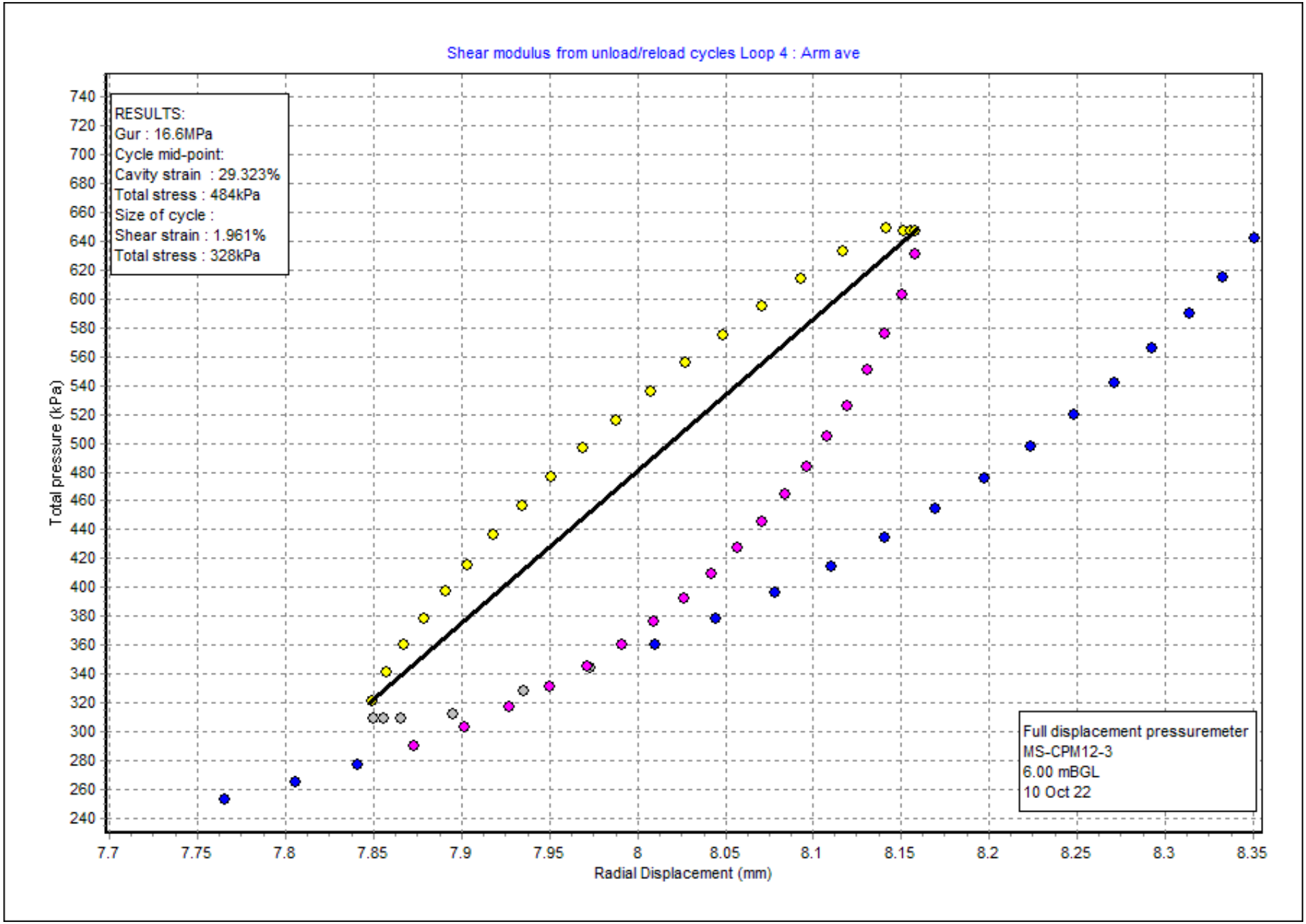

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 110.3kPa
Total pressure (kPa)
660
640
620
600
580
560
540
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22

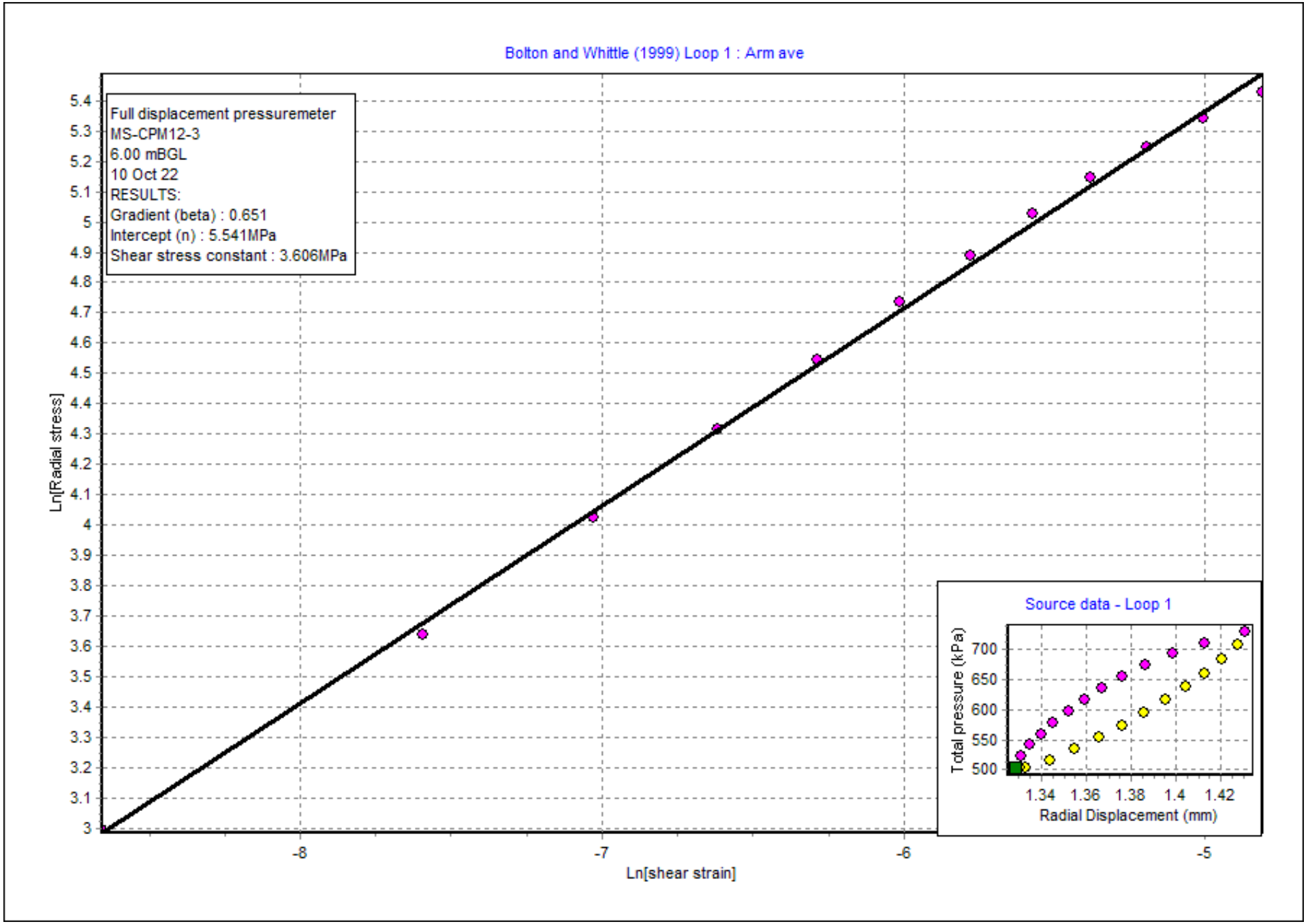

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
Ln[(Emx-Ec)/(1+Emx)]
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-2.8
-2.9
-3
-3.1
-7
-6
-5
-4
-3
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
RESULTS:
Ambient water pressure : 49.0 kPa
Residual friction angle : 29.0°
Gradient : -1.839
Friction angle : 28.3°
Dilation angle : -0.8°

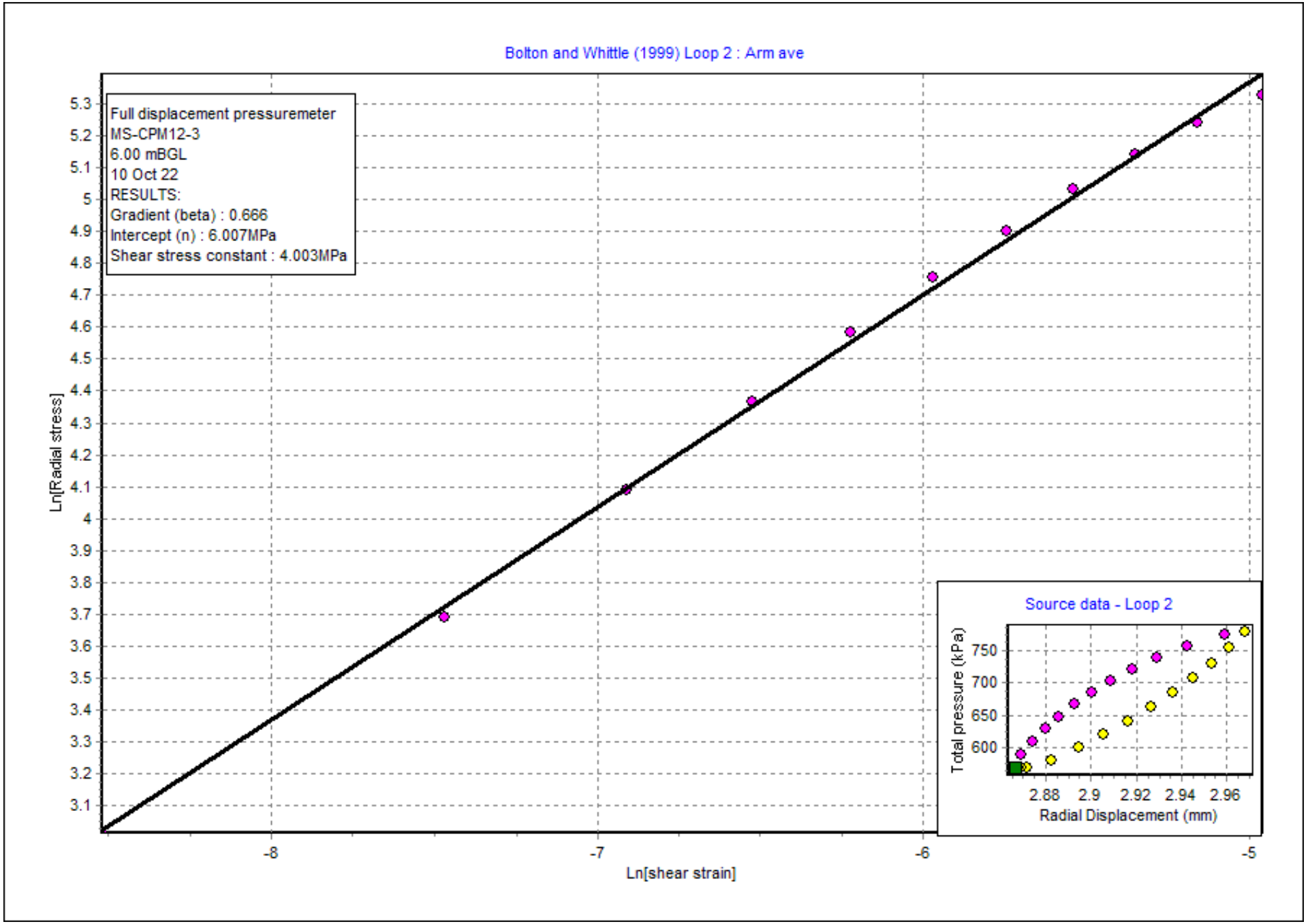

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 27.3MPa
Cycle mid-point:
Cavity strain : 5.724%
Total stress : 617kPa
Size of cycle :
Shear strain : 0.822%
Total stress : 225kPa
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
540
530
520
510
500
490
480
470
460
1.2
1.22
1.24
1.26
1.28
1.3
1.32
1.34
1.36
1.38
1.4
1.42
1.44
1.46
1.48
1.5
1.52
1.54
1.56
1.58
1.6
1.62

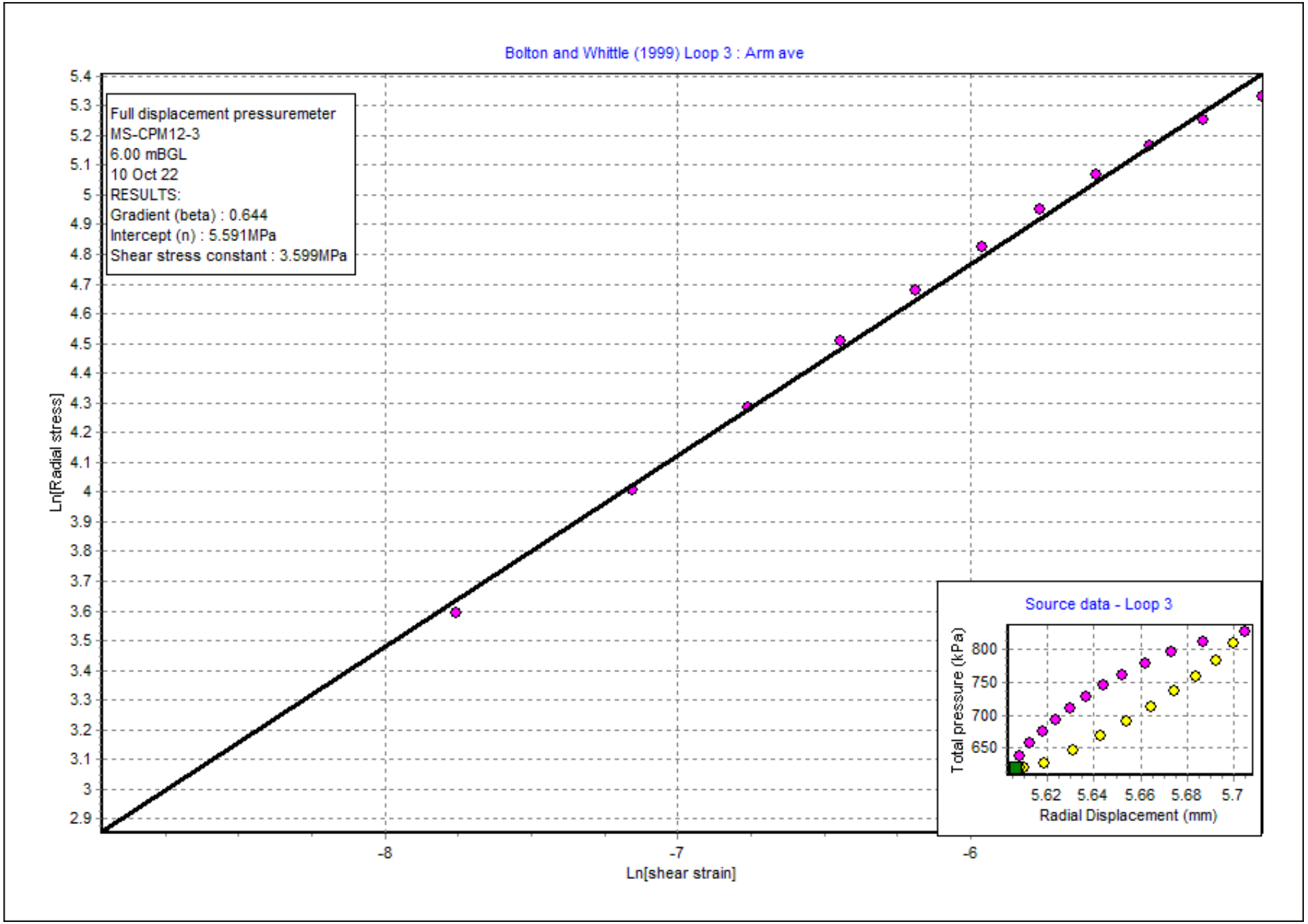

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 28.0MPa
Cycle mid-point:
Cavity strain : 11.716%
Total stress : 676kPa
Size of cycle :
Shear strain : 0.769%
Total stress : 216kPa
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
Total pressure (kPa)
820
810
800
790
780
770
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
540
530
Radial Displacement (mm)
2.55
2.6
2.65
2.7
2.75
2.8
2.85
2.9
2.95
3
3.05
3.1
3.15
3.2
3.25
3.3

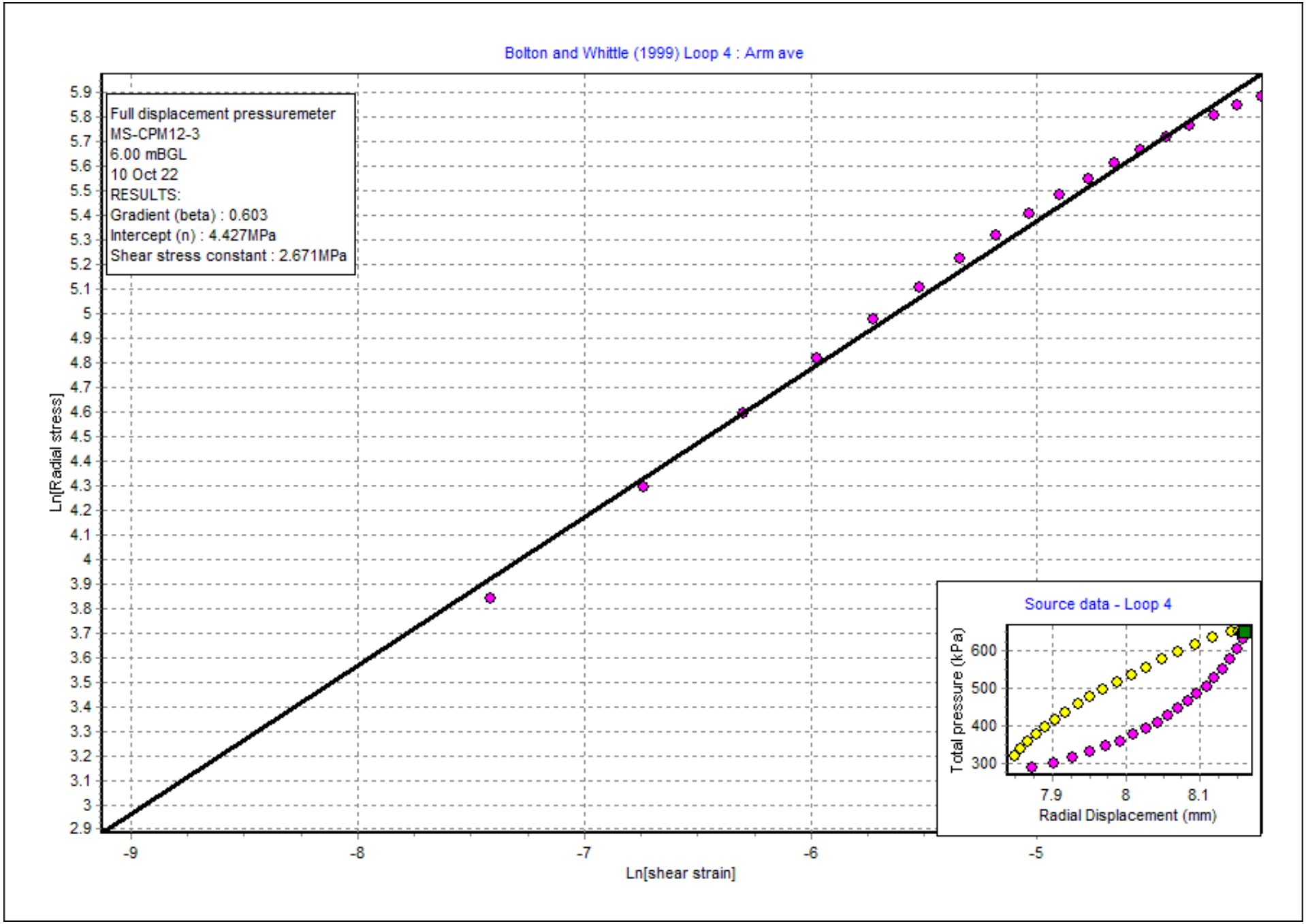

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 31.2MPa
Cycle mid-point:
Cavity strain : 21.577%
Total stress : 724kPa
Size of cycle :
Shear strain : 0.666%
Total stress : 209kPa
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
600
590
5
6

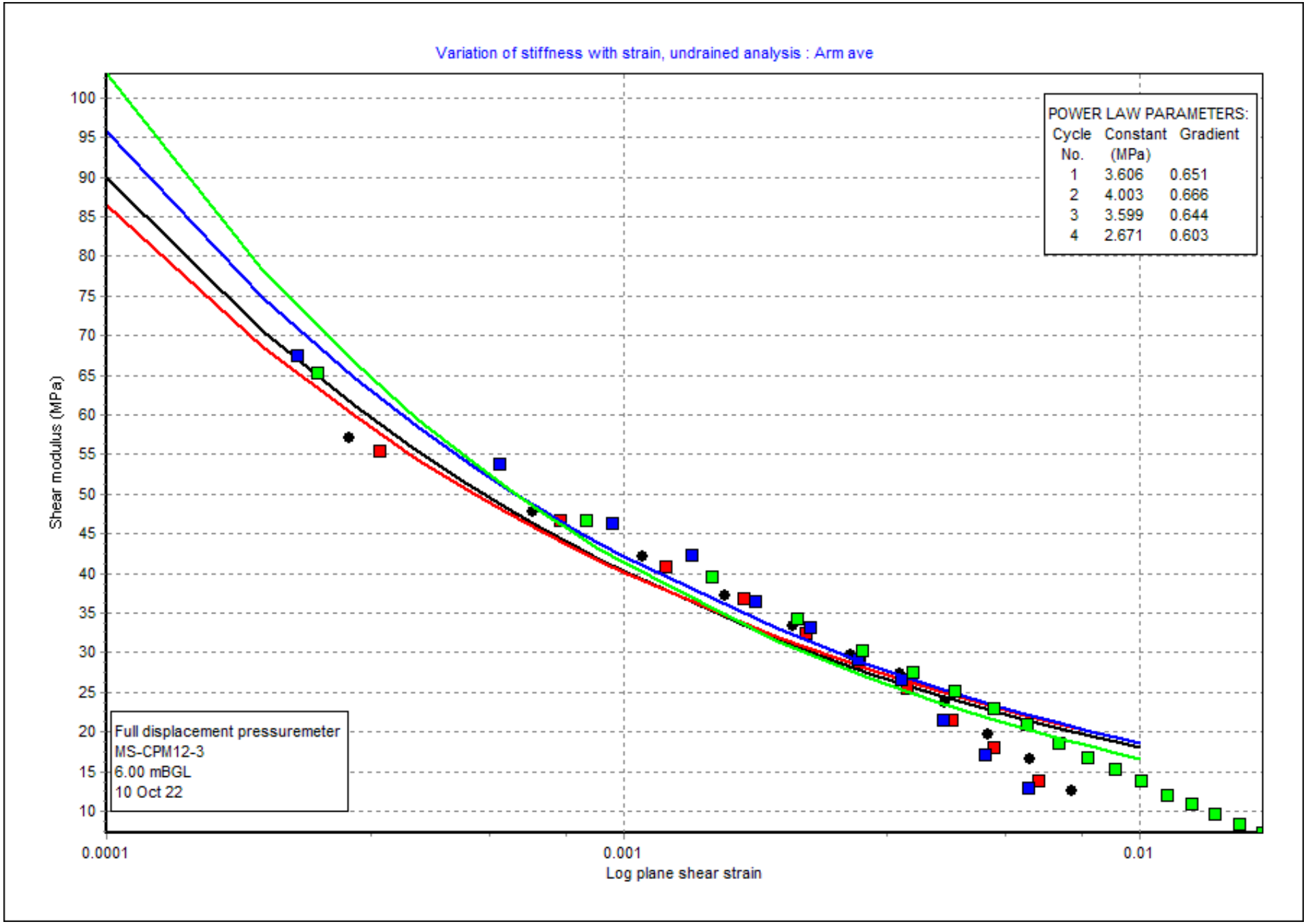

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 16.6MPa
Cycle mid-point:
Cavity strain : 29.323%
Total stress : 484kPa
Size of cycle :
Shear strain : 1.961%
Total stress : 328kPa
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
740
720
700
680
660
640
620
600
580
560
540
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
7.7
7.75
7.8
7.85
7.9
7.95
8
8.05
8.1
8.15
8.2
8.25
8.3
8.35

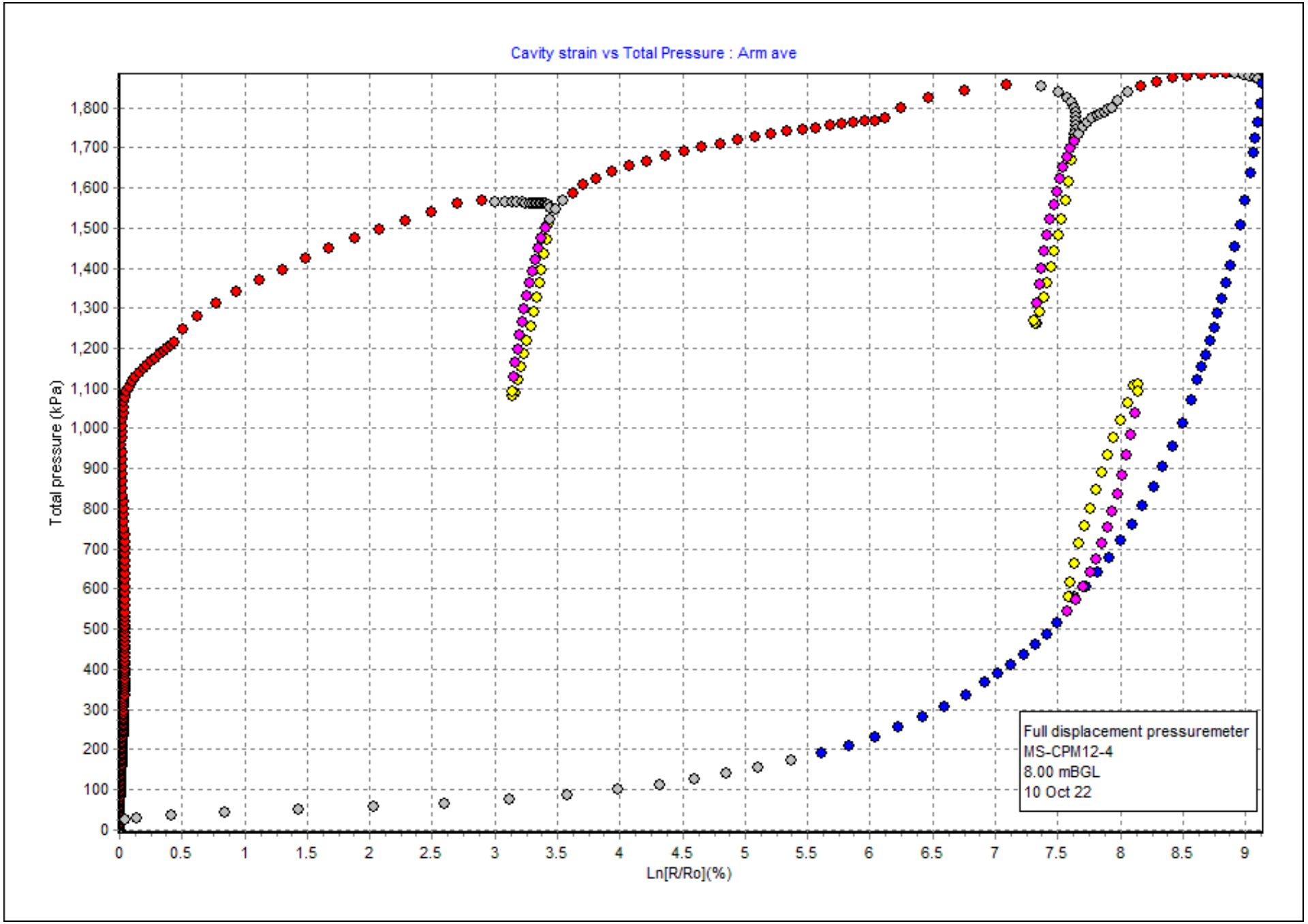

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.651
Intercept (n) : 5.541MPa
Shear stress constant : 3.606MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

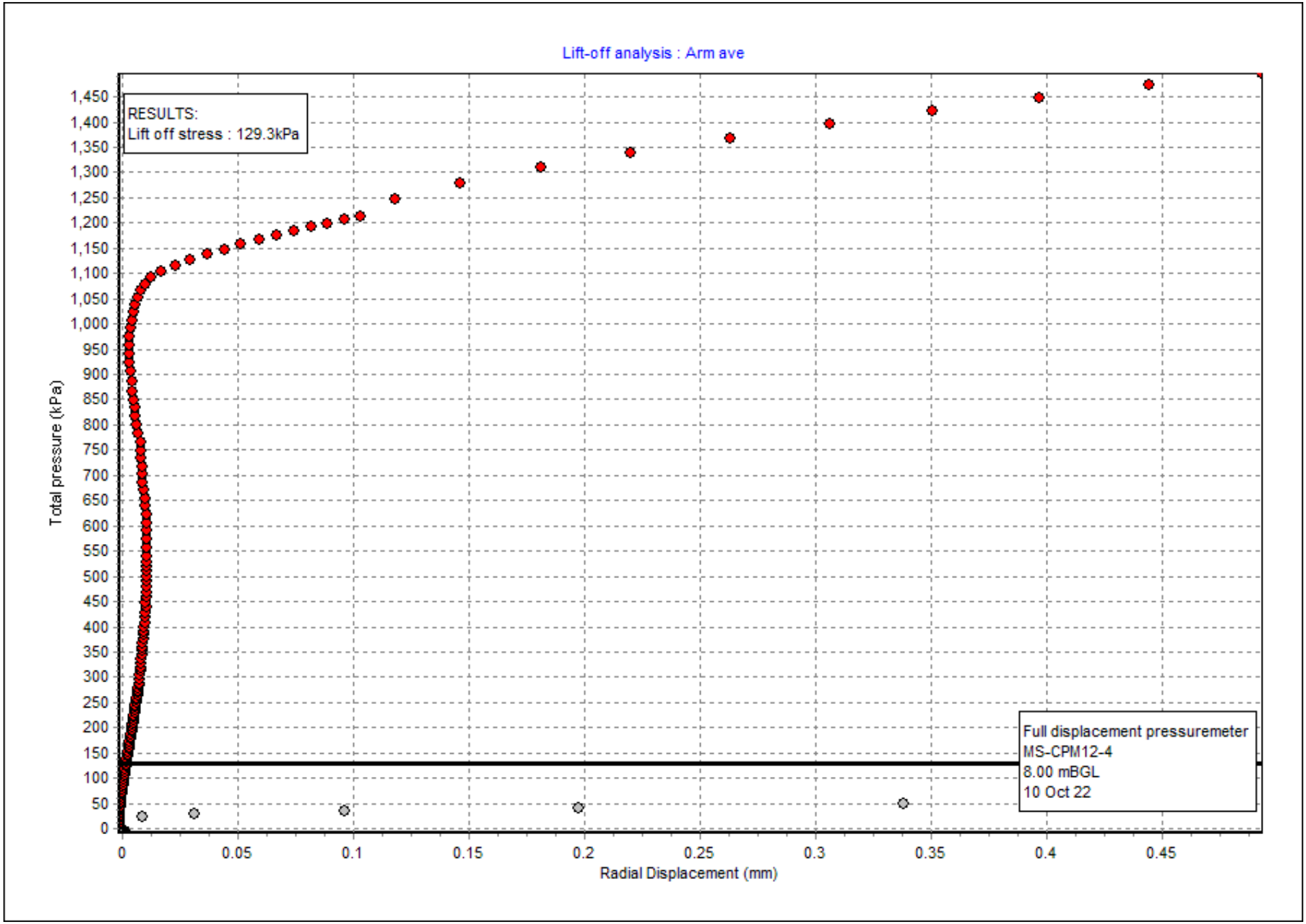

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.666
Intercept (n) : 6.007MPa
Shear stress constant : 4.003MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

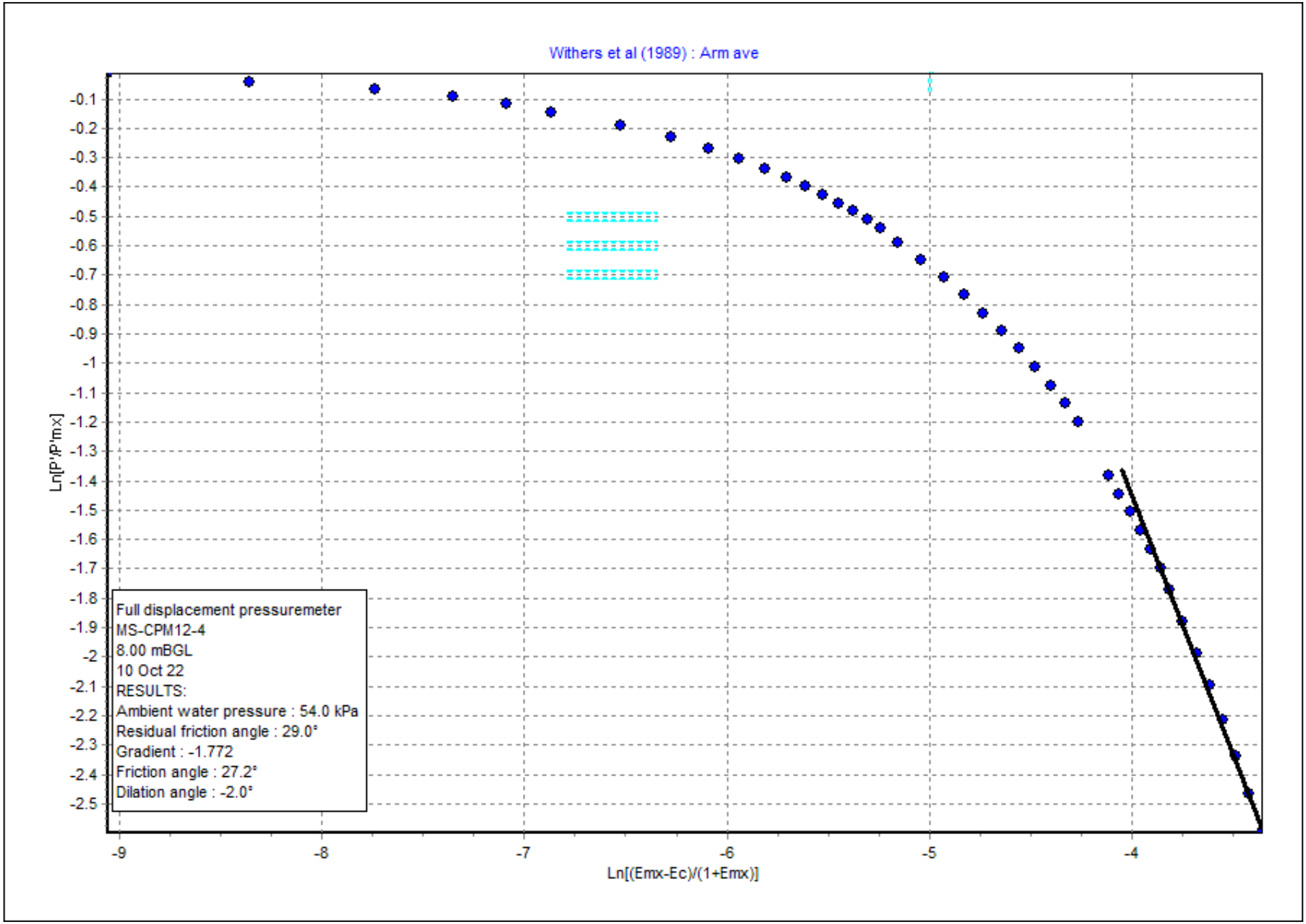

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.644
Intercept (n) : 5.591MPa
Shear stress constant : 3.599MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

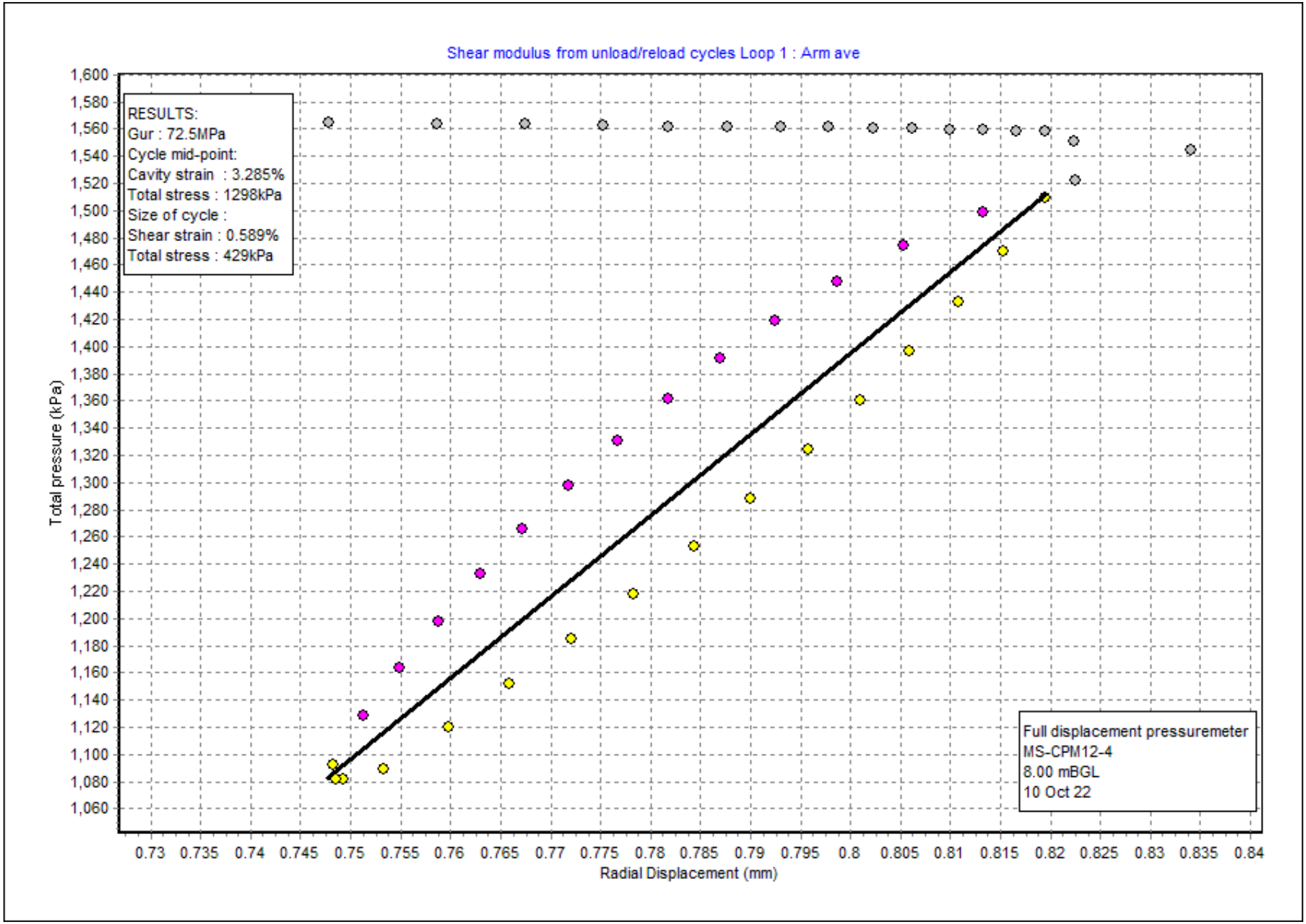

Bolton and Whittle (1999) Loop 4 : Arm ave
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.603
Intercept (n) : 4.427MPa
Shear stress constant : 2.671MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 4
Total pressure (kPa)
Radial Displacement (mm)

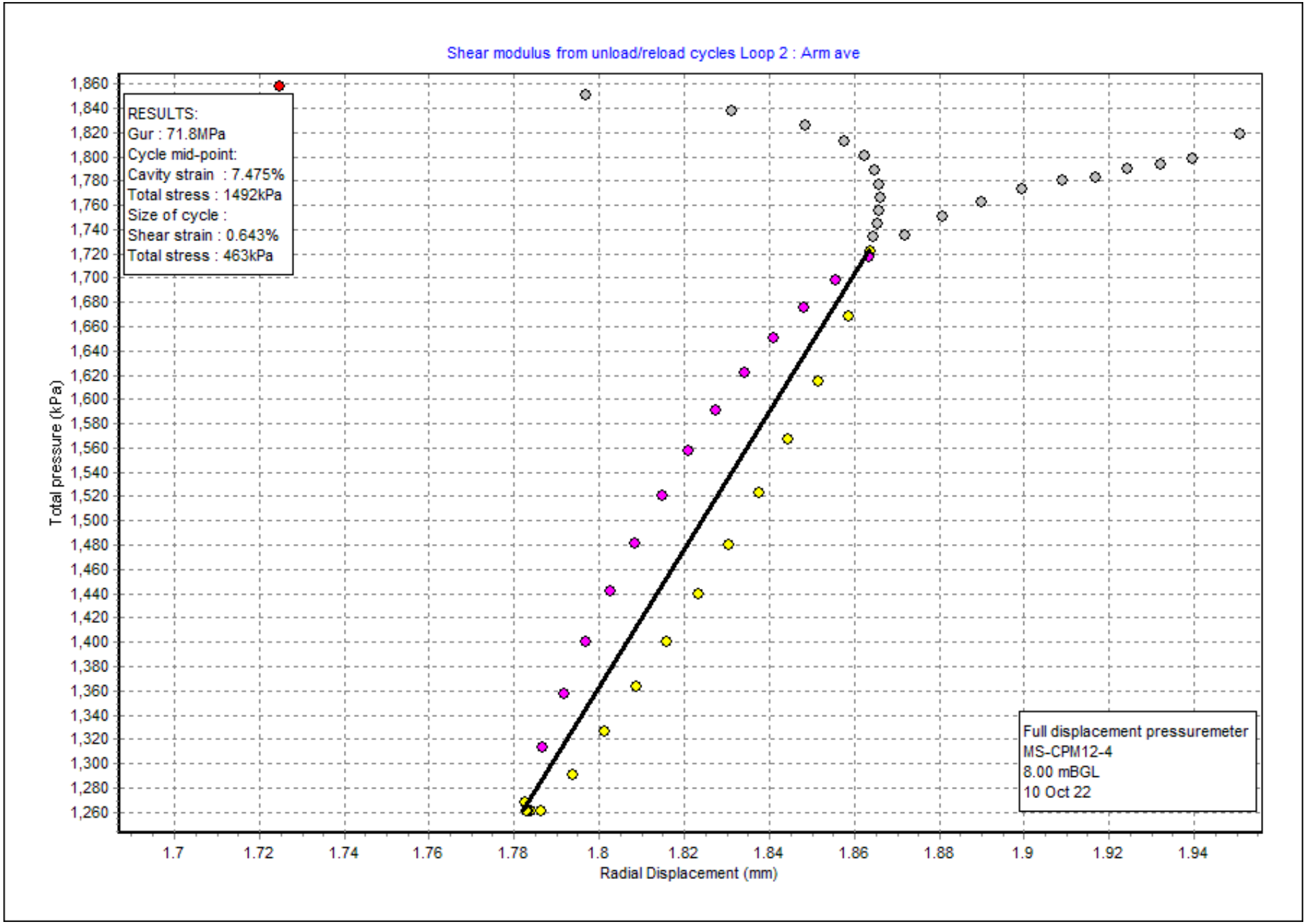

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 3.606 | 0.651
2 | 4.003 | 0.666
3 | 3.599 | 0.644
4 | 2.671 | 0.603
Full displacement pressuremeter
MS-CPM12-3
6.00 mBGL
10 Oct 22
Shear modulus (MPa)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
0.0001
0.001
0.01
Log plane shear strain

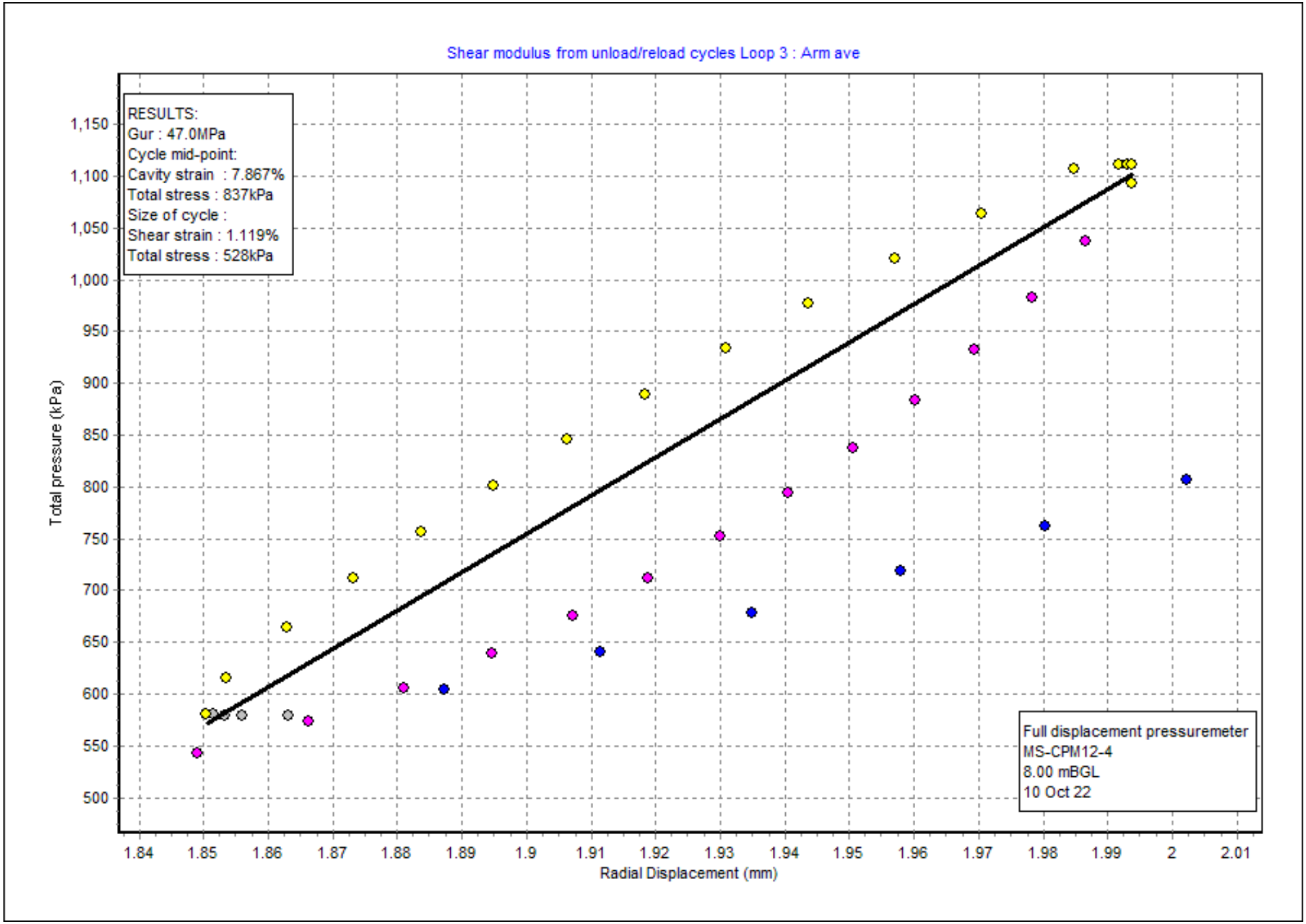

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22

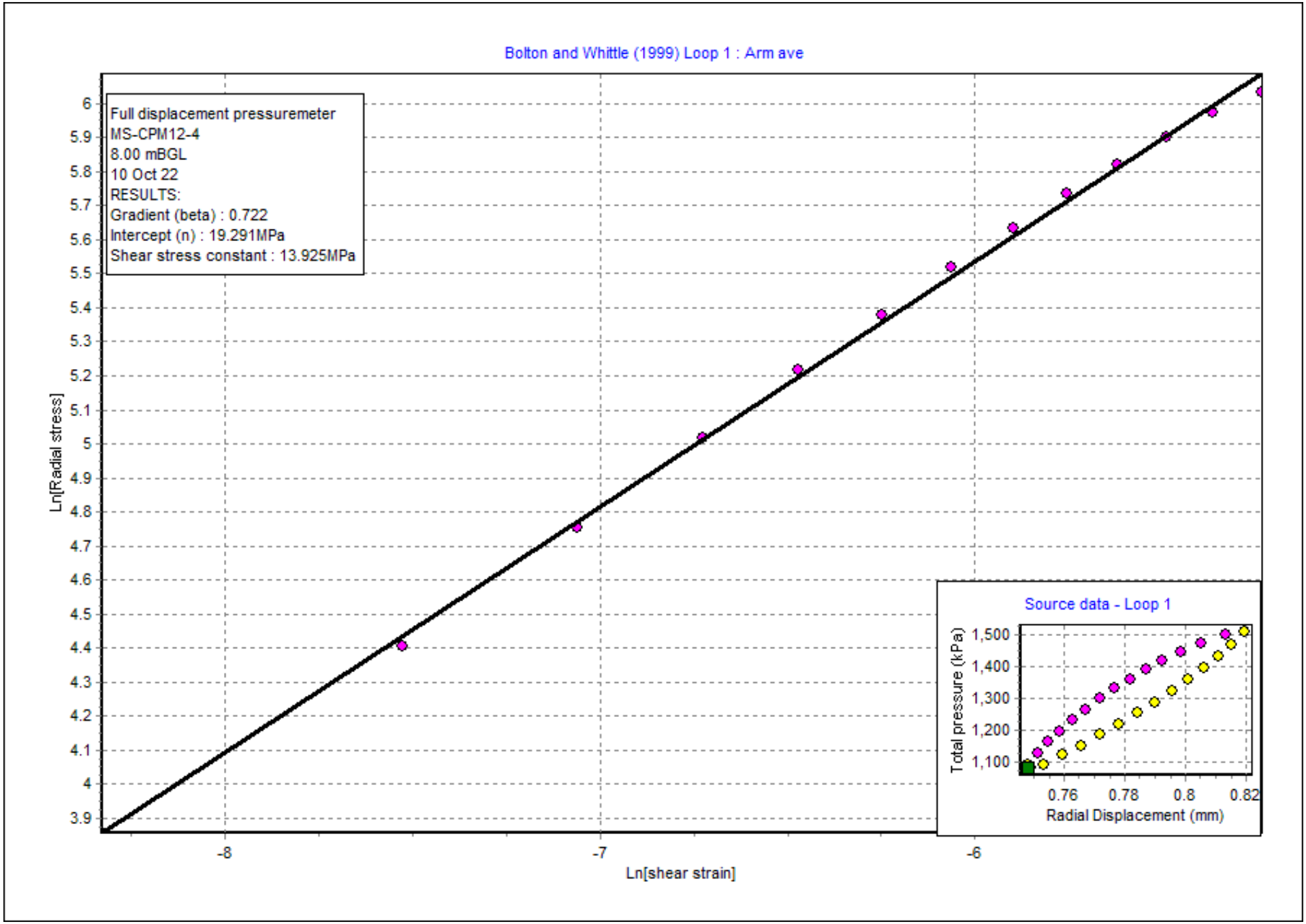

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 129.3kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22

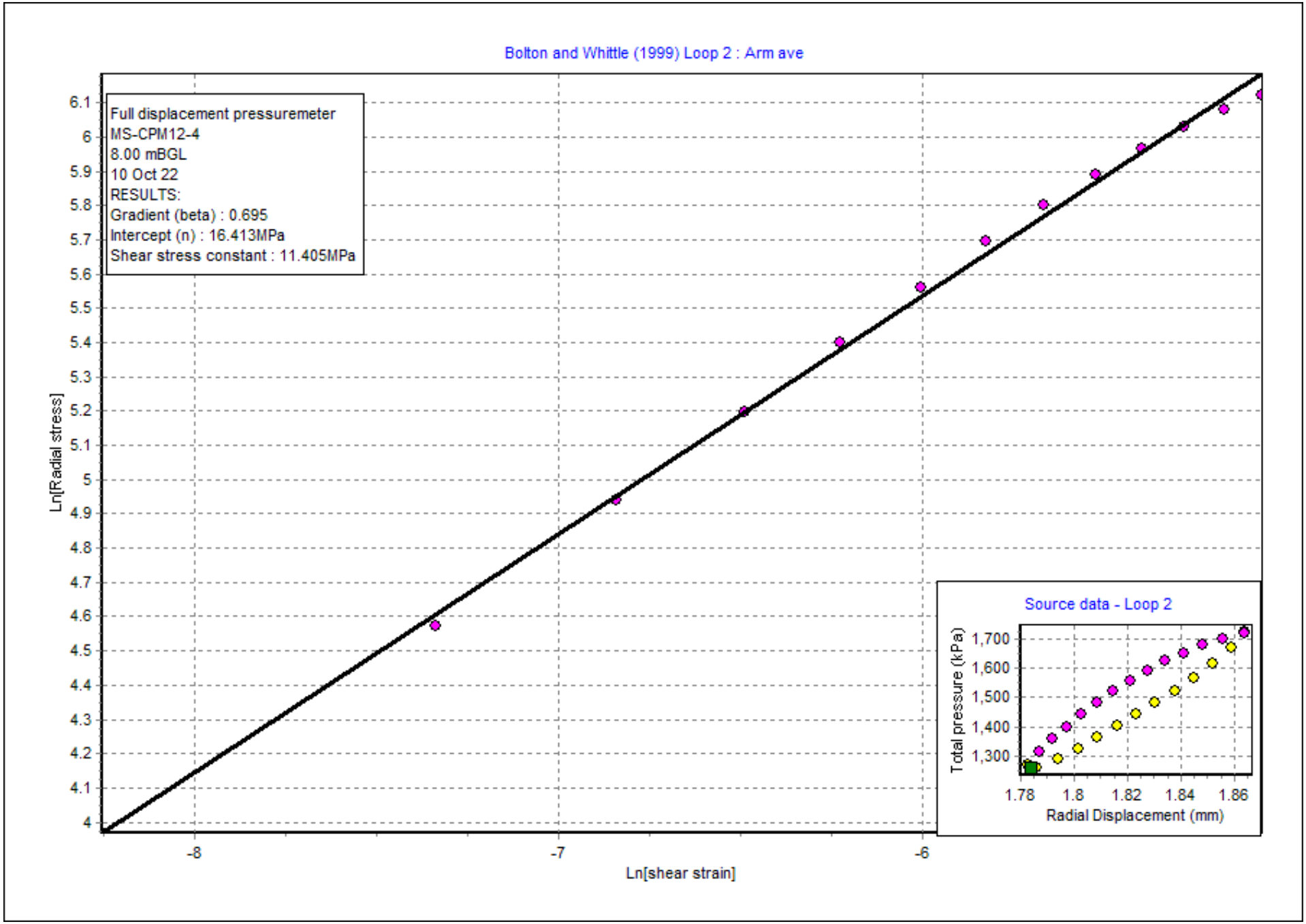

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-9
-8
-7
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22
RESULTS:
Ambient water pressure : 54.0 kPa
Residual friction angle : 29.0°
Gradient : -1.772
Friction angle : 27.2°
Dilation angle : -2.0°

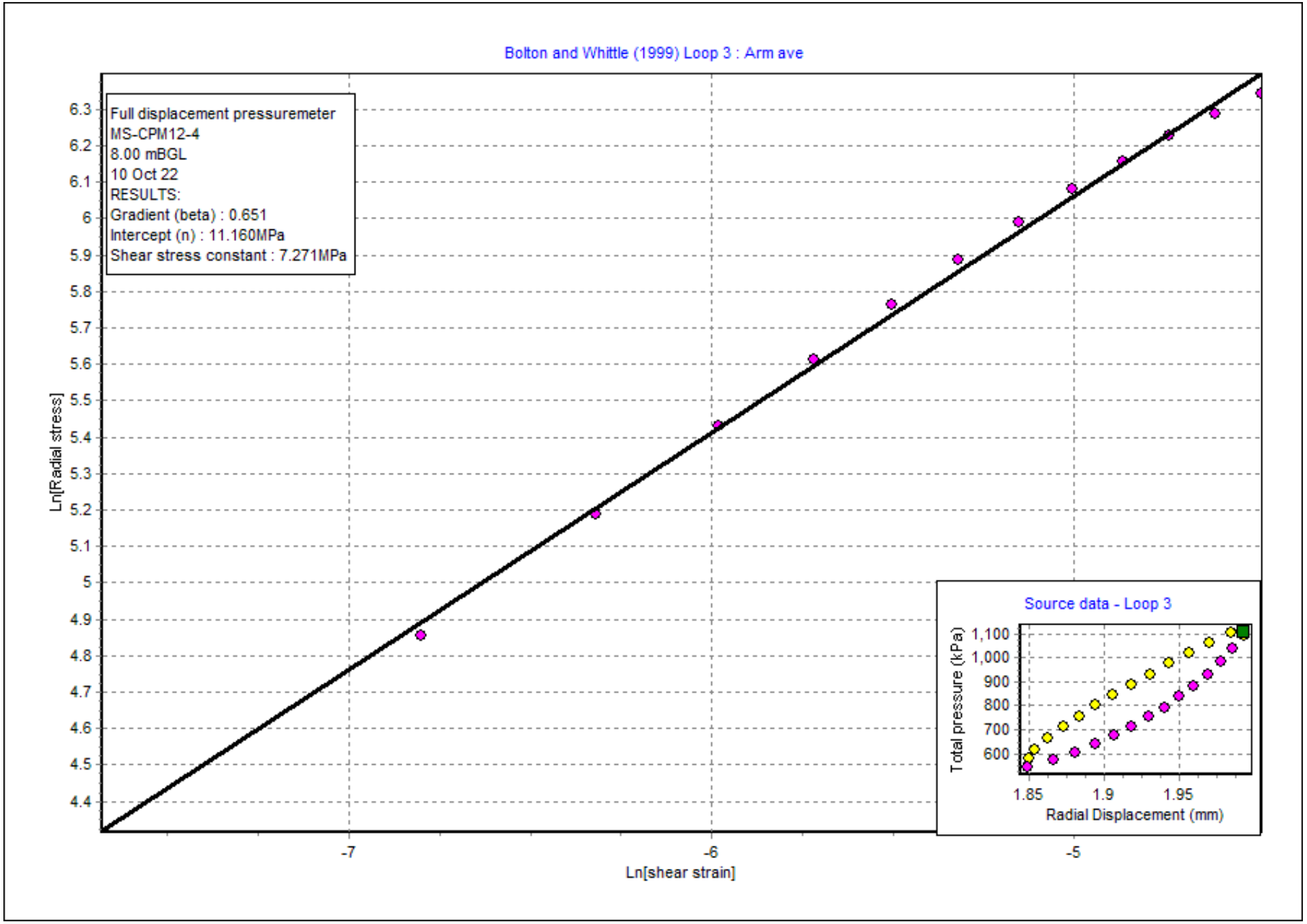

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 72.5MPa
Cycle mid-point:
Cavity strain : 3.285%
Total stress : 1298kPa
Size of cycle :
Shear strain : 0.589%
Total stress : 429kPa
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
0.73
0.735
0.74
0.745
0.75
0.755
0.76
0.765
0.77
0.775
0.78
0.785
0.79
0.795
0.8
0.805
0.81
0.815
0.82
0.825
0.83
0.835
0.84

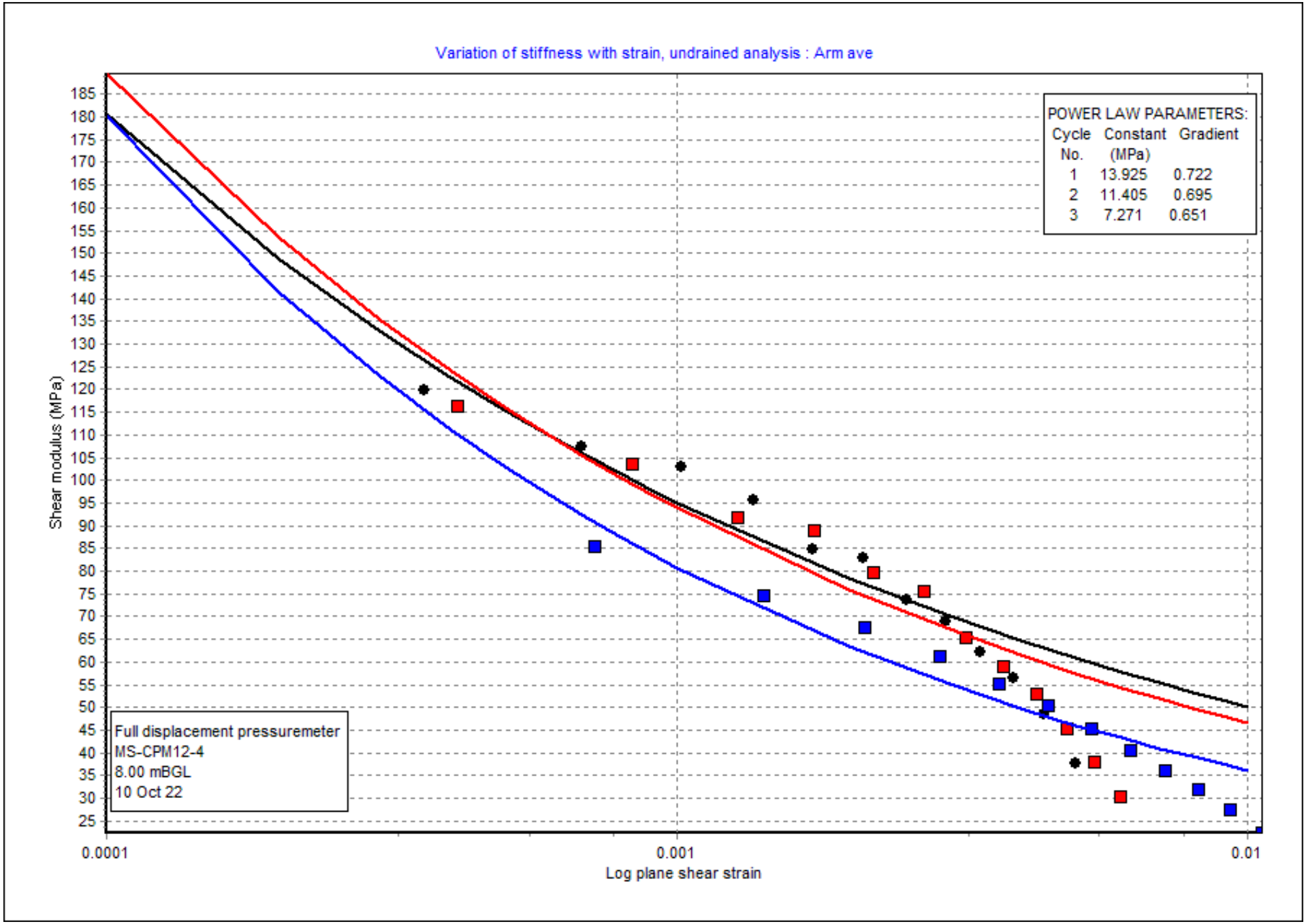

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 71.8MPa
Cycle mid-point:
Cavity strain : 7.475%
Total stress : 1492kPa
Size of cycle :
Shear strain : 0.643%
Total stress : 463kPa
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,860
1,840
1,820
1,800
1,780
1,760
1,740
1,720
1,700
1,680
1,660
1,640
1,620
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1.7
1.72
1.74
1.76
1.78
1.8
1.82
1.84
1.86
1.88
1.9
1.92
1.94

