AECOM

# West Burton C (Gas Fired Generating Station)

Appendix 11B: West Burton C - Ground Investigation Environmental Support and Sampling Report

EDF Energy (Thermal Generation) Ltd

Project Number: 60572265

April 2019

## Table of Contents



## Tables

# 1. Background

## 1.1 Overview

1.1.1 EDF Energy Thermal Generation Ltd (hereafter referred to as the Applicant) is currently developing options to expand gas-powered electricity generation capability at the West Burton Power Station Site.

1.1.2 The Proposed Development comprises the construction, operation (including maintenance) and decommissioning of a gas fired generating station with a gross electrical output of 299MW; comprising up to five open cycle gas turbine (OCGT) units (depending on the technology to be selected – refer to **Section 4.2** of **Chapter 4**: The Proposed Development (ES Volume I) for details of potential technology options).

1.1.3 The Proposed Development Site (the Site) is located within the boundary of the existing West Burton Power Station site (and associated land within the ownership of the Applicant). The Site has undergone previous assessment. The land was previously used for Pulverised Fuel Ash (PFA) and Furnace Bottom Ash (FBA) storage, and during the WBB Power Station construction was also used as a construction laydown area. It is understood that some ground improvement works, including compaction and PFA stabilisation, were carried out prior to the site being used as construction laydown, to improve the bearing capacity and support the increased loading.

1.1.4 A Phase I Geo-environmental Site Assessment for the Proposed Development was prepared in support of the Preliminary Environmental Information (PEI) Report to inform formal consultation as part of the application for a Development Consent Order (DCO). One of the recommendations of the Phase 1 Geo-environmental Site Assessment report (**Appendix 11A** of ES Volume II) was that additional site investigation be undertaken at the Site, in order to enable further assessment of potential development constraints and risks to the environment associated with the Proposed Development.

1.1.5 AECOM was commissioned by the Applicant to provide environmental support during the intrusive investigation and post-works monitoring, including:

- inspection of soils for visual and olfactory evidence of contamination, including conducting headspace analysis of Volatile Organic Carbon (VOC by PID) in soil samples;
- collection of samples of made ground, PFA and natural soils for chemical laboratory analysis;
- identification of potential presence and depth of groundwater and observation of installation of gas and groundwater monitoring positions;

- development of installed monitoring wells, to ensure groundwater ingress during sampling works is representative of the surrounding formation;
- monitoring of gas and groundwater; and
- collection of ground and surface water samples for chemical laboratory analysis.

# 2. Site Works

## 2.1 Scope

2.1.1 During the intrusive investigation AECOM observed the sinking of 12 windowless sample (WS) holes, 6 rotary boreholes (BH) and 13 trial pits (TP). A further 2 rotary boreholes were sunk for geotechnical reasons as part of the wider investigation, however these were not observed by AECOM.

2.1.2 Gas and groundwater monitoring was conducted at 12 installed locations. Surface water samples were collected at 2 locations.

2.1.3 A summary of the site work undertaken is detailed in **Table 1** below.

**Table 1 – Summary of Site Works**

| Date(s) | Works Undertaken |
|---|---|
| 30/11/17 | • NCP training<br>• Meeting representatives from site investigation contractors (Firbeck Construction and Socotec). |
| 04/12/17 | • Site induction<br>• Site entry drug and alcohol testing<br>• ‘Lifestyle’ drug and alcohol testing |
| 11/12/17 - 15/12/17 | • Liaison with the Applicant, Firbeck Construction and Socotec site representatives<br>• Observation of intrusive works (window sampling, rotary coring and trial pitting) and collection of soil samples from arisings<br>• Development of newly installed monitoring wells |
| 18/12/17 - 22/12/17 | • Liaison with the Applicant, Firbeck Construction and Socotec site representatives<br>• Observation of intrusive works (window sampling, rotary coring and trial pitting) and collection of soil samples from arisings<br>• Development of newly installed monitoring wells<br>• Gas and groundwater level monitoring at installed well locations<br>• Collection of groundwater samples from installed locations<br>• Collection of surface water samples |

## 2.2 Soil Sampling

2.2.1 During intrusive works, 64 soil samples were recovered from trial pit and borehole arisings. A summary of soil samples collected is presented in **Table 2**. Each of the samples was analysed for volatile hydrocarbons using headspace analysis with a photo-ionisation detector (PID) fitted with a 10.6 eV lamp. The results of the headspace analysis are presented in **Table 2**. Of the 64 natural and made ground samples subjected to headspace analysis, none returned PID readings greater than 5 parts per million (ppm).

2.2.2 Once collected, the samples were placed in cool boxes pre-chilled with ice. These were then shipped via the laboratory courier under chain of custody to Exova Jones environmental laboratory in Hawarden, Deeside.

**Table 2 – Summary of Soil Samples**

| Location | Depth | PID Reading parts per billion (ppb) | Material | Scheduled for Analysis |
|---|---|---|---|---|
| BH101 | 0.50 | 0 | Made ground/PFA | □ |
| | 14.70 | 0.3 | Weathered bedrock (Mercia Mudstone) | □ |
| BH102 | 2.20 | 0 | Made ground/PFA | □ |
| | 13.80 | 0.1 | Weathered bedrock (Mercia Mudstone) | □ |
| | 21.30 | 0 | Weathered bedrock (Mercia Mudstone) | × |
| BH103 | 0.50 | 0 | Made ground | □ |
| | 9.30 | 0 | Natural superficial deposits (clay) | □ |
| BH104 | 1.00 | 0.2 | Made ground/PFA | □ |
| BH106 | 1.00 | 0.3 | Made ground/PFA | □ |
| TP102 | 0.60 | 0.3 | Made ground/PFA | □ |
| | 2.50 | 0.2 | Natural superficial deposits (silt) | □ |
| TP103 | 1.20 | 0.2 | Natural superficial deposits (silt) | × |
| | 3.00 | 3.5 | Natural superficial deposits (silt) | □ |
| TP104 | 0.80 | 0.1 | Made ground/PFA | □ |
| | 3.00 | 0 | Made ground/PFA | × |

| Location | Depth | PID Reading parts per billion (ppb) | Material | Scheduled for Analysis |
|---|---|---|---|---|
| TP105 | 2.00 | 0.5 | Made ground/PFA | □ |
| TP106 | 0.50 | 0.1 | Made ground/PFA | □ |
| | 1.50 | 0 | Made ground/PFA | × |
| TP107 | 0.20 | 0 | Made ground | □ |
| | 1.00 | 0 | Made ground | × |
| TP108 | 0.50 | 0.3 | Made ground/PFA | □ |
| | 1.50 | 0.4 | Made ground/PFA | × |
| TP110 | 0.20 | 0 | Made ground/PFA | □ |
| | 1.40 | 0.4 | Natural superficial deposits (silt) | □ |
| TP111 | 2.00 | 1.5 | Natural superficial deposits (silt) | □ |
| | 3.00 | 0 | Natural superficial deposits (silt) | × |
| TP112 | 0.50 | 0.6 | Natural superficial deposits (clay) | □ |
| | 2.50 | 0.5 | Weathered bedrock | □ |
| TP113 | 2.00 | 0.1 | Made ground/PFA | □ |
| TP114 | 1.00 | 0.1 | Made ground/PFA | □ |
| | 3.00 | 0 | Made ground/PFA | × |
| TP115 | 1.50 | 0.2 | Made ground/PFA | □ |
| | 3.00 | 1.3 | Natural superficial deposits (clay) | □ |
| TP116 | 1.00 | 0 | Made ground | × |
| | 3.00 | 0.2 | Made ground | □ |
| WS101 | 3.50 | 0.5 | Natural superficial deposits (silt) | □ |
| | 4.00 | 0 | Natural superficial deposits (clay) | □ |
| WS102 | 3.00 | 1.9 | Made ground/PFA | □ |
| | 8.60 | 1.5 | Weathered bedrock (Mercia Mudstone) | □ |
| WS103 | 3.20 | 0.2 | Made ground/PFA | □ |

| Location | Depth | PID Reading parts per billion (ppb) | Material | Scheduled for Analysis |
|---|---|---|---|---|
| WS104 | 0.50 | 0 | Made ground/PFA | ☐ |
| | 14.00 | 0.8 | Made ground/PFA | ☐ |
| WS105 | 1.30 | 0.1 | Made ground/PFA | ☐ |
| | 6.50 | 0.2 | Made ground/PFA | ☐ |
| | 14.50 | 0.1 | Weathered bedrock (Mercia Mudstone) | ☐ |
| WS106 | 10.50 | 0.6 | Natural superficial deposits (clay) | ☐ |
| WS107 | 0.50 | 0 | Made ground/PFA | ☐ |
| | 2.00 | 0 | Made ground/PFA | × |
| | 3.65 – 4.10 | 0 | Made ground/PFA | ☐ |
| | 11.70 | 0 | Natural superficial deposits (clay) | ☐ |
| WS108 | 4.50 | 0 | Made ground/PFA | ☐ |
| | 6.00 | 0 | Made ground/PFA | × |
| | 7.00 | 0 | Made ground/PFA | ☐ |
| | 8.50 | 0.1 | Made ground/PFA | ☐ |
| | 12.00 | 0.1 | Weathered bedrock | ☐ |
| WS109 | 15.00 | 0 | Weathered bedrock (Mercia Mudstone) | × |
| WS110 | 2.00 | 0.2 | Made ground/PFA | ☐ |
| | 15.00 | 2.5 | Weathered bedrock (Mercia Mudstone) | ☐ |
| WS111 | 0.5 – 1.00 | 0 | Made ground/PFA | ☐ |
| | 4.00 | 0 | Made ground/PFA | ☐ |
| | 8.20 | 0 | Made ground/PFA | ☐ |
| | 13.65 | 0 | Weathered bedrock (Mercia Mudstone) | × |
| WS112 | 2.00 | 1 | Made ground/PFA | ☐ |
| | 12.90 | 0.7 | Natural superficial deposits (clay) | × |

## 2.3 Ground and Surface Water Sampling

2.3.1 Following installation of the groundwater wells, each well was developed in accordance with the Environment Agency guidance document "*Guidance on the design and installation of groundwater quality monitoring points"* Science Report SC020093, published in January 2006.

2.3.2 The well development was conducted to remove any water added during drilling and well installation and to remove any fines entrained in the sand filter pack during installation. Water removal was continued until the wells ran dry, or a minimum of ten well volumes were removed and the groundwater was visibly clear with no trace of suspended solids. The wells were left to recharge for a minimum of 24 hours prior to sampling.

2.3.3 During post-works monitoring, 12 groundwater samples were recovered from newly installed monitoring wells (excluding samples taken for QA/QC purposes). Prior to sampling, each well was purged in accordance with EA guidance (see above). During purging, measurements of temperature, conductivity, pH, dissolved oxygen, and redox were made using a YSI multimeter. The volume of the well was calculated and successive well volumes were removed until the field parameters stabilised to within 5% of the previous set of readings. Where the recharge rate of wells was insufficient to allow full purging of the well, grab samples were taken. The final set of YSI readings for the groundwater which was sampled are presented in **Annex A**. A groundwater sample was collected from each of the installed wells, with a further duplicate sample collected for quality assurance and quality control (QA/QC) purposes.

2.3.4 Two surface water samples and one QA/QC sample were recovered from sampling points at Wheatley Beck and the Fishing Ponds, outside of the intrusive works site boundary.

2.3.5 A summary of the groundwater and surface water sampling conducted is presented in **Table 3**.

**Table 3 – Summary of Water Samples**

| Sample Type | Location | Screened Unit |
|---|---|---|
| Groundwater Samples | WS101 | Natural superficial deposits |
| | WS102 | Natural superficial deposits / bedrock |
| | WS103* | Natural superficial deposits / bedrock |
| | WS104* | PFA / bedrock |
| | WS106* | PFA / natural superficial deposits |
| | WS108* | PFA / natural superficial deposits / bedrock |
| | WS109 | PFA / natural superficial |

| Sample Type | Location | Screened Unit |
|---|---|---|
| | | deposits/bedrock |
| | WS110* | Bedrock |
| | WS111 | Natural superficial deposits / bedrock |
| | WS112 | Natural superficial deposits / bedrock |
| | BH104* | PFA/natural superficial deposits |
| | BH105* | Natural superficial deposits / bedrock |
| Surface Water Samples | SW01 | Fishing Pond |
| | SW02 | Wheatley Beck |
| QA/QC | DUP01 | Duplicate of WS102 |
| | DUP02 | Duplicate of SW01 |
| | Trip Blank | N / a |
| * Water level falling, grab sample taken | | |

## 2.4 Soil Analysis

2.4.1 A subset of the soils samples were selected for chemical analysis for a range of contaminants. The analytical suites were based on the contaminants of concern identified in the Phase 1 Geo-environmental Site Assessment report (**Appendix 11A** in ES Volume II) and varied according to whether the sample was of natural soil or made ground. Samples of made ground from a range of depths were selected for analysis.

2.4.2 A summary of the soil samples submitted for analysis is provided in **Table 4** below.

## Table 4 – Summary of Soil Analysis by Material

| Soil type | Anions | CLEA[1] Metals | pH | TPH CWG[2] | PAH[3] | SVOC[4] | VOC[5] | Total Organic Carbon | Asbestos Screen | Cyanides |
|---|---|---|---|---|---|---|---|---|---|---|
| Made ground | 3 | 3 | 3 | - | 2 | - | - | 3 | 2 | 2 |
| Made ground/PFA | 21 | 29 | 29 | 2 | 12 | 6 | 6 | 29 | 29 | 29 |
| Natural superficial deposits (clay) | 3 | 6 | 6 | 3 | - | 4 | 4 | 6 | - | - |
| Natural superficial deposits (silt) | 3 | 5 | 5 | 2 | - | 3 | 3 | 5 | - | - |
| Weathered bedrock (Mercia Mudstone) | 4 | 8 | 8 | 7 | - | 7 | 7 | 8 | - | - |

[1] Contaminated Land Exposure Assessment (CLEA) Handbook and software which help assess the risks of contaminated land exposure for human health.
[2] Total Petroleum Hydrocarbon Criteria Working Group (TPH CWG)
[3] Polyaromatic Hydrocarbons
[4] Semi-volatile organic compounds
[5] Volatile Organic compounds

## 2.5 Ground and Surface Water Analysis

2.5.1 Ground and surface water samples recovered were sent for chemical analysis for a range of contaminants. The analytical suites were based on the contaminants of concern identified in the Phase 1 Geo-Environmental desk based assessment (**Appendix 11A** in ES Volume II).

2.5.2 A summary of the water samples submitted for analysis is provided in **Table 5** below.

**Table 5 – Summary of Water Analysis by Type**

| Waters type | Anions | Metals | pH | TPH CWG | PAH | SVOC | VOC | Total Organic Carbon | Cyanides |
|---|---|---|---|---|---|---|---|---|---|
| Groundwater | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Surface Water | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Waters QA/QC* | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

***Duplicate samples (see Table 3) and a trip blank

# 3. Laboratory Results

## 3.1 Results

3.1.1 The results of laboratory testing of soils and waters are attached as **Annex B**.

## 3.2 QA/QC

3.2.1 To assess the precision and accuracy of the sampling and analytical methods a trip blank and field duplicates, were analysed in addition to the primary field samples. The field duplicates were submitted for the same suite of analysis under a different identifier and the results compared.

3.2.2 QA/QC data is presented in **Annex C**.

3.2.3 A review of the analytical data indicated that all samples were extracted and analysed within acceptable holding times.

### Duplicate Sample Review

3.2.4 Duplicate water samples from WS102 and surface water sampling point SW01 were analysed. Comparison of testing results to the parent sample of each duplicate revealed that Relative Percentage Difference (RPD) values were below the ±30% criteria for the majority of analytes tested. Exceptions are listed below:

- antimony - 67% (SW01/DUP02)
- molybdenum - 33% (WS102/DUP01)
- ortho phosphate as $PO_4$ - 30% (WS102/DUP01)

3.2.5 In all instances where the target RPD value (±30%) was exceeded, the measured concentration was close to the Method Detection Limit (MDL) where analytical reproducibility is often more difficult.

3.2.6 Therefore based on the duplicate data, the reproducibility of the analytical results is considered acceptable for the purposes of this assessment.

### Trip Blank Review

3.2.7 One trip blank was submitted for analysis of; anions, metals, VOCs, SVOCs, TPH-CWG, total organic carbon and total cyanide.

3.2.8 All analytes returned results below their respective MDLs.

3.2.9 Therefore the potential for cross contamination of the groundwater samples during transportation and prior to analysis is considered unlikely.

## 3.3 Data Screening

3.3.1 As part of these works, AECOM were commissioned by the Applicant to provide analysis and interpretation of the information gathered during the site investigation with regard to risks to receptors identified in the Phase I Geo-Environmental Site Assessment (**Appendix 11A** in ES Volume II) and also in relation to Hazardous Waste classification:

- Data will be screened against Generic Risk Assessment criteria (GAC) to assess whether the soils and surface water/groundwater pose a potential risk to identified receptors. The results of the screening may be used to support the DCO application.
- Analytical data for made ground will be input into the Waste Acceptance Classification (WAC) tool to assess whether the levels of contaminants may lead the made ground to be classified as hazardous waste. Additional WAC testing may be required to assess whether the waste is suitable for disposal at an inert non-hazardous landfill.

***Selection of Generic Assessment Criteria (GAC) for Stage 2 Assessment***

3.3.2 The results of the soil and water sampling conducted during the site investigation have been screened against Generic Assessment Criteria (GAC). These represent a level of minimal risk, below which it can be presumed that there is no risk to the receptor in question. Where GAC have been exceeded, it does not automatically mean that a risk to the relevant receptor exists but further interpretation of the results may be required. In some cases, the GAC used may also be an environmental standard.

3.3.3 The results are presented in **Annex D**, and discussed below.

***Soils – Human Health Screening***

3.3.4 Results of the soil analysis were screened against the GAC protective of human health, assuming an Industrial/Commercial end land use (sand, >3.48% Total Organic Carbon). None of the samples analysed exceeded the screening values selected.

3.3.5 A minor detection of asbestos (chrysotile fibres) was reported in one soil sample analysed (WS112, 2.0m depth). However, considering the depth at which the sample was retrieved and the low concentration of fibres reported (less than 0.1%), additional assessment regarding risk to human health is not considered necessary and is beyond the scope of this report.

***Groundwater Screening – Human Health Screening***

3.3.6 Results of the groundwater analysis were screened against the GAC protective of human health, assuming an Industrial/Commercial end use (sand, >3.48% Total

Organic Carbon). Screening against these values indicated that the GAC for Sulphates (250mg/l) was exceeded at all sample locations. Values for sulphates ranged from 941.3mg/l (WS102) to 2490.4mg/l (WS108). The GAC for $NO_2$ (0.5mg/l) was exceeded in three locations; BH105, WS104 and WS106. Values for $NO_2$ across the site ranged from <0.02mg/l, i.e. below the 'Limit of Detection' to 4.26mg/l.

### *Groundwater Screening – Controlled Waters Screening*

3.3.7 Groundwater samples were screened against three different GAC to assess risks to Controlled Waters. The samples were screened against Environmental Quality Standards (EQS) Freshwater (to assess risks to fishing ponds and Wheatley Beck), EQS Coastal Water (for the tidal River Trent) and Drinking Water Standards (DWS), for the underlying groundwater, assuming abstraction for a potable supply.

- EQS Freshwater – screening values were exceeded for sulphate (400mg/l) at all sampling locations, with values ranging from 941.3mg/l (WS102) to 2490.4mg/l. The EQS Freshwater limit for manganese (123µg/l) was also exceeded at 8 of 12 sampling locations. Values for manganese ranged from 172µg/l to 1464 µg/l. Nickel (4µg/l) showed marginal exceedances in 3 locations, ranging from 4µg/l to 5µg/l. Zinc (10.9µg/l) showed exceedances in 3 locations, ranging from 21µg/l to 88µg/l. Iron (1000µg/l) showed exceedances in 2 locations, ranging from 7453µg/l to 12440µg/l. There was also a single exceedance for arsenic (50µg/l) at WS111 of 56.2µg/l.
- EQS Coastal Water – The EQS was exceeded at 4 sampling locations for zinc (6.8µg/l), with values ranging from 7µg/l to 88µg/l. Screening values were exceeded for iron (1000µg/l) at 2 locations, ranging from 7453µg/l to 12440µg/l. The screening value for arsenic (25µg/) was also exceeded at 2 locations, with values ranging from 36.2µg/l to 56.2µg/l.
- Drinking Water Standards – The UK Drinking Water Standards were exceeded at all groundwater sampling locations for sulphate (250mg/l), with values ranging from 941.3mg/l (WS102) to 2490.4mg/l. The standard was exceeded in 9 of 12 locations for manganese (50µg/l), with values ranging from 73µg/l to 1464µg/l. The standard for molybdenum was also exceeded at 9 of 12 sampling locations, with values ranging from 247µg/l to 5527µg/l. The standard was exceeded at 6 locations for selenium (10µg/l), with values ranging from 11µg/l to 95µg/l. The standard for arsenic (10µg/l) was exceeded in 4 locations, with values ranging from 10.3µg/l to 56.2µg/l. The standard for Iron (200µg/l) was exceeded at 3 sampling locations, with values ranging from 692µg/l to 12440µg/l. There was a single exceedance of the Drinking Water Standard for EC16-EC21 aromatics (90µg/l) at sampling location WS111, with a value of 220µg/l.

3.3.8 It should be noted that the screening carried out above is conservative. The groundwater beneath the site is not being used in the immediate vicinity of the site for potable supply, and is not in direct hydraulic continuity with surface waters and no consideration has been made of dilution, degradation and retardation. A range of metals and sulphates occur naturally in the Mercia Mudstone and can therefore be expected to be present naturally in the formation waters.

### *Surface Waters – Human Health Screening*

3.3.9 Surface Water samples were screened against appropriate Generic Assessment Criteria for risk to human health. The GAC for Industrial/Commercial land use (Sand, >3.48% Total Organic Carbon) was selected. Screening against these values indicated that the GAC for sulphates (250mg/l) was exceeded at sample location SW02 on Wheatley Beck. The sample returned a value of 1095.8mg/l.

### *Surface Waters – Controlled Waters Screening*

3.3.10 Surface Water samples were screened against three different Generic Assessment Criteria for risk to Controlled Waters. The samples were screened against Environmental Quality Standards (EQS) Freshwater, Environmental Quality Standards (EQS) Coastal Water and Drinking Water Standards (DWS). The only exceedance of any of the three GAC selected was for Sulphate at sample location SW02, which returned a value of 1095.8mg/l and exceeded both the EQS Freshwater (400mg/l) and the Drinking Water Standards (250mg/l).

### *Waste Acceptance Classification Screening*

3.3.11 Soil sampling results from the Ground Investigation works were processed through the HazWasteOnline™ screening tool, which classifies waste in line with the Environment Agency WM3 guidance. This demonstrated that none of the soils sampled could be classified as 'Hazardous Waste'.

3.3.12 There was a single detection of asbestos in a soil sample from WS12 at 2.0m, but following quantification, the concentration of asbestos (chrysotile) present in the sample was recorded as less than 0.1%, which is below the threshold for determination as hazardous waste.

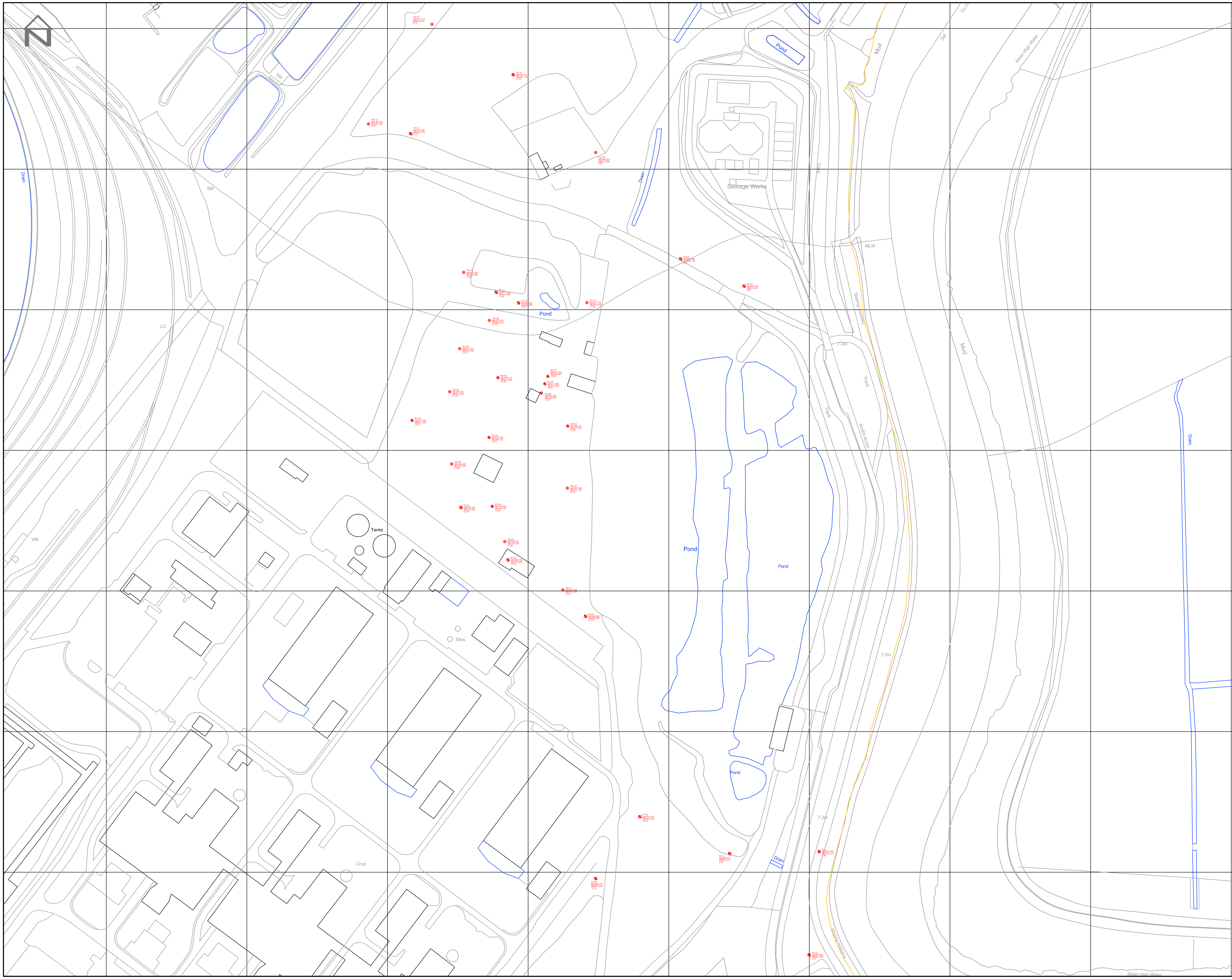
### *Summary*

3.3.13 The results of the soil and groundwater analysis completed during the investigation have indicated that levels of contamination detected at the site do not currently present a risk to human health and controlled waters at the site. The Mercia Mudstone bedrock contains naturally occurring measurable concentrations of a range of metals and sulphates, which can also be expected to occur in surface waters where fed by groundwater. There are no local potable abstractions from groundwater or surface water; therefore plausible exposure pathways which could affect human health are not present.