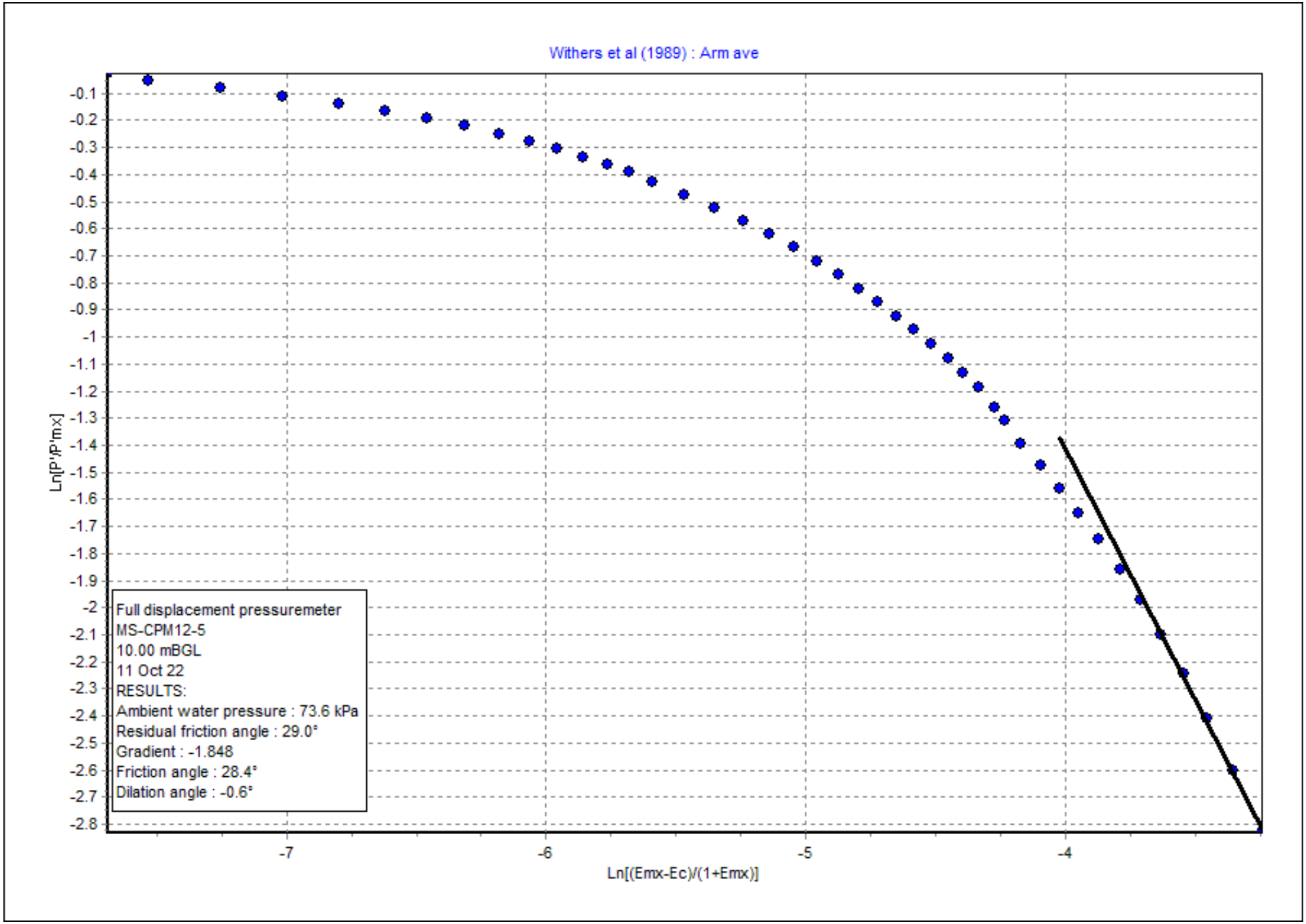

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 47.0MPa
Cycle mid-point:
Cavity strain : 7.867%
Total stress : 837kPa
Size of cycle :
Shear strain : 1.119%
Total stress : 528kPa
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,150
1,100
1,050
1,000
950
900
850
800
750
700
650
600
550
500
1.84
1.85
1.86
1.87
1.88
1.89
1.9
1.91
1.92
1.93
1.94
1.95
1.96
1.97
1.98
1.99
2
2.01

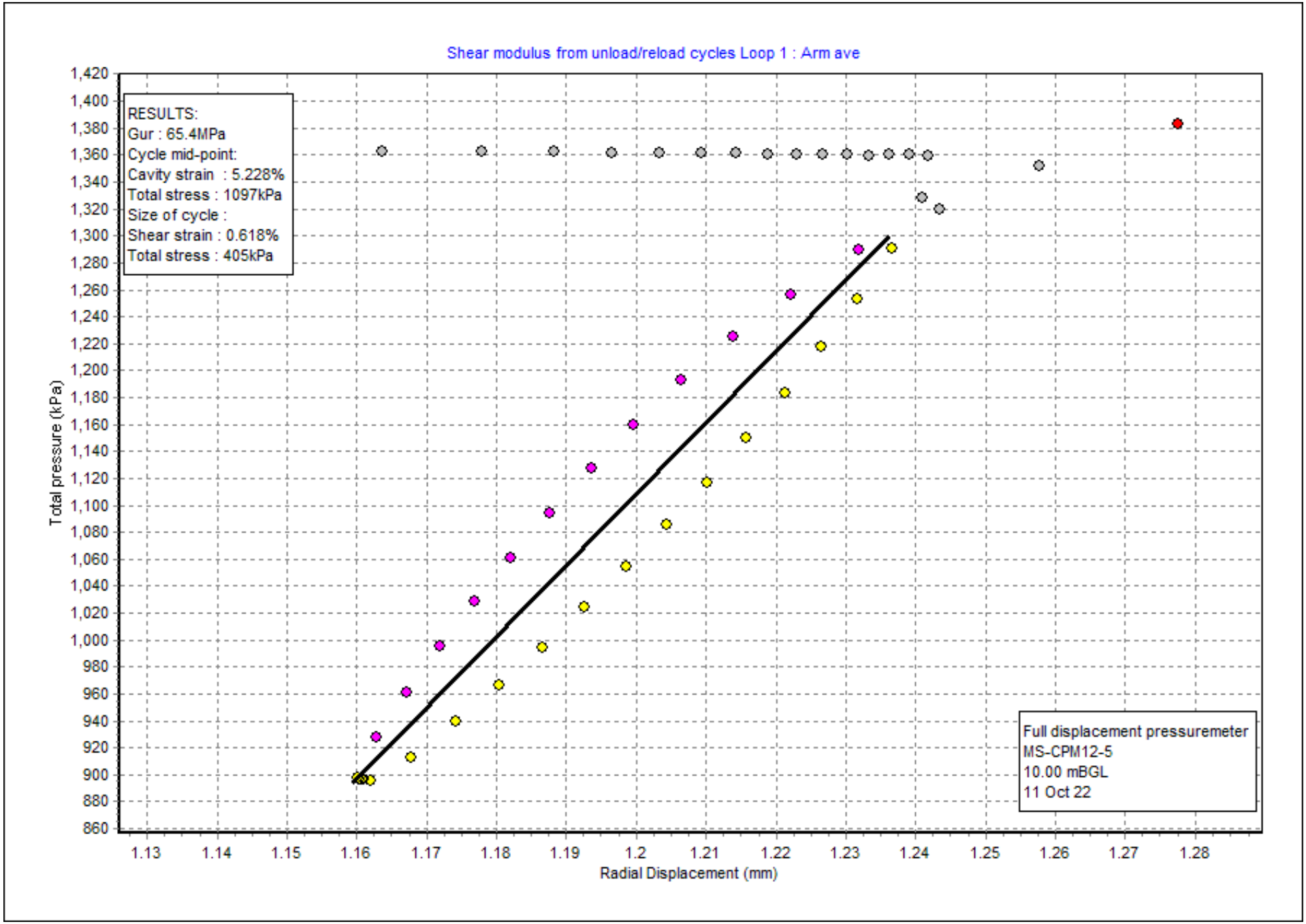

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.722
Intercept (n) : 19.291MPa
Shear stress constant : 13.925MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

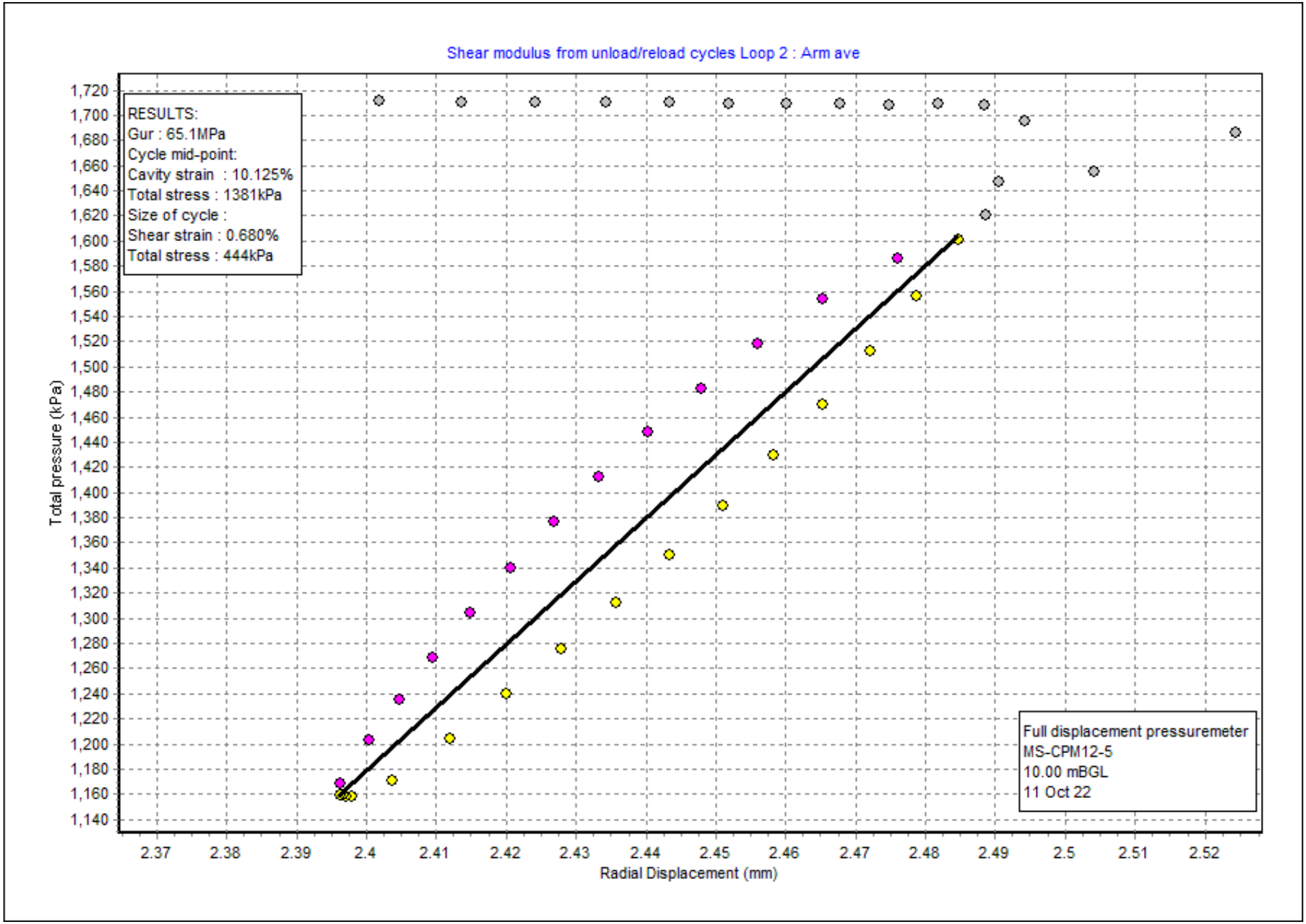

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.695
Intercept (n) : 16.413MPa
Shear stress constant : 11.405MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

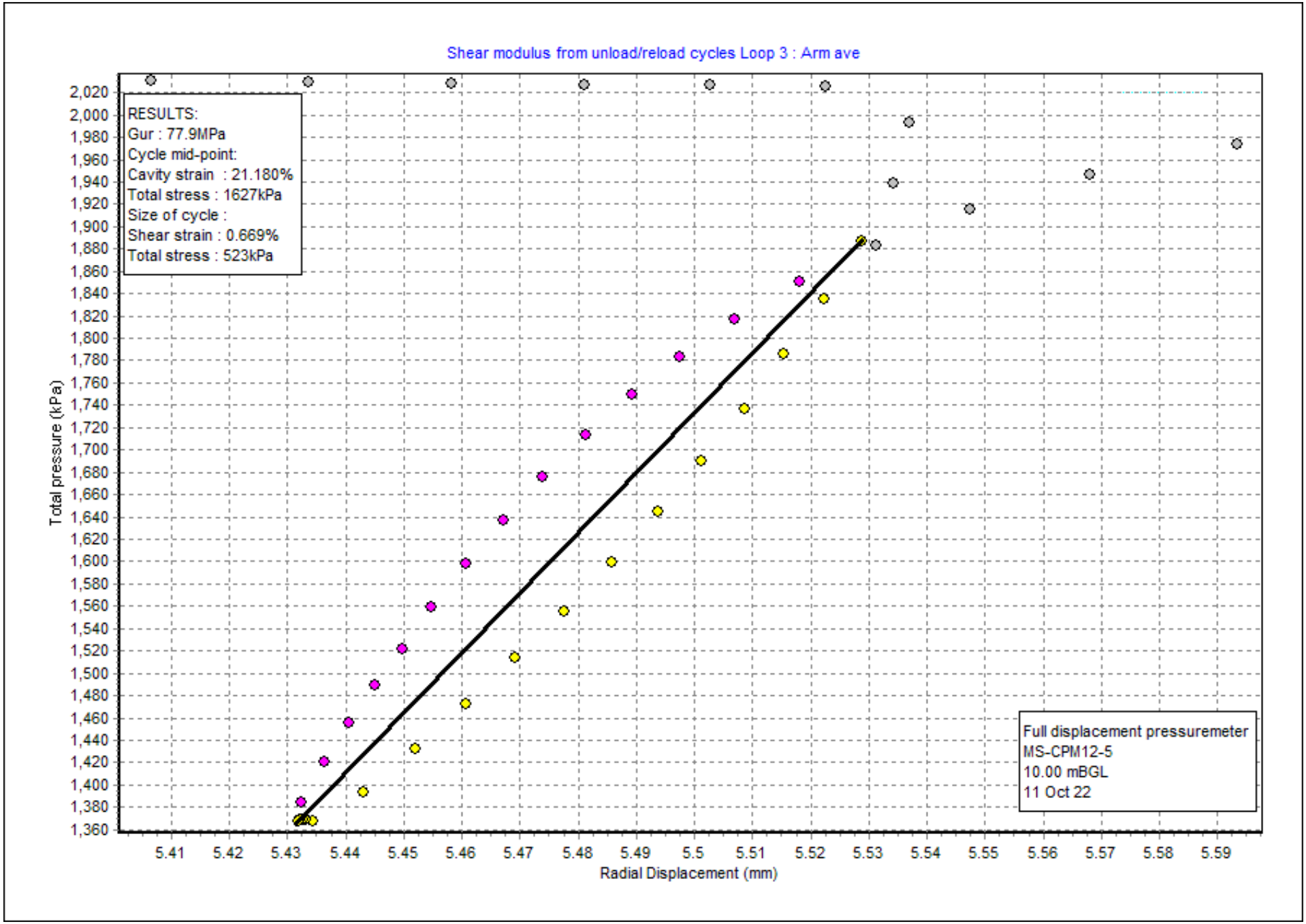

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22
RESULTS:
Gradient (beta) : 0.651
Intercept (n) : 11.160MPa
Shear stress constant : 7.271MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

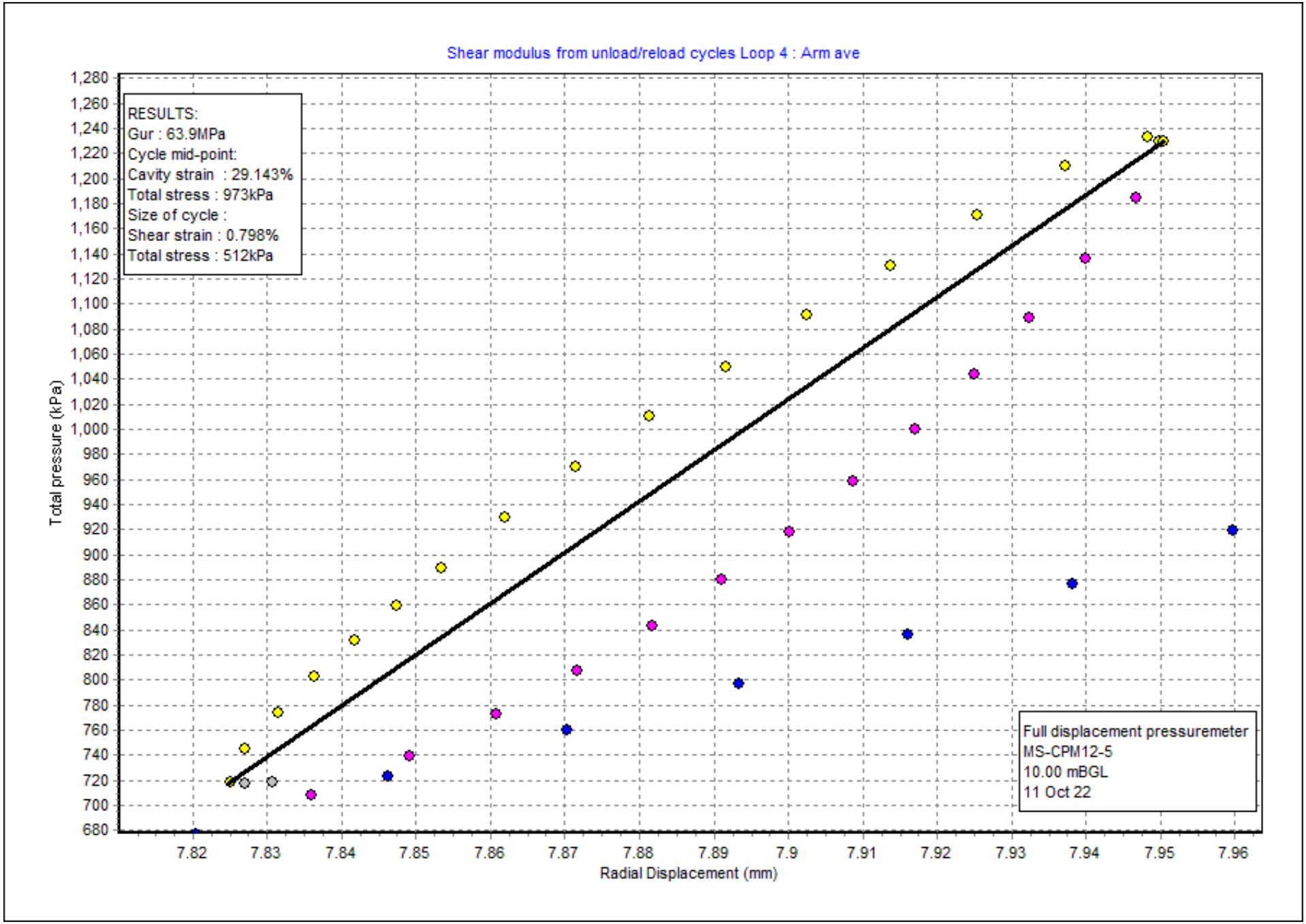

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 13.925 | 0.722
2 | 11.405 | 0.695
3 | 7.271 | 0.651
Full displacement pressuremeter
MS-CPM12-4
8.00 mBGL
10 Oct 22
Shear modulus (MPa)
185
180
175
170
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0.0001
0.001
0.01
Log plane shear strain


Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-2.8
-7
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
RESULTS:
Ambient water pressure : 73.6 kPa
Residual friction angle : 29.0°
Gradient : -1.848
Friction angle : 28.4°
Dilation angle : -0.6°


Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 65.4MPa
Cycle mid-point:
Cavity strain : 5.228%
Total stress : 1097kPa
Size of cycle :
Shear strain : 0.618%
Total stress : 405kPa
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
1.13
1.14
1.15
1.16
1.17
1.18
1.19
1.2
1.21
1.22
1.23
1.24
1.25
1.26
1.27
1.28


Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 65.1MPa
Cycle mid-point:
Cavity strain : 10.125%
Total stress : 1381kPa
Size of cycle :
Shear strain : 0.680%
Total stress : 444kPa
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,720
1,700
1,680
1,660
1,640
1,620
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
2.37
2.38
2.39
2.4
2.41
2.42
2.43
2.44
2.45
2.46
2.47
2.48
2.49
2.5
2.51
2.52


Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 77.9MPa
Cycle mid-point:
Cavity strain : 21.180%
Total stress : 1627kPa
Size of cycle :
Shear strain : 0.669%
Total stress : 523kPa
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
2,020
2,000
1,980
1,960
1,940
1,920
1,900
1,880
1,860
1,840
1,820
1,800
1,780
1,760
1,740
1,720
1,700
1,680
1,660
1,640
1,620
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
5.41
5.42
5.43
5.44
5.45
5.46
5.47
5.48
5.49
5.5
5.51
5.52
5.53
5.54
5.55
5.56
5.57
5.58
5.59


Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 63.9MPa
Cycle mid-point:
Cavity strain : 29.143%
Total stress : 973kPa
Size of cycle :
Shear strain : 0.798%
Total stress : 512kPa
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
800
780
760
740
720
700
680
7.82
7.83
7.84
7.85
7.86
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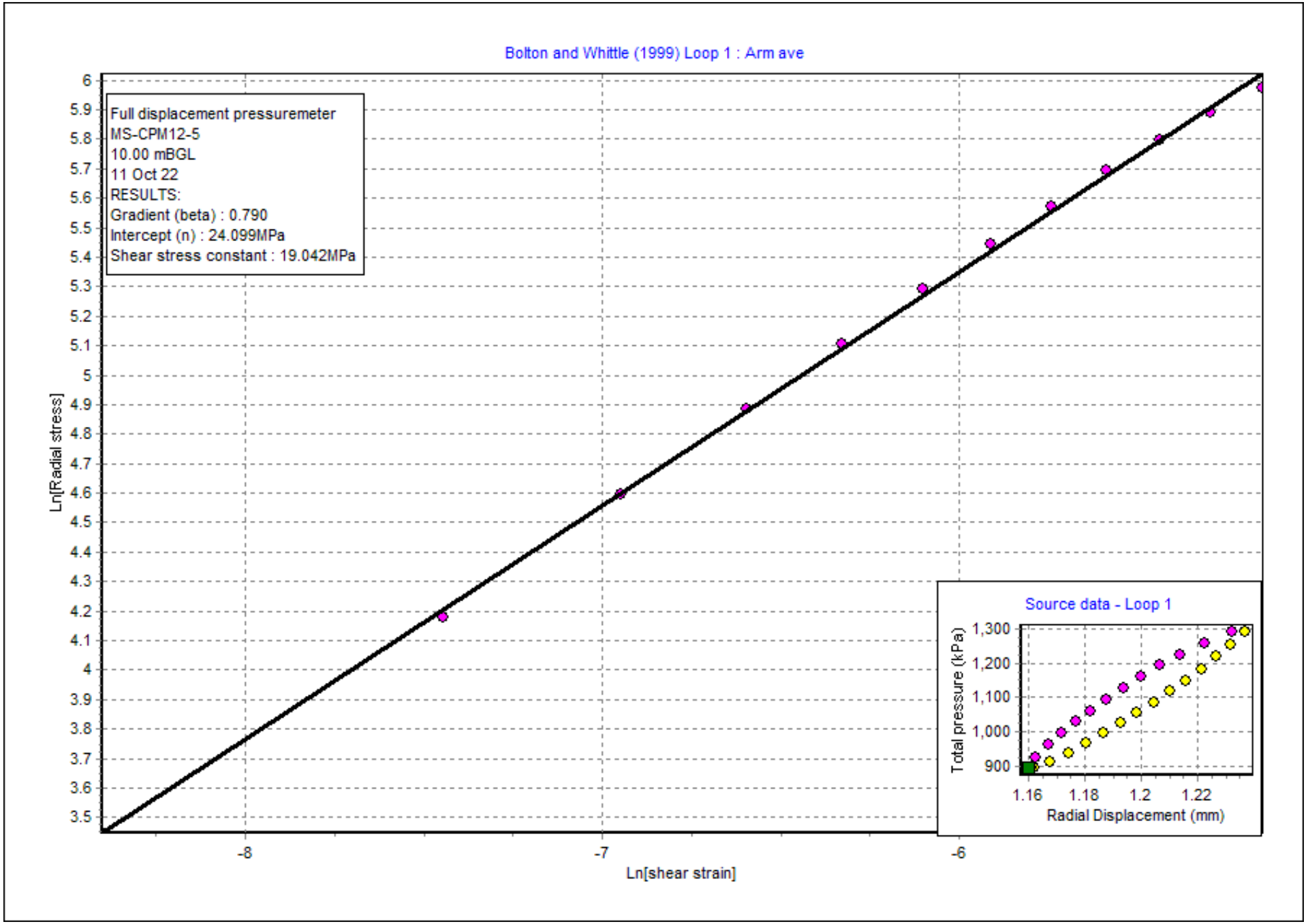
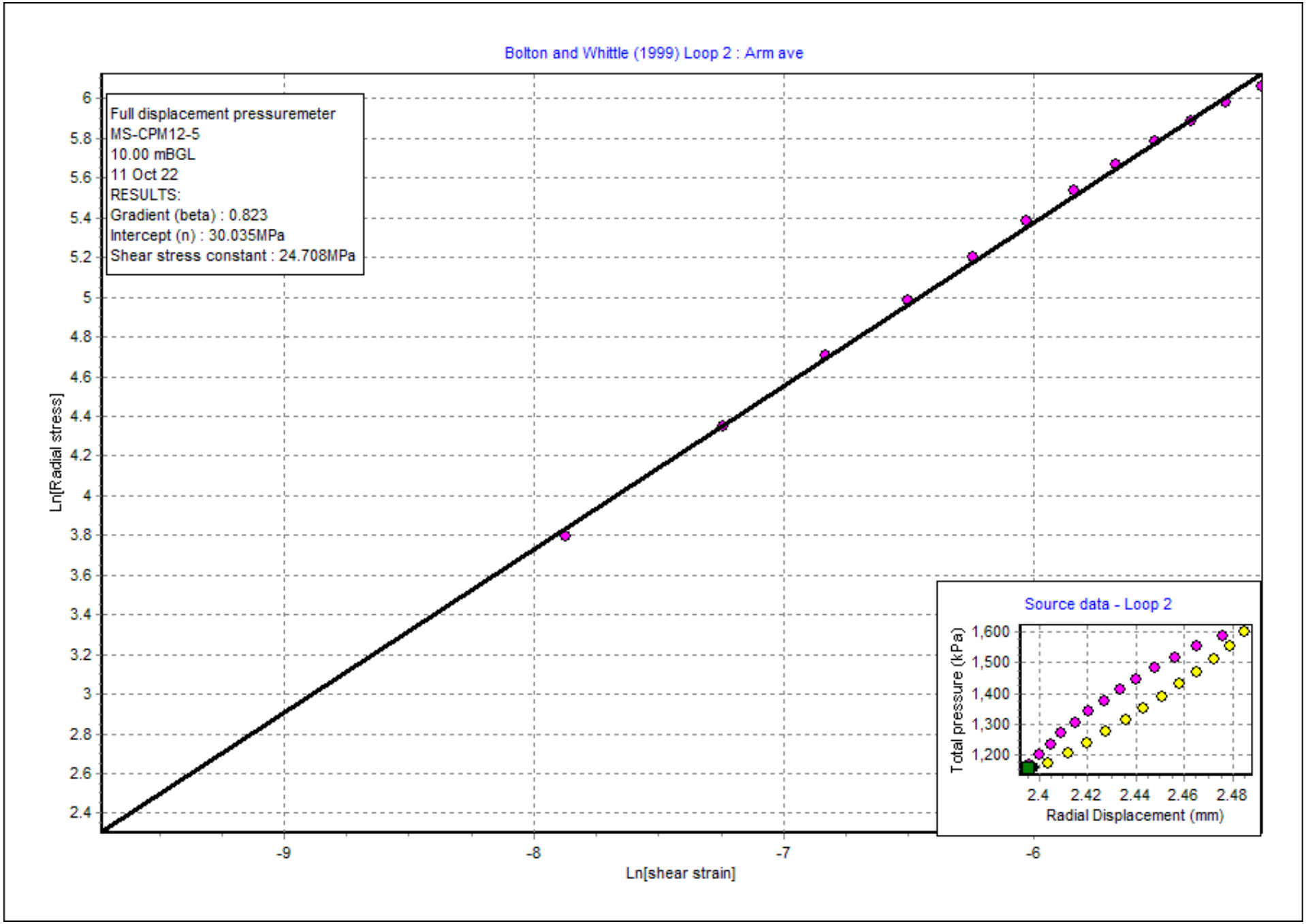
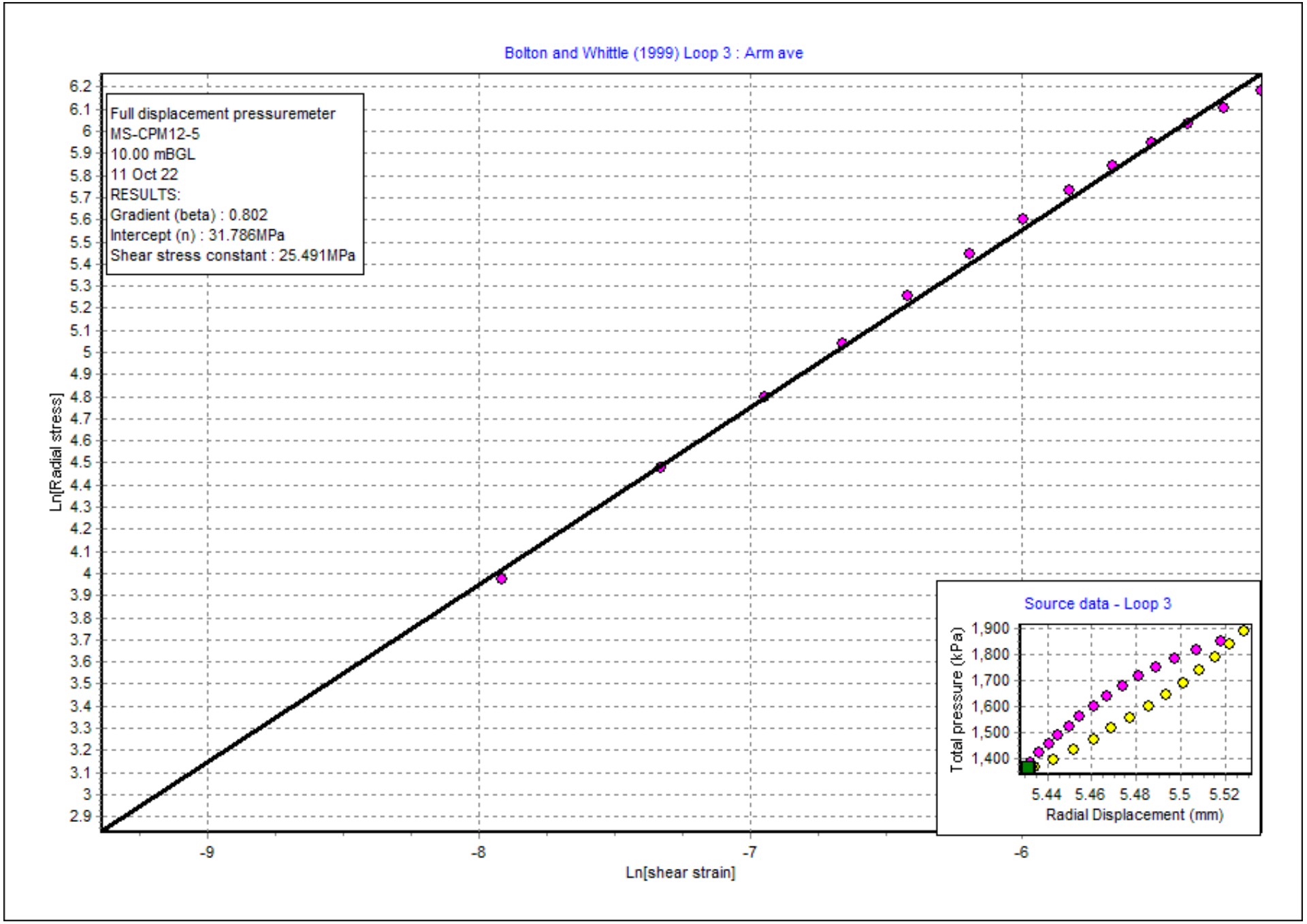
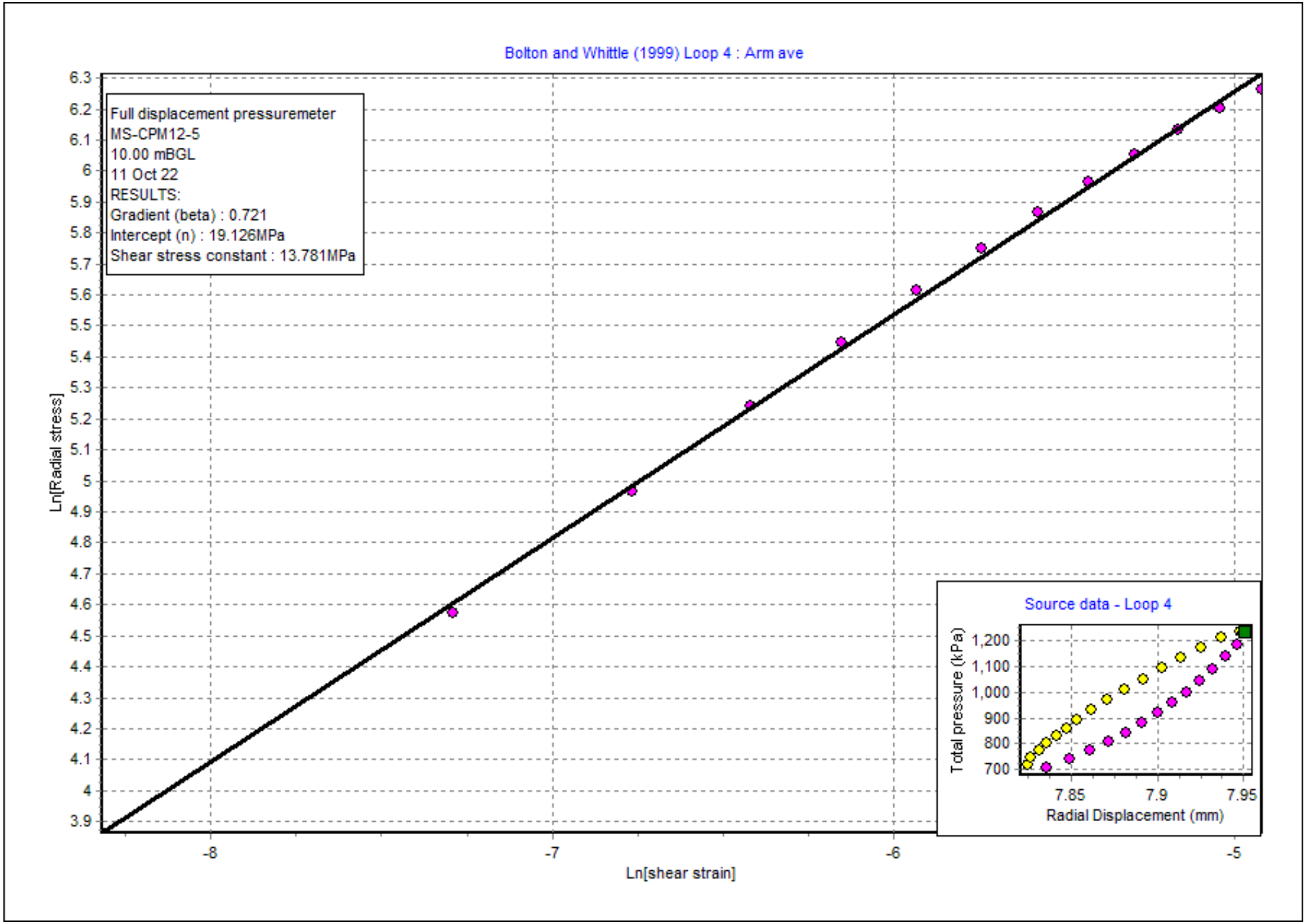
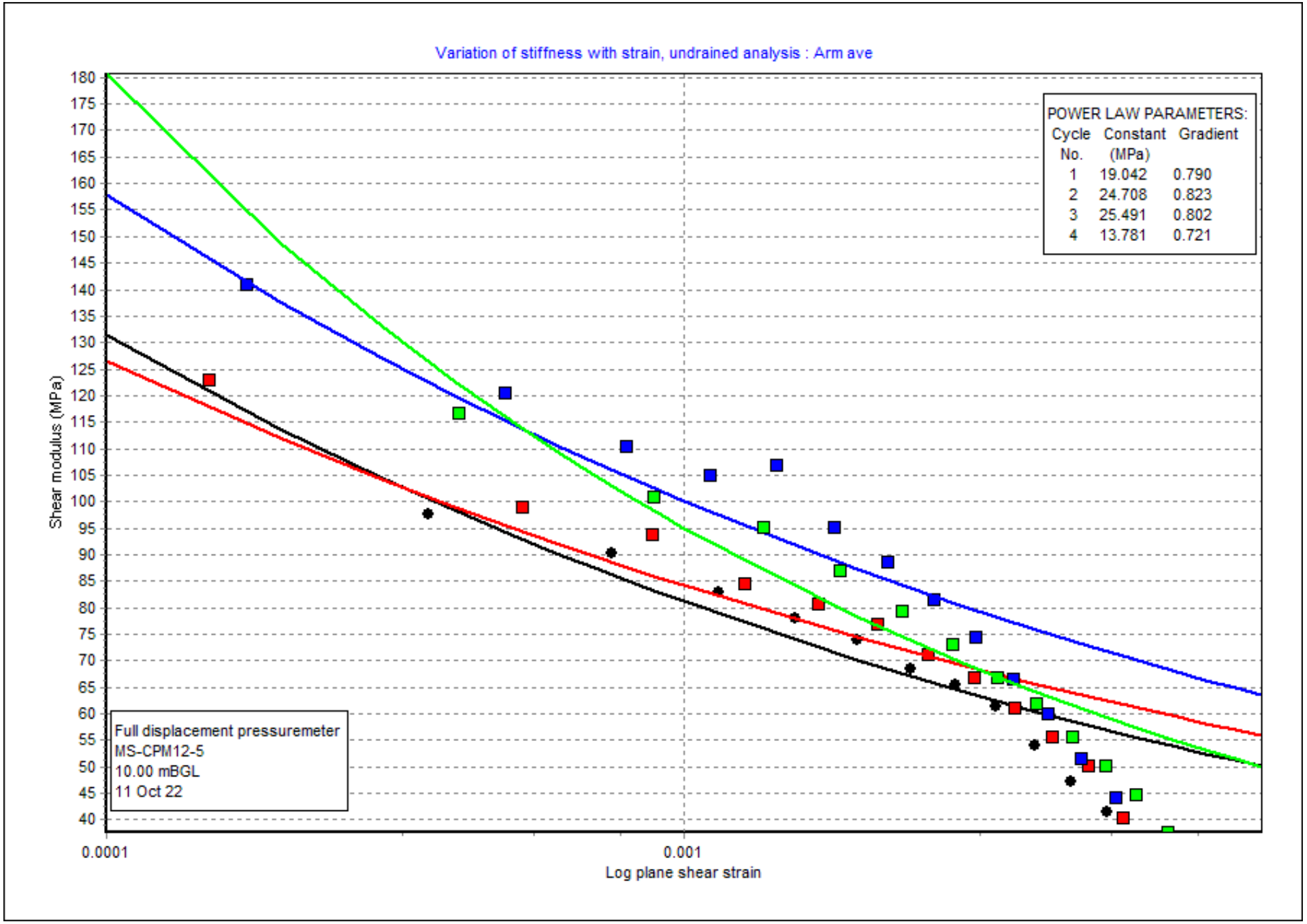
7.93
7.94
7.95
7.96

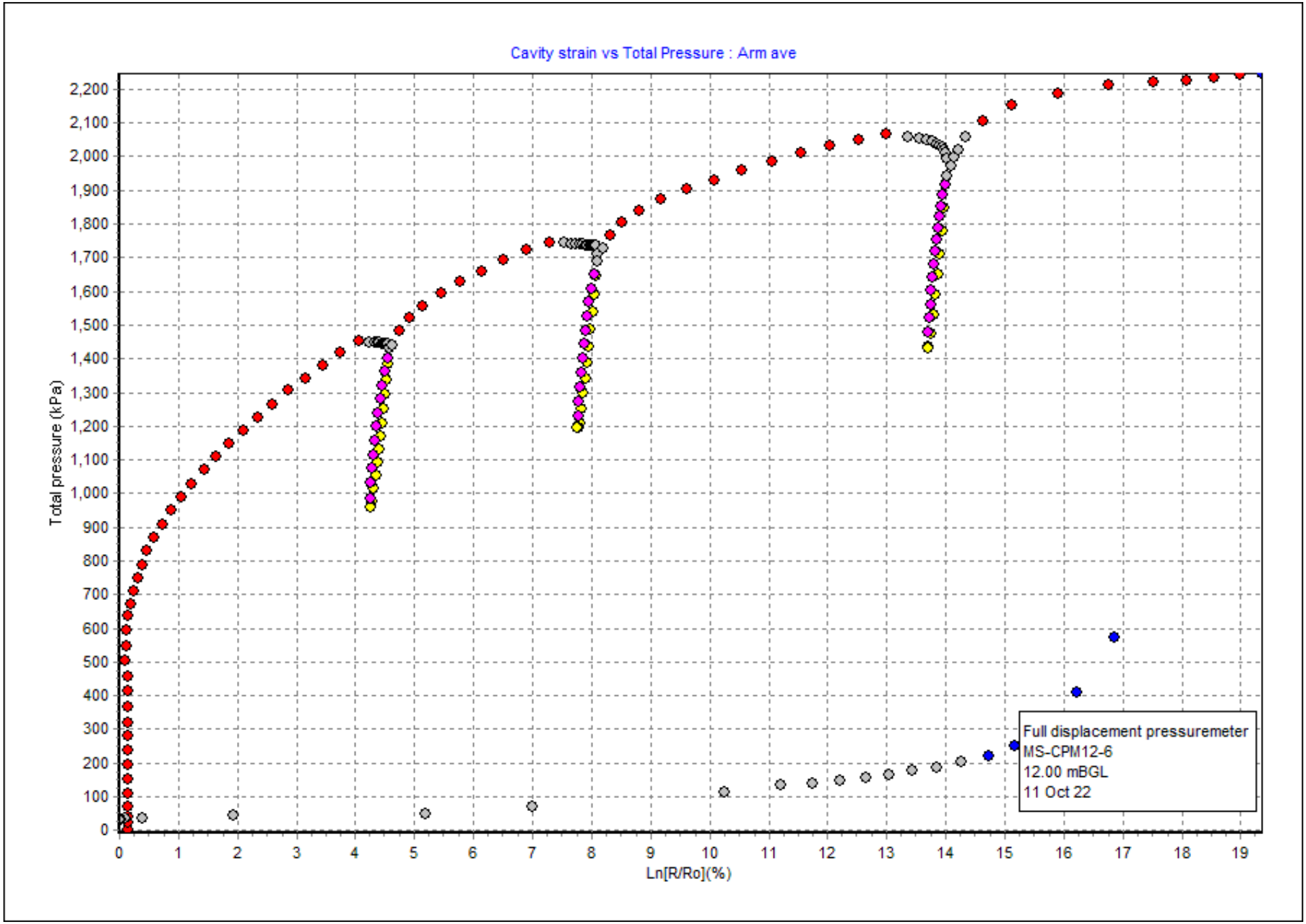

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.790
Intercept (n) : 24.099MPa
Shear stress constant : 19.042MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

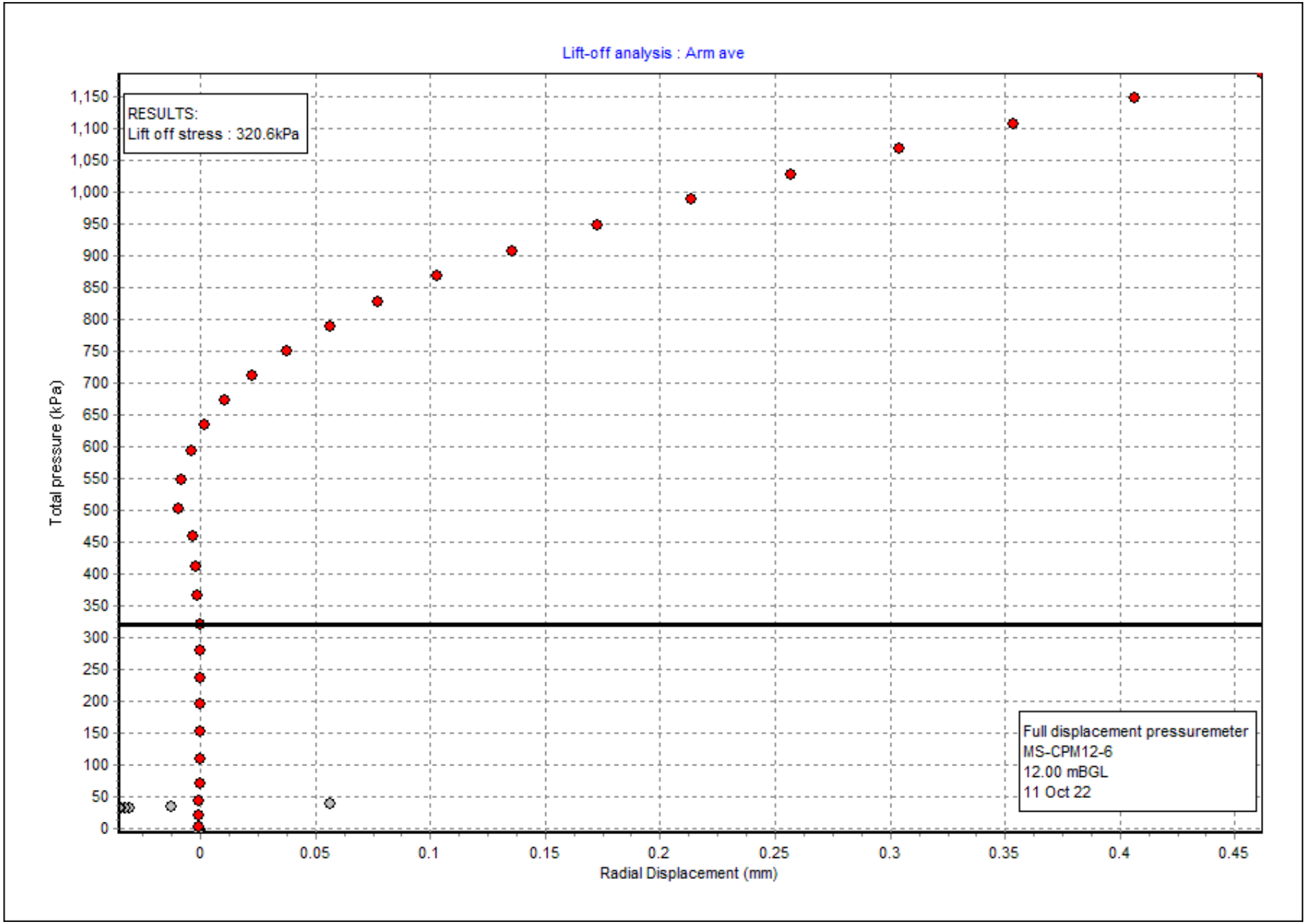

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.823
Intercept (n) : 30.035MPa
Shear stress constant : 24.708MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

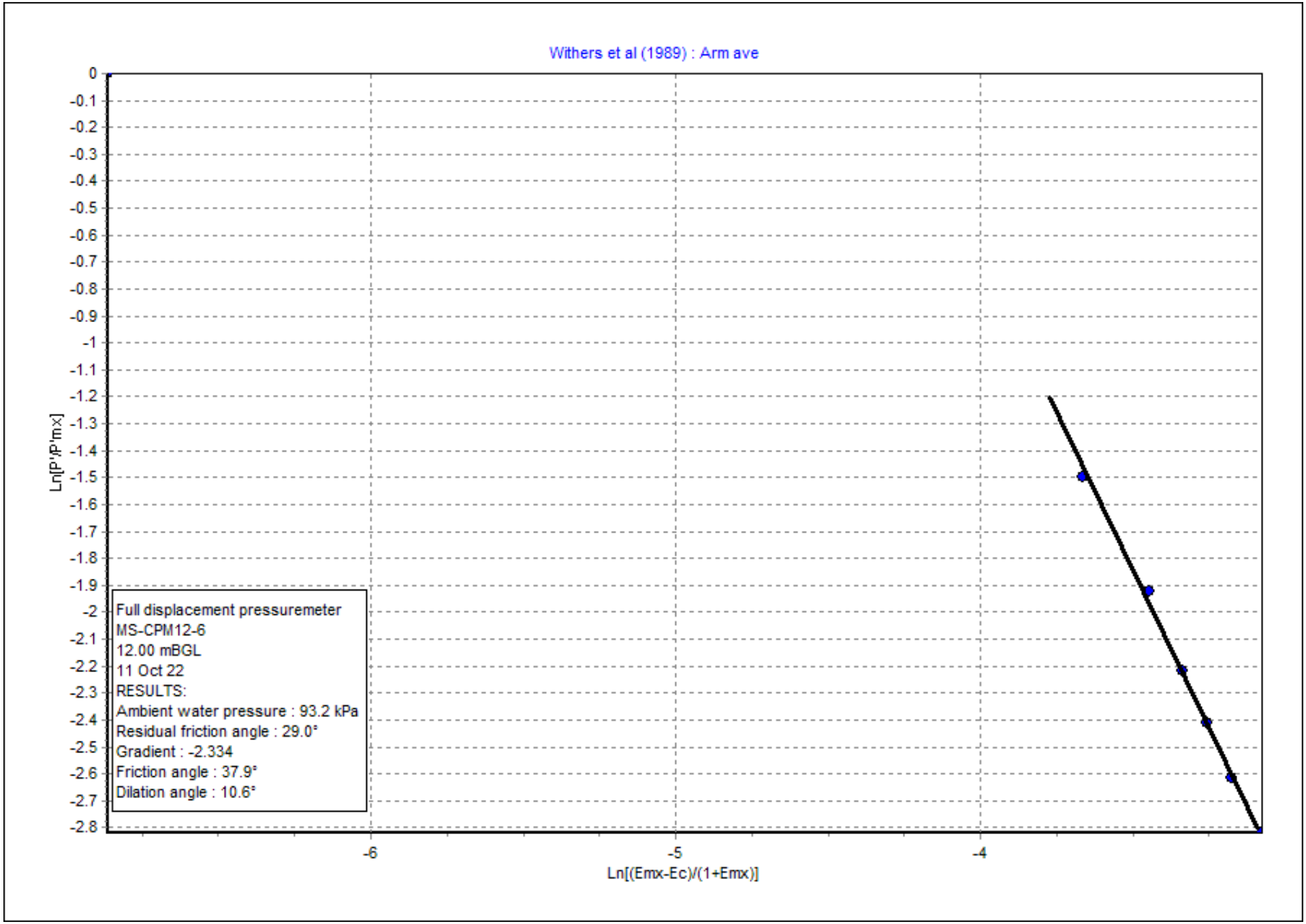

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.802
Intercept (n) : 31.786MPa
Shear stress constant : 25.491MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

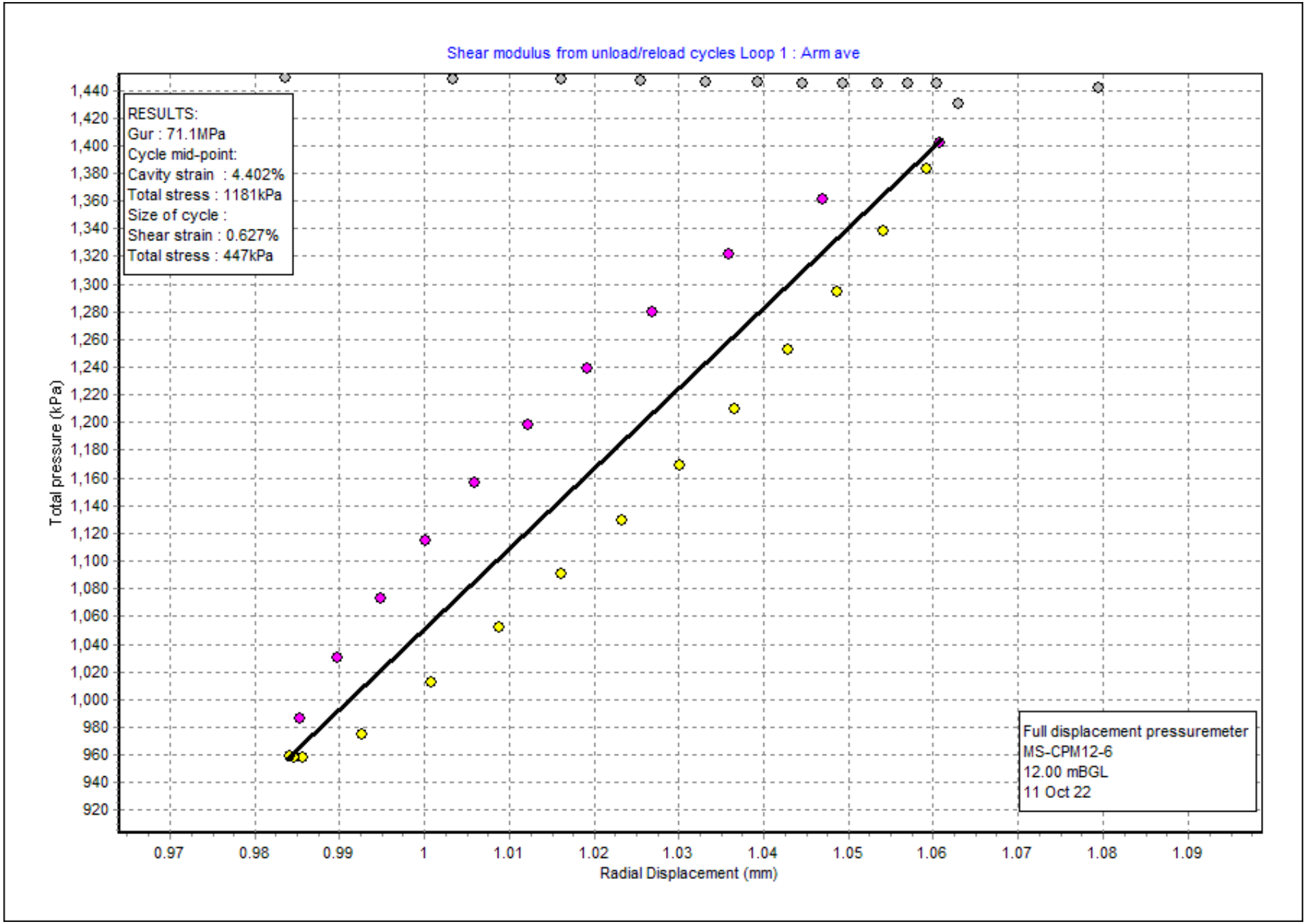

Bolton and Whittle (1999) Loop 4 : Arm ave
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.721
Intercept (n) : 19.126MPa
Shear stress constant : 13.781MPa
Ln[Radial stress]
Ln[shear strain]
6.3
6.2
6.1
6
5.9
5.8
5.7
5.6
5.5
5.4
5.3
5.2
5.1
5
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4
3.9
-8
-7
-6
-5
Source data - Loop 4
Total pressure (kPa)
1,200
1,100
1,000
900
800
700
7.85
7.9
7.95
Radial Displacement (mm)

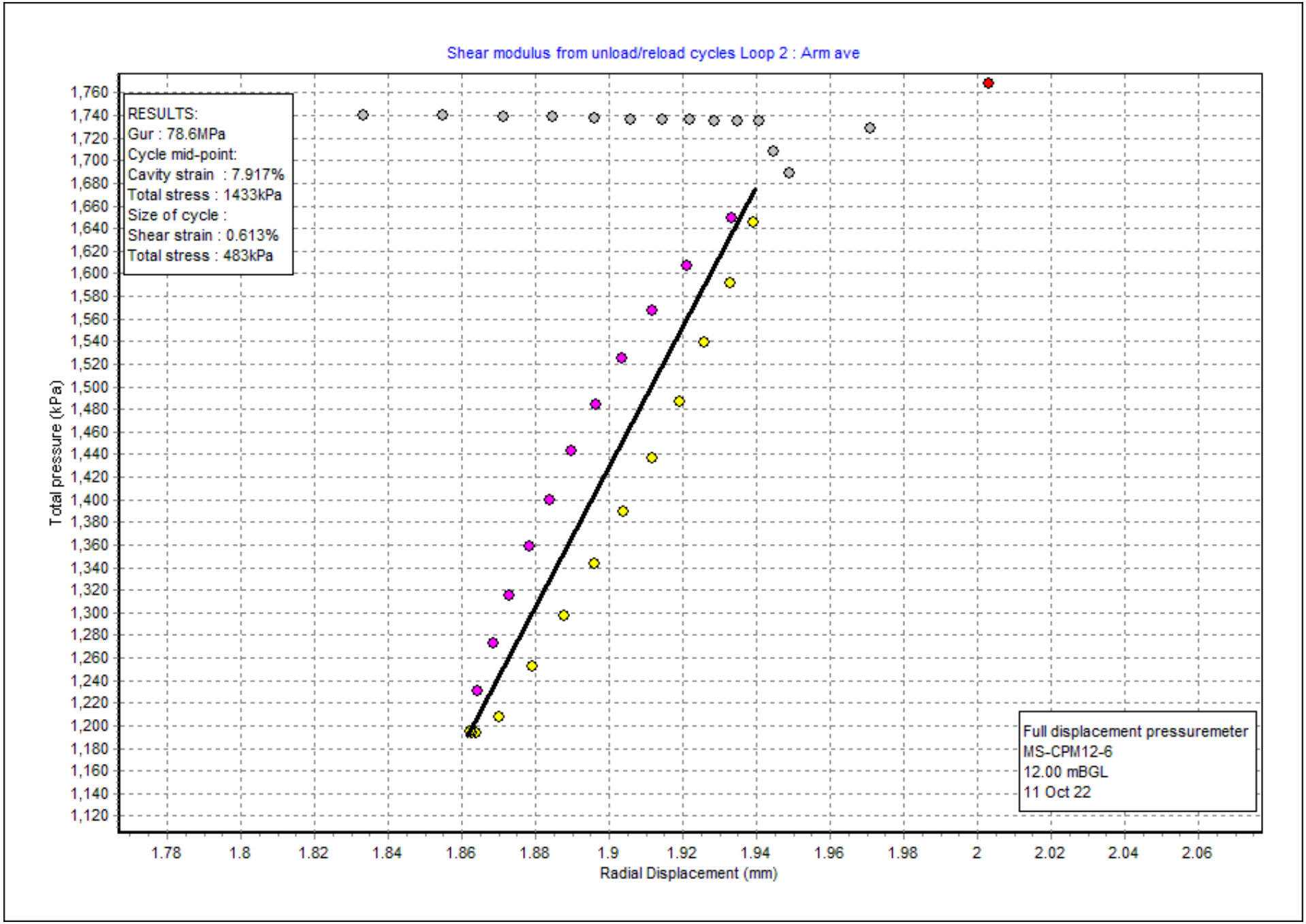

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 19.042 | 0.790
2 | 24.708 | 0.823
3 | 25.491 | 0.802
4 | 13.781 | 0.721
Full displacement pressuremeter
MS-CPM12-5
10.00 mBGL
11 Oct 22
Shear modulus (MPa)
Log plane shear strain
0.0001
0.001
180
175
170
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40

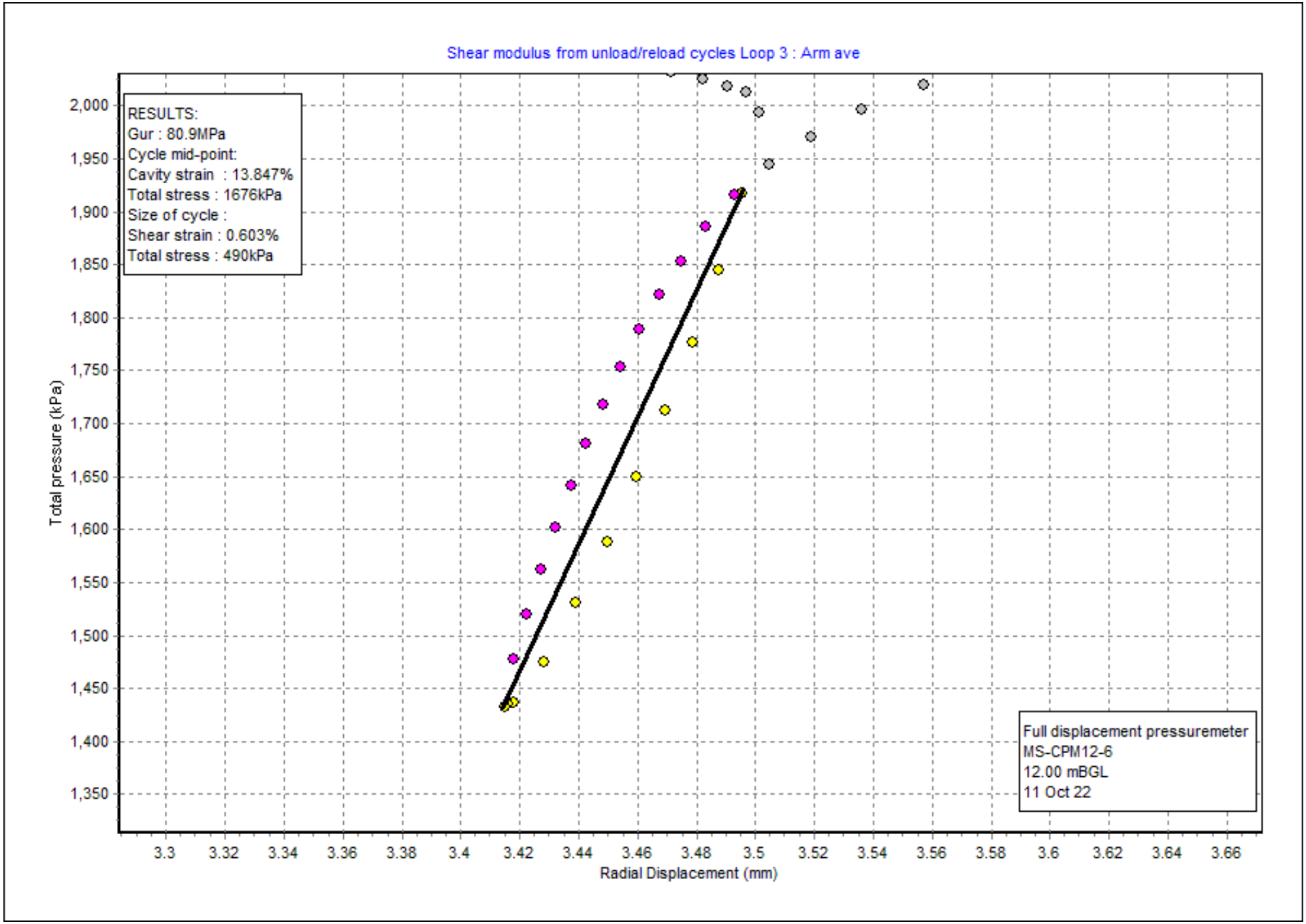

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22

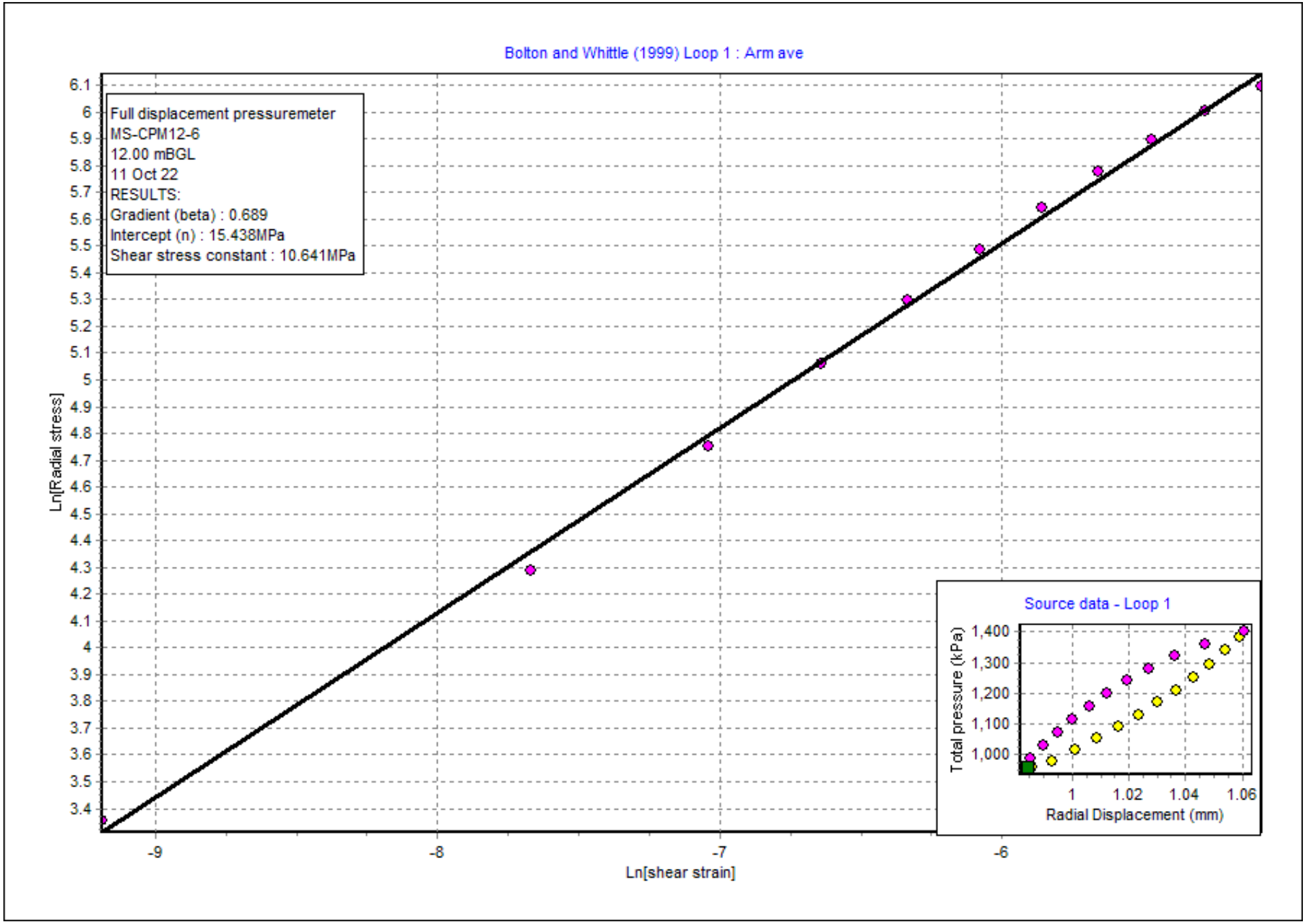

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 320.6kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22

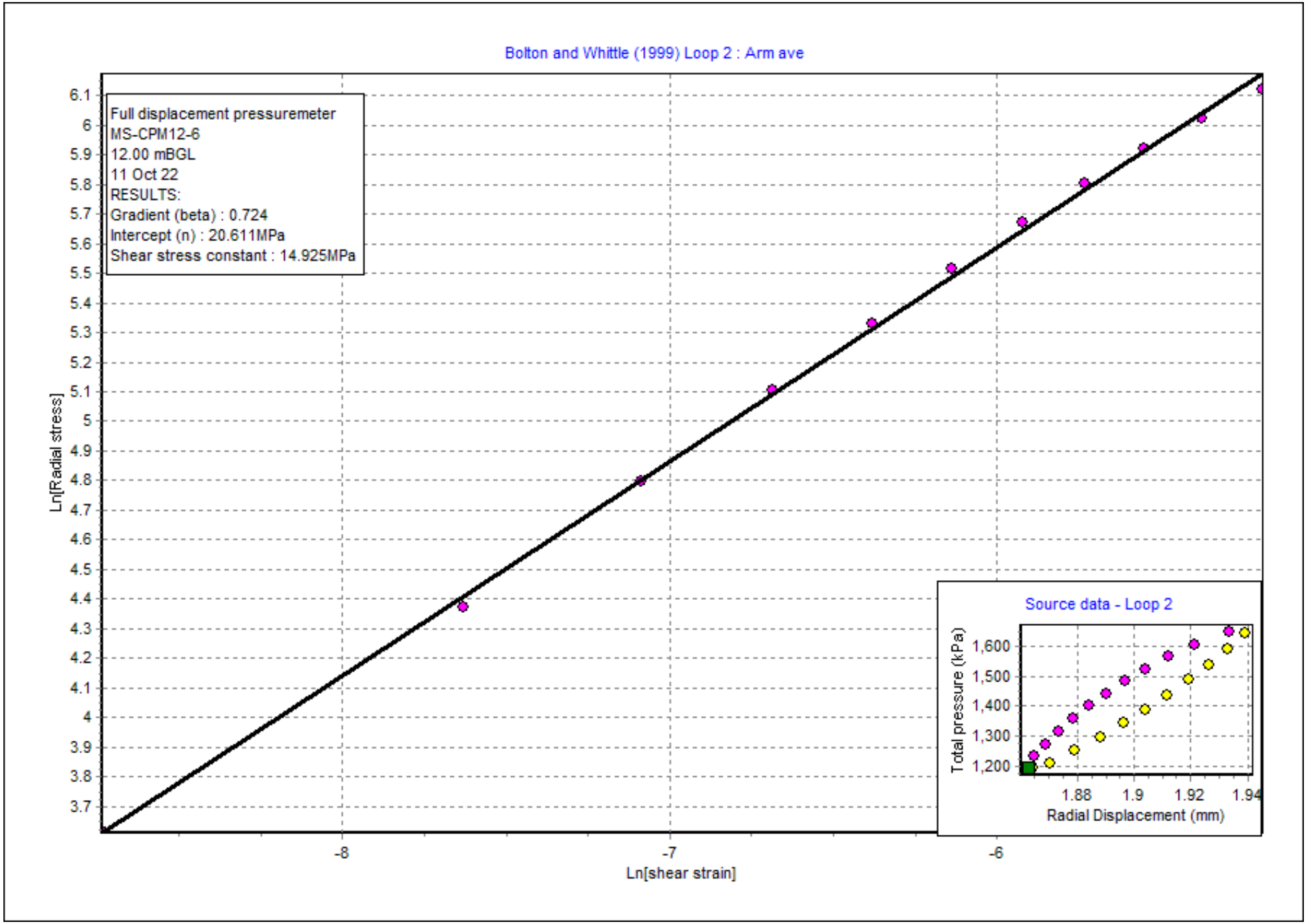

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-2.8
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22
RESULTS:
Ambient water pressure : 93.2 kPa
Residual friction angle : 29.0°
Gradient : -2.334
Friction angle : 37.9°
Dilation angle : 10.6°

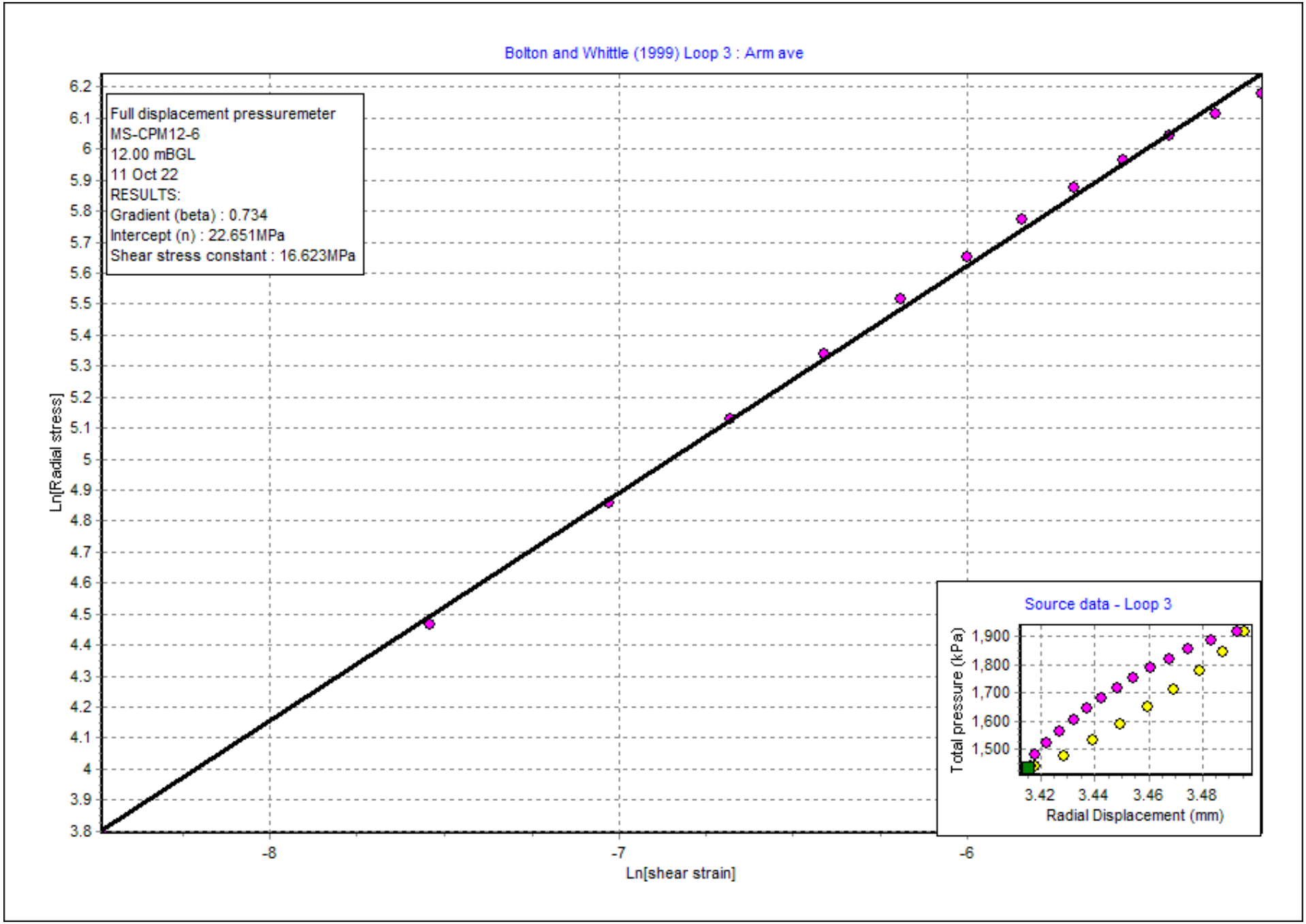

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 71.1MPa
Cycle mid-point:
Cavity strain : 4.402%
Total stress : 1181kPa
Size of cycle :
Shear strain : 0.627%
Total stress : 447kPa
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
0.97
0.98
0.99
1
1.01
1.02
1.03
1.04
1.05
1.06
1.07
1.08
1.09

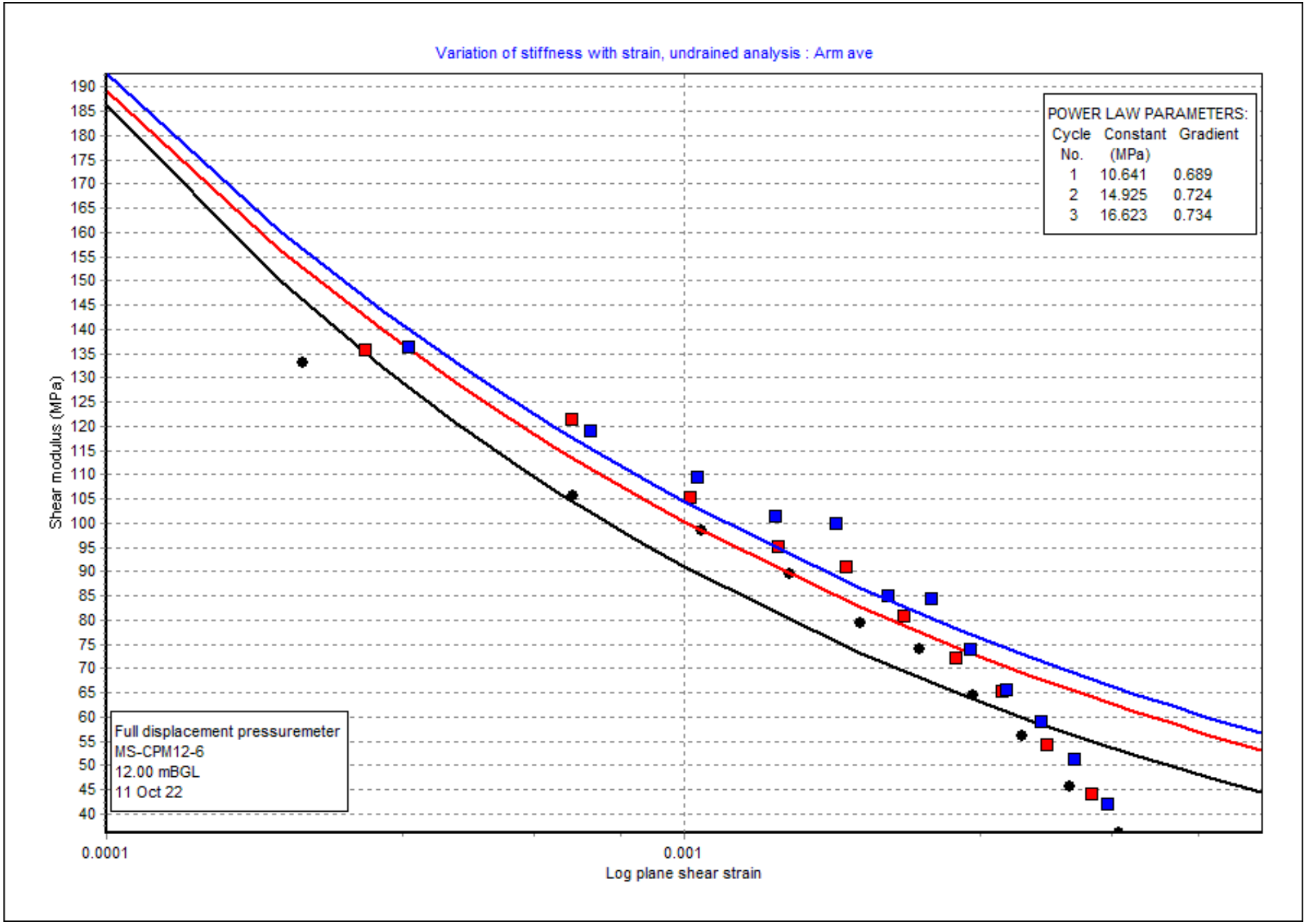

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 78.6MPa
Cycle mid-point:
Cavity strain : 7.917%
Total stress : 1433kPa
Size of cycle :
Shear strain : 0.613%
Total stress : 483kPa
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,760
1,740
1,720
1,700
1,680
1,660
1,640
1,620
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1.78
1.8
1.82
1.84
1.86
1.88
1.9
1.92
1.94
1.96
1.98
2
2.02
2.04
2.06

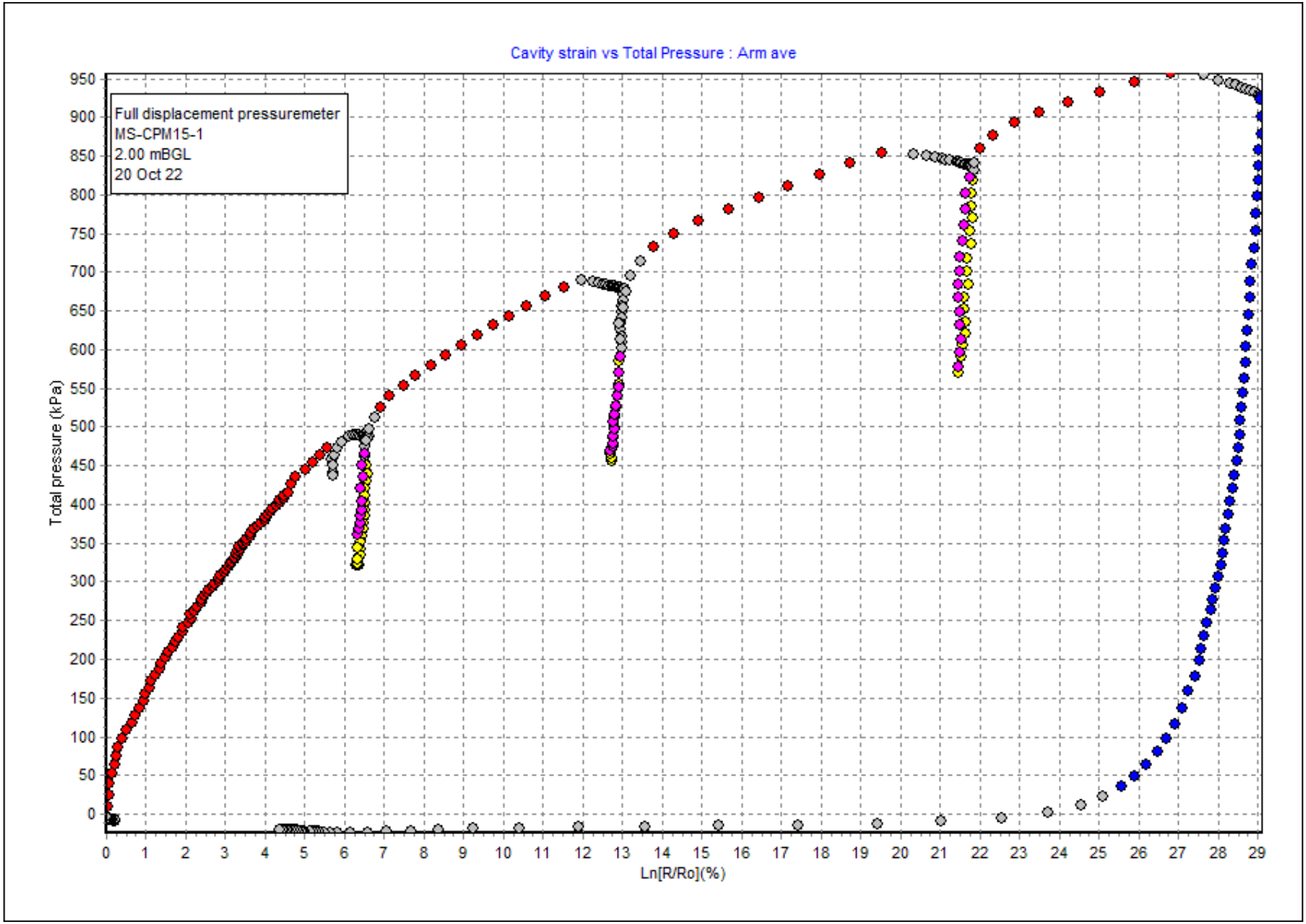

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 80.9MPa
Cycle mid-point:
Cavity strain : 13.847%
Total stress : 1676kPa
Size of cycle :
Shear strain : 0.603%
Total stress : 490kPa
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22
Total pressure (kPa)
2,000
1,950
1,900
1,850
1,800
1,750
1,700
1,650
1,600
1,550
1,500
1,450
1,400
1,350
Radial Displacement (mm)
3.3
3.32
3.34
3.36
3.38
3.4
3.42
3.44
3.46
3.48
3.5
3.52
3.54
3.56
3.58
3.6
3.62
3.64
3.66

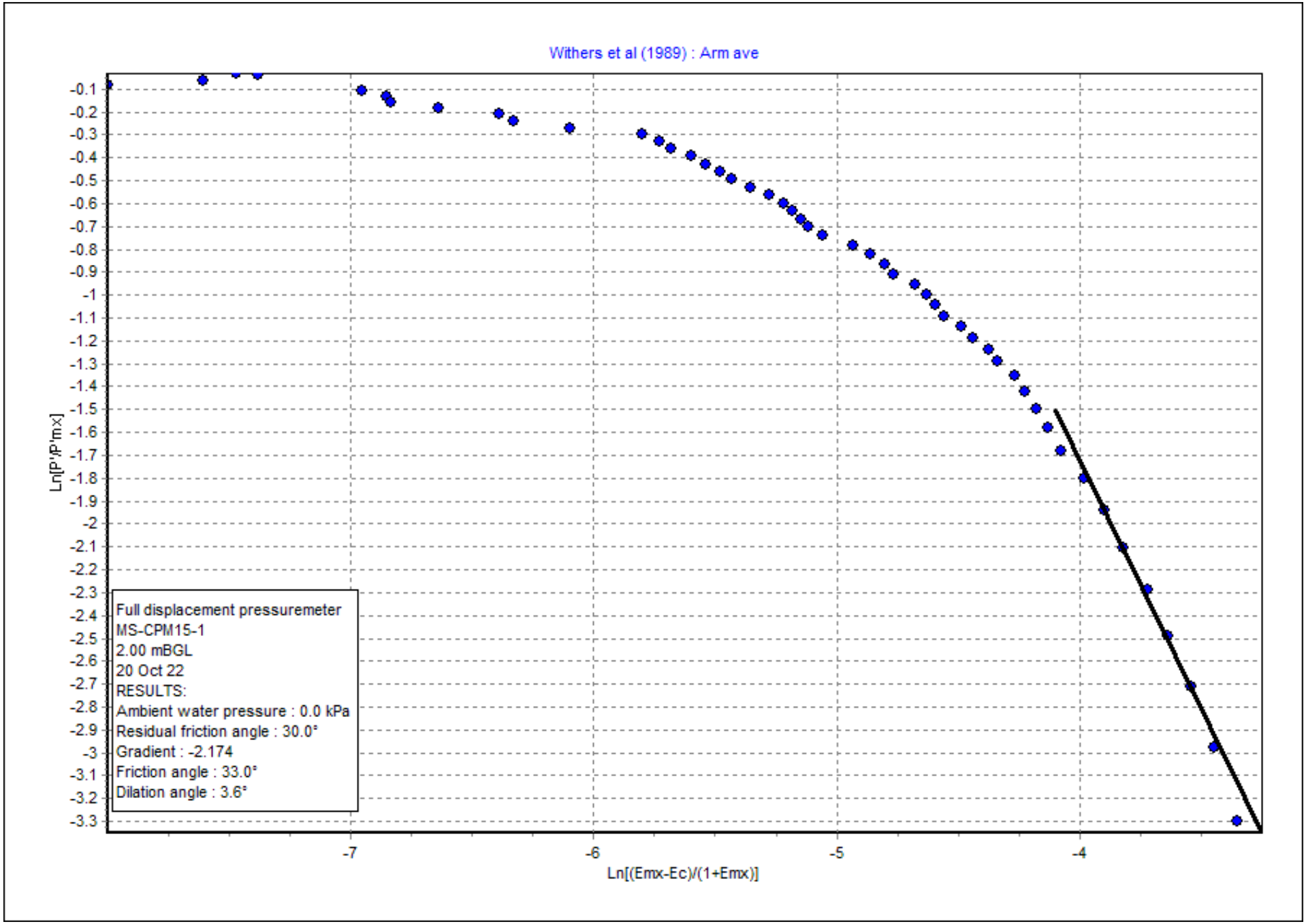

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.689
Intercept (n) : 15.438MPa
Shear stress constant : 10.641MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

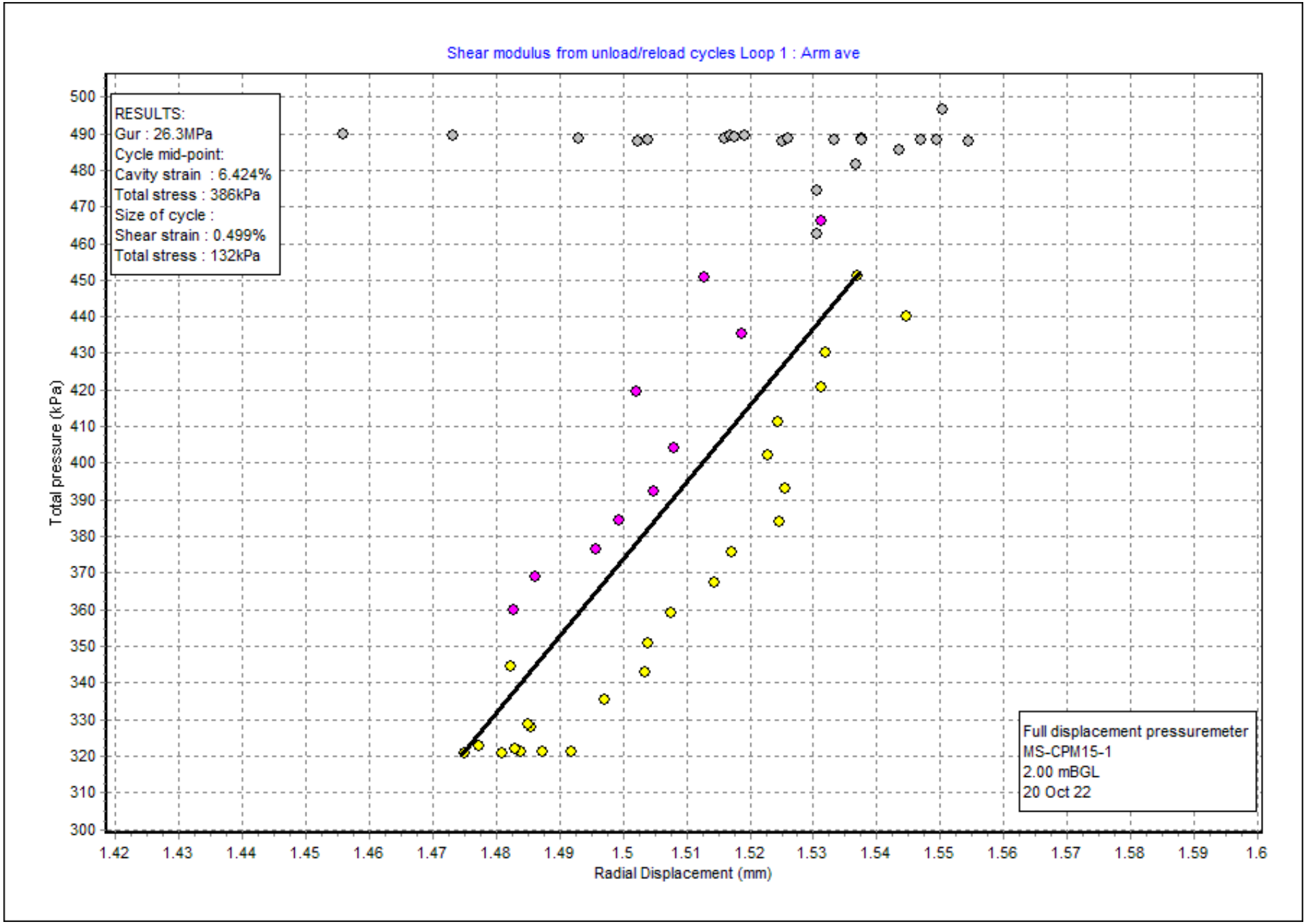

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.724
Intercept (n) : 20.611MPa
Shear stress constant : 14.925MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

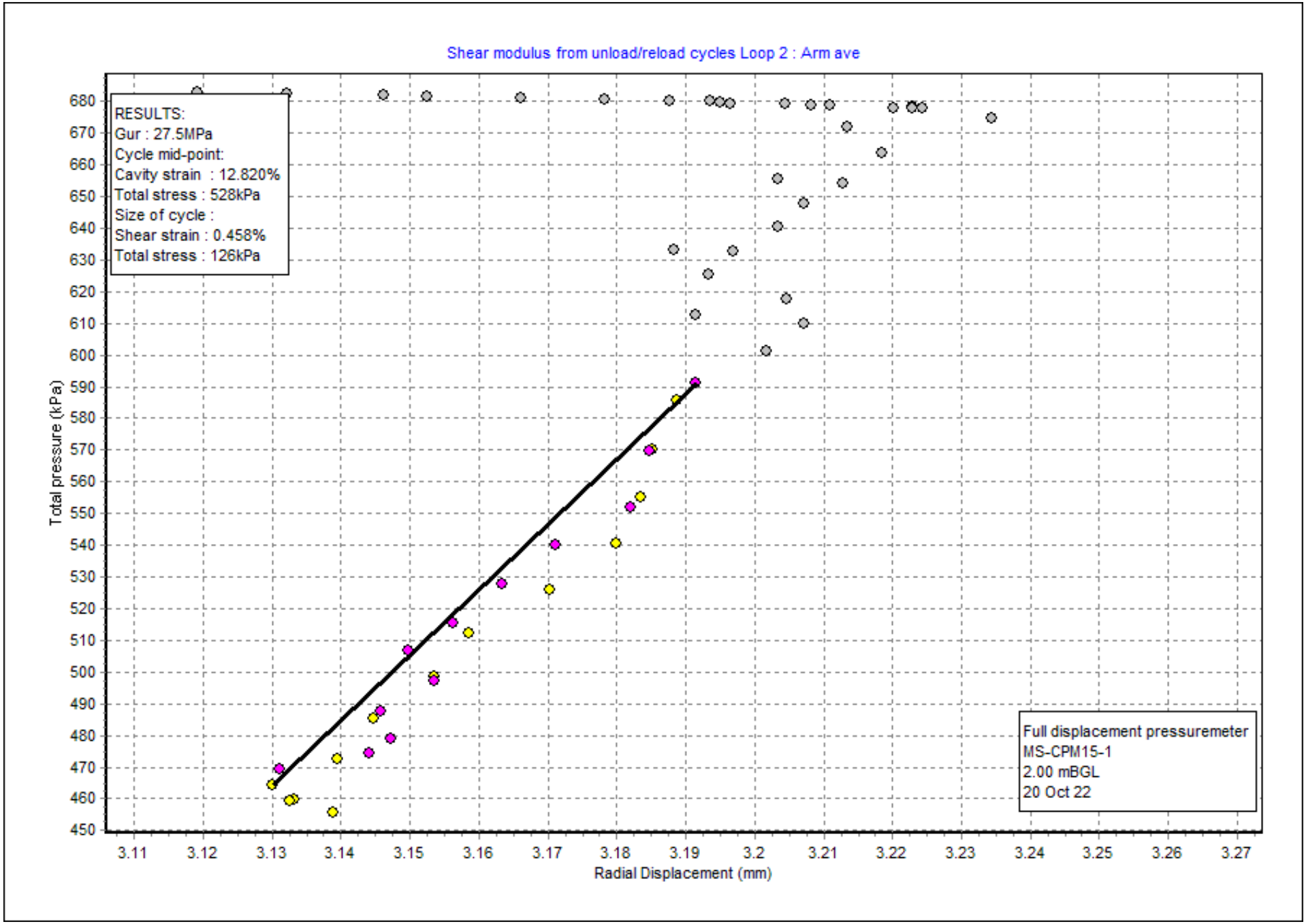

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.734
Intercept (n) : 22.651MPa
Shear stress constant : 16.623MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

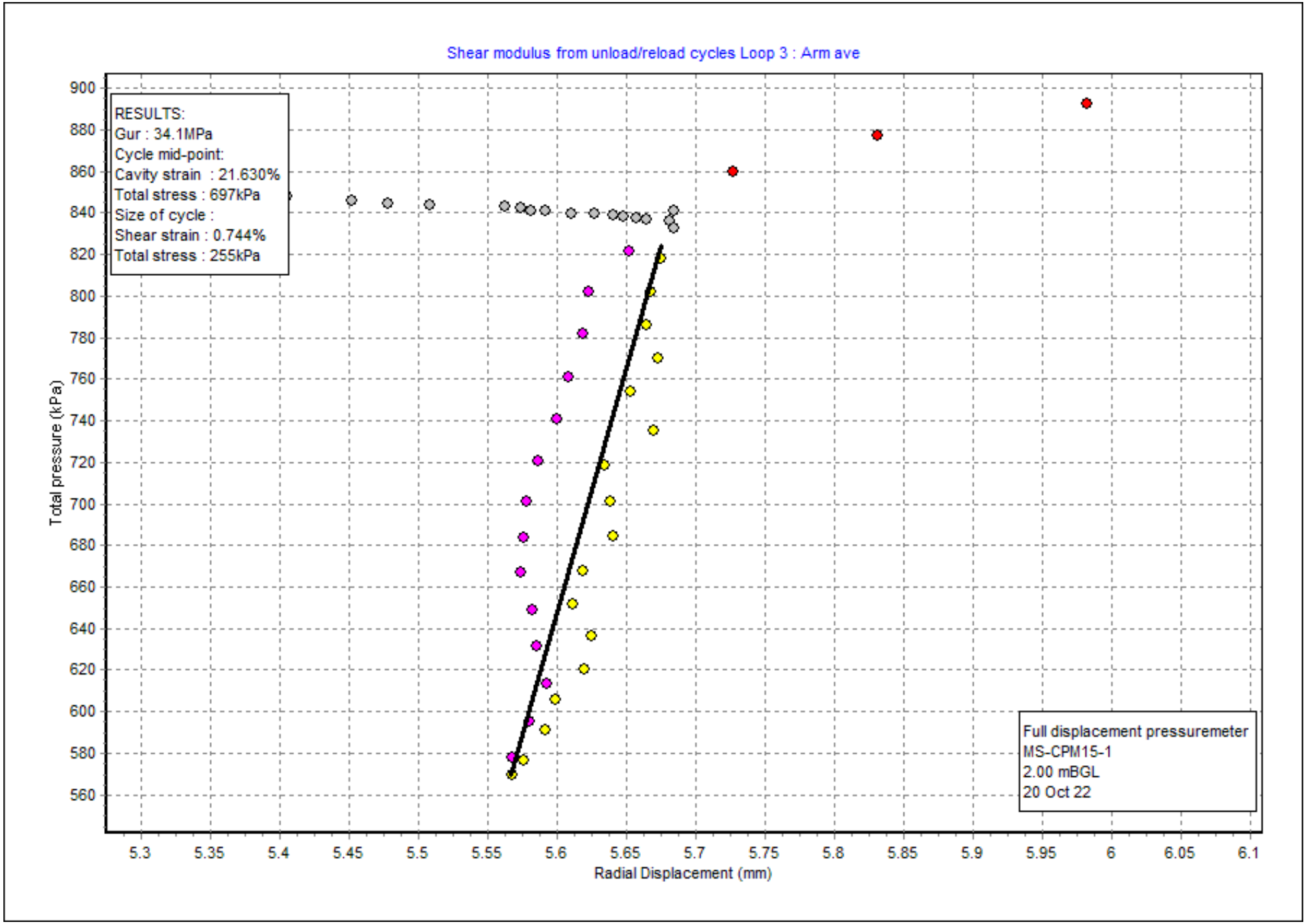

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 10.641 | 0.689
2 | 14.925 | 0.724
3 | 16.623 | 0.734
Full displacement pressuremeter
MS-CPM12-6
12.00 mBGL
11 Oct 22
Shear modulus (MPa)
190
185
180
175
170
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
0.0001
0.001
Log plane shear strain

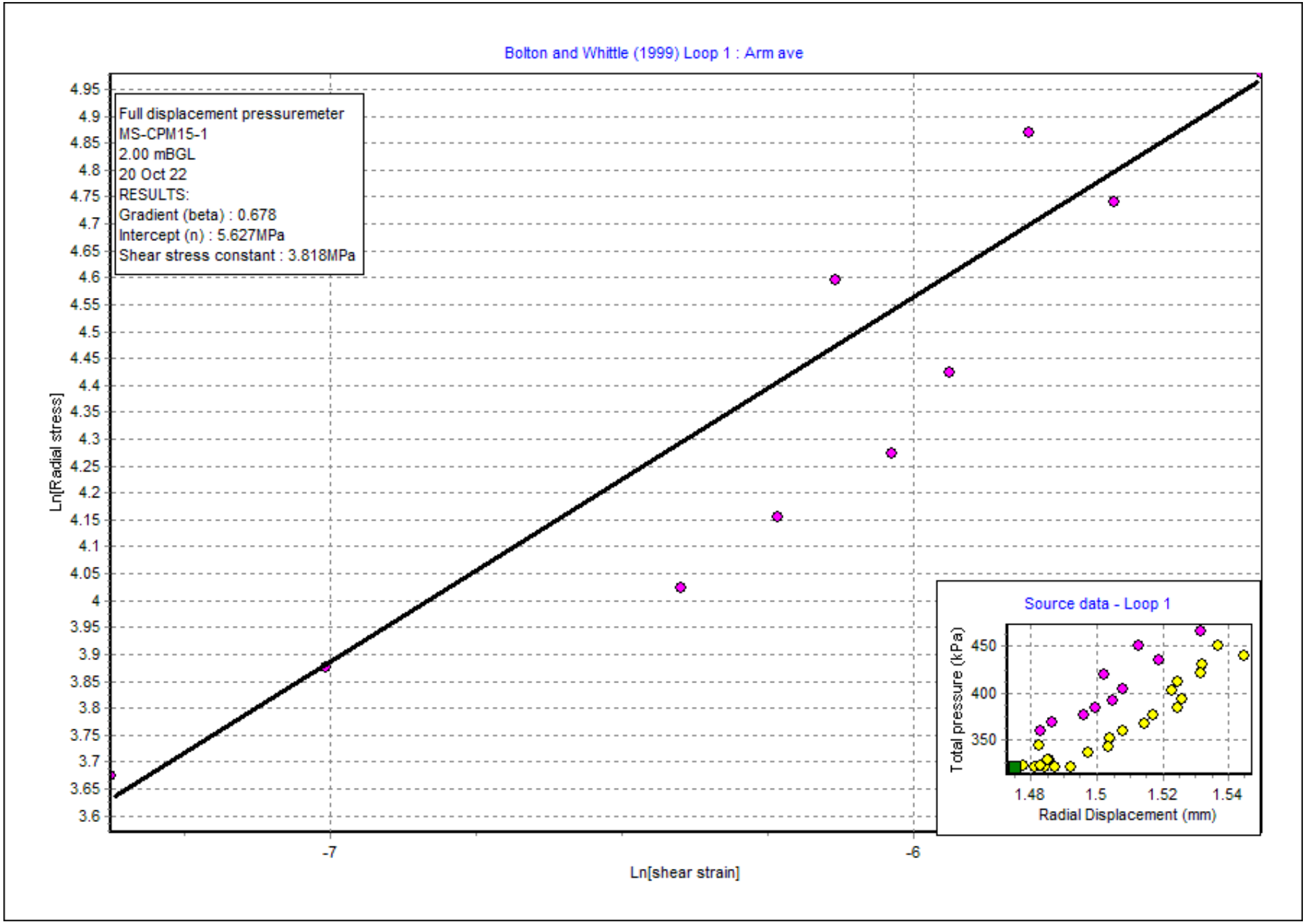

Cavity strain vs Total Pressure : Arm ave
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
Total pressure (kPa)
Ln[R/Ro](%)
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

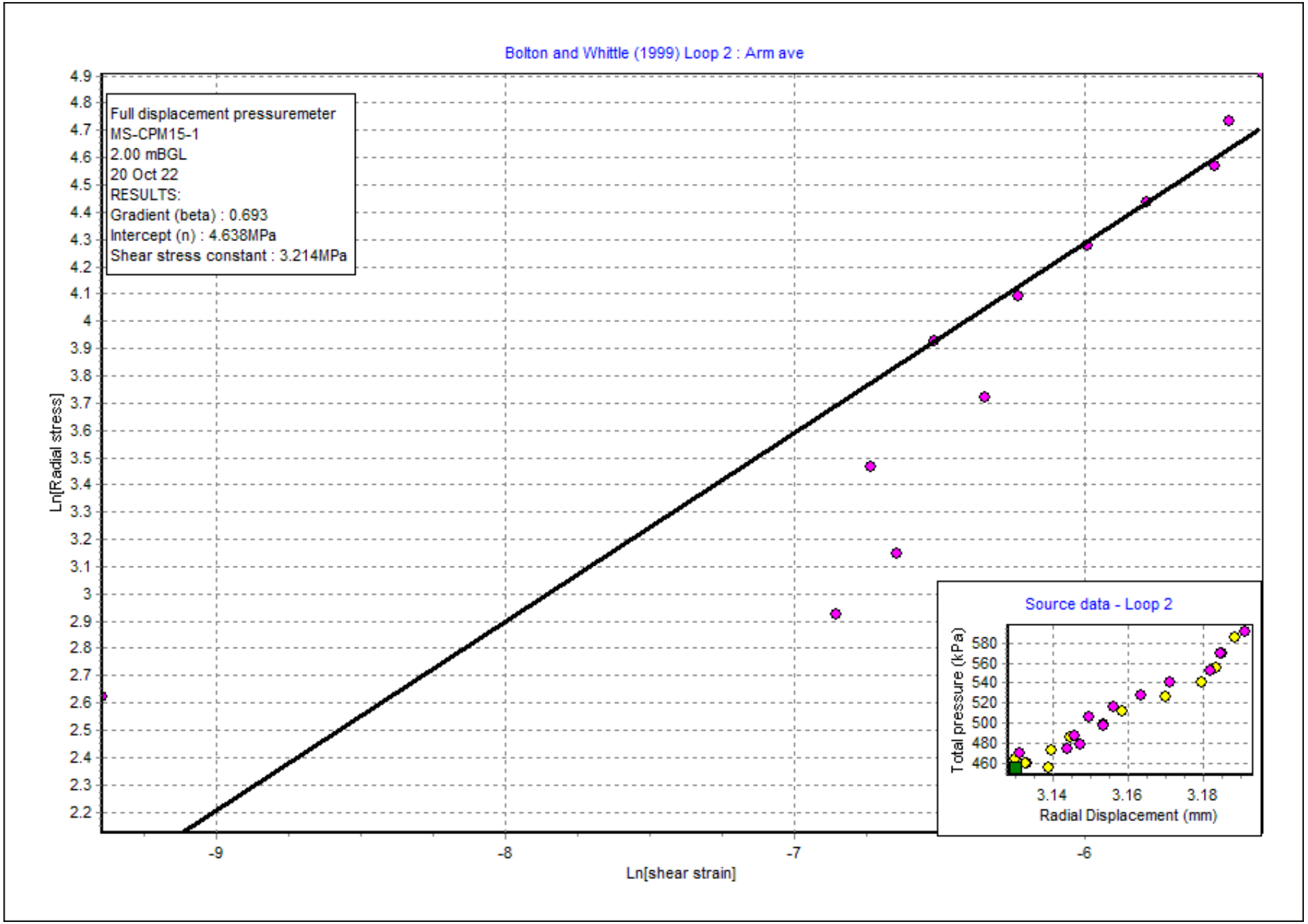

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-2.8
-2.9
-3
-3.1
-3.2
-3.3
-7
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
RESULTS:
Ambient water pressure : 0.0 kPa
Residual friction angle : 30.0°
Gradient : -2.174
Friction angle : 33.0°
Dilation angle : 3.6°

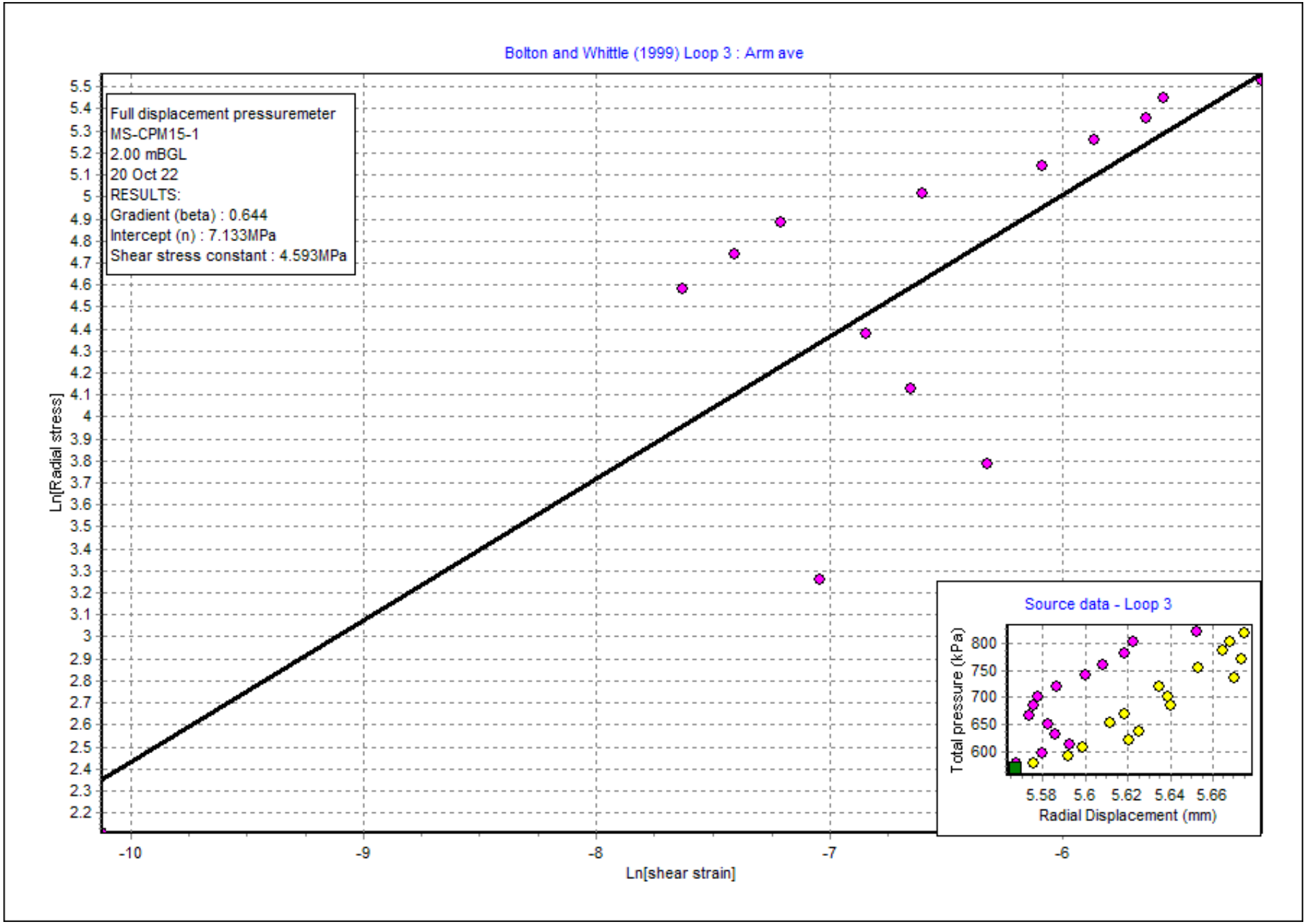

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 26.3MPa
Cycle mid-point:
Cavity strain : 6.424%
Total stress : 386kPa
Size of cycle :
Shear strain : 0.499%
Total stress : 132kPa
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
500
490
480
470
460
450
440
430
420
410
400
390
380
370
360
350
340
330
320
310
300
1.42
1.43
1.44
1.45
1.46
1.47
1.48
1.49
1.5
1.51
1.52
1.53
1.54
1.55
1.56
1.57
1.58
1.59
1.6

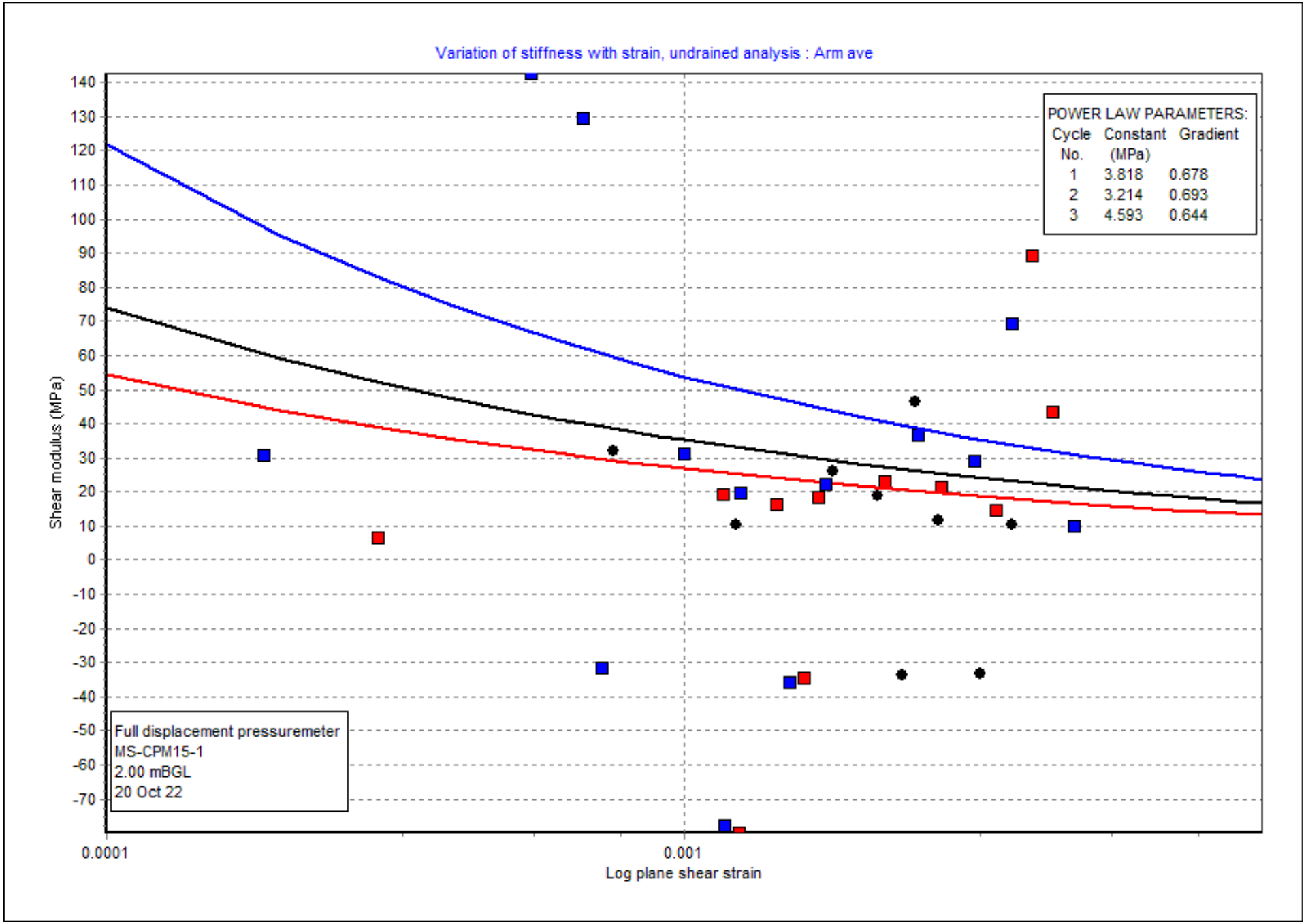

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 27.5MPa
Cycle mid-point:
Cavity strain : 12.820%
Total stress : 528kPa
Size of cycle :
Shear strain : 0.458%
Total stress : 126kPa
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
450
460
470
480
490
500
510
520
530
540
550
560
570
580
590
600
610
620
630
640
650
660
670
680
3.11
3.12
3.13
3.14
3.15
3.16
3.17
3.18
3.19
3.2
3.21
3.22
3.23
3.24
3.25
3.26
3.27

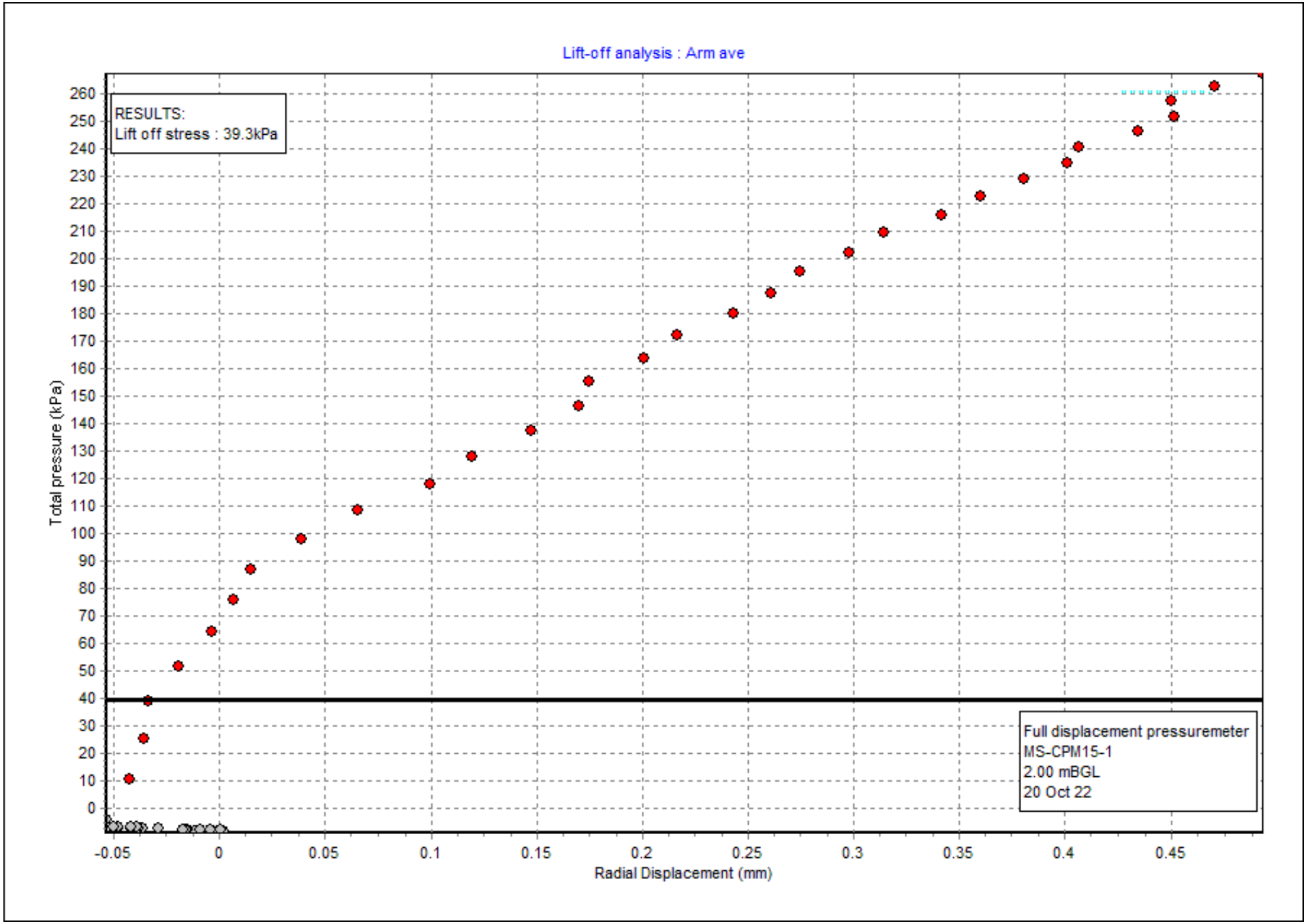

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 34.1MPa
Cycle mid-point:
Cavity strain : 21.630%
Total stress : 697kPa
Size of cycle :
Shear strain : 0.744%
Total stress : 255kPa
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
900
880
860
840
820
800
780
760
740
720
700
680
660
640
620
600
580
560
5.3
5.35
5.4
5.45
5.5
5.55
5.6
5.65
5.7
5.75
5.8
5.85
5.9
5.95
6
6.05
6.1

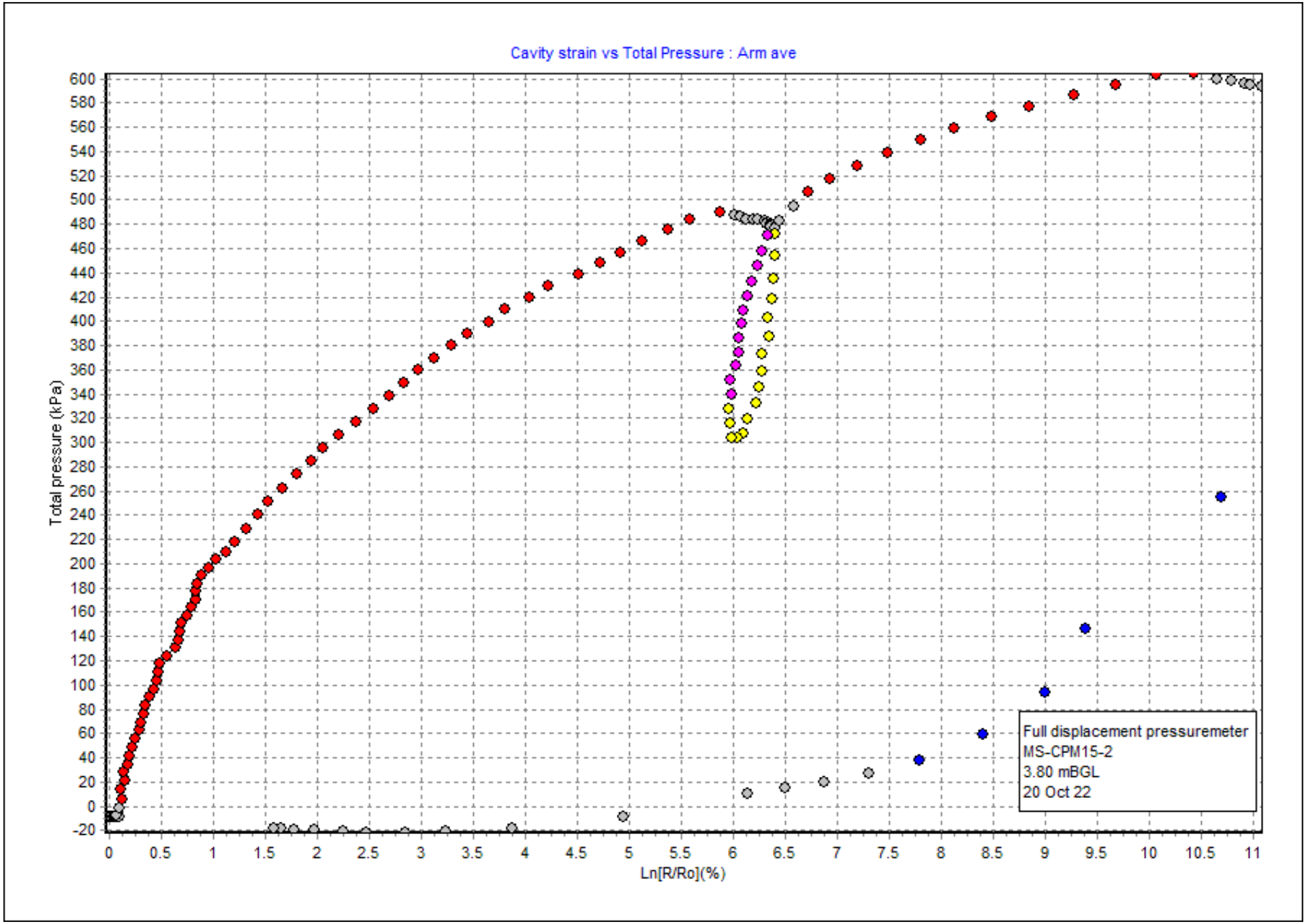

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
RESULTS:
Gradient (beta) : 0.678
Intercept (n) : 5.627MPa
Shear stress constant : 3.818MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

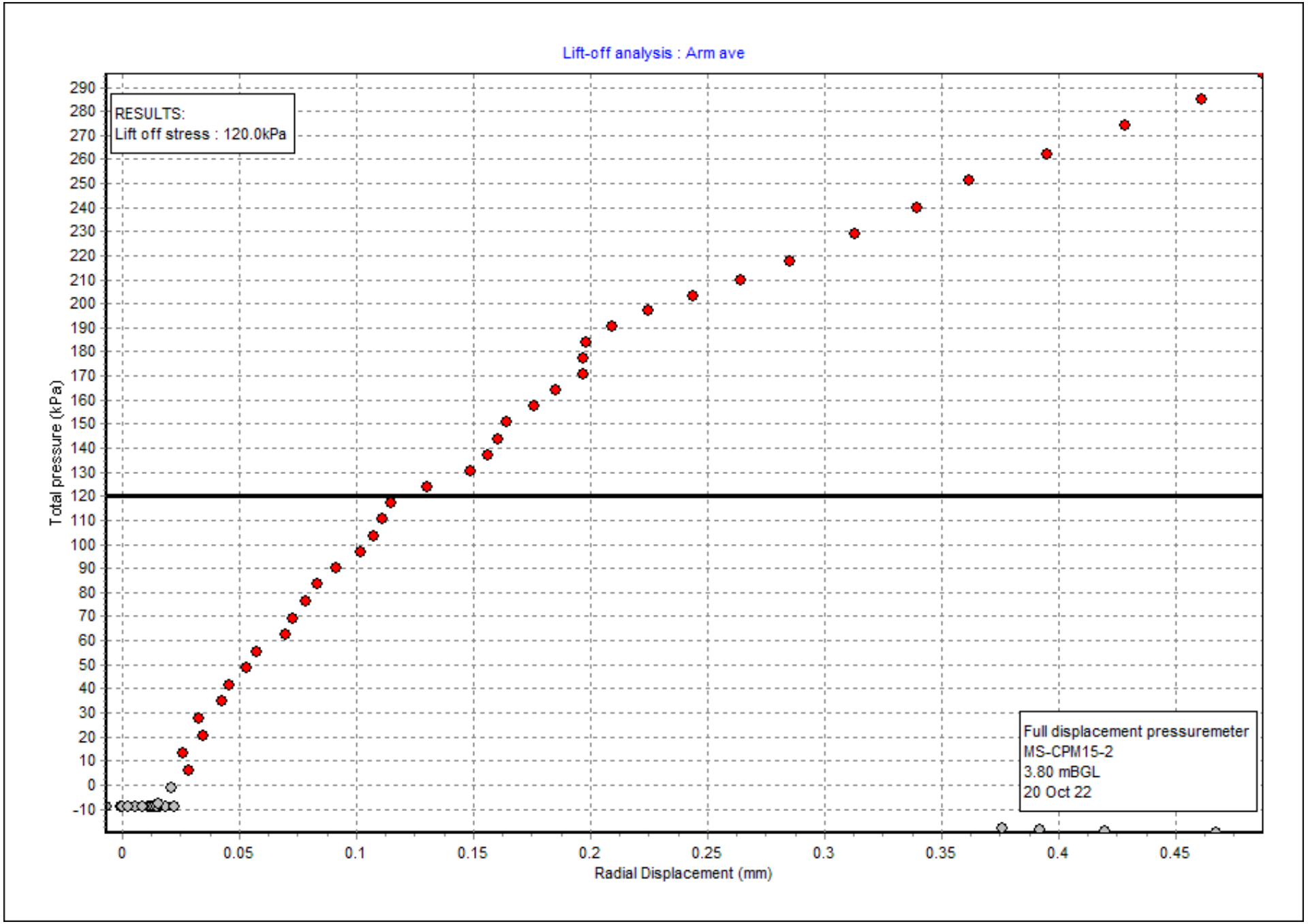

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
RESULTS:
Gradient (beta) : 0.693
Intercept (n) : 4.638MPa
Shear stress constant : 3.214MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

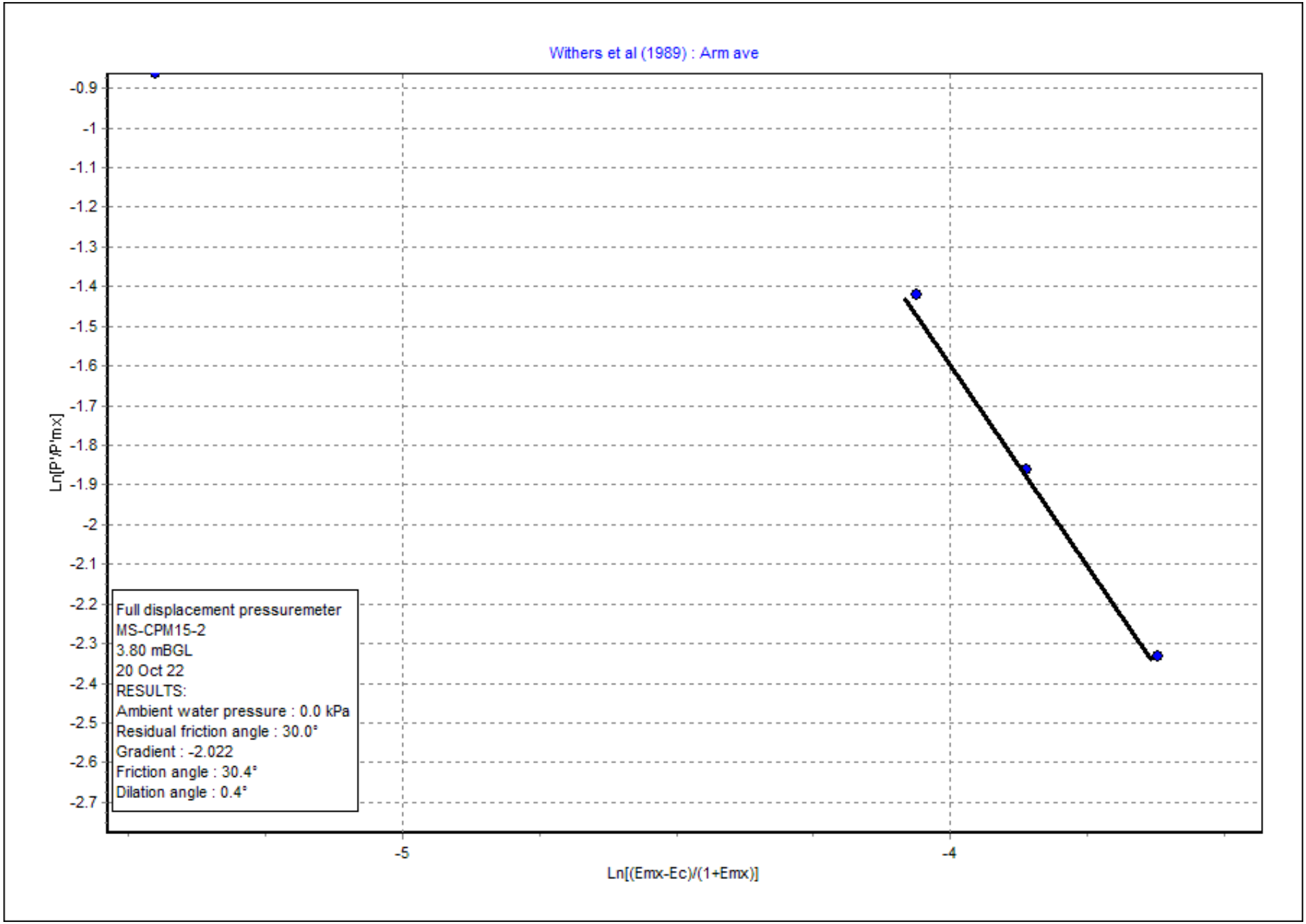

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
RESULTS:
Gradient (beta) : 0.644
Intercept (n) : 7.133MPa
Shear stress constant : 4.593MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