3.3.14 The soil sampling and analysis has established a snapshot of conditions beneath the site prior to commencement of construction of the Proposed Development, and this data may be considered as part of a future Site Condition Report to establish baseline conditions at the Site for a future environmental permit.

3.3.15 Similarly, provided that the groundwater wells installed as part of this investigation are retained and suitably protected during the construction phase, these wells may form part of a future groundwater monitoring programme which may be required as part of a future environmental permit.

# Annex A Factual Report, Pressure Testing and Groundwater Field Parameters




## CONTROL & DATUM INFORMATION

Co-ordinates and levels are based upon OSGB 1936 National Grid (OSGB36) and Ordnance Survey Datum Newlyn (ODN).

They are derived using realtime on site GPS survey, that utilises the National Grid Transformation OSTN15GB and the National Geoid Model OSGM15GB.

The data obtained for use in this drawing involved the use of realtime GPS survey and total station survey.

## COORDINATES

Ground Investigation Co-ordinates

| Reference | East | North | Elevation | Description |
|---|---|---|---|---|
| BH101 | 480314.024 | 386252.601 | 12.95 | Dynamic Sample |
| BH102 | 480272.229 | 386209.156 | 13.01 | Dynamic Sample |
| BH103 | 480278.514 | 386251.638 | 12.70 | Dynamic Sample |
| BH104 | 480328.157 | 386217.297 | 13.09 | Dynamic Sample |
| BH105 | 480217.436 | 386221.292 | 13.31 | Dynamic Sample |
| BH106 | 480274.502 | 386160.191 | 13.05 | Dynamic Sample |
| BH107 | 480311.894 | 386247.302 | 12.91 | Dynamic Sample |
| BH108 | 480309.308 | 386240.772 | 12.91 | Dynamic Sample |
| TP102 | 480408.463 | 386336.138 | 4.47 | Trial Pit |
| TP103 | 480453.609 | 386316.810 | 3.87 | Trial Pit |
| TP104 | 480252.254 | 386159.355 | 13.09 | Trial Pit |
| TP105 | 480285.706 | 386122.080 | 13.44 | Trial Pit |
| TP106 | 480340.802 | 386082.009 | 13.10 | Trial Pit |
| TP107 | 480379.494 | 385939.429 | 12.45 | Trial Pit |
| TP108 | 480348.078 | 385895.449 | 12.16 | Trial Pit |
| TP110 | 480443.301 | 385913.174 | 4.40 | Trial Pit |
| TP111 | 480506.998 | 385914.615 | 4.80 | Trial Pit |
| TP112 | 480499.866 | 385841.234 | 7.01 | Trial Pit |
| TP113 | 480293.201 | 386304.894 | 13.01 | Trial Pit |
| TP114 | 480277.305 | 386312.388 | 13.05 | Trial Pit |
| TP115 | 480216.451 | 386425.199 | 9.12 | Trial Pit |
| TP116 | 480289.441 | 386467.146 | 13.55 | Trial Pit |
| WS101 | 480231.613 | 386503.027 | 8.12 | Borehole |
| WS102 | 480348.037 | 386411.836 | 7.29 | Borehole |
| WS103 | 480254.220 | 386326.593 | 13.22 | Borehole |
| WS104 | 480272.493 | 386292.434 | 12.79 | Borehole |
| WS105 | 480251.341 | 386272.330 | 13.13 | Borehole |
| WS106 | 480244.241 | 386241.683 | 13.20 | Borehole |
| WS107 | 480327.968 | 386173.119 | 13.16 | Borehole |
| WS108 | 480245.663 | 386190.345 | 13.48 | Borehole |
| WS109 | 480283.382 | 386135.144 | 13.38 | Borehole |
| WS110 | 480341.799 | 386305.044 | 11.58 | Borehole |
| WS111 | 480324.708 | 386100.720 | 13.41 | Borehole |
| WS112 | 480186.502 | 386432.185 | 9.42 | Borehole |

## LEGEND TO SYMBOLS

- Denotes Cable Tool Borehole Location
- Denotes Trial Pit Location
- Denotes Dynamic Sampling & Rotary Borehole Location

Scale: 1:1250

0 12.5m 25 50 75 100

Title

SITE PLAN

Project

WEST BURTON C/D POWER STATION

Client

Firbeck Construction Limited

SOCOTEC

| Date | Drawn By | Approv. By |
|---|---|---|
| 05.01.18 | AW | MJS |

| Sheet Size | Scale | Project No |
|---|---|---|
| A1 | 1:1250 | A7102-17 |

| Drawing No | Rev |
|---|---|
| A2 | 0 |

| Location | Depth to product (m btp) | Ground Level (m aOD) | Depth to Groundwater (m btp) | Depth of base (m btp) | Depth to base (m aOD) | Volume Purged (L) | Temperature (°C) | Dissolved Oxygen (%) | Conductivity (µS/cm) | pH | Field Redox | True Redox (mV) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WS101 | - | 8.12 | 4.399 | 11.890 | -3.77 | 7 | 10.80 | 25.10 | 2219 | 7.15 | -153.70 | 87.30 | Clear, NVO. |
| WS102 | - | 7.29 | 3.970 | 10.600 | -3.31 | 6 | 10.90 | 26.90 | 1816 | 7.41 | -142.30 | 98.70 | Very slightly silty (light brown), NVO. |
| WS103* | - | 13.22 | 8.740 | 13.940 | -0.72 | 14 | 10.50 | 46.50 | 4181 | 7.67 | -118.60 | 122.40 | Initially clear, then very slightly silty (light grey). |
| WS104* | - | 12.79 | 8.310 | 13.570 | -0.78 | 32 | 10.50 | 48.00 | 2336 | 8.79 | -133.80 | 107.20 | Slighty silty (light grey), NVO. |
| WS106* | - | 13.2 | 7.460 | 10.300 | 2.90 | 18 | 11.00 | 49.00 | 2923 | 8.57 | -97.10 | 143.90 | Slighty silty (light grey), NVO. |
| WS108* | - | 13.48 | 7.640 | 13.850 | -0.37 | 13 | 10.80 | 66.00 | 2977 | 6.62 | 2.10 | 243.10 | Slightly silty (greyish brown), NVO. |
| WS109 | - | 13.38 | 8.199 | 13.319 | 0.06 | 4 | 10.50 | 27.90 | 2576 | 9.21 | -146.20 | 94.80 | Clear, NVO. |
| WS110* | - | 11.58 | 8.230 | 15.200 | -3.62 | 12 | 10.70 | 48.00 | 3084 | 7.30 | -106.60 | 134.40 | Slightly silty (light greyish brown), NVO. |
| WS111 | - | 13.41 | 8.300 | 14.480 | -1.07 | 3.5 | 10.40 | 30.20 | 2660 | 10.36 | -210.00 | 31.00 | Clear, NVO. |
| WS112 | - | 9.42 | 5.390 | 13.815 | -4.40 | 9 | 10.80 | 24.10 | 2472 | 7.03 | -156.90 | 84.10 | Very slightly silty (light brown), NVO. |
| BH104* | - | 13.09 | 9.250 | 14.160 | -1.07 | 9 | 10.80 | 49.90 | 2957 | 8.52 | -115.70 | 125.30 | Slighty silty (grey), NVO. |
| BH105* | - | 13.31 | 7.960 | 13.860 | -0.55 | 13 | 10.70 | 60.40 | 2430 | 6.97 | -89.30 | 151.70 | Slighty silty (light grey), NVO. |
| SW01 | - | | - | - | | - | 4.50 | 79.50 | 3785 | 7.72 | -218.80 | 22.20 | Clear, NVO. |
| SW02 | - | | - | - | | - | 7.60 | 95.90 | 1708 | 7.85 | -181.60 | 59.40 | Clear, NVO. |

**Notes:**

m aOD - Metres above Ordnance Datum

m btp - Metres below top of well pipe

Redox potential has been corrected according to Standard Hydrogen Electrode (SHE) values

' - ' - No product/groundwater detected

*(Water level dropping - grab sample taken)

# WEST BURTON C/D POWER STATION

# FACTUAL REPORT ON GROUND INVESTIGATION

## Report No A7102-17

January 2018

Carried out for:
Firbeck Construction Limited
7 Lawn Court
Lawn Road Industrial Estate
Carlton-in-Lindrick
Worksop
Nottinghamshire
S81 9ED

Engineer:
Sir Robert McAlpine Design Group
No. 5 Booths Park
Chelford Road
Knutsford
Cheshire
WA16 8GS

Please be aware that as of 17 October 2017, Environmental Scientifics Group Limited has become SOCOTEC UK Limited.  This is a name change only, the legal identity of the company, including company registration number remains unchanged.

In the interim period during the rebranding process please note that some reports may display two logos and company references.

# SOCOTEC UK Limited

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## Report No A7102-17

January 2018

| Issue No Date | Status | Prepared by | Checked by | Approved by |
|---|---|---|---|---|
| 1<br><br>January 2018 | Draft report | NAME and QUALIFICATIONS<br><br>**M STANLEY BSc (Hons)** | NAME and QUALIFICATIONS | NAME and QUALIFICATIONS |
| | | SIGNATURE<br>[redacted] | SIGNATURE | SIGNATURE |
| | Final report | NAME and QUALIFICATIONS | NAME and QUALIFICATIONS | NAME and QUALIFICATIONS |
| | | SIGNATURE | SIGNATURE | SIGNATURE |

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Whilst every effort has been made to ensure the accuracy of the data supplied and any analysis interpretation derived from it, the possibility exists of variations in the ground and groundwater conditions around and between the exploratory positions. SOCOTEC shall not be liable for any use of the Report for any purpose other than that for which it was originally prepared. No liability can be accepted for any such variations in these conditions. Furthermore, any recommendations are specific to the development as detailed in this Report and no liability will be accepted should they be used for the design of alternative schemes without prior consultant with SOCOTEC.

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SOCOTEC UK Limited was formerly known as Environmental Scientifics Group Limited. The Certificate of Incorporation on Change of Name was filed on 16 October 2017.

CONTENTS

Page

## 1 INTRODUCTION

In November 2017 SOCOTEC UK Limited (formerly known as ESG) was commissioned by Firbeck Construction Limited (FCL), on behalf of EDF Energy, to carry out a site investigation at West Burton Power Station, Nottinghamshire. The Investigation Supervisor was Sir Robert McAlpine Design Group (SRM). The investigation was required to obtain geotechnical and geoenvironmental information for the proposed development of West Burton C and D gas turbine power plants adjacent to the existing station.

The scope of the investigation was specified by SRM and comprised cable percussion boreholes, dynamic sampling, rotary drilled boreholes, trial pits, in situ testing and laboratory testing. The investigation was performed in accordance with the contract specification, and the general requirements of BS 5930 (2015), BS EN 1997-2 (2007), BS EN ISO 22475-1 (2006) and other relevant related standards identified below. The fieldwork took place between 4 December 2017 and 21 December 2017.

This report presents the factual records of the fieldwork and laboratory testing. The information is also presented as digital data as defined in AGS (2017).

## 2 SITE SETTING

### 2.1 Location and Description

West Burton Power Station is situated off Gainsborough Road, approximately 7 km South West of Gainsborough. The site is located within the power station complex and is centred at National Grid Reference SK 803 862.

The site is bounded to the North and West by areas used for processing ash and to the East by the River Trent. The Southern boundary of the site consists of power station buildings and structures. The majority of the site consists of a landscaped area formerly used for ash disposal, with some wooded areas along the perimeter.

## 2.2 Published Geology

The published geological map covering the site (GS sheet 101, 1967) and the BGS Geology of Britain Viewer (2018) shows the site to be underlain by Alluvium and River Terrace Deposits. Bedrock is shown to be the Mercia Mudstone Group consisting of mudstones with subordinate siltstone and beds of gypsum.

There is also Made Ground present associated with the historical use of the site. This was confirmed by the investigation.

# 3 FIELDWORK

## 3.1 General

The fieldwork was carried out in general accordance with BS 5930 (2015), BS EN 1997-2 (2007) and BS EN ISO 22475-1 (2006).

The exploratory hole locations were selected by SRM. The locations were set out by EDF Energy and SOCOTEC UK Ltd from local features. The co-ordinates and reduced levels were surveyed by SOCOTEC UK Ltd to National Grid and Ordnance Datum, where applicable. The exploratory hole locations are shown on the Site Plan in Appendix A.

## 3.2 Exploratory Holes

The exploratory holes are summarised in the table below and in further detail in the Exploratory Hole Summary included in Appendix B.

TABLE 1 : SUMMARY OF EXPLORATORY HOLES

| TYPE | QUANTITY | MAXIMUM DEPTH (m) | REMARKS |
|---|---|---|---|
| Cable Percussion Boreholes | 12 | 15.60 | WS101 to WS112 |
| Dynamic Sampling extended by Rotary Core Drilling | 8 | 30.30 | BH101 to 108 |
| Trial Pits | 14 | 3.70 | TP101 and TP109 omitted from the contract. TP107 and TP110 were hand excavated. |

The exploratory hole logs are presented in Appendix B. These provide information including the equipment and methods used, samples taken, tests carried out, water observations and descriptions of the strata encountered. Explanation of the terms and abbreviations used on the logs is given in the Key to Exploratory Hole Records in Appendix B, together with other explanatory information. The logging of soil and rock materials is in accordance with BS EN ISO 14688-1+A1 (2013) for soils and BS EN ISO 14689-1 (2003) for rocks, as amplified by BS 5930 (2015). The encountered mudstone and siltstone of the Mercia Mudstone Group has been divided according to the weathering grades defined in Spink and Norbury (1993).

Standard penetration tests (SPT) in the boreholes were carried out in accordance with BS EN ISO 22476-3+A1 (2011) and the SPT hammer energy ratio certificate is included in Appendix B. The SPT results are presented on the logs as uncorrected N values.

Photographs of the trial pits and rotary drilled core are presented in Appendix E.

On completion of the fieldwork geotechnical samples were transported to the Doncaster office of SOCOTEC for temporary retention, with those required for testing being transferred to the SOCOTEC laboratories.

### 3.3 Instrumentation

Instrumentation installed in the exploratory holes for groundwater and gas monitoring are shown on the logs and summarised in Appendix C.

SOCOTEC were not required to undertake post fieldwork monitoring of the instrumentation.

### 3.4 In Situ Testing

In situ testing was carried out in accordance with the relevant standards as tabulated below. The testing is summarised in the following table and the results are presented in separate reports as detailed below.

TABLE 2: SUMMARY OF IN SITU TESTING

| TYPE | QUANTITY | REMARKS |
|---|---|---|
| Self Boring Pressuremeter | 4 tests at 2 locations – BH101 and BH102 | BS 5930 (2015). Results presented in Geocone Report Ref: A7104-17 |
| High Pressure Dilatometer Test (HPD) | 6 tests at 2 locations – BH101 and BH102 | BS 5930 (2015). Results presented in Geocone Report Ref: |
| Cross Hole Seismic Survey | 3 locations – BH101, BH107, BH108 | Results presented in Pelorus Report Ref: TBC |

## 4 LABORATORY TESTING

Geotechnical laboratory testing was scheduled by SRM and was carried out in accordance with BS 1377 (1990), BS EN ISO 17892 (2014) Part 1 and 2 and ISRM (2007) unless otherwise stated. The testing is summarised below and the results are presented in Appendix D.

TABLE 3 : SUMMARY OF GEOTECHNICAL LABORATORY TESTING

| TYPE | REMARKS |
|---|---|
| Water Content Determination | |
| Atterberg Limit Determination | |
| Particle Size Distribution Analysis | |
| pH and Water Soluble Sulphate Content of Soils<br>Magnesium, Chloride, Nitrate, Acid Soluble Sulphate and Total Sulphur | Test methods are BS 1377 or others recognised in BRE Special Digest 1 (2005); they are indicated on the results report sheets in Appendix D. |
| Organic Matter Content | |
| Compaction Testing | |
| Unconsolidated Undrained Triaxial Compression Testing | |
| Uniaxial Compressive Strength of Rocks | |
| Point Load Testing of Rocks | |

## REFERENCES


AGS : 2017 : Electronic transfer of geotechnical and geoenvironmental data (Edition 4.0.4 February 2017). Association of Geotechnical and Geoenvironmental Specialists.

BGS Geology of Britain Viewer : 2018. www.bgs.ac.uk. British Geological Survey.

BRE Special Digest 1 : 2005 : Concrete in aggressive ground. Building Research Establishment.

BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.

BS 5930 : 2015 : Code of practice for ground investigations. British Standards Institution.

BS EN 1997-2 : 2007 : Eurocode 7 - Geotechnical design - Part 2 Ground investigation and testing. British Standards Institution.

BS EN ISO 14688-1:2002+A1 : 2013 : Geotechnical investigation and testing - Identification and classification of soil - Part 1 Identification and description. British Standards Institution.

BS EN ISO 14688-2:2004+A1 : 2013 : Geotechnical investigation and testing - Identification and classification of soil - Part 2 Principles for a classification. British Standards Institution.

BS EN ISO 14689-1 : 2003 : Geotechnical investigation and testing - Identification and classification of rock - Part 1 Identification and description. British Standards Institution.

BS EN ISO 17892-1 : 2014 : Geotechnical investigation and testing – Laboratory Testing of soil – Determination of water content.

BS EN ISO 17892-2 : 2014 : Geotechnical investigation and testing – Laboratory Testing of soil – Determination of bulk density.

BS EN ISO 22475-1 : 2006 : Geotechnical investigation and testing – Sampling methods and groundwater measurements - Part 1 Technical principles for execution. British Standards Institution.

BS EN ISO 22476-3:2005+A1 : 2011 : Geotechnical investigation and testing - Field testing - Part 3 Standard penetration test. British Standards Institution.

CIRIA C570: 2001: Engineering in Mercia Mudstone. CIRIA.

GS England and Wales Sheet 101 : 1967 : East Retford 1:63360 geological map (solid and drift) (Bedrock and Superficials). Geological Survey of Great Britain.

ISRM : 2007 : The Complete ISRM Suggested Methods for Rock Characterisation, Testing and Monitoring (1974-2006). Commission on Testing Methods, International Society for Rock Mechanics (Editors Ulusay R & Hudson JA).

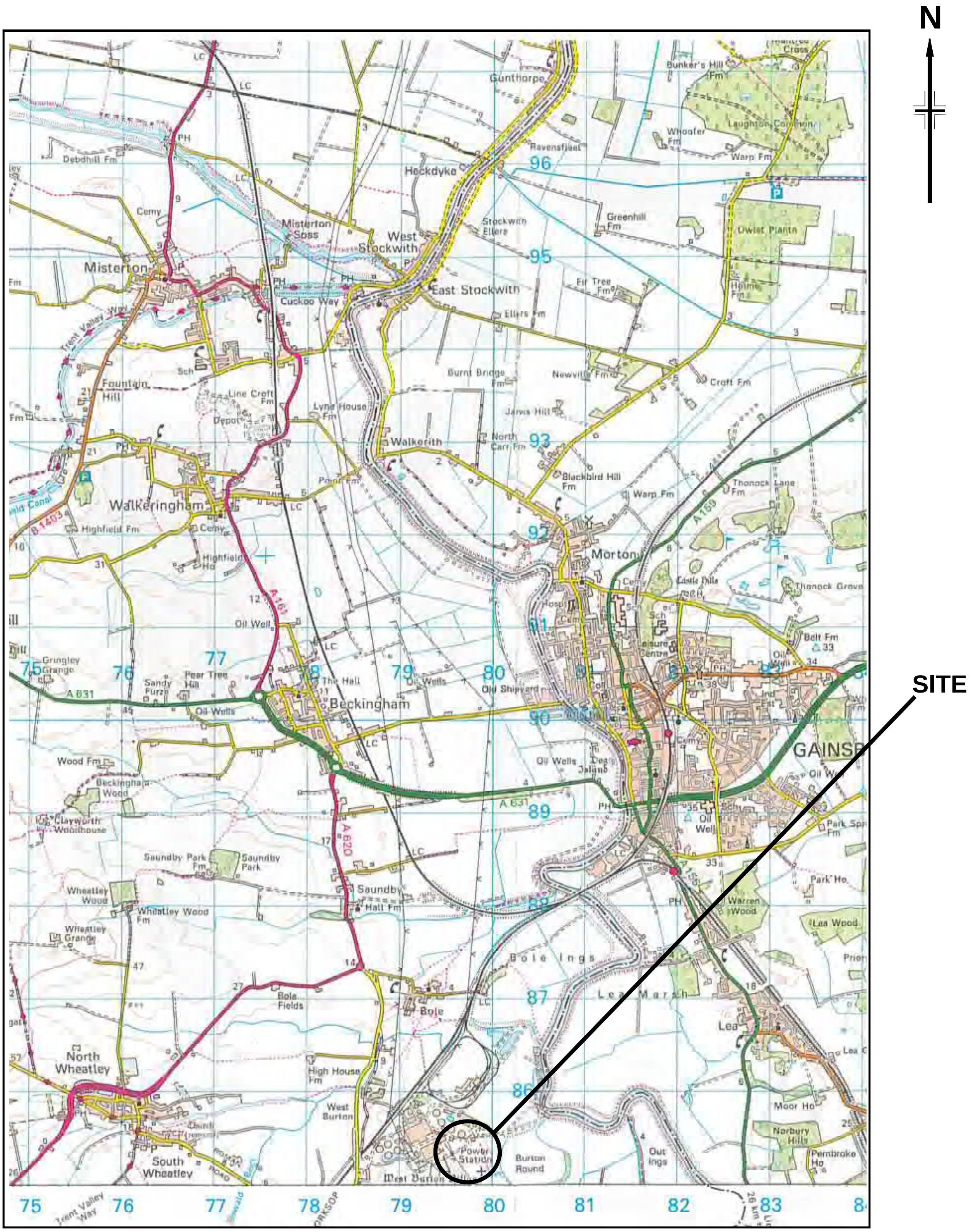
Spink TW and Norbury DR : 1993 : The Engineering Geological Description of Weak Rocks and Overconsolidated Soils. Proc 26th Regional Meeting of Engineering Group of Geological Society, Leeds.

**APPENDIX A**

**FIGURES AND DRAWINGS**

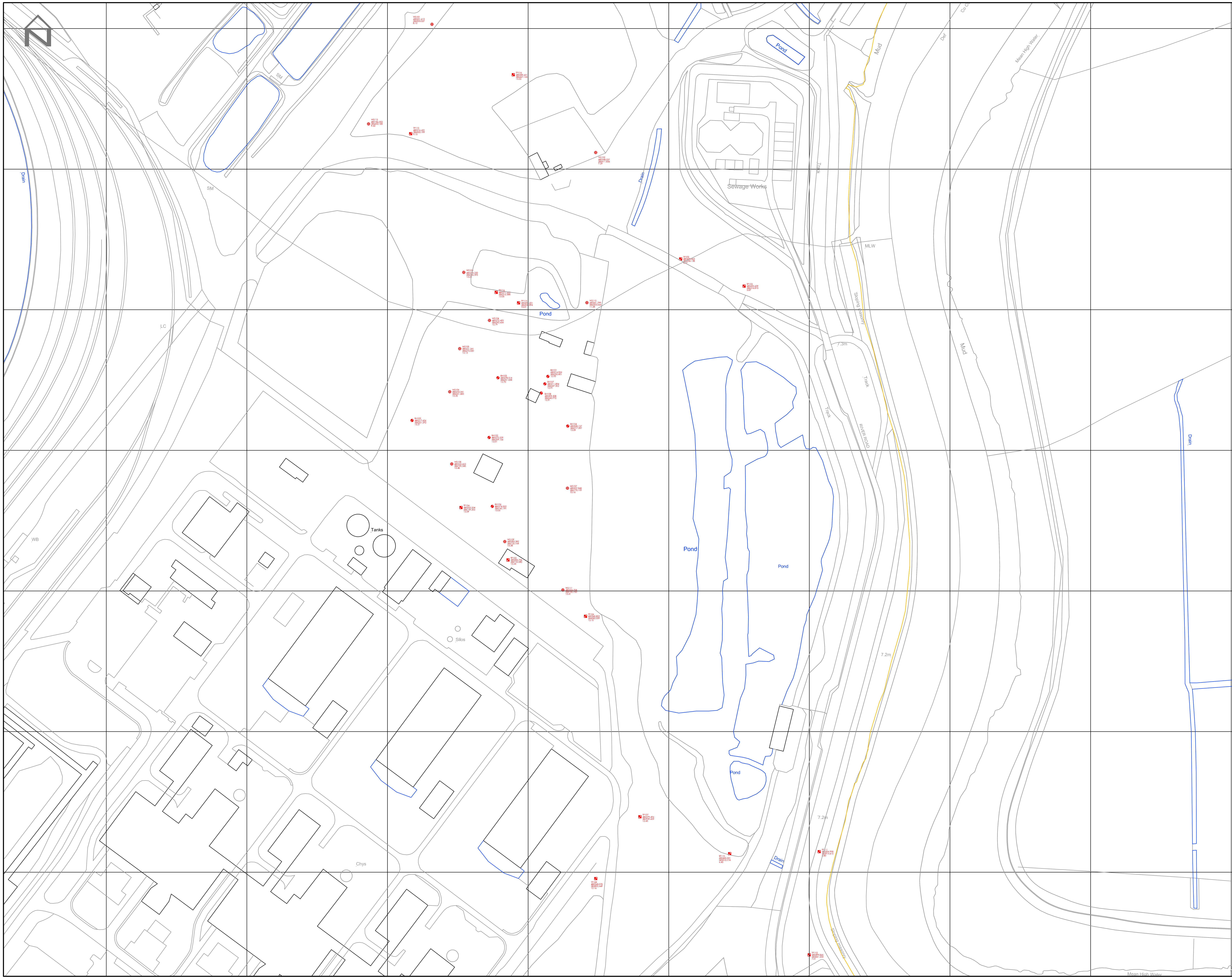
# Site Location Plan

SOCOTEC




Reproduced from the 2005 Ordnance Survey 1:50 000 scale Landranger map No 112 by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, © Crown copyright, Environmental Services Group Limited. All rights reserved. Licence Number 100006060

| | | | |
|---|---|---|---|
| Notes:<br>Scale 1:50 000 | Project<br>Project No.<br>Carried out for | WEST BURTON C/D POWER STATION<br>A7102-17<br>Firbeck Construction Limited | Figure<br>A1 |




CONTROL & DATUM INFORMATION

Co-ordinates and levels are based upon OSGB 1936 National Grid (OSGB36) and Ordnance Survey Datum Newlyn (ODN).