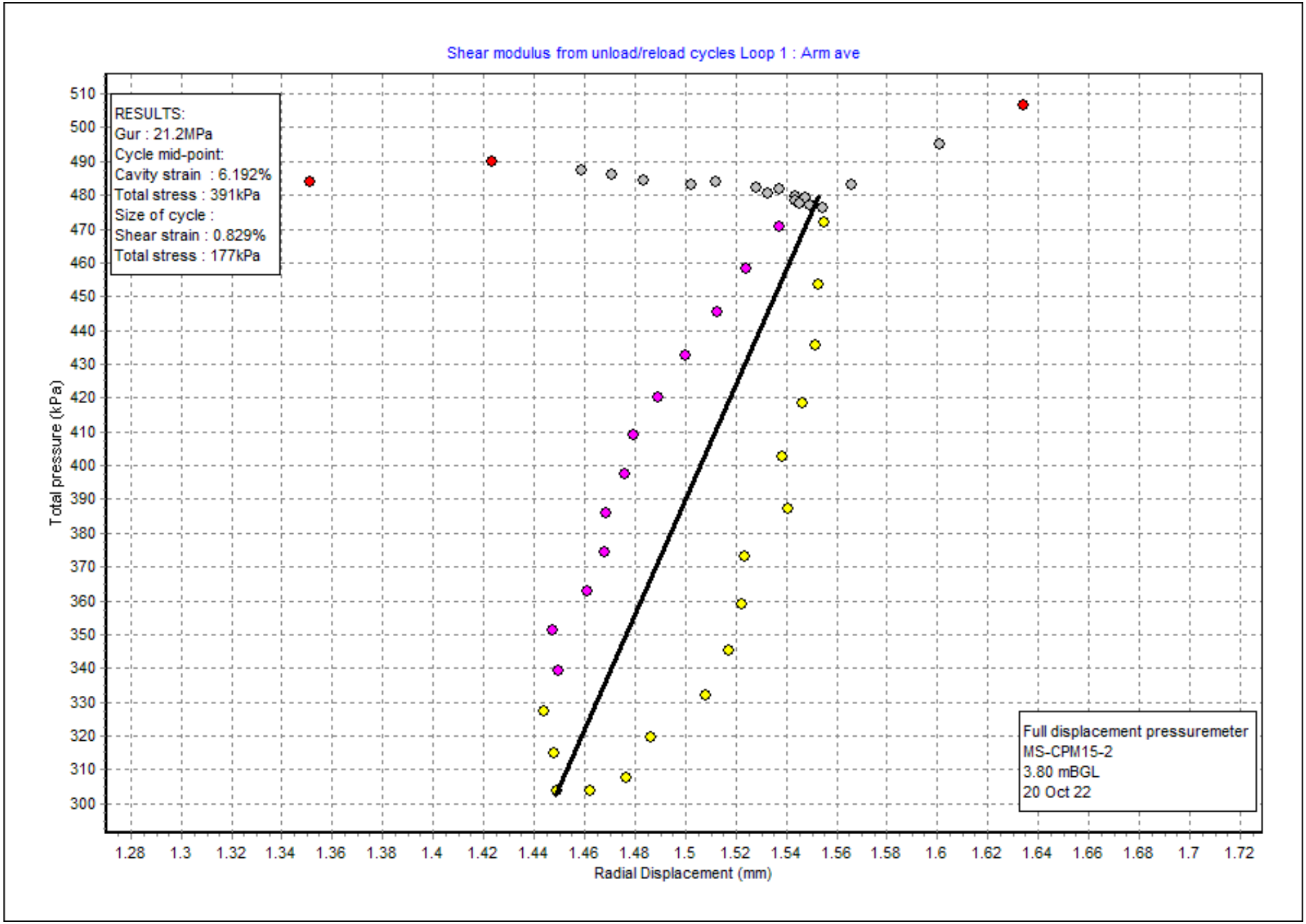

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 3.818 | 0.678
2 | 3.214 | 0.693
3 | 4.593 | 0.644
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22
Shear modulus (MPa)
Log plane shear strain
0.0001
0.001
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70

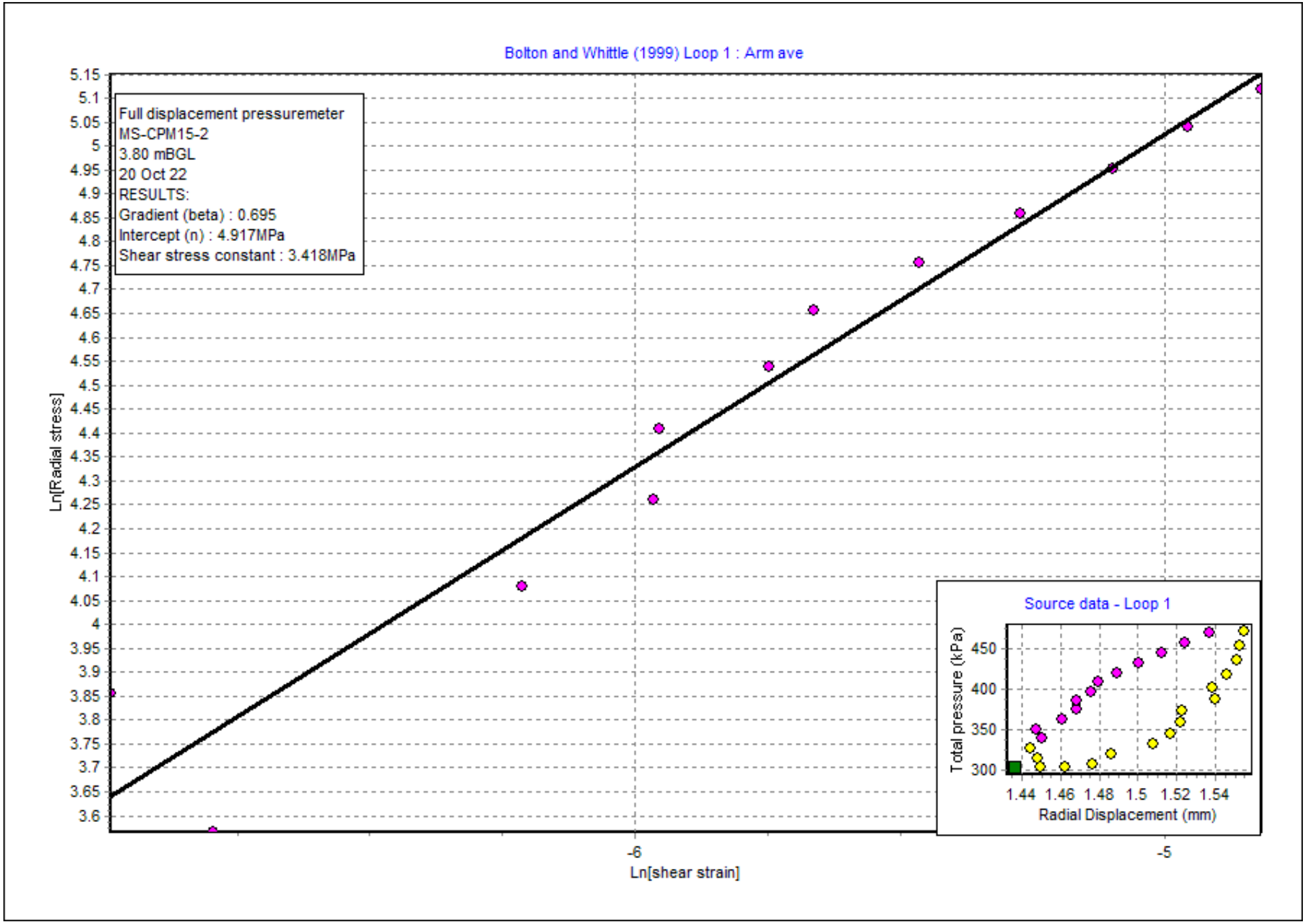

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 39.3kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM15-1
2.00 mBGL
20 Oct 22

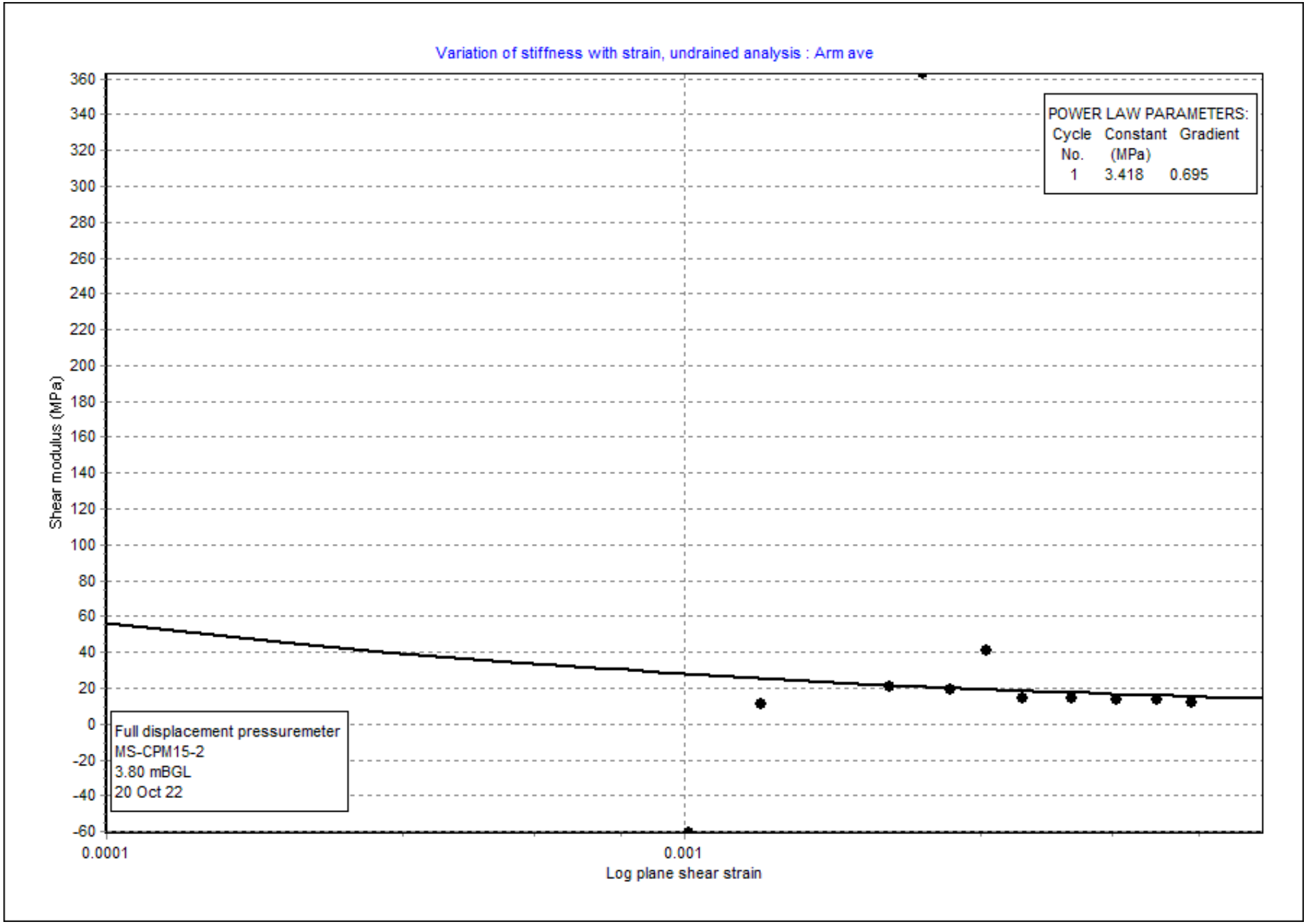

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM15-2
3.80 mBGL
20 Oct 22

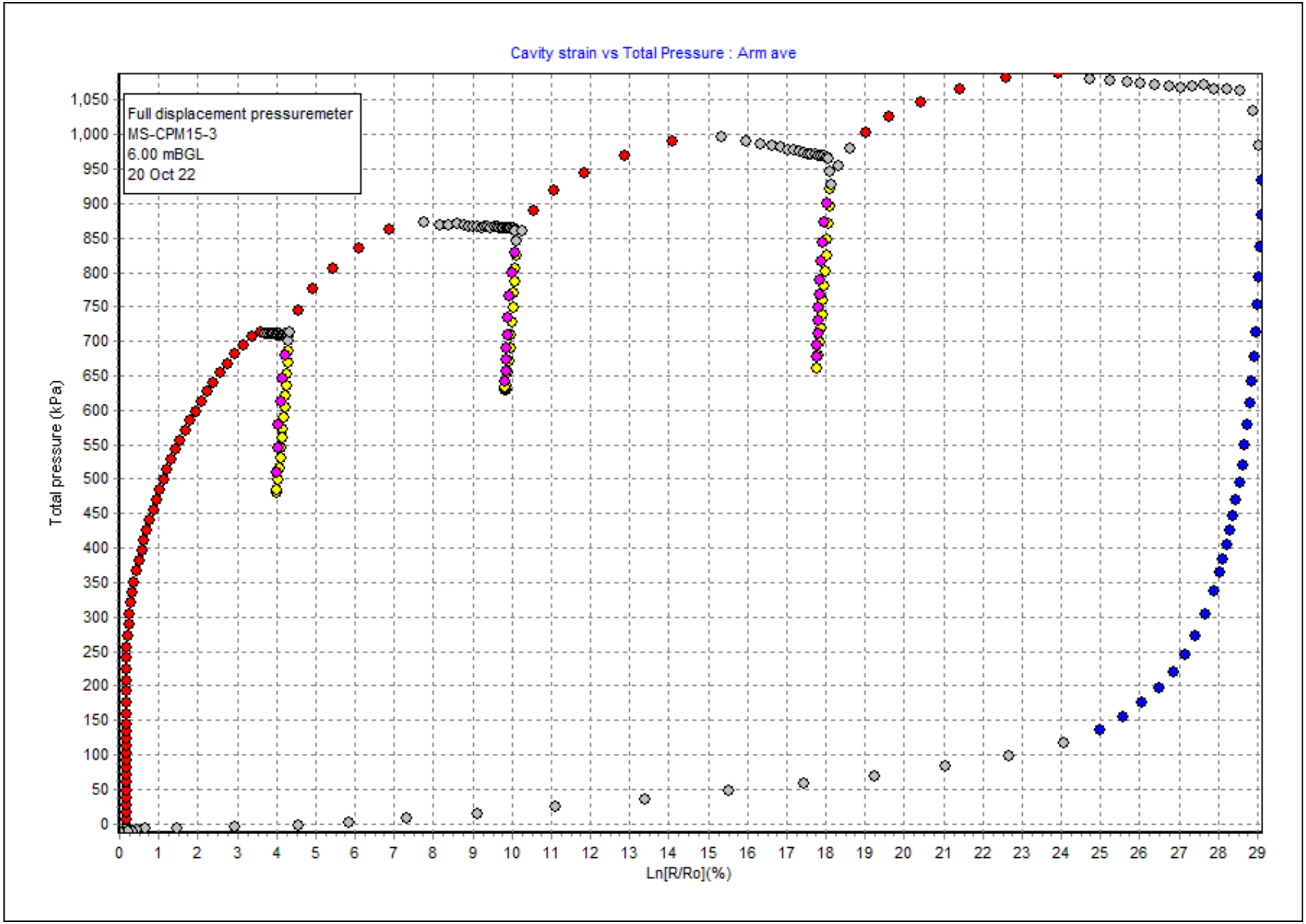

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 120.0kPa
Total pressure (kPa)
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM15-2
3.80 mBGL
20 Oct 22

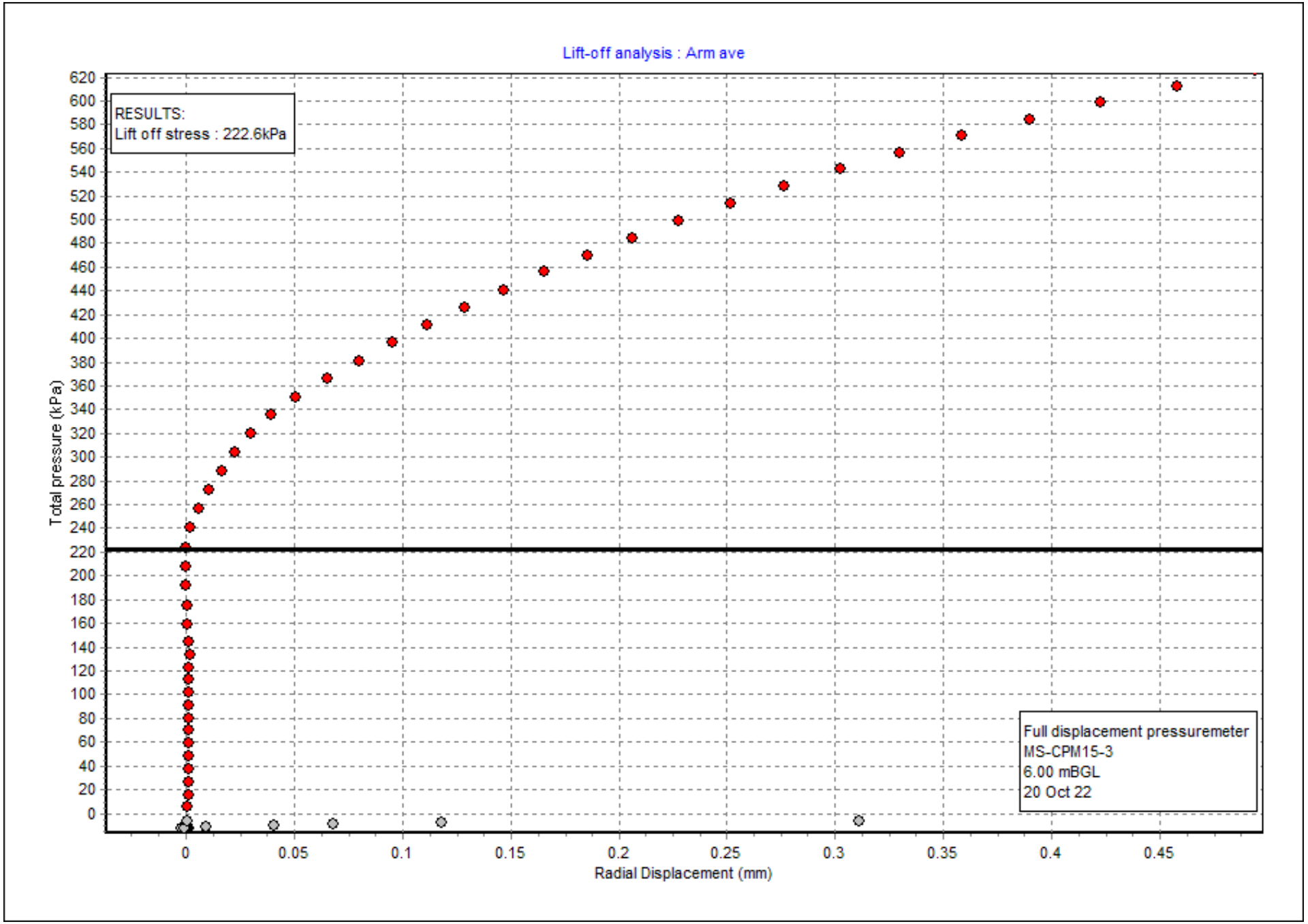

Withers et al (1989) : Arm ave
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
Ln[P'/P'mx]
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM15-2
3.80 mBGL
20 Oct 22
RESULTS:
Ambient water pressure : 0.0 kPa
Residual friction angle : 30.0°
Gradient : -2.022
Friction angle : 30.4°
Dilation angle : 0.4°

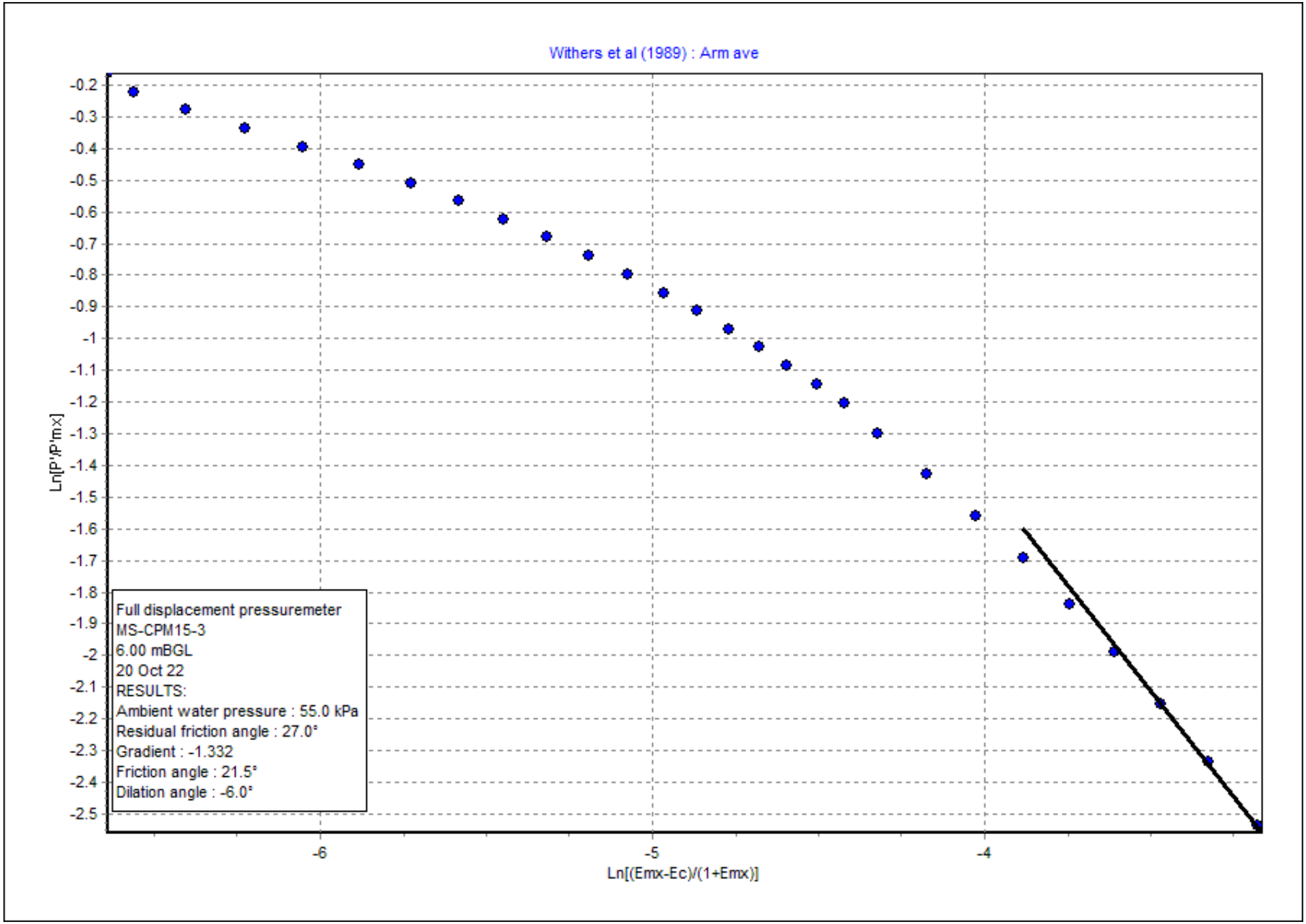

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 21.2MPa
Cycle mid-point:
Cavity strain : 6.192%
Total stress : 391kPa
Size of cycle :
Shear strain : 0.829%
Total stress : 177kPa
Full displacement pressuremeter
MS-CPM15-2
3.80 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
510
500
490
480
470
460
450
440
430
420
410
400
390
380
370
360
350
340
330
320
310
300
1.28
1.3
1.32
1.34
1.36
1.38
1.4
1.42
1.44
1.46
1.48
1.5
1.52
1.54
1.56
1.58
1.6
1.62
1.64
1.66
1.68
1.7
1.72

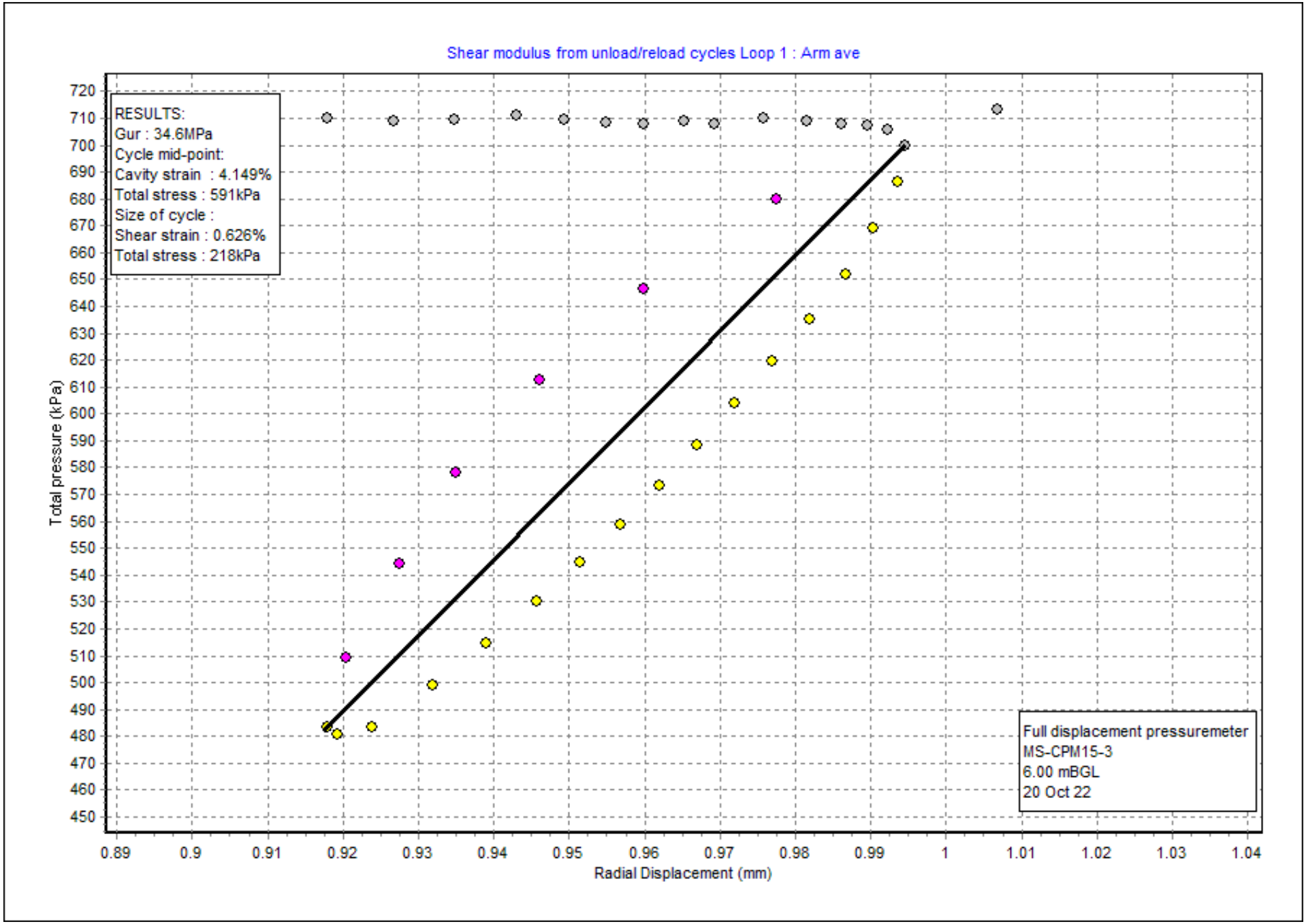

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM15-2
3.80 mBGL
20 Oct 22
RESULTS:
Gradient (beta) : 0.695
Intercept (n) : 4.917MPa
Shear stress constant : 3.418MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

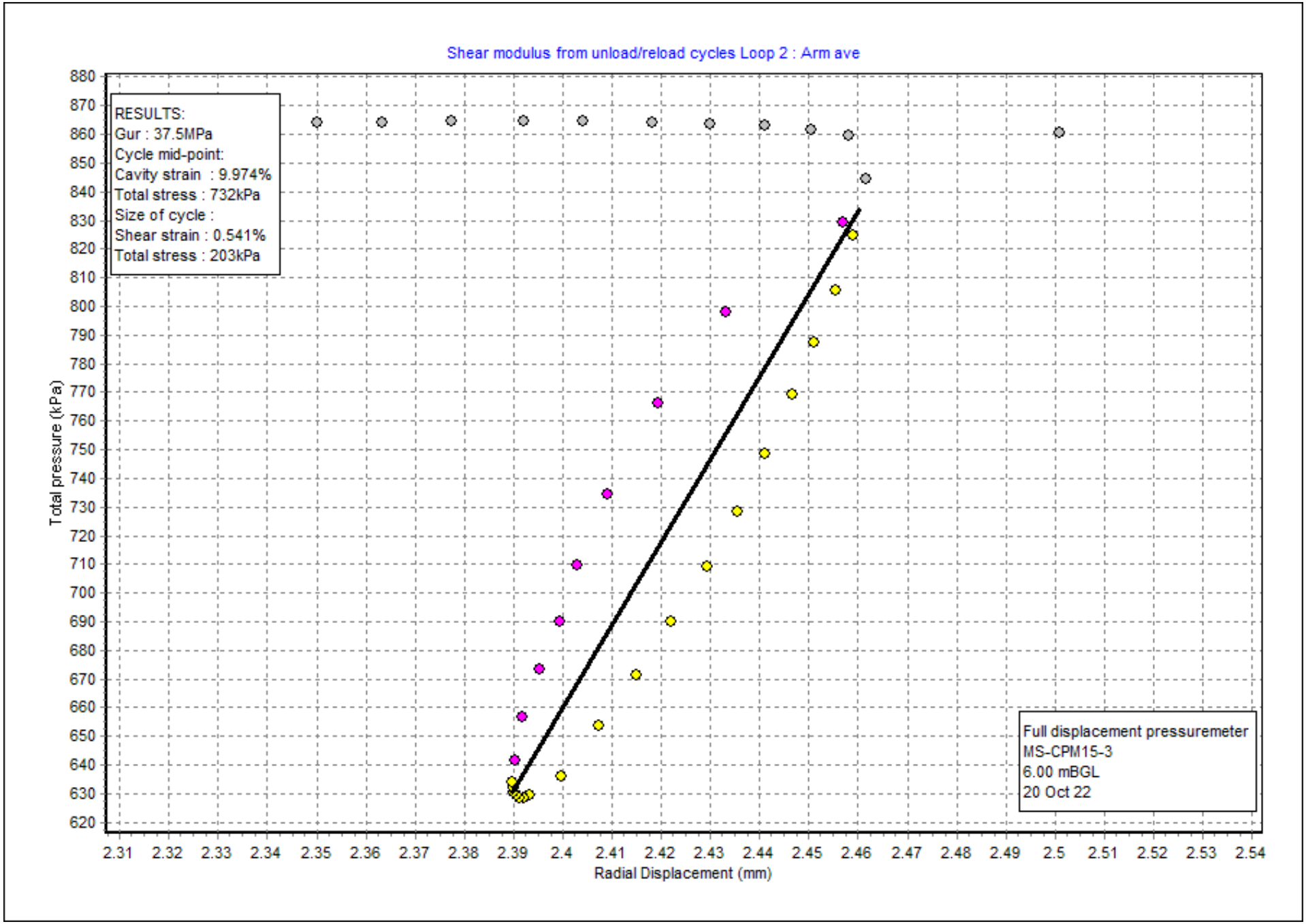

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. Constant (MPa) Gradient
1 3.418 0.695
Full displacement pressuremeter
MS-CPM15-2
3.80 mBGL
20 Oct 22
Shear modulus (MPa)
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
0.0001
0.001
Log plane shear strain

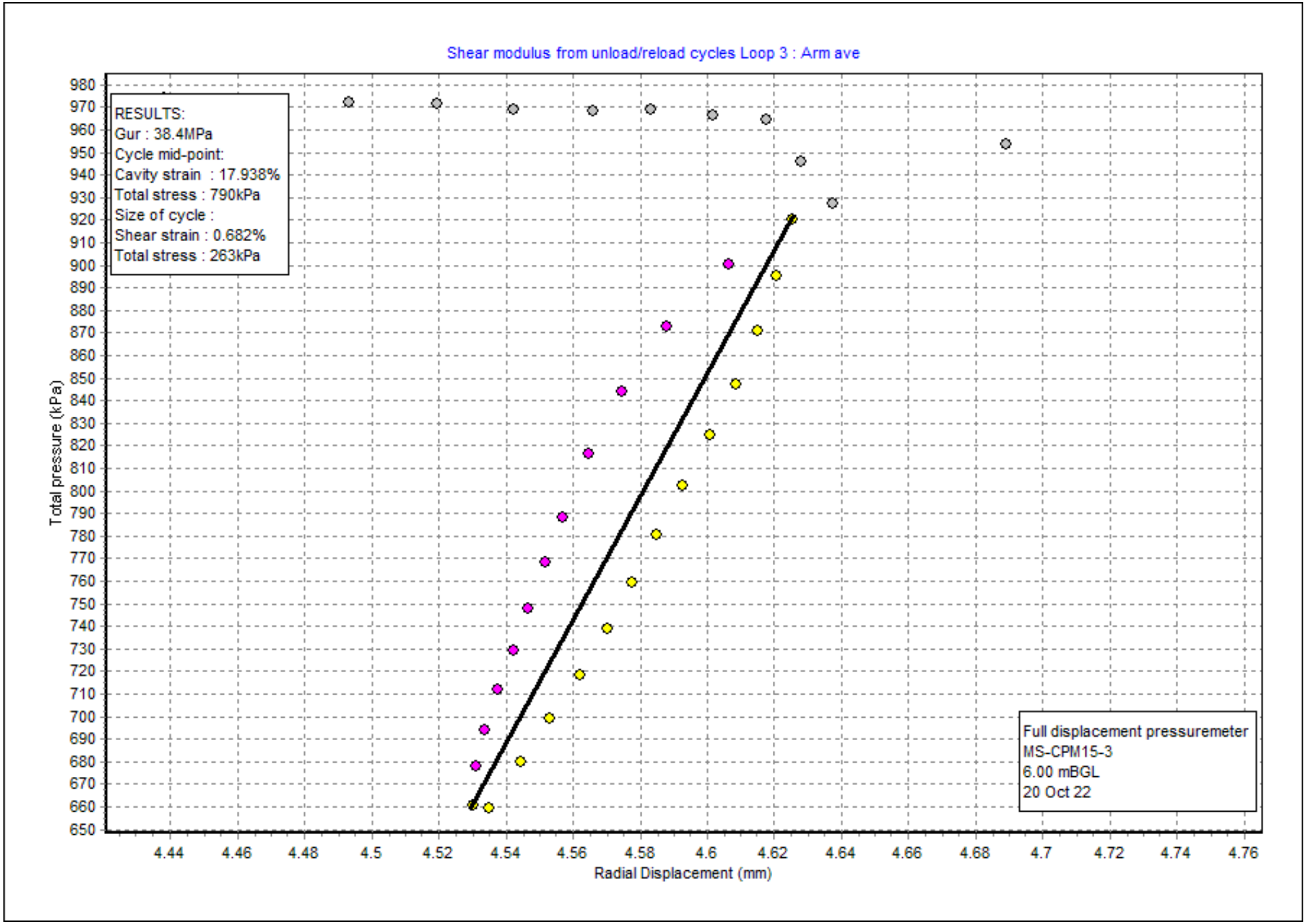

Cavity strain vs Total Pressure : Arm ave
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
Total pressure (kPa)
Ln[R/Ro](%)
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1,000
1,050
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

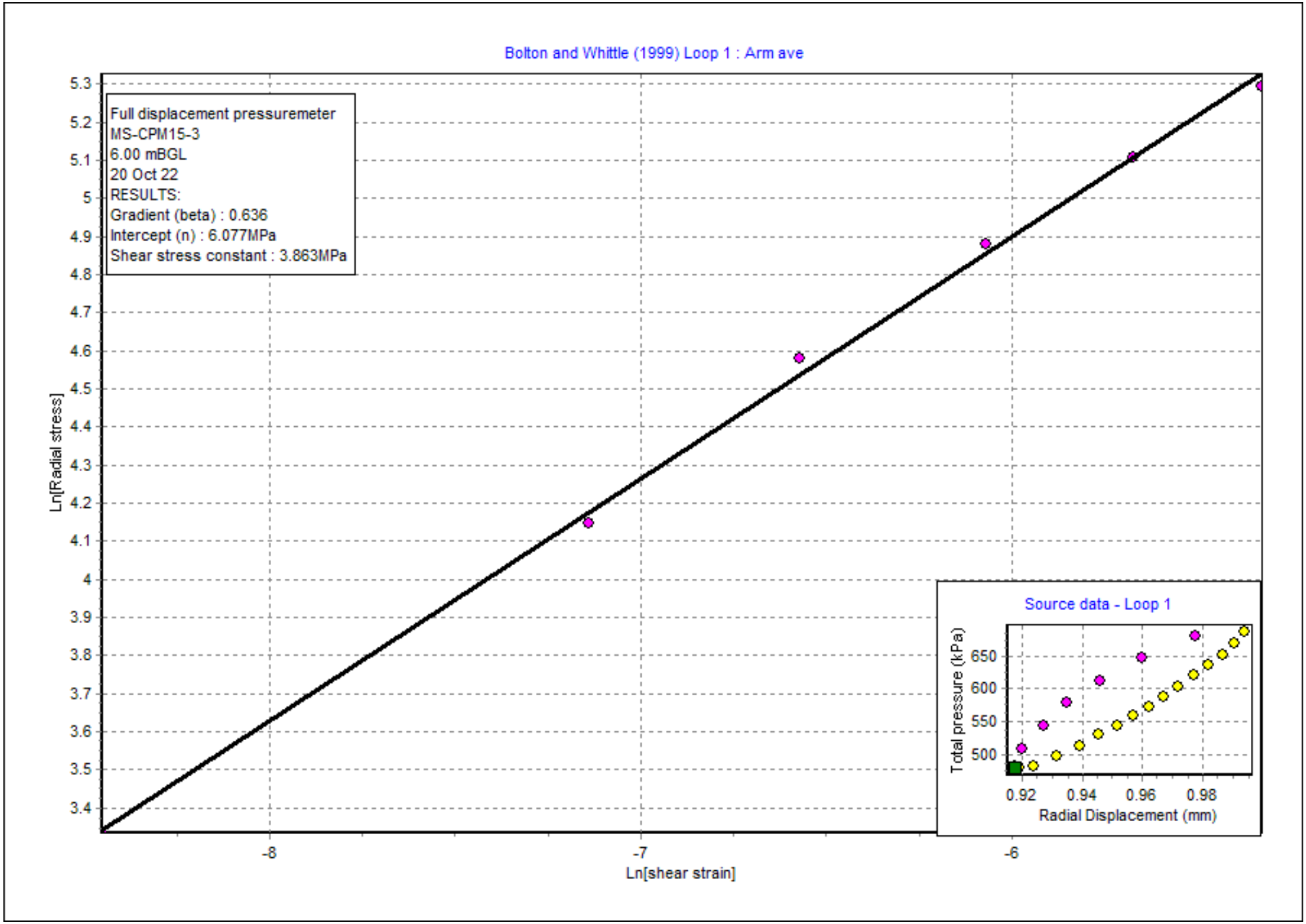

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 222.6kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22

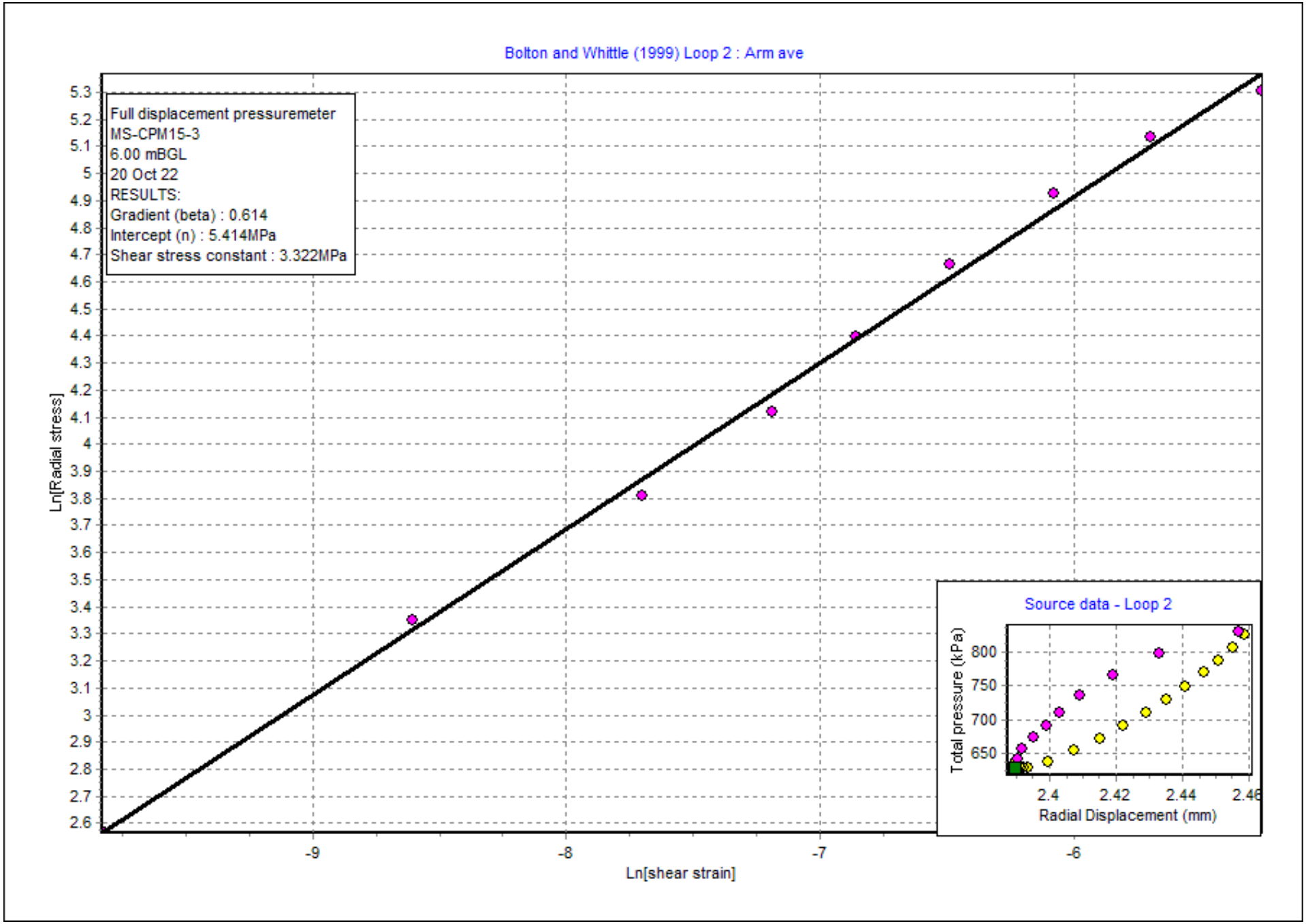

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
RESULTS:
Ambient water pressure : 55.0 kPa
Residual friction angle : 27.0°
Gradient : -1.332
Friction angle : 21.5°
Dilation angle : -6.0°

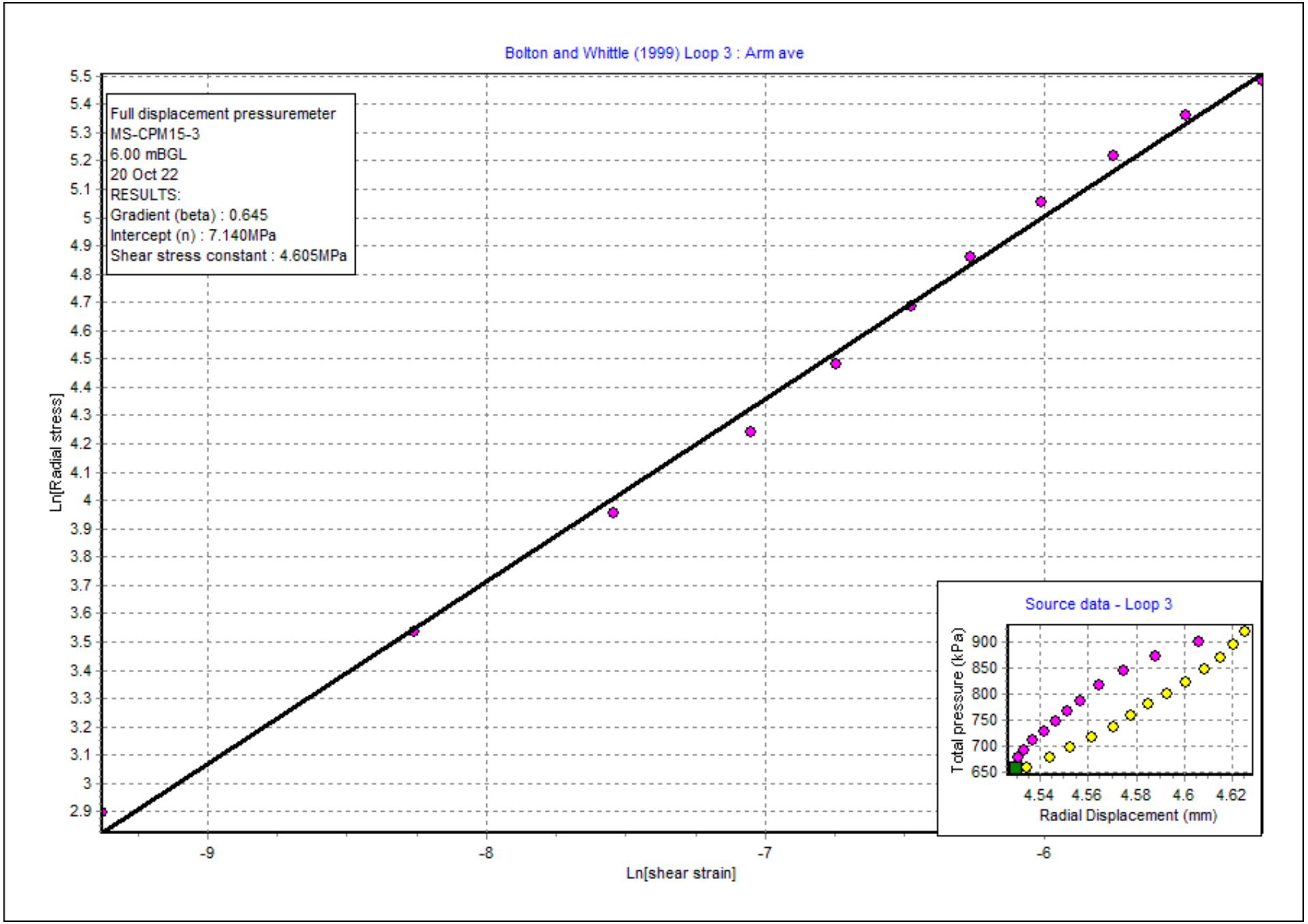

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 34.6MPa
Cycle mid-point:
Cavity strain : 4.149%
Total stress : 591kPa
Size of cycle :
Shear strain : 0.626%
Total stress : 218kPa
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
720
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
540
530
520
510
500
490
480
470
460
450
0.89
0.9
0.91
0.92
0.93
0.94
0.95
0.96
0.97
0.98
0.99
1
1.01
1.02
1.03
1.04

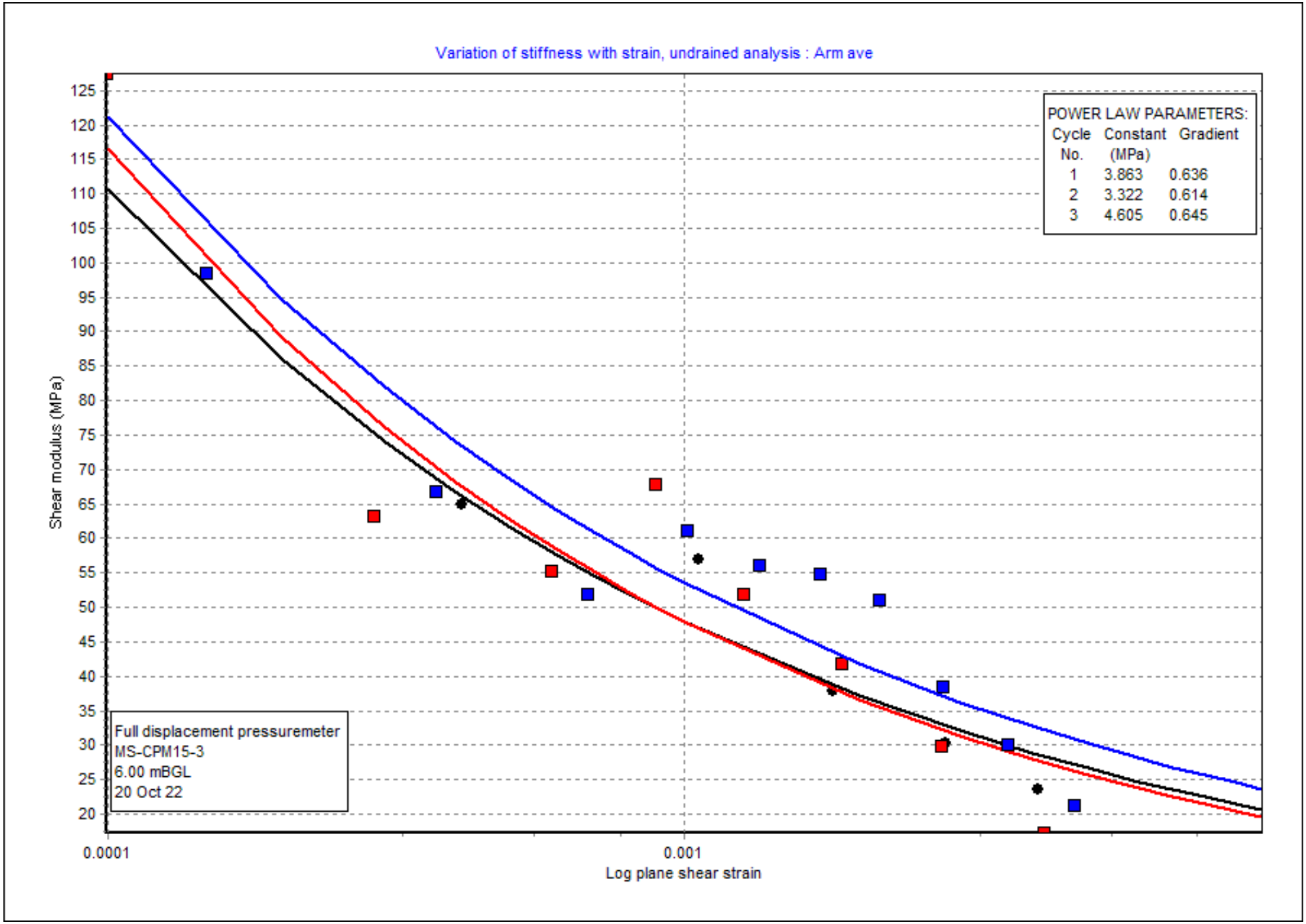

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 37.5MPa
Cycle mid-point:
Cavity strain : 9.974%
Total stress : 732kPa
Size of cycle :
Shear strain : 0.541%
Total stress : 203kPa
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
2.31
2.32
2.33
2.34
2.35
2.36
2.37
2.38
2.39
2.4
2.41
2.42
2.43
2.44
2.45
2.46
2.47
2.48
2.49
2.5
2.51
2.52
2.53
2.54

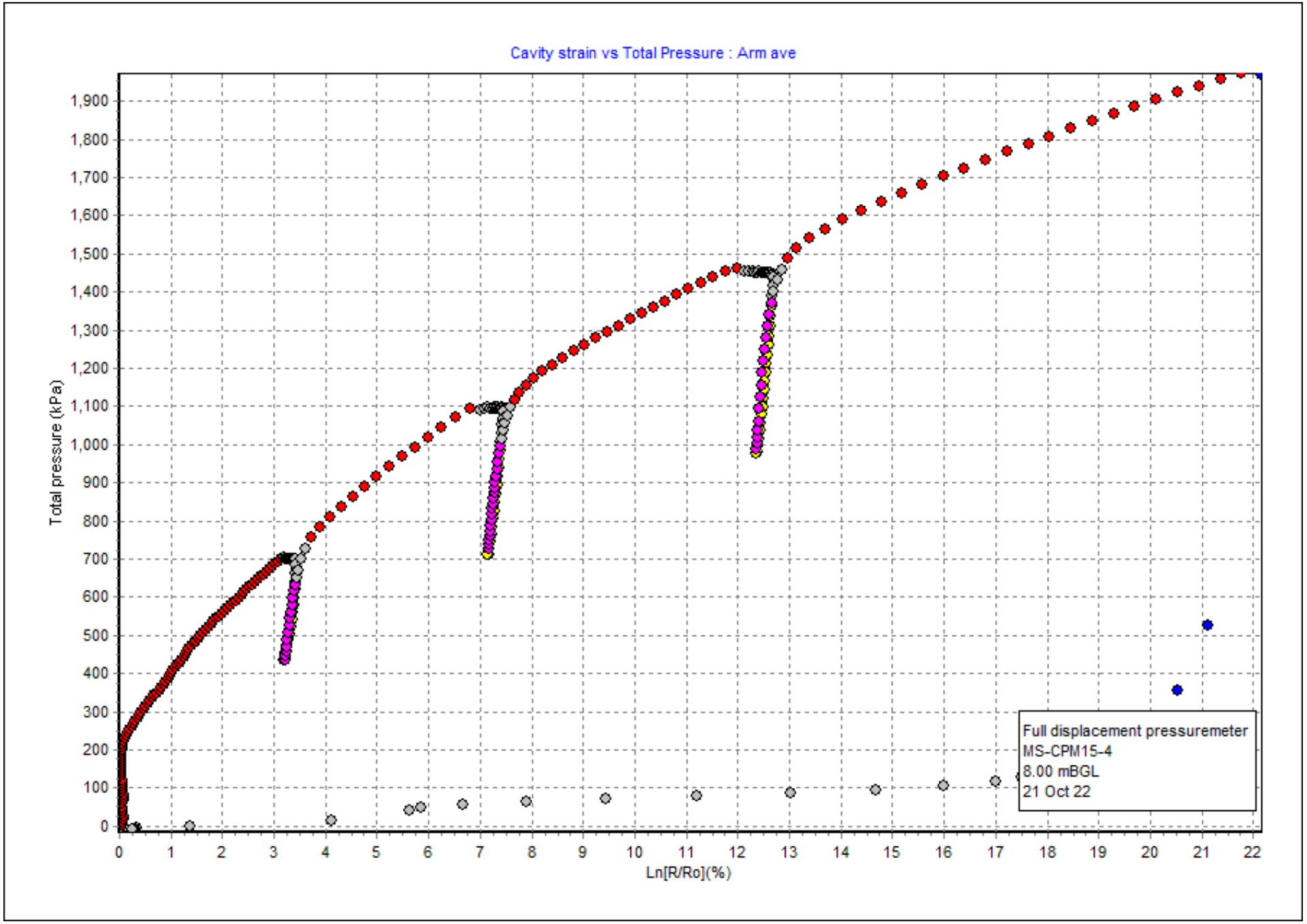

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 38.4MPa
Cycle mid-point:
Cavity strain : 17.938%
Total stress : 790kPa
Size of cycle :
Shear strain : 0.682%
Total stress : 263kPa
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
980
970
960
950
940
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
720
710
700
690
680
670
660
650
4.44
4.46
4.48
4.5
4.52
4.54
4.56
4.58
4.6
4.62
4.64
4.66
4.68
4.7
4.72
4.74
4.76

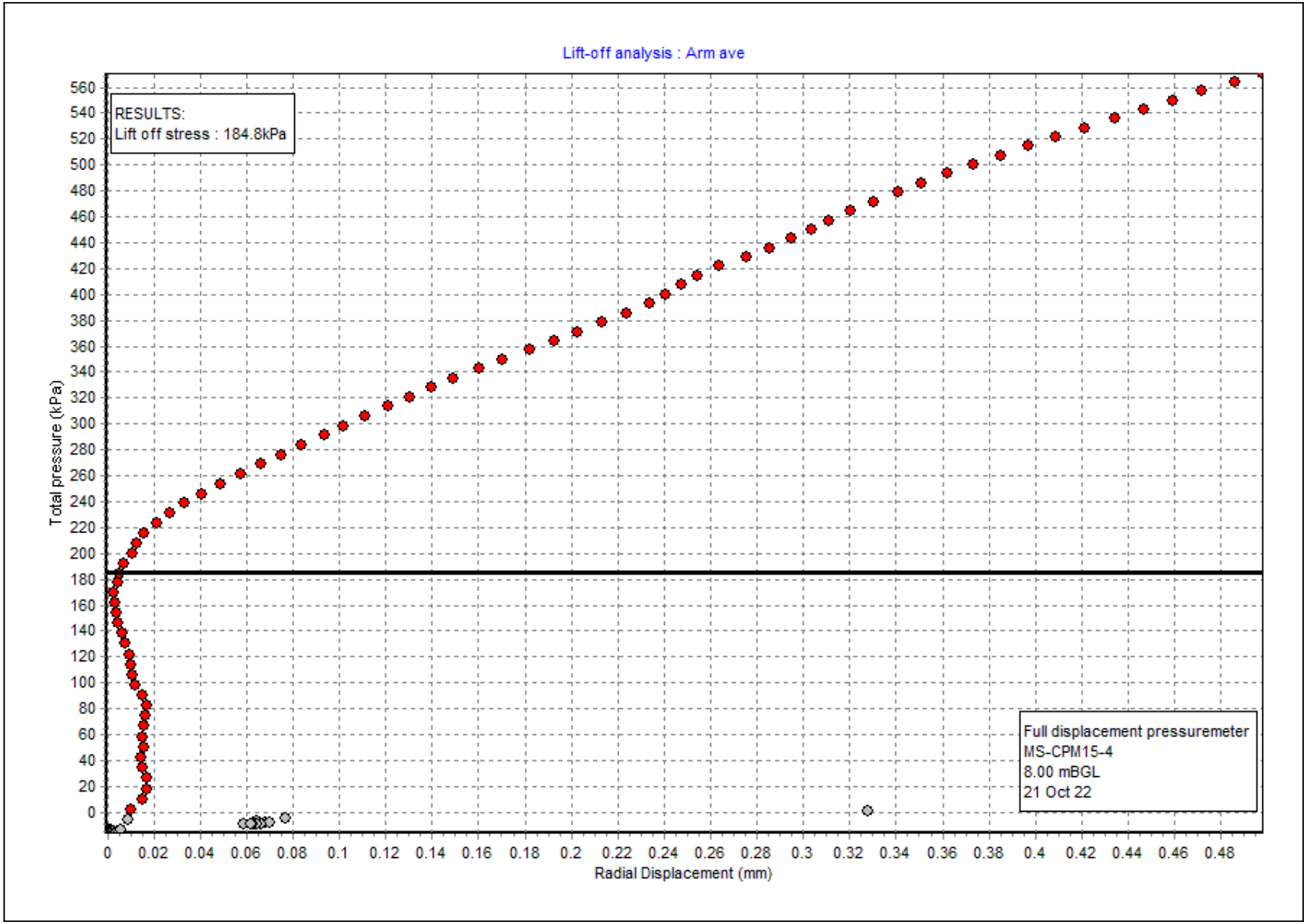

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
RESULTS:
Gradient (beta) : 0.636
Intercept (n) : 6.077MPa
Shear stress constant : 3.863MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

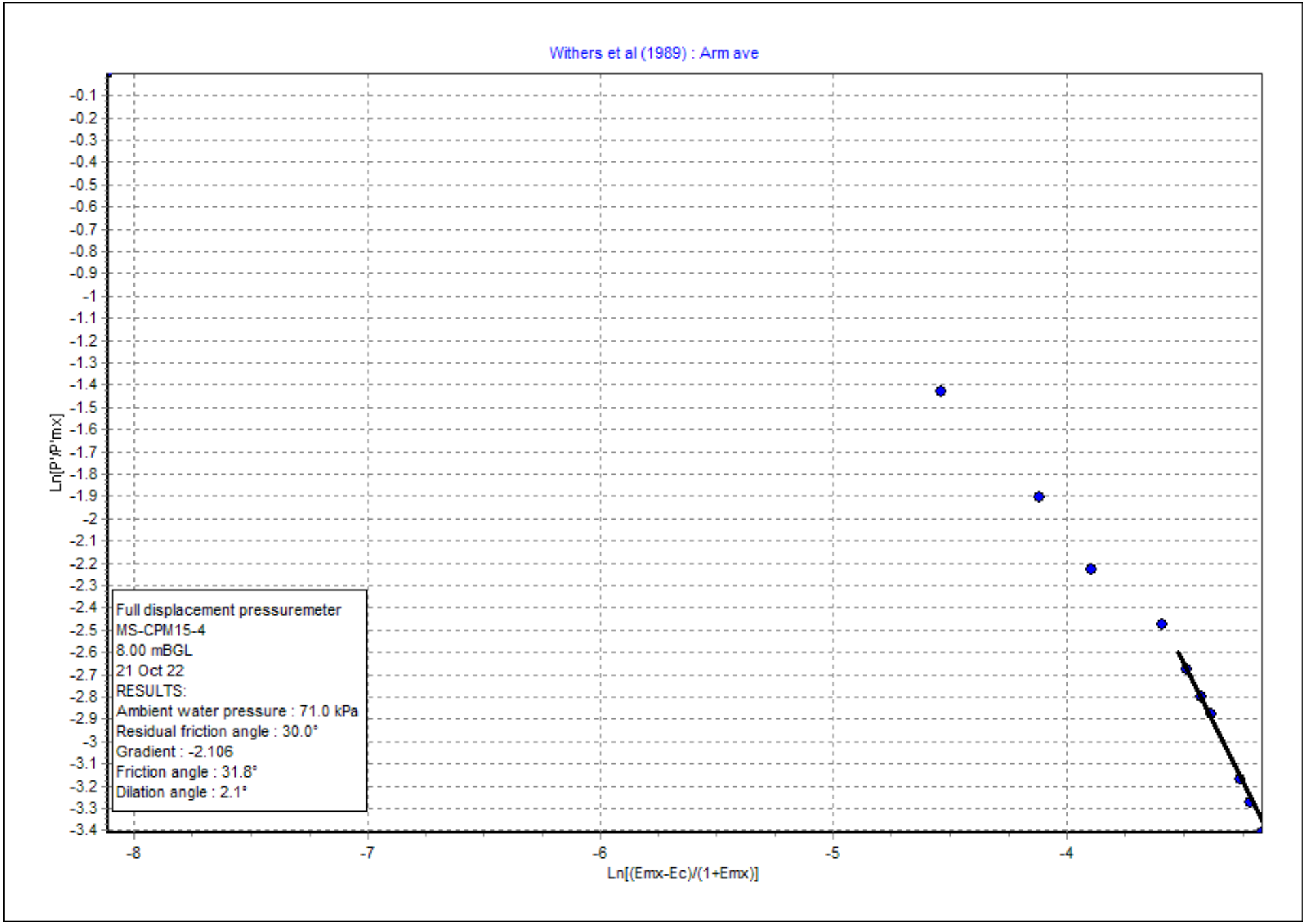

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
RESULTS:
Gradient (beta) : 0.614
Intercept (n) : 5.414MPa
Shear stress constant : 3.322MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

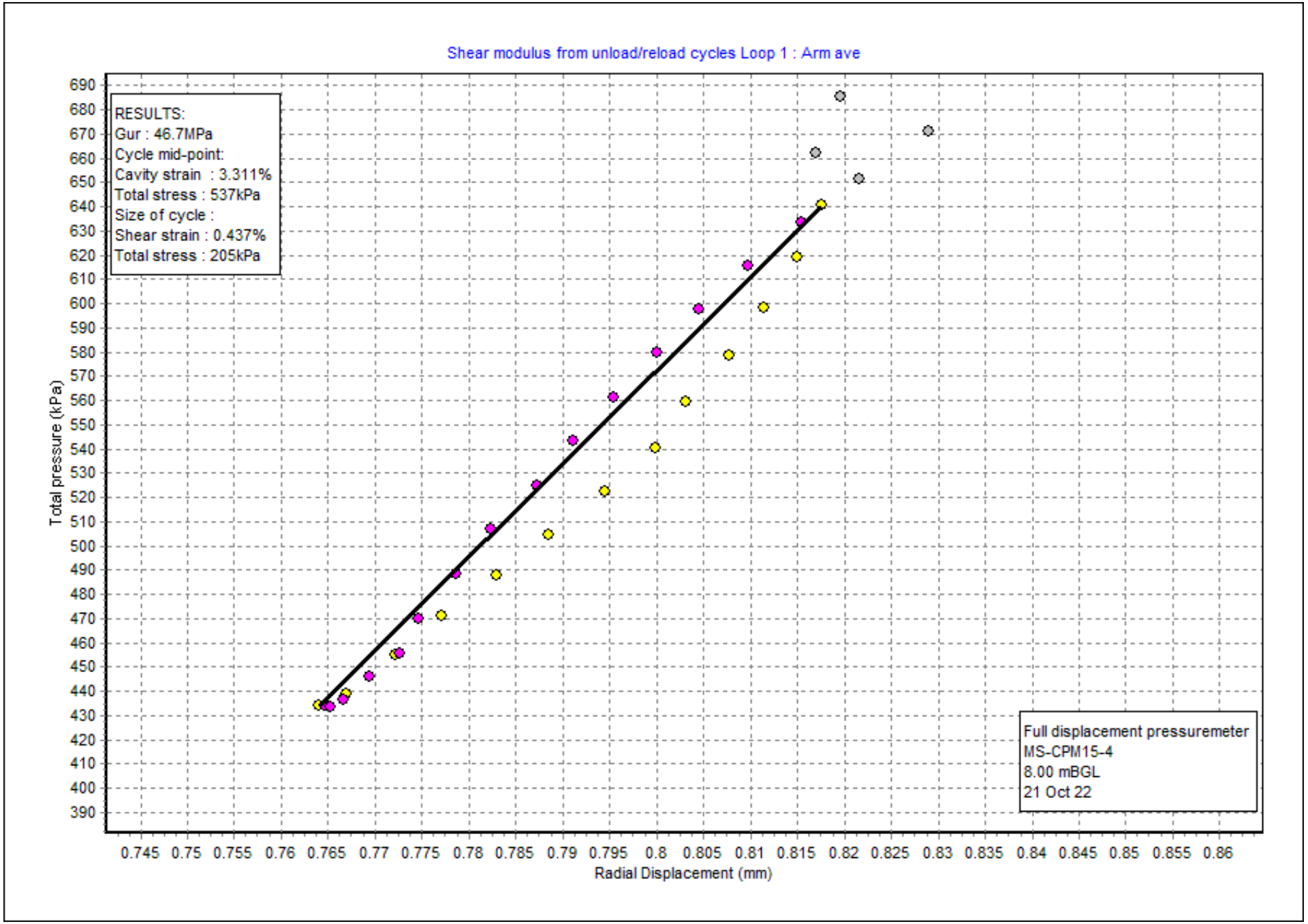

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
RESULTS:
Gradient (beta) : 0.645
Intercept (n) : 7.140MPa
Shear stress constant : 4.605MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

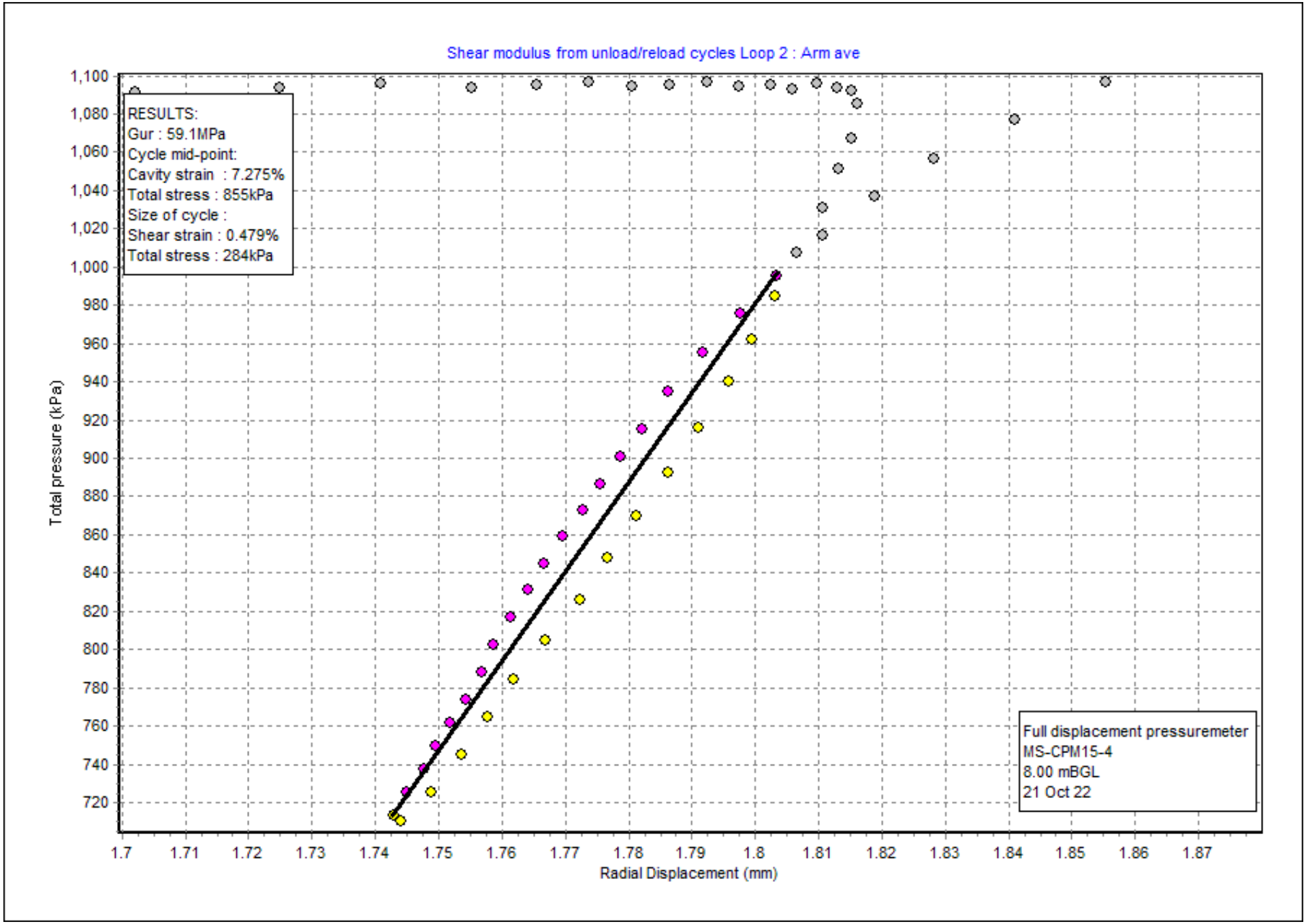

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 3.863 | 0.636
2 | 3.322 | 0.614
3 | 4.605 | 0.645
Full displacement pressuremeter
MS-CPM15-3
6.00 mBGL
20 Oct 22
Shear modulus (MPa)
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
0.0001
0.001
Log plane shear strain

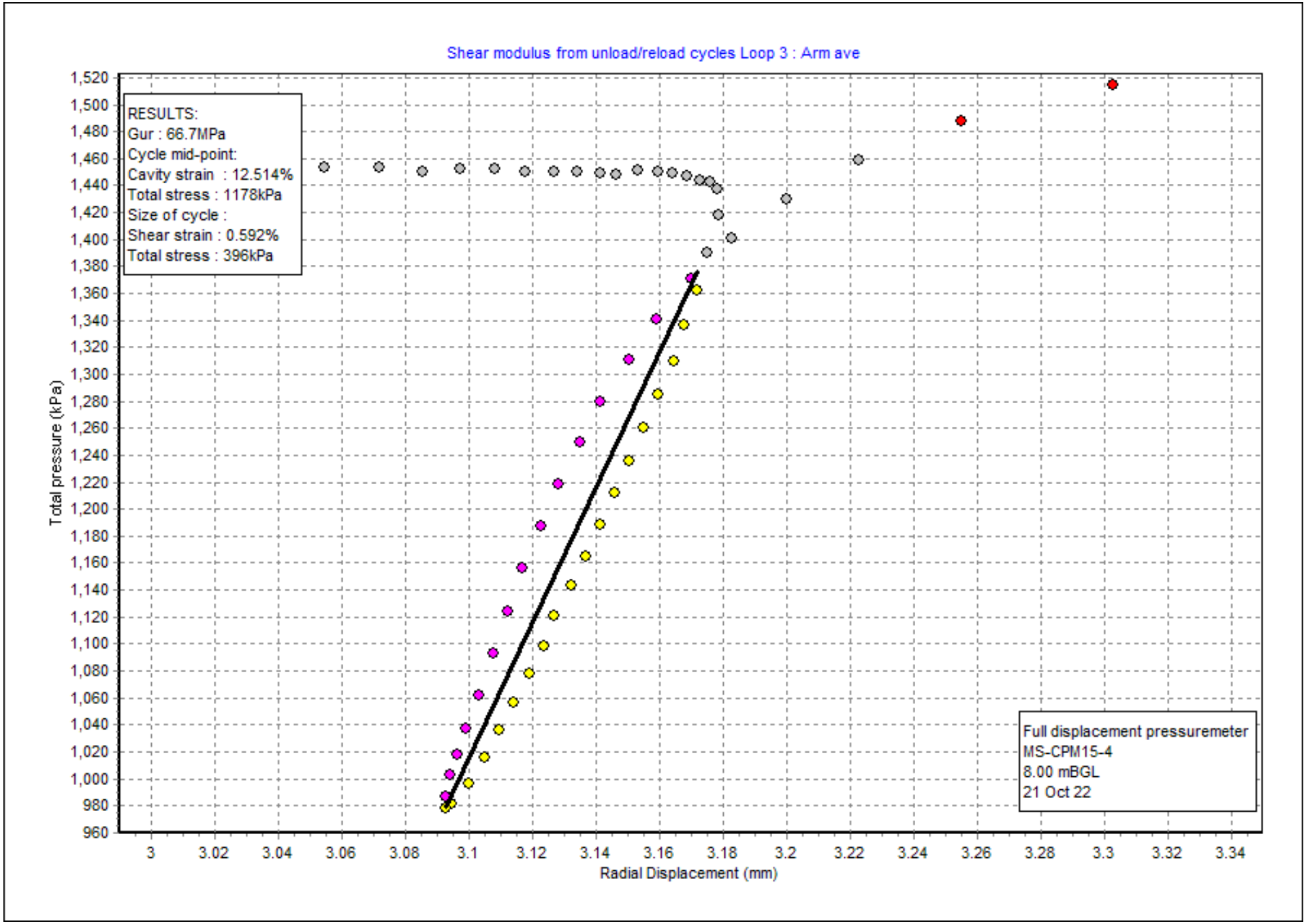

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22


Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 184.8kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22


Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-2.8
-2.9
-3
-3.1
-3.2
-3.3
-3.4
-8
-7
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22
RESULTS:
Ambient water pressure : 71.0 kPa
Residual friction angle : 30.0°
Gradient : -2.106
Friction angle : 31.8°
Dilation angle : 2.1°


Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 46.7MPa
Cycle mid-point:
Cavity strain : 3.311%
Total stress : 537kPa
Size of cycle :
Shear strain : 0.437%
Total stress : 205kPa
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22
Total pressure (kPa)
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
540
530
520
510
500
490
480
470
460
450
440
430
420
410
400
390
0.745 0.75 0.755 0.76 0.765 0.77 0.775 0.78 0.785 0.79 0.795 0.8 0.805 0.81 0.815 0.82 0.825 0.83 0.835 0.84 0.845 0.85 0.855 0.86
Radial Displacement (mm)


Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 59.1MPa
Cycle mid-point:
Cavity strain : 7.275%
Total stress : 855kPa
Size of cycle :
Shear strain : 0.479%
Total stress : 284kPa
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
800
780
760
740
720
1.7
1.71
1.72
1.73
1.74
1.75
1.76
1.77
1.78
1.79
1.8
1.81
1.82
1.83
1.84
1.85
1.86
1.87


Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 66.7MPa
Cycle mid-point:
Cavity strain : 12.514%
Total stress : 1178kPa
Size of cycle :
Shear strain : 0.592%
Total stress : 396kPa
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
3
3.02
3.04
3.06
3.08
3.1
3.12
3.14
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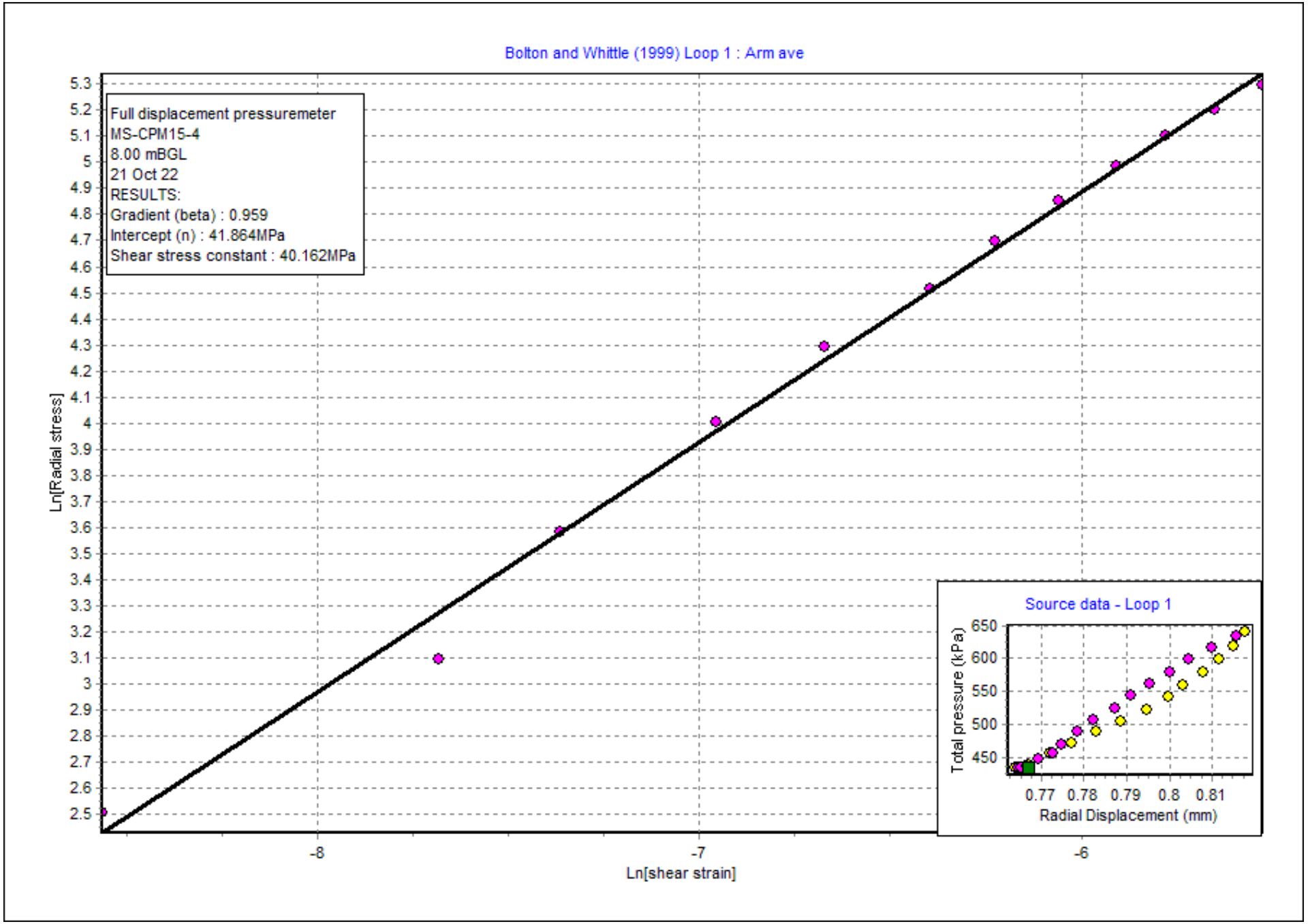
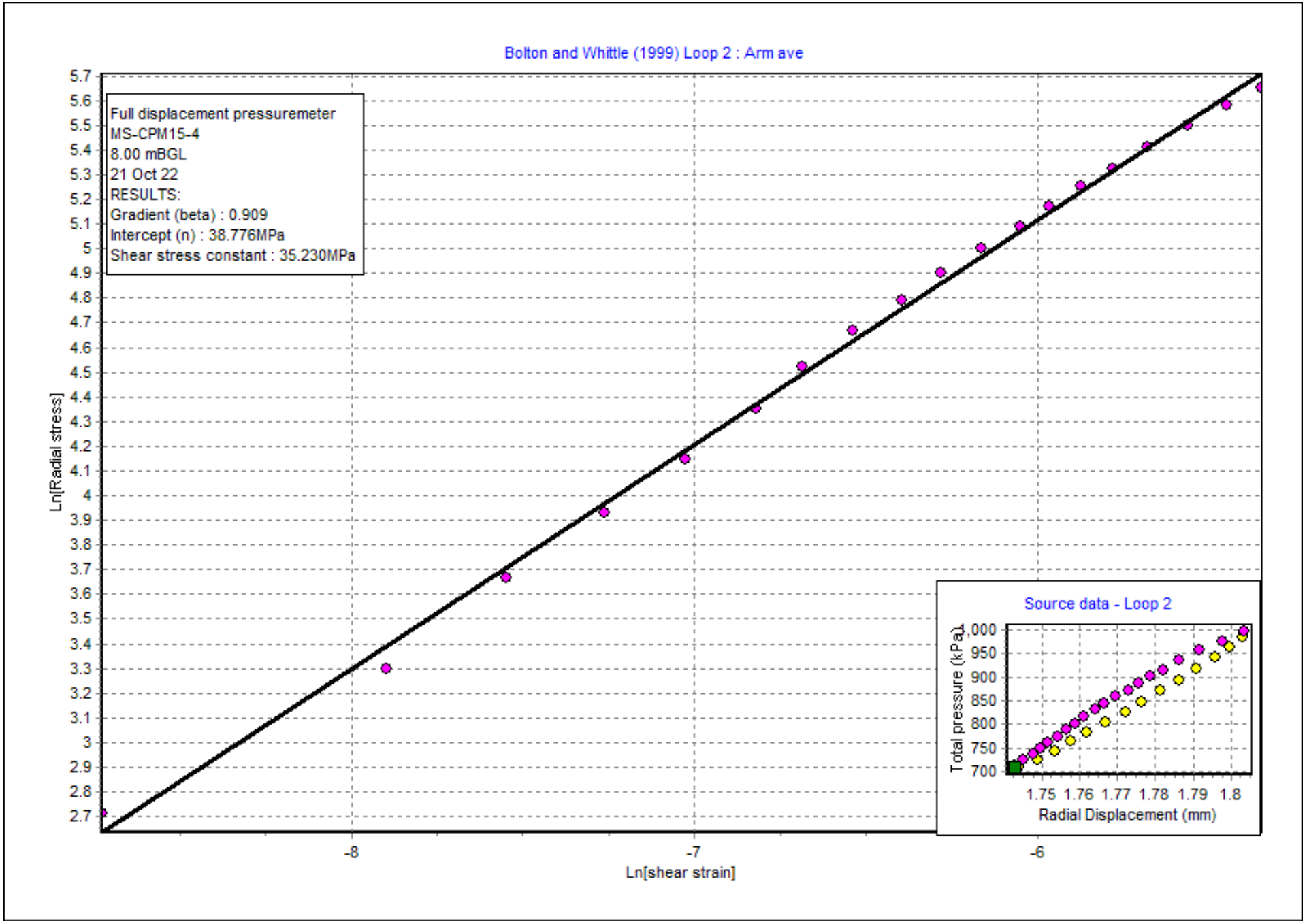
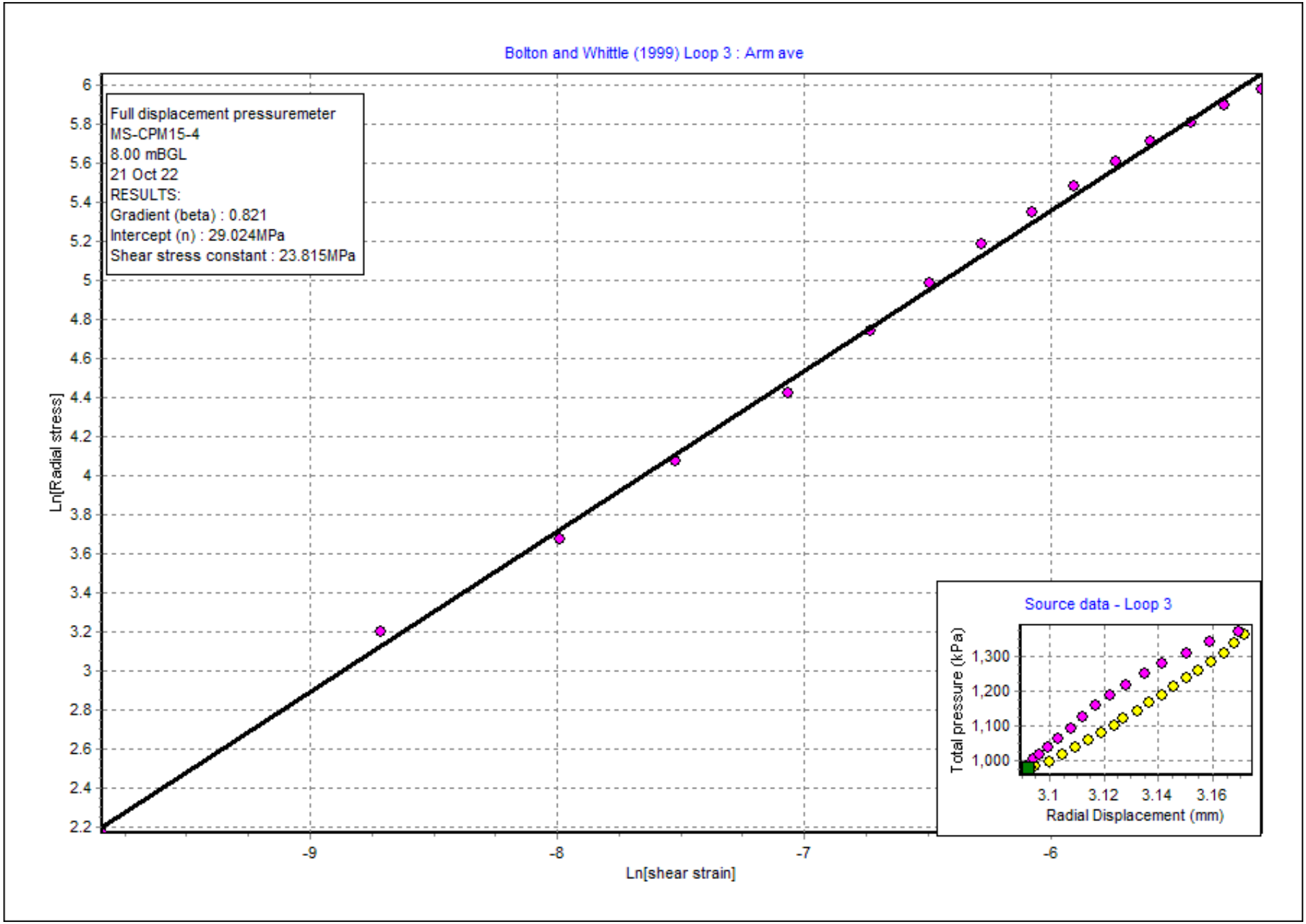
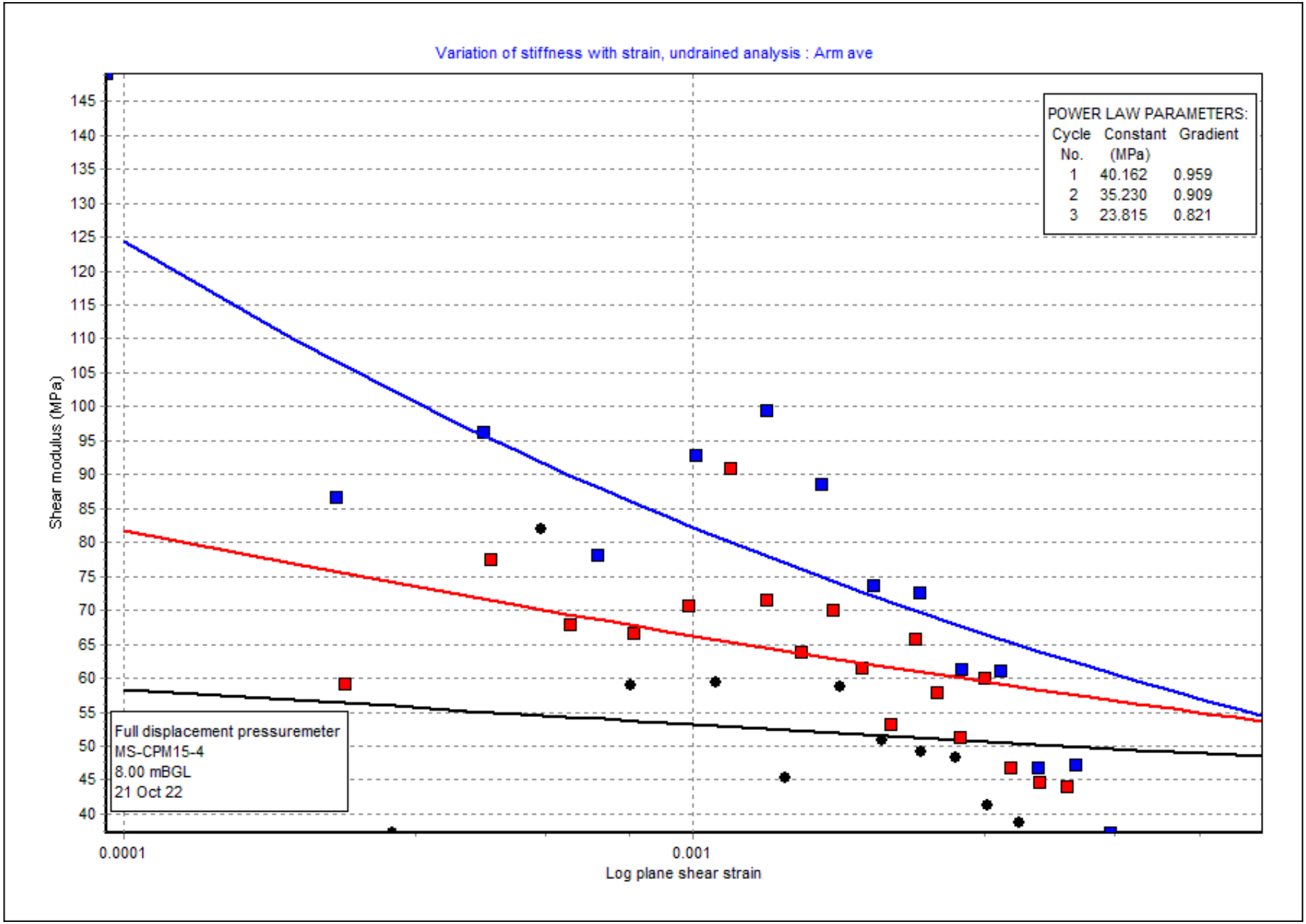
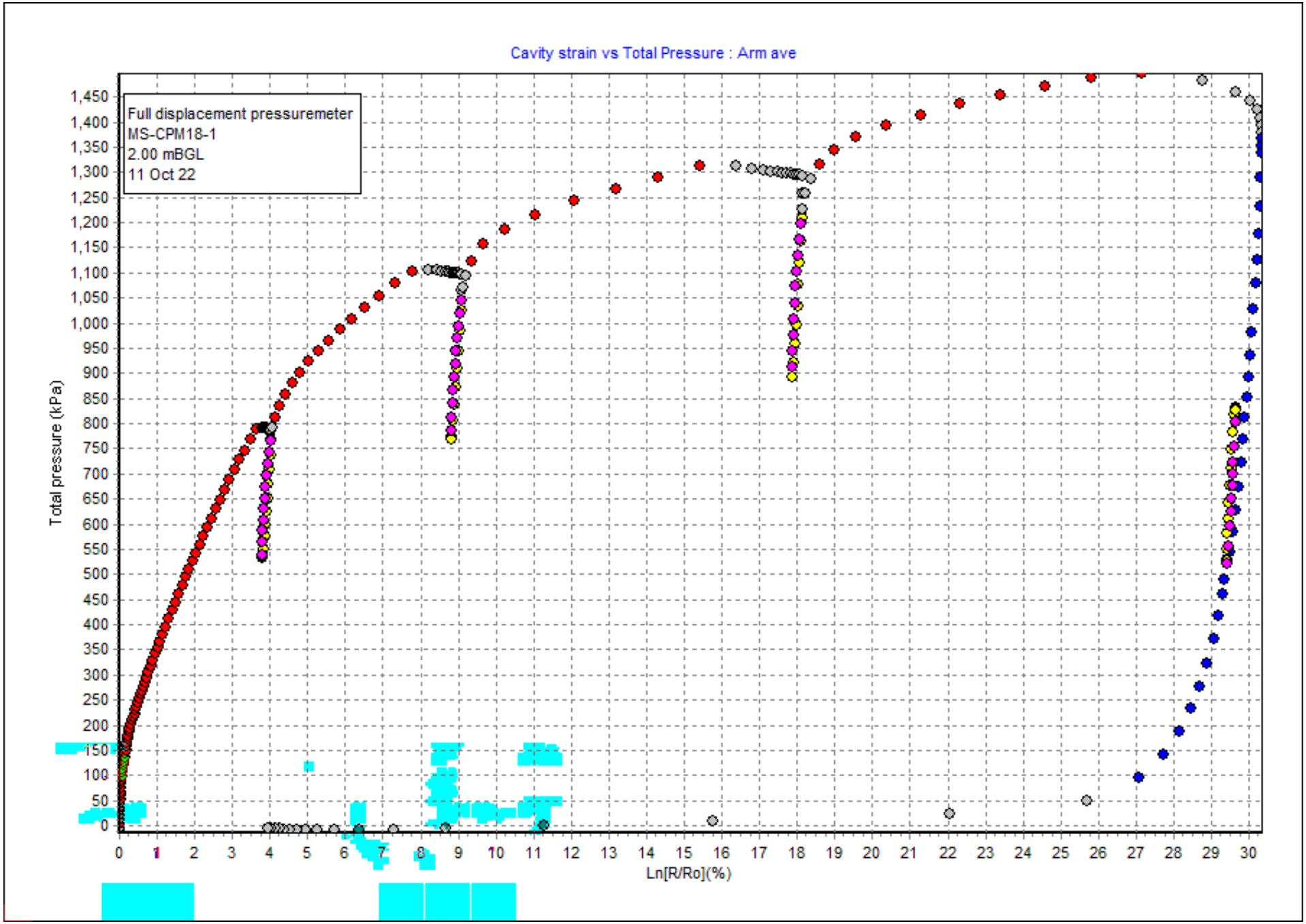
3.18
3.2
3.22
3.24
3.26
3.28
3.3
3.32
3.34

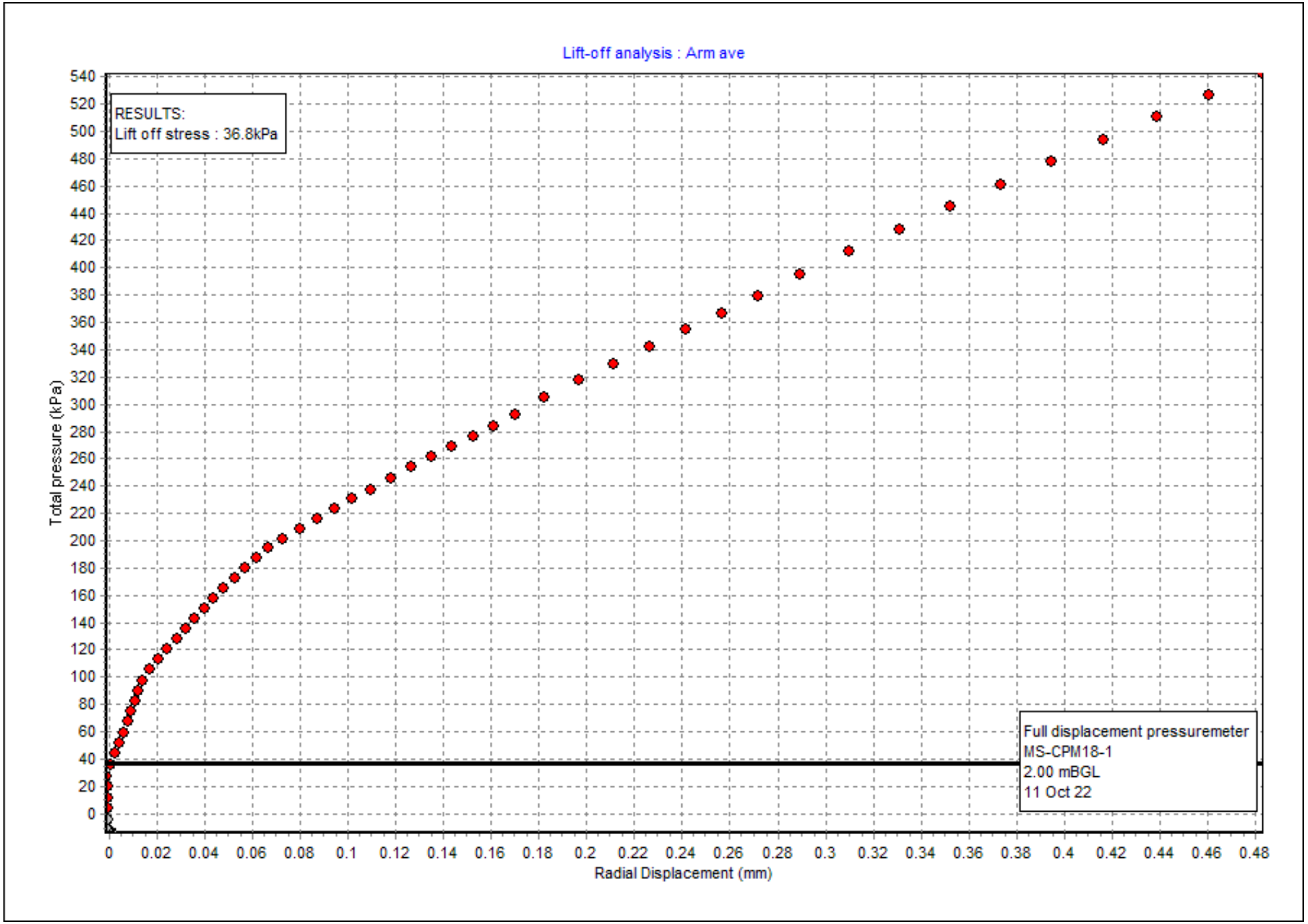

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22
RESULTS:
Gradient (beta) : 0.959
Intercept (n) : 41.864MPa
Shear stress constant : 40.162MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

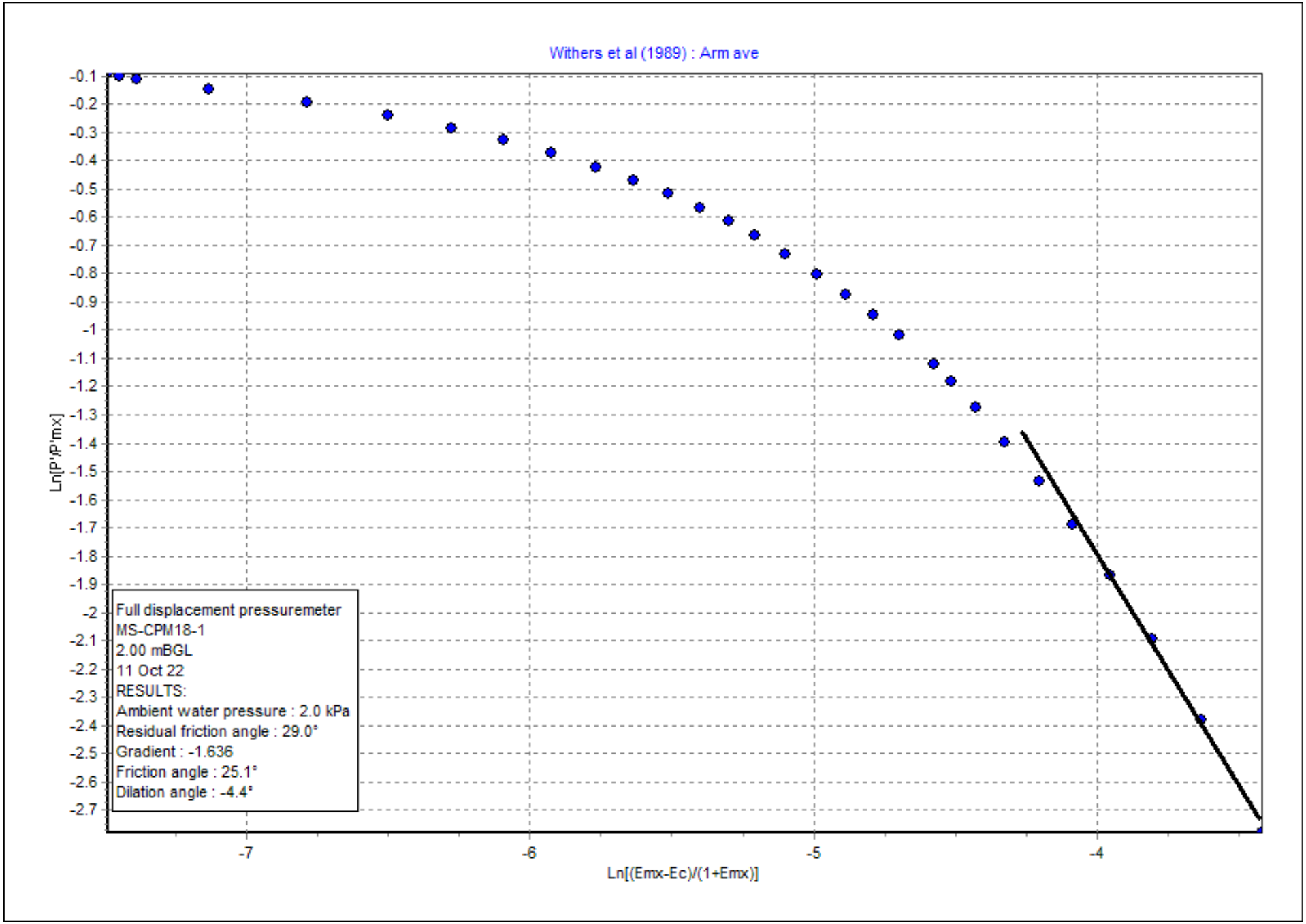

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22
RESULTS:
Gradient (beta) : 0.909
Intercept (n) : 38.776MPa
Shear stress constant : 35.230MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

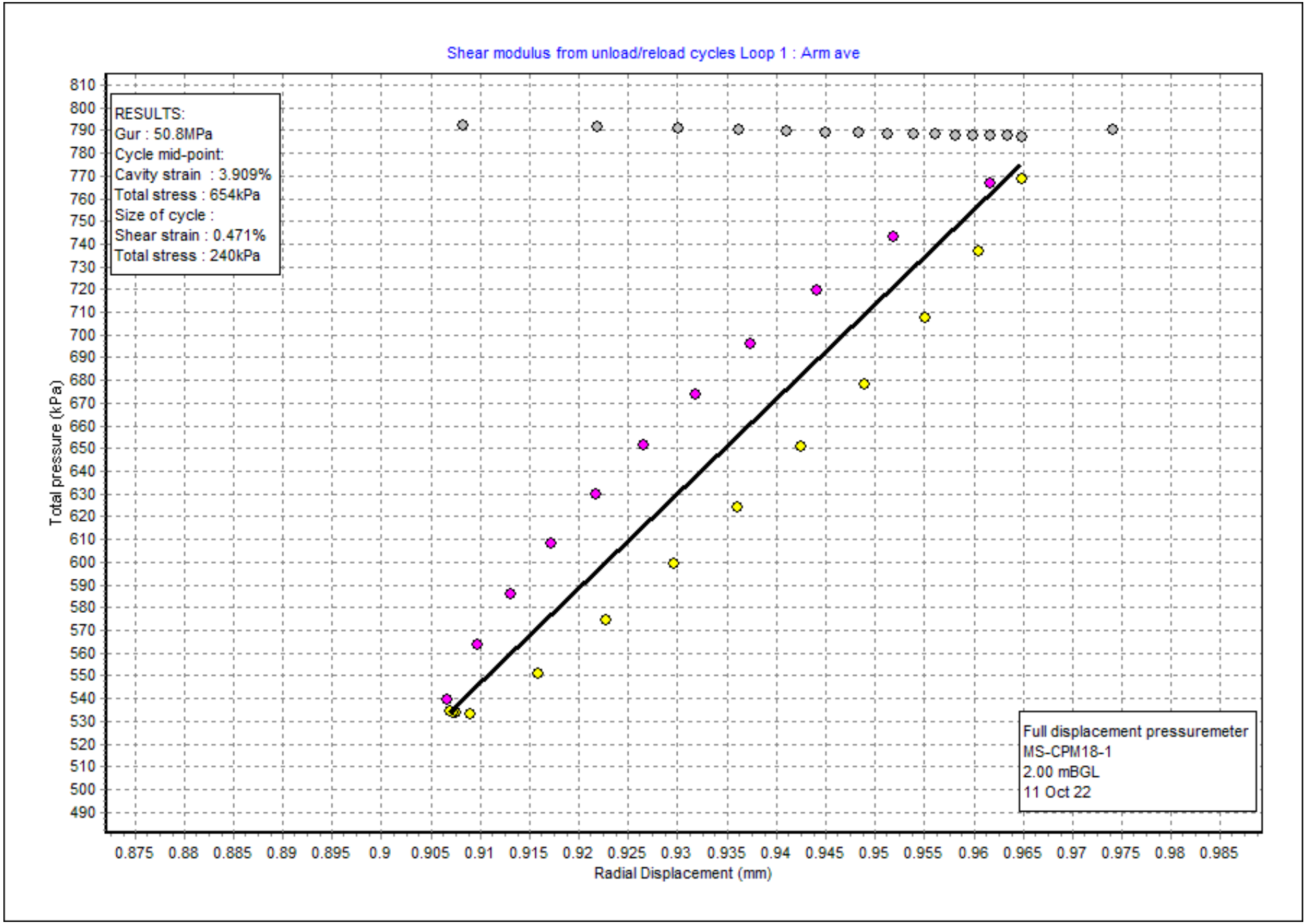

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22
RESULTS:
Gradient (beta) : 0.821
Intercept (n) : 29.024MPa
Shear stress constant : 23.815MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

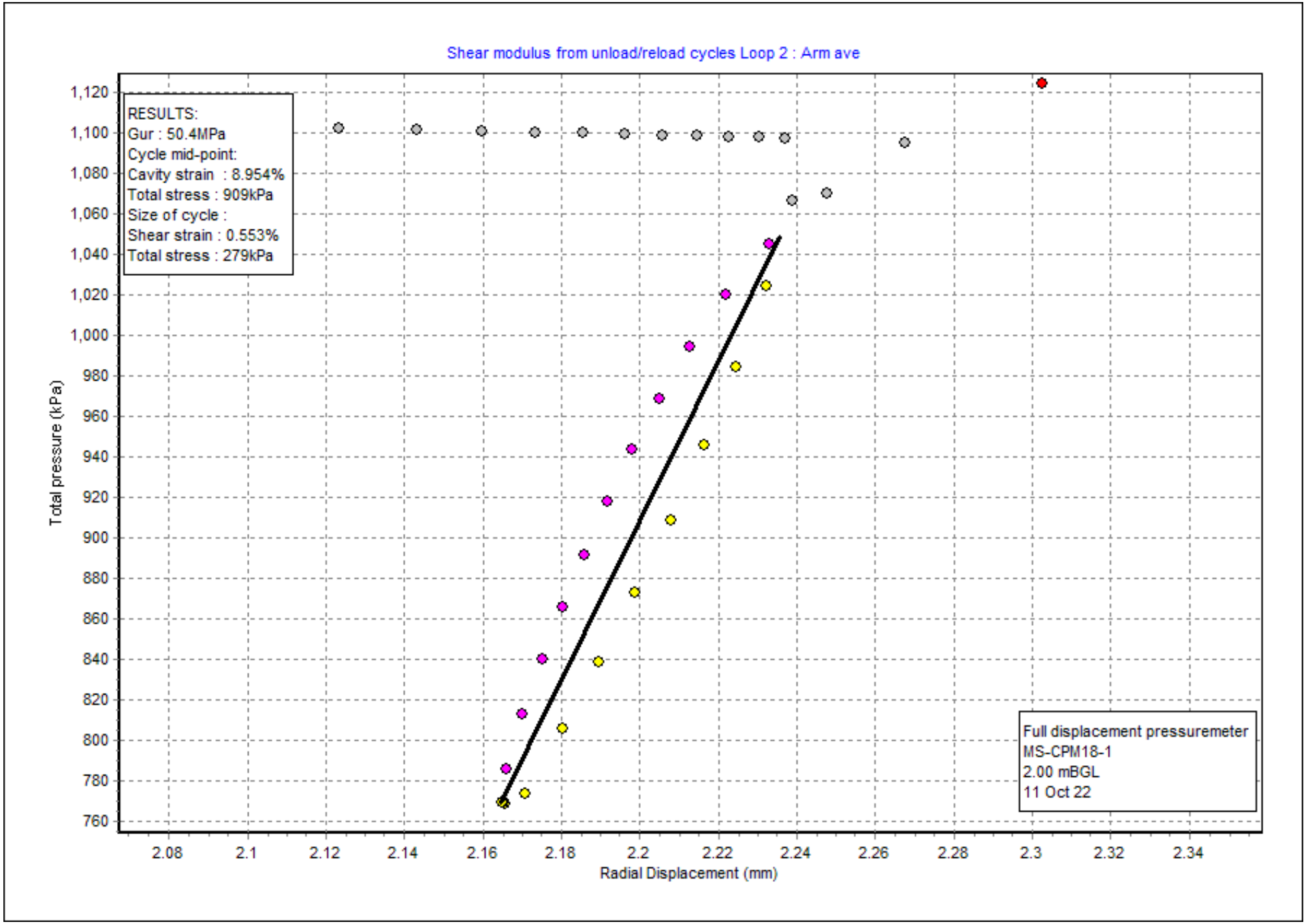

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. Constant (MPa) Gradient
1 40.162 0.959
2 35.230 0.909
3 23.815 0.821
Full displacement pressuremeter
MS-CPM15-4
8.00 mBGL
21 Oct 22
Shear modulus (MPa)
Log plane shear strain
0.0001
0.001
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40

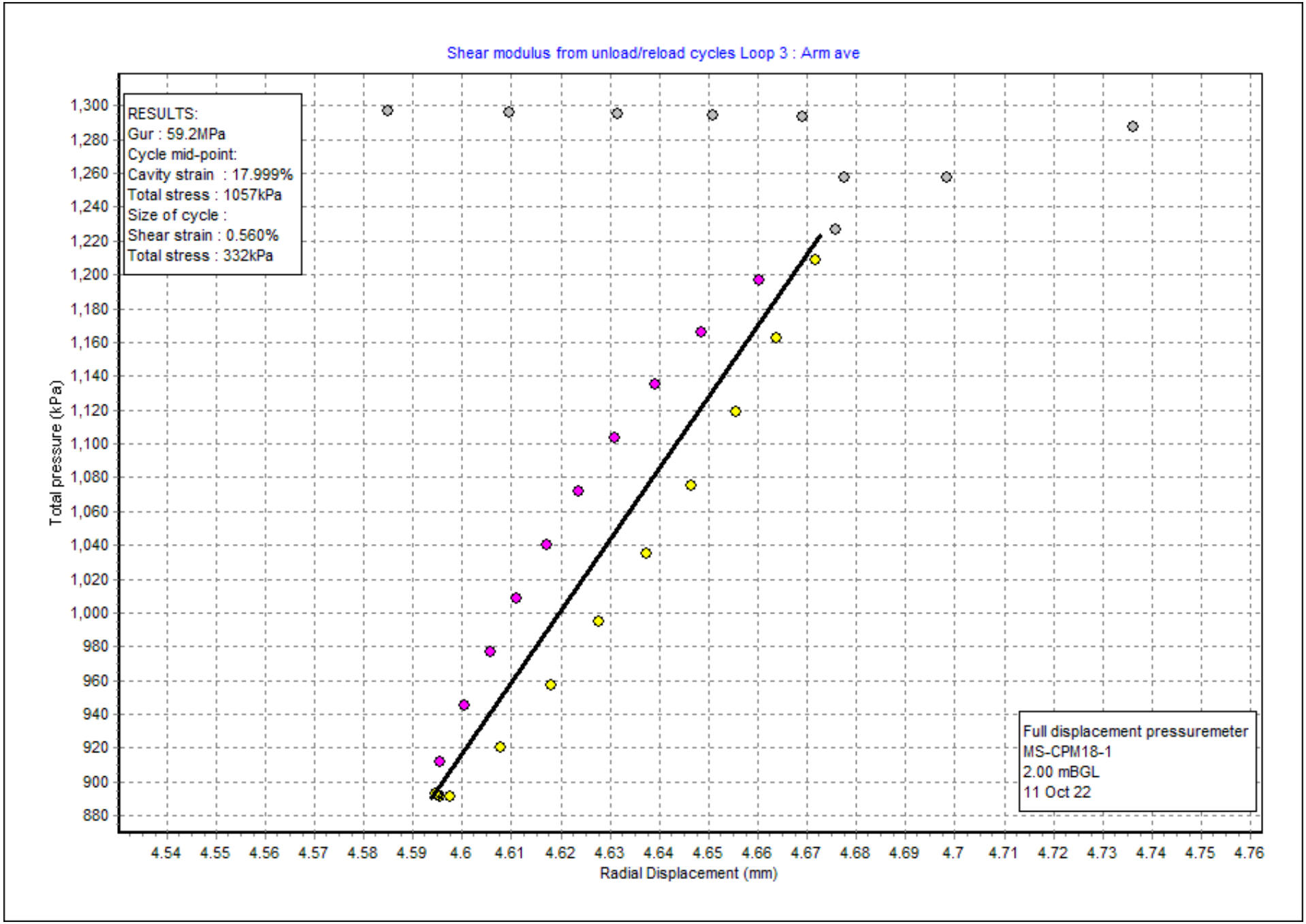

Cavity strain vs Total Pressure : Arm ave
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
Total pressure (kPa)
Ln[R/Ro](%)

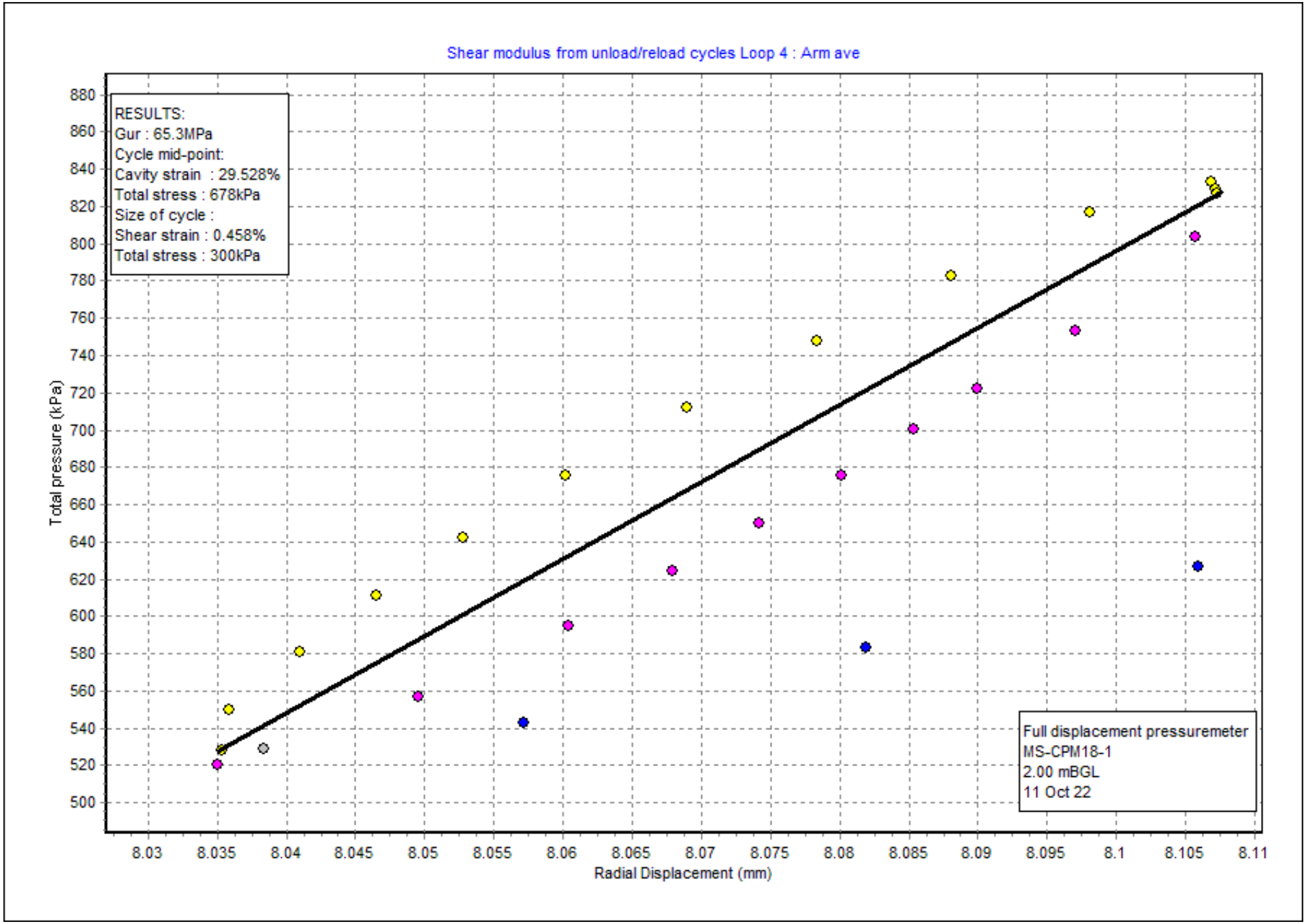

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 36.8kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22

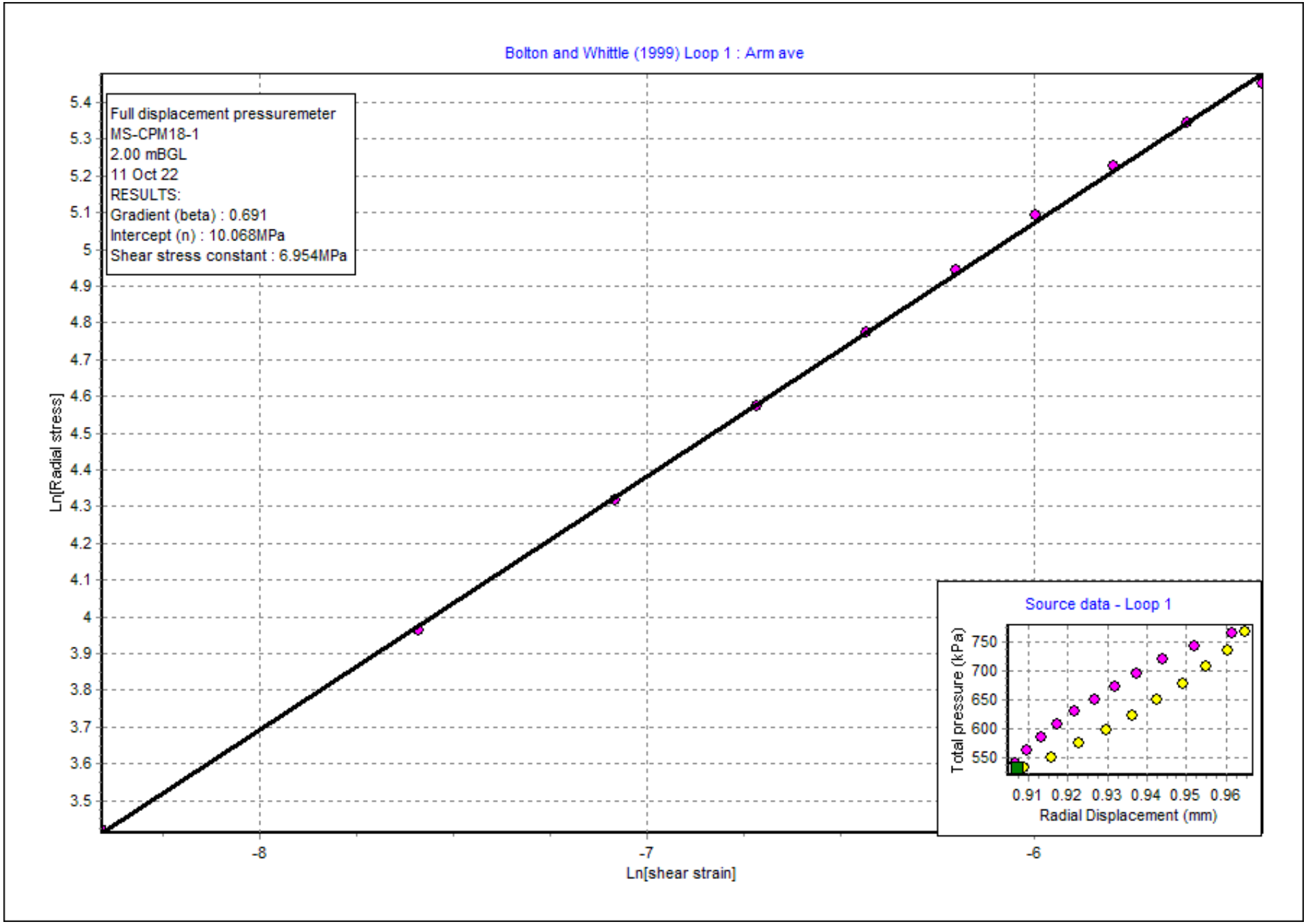

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-7
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
RESULTS:
Ambient water pressure : 2.0 kPa
Residual friction angle : 29.0°
Gradient : -1.636
Friction angle : 25.1°
Dilation angle : -4.4°

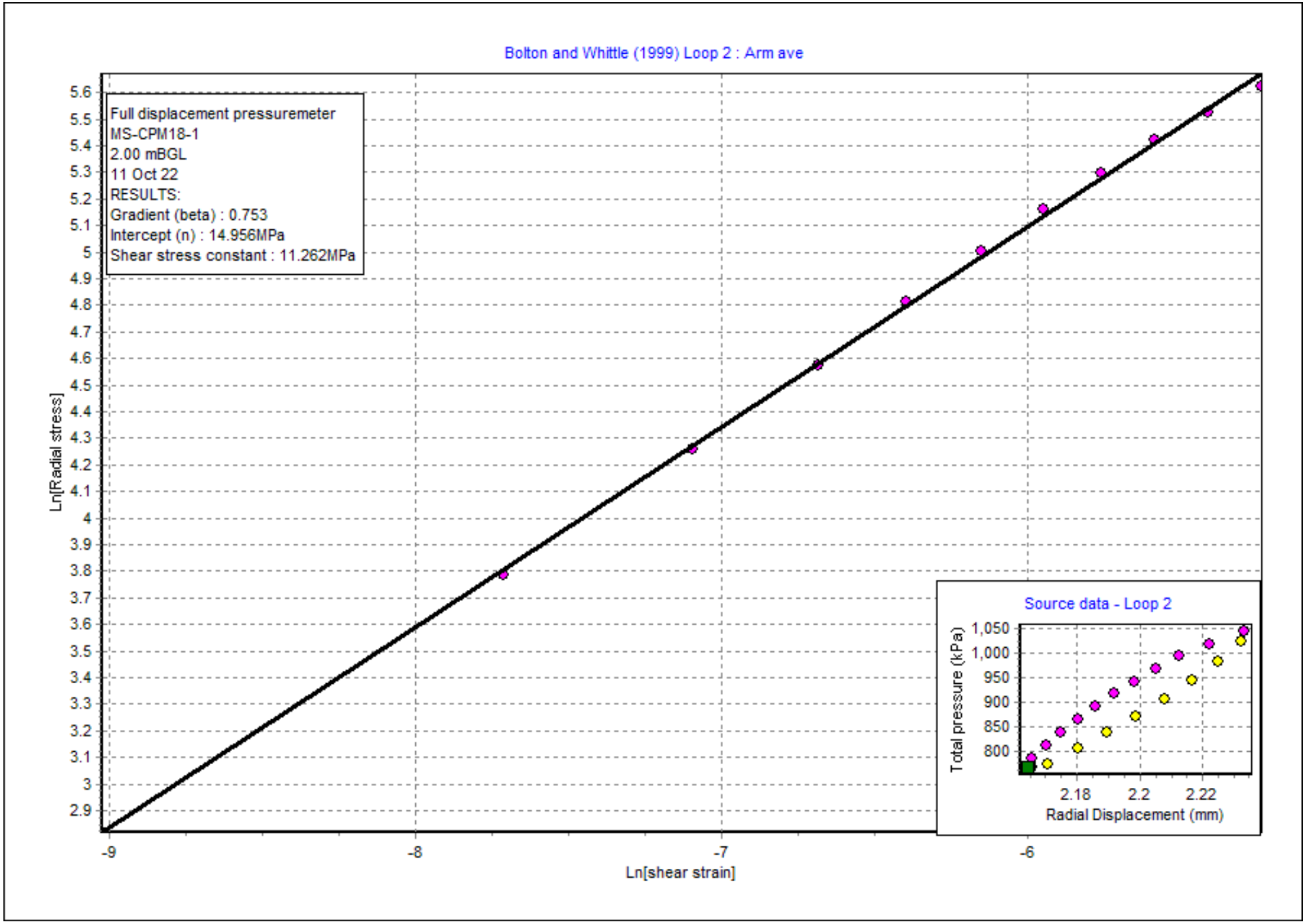

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 50.8MPa
Cycle mid-point:
Cavity strain : 3.909%
Total stress : 654kPa
Size of cycle :
Shear strain : 0.471%
Total stress : 240kPa
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600 590 580 570 560 550 540 530 520 510 500 490
0.875 0.88 0.885 0.89 0.895 0.9 0.905 0.91 0.915 0.92 0.925 0.93 0.935 0.94 0.945 0.95 0.955 0.96 0.965 0.97 0.975 0.98 0.985