They are derived using realtime on site GPS survey, that utilises the National Grid Transformation OSTN15GB and the National Geoid Model OSGM15GB.

The data obtained for use in this drawing involved the use of realtime GPS survey and total station survey.

COORDINATES

Ground Investigation Co-ordinates

| Reference | East | North | Elevation | Description |
|---|---|---|---|---|
| BH101 | 480314.024 | 386252.601 | 12.95 | Dynamic Sample |
| BH102 | 480272.229 | 386209.156 | 13.01 | Dynamic Sample |
| BH103 | 480278.514 | 386251.638 | 12.70 | Dynamic Sample |
| BH104 | 480328.157 | 386217.297 | 13.09 | Dynamic Sample |
| BH105 | 480217.436 | 386221.292 | 13.31 | Dynamic Sample |
| BH106 | 480274.502 | 386160.191 | 13.05 | Dynamic Sample |
| BH107 | 480311.894 | 386247.302 | 12.91 | Dynamic Sample |
| BH108 | 480309.308 | 386240.772 | 12.91 | Dynamic Sample |
| TP102 | 480408.463 | 386336.138 | 4.47 | Trial Pit |
| TP103 | 480453.609 | 386316.810 | 3.87 | Trial Pit |
| TP104 | 480252.254 | 386159.355 | 13.09 | Trial Pit |
| TP105 | 480285.706 | 386122.080 | 13.44 | Trial Pit |
| TP106 | 480340.802 | 386082.009 | 13.10 | Trial Pit |
| TP107 | 480379.494 | 385939.429 | 12.45 | Trial Pit |
| TP108 | 480348.078 | 385895.449 | 12.16 | Trial Pit |
| TP110 | 480443.301 | 385913.174 | 4.40 | Trial Pit |
| TP111 | 480506.998 | 385914.615 | 4.80 | Trial Pit |
| TP112 | 480499.866 | 385841.234 | 7.01 | Trial Pit |
| TP113 | 480293.201 | 386304.894 | 13.01 | Trial Pit |
| TP114 | 480277.305 | 386312.388 | 13.05 | Trial Pit |
| TP115 | 480216.451 | 386425.199 | 9.12 | Trial Pit |
| TP116 | 480289.441 | 386467.146 | 13.55 | Trial Pit |
| WS101 | 480231.613 | 386503.027 | 8.12 | Borehole |
| WS102 | 480348.037 | 386411.836 | 7.29 | Borehole |
| WS103 | 480254.220 | 386326.593 | 13.22 | Borehole |
| WS104 | 480272.493 | 386292.434 | 12.79 | Borehole |
| WS105 | 480251.341 | 386272.330 | 13.13 | Borehole |
| WS106 | 480244.241 | 386241.683 | 13.20 | Borehole |
| WS107 | 480327.968 | 386173.119 | 13.16 | Borehole |
| WS108 | 480245.663 | 386190.345 | 13.48 | Borehole |
| WS109 | 480283.382 | 386135.144 | 13.38 | Borehole |
| WS110 | 480341.799 | 386305.044 | 11.58 | Borehole |
| WS111 | 480324.708 | 386100.720 | 13.41 | Borehole |
| WS112 | 480186.502 | 386432.185 | 9.42 | Borehole |

LEGEND TO SYMBOLS

- Denotes Cable Tool Borehole Location
- Denotes Trial Pit Location
- Denotes Dynamic Sampling & Rotary Borehole Location

Scale: 1:1250

0 12.5m 25 50 75 100

Title

SITE PLAN

Project

WEST BURTON C/D POWER STATION

Client

Firbeck Construction Limited

SOCOTEC

| Date | Drawn By | Approv. By |
|---|---|---|
| 05.01.18 | AW | MJS |

| Sheet Size | Scale | Project No |
|---|---|---|
| A1 | 1:1250 | A7102-17 |

| Drawing No | Rev |
|---|---|
| A2 | 0 |

**APPENDIX B**

**EXPLORATORY HOLE RECORDS**

| | |
|---|---|
| Exploratory Hole Summary | Table B1 |
| Key to Exploratory Hole Records | Key |
| SPT Hammer Energy Ratio Report | SPT Hammer Reference AR868, AR932, AR1121, AR1777, ESG01 and SM39 |
| Borehole Logs | BH101 to 106, WS101 to 112 |
| Trial Pit Logs | TP102 to 108, 110 to 116 |

# Exploratory Hole Summary

SOCOTEC

| Hole ID | Hole Depth, (m) | Hole Type | Eastings, (m) | Northings, (m) | Ground Level, (m AOD) | Start Date | End Date | Hole Remarks |
|---|---|---|---|---|---|---|---|---|
| BH101 | 30.30 | WLS+RC | 480314.02 | 386252.60 | 12.95 | 08/12/2017 | 15/12/2017 | |
| BH102 | 30.07 | WLS+RC | 480272.23 | 386209.16 | 13.01 | 05/12/2017 | 08/12/2017 | |
| BH103 | 29.80 | WLS+RC | 480278.51 | 386251.64 | 12.70 | 04/12/2017 | 08/12/2017 | |
| BH104 | 30.10 | WLS+RC | 480328.16 | 386217.30 | 13.09 | 11/12/2017 | 15/12/2017 | |
| BH105 | 29.50 | WLS+RC | 480217.44 | 386221.29 | 13.31 | 11/12/2017 | 15/12/2017 | |
| BH106 | 29.80 | WLS+RC | 480274.50 | 386160.19 | 13.05 | 16/12/2017 | 19/12/2017 | |
| BH107 | 30.00 | RO | 480311.89 | 386247.30 | 12.91 | 16/12/2017 | 18/12/2017 | |
| BH108 | 28.00 | RO | 480309.31 | 386240.77 | 12.91 | 15/12/2018 | 18/12/2018 | |
| TP102 | 3.00 | TP | 480408.46 | 386336.14 | 4.47 | 14/12/2017 | 14/12/2017 | |
| TP103 | 3.50 | TP | 480453.61 | 386316.81 | 3.87 | 14/12/2017 | 14/12/2017 | |
| TP104 | 3.70 | TP | 480252.25 | 386159.36 | 13.09 | 13/12/2017 | 13/12/2017 | |
| TP105 | 3.50 | TP | 480285.71 | 386122.08 | 13.44 | 12/12/2017 | 12/12/2017 | |
| TP106 | 3.50 | TP | 480340.80 | 386082.01 | 13.10 | 12/12/2017 | 12/12/2017 | |
| TP107 | 1.20 | TP | 480379.49 | 385939.43 | 12.45 | 20/12/2017 | 20/12/2017 | |
| TP108 | 3.50 | TP | 480348.08 | 385895.45 | 12.16 | 14/12/2017 | 14/12/2017 | |
| TP110 | 1.20 | TP | 480443.30 | 385913.17 | 4.40 | 20/12/2017 | 20/12/2017 | |
| TP111 | 3.50 | TP | 480507.00 | 385914.62 | 4.80 | 14/12/2017 | 14/12/2017 | |
| TP112 | 3.50 | TP | 480499.87 | 385841.23 | 7.01 | 14/12/2017 | 14/12/2017 | |
| TP113 | 3.50 | TP | 480293.20 | 386304.89 | 13.01 | 13/12/2017 | 13/12/2017 | |
| TP114 | 3.50 | TP | 480277.31 | 386312.39 | 13.05 | 13/12/2017 | 13/12/2017 | |
| TP115 | 3.50 | TP | 480216.45 | 386425.20 | 9.12 | 13/12/2017 | 13/12/2017 | |
| TP116 | 3.50 | TP | 480289.44 | 386467.15 | 13.55 | 13/12/2017 | 13/12/2017 | |
| WS101 | 15.15 | CP | 480231.61 | 386503.03 | 8.12 | 18/12/2017 | 20/12/2017 | |
| WS102 | 10.88 | CP | 480348.04 | 386411.84 | 7.29 | 15/12/2017 | 18/12/2017 | |
| WS103 | 15.00 | CP | 480254.22 | 386326.59 | 13.22 | 13/12/2017 | 14/12/2017 | |
| WS104 | 15.00 | CP | 480272.49 | 386292.43 | 12.79 | 13/12/2017 | 15/12/2017 | |
| WS105 | 15.45 | CP | 480251.34 | 386272.33 | 13.13 | 11/12/2017 | 12/12/2017 | |
| WS106 | 15.00 | CP | 480244.24 | 386241.68 | 13.20 | 11/12/2017 | 12/12/2017 | |
| WS107 | 15.45 | CP | 480327.97 | 386173.12 | 13.16 | 05/12/2017 | 06/12/2017 | |
| WS108 | 14.60 | CP | 480245.66 | 386190.35 | 13.48 | 07/12/2017 | 07/12/2017 | |
| WS109 | 15.45 | CP | 480283.38 | 386135.14 | 13.38 | 07/12/2017 | 08/12/2017 | |
| WS110 | 15.00 | CP | 480341.80 | 386305.04 | 11.58 | 13/12/2017 | 14/12/2017 | |
| WS111 | 15.60 | CP | 480324.71 | 386100.72 | 13.41 | 05/12/2017 | 06/12/2017 | |
| WS112 | 15.00 | CP | 480186.50 | 386432.19 | 9.42 | 15/12/2017 | 18/12/2017 | |

Notes:

AGS

| | | | |
|---|---|---|---|
| Project | WEST BURTON C/D POWER STATION | Table | B1 |
| Project No. | A7102-17 | | |
| Carried out for | Firbeck Construction Limited | | |

# Key to Exploratory Hole Records

SOCOTEC

**SAMPLES**

**Undisturbed**

| | |
|---|---|
| U | Driven tube sample |
| UT | Driven thin wall tube sample |
| TW | Pushed thin wall tube sample |
| P | Pushed piston sample |
| L | Liner sample from dynamic (windowless) sampling. Full recovery unless otherwise stated |
| CBR | CBR mould sample |
| BLK | Block sample |
| C / CS | Core sample (from rotary core) taken for laboratory testing. |
| AMAL | Amalgamated sample |

U, UT, TW, P: nominally 100 mm diameter and full recovery unless otherwise stated

**Disturbed**

| | |
|---|---|
| D | Small sample |
| B | Bulk sample |

**Other**

| | |
|---|---|
| W | Water sample |
| G | Gas sample |
| | Environmental chemistry samples (in more than one container where appropriate) |
| ES | Soil sample |
| EW | Water sample |

**Comments**

Sample reference numbers are assigned to every sample taken. A sample reference of 'NR' indicates that, while an attempt was made to take a tube sample, there was no recovery.

Samples taken from borehole installations (ie water or gas) after hole construction are not shown on the exploratory hole logs.

Specimens for point load testing undertaken on site (or other non-lab location) are not shown on the log.

**IN SITU TESTS**

SPT S or SPT C — Standard Penetration Test, open shoe (S) or solid cone (C)

The Standard Penetration Test is defined in BS EN ISO 22476-3:2005+A1:2011.
The incremental blow counts are given in the Field Records column; each increment is 75 mm unless stated otherwise and any penetration under self-weight in mm (SW) is noted. Where the full 300 mm test drive is achieved the total number of blows for the test drive is presented as N = ** in the Test column. Where the test drive blows reach 50 the total blow count beyond the seating drive is given (without the N = prefix).

| | |
|---|---|
| IV | *in situ* vane shear strength, peak (p) and remoulded (r) |
| HV | Hand vane shear strength, peak (p) and remoulded (r) |
| PP | Pocket penetrometer test, converted to shear strength |
| KFH, KRH, KPI | Permeability tests (KFH = falling head, KRH = rising head; KPI = packer inflow); results provided in Field Records column (one value per stage for packer tests) |

**DRILLING RECORDS**

The mechanical indices (TCR/SCR/RQD & If) are defined in BS 5930:2015

| | |
|---|---|
| TCR | Total Core Recovery, % |
| SCR | Solid Core Recovery, % |
| RQD | Rock Quality Designation, % |
| If | Fracture spacing, mm. Minimum, typical and maximum spacing measurements are presented. |
| NI | The term non-intact (NI) is used where the core is fragmented. |
| NA | Used where a measurement is not applicable (eg. If, SCR and RQD in non-rock materials). |

Flush returns, estimated percentage with colour where relevant, are given in the Records column

| | |
|---|---|
| CRF | Core recovered (length in m) in the following run |
| AZCL | Assessed zone of core loss |

**GROUNDWATER**

| | |
|---|---|
| ▼ | Groundwater entry |
| ▽ | Depth to groundwater after standing period |

Notes:

See report text for full references of standards.

Updated October 2017

| | |
|---|---|
| **Project** | **WEST BURTON C/D POWER STATION** |
| **Project No.** | **A7102-17** |
| **Carried out for** | **Firbeck Construction Limited** |

**Key**

# Key to Exploratory Hole Records

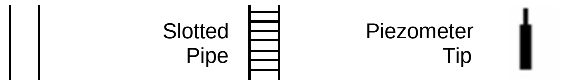
**INSTALLATION**

**Standpipe/ piezometer**

Details of standpipe/piezometer installations are given on the Record. Legend column shows installed instrument depths including slotted pipe section or tip depth, response zone filter material type and layers of backfill.

The type of instrument installed is indicated by a code in the Legend column at the depth of the response zone:

| | | | |
|---|---|---|---|
| SP | Standpipe | Plain Pipe | Slotted Pipe | Piezometer Tip |
| SPIE | Standpipe piezometer | | | |
| PPIE | Pneumatic piezometer | | | |
| EPIE | Electronic piezometer | | | |



**Inclinometer or Slip Indicator**

The installation of vertical profiling instruments is indicated on the Record. The base of tubing is shown in the Legend column.

The type of instrument installed is indicated by a code in the Legend column at the base of the tubing:

| | |
|---|---|
| ICE | Biaxial inclinometer |
| ICM | Inclinometer tubing for use with probe |
| SLIP | Slip indicator |

**Settlement Points or Pressure Cells**

The installation of single point instruments is indicated on the Record. The location of the measuring device is shown in the Legend column.

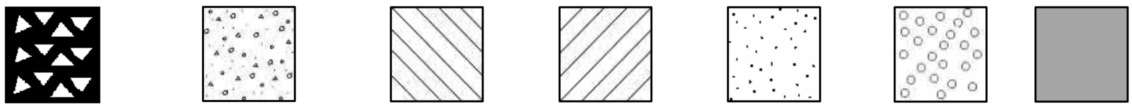
The type of instrument installed is indicated by a code in the Legend column:

| | |
|---|---|
| ESET | Electronic settlement cell/gauge |
| ETM | Magnetic extensometer settlement point |
| EPCE | Electronic embedment pressure cell |
| PPCE | Electronic push in pressure cell |

**INSTALLATION / BACKFILL LEGENDS**

A legend describing the installation is shown in the rightmost column. Legend symbols used to describe the backfill materials are indicated below.

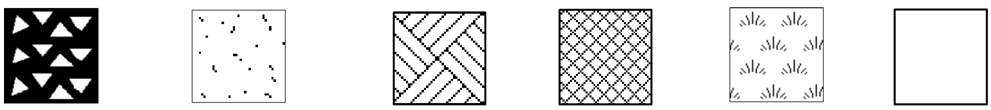
Macadam Concrete Grout Bentonite Sand Gravel Arisings



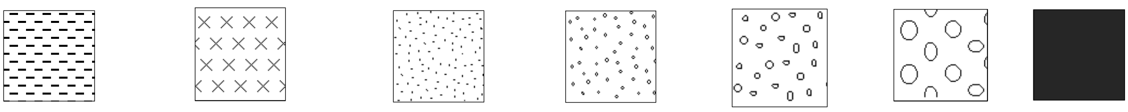
**STRATUM LEGENDS**

The legend symbols used for graphical representation of soils, rocks and other materials on the borehole logs are shown below. For soils with significant proportions of secondary soil types, a combination of two or more symbols may be used.

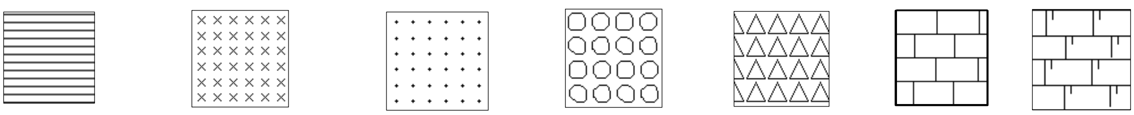
Macadam Concrete Topsoil Made Ground / Fill Peat Void or No Information



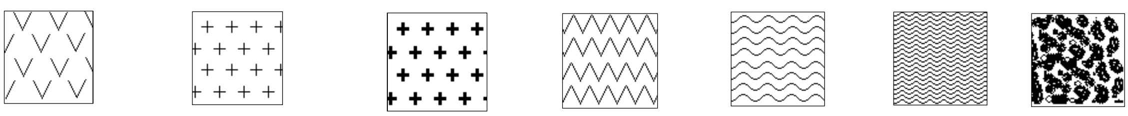
Clay Silt Sand Gravel Cobbles Boulders Coal



Mudstone Siltstone Sandstone Conglomerate Breccia Limestone Chalk



Igneous (Fine) Igneous (Med) Igneous (Coarse) Metamorphic (Fine) Metamorphic (Med) Metamorphic (Coarse) Tuff



Notes:

See report text for full references of standards.

Updated October 2017

**Project** **WEST BURTON C/D POWER STATION**

**Project No.** **A7102-17**

**Carried out for** **Firbeck Construction Limited**

**Key**

# Key to Exploratory Hole Records

SOCOTEC

**NOTES**

1 Soils and rocks are described in accordance with BS EN ISO 14688-1:2002+A1:2013 and 14689-1:2003 respectively as amplified by BS 5930:2015.

2 For fine soils, consistency determined during description is reported for those strata where undisturbed samples are available. Where the logger considers that the sample may not be representative of the condition in situ, for whatever reason, the reported consistency is given in brackets. The reliability of the sample is indicated by Probably or Possibly as appropriate. Hence (Probably firm) indicates the logger is reasonably confident of the assessment, but (Possibly firm) means less certainty. Where the samples available are too disturbed to allow a reasonable assessment of the in situ condition, no consistency is given.

3 Evidence of the occurrence of very coarse particles (cobbles and boulders) is presented on the logs. However, because of their size in relation to the exploratory hole these records may not be fully representative of their size and frequency in the ground mass.

4 The declination of bedding and joints is given with respect to the normal to the core axis. Thus in a vertical borehole this will be the dip.

5 The assessment of SCR, RQD and Fracture Spacing excludes artificial fractures.

6 Observations of discernible groundwater entries during the advancement of the exploratory hole are given at the foot of the log and in the Legend column. The absence of a recorded groundwater entry should not, however, be interpreted as a groundwater level below the base of the borehole. Under certain conditions groundwater entry may not be observed, for instance, drilling with water flush or overwater, or boring at a rate faster than water can accumulate in the borehole. Similarly, where water entry observations do exist, groundwater may also be present at higher elevations in the ground than where recorded in the borehole. In addition, where appropriate, water levels in the hole at the time of recovering individual samples or carrying out in situ tests and at shift changes are given in the Records column.

7 The borehole logs present the results of Standard Penetration Tests recorded in the field without correction or interpretation. However, in certain ground conditions (eg high hydraulic head or where very coarse particles are present) some judgement may be necessary in considering whether the results are representative of in situ mass conditions.

**REFERENCES**


1 BS EN ISO 14688-1:2002+A1 : 2013 : Geotechnical investigation and testing - Identification and classification of soil. Part 1 Identification and description. British Standards Institution

2 BS EN ISO 14689-1 : 2003 : Geotechnical investigation and testing - Identification and classification of rock. Part 1 Identification and description. British Standards Institution

3 BS EN ISO 22476-3:2005+A1 : 2011 : Geotechnical investigation and testing - Field testing. Part 3 Standard penetration test. British Standards Institution

4 BS 5930 : 2015 : Code of practice for ground investigations. British Standards Institution

# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

**ARCHWAY ENGINEERING**
**AINLEYS INDUSTRIAL ESTATE**
**ELLAND**
**WEST YORKSHIRE**
**HX5 9JP**

| | |
|---|---|
| SPT Hammer Ref: | AR868 |
| Test Date: | 16/08/2017 |
| Report Date: | 16/08/2017 |
| File Name: | AR868.spt |
| Test Operator: | SH |

**Instrumented Rod Data**

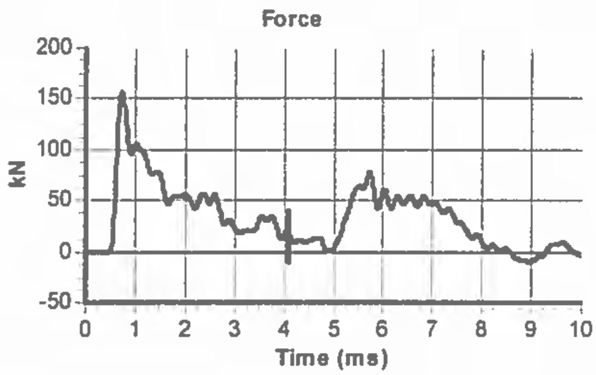
| | |
|---|---|
| Diameter $d_r$ (mm): | 54 |
| Wall Thickness $t_r$ (mm): | 6.0 |
| Assumed Modulus $E_a$ (GPa): | 208 |
| Accelerometer No.1: | 7080 |
| Accelerometer No.2: | 11609 |

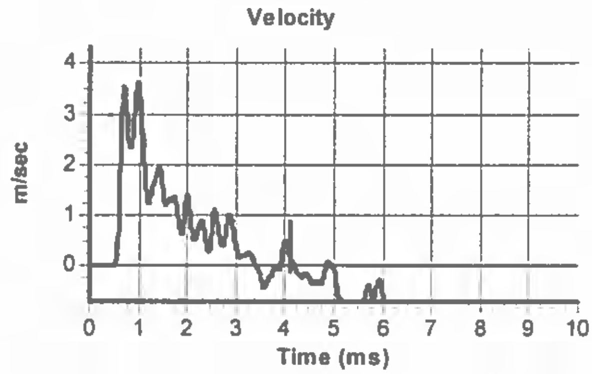
**SPT Hammer Information**

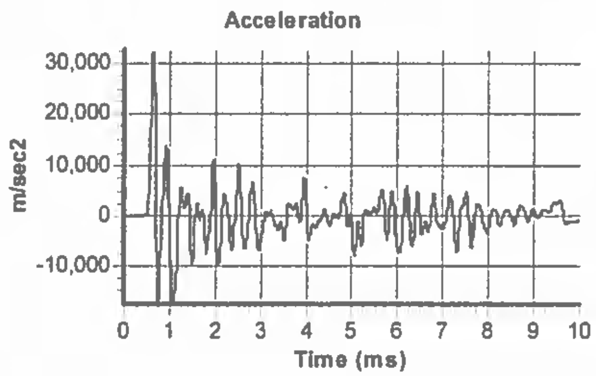
| | |
|---|---|
| Hammer Mass m (kg): | 63.5 |
| Falling Height h (mm): | 760 |
| SPT String Length L (m): | 10.0 |

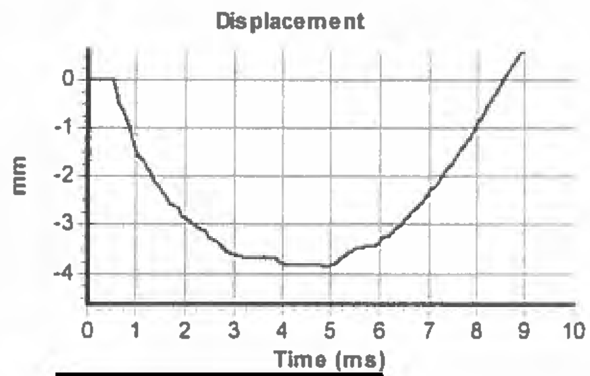
**Comments / Location**

CALIBRATION




**Calculations**

| | |
|---|---|
| Area of Rod A (mm2): | 905 |
| Theoretical Energy $E_{theor}$ (J): | 473 |
| Measured Energy $E_{meas}$ (J): | 343 |