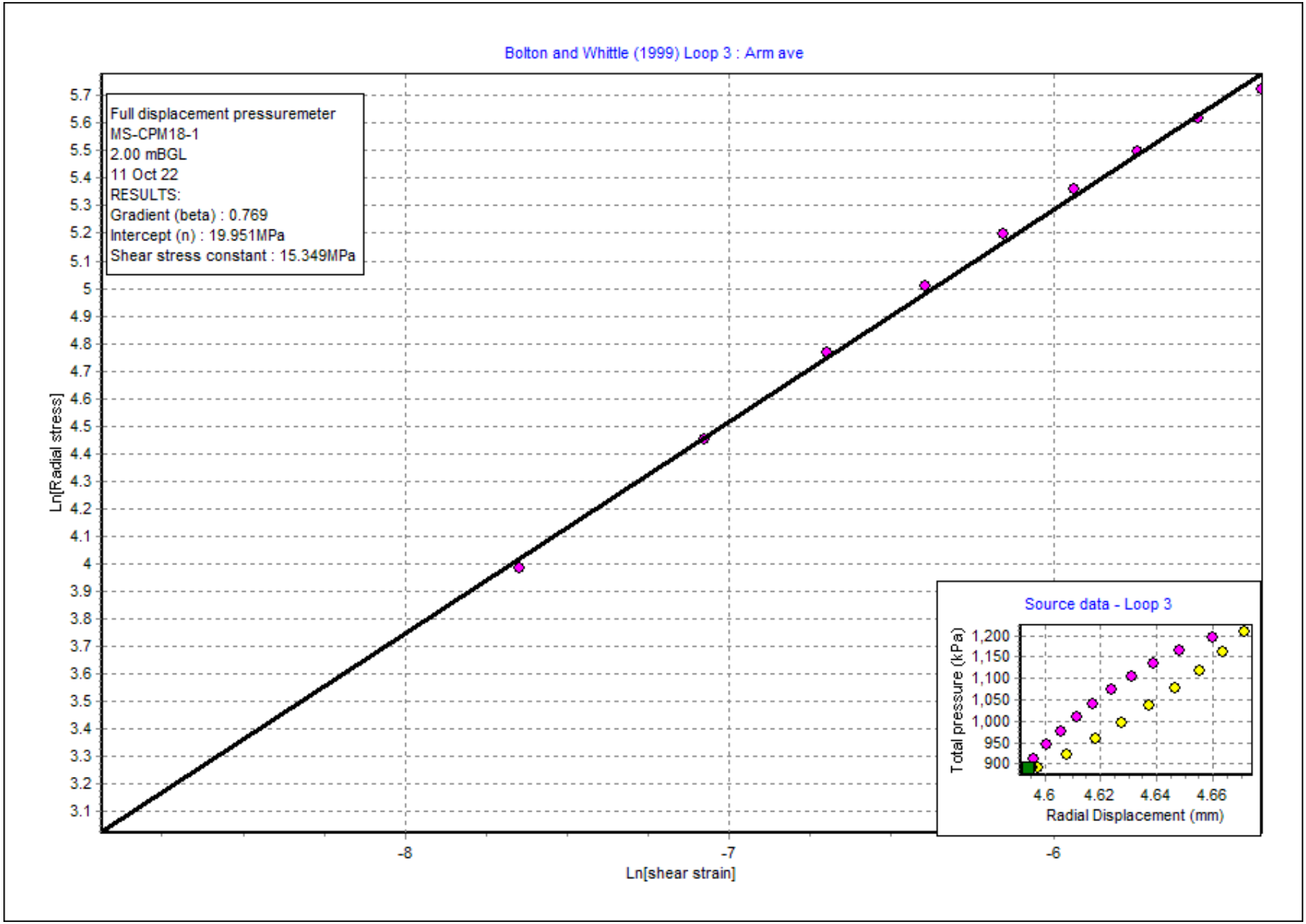

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 50.4MPa
Cycle mid-point:
Cavity strain : 8.954%
Total stress : 909kPa
Size of cycle :
Shear strain : 0.553%
Total stress : 279kPa
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
Total pressure (kPa)
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
800
780
760
Radial Displacement (mm)
2.08
2.1
2.12
2.14
2.16
2.18
2.2
2.22
2.24
2.26
2.28
2.3
2.32
2.34

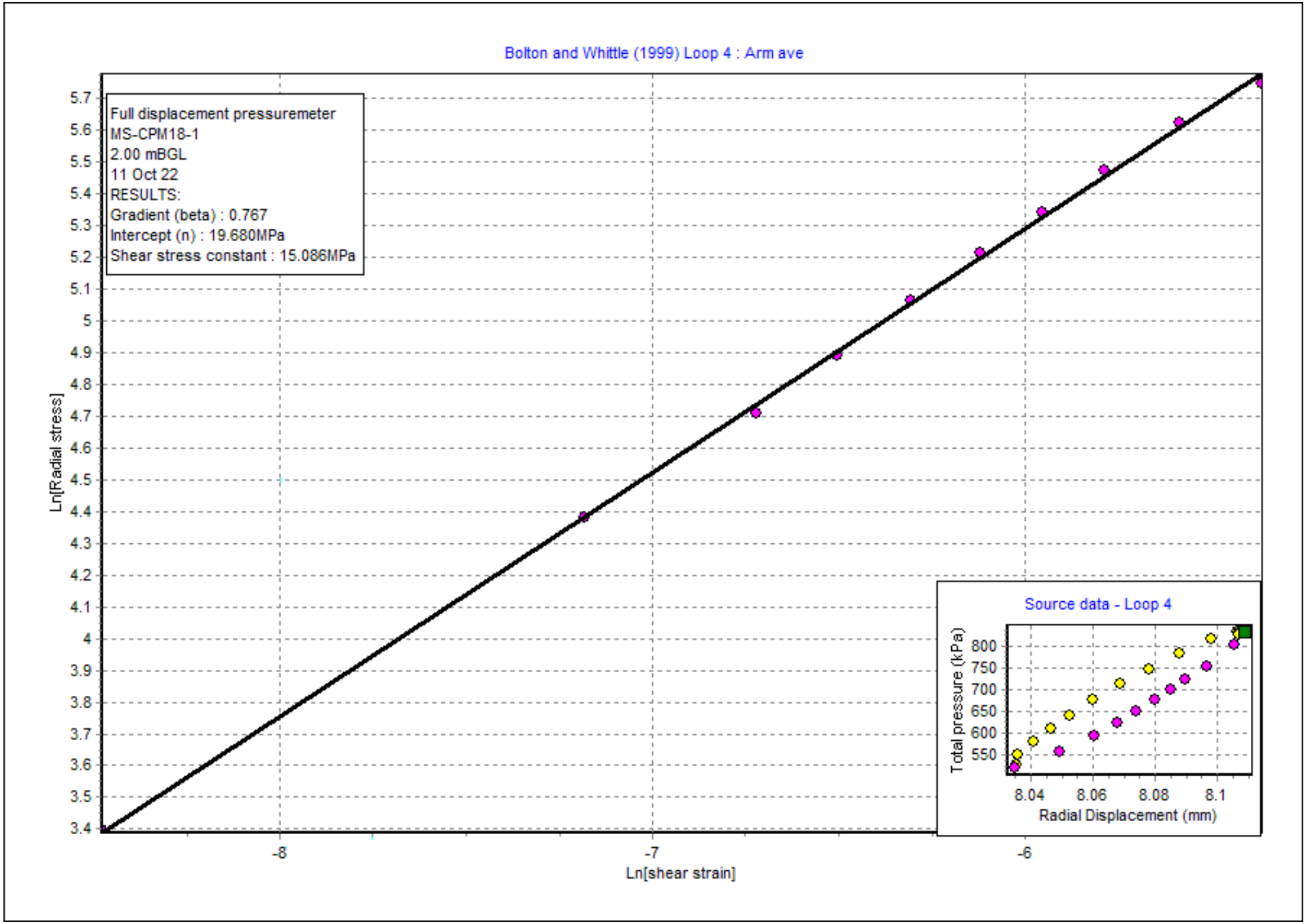

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 59.2MPa
Cycle mid-point:
Cavity strain : 17.999%
Total stress : 1057kPa
Size of cycle :
Shear strain : 0.560%
Total stress : 332kPa
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
4.54
4.55
4.56
4.57
4.58
4.59
4.6
4.61
4.62
4.63
4.64
4.65
4.66
4.67
4.68
4.69
4.7
4.71
4.72
4.73
4.74
4.75
4.76

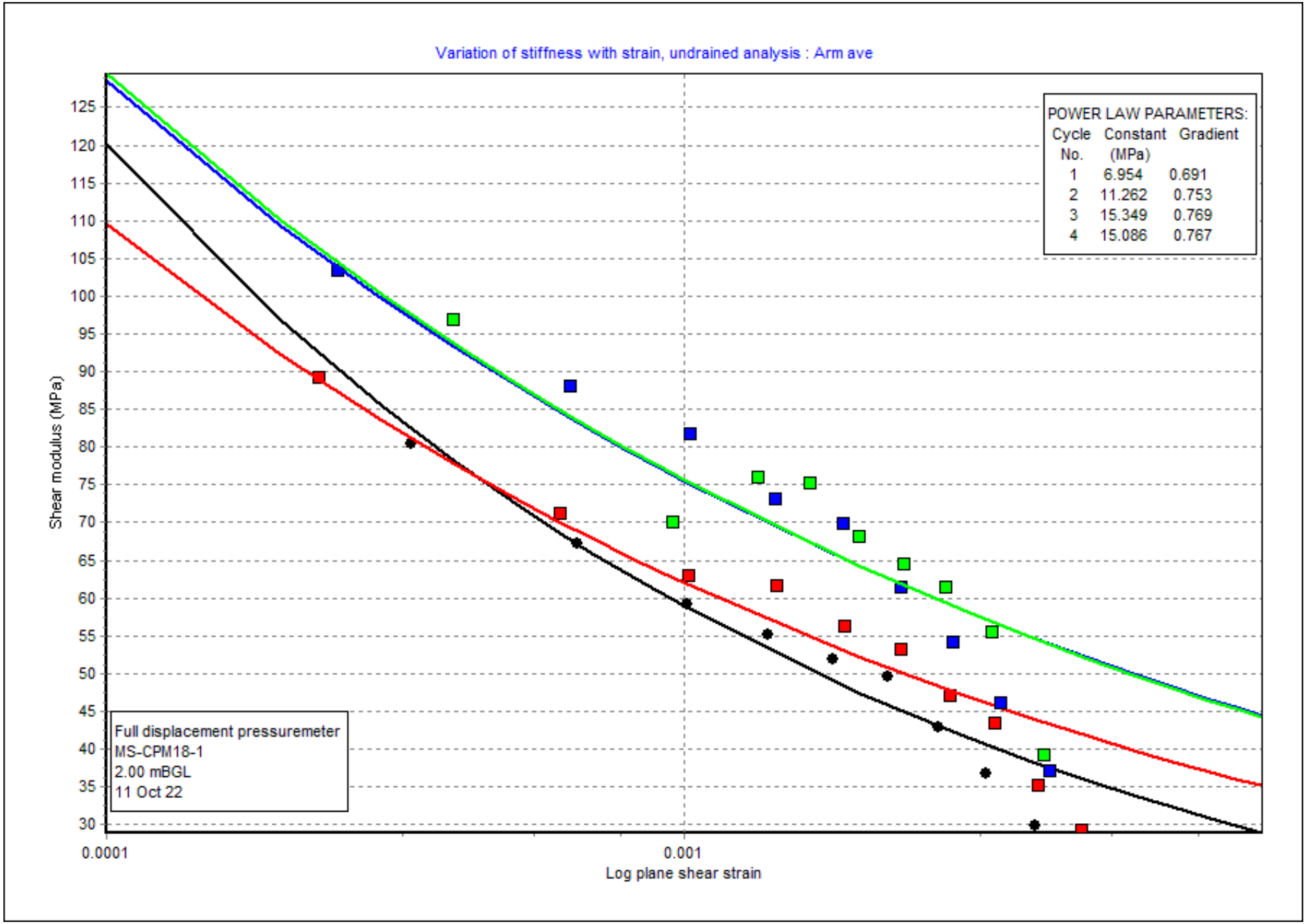

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 65.3MPa
Cycle mid-point:
Cavity strain : 29.528%
Total stress : 678kPa
Size of cycle :
Shear strain : 0.458%
Total stress : 300kPa
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
880
860
840
820
800
780
760
740
720
700
680
660
640
620
600
580
560
540
520
500
8.03
8.035
8.04
8.045
8.05
8.055
8.06
8.065
8.07
8.075
8.08
8.085
8.09
8.095
8.1
8.105
8.11

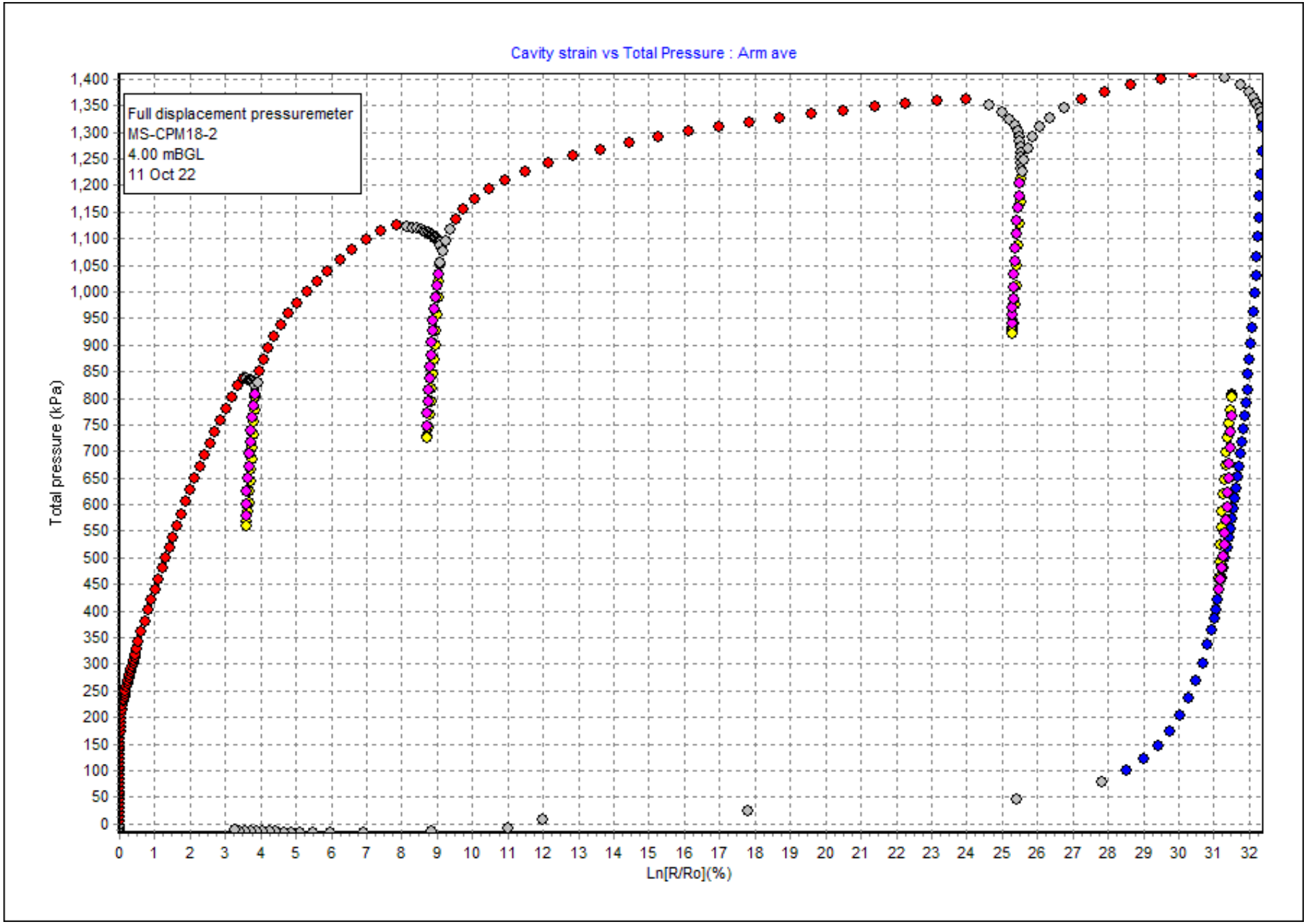

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.691
Intercept (n) : 10.068MPa
Shear stress constant : 6.954MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

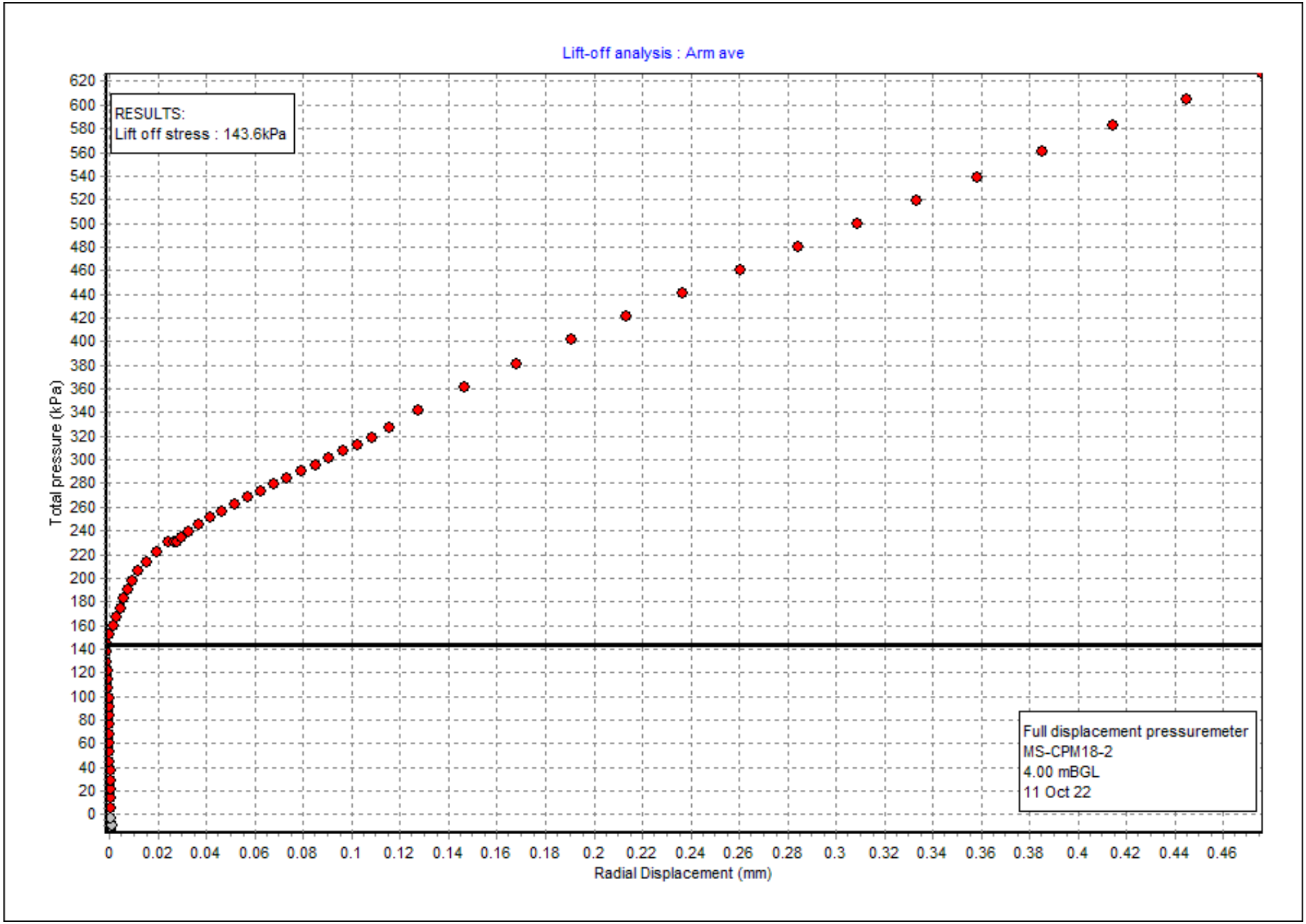

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.753
Intercept (n) : 14.956MPa
Shear stress constant : 11.262MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

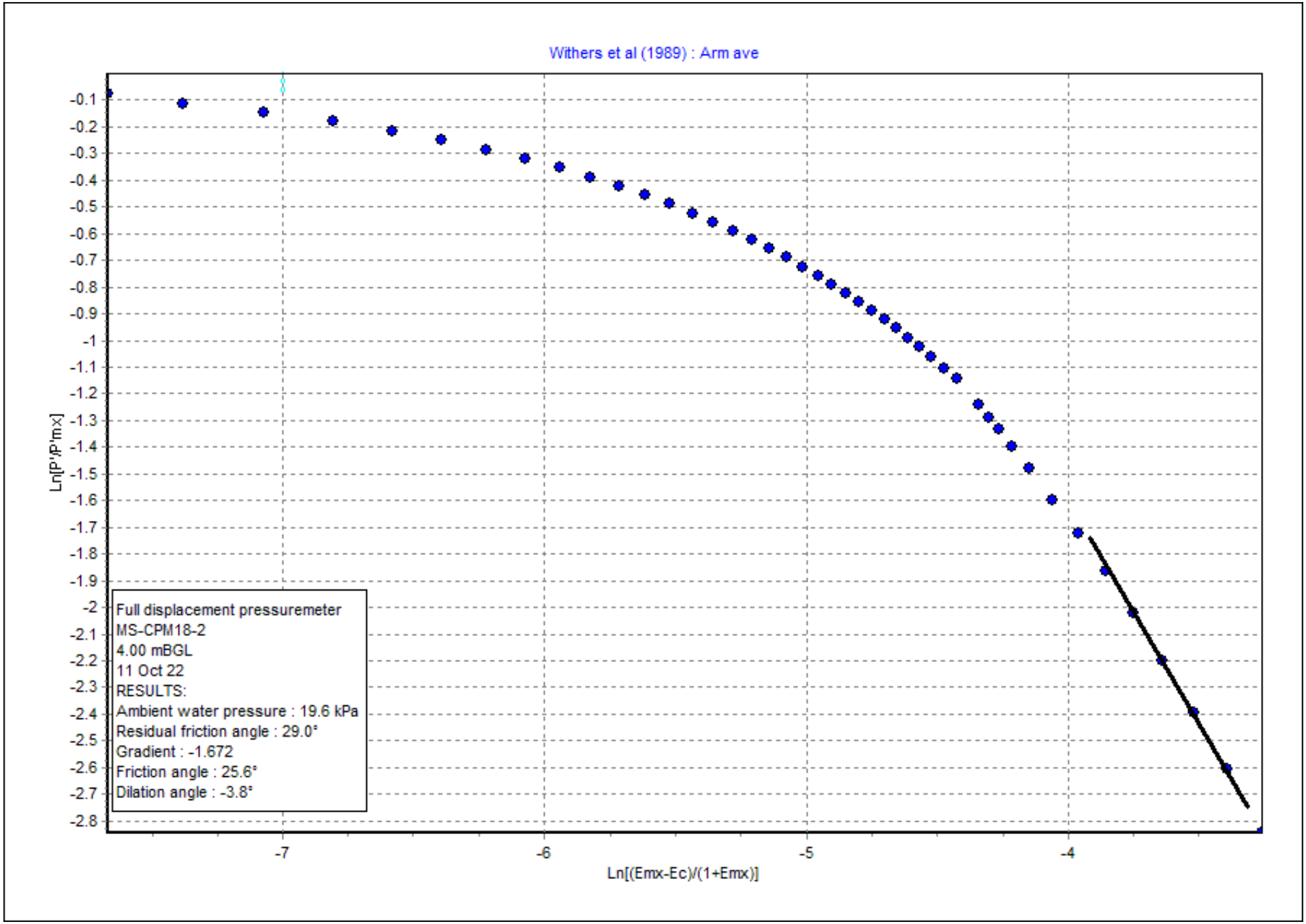

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.769
Intercept (n) : 19.951MPa
Shear stress constant : 15.349MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

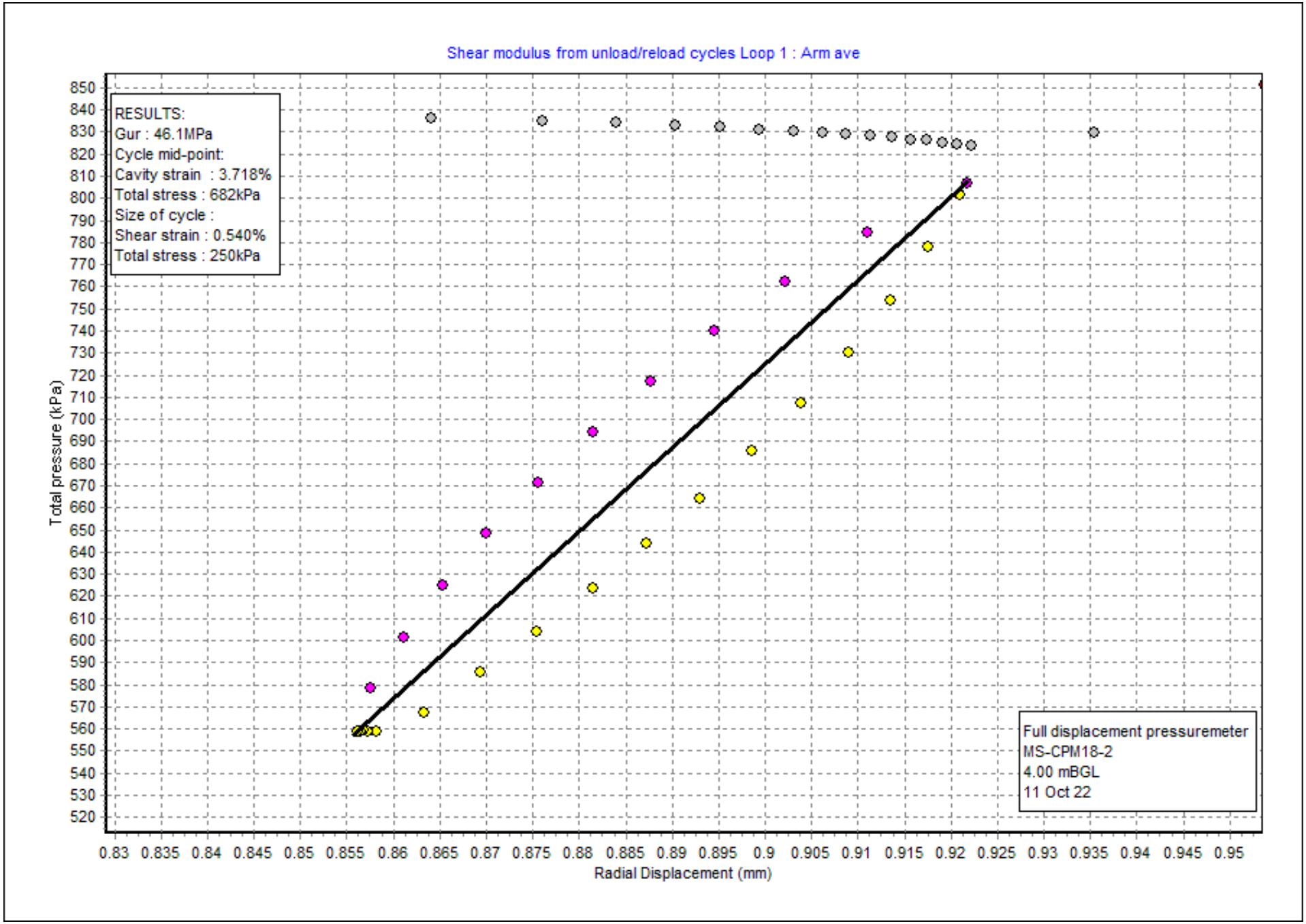

Bolton and Whittle (1999) Loop 4 : Arm ave
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.767
Intercept (n) : 19.680MPa
Shear stress constant : 15.086MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 4
Total pressure (kPa)
Radial Displacement (mm)

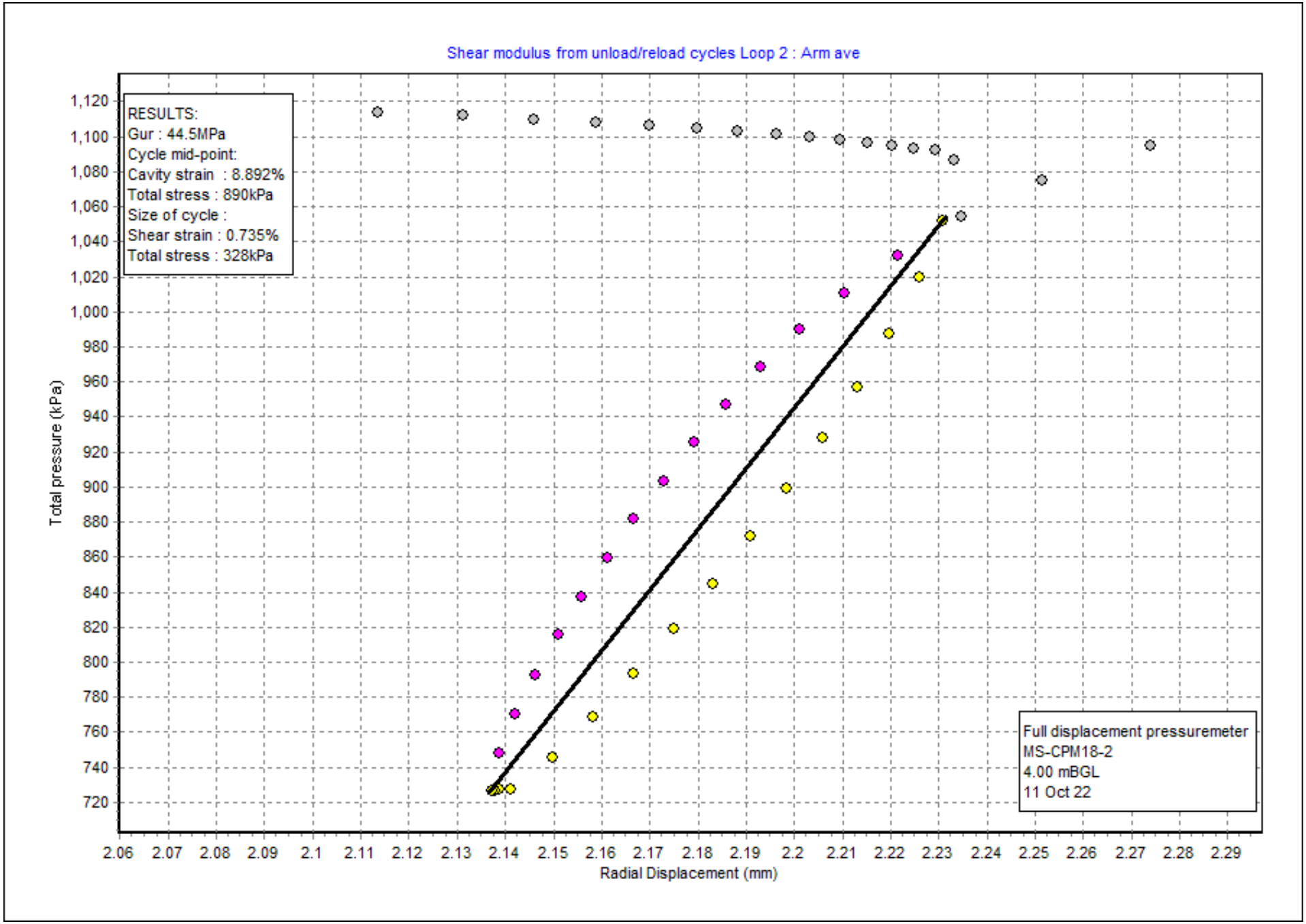

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 6.954 | 0.691
2 | 11.262 | 0.753
3 | 15.349 | 0.769
4 | 15.086 | 0.767
Full displacement pressuremeter
MS-CPM18-1
2.00 mBGL
11 Oct 22
Shear modulus (MPa)
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
0.0001
0.001
Log plane shear strain

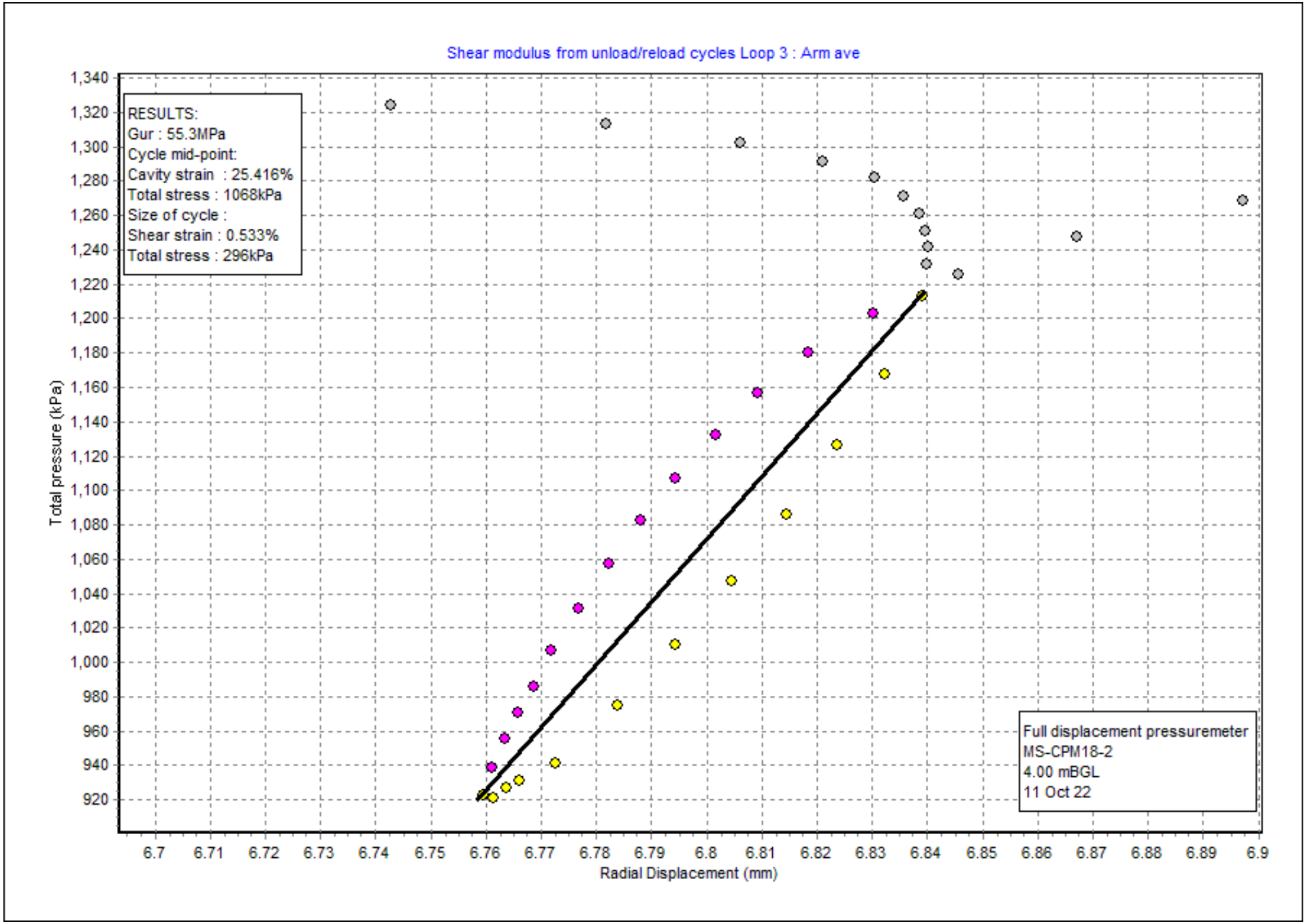

Cavity strain vs Total Pressure : Arm ave
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
Total pressure (kPa)
Ln[R/Ro](%)

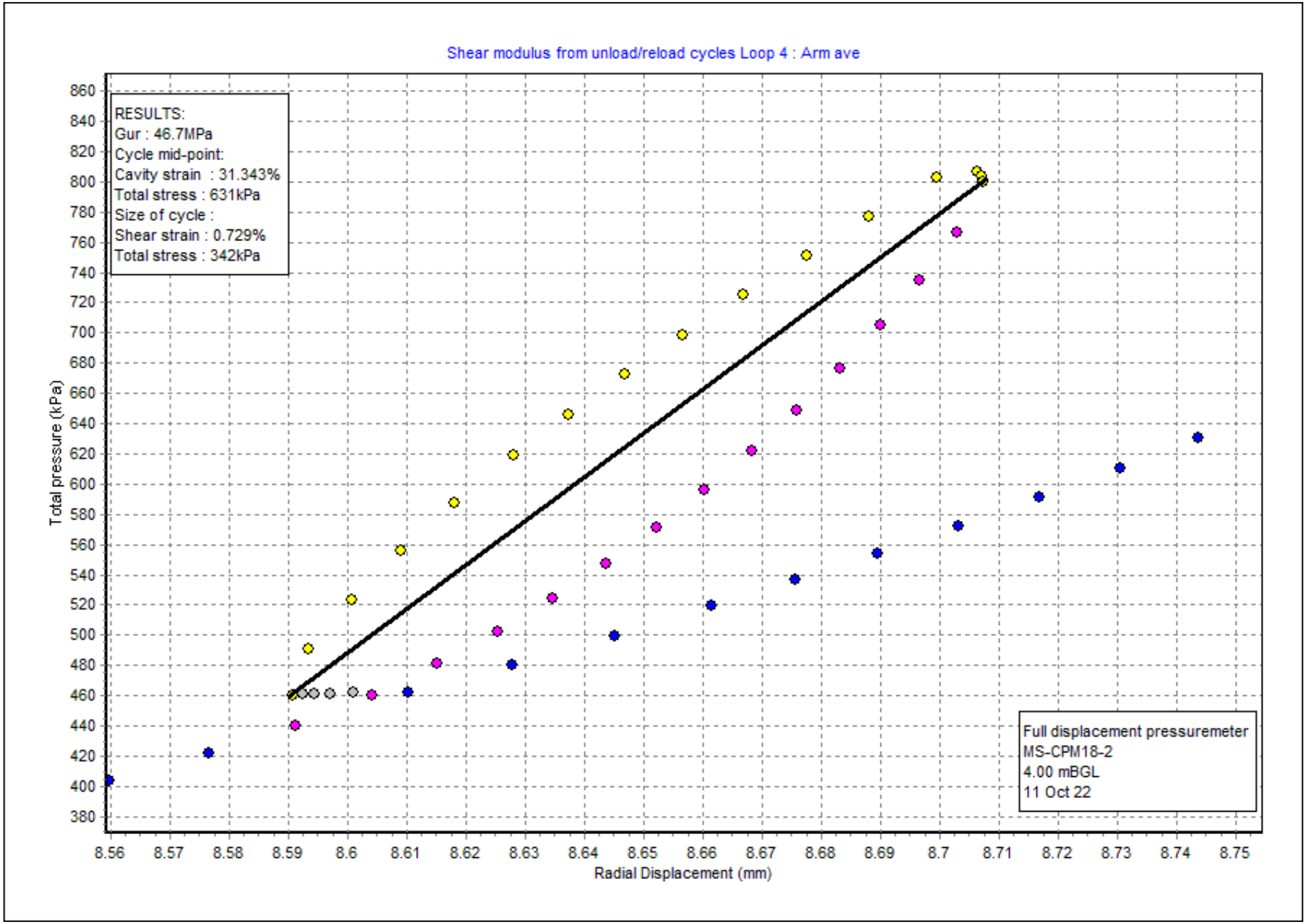

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 143.6kPa
Total pressure (kPa)
620
600
580
560
540
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
0.16
0.18
0.2
0.22
0.24
0.26
0.28
0.3
0.32
0.34
0.36
0.38
0.4
0.42
0.44
0.46
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22

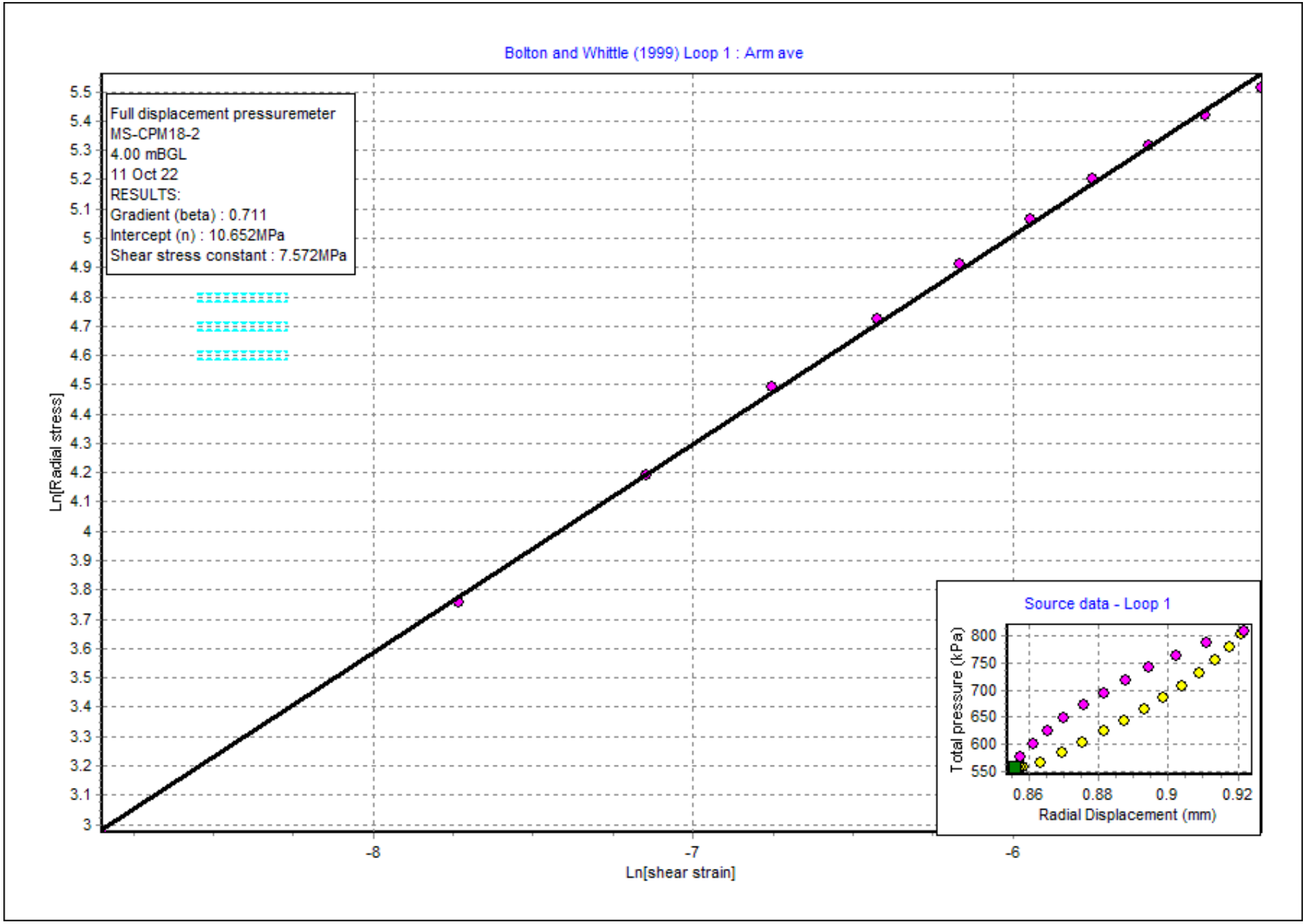

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-2.8
-7
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
RESULTS:
Ambient water pressure : 19.6 kPa
Residual friction angle : 29.0°
Gradient : -1.672
Friction angle : 25.6°
Dilation angle : -3.8°

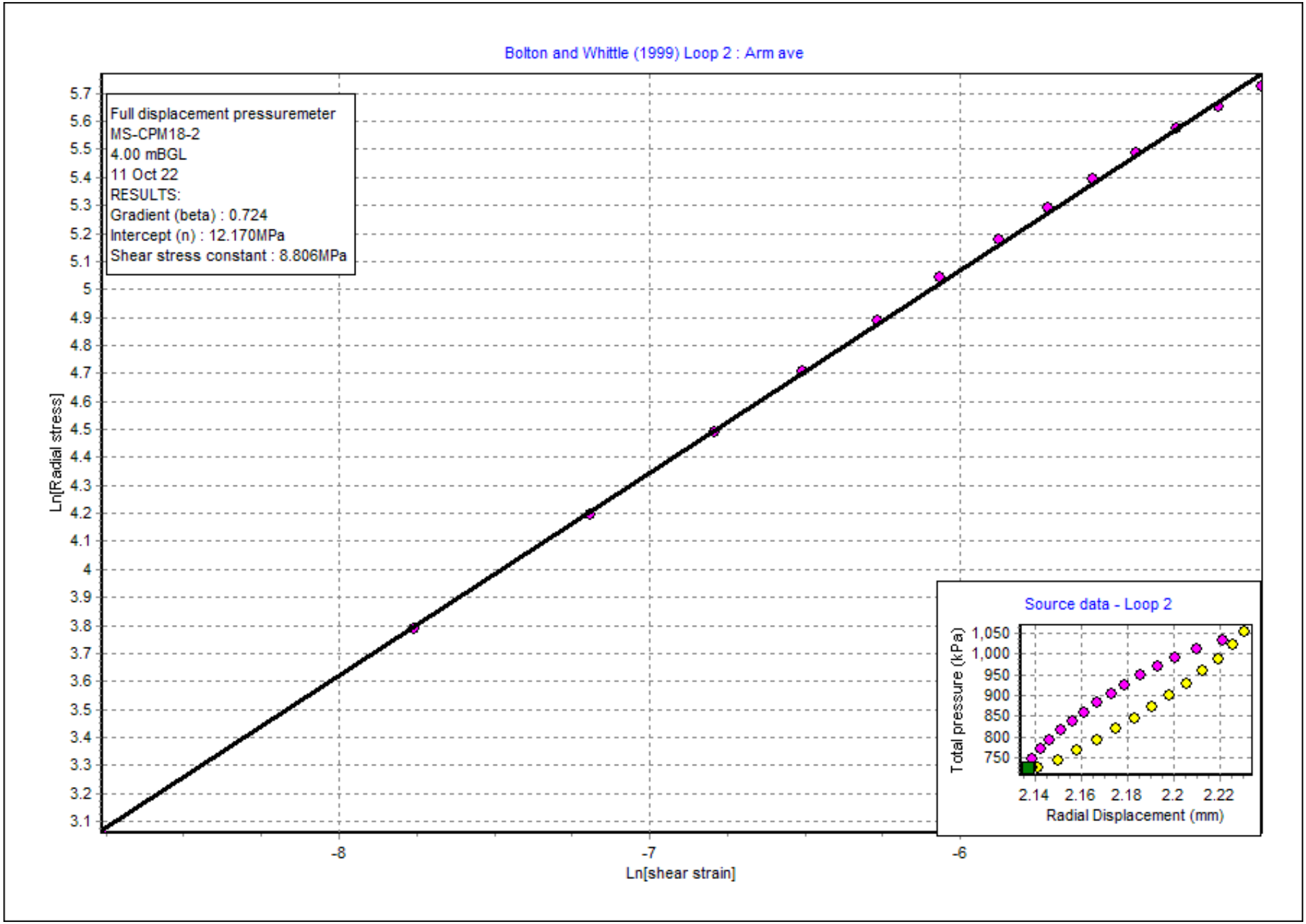

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 46.1MPa
Cycle mid-point:
Cavity strain : 3.718%
Total stress : 682kPa
Size of cycle :
Shear strain : 0.540%
Total stress : 250kPa
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600 590 580 570 560 550 540 530 520
0.83 0.835 0.84 0.845 0.85 0.855 0.86 0.865 0.87 0.875 0.88 0.885 0.89 0.895 0.9 0.905 0.91 0.915 0.92 0.925 0.93 0.935 0.94 0.945 0.95

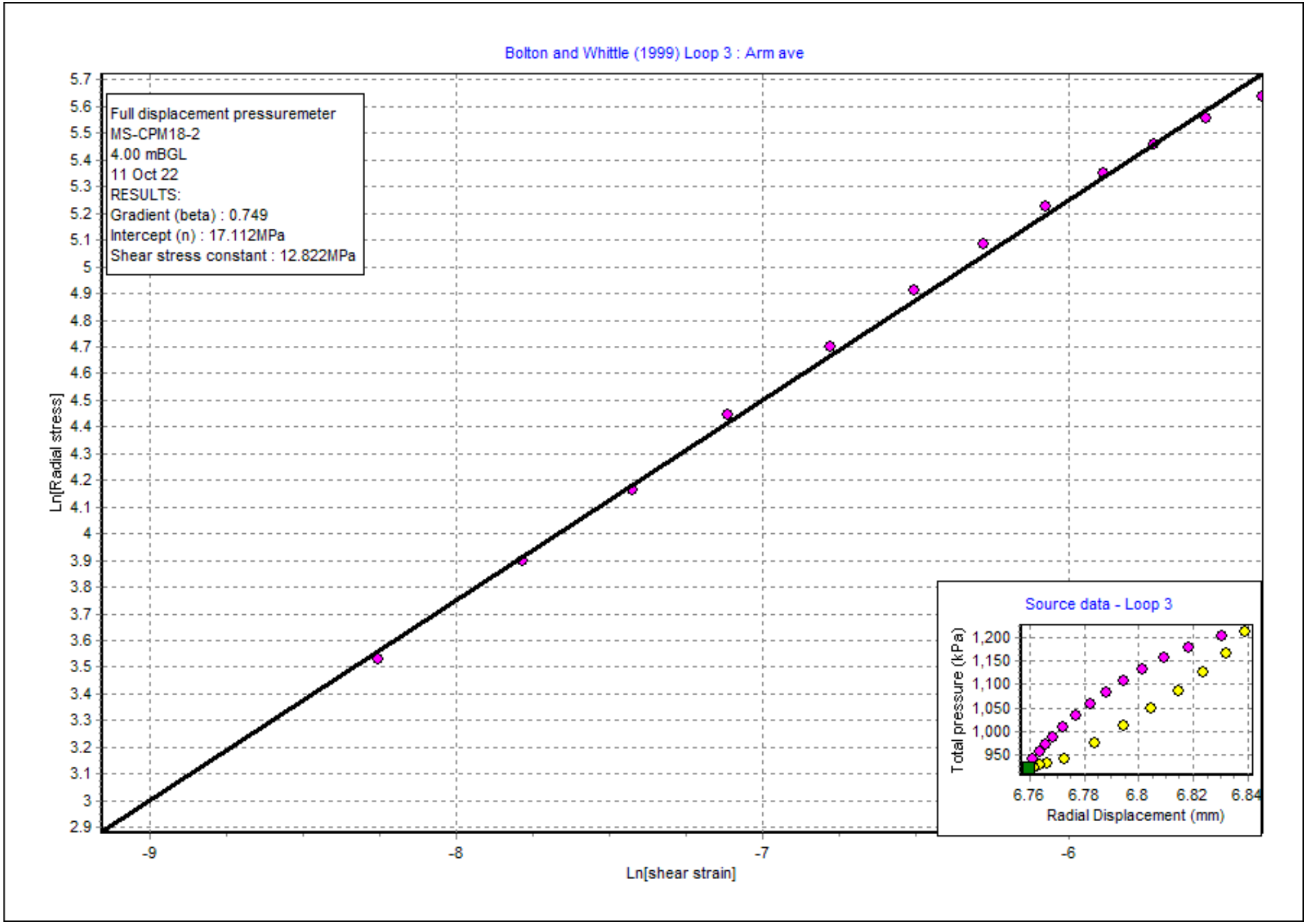

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 44.5MPa
Cycle mid-point:
Cavity strain : 8.892%
Total stress : 890kPa
Size of cycle :
Shear strain : 0.735%
Total stress : 328kPa
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
800
780
760
740
720
2.06
2.07
2.08
2.09
2.1
2.11
2.12
2.13
2.14
2.15
2.16
2.17
2.18
2.19
2.2
2.21
2.22
2.23
2.24
2.25
2.26
2.27
2.28
2.29

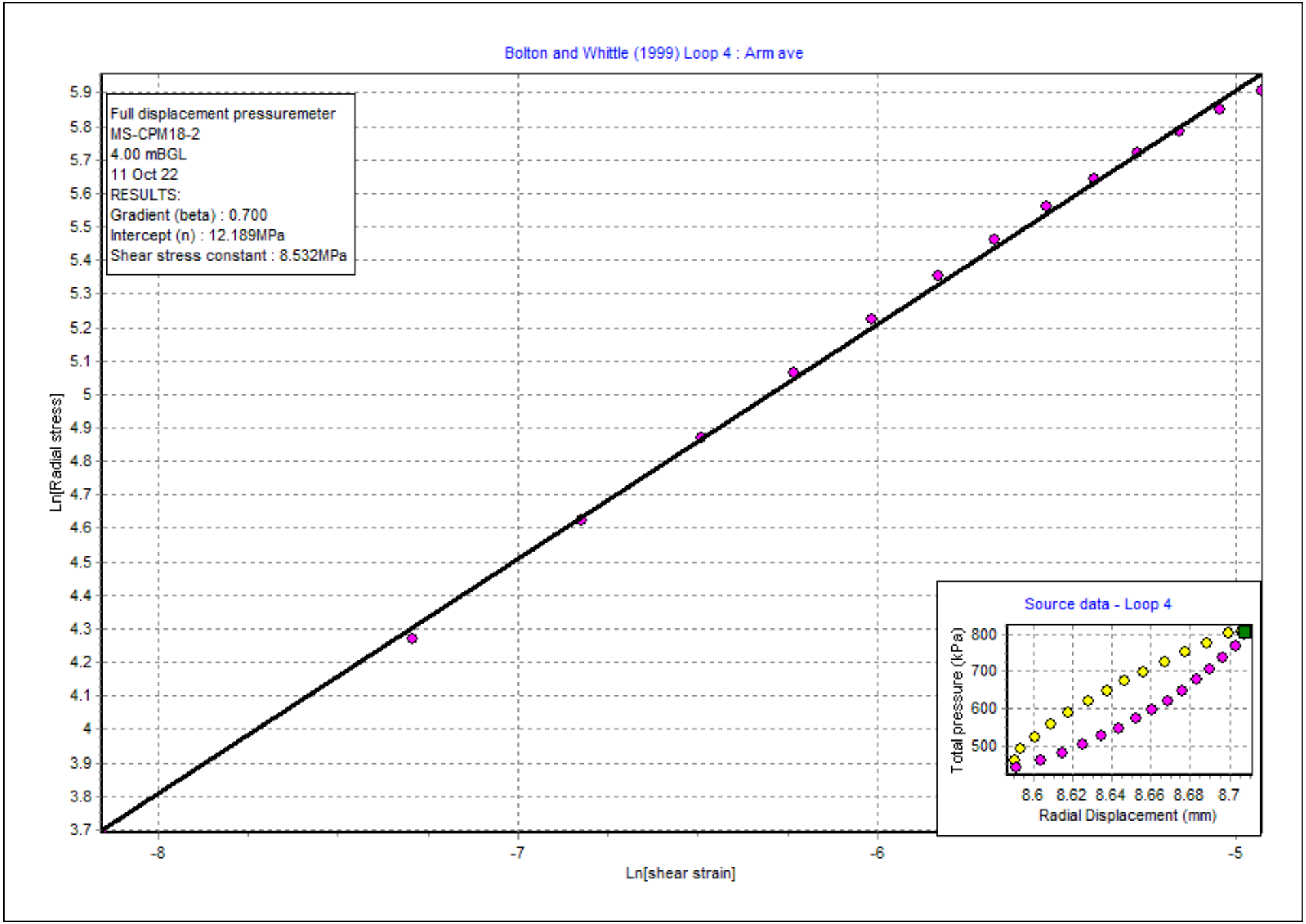

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 55.3MPa
Cycle mid-point:
Cavity strain : 25.416%
Total stress : 1068kPa
Size of cycle :
Shear strain : 0.533%
Total stress : 296kPa
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
6.7
6.71
6.72
6.73
6.74
6.75
6.76
6.77
6.78
6.79
6.8
6.81
6.82
6.83
6.84
6.85
6.86
6.87
6.88
6.89
6.9

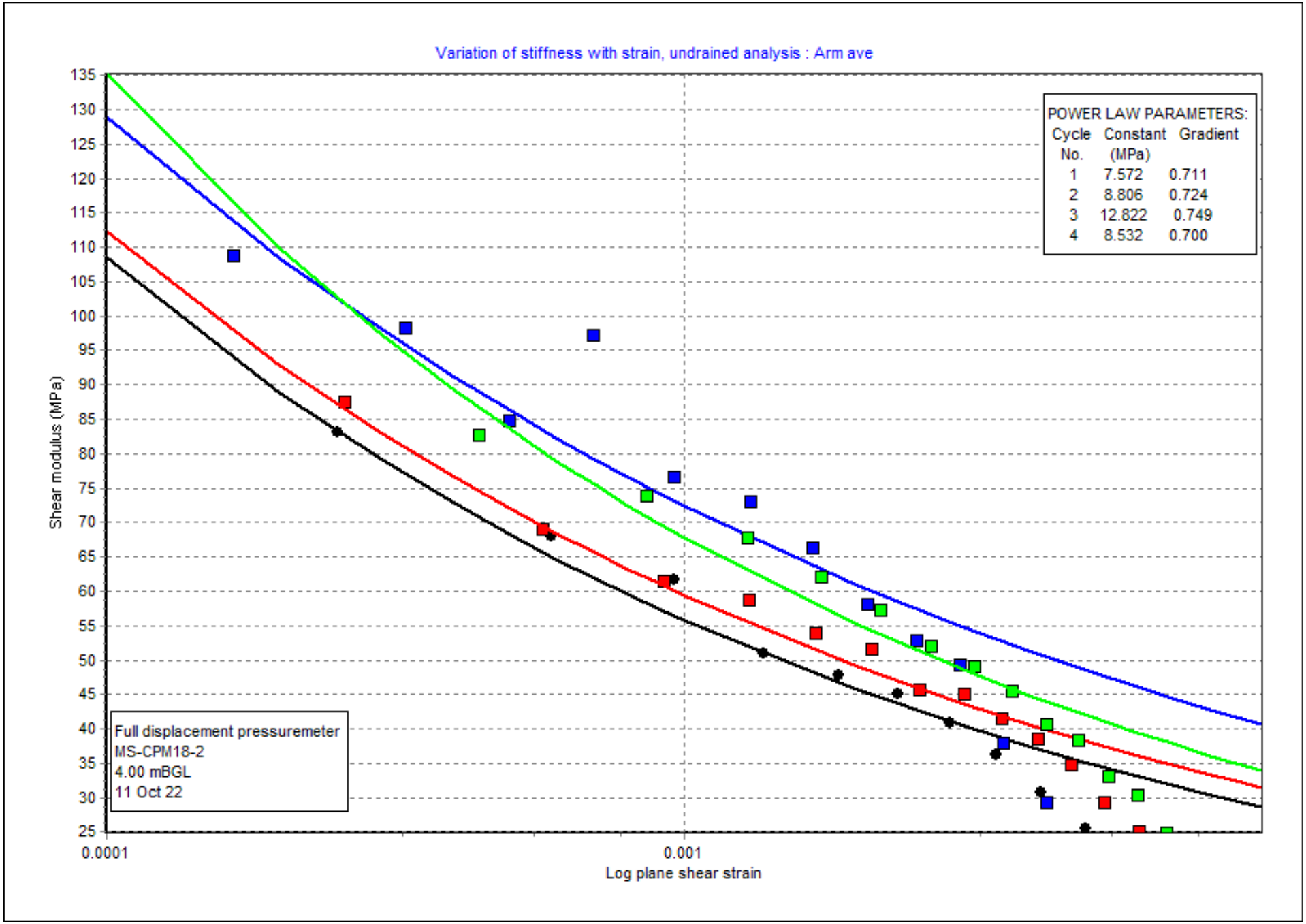

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 46.7MPa
Cycle mid-point:
Cavity strain : 31.343%
Total stress : 631kPa
Size of cycle :
Shear strain : 0.729%
Total stress : 342kPa
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
860
840
820
800
780
760
740
720
700
680
660
640
620
600
580
560
540
520
500
480
460
440
420
400
380
8.56
8.57
8.58
8.59
8.6
8.61
8.62
8.63
8.64
8.65
8.66
8.67
8.68
8.69
8.7
8.71
8.72
8.73
8.74
8.75

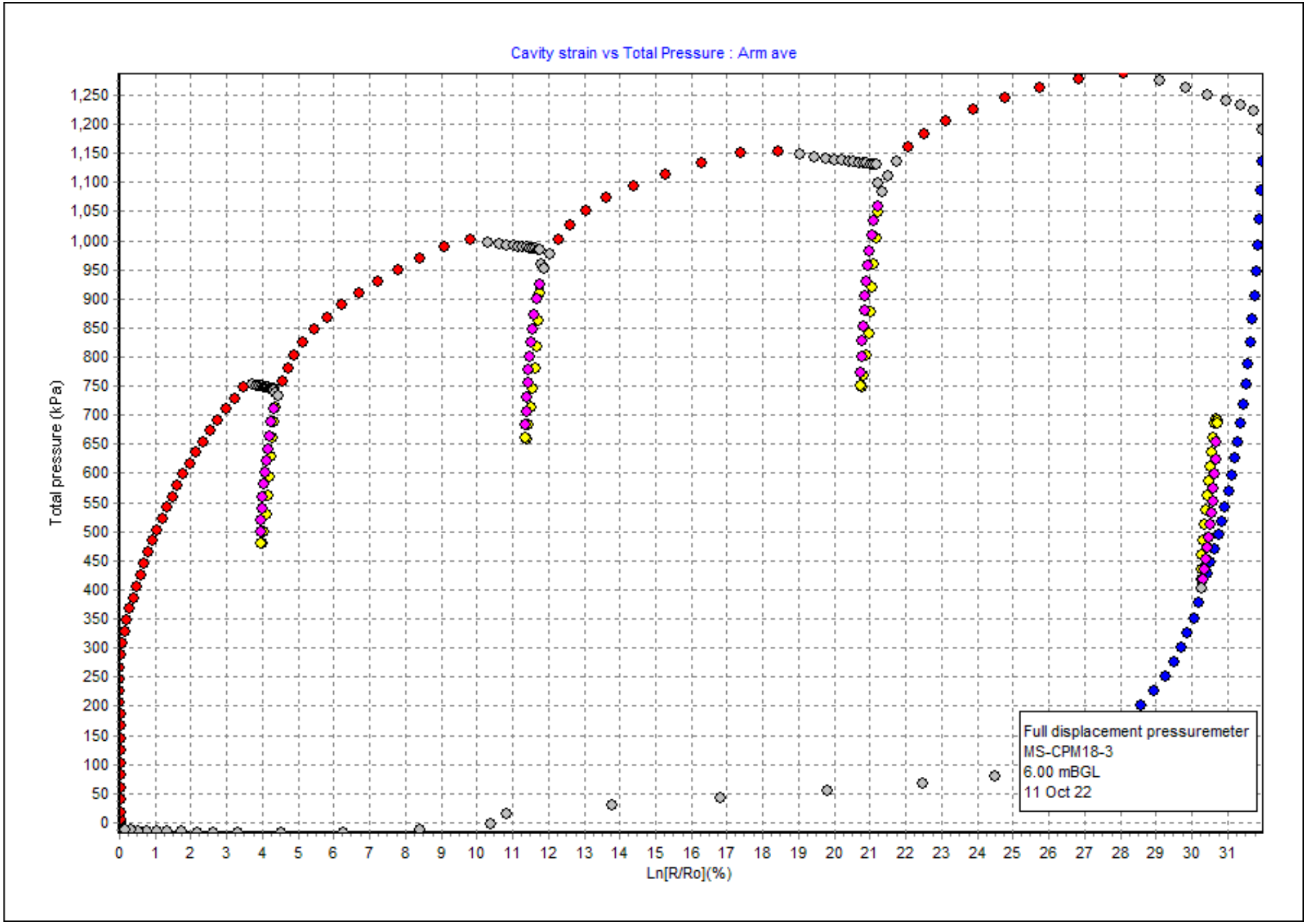

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.711
Intercept (n) : 10.652MPa
Shear stress constant : 7.572MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