**Energy Ratio $E_r$ (%): 72**

[redacted]

Signed: S. HOWARTH

Title: FITTER

The recommended calibration interval is 12 months

# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

**ARCHWAY ENGINEERING**
**AINLEYS INDUSTRIAL ESTATE**
**ELLAND**
**WEST YORKSHIRE**
**HX59JP**

| | |
|---|---|
| SPT Hammer Ref: | AR932 |
| Test Date: | 19/12/2016 |
| Report Date: | 19/12/2016 |
| File Name: | AR932.spt |
| Test Operator: | SH |

### Instrumented Rod Data

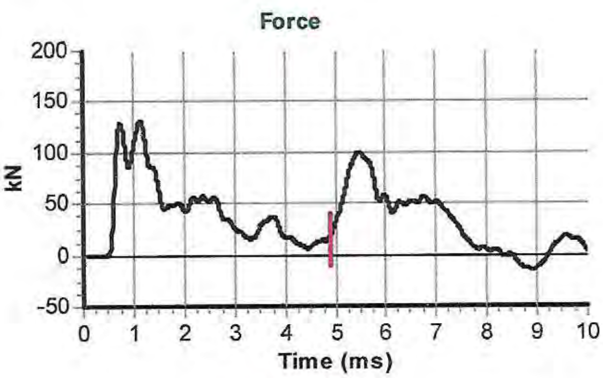
| | |
|---|---|
| Diameter $d_r$ (mm): | 54 |
| Wall Thickness $t_r$ (mm): | 6.1 |
| Assumed Modulus $E_a$ (GPa): | 208 |
| Accelerometer No.1: | 7080 |
| Accelerometer No.2: | 7079 |

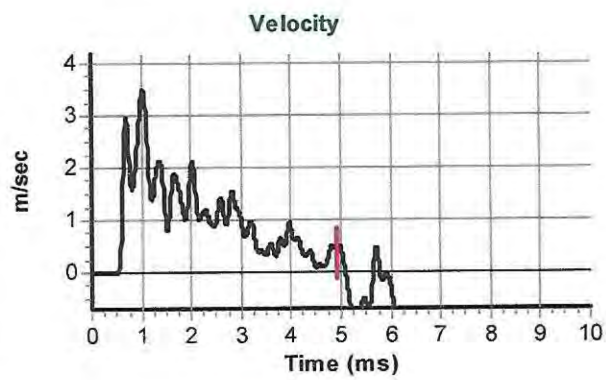
### SPT Hammer Information

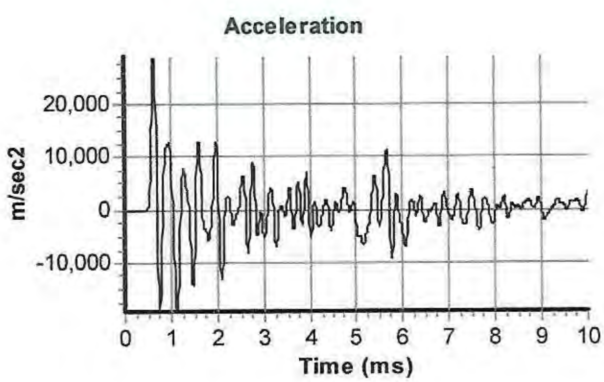
| | |
|---|---|
| Hammer Mass m (kg): | 63.5 |
| Falling Height h (mm): | 760 |
| SPT String Length L (m): | 10.0 |

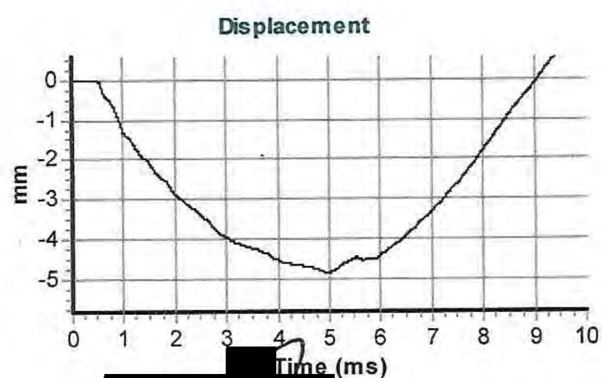
### Comments / Location

CALIBRATION




### Calculations

| | |
|---|---|
| Area of Rod A (mm2): | 918 |
| Theoretical Energy $E_{theor}$ (J): | 473 |
| Measured Energy $E_{meas}$ (J): | 288 |

**Energy Ratio $E_r$ (%): 61**

[redacted]

Signed: S. HOWARTH
Title: FITTER

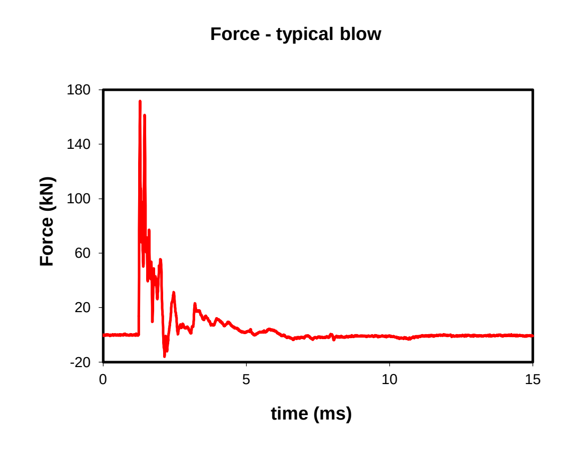
The recommended calibration interval is 12 months

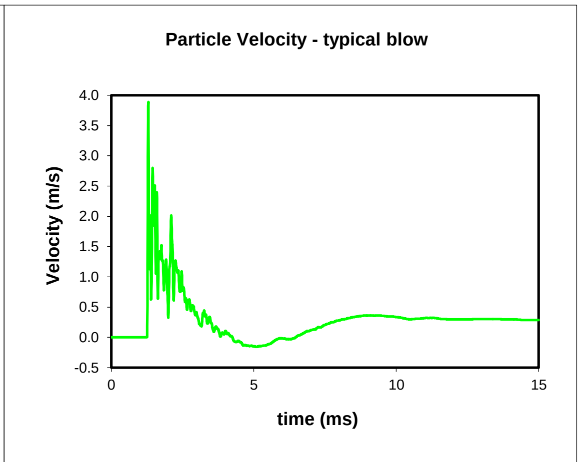
# Hammer Energy Report

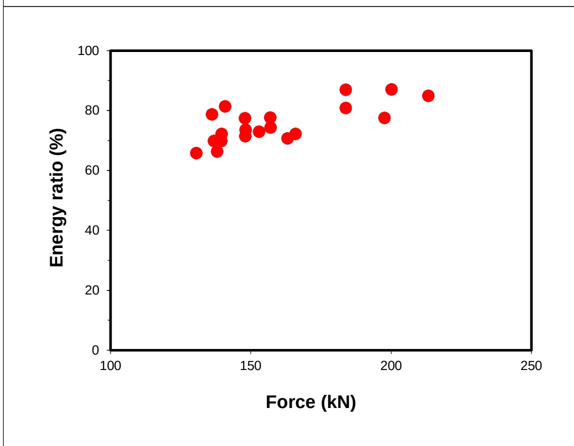
SOCOTEC

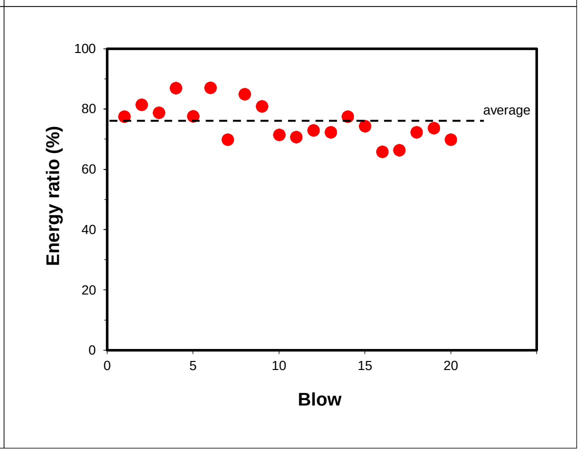
| | | | |
|---|---|---|---|
| **Date of test:** | 03/01/2018 | **Hammer ID:** | AR1121 |
| | | **Hammer mass ($m$)** | 63.5 kg |
| **Instrumented rod:** | | **Fall height ($h$)** | 0.76 m |
| **Type** | NWY | **Test type:** | SPT |
| **Cross-sectional area ($A_a$)** | 11.30 $cm^2$ | **Manufacturer:** | Archway |
| **Young's modulus ($E_a$)** | 207000 MPa | **Model:** | Automatic Trip Hammer |
| **Length** | 0.60 m | | |
| | | **Rig:** | Beretta T51 |
| **Test rod type:** | NWY | **Rig ID:** | R62 |
| | | **Type:** | Rotary |
| | | **Foreman:** | D Strong |

**Remarks:**
Data obtained from test carried out in BH1, located in the SOCOTEC UK Doncaster yard. Test carried out at depth of 4.96 mbgl, with a total blow count of 20. Energy determined from every blow.




**Theoretical energy ($E_{theor}$)** = $m \times g \times h$ = **0.473 kN-m (473 J)**

**Measured energy ($E_{meas}$)** ***average of 20 blows*** = **0.359 kN-m**

**Energy ratio =** $\dfrac{E_{meas}}{E_{theor}}$ = **76 %**

Test carried out by: John Holt

Signed for issue: [redacted]

Test carried out in accordance with BS EN ISO 22476-3:2005

Equipment used: SPT Analyzer Serial No. 4032T

# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

**ARCHWAY ENGINEERING**
**AINLEYS INDUSTRIAL ESTATE**
**ELLAND**
**WEST YORKSHIRE**
**HX59JP**

| | |
|---|---|
| SPT Hammer Ref: | AR1777 |
| Test Date: | 13/04/2017 |
| Report Date: | 13/04/2017 |
| File Name: | AR1777.spt |
| Test Operator: | SH |

**Instrumented Rod Data**

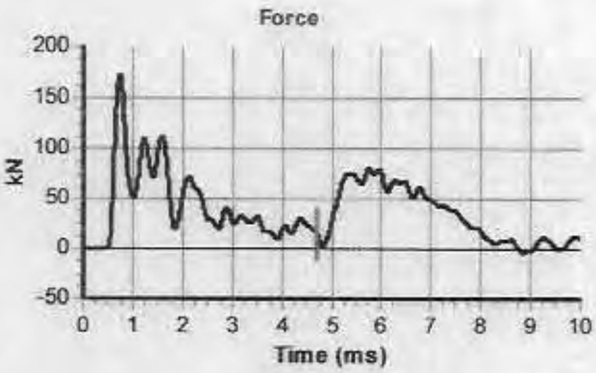
| | |
|---|---|
| Diameter $d_r$ (mm): | 54 |
| Wall Thickness $t_r$ (mm): | 6.0 |
| Assumed Modulus $E_a$ (GPa): | 208 |
| Accelerometer No.1: | 7080 |
| Accelerometer No.2: | 11609 |

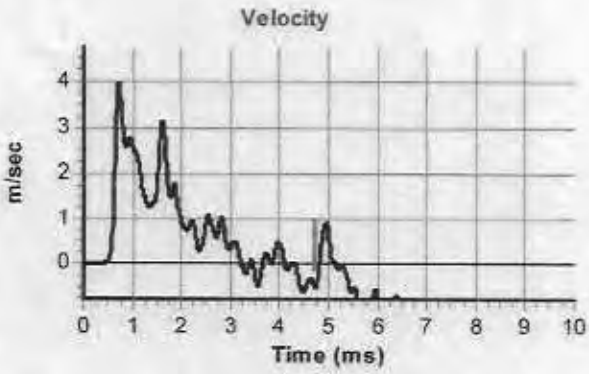
**SPT Hammer Information**

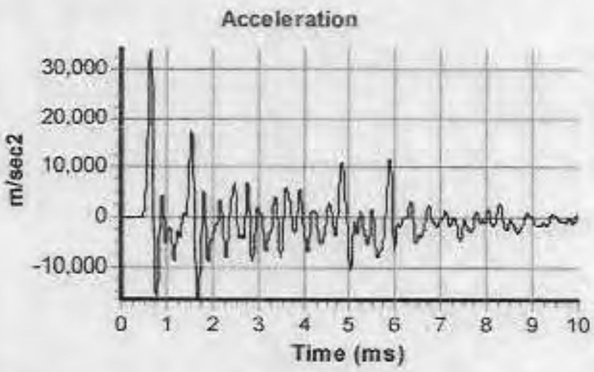
| | |
|---|---|
| Hammer Mass m (kg): | 63.5 |
| Falling Height h (mm): | 760 |
| SPT String Length L (m): | 10.0 |

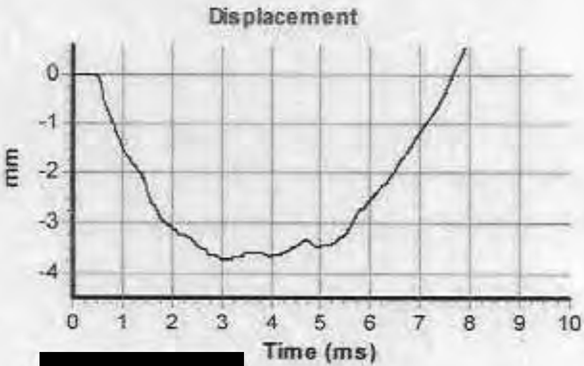
**Comments / Location**

CALIBRATION




**Calculations**

| | |
|---|---|
| Area of Rod A (mm2): | 905 |
| Theoretical Energy $E_{theor}$ (J): | 473 |
| Measured Energy $E_{meas}$ (J): | 340 |

**Energy Ratio $E_r$ (%):** 72

[redacted]

Signed: S. HOWARTH
Title: FITTER

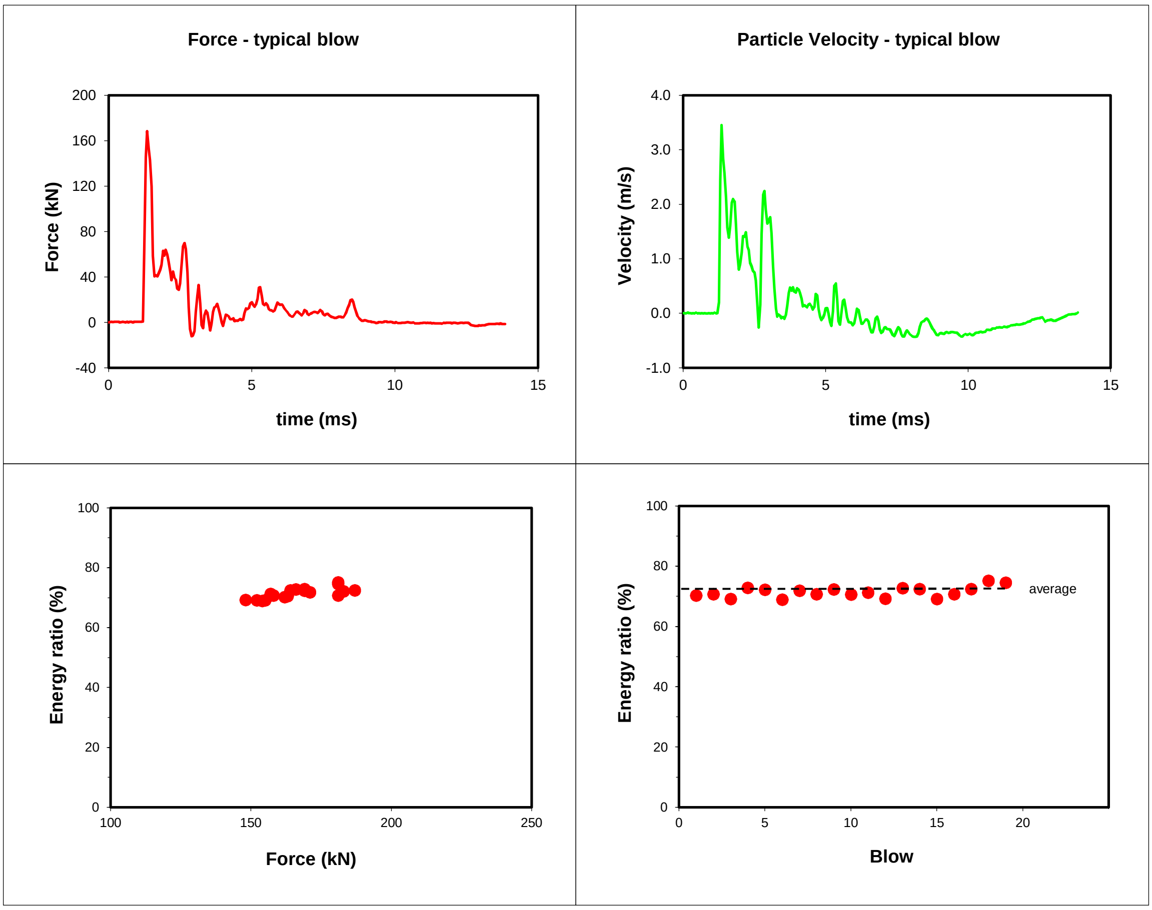
The recommended calibration interval is 12 months

# Hammer Energy Report

ESG

| | | | |
|---|---|---|---|
| **Date of test:** | 19/05/2017 | **Hammer ID:** | ESG01 |
| | | **Hammer mass (*m*)** | 63.5 kg |
| **Instrumented rod:** | | **Fall height (*h*)** | 0.76 m |
| **Type** | BW | **Test type:** | SPT |
| **Cross-sectional area (*A* a)** | 11.30 $cm^2$ | **Manufacturer:** | Archway |
| **Young's modulus (*E* a)** | 207000 MPa | **Model:** | Automatic Trip Hammer |
| **Length** | 0.60 m | | |
| | | **Rig:** | Beretta T41 |
| **Test rod type:** | NWY | **Rig ID:** | R29 |
| | | **Type:** | Rotary |
| | | **Foreman:** | J Govan |

**Remarks:**
Data obtained from test carried out in BH1, located in ESG Doncaster yard. Test carried out at depth of 5.70 mbgl, with a total blow count of 19. Energy determined from every blow.




**Theoretical energy ($E_{theor}$) = *m x g x h* =** **0.473 kN-m (473 J)**

**Measured energy ($E_{meas}$) *average of 19 blows* =** **0.340 kN-m**

**Energy ratio =** $\dfrac{E_{meas}}{E_{theor}}$ **= 72 %**

Test carried out by: John Holt

Signed for issue: [redacted]

Test carried out in accordance with BS EN ISO 22476-3:2005

Equipment used: SPT Analyzer Serial No. 4032T

# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

**ARCHWAY ENGINEERING**
**AINLEYS INDUSTRIAL ESTATE**
**ELLAND**
**WEST YORKSHIRE**
**HX59JP**

| | |
|---|---|
| SPT Hammer Ref: | SM39 |
| Test Date: | 29/06/2017 |
| Report Date: | 06/07/2017 |
| File Name: | SM39.spt |
| Test Operator: | SH |

### Instrumented Rod Data

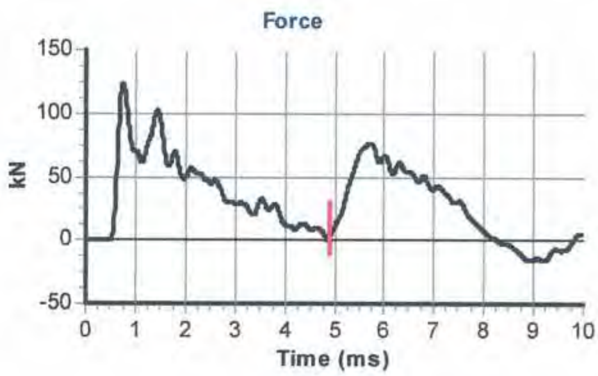
| | |
|---|---|
| Diameter $d_r$ (mm): | 54 |
| Wall Thickness $t_r$ (mm): | 6.0 |
| Assumed Modulus $E_a$ (GPa): | 208 |
| Accelerometer No.1: | 7080 |
| Accelerometer No.2: | 11609 |

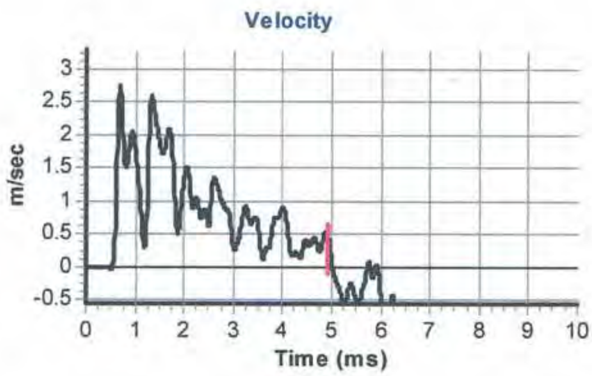
### SPT Hammer Information

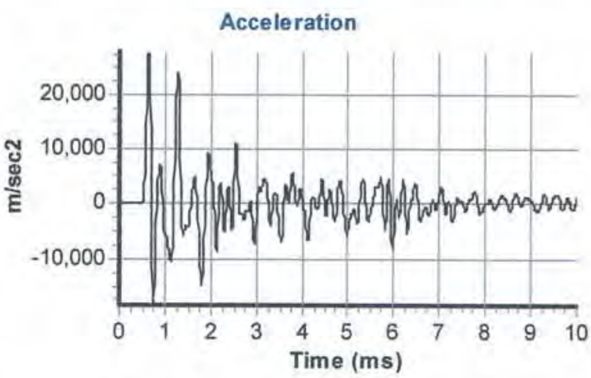
| | |
|---|---|
| Hammer Mass m (kg): | 63.5 |
| Falling Height h (mm): | 760 |
| SPT String Length L (m): | 10.0 |

### Comments / Location

CALIBRATION





### Calculations

| | |
|---|---|
| Area of Rod A (mm2): | 905 |
| Theoretical Energy $E_{theor}$ (J): | 473 |
| Measured Energy $E_{meas}$ (J): | 290 |

**Energy Ratio $E_r$ (%):** **61**

[redacted]

Signed: M.GARDNER
Title: FITTER

The recommended calibration interval is 12 months

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 12.95 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 08/12/2017 | Comacchio 305.<br>Dynamic sampling followed by rotary core drilling (PWF size) using water flush.<br>SPT Hammer ID: AR868, Rod type: NWY. | 1.20 | 30.30 | 121 | 16.00 | Coordinates (m) | E 480314.02 |
| Checked | MS | End | | | | | | National Grid | N 386252.60 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| | | | 0.00-1.20 Hand excavated inspection pit. | | |
| 0.25 - 1.20 | B 3 | | | | |
| 0.50 | D 1 | | | | |
| 1.00 | D 2 | | | | |
| 1.20 - 1.65<br>1.20 - 2.20<br>1.20 | SPTS<br>L 5<br>D 4 | | N=32 (4,5/7,8,8,9) | | |
| | | | | 08/12/17<br>2.20 | 1630<br>Dry |
| 2.20 - 2.65<br>2.20 | SPTS<br>D 6 | | N=20 (3,3/4,7,4,5) | 11/12/17<br>2.20 | 0800<br>Dry |
| 3.50 - 3.95<br>3.50 - 4.50<br>3.50 | SPTS<br>L 8<br>D 7 | | N=9 (2,2/3,2,2,2) | 2.20 | 1.95 |
| 4.50 - 4.95<br>4.50 - 5.20 | SPTS<br>L 9 | | N=12 (3,2/3,3,3,3) | 2.20 | 3.55 |
| 5.50 - 5.95<br>5.50 - 6.50<br>5.50<br>5.50 | SPTS<br>L 12<br>D 10<br>D 11 | | N=24 (3,4/5,5,6,8) | 5.50 | 3.10 |
| 6.50 - 6.95<br>6.50 - 7.00<br>6.50 | SPTS<br>L 14<br>D 13 | | N=54 (6,9/10,13,15,16) | 5.50 | 3.90 |
| 7.00 - 8.50 | L 15 | | | | |
| 8.50 - 8.95<br>8.50 - 9.50<br>8.50 | SPTS<br>L 17<br>D 16 | | N=26 (5,5/6,6,7,7) | 8.50 | 4.65 |
| 9.50 - 10.50 | L 18 | | | | |

## Strata Description

| Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|
| TOPSOIL. | | (0.25)<br>0.25 +12.70 | | |
| Dark grey slightly sandy SILT.<br>(MADE GROUND - Pulverised Fuel Ash) | | (4.75)<br>5.00 +7.95 | | |
| Firm dark red, mottled bluish grey, gravelly CLAY. Gravel is angular coarse of poorly cemented siltstone.<br>(MADE GROUND) | | (0.20)<br>5.20 +7.75 | | |
| Dark grey slightly sandy SILT.<br>(MADE GROUND - Pulverised Fuel Ash) | 5.70-6.00 clayey<br>7.00-7.50 brownish grey<br>9.50-10.00 slightly gravelly. Gravel is angular to subrounded of clinker and poorly cemented siltstone | (5.10) | | |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:06