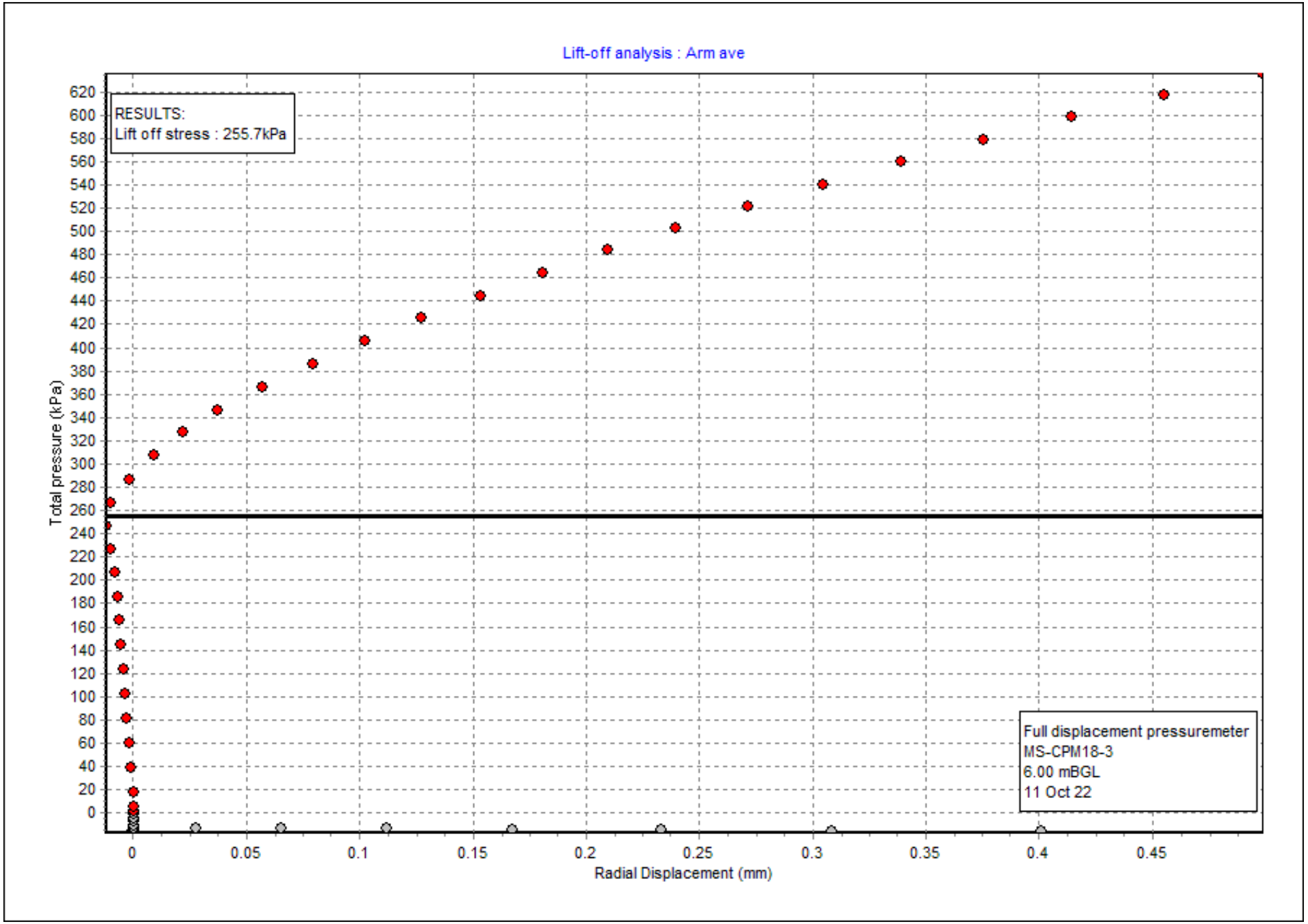

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.724
Intercept (n) : 12.170MPa
Shear stress constant : 8.806MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

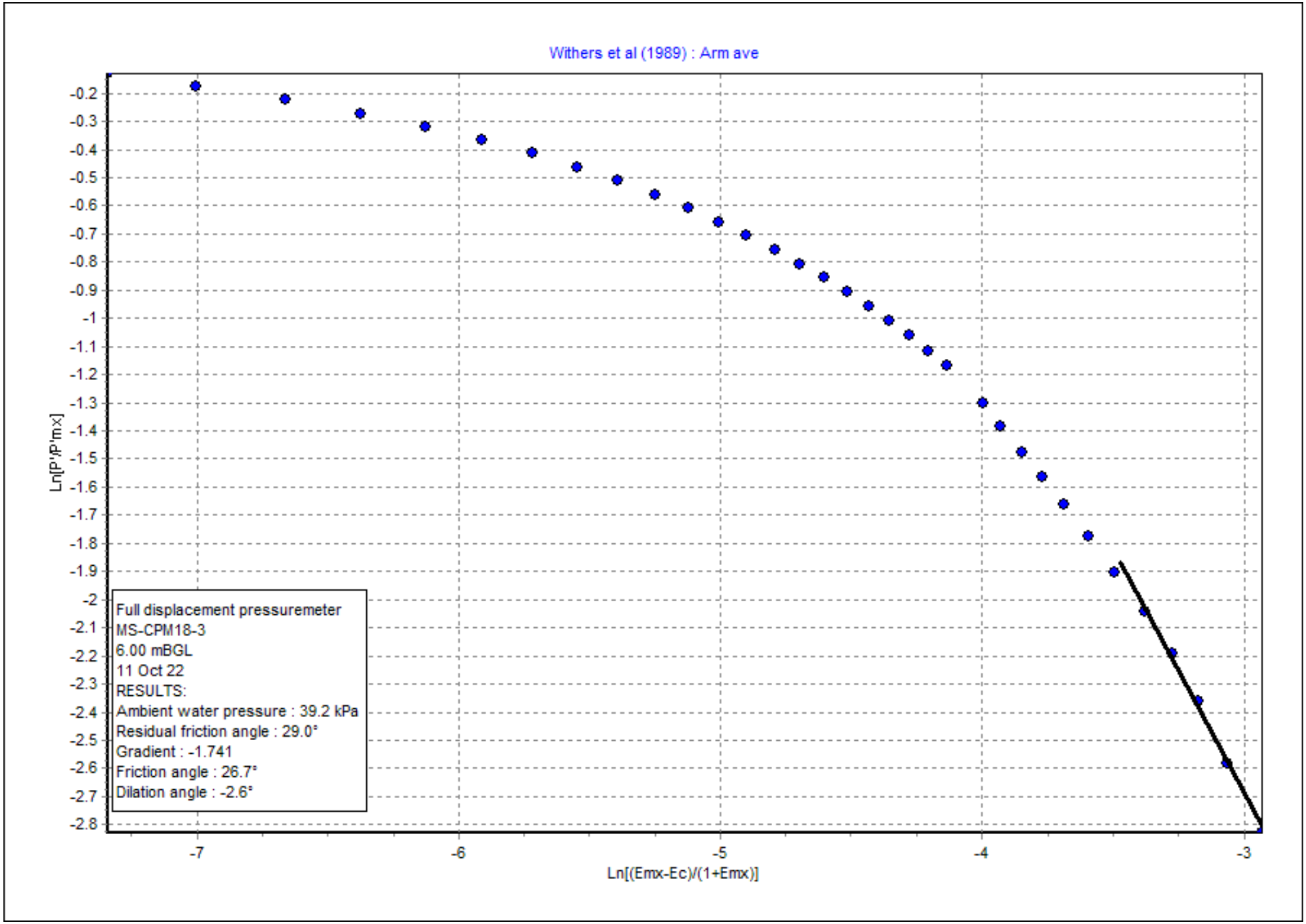

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.749
Intercept (n) : 17.112MPa
Shear stress constant : 12.822MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

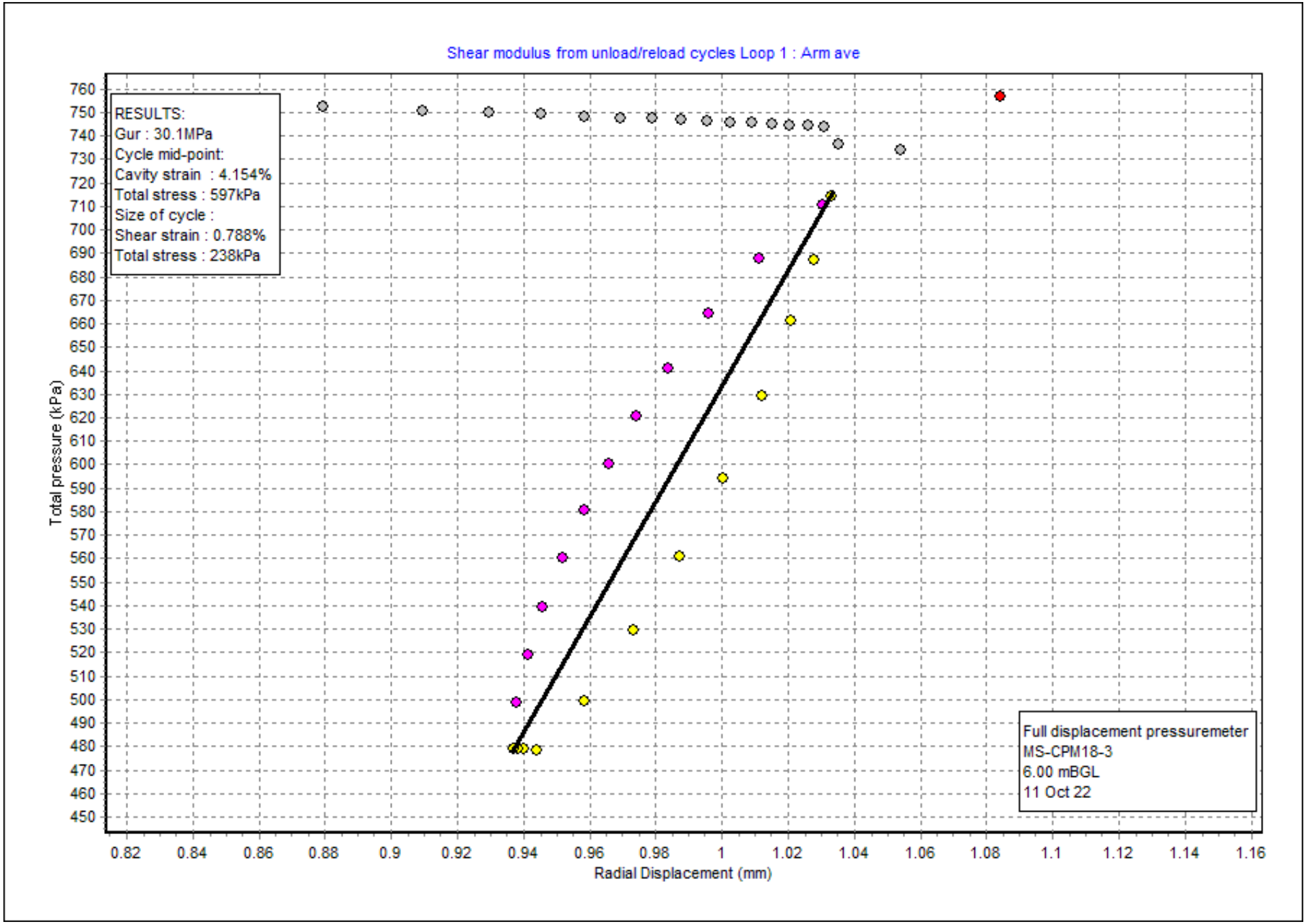

Bolton and Whittle (1999) Loop 4 : Arm ave
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.700
Intercept (n) : 12.189MPa
Shear stress constant : 8.532MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 4
Total pressure (kPa)
Radial Displacement (mm)

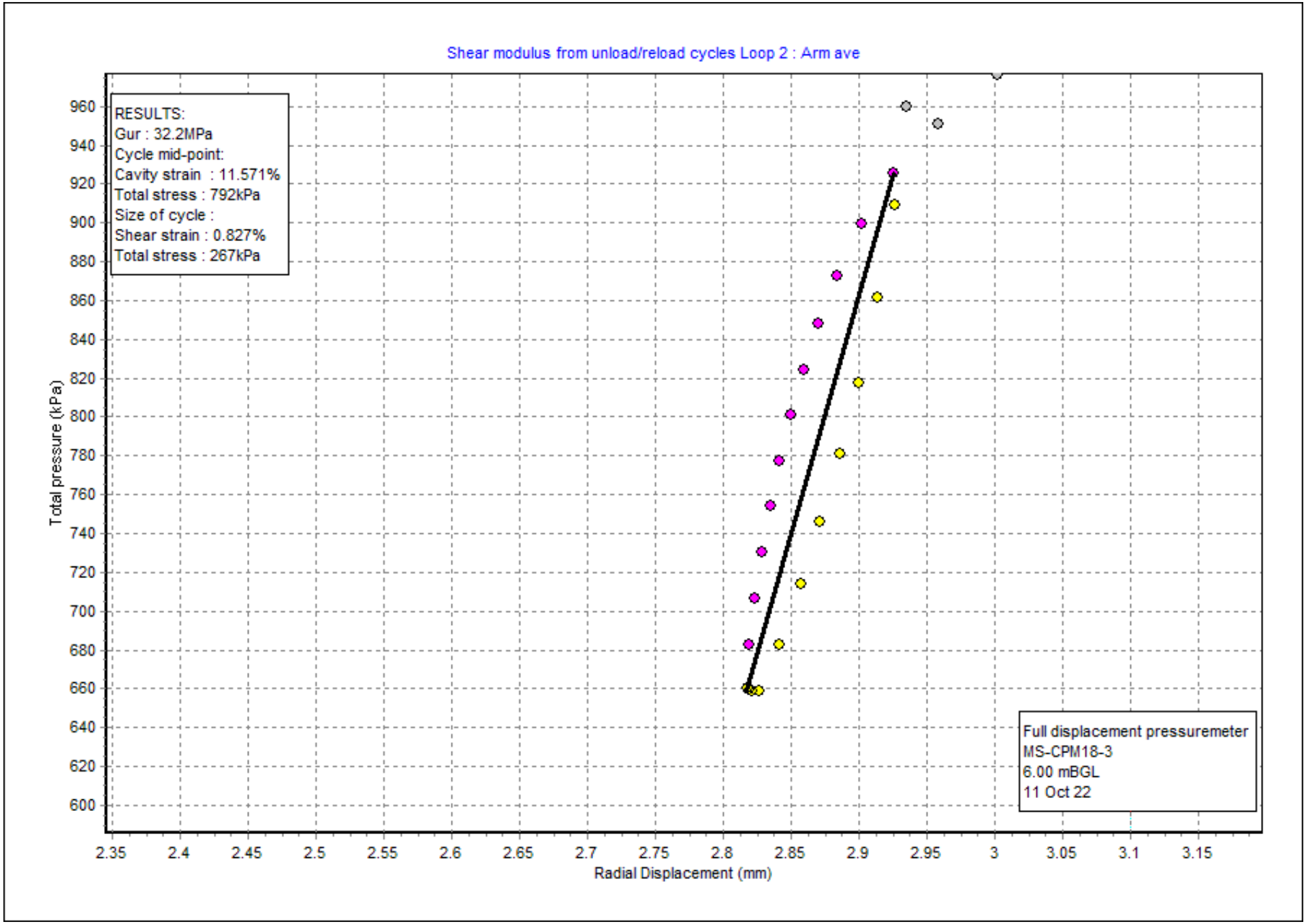

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 7.572 | 0.711
2 | 8.806 | 0.724
3 | 12.822 | 0.749
4 | 8.532 | 0.700
Full displacement pressuremeter
MS-CPM18-2
4.00 mBGL
11 Oct 22
Shear modulus (MPa)
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
0.0001
0.001
Log plane shear strain

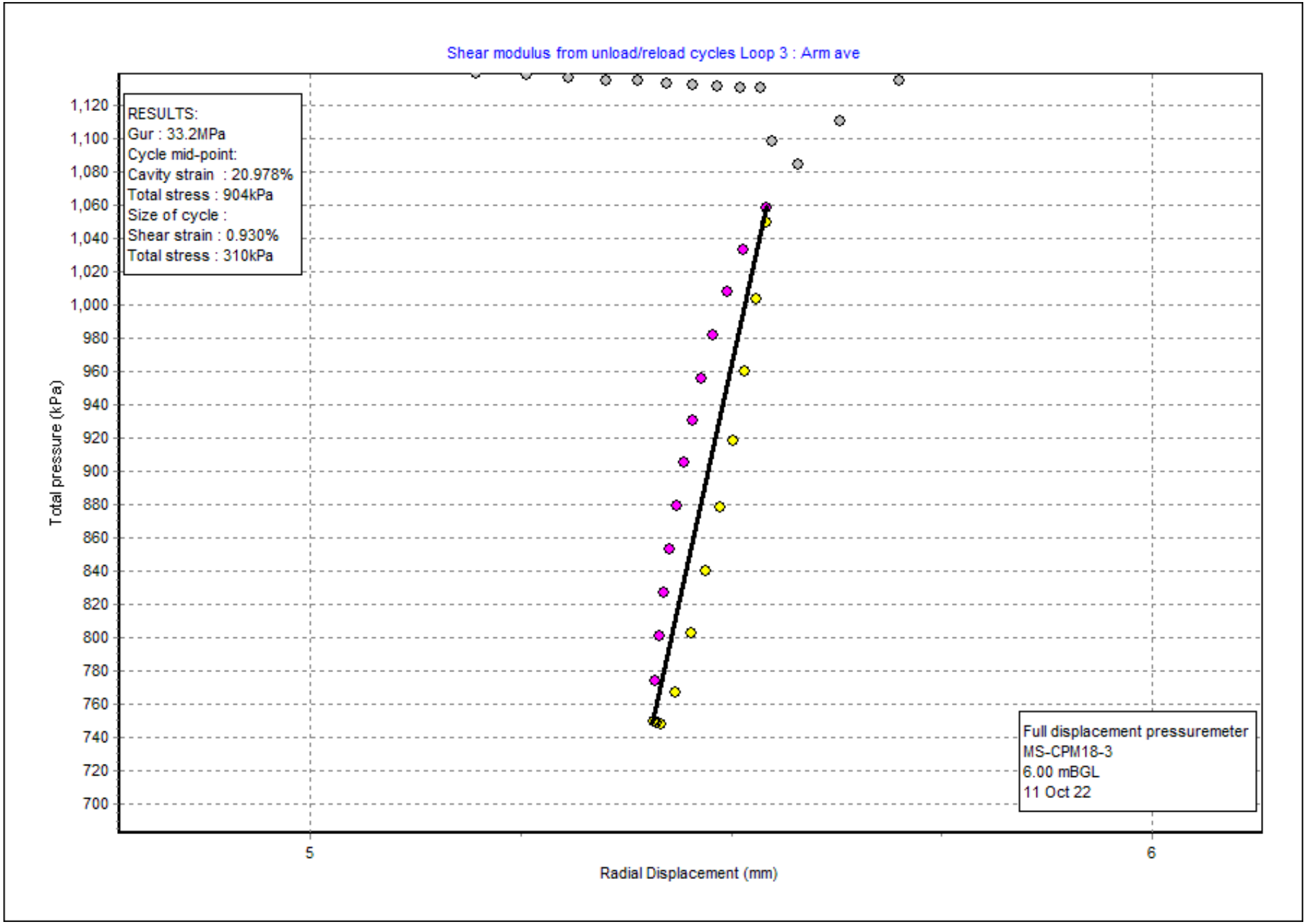

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22

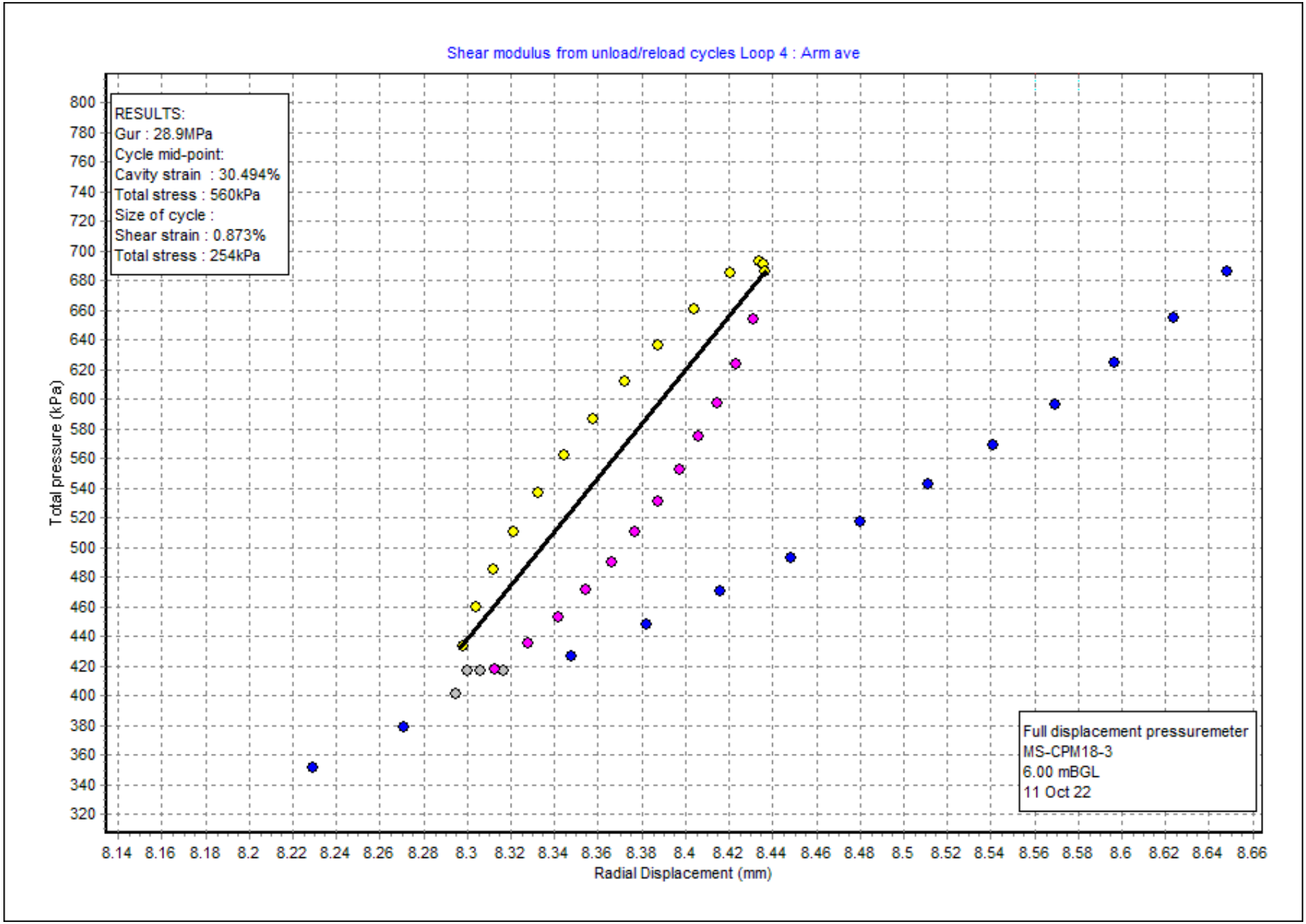

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 255.7kPa
Total pressure (kPa)
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22

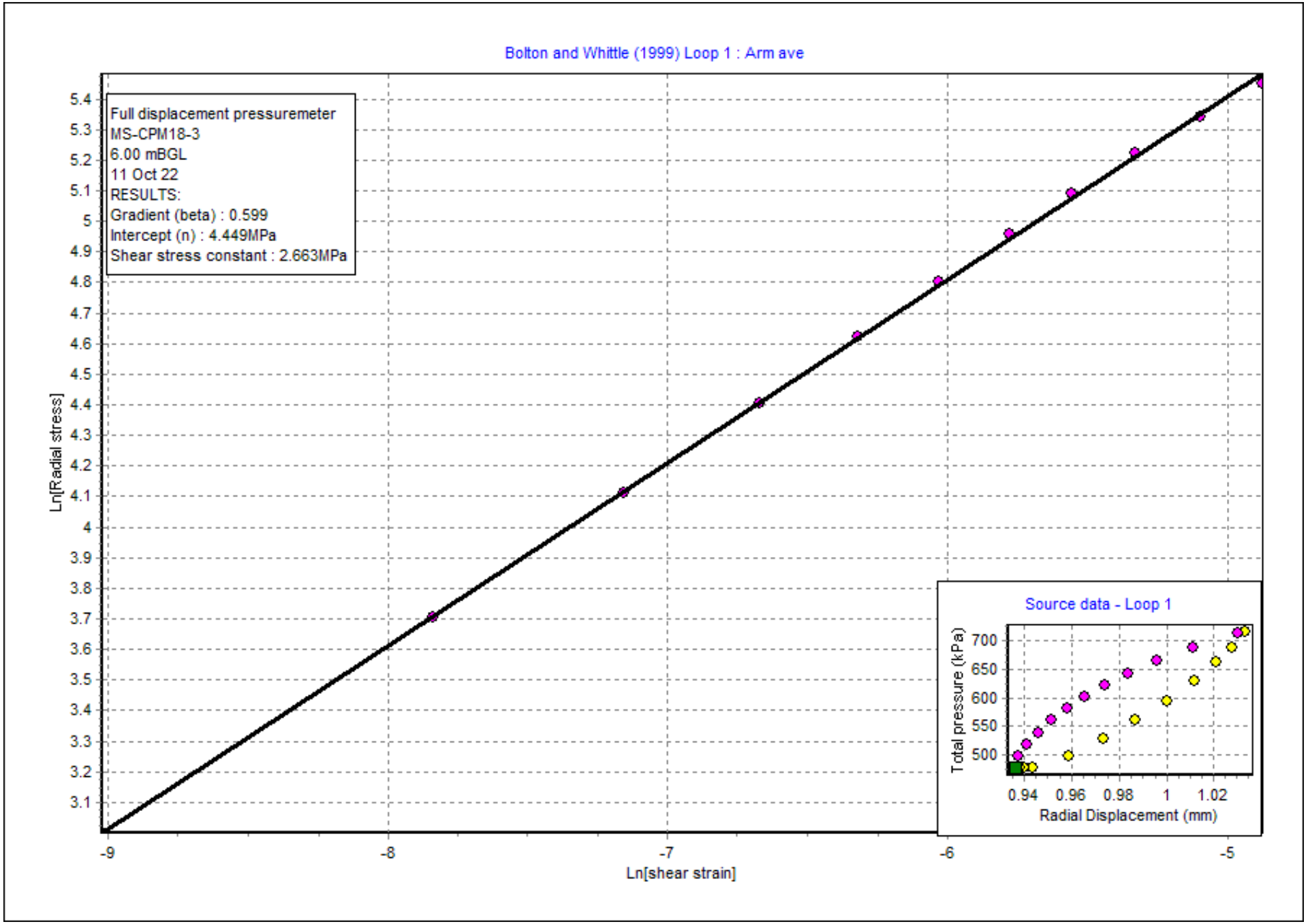

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-2.8
-7
-6
-5
-4
-3
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
RESULTS:
Ambient water pressure : 39.2 kPa
Residual friction angle : 29.0°
Gradient : -1.741
Friction angle : 26.7°
Dilation angle : -2.6°

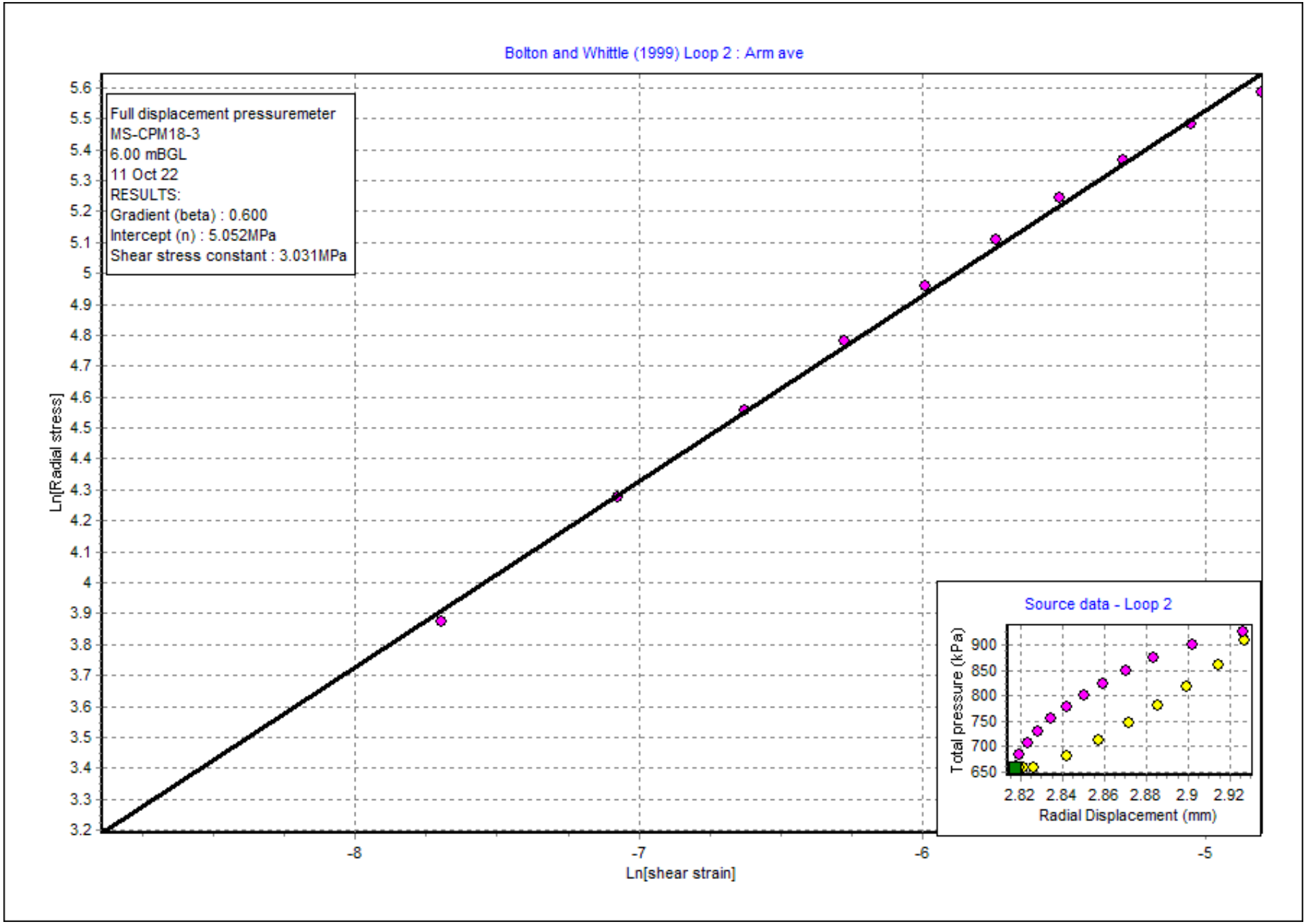

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 30.1MPa
Cycle mid-point:
Cavity strain : 4.154%
Total stress : 597kPa
Size of cycle :
Shear strain : 0.788%
Total stress : 238kPa
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
540
530
520
510
500
490
480
470
460
450
0.82
0.84
0.86
0.88
0.9
0.92
0.94
0.96
0.98
1
1.02
1.04
1.06
1.08
1.1
1.12
1.14
1.16

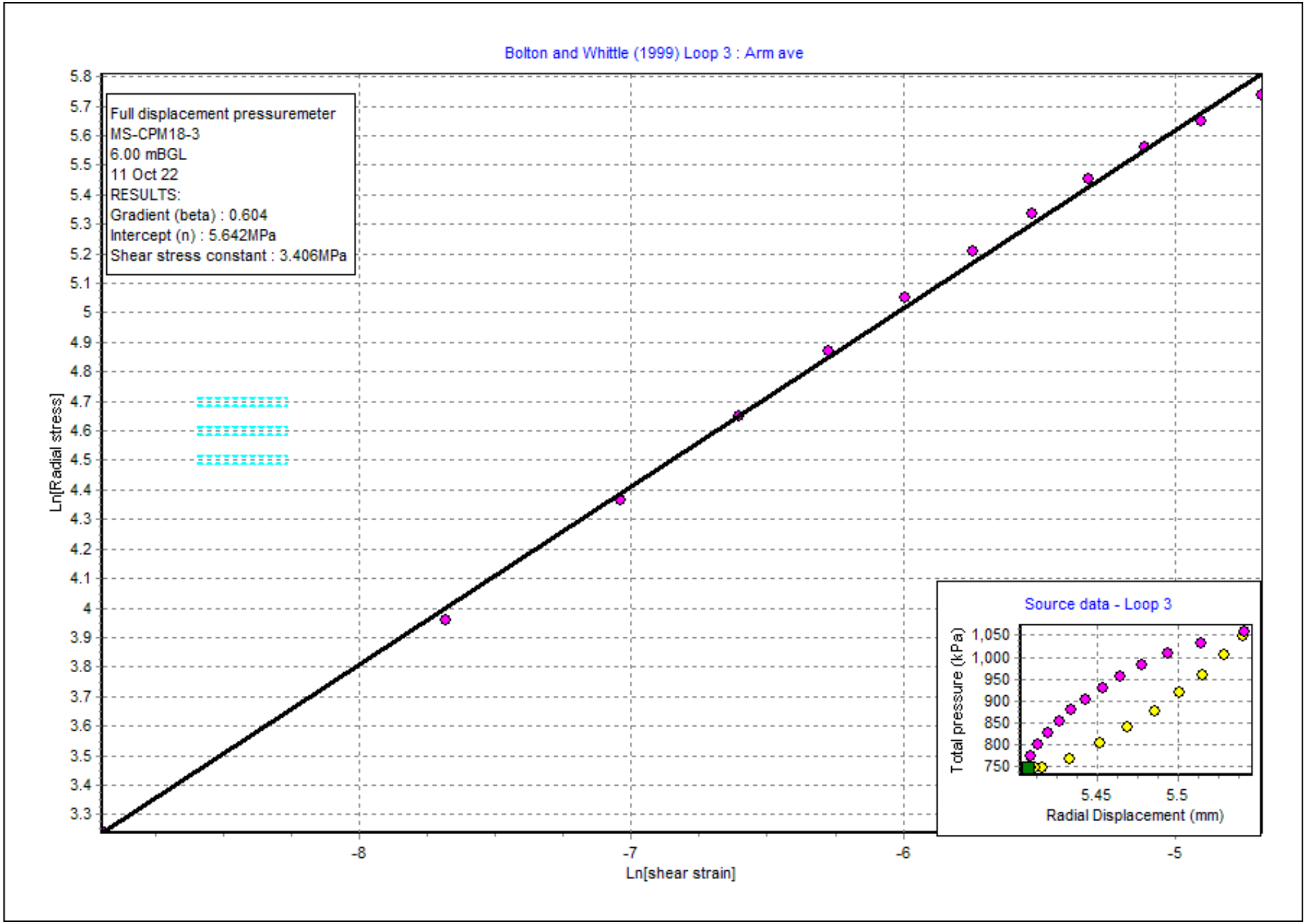

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 32.2MPa
Cycle mid-point:
Cavity strain : 11.571%
Total stress : 792kPa
Size of cycle :
Shear strain : 0.827%
Total stress : 267kPa
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
Total pressure (kPa)
960
940
920
900
880
860
840
820
800
780
760
740
720
700
680
660
640
620
600
Radial Displacement (mm)
2.35
2.4
2.45
2.5
2.55
2.6
2.65
2.7
2.75
2.8
2.85
2.9
2.95
3
3.05
3.1
3.15

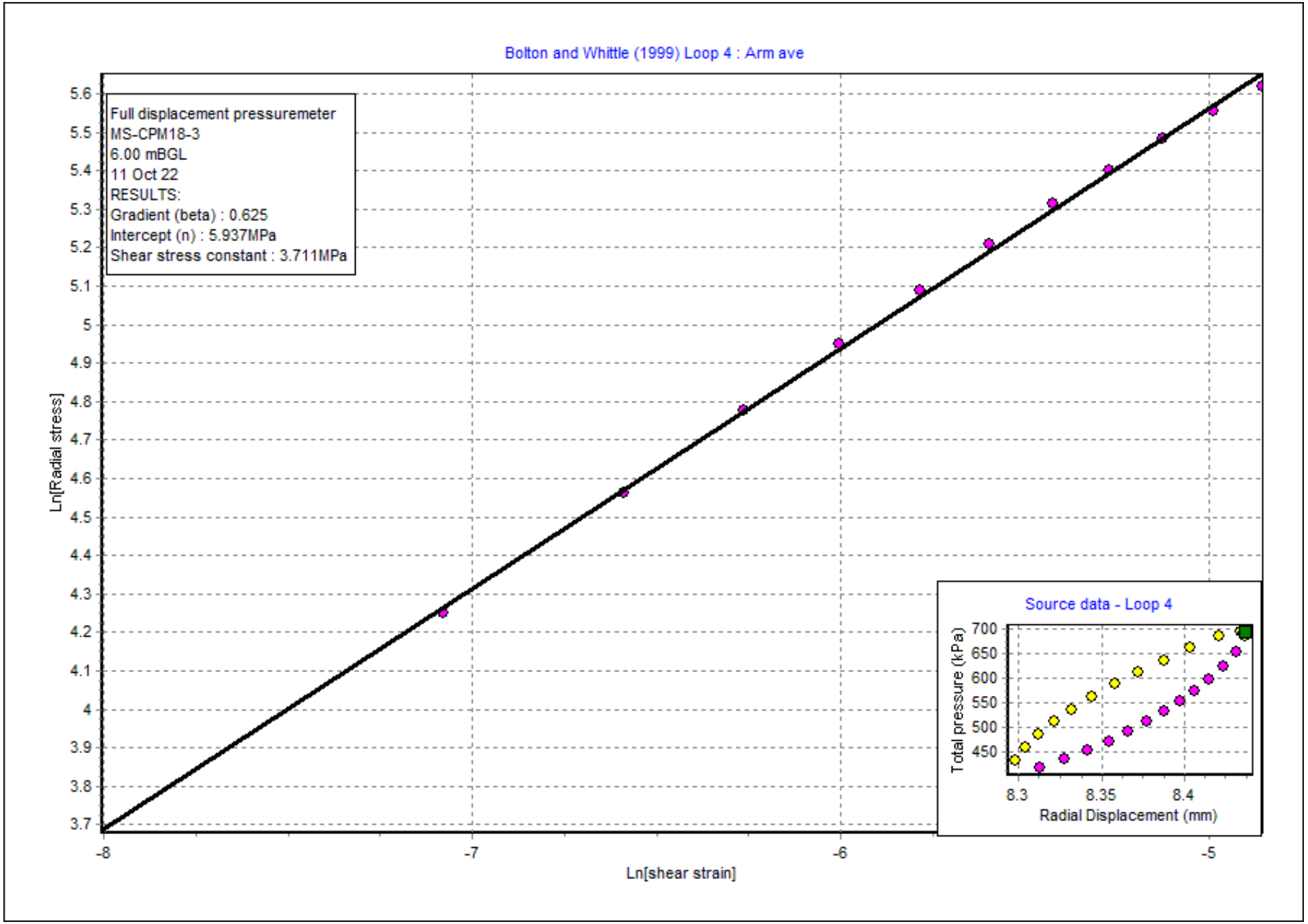

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 33.2MPa
Cycle mid-point:
Cavity strain : 20.978%
Total stress : 904kPa
Size of cycle :
Shear strain : 0.930%
Total stress : 310kPa
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
Total pressure (kPa)
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
800
780
760
740
720
700
5
6
Radial Displacement (mm)

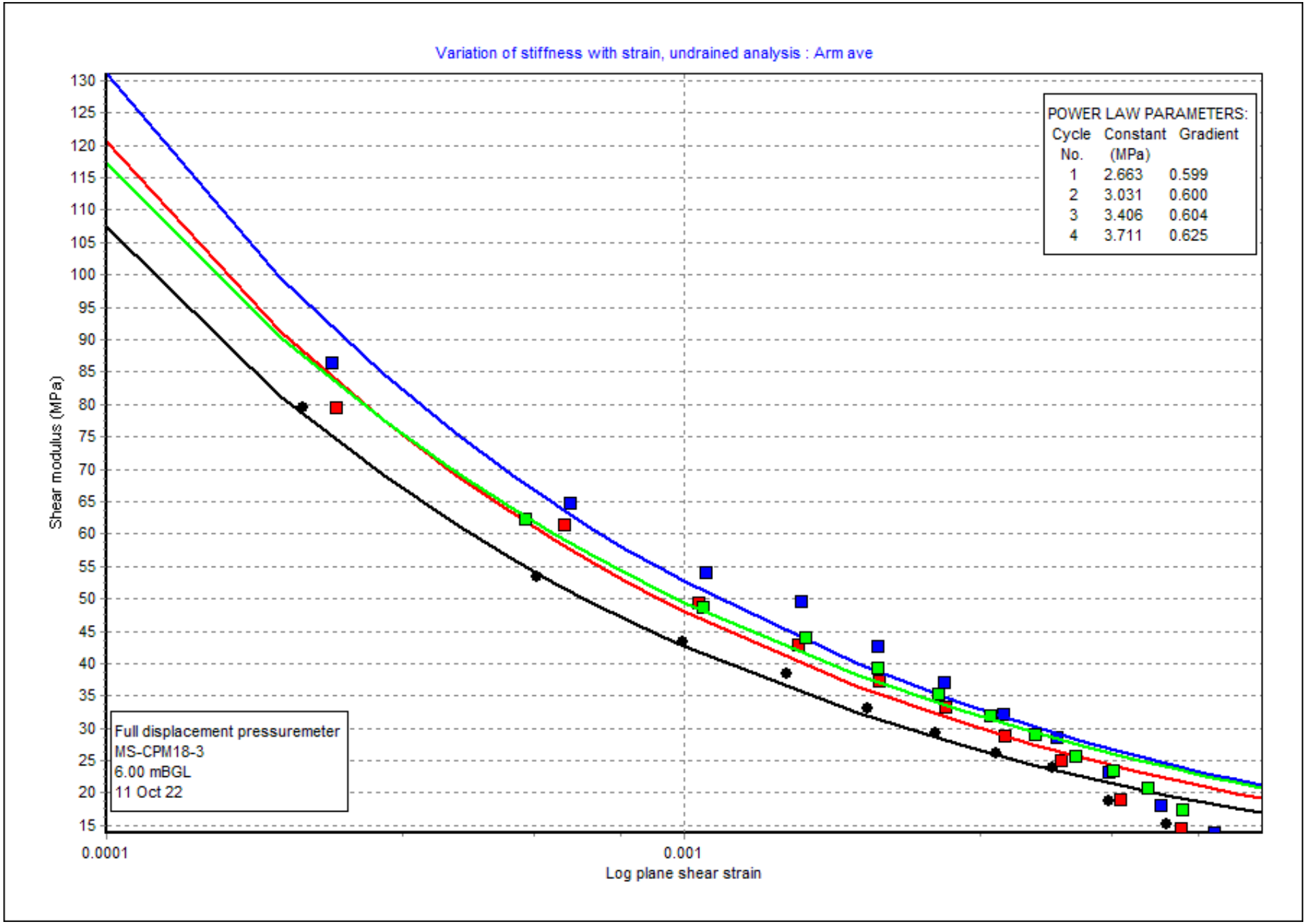

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 28.9MPa
Cycle mid-point:
Cavity strain : 30.494%
Total stress : 560kPa
Size of cycle :
Shear strain : 0.873%
Total stress : 254kPa
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
800
780
760
740
720
700
680
660
640
620
600
580
560
540
520
500
480
460
440
420
400
380
360
340
320
8.14
8.16
8.18
8.2
8.22
8.24
8.26
8.28
8.3
8.32
8.34
8.36
8.38
8.4
8.42
8.44
8.46
8.48
8.5
8.52
8.54
8.56
8.58
8.6
8.62
8.64
8.66

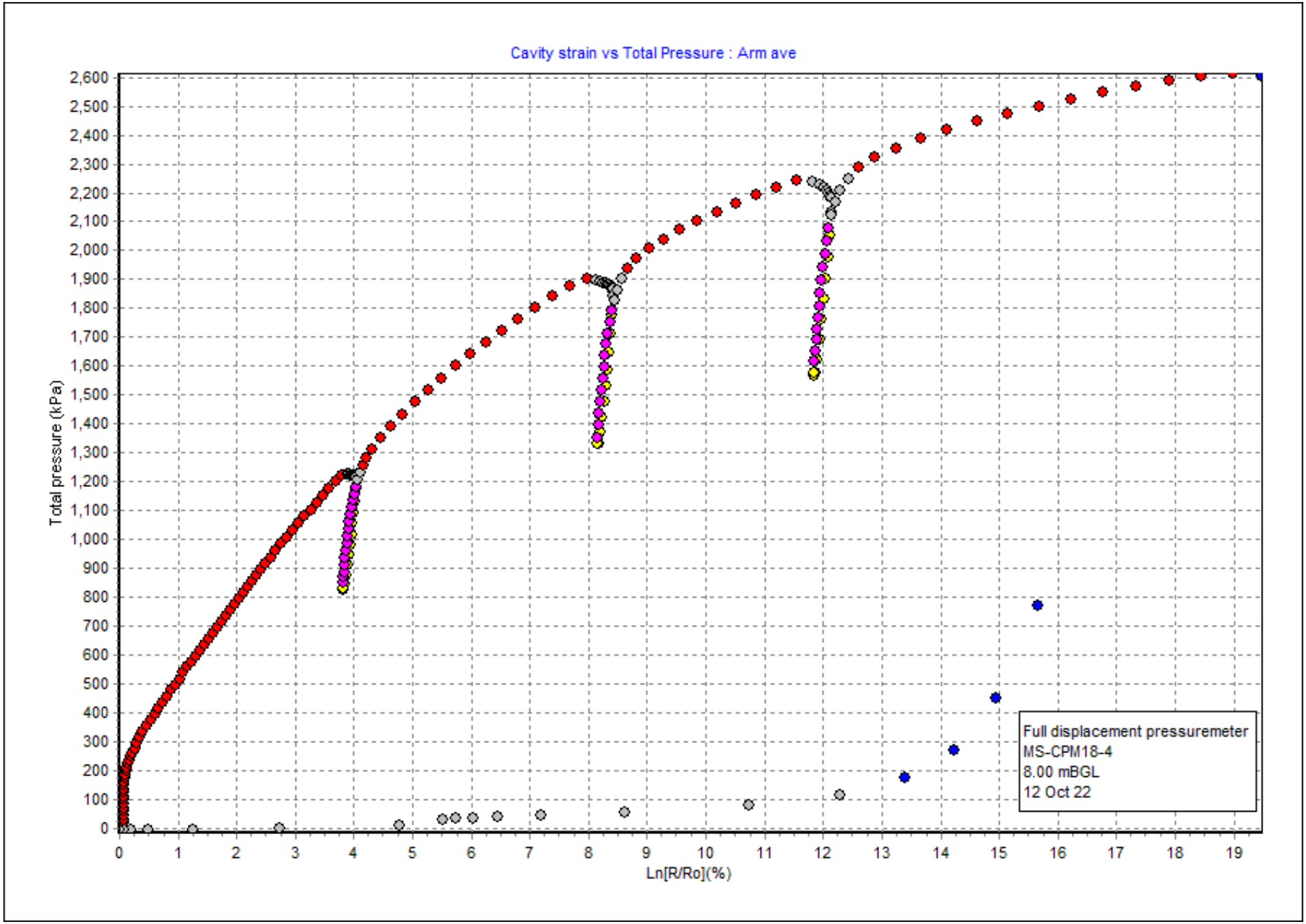

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.599
Intercept (n) : 4.449MPa
Shear stress constant : 2.663MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

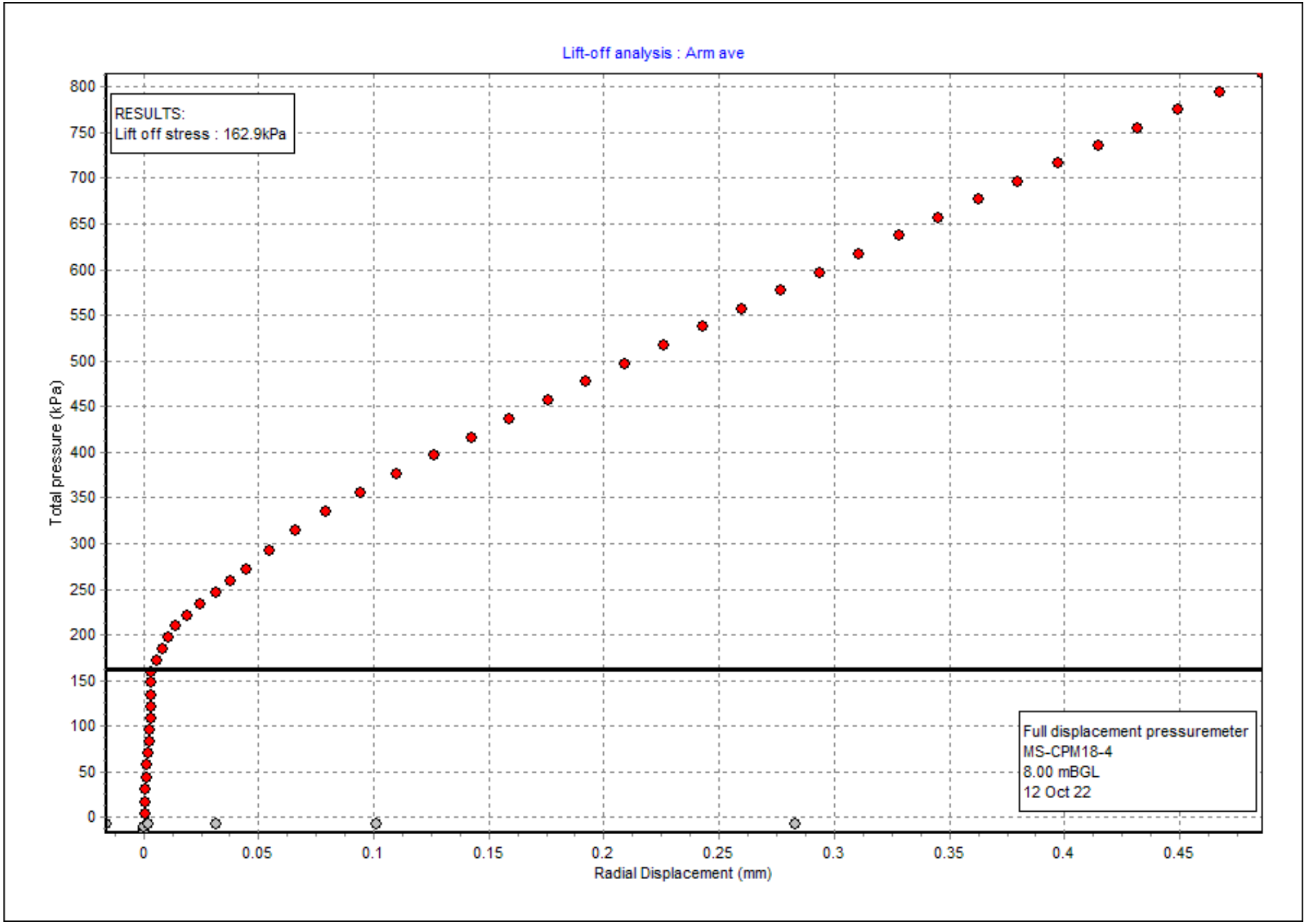

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.600
Intercept (n) : 5.052MPa
Shear stress constant : 3.031MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

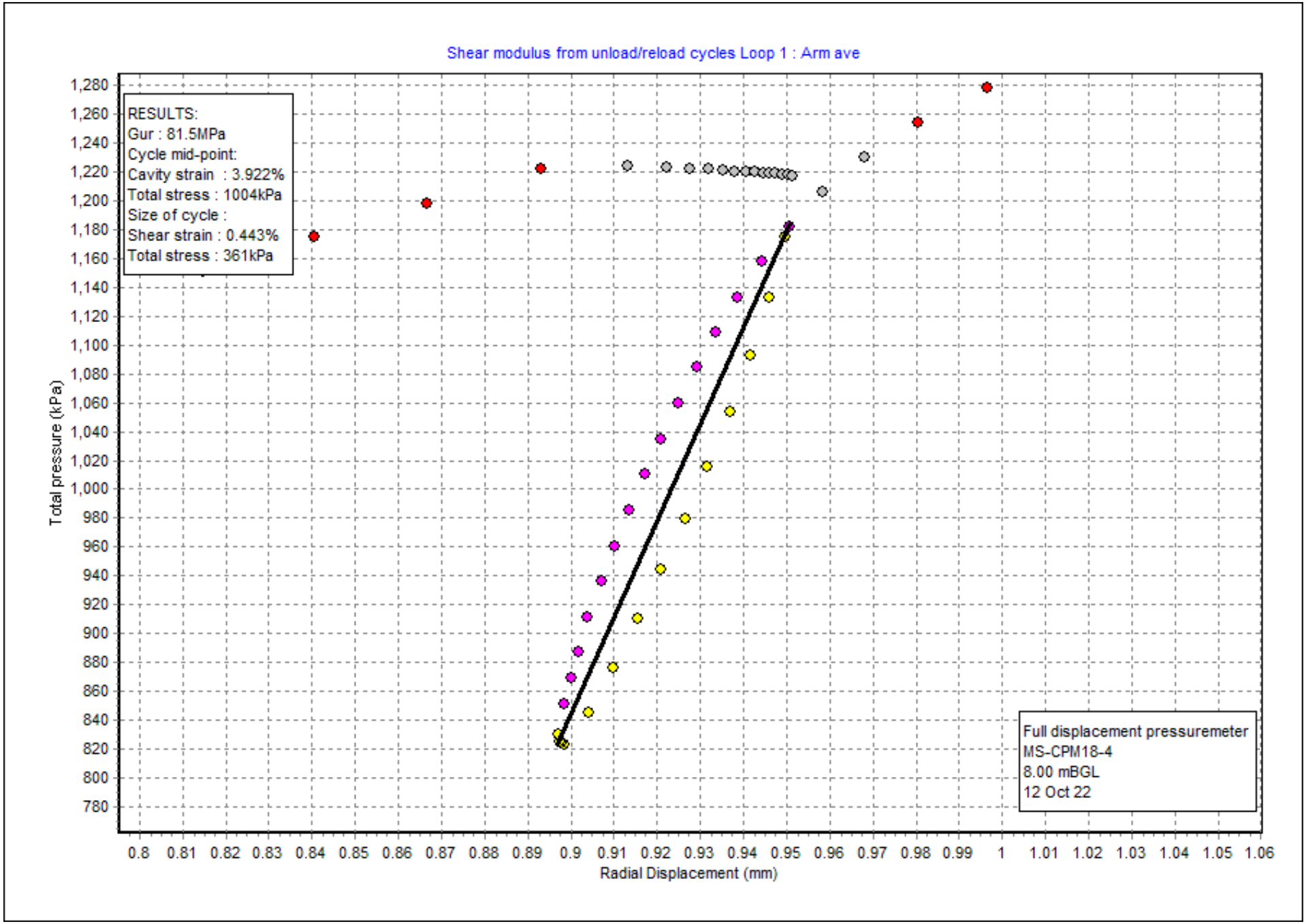

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.604
Intercept (n) : 5.642MPa
Shear stress constant : 3.406MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

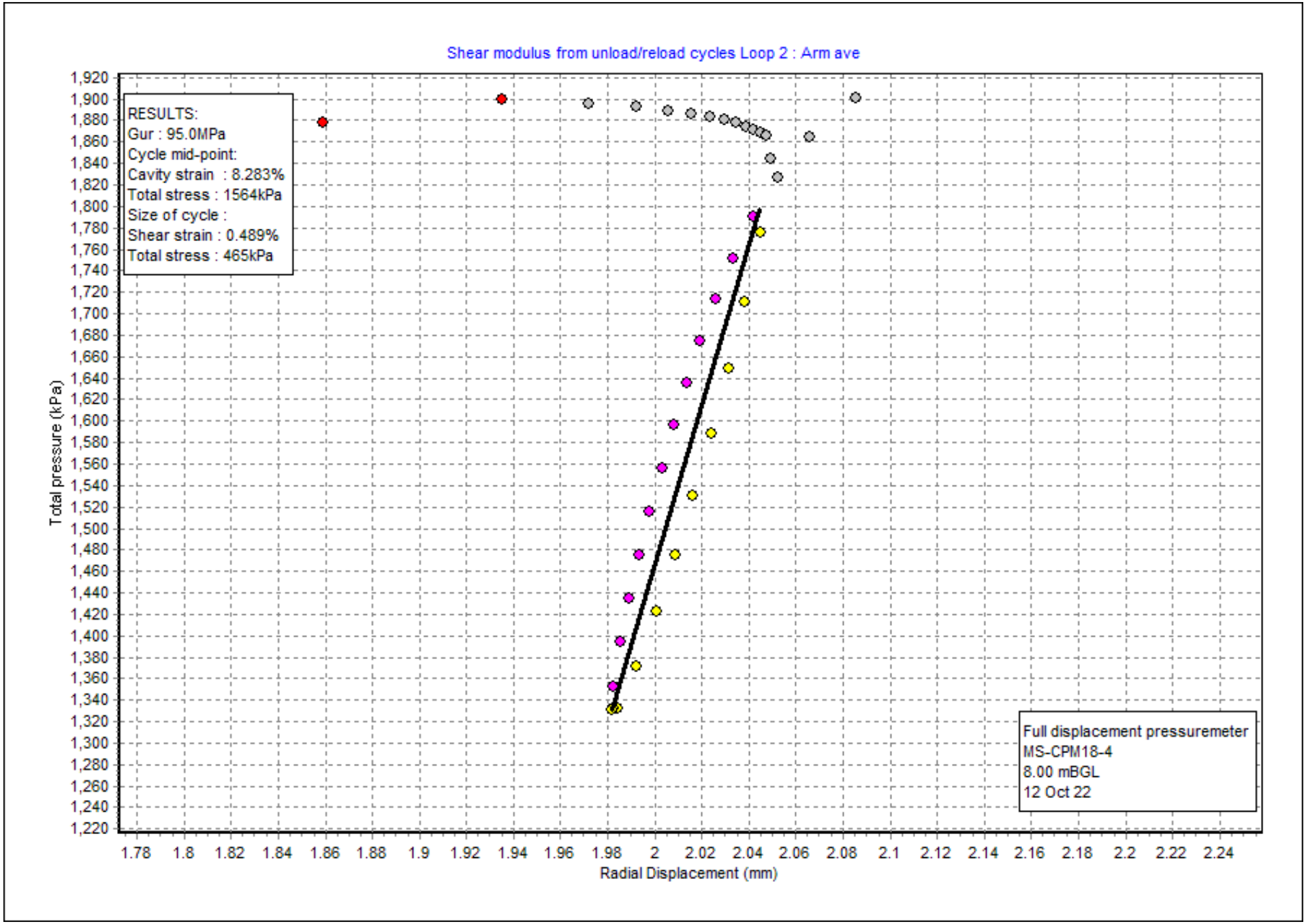

Bolton and Whittle (1999) Loop 4 : Arm ave
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
RESULTS:
Gradient (beta) : 0.625
Intercept (n) : 5.937MPa
Shear stress constant : 3.711MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 4
Total pressure (kPa)
Radial Displacement (mm)

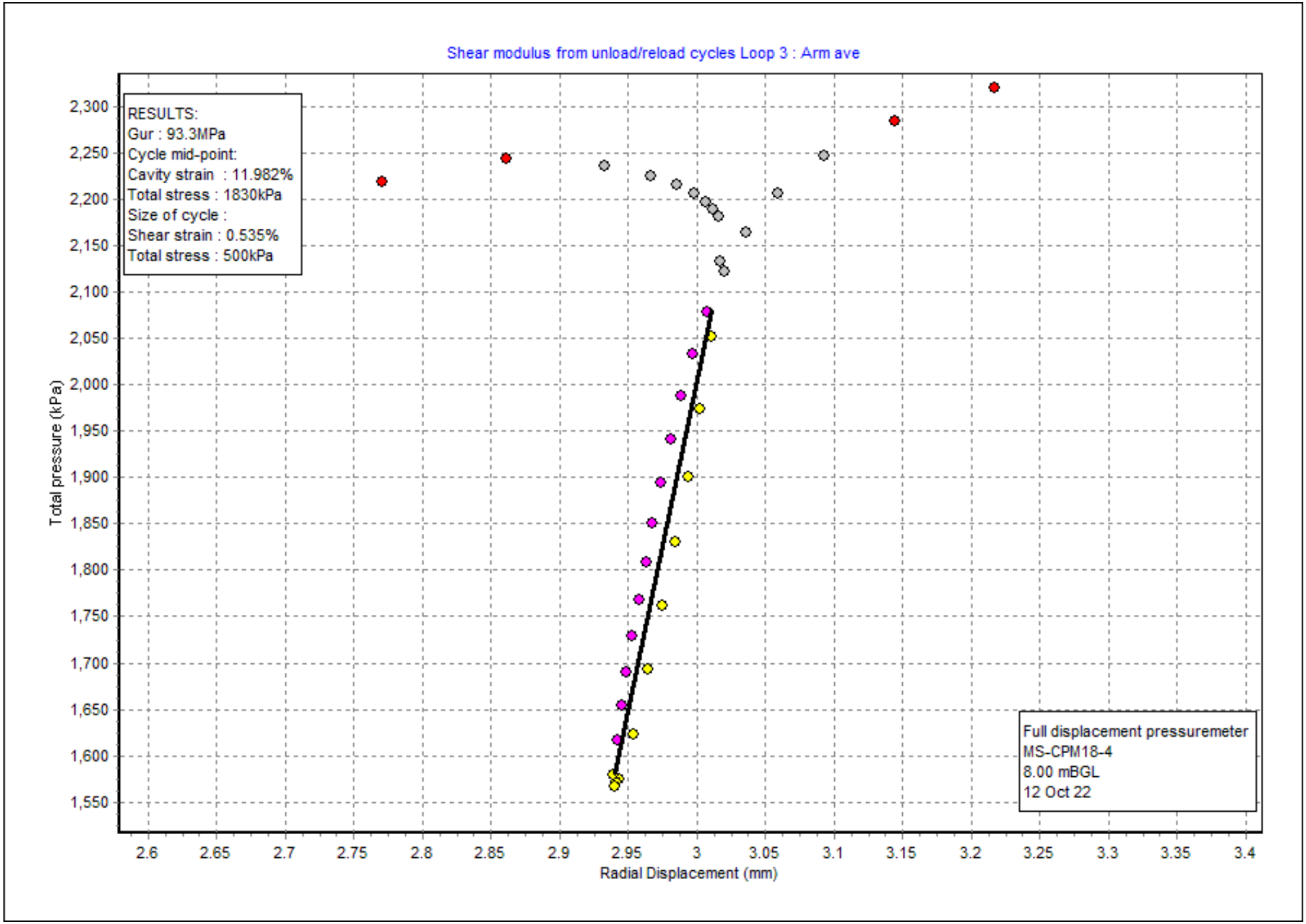

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 2.663 | 0.599
2 | 3.031 | 0.600
3 | 3.406 | 0.604
4 | 3.711 | 0.625
Full displacement pressuremeter
MS-CPM18-3
6.00 mBGL
11 Oct 22
Shear modulus (MPa)
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
0.0001
0.001
Log plane shear strain