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**BH101**

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 12.95 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 08/12/2017 | Comacchio 305. Dynamic sampling followed by rotary core drilling (PWF size) using water flush. SPT Hammer ID: AR868, Rod type: NWY. | 1.20 | 30.30 | 121 | 16.00 | Coordinates (m) | E 480314.02 |
| Checked | MS | End | | | | | | National Grid | N 386252.60 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 10.50 - 10.95<br>10.50 - 12.00<br>10.50 | SPTS<br>L 20<br>D 19 | | N=11 (5,3/3,2,3,3) | 9.00 | 4.15 |
| 12.00 - 13.50 | L 21 | | | | |
| | | | | 11/12/17<br>9.00 | 1630<br>6.10 |
| 13.50 - 13.95<br>13.50 - 14.50 | SPTS<br>L 21A | | N=9 (3,3/2,2,2,3) | 12/12/17<br>9.00 | 0800<br>7.50 |
| 14.50 - 16.00 | L 22 | | | | |
| | | | | 12/12/17<br>16.00 | 1707<br>3.00 |
| 16.00 - 16.45<br>16.00 | | -<br>NA<br>- | N=15 (3,4/3,4,4,4)<br>D 23 | 13/12/17<br>16.00 | 0800<br>3.60 |
| 16.00 - 17.50 | 100<br>40<br>0 | NI<br>30<br>60 | | | |
| 17.50 - 18.30<br>18.05 - 18.16 | 100<br>34<br>25 | -<br>NA<br>- | Flush: 16.00 - 19.80 Water 100%<br>CS 24 | | |
| 18.83 - 19.05<br>18.30 - 19.80 | 87<br>82<br>59 | NI<br>100<br>200 | CS 25 | | |
| 19.80 - 19.94 | | | SPTC 50 (25 for 70mm/50 for 70mm) | 16.00 | 1.90 |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 10.30 | +2.65 | |
| Firm greyish brown silty CLAY. Strong organic odour. (ALLUVIUM) | | 10.60 | +2.35 | (0.30) |
| Thinly laminated orangish brown, mottled brown and grey, becoming dark brown, clayey SILT. Slight organic odour. (ALLUVIUM) | | 15.20 | -2.25 | (4.60) |
| Soft to firm reddish brown, locally mottled light greenish grey, CLAY. (MERCIA MUDSTONE - Class Dc) | | 16.45 | -3.50 | (1.25) |
| Extremely weak thinly laminated light greenish grey, mottled reddish brown, MUDSTONE, locally reduced to subrounded fine gravel size fragments in a clay matrix. Fractures are subhorizontal, very closely spaced, undulating and planar, smooth. (MERCIA MUDSTONE - Class B) | 17.10 10 degree 5mm band of white fibrous gypsum<br>17.35 subhorizontal 10mm band of white fibrous gypsum | 17.60 | -4.65 | (1.15) |
| Stiff reddish brown, locally mottled light greenish grey, CLAY, locally reduced to subrounded fine to coarse very stiff clay to extremely weak mudstone lithorelics. (MERCIA MUDSTONE - Class C) | | 18.05 | -5.10 | (0.45) |
| Extremely weak very thinly bedded light greenish grey, locally mottled light reddish brown, MUDSTONE with 20 degree subhorizontal bands (up to 20mm) of white fibrous gypsum. Fractures are subhorizontal, closely spaced, undulating, planar and smooth. (MERCIA MUDSTONE - Class B) | 19.15 subhorizontal 40mm spaced bands of white fibrous gypsum<br>19.53 10 degree 30mm bands of white fibrous gypsum. | 19.90 | -6.95 | (1.85) |

Legend / Backfill

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:06

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | BH101 |
| Carried out for | Firbeck Construction Limited | Sheet 2 of 4 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 12.95 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 08/12/2017 | Comacchio 305. Dynamic sampling followed by rotary core drilling (PWF size) using water flush. SPT Hammer ID: AR868, Rod type: NWY. | 1.20 | 30.30 | 121 | 16.00 | Coordinates (m) | E 480314.02 |
| Checked | MS | End | | | | | | National Grid | N 386252.60 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 19.80 - 21.30 | 100 23 0 | NI 10 30 | Flush: 19.80 - 21.30 Water 90% | | |
| | | NI 20 120 | | | |
| 21.30 - 22.80 | 100 37 19 | | Flush: 21.30 - 22.80 Water 85% | | |
| 22.50 - 22.59 | | | CS 26 | 13/12/17 16.00 | 1615 3.60 |
| 22.80 - 22.92 | | | SPTC 50 (25 for 50mm/50 for 70mm) | 14/12/17 16.00 | 0800 7.60 |
| 22.88 - 23.19 | | | CS 27 | | |
| 22.80 - 24.30 | 100 97 75 | 30 200 350 | Flush: 22.80 - 24.30 Water 100% | | |
| 24.50 - 24.69 | | | CS 28 | | |
| 24.30 - 25.60 | 92 62 51 | | | | |
| 25.82 - 25.92 | | | Flush: 24.30 - 27.10 Water 50% CS 29 | | |
| 25.60 - 27.10 | 80 27 19 | NI 100 140 | | | |
| 27.10 - 27.25 | | | SPTC 50 (19,6 for 15mm/50 for 60mm) | 14/12/17 16.00 | 1430 1.10 |
| 27.30 - 27.43 | | | CS 30 | 15/12/17 16.00 | 0800 8.90 |
| 27.10 - 28.70 | 94 43 43 | | | | |
| | | NI NI 8 | Flush: 27.10 - 30.30 Water 80% | | |
| 28.70 - 30.30 | 94 50 0 | | | | |

## Strata Description

| Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|
| Extremely weak thinly laminated dark reddish brown MUDSTONE, locally disintegrating to subrounded fine to medium gravel size fragments in a clay matrix. Fractures are subhorizontal, very closely spaced, undulating, rough. (MERCIA MUDSTONE - Class B) | | (1.25) 21.15 -8.20 | | |
| Extremely weak very thinly bedded light reddish brown MUDSTONE, locally reduced to subangular and subrounded fine to coarse lithorelics of very stiff clay to extremely weak mudstone. Fractures are subhorizontal, very closely spaced, planar, rough. (MERCIA MUDSTONE - Class B) | 21.50 20 degree 10mm band of off white fibrous gypsum<br>21.70 subhorizontal 30mm band of off white fibrous gypsum | (1.00) 22.15 -9.20 | | |
| Extremely weak, locally very weak, very thinly bedded dark reddish brown, becoming light greenish grey, locally mottled reddish brown, MUDSTONE with 10 degree subhorizontal, closely spaced (up to 10mm) bands of white fibrous gypsum. Fractures are subhorizontal, closely, locally medium spaced, planar, smooth. (MERCIA MUDSTONE - Class B) | 21.80 subhorizontal 30mm band of off white fibrous gypsum<br>22.05-22.10 20 degree stepped 10mm band of off white fibrous gypsum<br>22.60-22.80 turning to clay and subangular to subrounded fine to coarse gravel size lithorelics of mudstone<br>23.30 subhorizontal 30mm band of white fibrous gypsum<br>23.85 subhorizontal 60mm band of white fibrous gypsum<br>24.10 10 degree 15mm band of white fibrous gypsum | (2.70) 24.85 -11.90 | | |
| Extremely weak very thinly bedded dark reddish brown MUDSTONE, locally turning to (up to 50mm) clay bands and subangular to subrounded fine to coarse gravel size mudstone lithorelics. Fractures are subhorizontal, closely spaced, undulating, smooth. (MERCIA MUDSTONE - Class B) | 24.25 20 degree 10mm band of white fibrous gypsum<br>24.30-24.35 subhorizontal and 80 degree bands (up to 5mm) of white fibrous gypsum<br>24.65 10 degree 50mm band of white fibrous gypsum<br>25.70-25.90 subhorizontal and 70 degree 5mm band of withe fibrous gypsum<br>26.25 10 degree 30mm band of white fibrous gypsum<br>26.70 subhorizontal 30mm band of fibrous white gypsum<br>26.70-27.10 AZCL. Core loss assumed to be more weathered material<br>27.15 10 degree 20mm band of fibrous white gypsum | (3.10) 27.95 -15.00 | | |
| Extremely weak thinly laminated dark reddish brown, becoming light greenish grey, MUDSTONE, locally reduced to clay and angular to subrounded fine to coarse gravel size mudstone lithorelics. Fractures are randomly orientated, extremely closely locally, very closely spaced, smooth, planar. (MERCIA MUDSTONE - Class B) | | (2.35) | | |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:06

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **BH101**

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 12.95 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 08/12/2017 | Comacchio 305.<br>Dynamic sampling followed by rotary core drilling (PWF size) using water flush.<br>SPT Hammer ID: AR868, Rod type: NWY. | 1.20 | 30.30 | 121 | 16.00 | Coordinates (m) | E 480314.02 |
| Checked | MS | End | | | | | | National Grid | N 386252.60 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | TCR SCR RQD | If | Records/Samples | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 15/12/17<br>16.00 | 1630<br>Dry | Extremely weak thinly laminated dark reddish brown, becoming light greenish grey, MUDSTONE, locally reduced to clay and angular to subrounded fine to coarse gravel size mudstone lithorelics. Fractures are randomly orientated, extremely closely locally, very closely spaced, smooth, planar.<br>(MERCIA MUDSTONE - Class B) | | 30.30 -17.35 | | |
| | | | | | | END OF EXPLORATORY HOLE | | | | |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:06

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**BH101**

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.01 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 05/12/2017 | Comacchio 305. Dynamic sampling followed by rotary core drilling (PWF size) using water flush. SPT Hammer ID: AR868, Rod type: NWY. | 1.20 | 30.07 | 121 | 12.30 | Coordinates (m) | E 480272.23 |
| Checked | MS | End | | | | | | National Grid | N 386209.16 |
| Approved | | 08/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|---|
| | | | 0.00-1.20 Hand excavated inspection pit. | | | TOPSOIL. | | (0.25) 0.25 +12.76 |
| 0.20 | D 1 | | | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | |
| 0.20 - 1.20 | B 4 | | | | | | | |
| 0.50 | D 2 | | | | | | | |
| 1.00 | D 3 | | | | | | | |
| 1.20 - 1.65 | SPTS | | N=58 (2,8/12,16,16,14) | | Dry | | | |
| 1.20 - 2.20 | L 6 | | | | | | | |
| 1.20 | D 5 | | | | | | | (3.95) |
| 3.50 - 3.95 | SPTS | | N=32 (3,5/5,7,9,11) | 1.50 | 2.30 | | | |
| 3.50 | D 7 | | | | | | | |
| 3.50 - 4.00 | B 8 | | | | | | | |
| 4.00 - 5.30 | L 9 | | | | | | 4.00-4.15 AZCL | 4.20 +8.81 |
| | | | | | | Firm dark greyish brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to medium of clinker and brick. (MADE GROUND) | | (0.10) 4.30 +8.71 |
| | | | | | | Firm reddish brown, locally mottled light bluish grey, slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to medium of clinker. Frequent pockets (up to 20mm) of light bluish grey silt. (MADE GROUND) | 4.70-4.75 light grey angular coarse gravel of quartzite | (0.70) 5.00 +8.01 |
| | | | | 05/12/17 5.50 | 1630 0.10 | | | (0.50) 5.50 +7.51 |
| | | | | 06/12/17 5.50 | 0800 0.35 | Firm thinly laminated brown and dark grey slightly sandy silty CLAY with rare angular fine to medium gravel of clinker. (MADE GROUND) | | |
| | | | | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | |
| 6.50 - 6.95 | SPTS | | N=2 (1,0/0,1,0,1) | 6.00 | 3.90 | | | |
| 6.50 - 7.50 | L 10 | | | | | | | |
| 6.50 | D 9A | | | | | | 6.80-7.50 rare angular fine to medium gravel of brick | |
| 7.50 - 8.80 | L 11 | | | | | | | (4.25) |
| 8.80 - 9.25 | SPTS | | N=10 (2,3/2,2,3,3) | 6.00 | 6.30 | | | |
| 8.80 - 9.80 | L 13 | | | | | | | |
| 8.80 | D 12 | | | | | | | |
| 9.80 - 11.30 | L 14 | | | | | Firm dark greyish brown, becoming dark brown, silty CLAY with rare relict roots (<2x<120mm). | | 9.75 +3.26 |

Legend / Backfill

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:06

| Project | WEST BURTON C/D POWER STATION |
|---|---|
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **BH102**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.01 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 05/12/2017 | Comacchio 305.<br>Dynamic sampling followed by rotary core drilling (PWF size) using water flush.<br>SPT Hammer ID: AR868, Rod type: NWY. | 1.20 | 30.07 | 121 | 12.30 | Coordinates (m) | E 480272.23 |
| Checked | MS | End | | | | | | National Grid | N 386209.16 |
| Approved | | 08/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 11.30 - 11.75<br>11.30 - 12.70<br>11.30 | SPTS<br>L 16<br>D 15 | | N=11 (2,1/2,3,3,3) | 9.00 | 3.65 |
| 12.70 - 13.15<br>12.70 | | | N=36 (6,6/7,8,10,11)<br>D 17 | 10.50 | 6.55 |
| 12.70 - 13.80 | 86<br>NA<br>NA | | | | |
| | | | | 06/12/17<br>12.30 | 1703<br>3.90 |
| | | -<br>NA<br>- | | 07/12/17<br>12.30 | 0800<br>3.90 |
| 13.80 - 15.30 | 97<br>4<br>0 | | | | |
| | | | 20<br>40<br>60 | | |
| | | -<br>NA<br>- | | | |
| 15.30 - 16.80 | 67<br>17<br>0 | NI<br>20<br>50 | | | |
| | | -<br>NA<br>- | | | |
| 16.80 - 16.86<br>16.90 - 17.00 | | | SPTC 50 (25 for 30mm/50 for 30mm)<br>CS 18 | 12.30 | 3.60 |
| 16.80 - 18.30 | 100<br>43<br>7 | NI<br>40<br>60 | | | |
| 17.70 - 17.78 | | | CS 19 | | |
| 18.00 - 18.15 | | | CS 20 | | |
| | | -<br>NA<br>- | | | |
| | | | NI<br>20<br>30 | | |
| 18.30 - 19.80 | 100<br>5<br>0 | | | | |
| | | -<br>NA<br>- | | | |
| 19.80 - 19.88 | | | SPTC 50 (25 for 40mm/50 for 40mm) | 12.30 | 2.90 |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| Faint organic odour.<br>(ALLUVIUM) | 10.30-10.50 mottled dark greyish green | 10.50 | +2.51 | (0.75) |
| Thinly laminated dark orangish brown, mottled brown and light grey, slightly sandy clayey SILT with rare relict rootlets. Rare pockets (up to 5mm) of dark purple fine sand.<br>(ALLUVIUM) | | 11.80 | +1.21 | (1.30) |
| Thinly laminated dark brown slightly sandy clayey SILT with rare relict roots (<3x<40mm).<br>(ALLUVIUM) | | 12.60 | +0.41 | (0.80) |
| Firm reddish brown, mottled light bluish grey, silty CLAY. | | 12.70 | +0.31 | (0.10) |
| Soft to firm, mottled greenish brown, silty CLAY.<br>(MERCIA MUDSTONE - Class Dc) | 13.20-13.40 clayey silt | 13.40 | -0.39 | (0.70) |
| Firm reddish brown, locally mottled light greenish grey and brown, slightly gravelly CLAY. Gravel is subangular fine lithorelicts of extremely weak mudstone.<br>(MERCIA MUDSTONE - Class Da) | 14.10-14.15 light greenish grey clayey silt<br>14.90-15.24 firm thinly laminated bluish grey, mottled light reddish brown, clayey SILT | 15.24 | -2.23 | (1.84) |
| Extremely weak thinly laminated light reddish brown, locally mottled light bluish grey MUDSTONE with frequent white gypsum (<1x<20mm). Fractures are subhorizontal, very closely spaced, undulating, rough.<br>(MERCIA MUDSTONE - Class B) | | 15.50 | -2.49 | (0.26) |
| Soft to firm dark reddish brown, mottled light greenish grey, gravelly CLAY with rare subvertical bands (up to 5mm) of white fibrous gypsum. Gravel is tabular fine to coarse lithorelicts of extremely weak mudstone.<br>((MERCIA MUDSTONE - Class Da) | | 15.90 | -2.89 | (0.40) |
| Extremely weak thinly and thickly laminated light grey, locally dark grey, dark reddish brown, mottled dark greenish grey, MUDSTONE with subhorizontal undulating bands (up to 20mm) of white fibrous gypsum. Fractures are subhorizontal, extremely closely to closely spaced, undulating, planar, rough, smooth.<br>(MERCIA MUDSTONE - Class B) | 15.95 subhorizontal 10mm band of white fibrous gypsum<br>16.15 subhorizontal 50mm band of white fibrous gypsum<br>16.20-16.30 reduced to subrounded coarse gravel size fragments<br>16.90-17.00 mottled dark reddish brown<br>17.25-17.30 reduced to clay bound tabular fine to coarse gravel size mudstone lithorelicts<br>17.60-17.70 reduced to clay bound tabular fine to coarse gravel size mudstone lithorelicts<br>17.75-17.80 mottled dark reddish brown<br>17.80-18.25 10-30 degree very closely spaced, undulating bands (up to 5mm) of white fibrous gypsum<br>18.25-18.85 very stiff thinly laminated dark reddish brown, mottled dark greenish grey, clay | 18.85 | -5.84 | (2.95) |
| Extremely weak thinly laminated dark grey MUDSTONE with very closely spaced, 30 degree bands (up to 5mm) of white fibrous gypsum. Fractures are subhorizontal, very closely spaced, undulating, rough.<br>(MERCIA MUDSTONE - Class B) | | 18.95 | -5.94 | (0.10) |
| Stiff fissured reddish brown, locally mottled bluish grey, CLAY, locally reduced to clay bound tabular fine to coarse gravel size lithorelicts of mudstone. | 18.50 20 degree 20mm band of white fibrous gypsum | | | (1.15) |

Legend | Backfill

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:06

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | **BH102** |
| Carried out for | Firbeck Construction Limited | Sheet 2 of 4 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.01 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 05/12/2017 | Comacchio 305. Dynamic sampling followed by rotary core drilling (PWF size) using water flush. SPT Hammer ID: AR868, Rod type: NWY. | 1.20 | 30.07 | 121 | 12.30 | Coordinates (m) | E 480272.23 |
| Checked | MS | End | | | | | | National Grid | N 386209.16 |
| Approved | | 08/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 20.13 - 20.26 | | | NI 100 120 CS 21 | | |
| 19.80 - 21.30 | 100 21 15 | - NA - | | | |
| | | NI 30 30 | | | |
| 21.30 - 21.38 | | | SPTC 50 (25 for 50mm/50 for 30mm) | 12.30 | 3.00 |
| 21.57 - 21.90 | | NI 110 330 | Flush: 12.70 - 30.00 Water 100% CS 22 | | |
| 21.30 - 22.80 | 100 45 27 | | | | |
| | | NI 30 100 | | | |
| 22.80 - 24.30 | 100 7 0 | NI 5 10 | | | |
| 24.30 - 24.39 | | | SPTC 50 (25 for 50mm/50 for 40mm) | 12.30 | 3.10 |
| | | 60 130 200 | | | |
| 24.72 - 24.85 | | | CS 23 | | |
| 24.30 - 25.80 | 100 33 23 | | | | |
| | | - NI - | | | |
| 25.80 - 27.30 | 100 13 13 | | | | |
| 26.62 - 26.73 | | | CS 24 | | |
| | | | | 07/12/17 12.30 | 1630 4.05 |
| 27.30 - 27.42 | | NI 60 60 | SPTC 50 (25 for 70mm/50 for 50mm) | 08/12/17 12.30 | 0800 8.23 |
| 27.30 - 28.80 | 100 8 0 | NI NI 30 | | | |
| | | NI NI 50 | | | |
| 28.80 - 30.00 | 100 13 0 | | | | |
| | | | 10 10 30 | 08/12/17 12.30 | 1130 Dry |

## Strata Description

| Main | Depth, Level (Thickness) |
|---|---|
| Fissures are randomly orientated, very closely spaced, undulating, rough. (MERCIA MUDSTONE) | 20.10 -7.09 |
| Extremely weak dark reddish brown, mottled dark grey, MUDSTONE. Fractures are subhorizontal to 10 degree, closely spaced, undulating, smooth. (MERCIA MUDSTONE - Class B) | (0.25) 20.35 -7.34 |
| Soft, locally firm, reddish brown, mottled bluish grey, gravelly CLAY. Gravel is angular to subrounded fine to medium of very stiff to extremely weak mudstone lithorelicts. (MERCIA MUDSTONE - Class C) | (0.60) 20.95 -7.94 |
| Extremely weak to very weak thinly laminated light and dark grey, locally mottled dark reddish brown, MUDSTONE, locally reduced to clay bound tabular fine to coarse gravel size mudstone lithorelicts. Fractures are subhorizontal, very closely spaced, undulating, smooth. (MERCIA MUDSTONE - Class B) | (2.15) 23.10 -10.09 |
| Very stiff fissured reddish brown gravelly CLAY with very closely spaced, 30 degree bands (up to 10mm) of white fibrous gypsum. Gravel is subangular fine to coarse lithorelicts of extremely weak mudstone. Fissures are randomly orientated, very closely spaced, undulating, planar, rough. (MERCIA MUDSTONE) | (0.35) 23.45 -10.44 |
| Extremely weak thinly bedded dark reddish brown MUDSTONE, locally reduced to clay bound tabular coarse gravel size mudstone lithorelicts. Fractures are subhorizontal, very closely to medium spaced, planar, undulating, rough, smooth. (MERCIA MUDSTONE - Class B) | (3.20) 26.65 -13.64 |
| Extremely weak to very weak thinly bedded dark reddish brown MUDSTONE with very closely spaced, subhorizontal to 20 degree bands (up to 2mm) of white fibrous gypsum. Fractures are subhorizontal, closely spaced, undulating, smooth. (MERCIA MUDSTONE - Class B) | (0.20) 26.85 -13.84 |
| Soft dark reddish brown slightly gravelly CLAY. Gravel is angular fine to medium of very stiff extremely weak lithorelicts of mudstone. (MERICA MUDSTONE - Class Da) | (0.15) 27.00 -13.99 |
| Extremely weak to very weak thickly bedded dark reddish brown and bluish grey MUDSTONE, locally reduced to clay bound tabular medium to coarse gravel size lithorelicts of mudstone. Fractures are randomly orientated, very closely spaced, undulating, smooth. (MERICA MUDSTONE - Class B) | (0.80) 27.80 -14.79 |
| Extremely weak thinly bedded bluish grey MUDSTONE disintegrated to subrounded coarse gravel size lithorelicts of mudstone in a clay matrix. (MERCIA MUDSTONE - Class B) | (0.60) 28.40 -15.39 |
| Extremely weak thinly bedded reddish brown MUDSTONE. Fractures are randomly orientated, very closely spaced, undulating, smooth. (MERCIA MUDSTONE - Class B) | (1.50) 29.90 -16.89 |
| | (0.17) |

**Detail**

- 18.95-19.05 60 degree 2mm bands of white fibrous gypsum
- 19.15 subhorizontal 15mm band of white fibrous gypsum
- 19.50 subhorizontal 20mm band of white fibrous gypsum
- 19.75-19.80 extremely weak thinly laminated bluish grey mudstone
- 19.80-19.85 subvertical 2mm bands of white fibrous gypsum
- 19.85-20.10 subhorizontal to 20 degree very closely spaced bands (up to 5mm) of white fibrous gypsum
- 20.30-20.35 tending to clay bound tabular fine to medium gravel size lithorelicts
- 20.50 subhorizontal 20mm band of white fibrous gypsum
- 21.45-21.50 40 degree 5mm band of white fibrous gypsum
- 21.95 subhorizontal 20mm undulating band of white fibrous gypsum
- 22.70-22.80 2No. 50mm bands of white fibrous gypsum
- 22.80 subhorizontal 20mm band of white fibrous gypsum
- 24.00-24.20 10 degree very closely spaced bands (up to 5mm) of white fibrous gypsum
- 24.30-24.50 10-30 degree very closely spaced band (up to0 10mm) of white fibrous gypsum
- 24.93 subhorizontal 20mm band of white fibrous gypsum
- 25.10-25.30 40 degree very closely spaced band (up to 5mm) of white fibrous gypsum
- 25.55 subhorizontal 10mm band of white fibrous gypsum
- 26.60-26.70 dark bluish grey
- 27.00-27.10 30 degree 20mm band of white fibrous gypsum
- 27.90 subhorizontal 20mm band of white fibrous gypsum
- 28.20 subhorizontal 30mm band of white fibrous gypsum
- 29.50-29.70 dark bluish grey silty clay with subrounded coarse gravel of gypsum

Legend | Backfill

**Groundwater Entries**

| No. | Depth Strike | Remarks | Depth Sealed |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Chiselling Details**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:06