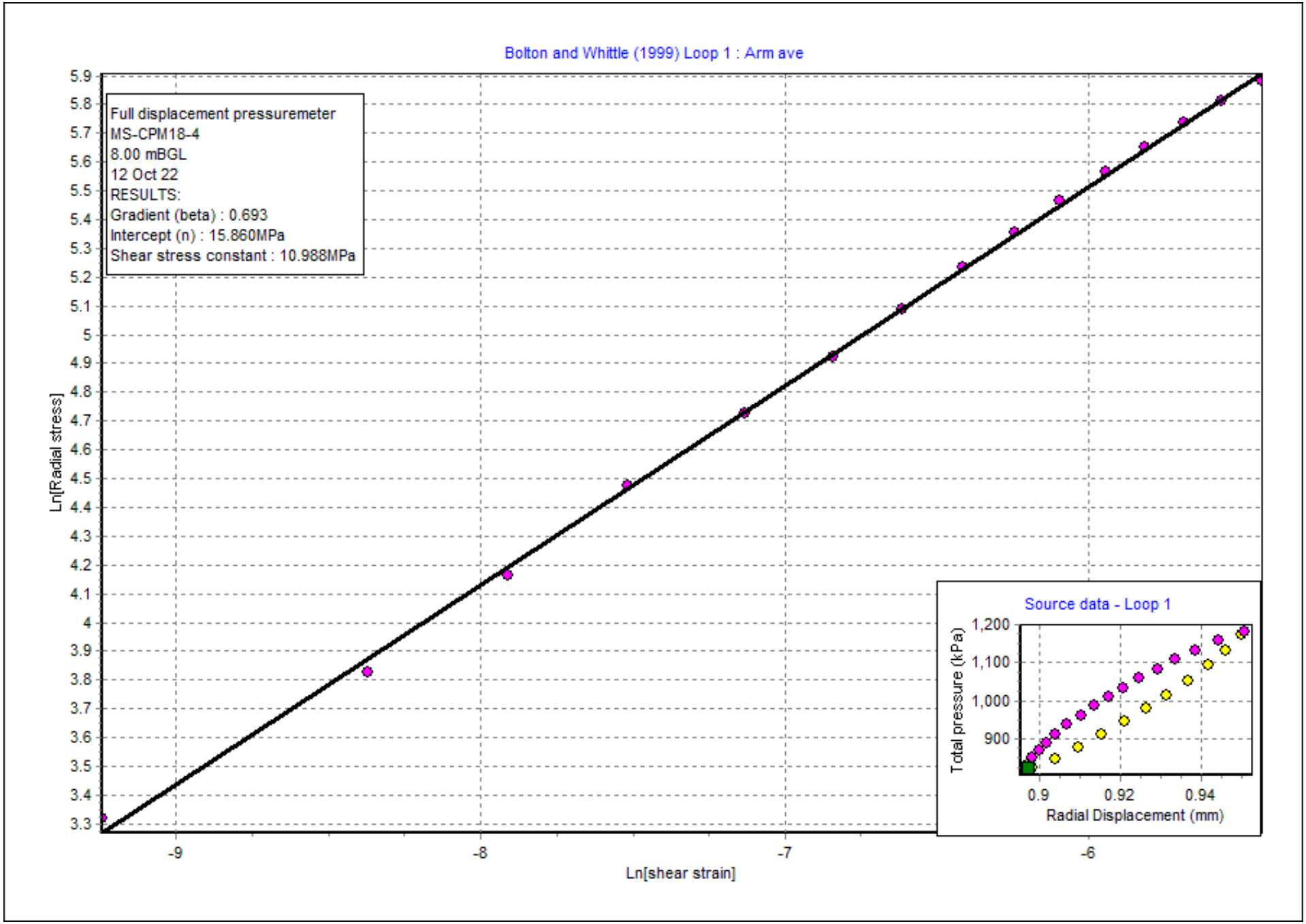

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22

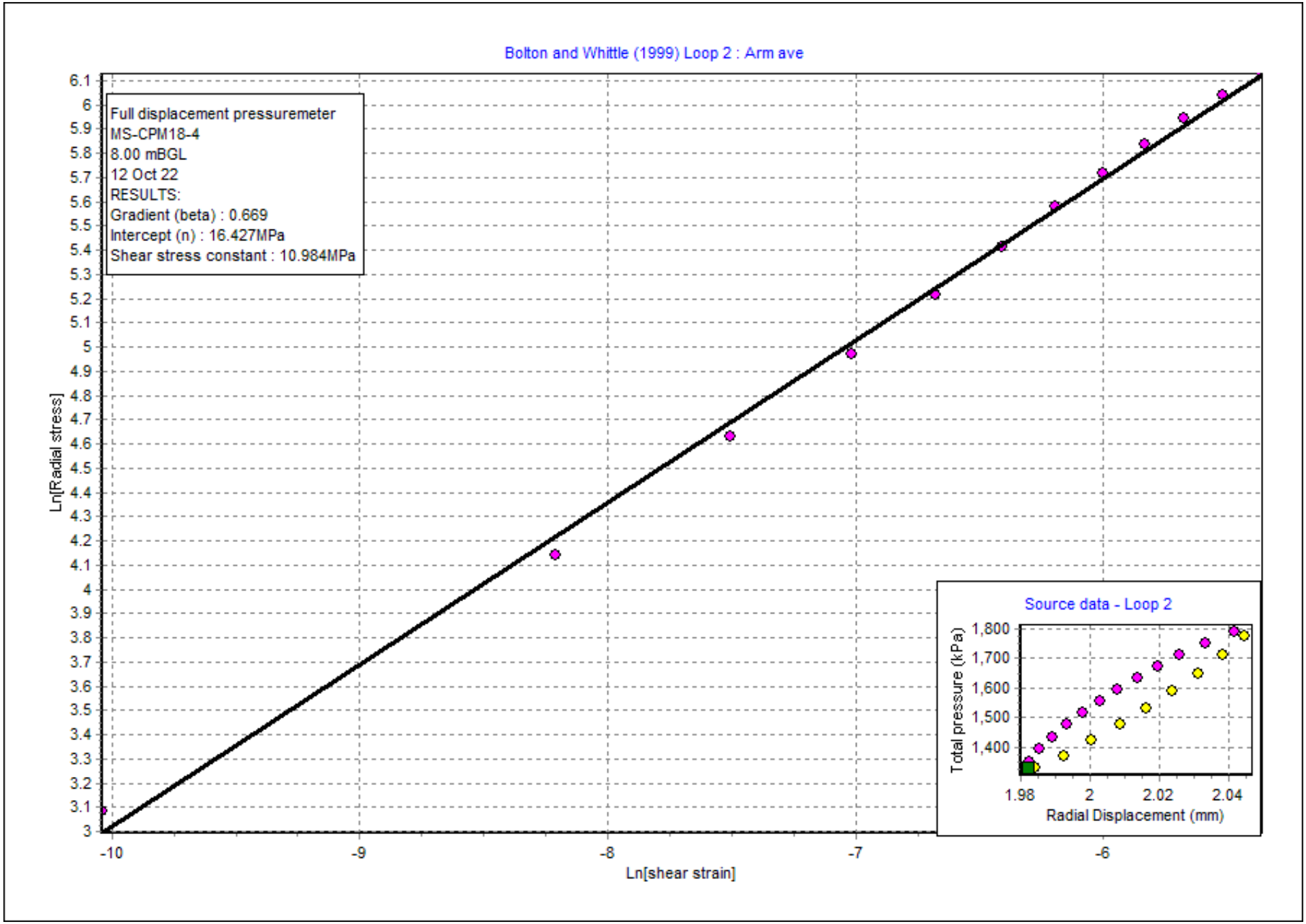

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 162.9kPa
Total pressure (kPa)
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
Radial Displacement (mm)
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22

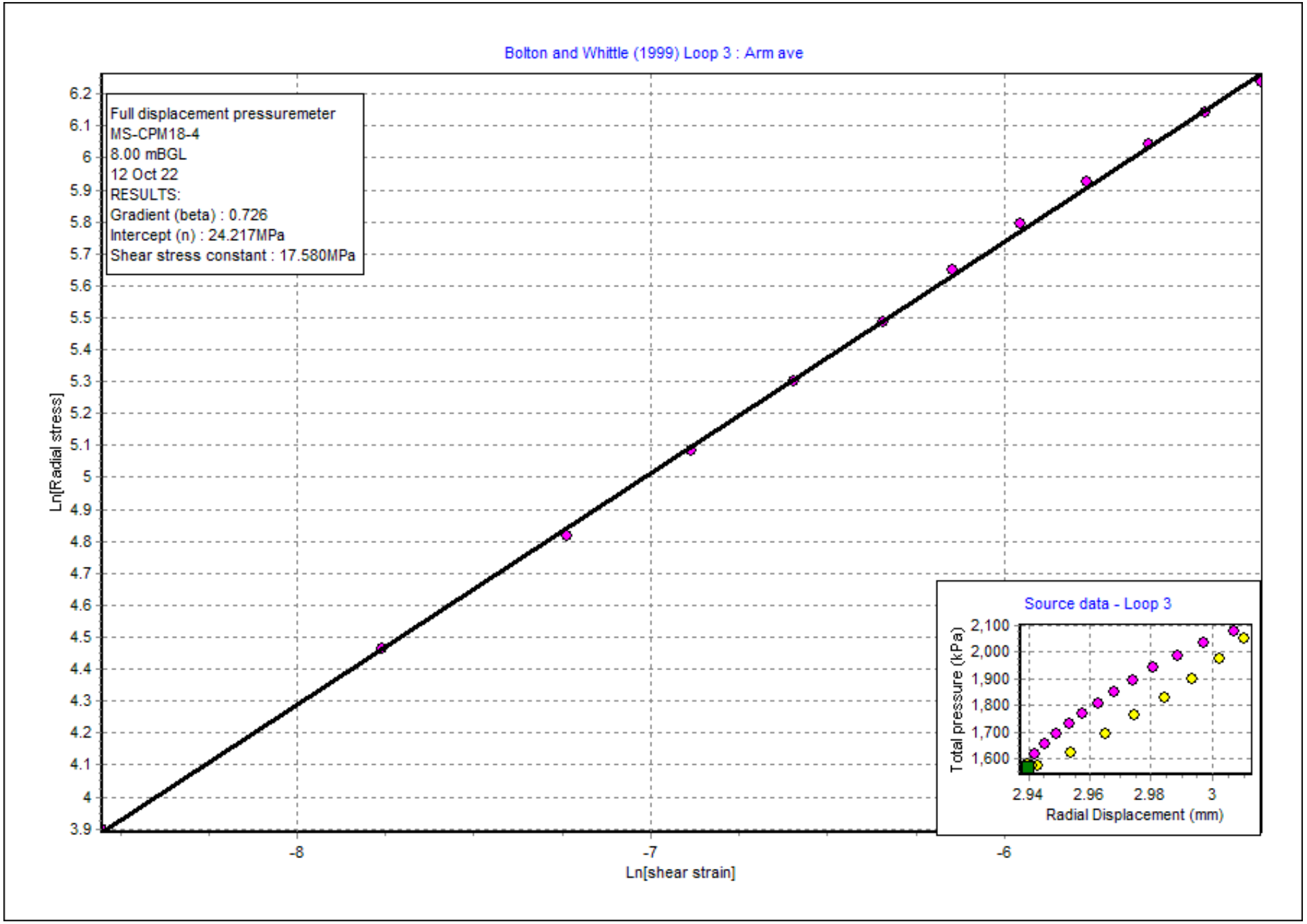

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 81.5MPa
Cycle mid-point:
Cavity strain : 3.922%
Total stress : 1004kPa
Size of cycle :
Shear strain : 0.443%
Total stress : 361kPa
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
800
780
0.8
0.81
0.82
0.83
0.84
0.85
0.86
0.87
0.88
0.89
0.9
0.91
0.92
0.93
0.94
0.95
0.96
0.97
0.98
0.99
1
1.01
1.02
1.03
1.04
1.05
1.06

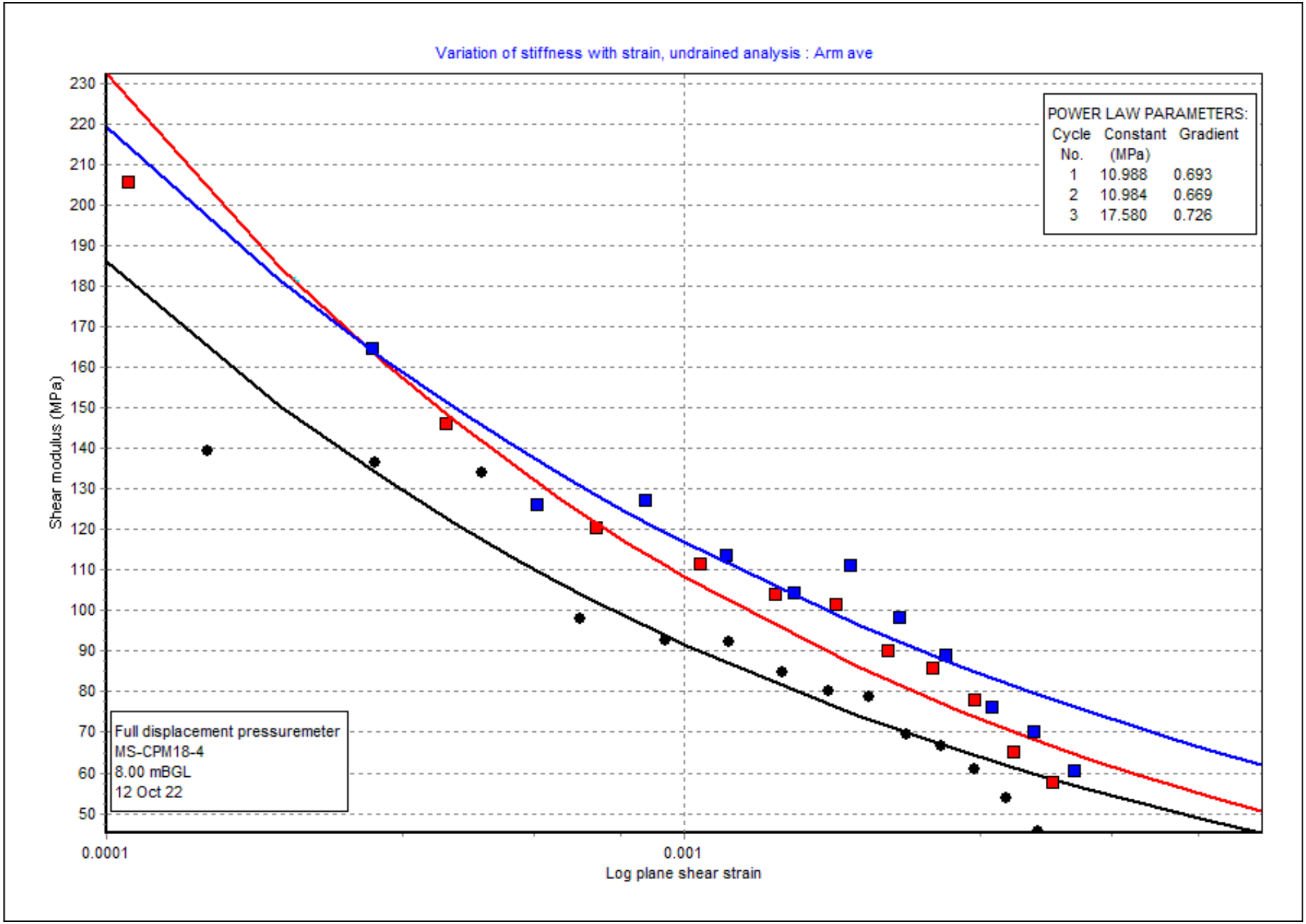

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 95.0MPa
Cycle mid-point:
Cavity strain : 8.283%
Total stress : 1564kPa
Size of cycle :
Shear strain : 0.489%
Total stress : 465kPa
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,920
1,900
1,880
1,860
1,840
1,820
1,800
1,780
1,760
1,740
1,720
1,700
1,680
1,660
1,640
1,620
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1.78
1.8
1.82
1.84
1.86
1.88
1.9
1.92
1.94
1.96
1.98
2
2.02
2.04
2.06
2.08
2.1
2.12
2.14
2.16
2.18
2.2
2.22
2.24

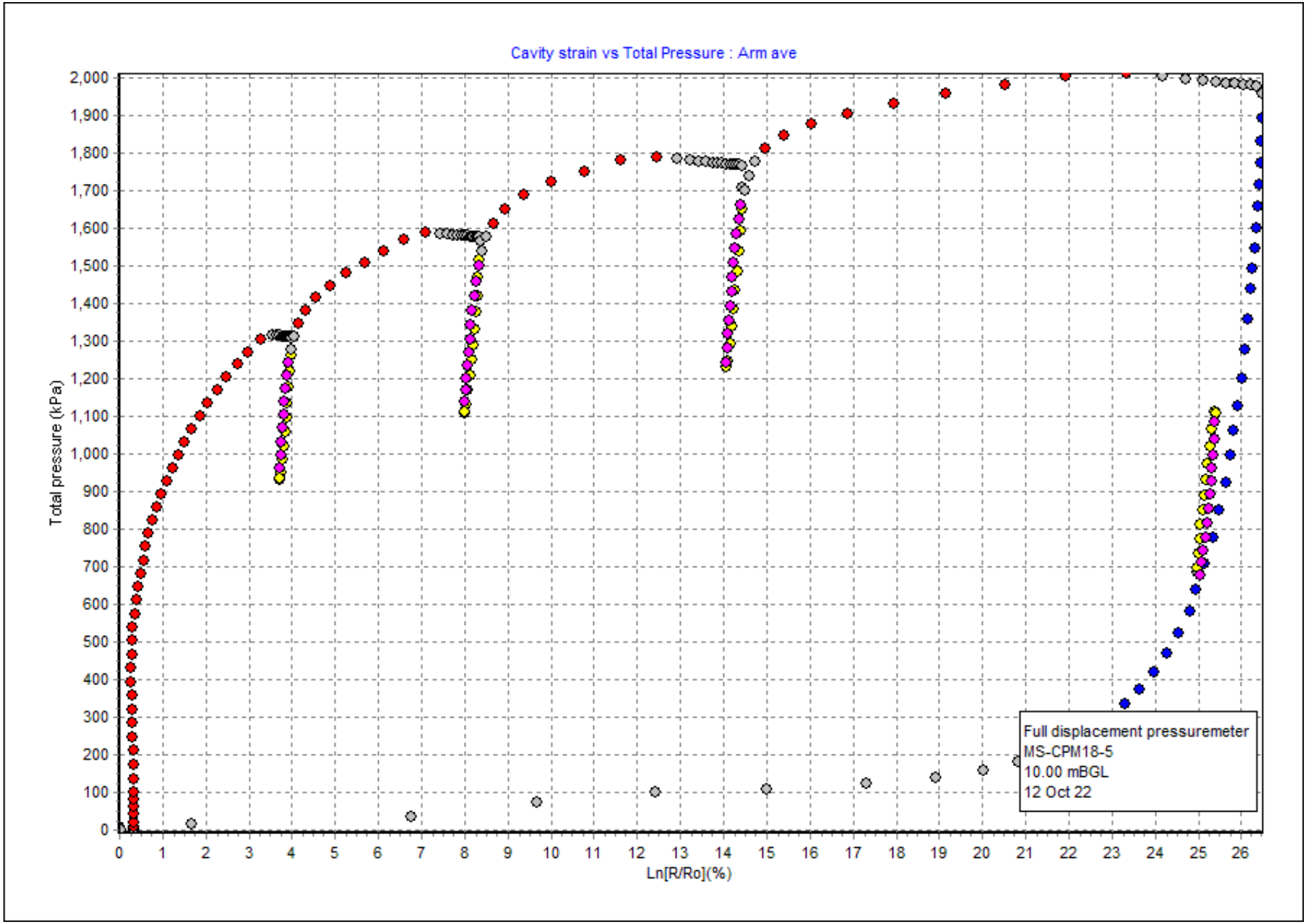

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 93.3MPa
Cycle mid-point:
Cavity strain : 11.982%
Total stress : 1830kPa
Size of cycle :
Shear strain : 0.535%
Total stress : 500kPa
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22
Total pressure (kPa)
2,300
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
1,800
1,750
1,700
1,650
1,600
1,550
Radial Displacement (mm)
2.6
2.65
2.7
2.75
2.8
2.85
2.9
2.95
3
3.05
3.1
3.15
3.2
3.25
3.3
3.35
3.4

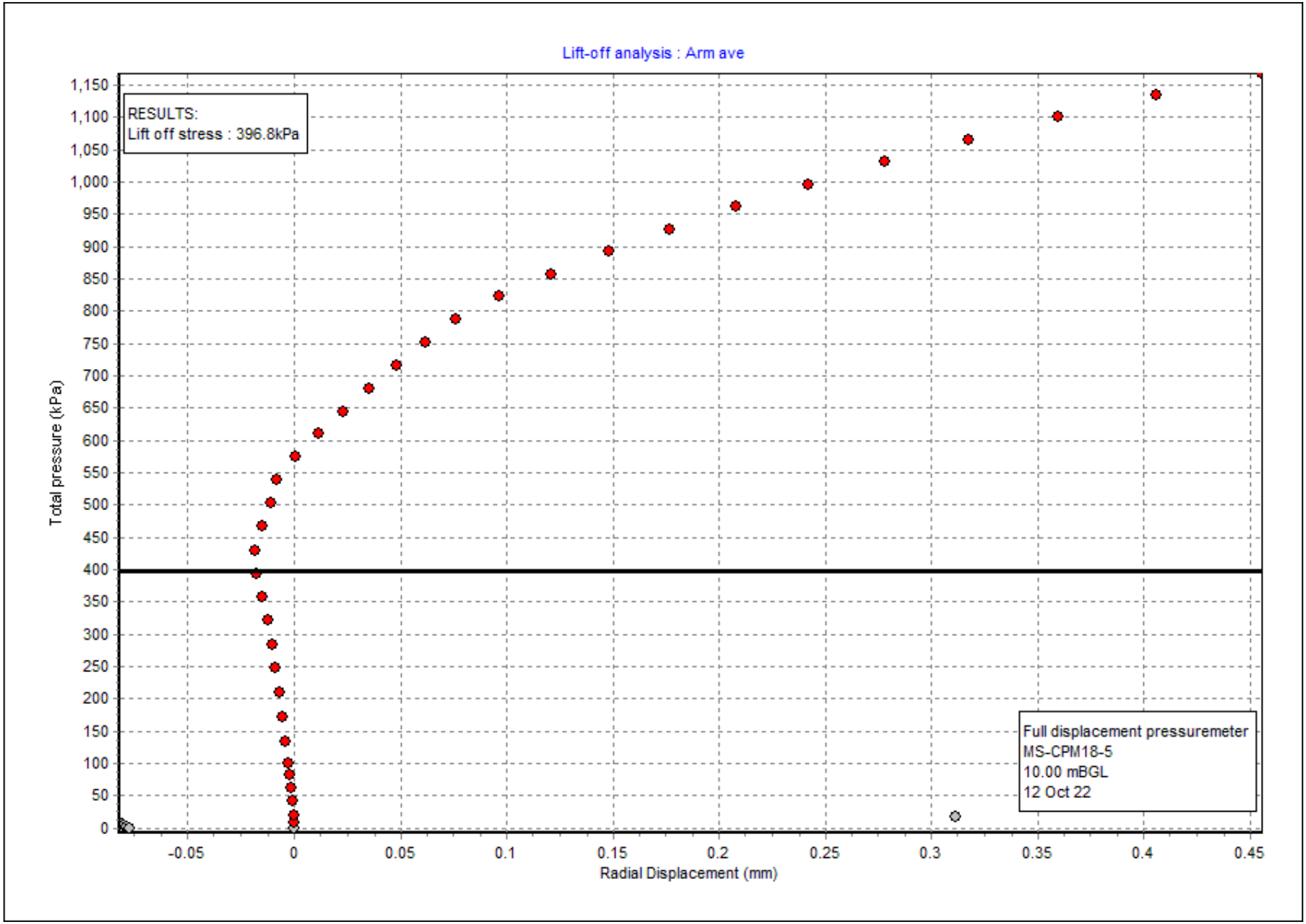

Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22
RESULTS:
Gradient (beta) : 0.693
Intercept (n) : 15.860MPa
Shear stress constant : 10.988MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)

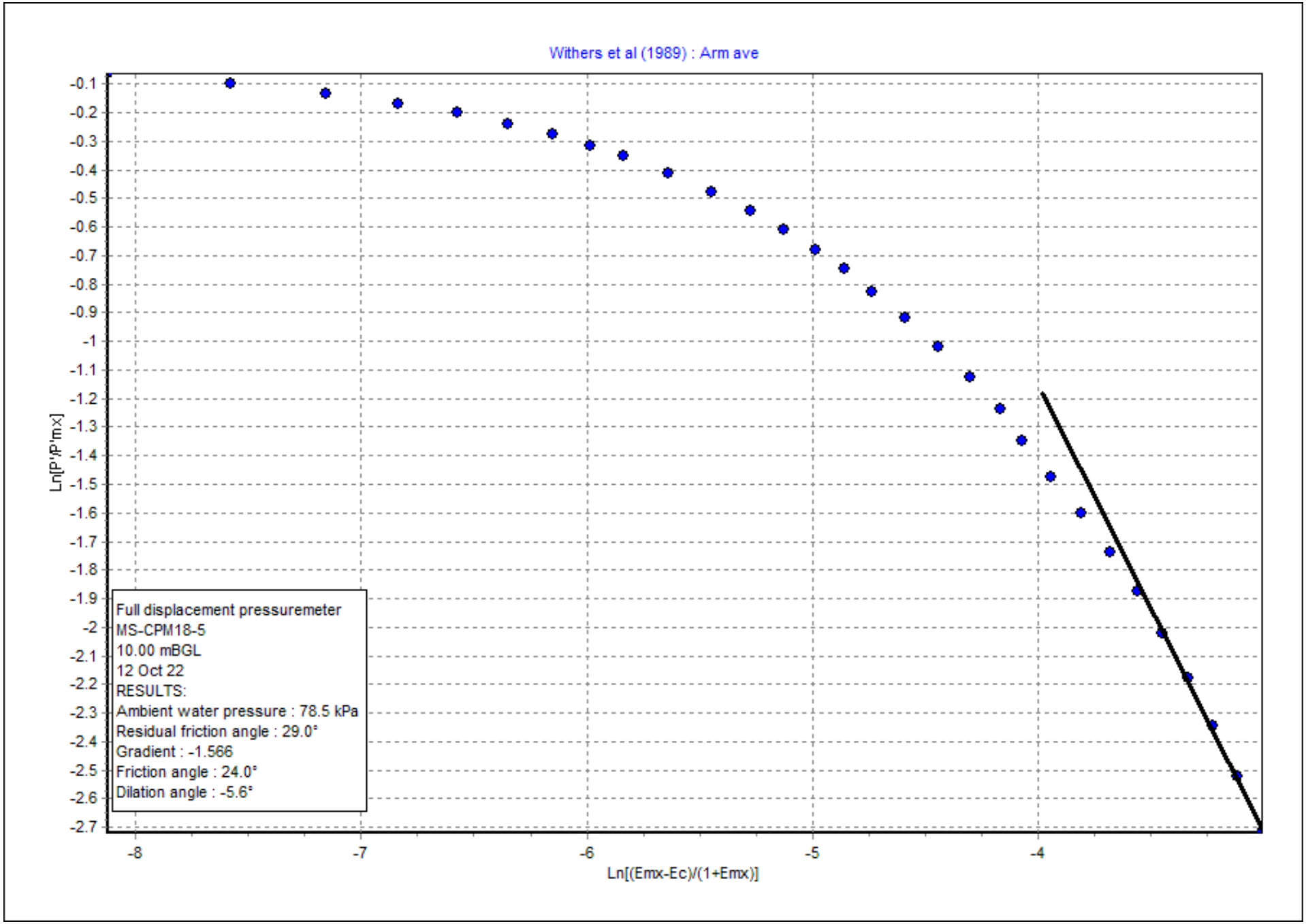

Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22
RESULTS:
Gradient (beta) : 0.669
Intercept (n) : 16.427MPa
Shear stress constant : 10.984MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)

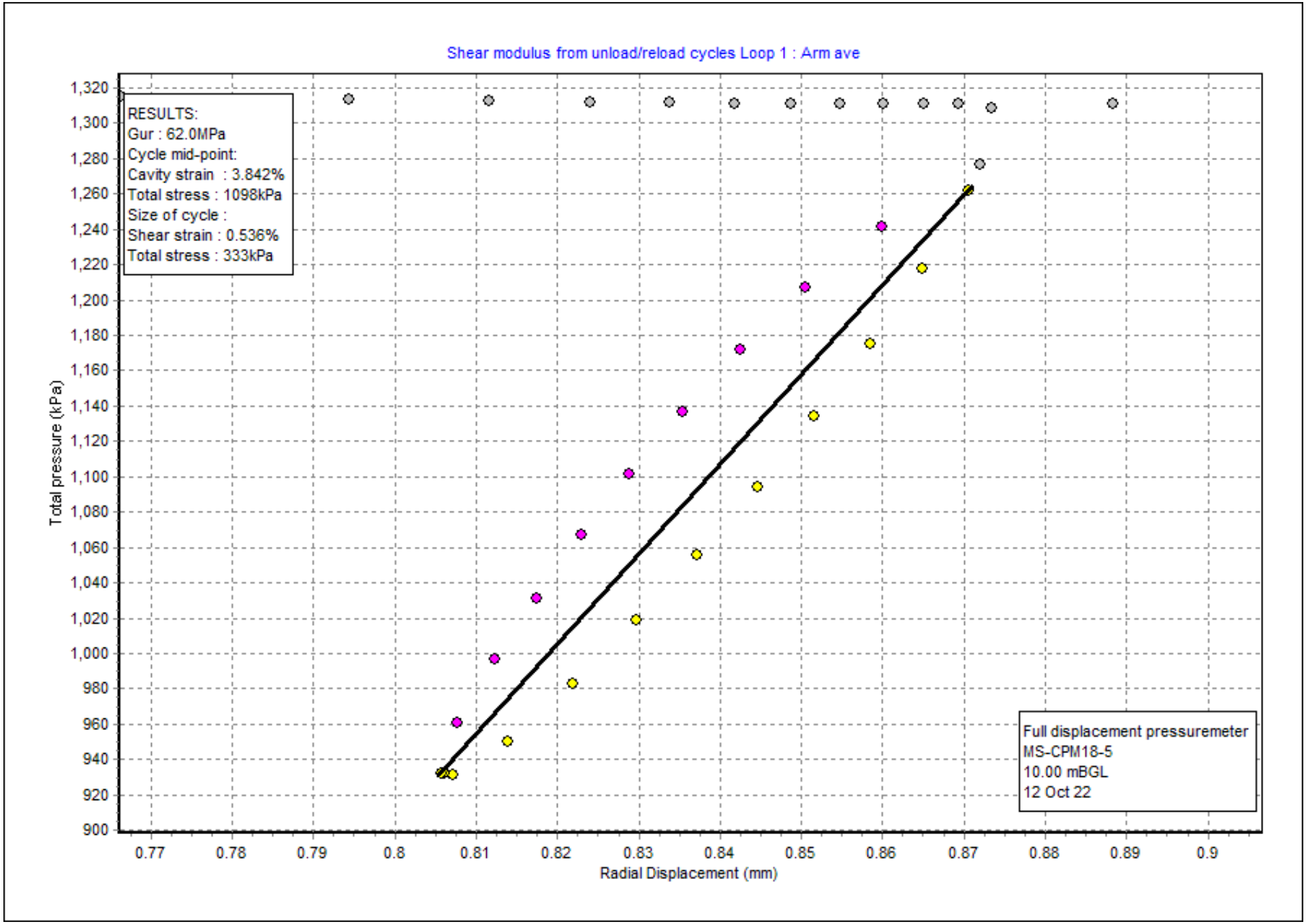

Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22
RESULTS:
Gradient (beta) : 0.726
Intercept (n) : 24.217MPa
Shear stress constant : 17.580MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
Radial Displacement (mm)

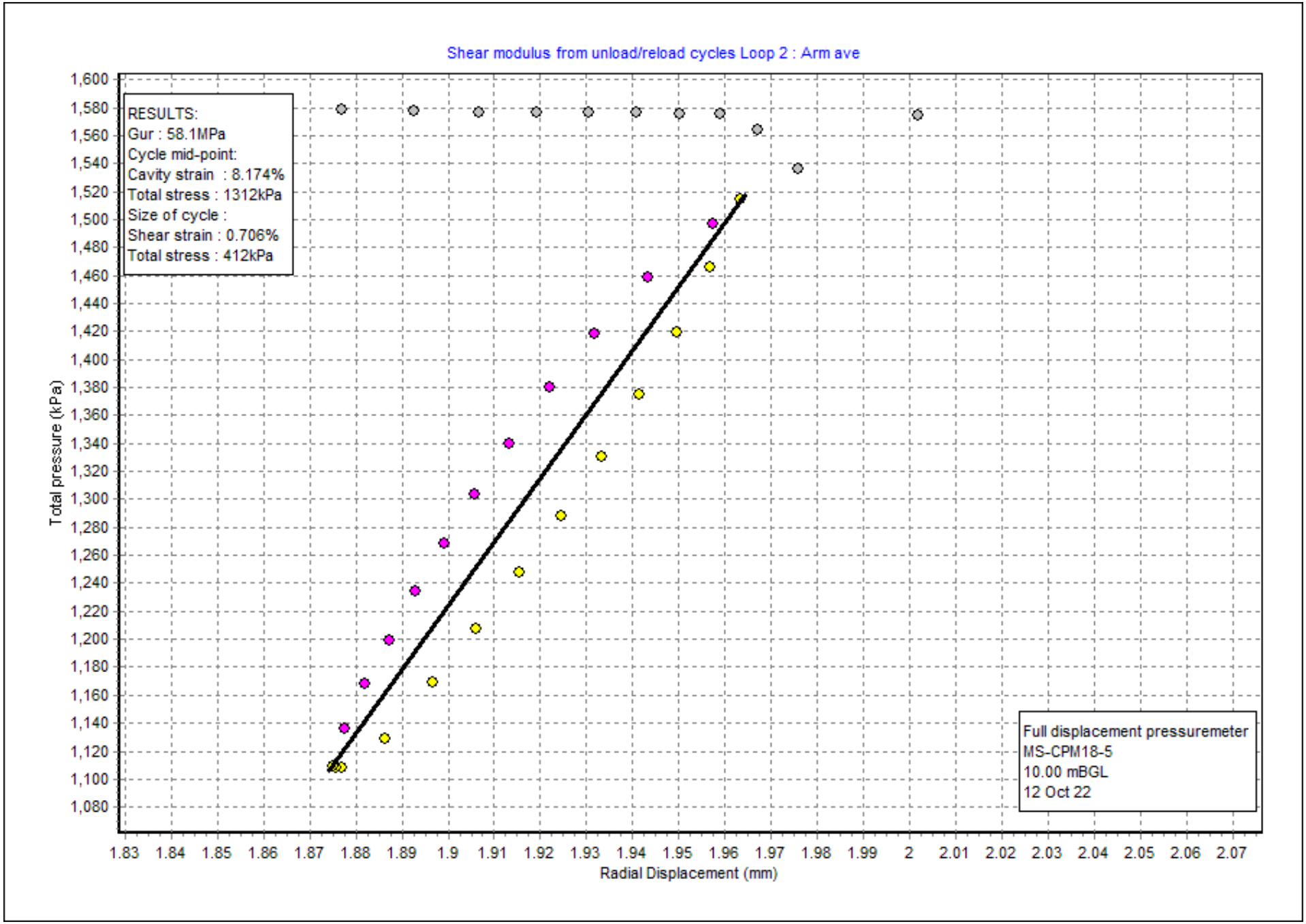

Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. | Constant (MPa) | Gradient
1 | 10.988 | 0.693
2 | 10.984 | 0.669
3 | 17.580 | 0.726
Full displacement pressuremeter
MS-CPM18-4
8.00 mBGL
12 Oct 22
Shear modulus (MPa)
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
0.0001
0.001
Log plane shear strain

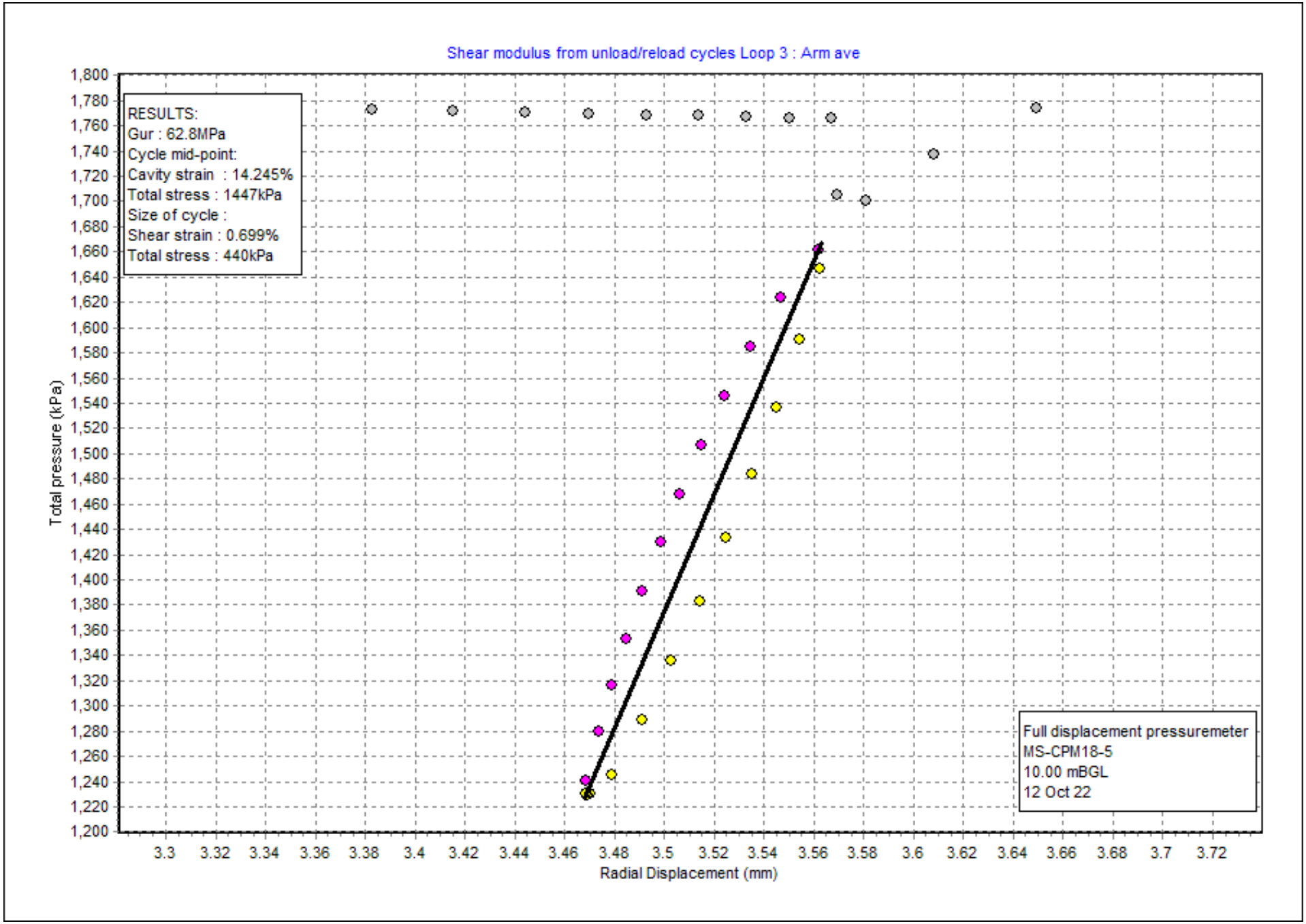

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Ln[R/Ro](%)
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22

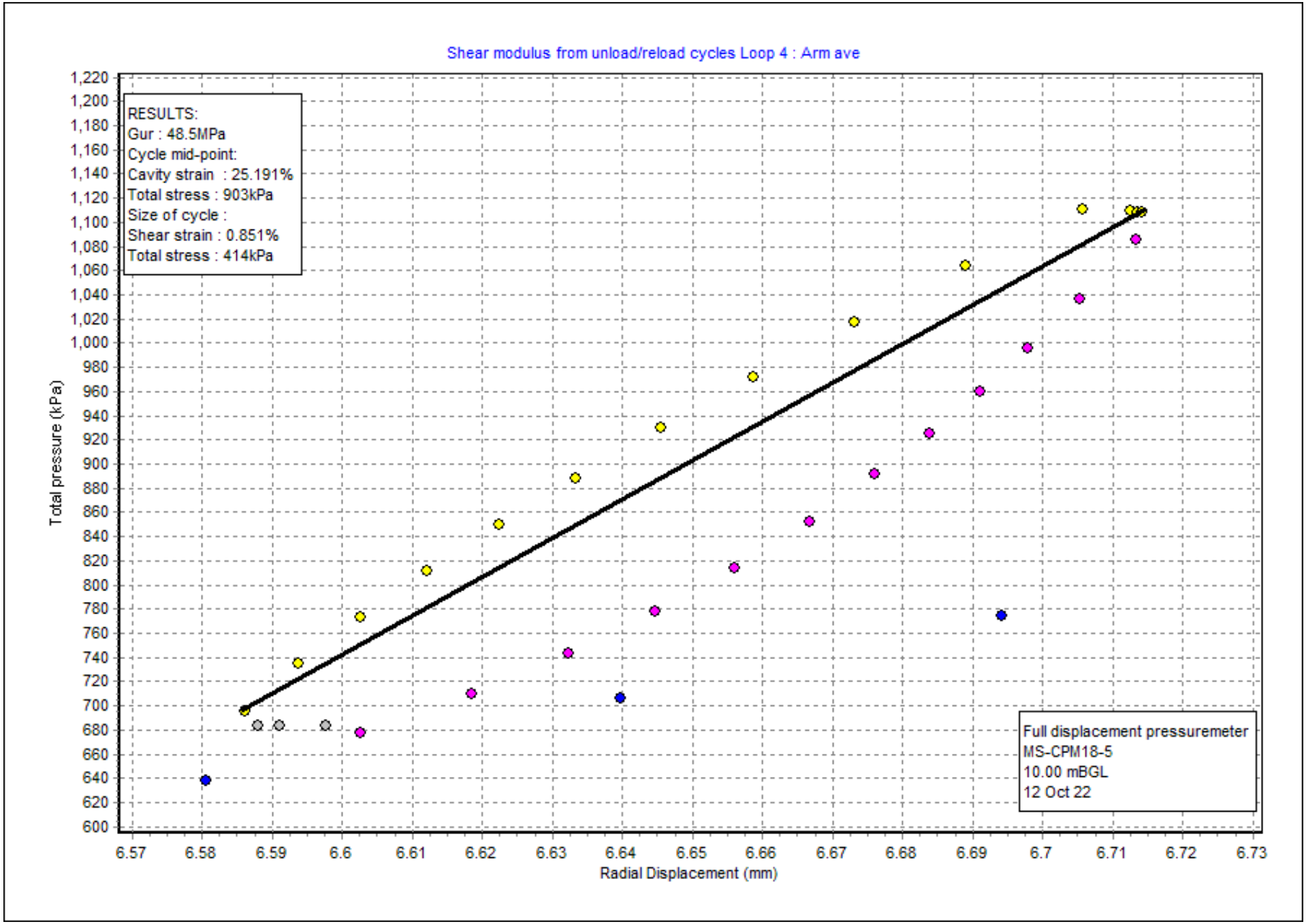

Lift-off analysis : Arm ave
RESULTS:
Lift off stress : 396.8kPa
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,150
1,100
1,050
1,000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45

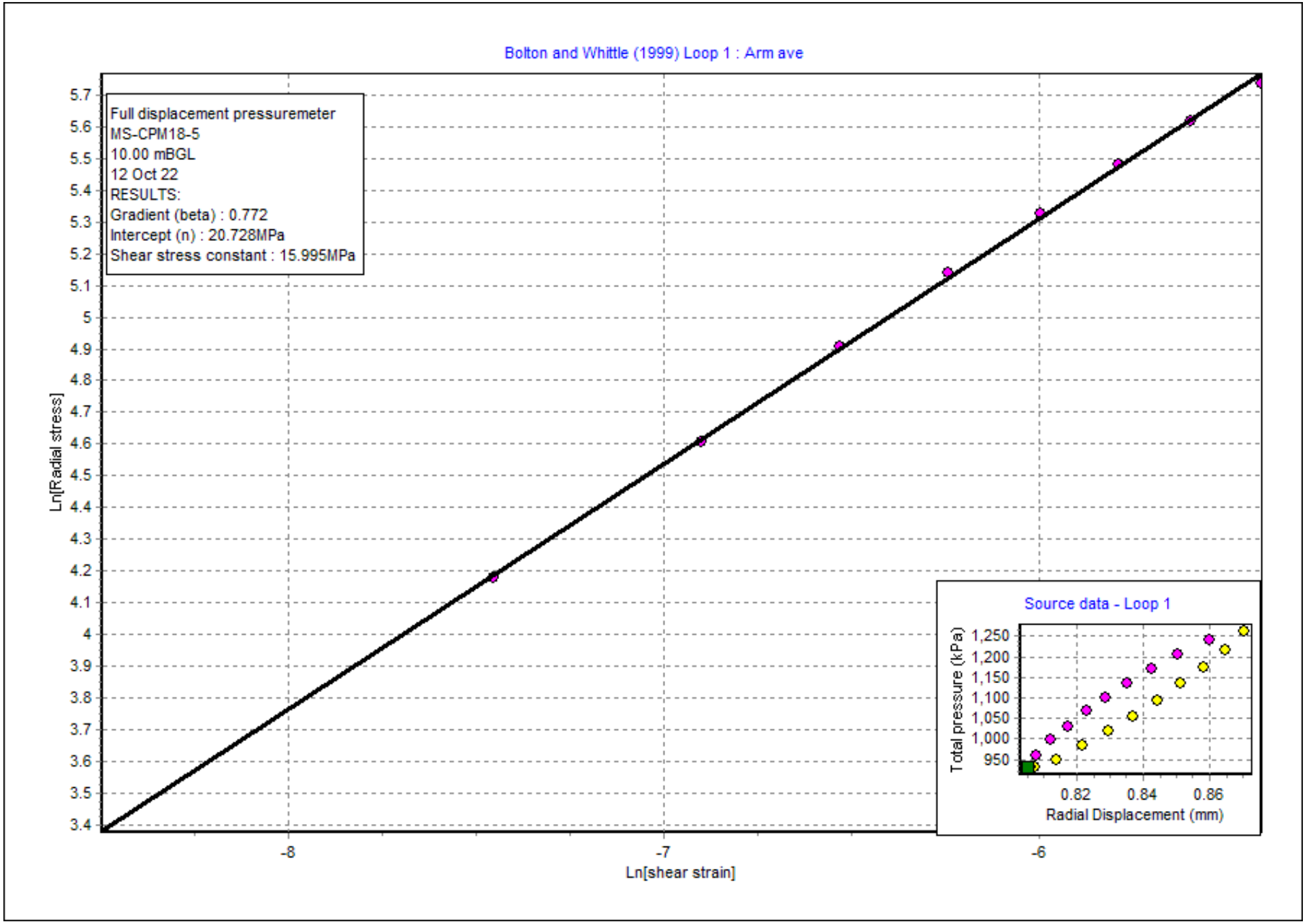

Withers et al (1989) : Arm ave
Ln[P'/P'mx]
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
-1
-1.1
-1.2
-1.3
-1.4
-1.5
-1.6
-1.7
-1.8
-1.9
-2
-2.1
-2.2
-2.3
-2.4
-2.5
-2.6
-2.7
-8
-7
-6
-5
-4
Ln[(Emx-Ec)/(1+Emx)]
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
RESULTS:
Ambient water pressure : 78.5 kPa
Residual friction angle : 29.0°
Gradient : -1.566
Friction angle : 24.0°
Dilation angle : -5.6°

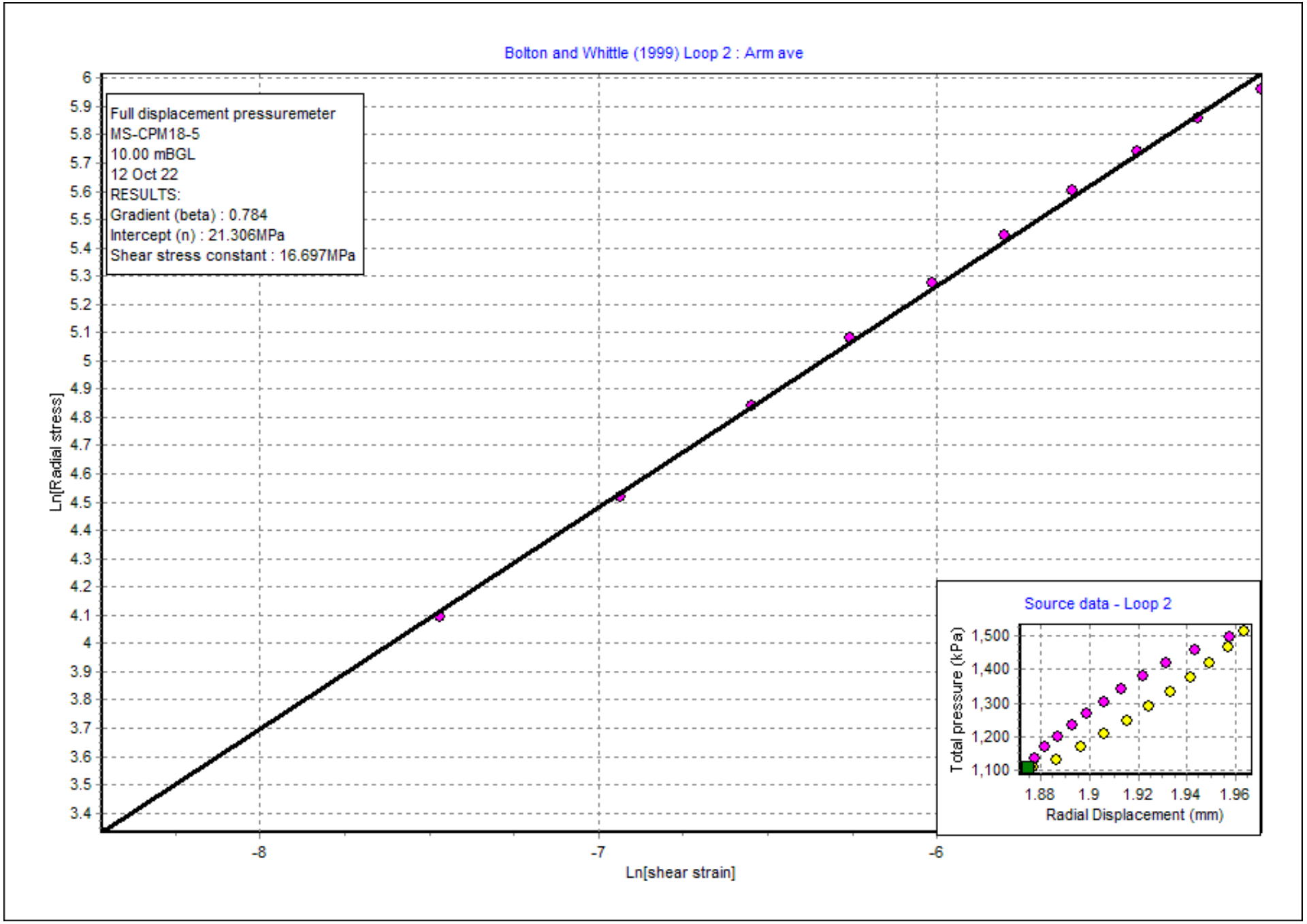

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 62.0MPa
Cycle mid-point:
Cavity strain : 3.842%
Total stress : 1098kPa
Size of cycle :
Shear strain : 0.536%
Total stress : 333kPa
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
0.77
0.78
0.79
0.8
0.81
0.82
0.83
0.84
0.85
0.86
0.87
0.88
0.89
0.9

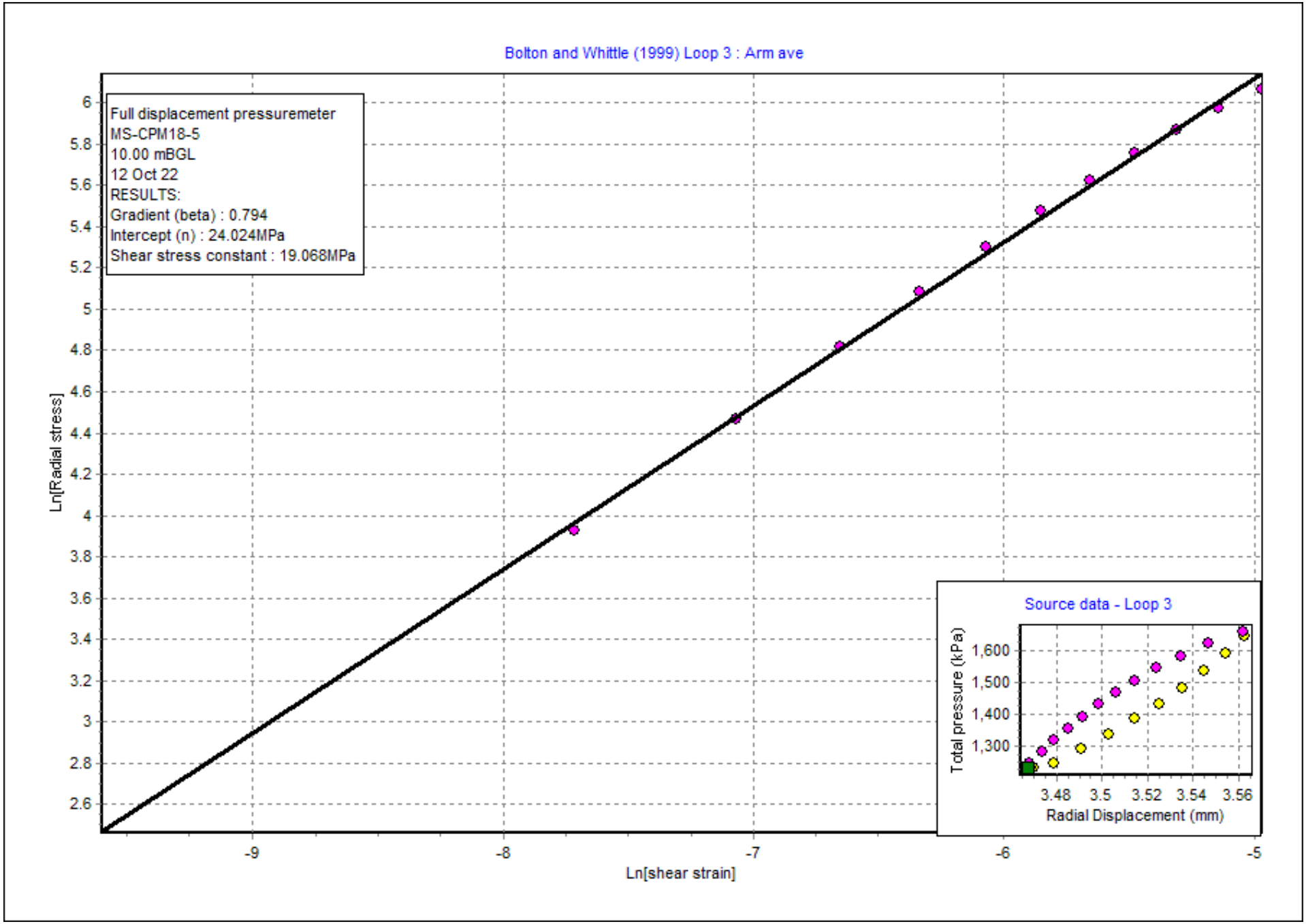

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 58.1MPa
Cycle mid-point:
Cavity strain : 8.174%
Total stress : 1312kPa
Size of cycle :
Shear strain : 0.706%
Total stress : 412kPa
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1.83
1.84
1.85
1.86
1.87
1.88
1.89
1.9
1.91
1.92
1.93
1.94
1.95
1.96
1.97
1.98
1.99
2
2.01
2.02
2.03
2.04
2.05
2.06
2.07

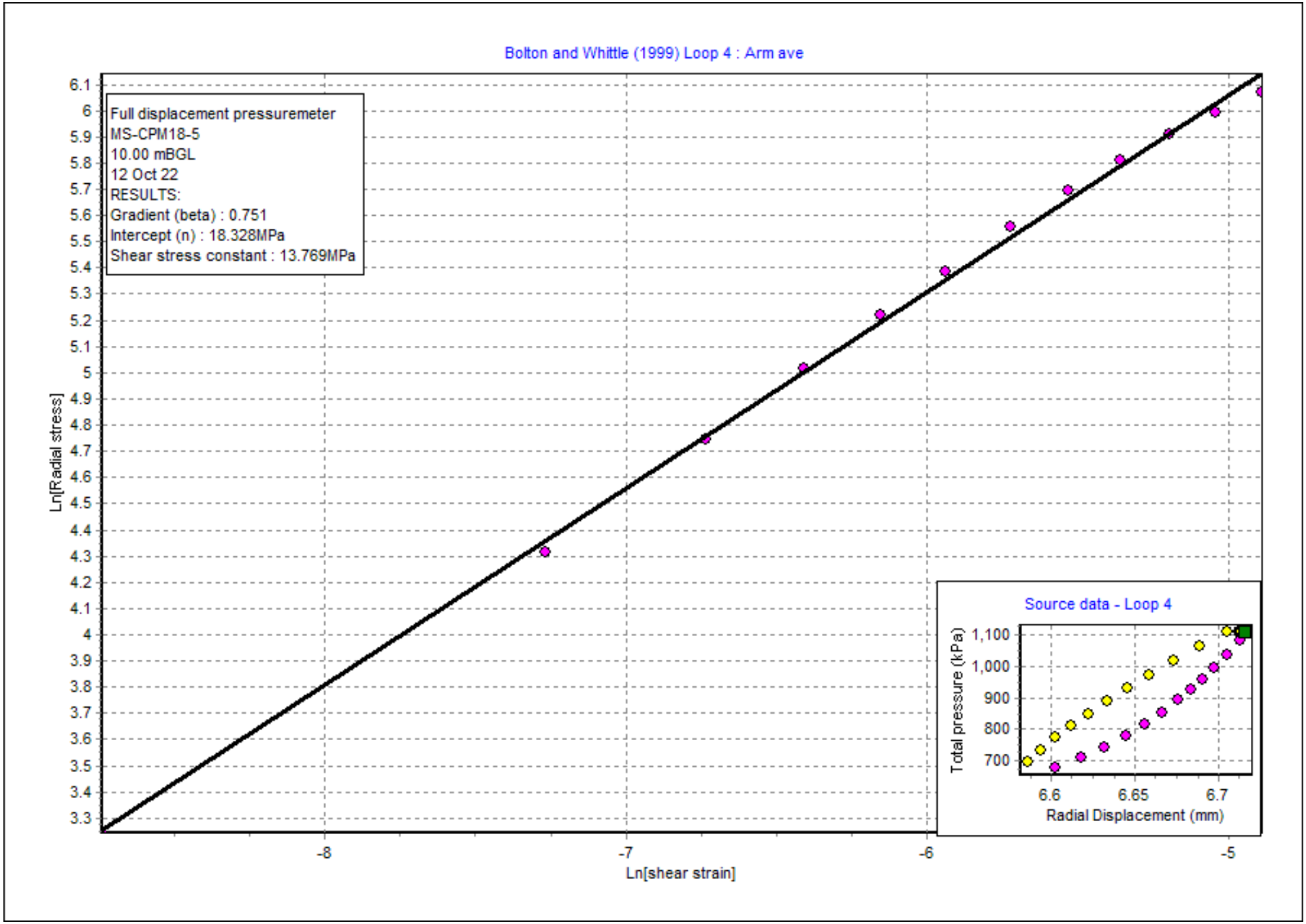

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 62.8MPa
Cycle mid-point:
Cavity strain : 14.245%
Total stress : 1447kPa
Size of cycle :
Shear strain : 0.699%
Total stress : 440kPa
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,800
1,780
1,760
1,740
1,720
1,700
1,680
1,660
1,640
1,620
1,600
1,580
1,560
1,540
1,520
1,500
1,480
1,460
1,440
1,420
1,400
1,380
1,360
1,340
1,320
1,300
1,280
1,260
1,240
1,220
1,200
3.3
3.32
3.34
3.36
3.38
3.4
3.42
3.44
3.46
3.48
3.5
3.52
3.54
3.56
3.58
3.6
3.62
3.64
3.66
3.68
3.7
3.72

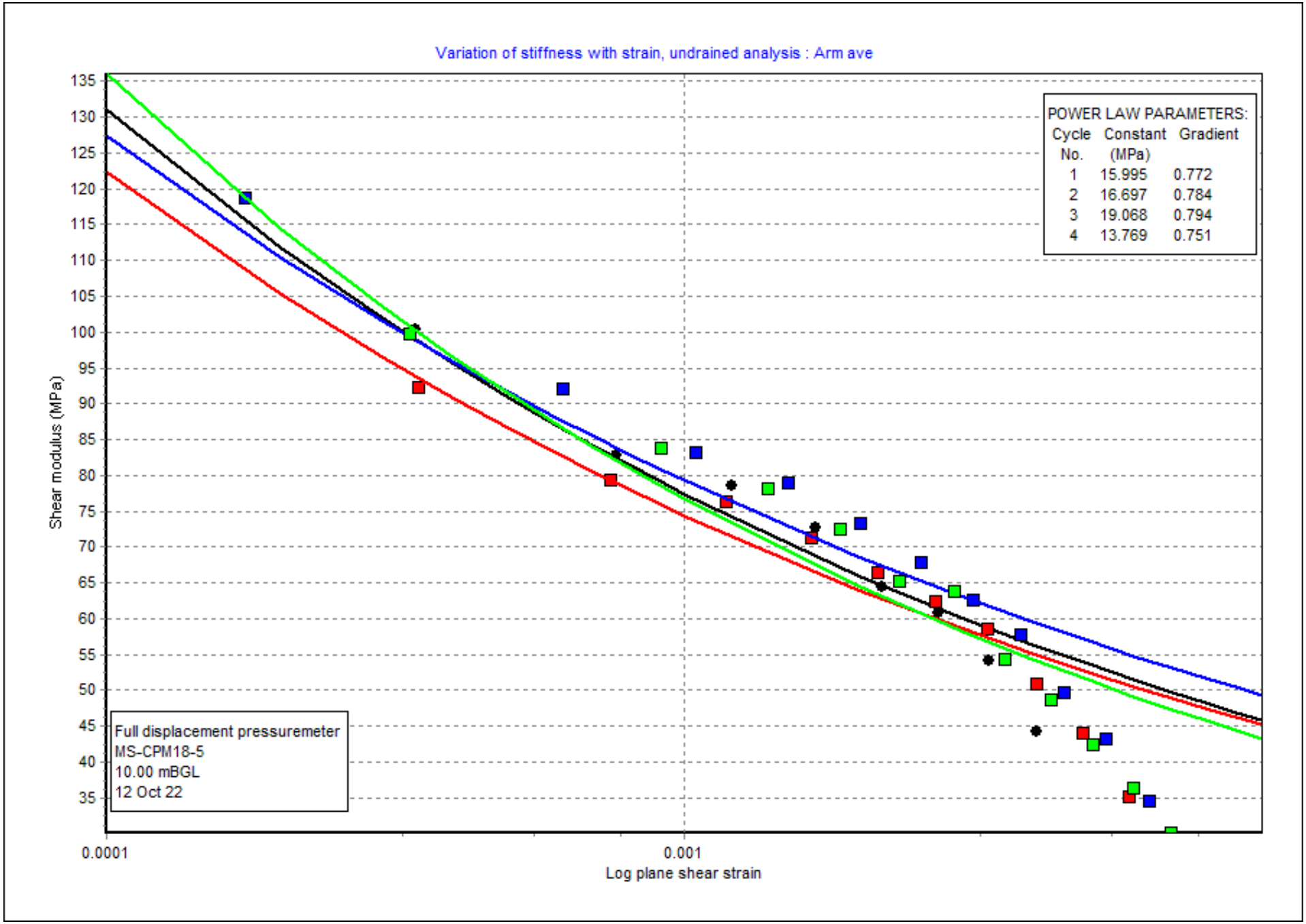

Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 48.5MPa
Cycle mid-point:
Cavity strain : 25.191%
Total stress : 903kPa
Size of cycle :
Shear strain : 0.851%
Total stress : 414kPa
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
Total pressure (kPa)
Radial Displacement (mm)
1,220
1,200
1,180
1,160
1,140
1,120
1,100
1,080
1,060
1,040
1,020
1,000
980
960
940
920
900
880
860
840
820
800
780
760
740
720
700
680
660
640
620
600
6.57
6.58
6.59
6.6
6.61
6.62
6.63
6.64
6.65
6.66
6.67
6.68
6.69
6.7
6.71
6.72
6.73


Bolton and Whittle (1999) Loop 1 : Arm ave
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
RESULTS:
Gradient (beta) : 0.772
Intercept (n) : 20.728MPa
Shear stress constant : 15.995MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
Radial Displacement (mm)


Bolton and Whittle (1999) Loop 2 : Arm ave
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
RESULTS:
Gradient (beta) : 0.784
Intercept (n) : 21.306MPa
Shear stress constant : 16.697MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)


Bolton and Whittle (1999) Loop 3 : Arm ave
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
RESULTS:
Gradient (beta) : 0.794
Intercept (n) : 24.024MPa
Shear stress constant : 19.068MPa
Ln[Radial stress]
Ln[shear strain]
6
5.8
5.6
5.4
5.2
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
-9
-8
-7
-6
-5
Source data - Loop 3
Total pressure (kPa)
1,600
1,500
1,400
1,300
3.48
3.5
3.52
3.54
3.56
Radial Displacement (mm)


Bolton and Whittle (1999) Loop 4 : Arm ave
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
RESULTS:
Gradient (beta) : 0.751
Intercept (n) : 18.328MPa
Shear stress constant : 13.769MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 4
Total pressure (kPa)
Radial Displacement (mm)


Variation of stiffness with strain, undrained analysis : Arm ave
POWER LAW PARAMETERS:
Cycle No. Constant (MPa) Gradient
1 15.995 0.772
2 16.697 0.784
3 19.068 0.794
4 13.769 0.751
Full displacement pressuremeter
MS-CPM18-5
10.00 mBGL
12 Oct 22
Shear modulus (MPa)
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
0.0001
0.001
Log plane shear strain

H.1.4.7 References

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