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**BH102**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DS | Start | 05/12/2017 | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.01 mOD |
|---|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | | | Comacchio 305. Dynamic sampling followed by rotary core drilling (PWF size) using water flush. SPT Hammer ID: AR868, Rod type: NWY. | 1.20 | 30.07 | 121 | 12.30 | Coordinates (m) | E 480272.23 |
| Checked | MS | End | | | | | | | National Grid | N 386209.16 |
| Approved | | | 08/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|---|
| 30.00 - 30.07 | | | SPTC 50 (25 for 30mm/50 for 40mm) | ~~12.50~~ | 3.10 | Weak white fibrous GYPSUM. Fractures are subhorizontal, very closely spaced, undulating, smooth. | | 30.07 -17.06 | | |
| | | | | | | END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike | Remarks | Depth Sealed |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Chiselling Details**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:06

| Project | WEST BURTON C/D POWER STATION |
|---|---|
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**BH102**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | SR | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 12.70 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DT | 04/12/2017 | Comacchio 305. Dynamic sampling and rotary core drilling (PWF size) using water flush. SPT Hammer ID: SM39, Rod type: NWY. | 1.20 | 29.80 | 121 | 15.30 | Coordinates (m) | E 480278.51 |
| Checked | MS | End | | | | | | National Grid | N 386251.64 |
| Approved | | 08/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|---|
| | | | 0.00-1.20 Hand excavated inspection pit. | | | TOPSOIL. | | (0.20) |
| | | | | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 0.20 +12.50 |
| 0.50 | D 1 | | | | | | | |
| 0.50 - 1.00 | B 2 | | | | | | | |
| 1.00 | D 3 | | | | | | | |
| 1.00 - 1.20 | B 4 | | | | | | | |
| 1.20 - 1.65 | SPTS | | N=47 (3,4/7,10,15,15) | | Dry | | | |
| 1.20 - 2.10 | L 5 | | | | | | | |
| 2.10 - 3.10 | L 6 | | | | | | | (4.30) |
| 3.10 - 3.58 | SPTS | | N=3 (1,0/1,0,1,1) SW=25 | 3.00 | Dry | | | |
| 3.10 - 4.10 | L 7 | | | | | | | |
| 4.10 - 4.70 | L 8 | | | | | | | |
| | | | | 05/12/17 4.00 | 1630 Dry | Dark reddish brown and grey subangular to subrounded fine to coarse sandy silty GRAVEL of concrete and mudstone. (MADE GROUND) | | 4.50 +8.20 |
| 4.70 - 4.76 | SPTC | | 50 (25 for 35mm/50 for 20mm) | 06/12/17 4.00 | 0730 Dry | | | (0.50) |
| | | | Flush: 4.70 - 5.50 Water 100% | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 5.00 +7.70 |
| 5.50 - 6.40 | L 9 | | | | | | 5.50-5.52 very sandy 5.50-6.20 slightly clayey | |
| 6.40 - 7.40 | L 10 | | | | | | | (4.00) |
| 7.40 - 7.85 | SPTS | | N=38 (1,2/4,6,11,17) | 5.15 | Damp | | 7.40-8.10 slightly clayey | |
| 7.40 - 8.30 | L 11 | | | | | | | |
| 8.30 - 9.30 | L 12 | | | | | | 8.80 relic wood fragments (80x2mm) | |
| | | | | | | Firm dark greyish brown slightly sandy silty CLAY. (ALLUVIUM) | 8.90 rare coarse gravel of siltstone 9.30 clay becomes soft to firm | 9.00 +3.70 |
| 9.30 - 9.75 | SPTS | | N=11 (3,2/3,3,2,3) | 9.15 | Damp | | | |
| 9.30 - 10.30 | L 13 | | | | | | | (1.30) |

Legend / Backfill

| Groundwater Entries | | | | Depth Related Remarks | | Chiselling Details | | |
|---|---|---|---|---|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed | Depths (m) | Remarks | Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:07

| | | | |
|---|---|---|---|
| Project | WEST BURTON C/D POWER STATION | Borehole | BH103 |
| Project No. | A7102-17 | | |
| Carried out for | Firbeck Construction Limited | | Sheet 1 of 3 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | SR | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 12.70 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DT | 04/12/2017 | Comacchio 305. Dynamic sampling and rotary core drilling (PWF size) using water flush. SPT Hammer ID: SM39, Rod type: NWY. | 1.20 | 29.80 | 121 | 15.30 | Coordinates (m) | E 480278.51 |
| Checked | MS | End | | | | | | National Grid | N 386251.64 |
| Approved | | 08/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 10.30 - 11.30 | L 14 | | | | |
| | | | | 06/12/17 9.15 | 1630 Damp |
| | | | | 07/12/17 9.15 | 0730 Damp |
| 11.30 - 12.30 | L 15 | | | | |
| 12.30 - 13.30 | L 16 | | | | |
| 13.30 - 13.75 | | | N=28 (8,3/4,5,7,12) | 12.30 | 0.60 |
| 13.30 - 14.30 | 0 0 0 | | | | |
| 14.30 - 15.30 | 0 0 0 | - NA - | | | |
| 15.30 - 16.30 | 100 4 0 | | | | |
| 16.30 - 16.44 | | | SPTS 50 (13,12 for 25mm/50 for 45mm) | 15.30 | 0.60 |
| 16.30 - 17.80 | 100 22 0 | - NA - | | | |
| | | NI 40 90 | | | |
| 17.80 - 19.30 | 100 19 0 | - NA - | | | |
| 19.30 - 19.42 | | | SPTC 50 (18,7 for 30mm/50 for 20mm) | 15.30 | 0.80 |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| Firm dark greyish brown slightly sandy silty CLAY. (ALLUVIUM) | | | | |
| Dark greyish brown, occasionally mottled brownish orange, slightly sandy clayey SILT. | 10.30-11.30 rare wood fragments (<40x2mm) | 10.30 | +2.40 | (0.60) |
| Thinly laminated dark grey slightly sandy clayey SILT. (ALLUVIUM) | 11.30-12.30 no recovery | 10.90 | +1.80 | (1.40) |
| Dark greyish brown slightly sandy SILT. (ALLUVIUM) | 12.30-12.50 very clayey; 12.60 becoming thinly laminated; 12.90-13.05 thickly laminated clayey silt | 12.30 | +0.40 | (0.85) |
| Soft to firm reddish brown, locally mottled light greenish grey, CLAY. (MERCIA MUDSTONE - Class Dc) | 13.30-15.30 no recovery | 13.15 | -0.45 | (3.15) |
| Firm to very stiff reddish brown sandy gravelly CLAY. Gravel is subangular to subrounded fine to medium lithorelicts of very stiff clay to extremely weak mudstone. Fissures are randomly orientated, extremely closely to closely spaced, planar, rough. (MERCIA MUDSTONE - Class C) | 16.23-16.30 extremely weak greenish grey mudstone; 17.05-17.06 off white fibrous gypsum; 17.30-17.32 off white fibrous gypsum | 16.30 | -3.60 | (1.35) |
| Extremely weak and very weak thinly laminated to very thinly bedded greenish grey and reddish brown, locally calcareous, MUDSTONE. Fractures are subhorizontal to subvertical, very closely spaced, undulating rough, locally infilled with clay and gypsum. (MERCIA MUDSTONE - Class B) | 17.35-17.38 off white fibrous gypsum; 18.17-18.20 off white fibrous gypsum | 17.65 | -4.95 | (0.95) |
| Firm to very stiff fissured greenish grey sandy gravelly CLAY. Gravel is subangular to subrounded fine to medium of extremely weak mudstone and very stiff clay lithorelics. Fissures are randomly orientated, extremely closely spaced, planar to undulating, rough. (MERCIA MUDSTONE - Class C) | 18.75-18.80 off white fibrous gypsum; 19.20-19.24 off white fibrous gypsum | 18.60 | -5.90 | (0.70) |
| Stiff to very stiff fissured reddish brown, locally mottled greenish grey, slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of extremely weak | 19.50 gypsum 40 degree; 19.60 gypsum 40 degree | 19.30 | -6.60 | |

Legend | Backfill

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:07

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | BH103 |
| Carried out for | Firbeck Construction Limited | Sheet 2 of 3 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | SR | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 12.70 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DT | 04/12/2017 | Comacchio 305.<br>Dynamic sampling and rotary core drilling (PWF size) using water flush.<br>SPT Hammer ID: SM39, Rod type: NWY. | 1.20 | 29.80 | 121 | 15.30 | Coordinates (m) | E 480278.51 |
| Checked | MS | End | | | | | | National Grid | N 386251.64 |
| Approved | | 08/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 19.30 - 20.80 | 100<br>3<br>15 | -<br>NA<br>- | | 07/12/17<br>15.30 | 1630<br>3.70 |
| 20.80 - 20.88 | | | SPTC 50 (25 for 30mm/50 for 45mm) | 08/12/17<br>15.30 | 0730<br>1.80 |
| 20.80 - 22.30 | 100<br>50<br>15 | | Flush: 13.30 - 29.80 Water 100% | | |
| 22.08 - 22.21 | | | CS 17 | | |
| 22.55 - 22.65 | | NI<br>50<br>150 | CS 18 | | |
| 22.30 - 23.80 | 100<br>27<br>0 | | | | |
| 23.80 - 23.90 | | | SPTC 50 (25 for 35mm/50 for 60mm) | 15.30 | 0.80 |
| 23.80 - 23.87 | | | CS 19 | | |
| 23.80 - 25.30 | 100<br>9<br>0 | | | | |
| 25.30 - 26.80 | 100<br>7<br>0 | -<br>NA<br>- | | | |
| 26.80 - 26.86 | | | SPTC 50 (25 for 30mm/50 for 35mm) | 15.30 | 0.80 |
| 26.80 - 28.30 | 100<br>7<br>0 | | | | |
| 28.95 - 29.01 | | -<br>NA<br>- | CS 20 | | |
| 28.30 - 29.80 | 100<br>6<br>0 | | | | |
| | | | | 08/12/17<br>15.30 | 1630<br>0.60 |

## Strata Description

| Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|
| mudstone lithorelics. Fissures are subhorizontal and subvertical, planar to undulating, rough. Rare fissures at 40-60 degree infilled with off white extremely weak gypsum.<br>(MERCIA MUDSTONE - Class C) | 20.05 gypsum 60 degree<br>20.30-20.34 very weak thinly laminated mudstone band<br>20.60 gypsum 40 degree<br>21.30-21.31 off white fibrous gypsum | (2.10)<br>21.40 -8.70 | | |
| Very weak thinly bedded greenish grey, locally calcareous, MUDSTONE, locally tending to clay with gravel size mudstone lithorelics. Fractures are subhorizontal and subvertical, very closely to closely spaced, planar, occasionally undulating, smooth.<br>(MERCIA MUDSTONE - Class B) | 21.40-21.70 reddish brown locally mottled greenish grey<br>21.45-21.60 subvertical undulating rough fracture<br>23.30-23.33 off white fibrous gypsum<br>23.80-23.87 cream fibrous gypsum | (2.50)<br>23.90 -11.20 | | |
| Stiff fissured reddish brown, locally mottled greenish grey, slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of extremely weak mudstone and very stiff clay lithorelics. Fissures are subhorizontal to subvertical, planar, smooth, locally infilled with gypsum.<br>(MERCIA MUDSTONE - Class C) | 25.27-25.30 off white fibrous gypsum<br>26.15-26.17 extremely weak thinly laminated mudstone band<br>26.55-26.58 extremely weak thinly laminated mudstone band<br>27.25-27.28 fine to medium gravel of gypsum and mudstone<br>27.53-27.58 fine to medium gravel of gypsum and mudstone | (4.30)<br>28.20 -15.50 | | |
| Very stiff indistinctly fissured greenish grey gravelly to very gravelly CLAY. Gravel is subangular to subrounded fine to coarse of extremely weak mudstone lithorelics. Fissures are randomly orientated, extremely closely spaced, planar, smooth.<br>(MERCIA MUDSTONE - Class C) | 28.95-29.01 off white fibrous gypsum | (1.60)<br>29.80 -17.10 | | |
| END OF EXPLORATORY HOLE | | | | |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:07

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **BH103**

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | SR | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.09 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 11/12/2017 | Comacchio 205.<br>Dynamic sampling and rotary core drilling (PWF size) using water flush.<br>SPT Hammer ID: SM39, Rod type: NWY. | 1.20 | 30.10 | 121 | 15.20 | Coordinates (m) | E 480328.16 |
| Checked | MS | End | | | | | | National Grid | N 386217.30 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| | | | 0.00-1.20 Hand excavated inspection pit. | | |
| 0.50 | D 1 | | | | |
| 0.50 - 0.60 | B 2 | | | | |
| 1.00 | D 3 | | | | |
| 1.00 - 1.20 | B 4 | | | | |
| 1.20 - 1.65 | SPTS | | N=8 (2,2/2,2,2,2) | | Dry |
| 1.20 - 2.20 | L 5 | | | | |
| 2.20 - 3.20 | L 6 | | | | |
| 3.20 - 3.65 | SPTS | | N=10 (2,3/3,2,3,2) | 3.00 | Dry |
| 3.20 - 4.20 | L 7 | | | | |
| 4.20 - 4.90 | L 8 | | | | |
| 4.90 - 4.97 | SPTC | | 50 (25 for 45mm/50 for 30mm) | | Dry |
| | | | | 11/12/17 4.70 | 1630 0.80 |
| | | | | 12/12/17 4.70 | 0730 0.80 |
| 5.40 - 5.85 | SPTS | | N=5 (1,2/1,1,2,1) | | |
| 5.40 - 6.10 | L 9 | | | | |
| 6.10 - 7.10 | L 10 | | | | |
| 7.10 - 7.55 | SPTS | | N=21 (1,3/4,3,6,8) | 4.70 | Damp |
| 7.18 - 8.00 | L 11 | | | | |
| 8.00 - 9.00 | L 12 | | | | |
| 9.00 - 9.45 | SPTS | | N=10 (2,3/3,2,3,2) | 7.00 | Damp |
| 9.00 - 10.00 | L 13 | | | | |

## Strata Description

| Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|
| TOPSOIL. | | (0.60) | | |
| Dark grey, locally grey, slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 0.60 +12.49 (4.10) | | |
| Soft to firm reddish brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of quartzite and clinker. (MADE GROUND) | | 4.70 +8.39 (0.20) | | |
| Dark grey slightly sandy slightly gravelly SILT. Gravel is angular to rounded fine to medium of siltstone and concrete. (MADE GROUND) | | 4.90 +8.19 (0.40) | | |
| Soft dark reddish brown gravelly CLAY. Gravel is angular fine to medium of clinker. (MADE GROUND) | | 5.30 +7.79 (0.10) | | |
| Soft reddish brown slightly sandy gravelly CLAY. Gravel is angular to rounded fine to medium of quartzite, brick and clinker. (MADE GROUND) | | 5.40 +7.69 (0.30) | | |
| Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | 9.10-10.00 sandy | 5.70 +7.39 (5.65) | | |

| Groundwater Entries | | | | Depth Related Remarks | | Chiselling Details | | |
|---|---|---|---|---|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed | Depths (m) | Remarks | Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:08

| | | | |
|---|---|---|---|
| Project | WEST BURTON C/D POWER STATION | Borehole | BH104 |
| Project No. | A7102-17 | | |
| Carried out for | Firbeck Construction Limited | | |

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | SR | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.09 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 11/12/2017 | Comacchio 205. Dynamic sampling and rotary core drilling (PWF size) using water flush. SPT Hammer ID: SM39, Rod type: NWY. | 1.20 | 30.10 | 121 | 15.20 | Coordinates (m) | E 480328.16 |
| Checked | MS | End | | | | | | National Grid | N 386217.30 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|---|
| 10.00 - 11.00 | L 14 | | | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | |
| 11.00 - 11.45<br>11.00 - 12.00 | SPTS<br>L 15 | | N=9 (2,1/2,3,2,2) | 10.70 | Damp | | | |
| | | | | | | Thinly laminated light brown, mottled orangish brown, clayey SILT. (ALLUVIUM) | | 11.35 +1.74 (0.35) |
| | | | | | | Dark brown, locally dark greyish brown, clayey SILT. (ALLUVIUM) | | 11.70 +1.39 (1.30) |
| 12.00 - 13.00 | L 16 | | | 12/12/17<br>13.00 | 1630<br>Damp | | | |
| 13.00 - 13.45<br>13.00 - 14.50 | SPTS<br>L 17 | | N=26 (3,4/6,6,6,8) | 13/12/17<br>13.00 | 0730<br>11.20 | Brown, mottled light brown, silty fine to coarse SAND. (ALLUVIUM) | | 13.00 +0.09 (1.00) |
| | | | | | | Firm, locally stiff, dark reddish brown, locally light bluish grey, CLAY. (MERCIA MUDSTONE - Class Dc) | | 14.00 -0.91 (2.45) |
| 14.50 - 15.20 | 71<br>NA<br>NA | -<br>NA<br>- | | | | | | |
| 15.20 - 16.60 | 100<br>NA<br>NA | | | | | | | |
| 16.60 - 16.70 | | | NI<br>NI<br>NI | 15.20 | 0.80 | Firm, locally stiff, dark reddish brown, becoming light grey, clayey angular to rounded fine to coarse GRAVEL of very stiff clay and extremely weak mudstone lithorelicts. (MERCIA MUDSTONE - Class C) | | 16.45 -3.36 (0.25) |
| 16.79 - 16.90 | | | SPTS 50 (25 for 50mm/50 for 45mm)<br>CS 18 | | | | | 16.70 -3.61 (0.10)<br>16.80 -3.71 (0.50) |
| 16.60 - 18.10<br>17.40 - 17.60 | 100<br>27<br>13 | | CS 19 | | | Extremely weak thinly laminated dark grey MUDSTONE. Fractures are subhorizontal, closely spaced, smooth, undulating. (MERCIA MUDSTONE - Class B) | 17.03 10 degree 50mm band of white fibrous gypsum | 17.30 -4.21 (0.25) |
| | | NI<br>60<br>100 | | | | Firm to stiff thinly laminated dark reddish brown, locally light bluish grey, slightly gravelly CLAY. Gravel is angular to subrounded fine to medium of very stiff clay and extremely weak mudstone lithorelicts. (MERCIA MUDSTONE - Class C) | 17.70-17.75 angular fine to medium gravel of gypsum | 17.55 -4.46 (0.25)<br>17.80 -4.71 (0.85) |
| 18.10 - 18.21 | | | CS 20 | | | | | |
| | | | | | | Extremely weak to very weak thinly laminated light greenish grey, mottled dark reddish brown, MUDSTONE with very closely spaced subhorizontal (up to 2mm) bands of white fibrous gypsum. Fractures are subhorizontal, closely spaced, rough, undulating. (MERCIA MUDSTONE - Class B) | 18.60 subhorizontal 50mm band of white fibrous gypsum | 18.65 -5.56 (0.45) |
| 18.10 - 19.60 | 100<br>17<br>7 | | | | | | | |
| | | | | | | Extremely weak thinly laminated dark reddish brown, locally mottled light greenish grey, MUDSTONE. Fractures are randomly orientated, extremely closely spaced, rough, undulating. | 19.20-19.30 subhorizontal very closely spaced bands of white fibrous gypsum | 19.10 -6.01 |
| 19.60 - 19.71 | | | SPTC 50 (25 for 60mm/50 for 50mm) | 15.20 | 0.60 | Extremely weak to very weak thinly to thickly laminated light greenish grey, locally mottled | 19.90 10 degree 5mm band of white fibrous gypsum | |

Legend / Backfill

| Groundwater Entries | | | | Depth Related Remarks | | Chiselling Details | | |
|---|---|---|---|---|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed | Depths (m) | Remarks | Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:08

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | BH104 |
| Carried out for | Firbeck Construction Limited | Sheet 2 of 4 |

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | SR | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.09 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 11/12/2017 | Comacchio 205. Dynamic sampling and rotary core drilling (PWF size) using water flush. SPT Hammer ID: SM39, Rod type: NWY. | 1.20 | 30.10 | 121 | 15.20 | Coordinates (m) | E 480328.16 |
| Checked | MS | End | | | | | | National Grid | N 386217.30 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 19.60 - 21.10 | 100 7 7 | - NA - | | | |
| | | | NI 60 100 | | |
| | | - NI - | | | |
| 21.10 - 22.60 | 100 15 7 | | | | |
| 22.05 - 22.15 | | | CS 21 | | |
| | | | Flush: 14.50 - 30.10 Water 100% | 13/12/17 15.20 | 1630 1.80 |
| 22.60 - 22.67 | | | SPTC 50 (25 for 30mm/50 for 40mm) | 14/12/17 15.20 | 0730 1.80 |
| 22.60 - 24.10 | 100 47 13 | NI 60 200 | | | |
| 23.40 - 23.52 | | | CS 22 | | |
| 24.10 - 25.60 | 40 0 0 | - NA - | | | |
| 25.60 - 25.70 | | NI 10 30 | SPTC 50 (25 for 60mm/50 for 45mm) | 15.20 | 0.80 |
| 25.60 - 27.00 | 13 7 0 | | | | |
| 26.39 - 26.51 | | | CS 23 | | |
| | | | NI 50 100 | | |
| 27.00 - 27.90 | 100 NA NA | | | | |
| 27.90 - 28.60 | 100 0 0 | - NA - | | | |
| 28.60 - 28.70 | | | SPTC 50 (25 for 50mm/50 for 45mm) | 15.20 | 0.60 |
| 28.60 - 30.10 | 100 9 0 | | | | |
| 29.45 - 29.53 | | | CS 24 | | |
| | | | N/A | 14/12/17 | 1630 |
| | | | ~~NI~~ | ~~15.20~~ | ~~4.60~~ |
| | | | N/A | | |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| reddish brown, MUDSTONE, locally reduced to clay bound angular fine to coarse gravel size mudstone lithorelicts. Fractures are subhorizontal closely spaced, locally non-intact, rough, undulating. | 20.25-20.30 30 degree 5mm band of white fibrous gypsum; 20.40-20.50 50 degree 15mm band of white fibrous gypsum | | | (1.90) |
| Firm light greenish grey gravelly CLAY. Gravel is angular to subangular fine to medium of very stiff clay and extremely weak mudstone lithorelicts. (MERCIA MUDSTONE - Class C) | 20.90 subhorizontal 10mm band of white fibrous gypsum | 21.00 | -7.91 | (0.30) |
| Firm to stiff fissured dark reddish brown, locally mottled light greenish grey, slightly gravelly CLAY. Gravel is angular to subangular fine to medium of very stiff clay and extremely weak mudstone lithorelicts. Fissures are randomly orientated, very closely spaced, smooth, planar. (MERCIA MUDSTONE - Class C) | 21.00 20 degree 20mm band of white fibrous gypsum | 21.30 | -8.21 | (0.80) |
| Extremely weak very thinly bedded dark reddish brown MUDSTONE. Fractures are subhorizontal, closely spaced, rough, undulating. (MERCIA MUDSTONE - Class B) | 22.05-22.10 20 degree bands (up to 5mm) of white fibrous gypsum | 22.10 | -9.01 | |
| Extremely weak very thinly bedded light reddish brown MUDSTONE, locally redcued to clay bound angular fine to coarse extremely weak mudstone lithorelicts. Fractures are randomly orientated, very closely spaced, smooth, planar. (MERCIA MUDSTONE - Class B) | 22.30 subhorizontal 30mm band of white fibrous gypsum; 22.50 subhorizontal 20mm band of white fibrous peat | | | |
| Extremely weak thinly bedded light reddish brown MUDSTONE, locally tending to clay bound angular to subangular fine to coarse extremely weak mudstone lithorelicts. Fractures are subhorizontal, closely spaced, locally non-intact, rough, undulating. (MERCIA MUDSTONE - Class B) | 22.80 subhorizontal 40mm band of white fibrous gypsum | | | (2.15) |
| Firm fissured dark reddish brown slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of very stiff clay and extremely weak mudstone lithorelicts. Fissures are randomly orientated, closely spaced. (MERCIA MUDSTONE - Class C) | 24.30-24.35 angular fine to medium gravel of gypsum; 24.50 10 degrees 2mm band of white fibrous gypsum; 24.60 subhorizontal band of white fibrous gypsum | 24.25 | -11.16 | (0.85) |
| Extremely weak thinly bedded dark reddish brown, locally mottled greenish grey, MUDSTONE, locally tending to clay bound tabular fine to coarse gravel size mudstone lithorelicts. Fractures are randomly orientated, occasionally 10 degree, very closely spaced, smooth, planar. (MERCIA MUDSTONE - Class B) | 25.40 subhorizontal 20mm band of white fibrous gypsum; 25.60-25.80 clay | 25.10 | -12.01 | (1.35) |
| Extremely weak thinly laminated dark reddish brown MUDSTONE. Fractures are subhorizontal, closely spaced, undulating, rough. (MERCIA MUDSTONE - Class B) | | 26.45 | -13.36 | (0.25) |
| Firm dark reddish brown gravelly CLAY. Gravel is angular to subrounded fine to coarse of very stiff clay and extremely weak mudstone lithorelicts. (MERCIA MUDSTONE - Class C) | 26.95 subhorizontal 40mm band of white fibrous gypsum | 26.70 | -13.61 | (1.20) |
| Stiff fissured reddish brown, becoming light greenish grey, gravelly CLAY. Gravel is angular to subangular fine to coarse of very stiff clay and extremely weak mudstone lithorelicts. (MERCIA MUDSTONE - Class C) | 28.50 subhorizontal 20mm band of white fibrous gypsum; 29.40-29.47 very weak mudstone with rounded gypsum inclusions (up to 10mm); 29.70-29.77 very | 27.90 | -14.81 | (2.00) |
| | | 29.90 | -16.81 | ~~(0.20)~~ |

Legend | Backfill

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.

 AGS

Scale 1:50 12/01/2018 09:34:08

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | BH104 |
| Carried out for | Firbeck Construction Limited | Sheet 3 of 4 |

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | SR | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.09 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 11/12/2017 | Comacchio 205.<br>Dynamic sampling and rotary core drilling (PWF size) using water flush.<br>SPT Hammer ID: SM39, Rod type: NWY. | 1.20 | 30.10 | 121 | 15.20 | Coordinates (m) | E 480328.16 |
| Checked | MS | End | | | | | | National Grid | N 386217.30 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Extremely weak dark reddish brown MUDSTONE. Fractures are randomly orientated, very closely spaced, smooth planar. (MERCIA MUDSTONE - Class B) | weak mudstone with rounded gypsum inclusions (up to 10mm) | | | |
| | | | | | | END OF EXPLORATORY HOLE | | 30.10 -17.01 | | |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:08

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | BH104 |
| Carried out for | Firbeck Construction Limited | Sheet 4 of 4 |

# DRAFT

# Borehole Log

SOCOTEC

| | | | |
|---|---|---|---|
| **Drilled** SS | **Start** 11/12/2017 | **Equipment, Methods and Remarks** | **Depth from (m)** 1.20 / **to (m)** 29.50 / **Diameter (mm)** 121 / **Casing Depth (m)** 15.00 |
| **Logged** DP | | Beretta T41. Dynamic sampling followed by rotary core drilling (PWF size) using water flush. SPT Hammer ID: AR1777, Rod type: NWY. | |
| **Checked** MS | **End** 15/12/2017 | | |
| **Approved** | | | |

**Ground Level** 13.31 mOD
**Coordinates (m)** E 480217.44
**National Grid** N 386221.29

## Samples and Tests / Strata Description

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|---|
| | | | 0.00-1.20 Hand excavated inspection pit. | | | TOPSOIL. | | (0.50) 0.50 +12.81 |
| | | | | | | Light greyish brown slightly sandy slightly gravelly SILT. Gravel is angular to subangular fine to coarse of clinker and poorly cemented silt. (MADE GROUND - Pulverised Fuel Ash) | | |
| 1.20 - 1.65 / 1.20 - 1.65 | SPTS / D 1 | | N=16 (3,4/4,4,5,3) | | Dry | | | |
| | | | | | | | | (3.40) |
| 2.70 - 3.15 / 2.70 - 3.15 | SPTS / D 2 | | N=15 (2,4/3,4,4,4) | | Dry | | 2.80-2.85 clayey | |
| | | | | 11/12/17 3.00 | 1600 Dry | | | 3.90 +9.41 |
| | | | | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | |
| 4.20 - 4.65 / 4.20 - 4.65 | SPTS / D 3 | | N=20 (3,4/6,7,3,4) | 12/12/17 3.00 | 0800 Dry | | 4.20-5.30 driller notes void | |
| | | | | | | | 5.00-5.30 clayey | |
| 5.30 - 5.75 / 5.30 - 5.75 | SPTS / D 4 | | N=14 (4,2/3,4,3,4) | 4.50 | Dry | | | |
| 6.00 - 6.30 / 6.00 - 6.30 | SPTS / D 5 | | 39 (4,17/20,19 for 75mm) | 6.00 | Dry | | | |
| | | | | | | | | (6.10) |
| | | | | | | | 8.00-8.50 slightly gravelly. Gravel is angular fine to coarse of poorly cemented silt | |
| 8.70 - 9.15 / 8.70 - 9.15 | SPTS / D 6 | | N=13 (5,4/3,3,3,4) | 7.50 | Dry | | | |
| | | | | | | | | 10.00 +3.31 |

Legend / Backfill

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:08

**Project** WEST BURTON C/D POWER STATION
**Project No.** A7102-17
**Carried out for** Firbeck Construction Limited

**Borehole**
**BH105**

# Borehole Log

**DRAFT**

| Drilled | SS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.31 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 11/12/2017 | Beretta T41. | 1.20 | 29.50 | 121 | 15.00 | Coordinates (m) | E 480217.44 |
| Checked | MS | End | Dynamic sampling followed by rotary core drilling (PWF size) using water flush. | | | | | National Grid | N 386221.29 |
| Approved | | 15/12/2017 | SPT Hammer ID: AR1777, Rod type: NWY. | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| | | | | 12/12/17 10.50 | 1600 6.50 |
| 11.50 - 11.95 | | | N=12 (2,2/2,3,3,4) | | |
| 11.50 - 11.95 | | | D 7 | 13/12/17 10.50 | 0800 8.50 |
| 11.50 - 13.00 | 100 0 0 | | | | |
| | | | 0 0 0 | | |
| 13.00 - 13.30 | | | | | |
| 13.30 - 13.60 | | | SPTS 34 (10,19/17,17 for 75mm) | 13.00 | 8.50 |
| 13.30 - 13.60 | | | D 8 | | |
| 13.30 - 14.80 | 0 0 0 | | | | |
| | | | | 13/12/17 14.80 | 1615 0.50 |
| 14.80 - 15.11 | | | SPTC 37 (6,9 for 14mm/12,10,15 for 75mm) | 14/12/17 14.80 | 0800 3.50 |
| 14.80 - 16.00 | 25 0 0 | | | | |
| 16.00 - 17.50 | 90 8 0 | | | | |
| | | NI 10 50 | | | |
| 17.50 - 17.80 | | | NI 50 130 | 15.00 | 3.50 |
| 17.50 - 17.64 | | | SPTC 42 (7,10/19,23 for 75mm) | | |
| | | | CS 9 | | |
| 17.50 - 19.00 | 100 15 9 | - NA - | | | |
| | | | NI 20 50 | | |
| 19.00 - 20.50 | 100 11 0 | | | | |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| Thinly laminated orangish brown, mottled brownish grey, clayey SILT with rare pockets (up to 5mm) of dark purple silt. (ALLUVIUM) | | 10.70 | +2.61 | (0.70) |
| Soft greenish brown, mottled greenish grey, silty CLAY with slight organic odour. (ALLUVIUM) | | 11.20 | +2.11 | (0.50) |
| Medium dense dark grey silty fine to coarse SAND. (ALLUVIUM) | | 12.05 | +1.26 | (0.85) |
| Thinly to thickly laminated orangish brown, mottled brownish grey, clayey SILT. (ALLUVIUM) | | 13.00 | +0.31 | (0.95) |
| Firm reddish brown, mottled greenish grey, slightly gravelly CLAY. Gravel is angular to subangular fine to medium of mudstone. (MERCIA MUDSTONE - Class Dc) | | 14.50 | -1.19 | (1.50) |
| Firm reddish brown, mottled bluish grey, CLAY. (MERCIA MUDSTONE - Class Dc) | | 16.00 | -2.69 | (1.50) |
| Firm fissured bluish grey, locally mottled reddish brown, slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mudstone. Fissures are randomly orientated, extremely closely spaced, rough undulating. (MERCIA MUDSTONE - Class Dc) | 16.20-16.26 subhorizontal 10 degree bands (up to 15mm) of white fibrous gypsum | 16.55 | -3.24 | (0.55) |
| Extremely weak thinly laminated light bluish grey MUDSTONE, locally disintegrated to subangular medium to coarse gravel size fragments. Fractures are subvertical, closely spaced and locally non-intact, smooth, planar. (MERCIA MUDSTONE - Class B) | 16.37 subhorizontal 15mm band of white fibrous gypsum<br>16.69 subhorizontal 10mm band of white fibrous gypsum | 16.75 | -3.44 | (0.20) |
| Stiff fissured reddish brown, locally mottled bluish grey, gravelly CLAY. Gravel is subangular to subrounded fine to coarse of very stiff clay and extremely weak mudstone lithorelicts. Fissures are randomly orientated, very closely spaced, smooth, planar. (MERCIA MUDSTONE - Class C) | 16.75-16.85 10-20 degree bands (up to 10mm) of white fibrous gypsum<br>17.40-17.50 soft reddish brown, mottled greenish grey, clay<br>17.50 30 degree 10mm band of fibrous white gypsum | 17.10 | -3.79 | (0.35) |
| Extremely weak to very weak very thinly bedded reddish brown, mottled greenish grey, MUDSTONE. Fractures are randomly orientated, very closely spaced, undulating, planar, smooth, undulating. (MERCIA MUDSTONE - Class B) | 17.73-17.76 reduced to subrounded medium gravel size fragments in soft clay | 17.80 | -4.49 | (0.70) |
| Firm fissured greenish grey, becoming reddish brown, gravelly CLAY. Gravel is angular to subrounded fine to coarse of very stiff clay and extremely weak mudstone lithorelicts. Fissures are randomly orientated, very closely spaced, rough, undulating. (MERCIA MUDSTONE - Class C) | 17.76-18.00 subhorizontal 40mm band of white fibrous gypsum<br>18.14 subhorizontal 10mm band of white fibrous gypsum<br>18.22 10 degree 15mm band of white fibrous gypsum | 18.90 | -5.59 | (1.10) |
| | | 19.10 | -5.79 | (0.20) |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:08

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **BH105**

# DRAFT

# Borehole Log

SOCOTEC

| | | | |
|---|---|---|---|
| Drilled | SS | Start | 11/12/2017 |
| Logged | DP | End | 15/12/2017 |
| Checked | MS | | |
| Approved | | | |

**Equipment, Methods and Remarks**

Beretta T41.
Dynamic sampling followed by rotary core drilling (PWF size) using water flush.
SPT Hammer ID: AR1777, Rod type: NWY.

| Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) |
|---|---|---|---|
| 1.20 | 29.50 | 121 | 15.00 |

| | |
|---|---|
| Ground Level | 13.31 mOD |
| Coordinates (m) | E 480217.44 |
| National Grid | N 386221.29 |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 20.50 - 20.95 | | - NA - | SPTC N=39 (8,10/10,8,12,9) | 15.00 | 3.50 |
| 21.08 - 21.28 | | | CS 10 | | |
| 20.50 - 22.00 | 93 47 30 | | Flush: 13.30 - 29.50 Water 100% | | |
| 21.60 - 21.72 | | | CS 11 | | |
| 22.10 - 22.30 | | NI 100 200 | CS 12 | | |
| 22.00 - 23.50 | 100 51 27 | | | | |
| | | NI NI NI | | | |
| 23.50 - 23.65 | | | SPTC 25 (20 for 75mm/25 for 75mm) | 15.00 | 3.50 |
| 23.50 - 25.00 | 0 0 0 | - NA - | | | |
| | | | | 14/12/17 15.00 | 1600 3.50 |
| | | | | 15/12/17 15.00 | 0800 3.50 |
| | | NI 10 60 | | | |
| 25.00 - 26.50 | 100 42 33 | | CS 13 | | |
| 25.78 - 25.88 | | | | | |
| 27.16 - 27.31 | 80 53 26 | | CS 14 | | |
| 26.50 - 28.00 | | NI 70 90 | | | |
| 28.00 - 28.30 | | | SPTC 47 (9,6/20,27 for 75mm) | 15.00 | |
| 28.16 - 28.27 | | | CS 15 | | |
| 28.00 - 29.50 | 57 35 24 | | | | |
| | | | | 15/12/17 15.00 | 1600 |

## Strata Description

| Main | Depth | Level | (Thickness) |
|---|---|---|---|
| Extremely weak very thinly bedded dark reddish brown MUDSTONE. Fractures are subhorizontal, very closely spaced, smooth, undulating. (MERCIA MUDSTONE - Class B) | | | (1.85) |
| Firm to stiff reddish brown, locally mottled greenish grey, gravelly CLAY. Gravel is subangular to subrounded fine to coarse of very stiff clay and extremely weak mudstone lithorelicts. (MERCIA MUDSTONE - Class C) | 20.95 | -7.64 | |
| Extremely weak to very weak very thinly bedded reddish brown, becoming light greenish grey, MUDSTONE. Fractures are subhorizontal to 10 degrees, closely spaced, smooth, stepped. (MERCIA MUDSTONE - Class B) | 22.90 | -9.59 | (1.95) |
| Extremely weak light greenish grey MUDSTONE, locally tending to claybound tabular subangular to subrounded fine to coarse gravel size mudstone lithorelicts. Fractures are randomly orientated, extremely closely spaced, smooth, undulating. (MERCIA MUDSTONE - Class B) | 23.50 | -10.19 | (0.60) |
| No recovery. Red clay/mudstone/gypsum. (Driller's description) | 25.00 | -11.69 | (1.50) |
| Extremely weak thinly bedded light greenish grey, becoming dark reddish brown, MUDSTONE. Fractures are subhorizontal, very closely spaced, smooth, planar. (MERCIA MUDSTONE - Class B) | 25.50 | -12.19 | (0.50) |
| Extremely weak, locally very weak, very thinly bedded dark reddish brown, locally mottled greenish grey, MUDSTONE with subhorizontal bands (up to 5mm) of white fibrous gypsum. Fractures are subhorizontal, very closely spaced, smooth, planar and undulating. (MERCIA MUDSTONE - Class B) | 29.50 | -16.19 | (4.00) |
| END OF EXPLORATORY HOLE | | | |

**Detail**

19.15-19.23 40 degree and subhorizontal 10mm bands of white fibrous gypsum
19.98 subhorizontal 15mm band of white fibrous gypsum
20.30 10 degree 30mm band of white fibrous gypsum
20.30-20.40 very stiff
21.30-21.35 40 degree 20mm band of white fibrous gypsum
21.60-21.65 50 degree 5mm band of white fibrous gypsum
22.00 subhorizontal 30mm band of white fibrous gypsum
22.20-22.60 subhorizontal to 20 degree bands (up to 5mm) of white fibrous gypsum
23.45 subhorizontal 50mm band of white fibrous gypsum
26.10 10 degree 15mm band of white fibrous gypsum
26.10-26.40 locally reduced to claybound tabular fine to coarse gravel size mudstone lithorelicts
26.25 subhorizontal 50mm band of white fibrous gypsum
26.50-26.90 drilling disturbed firm clay
26.98-27.15 40 degree closely spaced smooth undulating fractures
27.35 subhorizontal 30mm band of white fibrous gypsum
28.30-28.40 locally tending to claybound tabular fine to coarse gravel size mudstone lithorelicts
28.35 subhorizontal 10mm band of white fibrous gypsum
28.60 subhorizontal 10mm band of white fibrous gypsum

Legend | Backfill

**Groundwater Entries**

| No. | Depth Strike | Remarks | Depth Sealed |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Chiselling Details**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:08

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **BH105**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.05 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 16/12/2017 | Comacchio 305. Dynamic sampling followed by rotary core drilling (PWF size) using water flush. SPT Hammer ID: AR1121, Rod type: NWY. | 1.20 | 29.80 | 121 | 16.00 | Coordinates (m) | E 480274.50 |
| Checked | MS | End | | | | | | National Grid | N 386160.19 |
| Approved | | 19/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0.00-1.20 Hand excavated inspection pit. | | | TOPSOIL. | | (0.20) 0.20 +12.85 | | |
| 0.20 - 1.20 | B 3 | | | | | Dark grey, locally grey, slightly sandy slightly gravelly SILT. Gravel is angular fine to medium of clinker and poorly cemented silt. (MADE GROUND - Pulverised Fuel Ash) | | | | |
| 0.50 | D 1 | | | | | | | | | |
| 1.00 | D 2 | | | | | | | | | |
| 1.20 - 1.65<br>1.20 - 2.20<br>1.20 | SPTS<br>L 5<br>D 4 | | N=56 (5,10/10,15,15,16) | | Dry | | | | | |
| 2.20 - 3.60 | L 6 | | | | | | | | | |
| 3.60 - 4.05<br>3.60 - 4.60<br>3.60 | SPTS<br>L 8<br>D 7 | | N=18 (2,3/3,4,5,6) | 3.00 | Dry | | | | | |
| 4.60 - 5.60 | L 9 | | | | | | 4.80-4.95 clayey, mottled brown | (9.55) | | |
| 5.60 - 6.05<br>5.60 - 6.20<br>5.60 | SPTS<br>L 11<br>D 10 | | N=14 (3,3/2,3,4,5) | 3.00 | Dry | | | | | |
| 6.20 - 7.70 | L 12 | | | | | | 7.00-7.50 clayey | | | |
| 7.70 - 8.15<br>7.70 - 9.40<br>7.70 | SPTS<br>L 14<br>D 13 | | N=20 (1,2/1,3,7,9) | 6.00 | Dry | | | | | |
| 9.40 - 10.40 | L 15 | | | | | | | 9.75 +3.30 | | |
| | | | | | | Dark grey slightly gravelly silty fine to coarse SAND. Gravel is angular to subrounded fine to | | | | |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

12/01/2018 09:34:09

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**BH106**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.05 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 16/12/2017 | Comacchio 305.<br>Dynamic sampling followed by rotary core drilling (PWF size) using water flush.<br>SPT Hammer ID: AR1121, Rod type: NWY. | 1.20 | 29.80 | 121 | 16.00 | Coordinates (m) | E 480274.50 |
| Checked | MS | End | | | | | | National Grid | N 386160.19 |
| Approved | | 19/12/2017 | | | | | | | |

## Samples and Tests

| Depth | Type | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|---|
| 10.40 - 10.85<br>10.40 - 11.00 | SPTS<br>L 16 | | | N=13 (2,2/3,3,4,3) | 10.40 | 2.10 |
| 11.00 - 12.50 | L 17 | | | | | |
| 12.50 - 12.95<br>12.50 - 13.70<br>12.50 | SPTS<br>L 19<br>D 18 | | | N=10 (1,2/1,2,3,4) | 12.00 | 3.00 |
| 13.70 - 15.10 | L 20 | | | | | |
| 15.10 - 15.55<br>15.10 - 16.00<br>15.10 | SPTS<br>L 22<br>D 21 | | | N=22 (2,3/5,5,6,6) | 15.00 | 3.00 |
| | | | | | 16/12/17<br>15.60 | 1530<br>0.90 |
| | | | | | 18/12/17<br>15.60 | 0800<br>5.95 |
| 16.25 - 16.32 | | | | CS 22A | | |
| 16.00 - 17.05 | | 100<br>5<br>0 | | | | |
| 17.05 - 17.18 | | | -<br>NA<br>- | SPTC 50 (25 for 70mm/50 for 60mm) | 16.00 | 2.90 |
| 17.05 - 18.55 | | 100<br>0<br>0 | | | | |
| 18.90 - 19.01 | | | NA<br>60<br>100 | CS 23 | | |
| 18.55 - 20.05 | | 100<br>25<br>7 | | | | |
| | | | -<br>NA<br>- | | | |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| coarse of clinker and slag.<br>(MADE GROUND) | 10.95-11.00 soft dark grey silty clay | | | (1.90) |
| Orangish brown, mottled brown and grey, clayey SILT.<br>(MADE GROUND) | 11.65 soft dark greenish grey silty clay | 11.65 | +1.40 | (0.85) |
| Medium dense dark brownish grey gravelly slightly clayey fine to coarse SAND. Gravel is angular fine of clinker.<br>(MADE GROUND) | 12.90-13.00 soft orangish brown clay | 12.50 | +0.55 | (0.70) |
| Dark brown thinly laminated clayey SILT.<br>(ALLUVIUM) | | 13.20 | -0.15 | (0.20) |
| Soft thinly laminated light bluish grey, mottled reddish brown, silty CLAY. Slight organic odour.<br>(ALLUVIUM) | | 13.40 | -0.35 | (0.30) |
| Dark brown clayey SILT.<br>(ALLUVIUM) | | 13.70 | -0.65 | (0.65) |
| Soft to firm reddish brown, mottled bluish grey, CLAY.<br>(MERCIA MUDSTONE - Class Dc) | 15.10-15.25 AZCL | 14.35 | -1.30 | (1.15) |
| Bluish grey SILT with frequent pockets (up to 30mm) of clayey silt.<br>(MERCIA MUDSTONE - Class Dc) | | 15.50 | -2.45 | (0.30) |
| Stiff fissured bluish grey CLAY. Fissures are randomly orientated, extremely closely spaced, undulating, smooth.<br>(MERCIA MUDSTONE - Class Dc) | 16.00-16.20 drilling disturbed soft bluish grey clay<br>16.25-16.30 subhorizontal 50mm band of white fibrous gypsum | 15.80 | -2.75 | (0.70) |
| Stiff fissured reddish brown CLAY. Fissures are subhorizontal to 10 degree, undulating, rough.<br>(MERCIA MUDSTONE - Class Dc) | 16.70 20 degree 10mm band of white fibrous gypsum<br>17.00 subhorizontal 15mm band of white fibrous gypsum with mudstone inclusions | 16.50 | -3.45 | (0.65) |
| Stiff, locally very stiff, fissured dark reddish brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse lithorelicts of very stiff to extremely weak mudstone. Fissures are randomly orientated, extremely closely spaced, planar, smooth.<br>(MERCIA MUDSTONE - Class Da) | 17.40 subhorizontal 10mm band of white fibrous gypsum<br>17.50-17.68 subvertical 2mm band of white fibrous gypsum<br>17.70-18.00 30 degree very closely spaced bands (up to 5mm) of white fibrous gypsum | 17.15 | -4.10 | (1.40) |
| Extremely weak thinly laminated dark reddish brown, locally light greenish grey, MUDSTONE, locally reduced to claybound tabular fine to coarse gravel size mudstone lithorelicts. Fractures are subhorizontal, very closely spaced, undulating smooth and rough.<br>(MERCIA MUDSTONE - Class B) | 18.40 subhorizontal 20mm band of white fibrous gypsum<br>18.75 subhorizontal 10mm band of white fibrous gypsum<br>18.95 subhorizontal 20mm band of white fibrous gypsum with mudstone inclusions | 18.55 | -5.50 | (0.95) |
| Extremely weak thinly laminated light greenish grey MUDSTONE. Mainly recovered as a claybound angular to subrounded coarse gravel. Fractures are randomly orientated, extremely | 19.20 subangular fine and medium gypsum gravel | 19.50 | -6.45 | (0.55) |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike | Remarks | Depth Sealed |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Chiselling Details | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:09

| Project | WEST BURTON C/D POWER STATION |
|---|---|
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**BH106**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.05 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP | 16/12/2017 | Comacchio 305.<br>Dynamic sampling followed by rotary core drilling (PWF size) using water flush.<br>SPT Hammer ID: AR1121, Rod type: NWY. | 1.20 | 29.80 | 121 | 16.00 | Coordinates (m) | E 480274.50 |
| Checked | MS | End | | | | | | National Grid | N 386160.19 |
| Approved | | 19/12/2017 | | | | | | | |

## Samples and Tests

| Depth | TCR SCR RQD | If | Records/Samples | Date Casing | Time Water |
|---|---|---|---|---|---|
| 20.05 - 20.19 | | | SPTC 50 (25 for 50mm/32,18 for 15mm) | 16.00 | 3.05 |
| 20.20 - 20.34 | | 50<br>100<br>140 | CS 24 | | |
| 20.05 - 21.55 | 90<br>35<br>19 | | | | |
| 21.55 - 22.30 | 100<br>0<br>0 | -<br>NA<br>- | | | |
| 22.30 - 22.42 | | | SPTC 50 (25 for 65mm/50 for 55mm) | 16.00 | 3.00 |
| 22.30 - 23.80 | 100<br>0<br>0 | | Flush: 16.00 - 29.80 Water 100% | | |
| 23.90 - 24.00 | | 80<br>80<br>160 | CS 25 | | |
| 23.80 - 25.30 | 100<br>25<br>11 | -<br>NA<br>- | | | |
| 25.30 - 25.39 | | | SPTC 50 (25 for 40mm/50 for 50mm) | 16.00 | 3.10 |
| | | NI<br>30<br>60 | | | |
| 25.30 - 26.80 | 100<br>20<br>0 | -<br>NA<br>- | | | |
| 27.10 - 27.19 | | | CS 26 | | |
| 26.80 - 28.30 | 70<br>9<br>0 | -<br>NI<br>- | | 18/12/17<br>16.00 | 1630<br>3.25 |
| 28.30 - 28.40 | | | SPTC 50 (25 for 50mm/50 for 50mm) | 19/12/17<br>16.00 | 0800<br>6.10 |
| 28.30 - 29.80 | 67<br>5<br>0 | | | | |
| 29.40 - 29.48 | | NI<br>NI<br>80 | CS 27 | 19/12/17<br>16.00 | 1530<br>Dry |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| closely spaced, planar, smooth. (MERCIA MUDSTONE - Class B) | 19.30 30 degree band of white fibrous gypsum | 20.05 | -7.00 | (0.40) |
| Extremely weak very thinly bedded light greenish grey, mottled reddish brown, MUDSTONE with subhorizontal to 10 degree very closely spaced bands (up to 5mm) of white fibrous gypsum. Fractures are subhorizontal to 10 degree, closely spaced, planar and stepped, smooth. (MERCIA MUDSTONE - Class B) | 20.75 10 degree 15mm band of white fibrous gypsum with mudstone inclusions. | 20.45 | -7.40 | (3.45) |
| Very stiff fissured thinly laminated light greenish grey, becoming dark reddish brown, gravelly CLAY. Gravel is tabular angular to subrounded fine to coarse lithorelicts of very stiff clay to extremely weak mudstone. Fissures are randomly orientated, very closely spaced, planar, smooth. (MERCIA MUDSTONE - Class C) | 21.70-22.70 10 to 20 degree bands (up to 15mm) of white fibrous gypsum<br>22.05 subhorizontal 50mm band of white fibrous gypsum.<br>22.20-22.30 Extremely weak thinly laminated dark reddish brown mudstone. Fractures are subhorizontal extremely closely spaced undulating rough.<br>23.45 subhorizontal 40mm band of white fibrous gypsum<br>23.90 10 degree 10mm band of white fibrous gypsum | 23.90 | -10.85 | (0.45) |
| Extremely weak thickly laminated reddish brown, locally mottled light greenish grey, MUDSTONE with subhorizontal very closely spaced bands (up to 3mm thick) of white fibrous gypsum. Fractures are subhorizontal, very closely spaced, undulating and planar, smooth. (MERCIA MUDSTONE - Class B) | | 24.35 | -11.30 | (1.05) |
| Firm indistinctly structured dark reddish brown CLAY, locally reduced to claybound tabular and subrounded fine to coarse lithorelicts of very stiff to extremely weak mudstone. (MERCIA MUDSTONE - Class C) | | 25.40 | -12.35 | (0.60) |
| Extremely weak thinly laminated dark reddish brown MUDSTONE. Fractures are randomly orientated, locally subhorizontal, very closely spaced, planar, smooth. (MERCIA MUDSTONE - Class B) | 25.80-25.90 10 degree subhorizontal bands (up to 10mm) of white fibrous gypsum | 26.00 | -12.95 | (0.80) |
| Stiff, locally very stiff, fissured dark reddish brown, becoming light greenish grey, CLAY, locally reduced to claybound tabular subrounded fine to coarse lithorelicts of very stiff clay to extremely weak mudstone. Fissures are randomly orientated, very closely spaced, planar, smooth. (MERCIA MUDSTONE - Class C) | 26.50 subhorizontal 30mm band of white fibrous gypsum | 26.80 | -13.75 | (0.55) |
| Dark reddish brown angular to subrounded fine to coarse GRAVEL of mudstone. (MERCIA MUDSTONE - Class C) | | 27.35 | -14.30 | (0.85) |
| Extremely weak very thinly bedded dark reddish brown, locally mottled light greenish grey, MUDSTONE. Fractures are randomly orientated, extremely closely spaced, planar, smooth. Predominantly non-intact. (MERCIA MUDSTONE - Class B) | 27.80 subhorizontal 60mm band of white fibrous gypsum<br>28.12 subhorizontal 80mm band of white fibrous gypsum | 28.20 | -15.15 | (1.20) |
| Extremely weak dark reddish brown, mottled greenish grey, angular to subrounded fine to coarse GRAVEL of mudstone. (MERCIA MUDSTONE - Class C) | | 29.40 | -16.35 | (0.40) |
| Extremely weak very thinly bedded dark reddish brown MUDSTONE. Fractures are randomly orientated, extremely and very closely spaced, planar, smooth. (MERCIA MUDSTONE - Class B) | 29.70 subhorizontal 40mm band of white fibrous gypsum | 29.80 | -16.75 | |
| END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike | Remarks | Depth Sealed |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Chiselling Details**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 12/01/2018 09:34:09

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | BH106 |
| Carried out for | Firbeck Construction Limited | Sheet 3 of 3 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | SS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 8.12 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 18/12/2017 | Dando 175.<br>Cable percussion boring.<br>SPT Hammer ID: ARI777, Rod type: 54mm Whitworth. | 1.20 | 15.15 | 150 | 13.50 | Coordinates (m) | E 480231.61 |
| Checked | MS | End | | | | | | National Grid | N 386503.03 |
| Approved | | 20/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|
| | | 0.00-1.20 Hand excavated inspection pit. | | | Grey slightly gravelly sandy SILT. Gravel is subangular fine to medium of clinker and brick. (MADE GROUND - Pulverised Fuel Ash) | | |
| 0.30 | D 1 | | | | | | |
| 0.50 - 1.00 | B 2 | | | | | | |
| 1.20 - 1.65<br>1.20 | UT 4<br>D 3 | 42 blows 100% rec | 1.20 | Dry | | | |
| 1.65 - 1.85 | D 5 | | | | | | |
| 1.85 - 2.30<br>1.85 - 2.30 | SPTS<br>D 6 | N=13 (3,3/3,4,3,3) | 1.50 | Dry | | | |
| | | | 18/12/17<br>1.50 | 1620<br>Dry | | | (4.40) |
| | | | 19/12/17<br>1.50 | 0800<br>Dry | | | |
| 3.00 - 3.45 | UT 7 | 28 blows 100% rec | 3.00 | Dry | | | |
| 3.45 - 3.65 | D 8 | | | | | | |
| 3.65 - 4.10<br>3.65 - 4.10 | SPTS<br>D 9 | N=9 (2,3/2,3,2,2) | 3.00 | Dry | | | |
| | | | | | | | 4.40 +3.72 |
| 4.50 - 4.95 | UT 10 | 37 blows 100% rec | 4.50 | Dry | Soft to firm grey and greyish brown, mottled orangish brown, slightly sandy silty CLAY with frequent gravel size pockets of black silt. (Possible ALLUVIUM) | | |
| 4.95 - 5.15 | D 11 | | | | | | |
| 5.15 - 5.60<br>5.15 - 5.60 | SPTS<br>D 12 | N=12 (3,3/3,3,3,3) | 4.50 | Dry | | | (1.40) |
| 5.80 | D 13 | | | | | | 5.80 +2.32 |
| 6.00 - 6.45 | UT 14 | 23 blows 100% rec | 6.00 | Damp | Soft to firm orangish brown, mottled dark greyish brown, slightly sandy silty CLAY with frequent pockets (<5mm) of orange sand. Frequent pockets of dark grey silt. (ALLUVIUM) | | (0.50) |
| | | | | | | | 6.30 +1.82 |
| 6.45 - 6.65 | D 15 | | | | Soft brown, mottled grey, slightly sandy SILT with frequent pockets (<1mm) and partings (<2mm) of orange fine sand. (ALLUVIUM) | | |
| 6.65 - 7.10<br>6.65 - 7.10 | SPTS<br>D 16 | N=8 (2,1/2,2,2,2) | 6.00 | Damp | | | (1.30) |
| 7.50 - 7.95 | UT 17 | 17 blows 100% rec | 7.50 | Damp | | | |
| | | | | | Soft greyish brown slightly sandy SILT. (ALLUVIUM) | | 7.60 +0.52 |
| 7.95 - 8.15 | D 18 | | | | | | |
| 8.15 - 8.60<br>8.15 - 8.60 | SPTS<br>D 19 | N=2 (1,0/1,0,1,0) | 8.15 | 2.10 | | | |
| | | | | | | | (2.40) |
| 9.00 - 9.65<br>9.00 - 9.65 | UT NR<br>B 20 | 8 blows No Recovery | 9.00 | 2.00 | | | |
| 9.65 - 10.10<br>9.65 - 10.10 | SPTS<br>D 21 | N=10 (2,2/4,2,2,2) | 9.00 | 3.10 | | | |
| | | | | | | | 10.00 -1.88 |

Legend / Backfill: 1 ▽ 1 ▼

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|
| 1 | 6.80 | Rose to 6.10 m after 20 minutes. | 12.10 |

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|
| 8.00 - 12.10 | Water added to assist boring. |

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:53

| Project | WEST BURTON C/D POWER STATION |
|---|---|
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS101**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | SS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 8.12 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 18/12/2017 | Dando 175.<br>Cable percussion boring.<br>SPT Hammer ID: ARI777, Rod type: 54mm Whitworth. | 1.20 | 15.15 | 150 | 13.50 | Coordinates (m) | E 480231.61 |
| Checked | MS | End | | | | | | National Grid | N 386503.03 |
| Approved | | 20/12/2017 | | | | | | | |

## Samples and Tests

| Depth | Type & No. | Records | Date / Casing | Time / Water |
|---|---|---|---|---|
| 10.50 - 10.95<br>10.50 - 10.95 | SPTS<br>D 22 | N=24 (2,3/4,6,6,8) | 10.50 | 4.10 |
| 11.40 | D 23 | | | |
| 12.00 - 12.45<br>12.00 - 12.45 | SPTS<br>D 24 | N=10 (2,2/3,3,2,2) | 12.00 | 3.20 |
| | | | 19/12/17<br>12.00 | 1610<br>3.20 |
| | | | 20/12/17<br>12.00 | 0810<br>6.10 |
| 13.00 | D 25 | | | |
| 13.50 - 13.95<br>13.50 - 13.95 | SPTS<br>D 26 | N=10 (2,2/2,3,2,3) | 13.50 | 8.80 |
| 14.50 | D 27 | | | |
| 14.70 - 15.15<br>14.70 - 15.15 | SPTS<br>D 28 | N=49 (3,3/4,9,11,25) | 13.50 | 9.10 |
| | | | 20/12/17<br>13.50 | 1300<br>9.10 |

## Strata Description

| Main | Detail | Depth, Level (Thickness) |
|---|---|---|
| Medium dense reddish brown slightly gravelly silty fine to coarse SAND. Gravel is subangular to subrounded fine to medium of flint and poorly cemented mudstone. (RIVER TERRACE DEPOSITS) | | (1.30)<br>11.30 -3.18 |
| Greyish brown slightly sandy GRAVEL. Gravel is predominantly angular to subangular fine to coarse of mudstone and occasionally subrounded fine to coarse of sandstone. (RIVER TERRACE DEPOSITS) | | (0.80)<br>12.10 -3.98 |
| Soft to firm reddish brown, bluish grey, dark brown and grey, silty CLAY. (MERCIA MUDSTONE - Class Dc) | | (2.60)<br>14.70 -6.58 |
| Firm reddish brown, mottled brownish grey and grey, silty CLAY with frequent powdery white gypsum. (MERCIA MUDSTONE - Class Dc) | | (0.45)<br>15.15 -7.03 |
| END OF EXPLORATORY HOLE | | |

Legend / Backfill

**Groundwater Entries**

No. | Depth Strike (m) | Remarks | Depth Sealed (m)

**Depth Related Remarks**

Depths (m) | Remarks

**Hard Boring**

Depths (m) | Duration (mins) | Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:53

| | | | |
|---|---|---|---|
| Project | WEST BURTON C/D POWER STATION | Borehole | WS101 |
| Project No. | A7102-17 | | |
| Carried out for | Firbeck Construction Limited | | Sheet 2 of 2 |

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | JJ | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 7.29 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 15/12/2017 | Dando 3000. Cable percussion boring. SPT Hammer ID: AR932, Rod type: 54mm Whitworth. | 1.20 | 10.88 | 150 | 8.50 | Coordinates (m) | E 480348.04 |
| Checked | MS | End | | | | | | National Grid | N 386411.84 |
| Approved | | 18/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|
| 0.00 - 0.30 | B 1 | 0.00-1.20 Hand excavated inspection pit. | | | Dark grey slightly sandy SILT with some angular to subangular fine to coarse gravel of ash to 0.30m. (MADE GROUND - Pulverised Fuel Ash) | | (1.20) |
| 0.30 | D 2 | | | | | | |
| 1.20 - 1.65 | SPTS | N=24 (4,4/5,6,6,7) | | Dry | Light brownish grey slightly sandy SILT with rare gravel size pockets of yellowish brown fine sand. (MADE GROUND - Pulverised Fuel Ash) | | 1.20 +6.09 (2.80) |
| 1.20 - 1.65 | D 3 | | | | | | |
| 3.00 - 3.45 | SPTS | N=4 (1,1/1,1,1,1) | 3.00 | Dry | | | |
| 3.00 - 3.45 | D 5 | | | | | | |
| 3.00 - 3.45 | B 4 | | | | | | |
| | | | | | Soft orangish brown, mottled reddish brown, silty CLAY with lenses of orangish brown fine sand (<1mm) and rare black rootlet relicts. (ALLUVIUM) | | 4.00 +3.29 (2.00) |
| 4.50 - 4.95 | UT 6 | 41 blows 100% rec | 4.00 | Dry | | | |
| 4.90 - 5.35 | SPTS | N=25 (4,6/6,6,6,7) | 4.50 | Dry | | | |
| 4.90 - 5.35 | D 8 | | | | | | |
| 4.95 | D 7 | | | | | | |
| | | | 15/12/17 4.50 | 1600 Dry | | | |
| 6.00 - 6.45 | SPTS | N=3 (0,0/0,1,1,1) | 18/12/17 4.50 | 0800 Dry | Brown slightly sandy SILT with occasional gravel size pockets of orange fine sand. (ALLUVIUM) | | 6.00 +1.29 (2.50) |
| 6.00 - 6.45 | D 10 | | | | | | |
| 6.00 | B 9 | | | | | | |
| 7.50 - 7.95 | SPTS | N=4 (0,0/1,1,1,1) | 7.50 | Dry | | 7.50 reddish brown, brownish grey with orange fine sand. | |
| 7.50 - 7.95 | D 12 | | | | | | |
| 7.50 | B 11 | | | | | 7.95 dark greyish brown silt | |
| 8.50 | D 13 | | | | Firm reddish brown, mottled bluish grey, silty CLAY with lenses of bluish grey relict mudstone and occasional bluish grey veins. Rare angular coarse gravel size fragments of bluish grey mudstone. (MERCIA MUDSTONE - Class Db) | | 8.50 -1.21 (2.38) |
| 9.00 - 9.45 | SPTS | N=50 (5,6/9,12,14,15) | 9.00 | Dry | | | |
| 9.00 - 9.45 | D 14 | | | | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|
| 0.00 - 10.88 | No groundwater encountered during drilling. |

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:53

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**WS102**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled JJ | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 7.29 mOD |
|---|---|---|---|---|---|---|---|---|
| Logged RT | 15/12/2017 | Dando 3000. Cable percussion boring. SPT Hammer ID: AR932, Rod type: 54mm Whitworth. | 1.20 | 10.88 | 150 | 8.50 | Coordinates (m) | E 480348.04 |
| Checked MS | End | | | | | | National Grid | N 386411.84 |
| Approved | 18/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| 10.50 - 10.88<br>10.50 - 10.88<br>10.50 | SPTS<br>D 16<br>B 15 | 50 (6,7/9,15,26 for 75mm) | <br>18/12/17<br>8.50 | Dry<br>1600<br>Dry | Firm reddish brown, mottled bluish grey, silty CLAY with lenses of bluish grey relict mudstone and occasional bluish grey veins. Rare angular coarse gravel size fragments of bluish grey mudstone.<br>(MERCIA MUDSTONE - Class Db) | | 10.88 -3.59 | | |
| | | | | | END OF EXPLORATORY HOLE | | | | |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Hard Boring | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:53

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**WS102**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | JJ | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.22 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT/DP | 13/12/2017 | Dando 3000. Cable percussion boring. SPT Hammer ID: AR932, Rod type: 54mm Whitworth. | 1.20 | 15.00 | 150 | 13.50 | Coordinates (m) | E 480254.22 |
| Checked | MS | End | | | | | | National Grid | N 386326.59 |
| Approved | | 14/12/2017 | | | | | | | |

## Samples and Tests

| Depth | Type & No. | Records | Date / Casing | Time / Water |
|---|---|---|---|---|
| 0.00 - 0.80 | B 2 | 0.00-1.20 Hand excavated inspection pit. | | |
| 0.40 | D 1 | | | |
| 0.80 - 1.20 | B 4 | | | |
| 1.00 | D 3 | | | |
| 1.20 - 1.65<br>1.20 - 1.65 | SPTS<br>D 5 | N=4 (1,1/1,1,1,1) | 1.20 | Dry |
| 3.00 - 3.50 | UT 6 | 87 blows 100% rec | 3.00 | Dry |
| 3.50 - 3.78<br>3.50<br>3.50 - 3.95 | SPTS<br>D 7<br>D 8 | 50 (15,15/25,25 for 50mm) | 3.00 | Dry |
| 4.50 - 5.00 | UT 9 | 36 blows 100% rec | 4.50 | Dry |
| 5.00 - 5.45<br>5.00<br>5.00 - 5.45 | SPTS<br>D 10<br>D 11 | N=13 (2,3/3,3,3,4) | 5.00 | Dry |
| 6.00 - 6.50 | UT 12 | 14 blows 100% rec | 6.00 | Dry |
| 6.50 - 6.95<br>6.50<br>6.50 - 6.95 | SPTS<br>D 13<br>D 14 | N=17 (2,2/3,4,5,5) | 6.00 | Dry |
| | | | 13/12/17<br>6.00 | 1630<br>Dry |
| | | | 14/12/17<br>6.00 | 0800<br>Dry |
| 7.50 - 8.00 | UT 15 | 87 blows 100% rec | 7.50 | Dry |
| 8.00 - 8.45<br>8.00<br>8.00 - 8.45 | SPTS<br>D 16<br>D 17 | N=24 (9,9/7,7,5,5) | 8.00 | Dry |
| 9.00 - 9.50 | B 18 | | | |
| 9.50 - 9.95<br>9.50 - 10.00 | SPTS<br>D 19 | N=13 (3,3/3,3,4,3) | 9.00 | Dry |

## Strata Description

| Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|
| Soft to firm reddish brown slightly sandy CLAY with frequent rootlets to 0.20m. (MADE GROUND) | | (0.80)<br>0.80 +12.42 | | |
| Soft to firm dark brownish grey silty CLAY with frequent rootlets and occasional roots (<10mm). (MADE GROUND) | | (1.00)<br>1.80 +11.42 | | |
| Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | (8.50) | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|
| 0.00 - 15.00 | No water encountered during drilling. |

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:54

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS103**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | JJ | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.22 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT/DP | 13/12/2017 | Dando 3000.<br>Cable percussion boring.<br>SPT Hammer ID: AR932, Rod type: 54mm Whitworth. | 1.20 | 15.00 | 150 | 13.50 | Coordinates (m) | E 480254.22 |
| Checked | MS | End | | | | | | National Grid | N 386326.59 |
| Approved | | 14/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|
| | | | | | Dark grey slightly sandy SILT.<br>(MADE GROUND - Pulverised Fuel Ash) | | |
| | | | | | Orangish brown, mottled light brown, SILT.<br>(ALLUVIUM) | | 10.30 +2.92 |
| 10.50 - 11.00<br>10.50 - 11.00 | UT NR<br>B 20 | 19 blows No Recovery | 10.50 | Dry | | | |
| 11.00 - 11.45<br>11.00 - 11.45 | SPTS<br>D 21 | N=13 (2,3/3,3,3,4) | 10.50 | Dry | | 11.00-11.45 slightly sandy | (1.70) |
| 12.00 - 12.50<br>12.00 - 12.50 | UT NR<br>B 22 | 23 blows No Recovery | 12.00 | Dry | Dark grey, mottled orangish brown, slightly sandy SILT.<br>(ALLUVIUM) | | 12.00 +1.22 |
| 12.50 - 12.95<br>12.50 - 12.95 | SPTS<br>D 23 | N=14 (2,2/3,3,4,4) | 12.00 | Dry | | 12.50-14.50 no mottling | |
| | | | | | | | (2.50) |
| 13.50 - 14.00<br>13.50 - 14.00 | UT NR<br>B 24 | 31 blows No Recovery | 13.50 | Dry | | | |
| 14.00 - 14.45 | SPTS | N=28 (3,3/3,7,9,9) | 13.50 | Dry | | | |
| 14.50 | D 25 | | | | Firm to stiff reddish brown, mottled light bluish grey, silty CLAY.<br>(MERCIA MUDSTONE - Class Dc) | | 14.50 -1.28 |
| | | | 14/12/17<br>13.50 | 1630<br>Dry | | | (0.50) |
| | | | | | END OF EXPLORATORY HOLE | | 15.00 -1.78 |

Legend | Backfill

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:54

| Project | WEST BURTON C/D POWER STATION |
|---|---|
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS103**

# DRAFT

# Borehole Log

SOCOTEC

| | | | |
|---|---|---|---|
| Drilled LM | Start | Equipment, Methods and Remarks | Depth from (m) 1.20 / to (m) 15.00 / Diameter (mm) 150 / Casing Depth (m) 14.50 |
| Logged RT/DP | 13/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: AR1777, Rod type: 54mm Whitworth. | |
| Checked MS | End | | |
| Approved | 15/12/2017 | | |

Ground Level 12.79 mOD
Coordinates (m) E 480272.49
National Grid N 386292.43

## Samples and Tests

| Depth | Type & No. | Records | Date / Casing | Time / Water |
|---|---|---|---|---|
| | | 0.00-1.20 Hand excavated inspection pit. | | |
| 0.30 | D 1 | | | |
| 0.50 | B 2 | | | |
| 1.00 | D 3 | | | |
| 1.20 - 1.65<br>1.20 | UT 5<br>B 4 | 60 blows 89% rec | 1.20 | Dry |
| 1.70 - 2.15<br>1.70<br>1.70 | SPTS<br>D 6<br>D 7 | N=21 (2,4/5,4,5,7) | 1.50 | Dry |
| 2.20 | D 8 | | | |
| 2.70 - 3.15 | UT 9 | 70 blows 100% rec | 2.70 | Dry |
| 3.20 | D 10 | | | |
| | | | 14/12/17<br>2.50 | 0830<br>Dry |
| 4.20 - 4.65 | UT 12 | 40 blows 100% rec | 13/12/17<br>2.50 | 1600<br>Dry |
| 4.70 - 5.15<br>4.70<br>4.70 | SPTS<br>D 13<br>D 14 | N=6 (2,1/2,1,1,2) | 4.50 | Dry |
| 5.20 | D 15 | | | |
| 5.70 - 6.15 | UT 16 | 30 blows 100% rec | 5.70 | Dry |
| 6.20 - 6.65<br>6.20<br>6.20 | SPTS<br>D 17<br>D 18 | N=39 (4,9/10,9,10,10) | 6.00 | Dry |
| 6.70 | D 19 | | | |
| 7.20 - 7.65 | UT 20 | 60 blows 100% rec | 7.20 | Dry |
| 7.70 - 8.15<br>7.70<br>7.70 | SPTS<br>D 21<br>D 22 | N=34 (7,7/7,9,9,9) | 7.50 | Dry |
| 8.20 | D 23 | | | |
| 8.70 - 9.15 | UT 24 | 20 blows 100% rec | 8.70 | 8.40 |
| 9.20 - 9.65<br>9.20<br>9.20 | SPTS<br>D 25<br>D 26 | N=15 (2,3/2,4,4,5)<br>No sample | 9.00 | Damp |
| 9.70 | D 27 | | | |

## Strata Description

| Main | Detail | Depth, Level (Thickness) |
|---|---|---|
| Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of brick, concrete and sandstone. (MADE GROUND) | | (0.50)<br>0.50 +12.29 |
| Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | (12.50) |

Legend / Backfill: 1, 1, 1

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|
| 1 | 8.70 | Rose to 8.40 m after 20 minutes. Medium inflow | 8.50 |

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:54

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS104**

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | LM | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 12.79 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT/DP | 13/12/2017 | Dando 175.<br>Cable percussion boring.<br>SPT Hammer ID: AR1777, Rod type: 54mm Whitworth. | 1.20 | 15.00 | 150 | 14.50 | Coordinates (m) | E 480272.49 |
| Checked | MS | End | | | | | | National Grid | N 386292.43 |
| Approved | | 15/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Dark grey slightly sandy SILT.<br>(MADE GROUND - Pulverised Fuel Ash) | | | | |
| 10.70 - 11.15<br>10.70 | SPTS<br>D 28 | N=15 (2,2/3,3,3,6) | 10.50 | Damp | | | | | |
| 11.20 | D 29 | | | | | | | | |
| 12.20 - 12.65 | UT 30 | 20 blows 100% rec | 12.00 | Damp | | | | | |
| 12.70 - 13.30<br>12.70<br>12.70 | SPTS<br>D 31<br>D 32 | N=2 (1,0/0,0,1,1) SW=150 | 12.00<br>14/12/17<br>12.00 | Dry<br>1600<br>Dry | | | | | |
| | | | 15/12/17<br>12.00 | 0800<br>12.20 | Firm dark reddish brown, mottled light bluish grey, silty CLAY.<br>(MERCIA MUDSTONE - Class Dc) | | 13.00 -0.21 | | |
| 13.50 | D 33 | | | | | | | | |
| | | | | | | | (2.00) | | |
| 14.20 - 14.65 | UT 34 | 60 blows 100% rec | 14.20 | Damp | | | | | |
| 14.70 - 15.15 | SPTS | N=14 (2,2/2,4,4,4) | 14.50<br>15/12/17<br>14.50 | Damp<br>1225<br>Damp | | | | | |
| | | | | | END OF EXPLORATORY HOLE | | 15.00 -2.21 | | |

| Groundwater Entries | | | | Depth Related Remarks | | Hard Boring | | |
|---|---|---|---|---|---|---|---|---|
| No. | Depth Strike (m) | Remarks | Depth Sealed (m) | Depths (m) | Remarks | Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:54

| | | | |
|---|---|---|---|
| Project | WEST BURTON C/D POWER STATION | Borehole | WS104 |
| Project No. | A7102-17 | | |
| Carried out for | Firbeck Construction Limited | | |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | JJ | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.13 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 11/12/2017 | Dando 3000.<br>Cable percussion boring.<br>SPT Hammer ID: AR932, Rod type: 54mm Whitworth. | 1.20 | 15.45 | 150 | 13.00 | Coordinates (m) | E 480251.34 |
| Checked | MS | End | | | | | | National Grid | N 386272.33 |
| Approved | | 12/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | 0.00-1.20 Hand excavated inspection pit. | | | Firm brown slightly sandy CLAY. (MADE GROUND) | 0.00-0.30 frequent rootlets | (0.80) | | |
| | | | | | Soft dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 0.80 +12.33 | | |
| 1.20 - 1.65<br>1.20 - 1.65 | SPTS<br>D 1 | N=7 (2,2/1,2,2,2) | 1.20 | Dry | | | | | |
| 3.00 - 3.45 | UT 2 | 41 blows 100% rec | 3.00 | Dry | | | | | |
| 3.45 - 3.90<br>3.50 - 3.95<br>3.55 | D 4<br>SPTS<br>D 3 | N=7 (2,2/1,2,2,2) | 3.45 | Dry | | | | | |
| 4.50 - 4.80 | UT 5 | 20 blows 100% rec | 4.00<br>11/12/17<br>4.00 | Dry<br>1700<br>Dry | | 4.50 occasional pockets (<2mm) of black silt | | | |
| 4.90 - 5.35<br>4.90 - 5.35 | SPTS<br>D 6 | N=3 (0,0/0,1,1,1) | 12/12/17<br>4.00 | 0800<br>Dry | | | | | |
| 6.00 - 6.45 | UT 7 | 21 blows 80% rec | 6.00 | Dry | | | (10.10) | | |
| 6.45 - 6.90<br>6.45 | SPTS<br>D 8 | N=27 (3,4/5,6,8,8) | 6.45 | Dry | | | | | |
| 7.50 - 7.95<br>7.50 - 7.95<br>7.50<br>7.50 | SPTS<br>UT NR<br>D 9<br>B 11 | N=3 (0,0/0,1,1,1)<br>15 blows No Recovery | 7.50<br>7.50 | Dry<br>Dry | | | | | |
| 9.00 - 9.45<br>9.00<br>9.00 - 9.45 | SPTS<br>D 10<br>D 15 | N=8 (0,0/0,2,3,3) | 9.00 | Dry | | 9.00-9.45 rare subangular fine gravel of ash | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|
| 0.00 - 15.45 | No groundwater encountered during drilling. |

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:55

| Project | WEST BURTON C/D POWER STATION |
|---|---|
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS105**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | JJ | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.13 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 11/12/2017 | Dando 3000. Cable percussion boring. SPT Hammer ID: AR932, Rod type: 54mm Whitworth. | 1.20 | 15.45 | 150 | 13.00 | Coordinates (m) | E 480251.34 |
| Checked | MS | End | | | | | | National Grid | N 386272.33 |
| Approved | | 12/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Soft dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | | | |
| 10.50 - 10.95 | UT 16 | 51 blows 100% rec | 10.50 | Dry | | | | | |
| | | | | | | 10.80-10.90 occasional gravel size pockets of grey fine sand, rare black silt and rare reddish brown fine sand | | | |
| 10.90 - 11.35<br>10.90<br>10.90 - 11.35 | SPTS<br>D 17<br>D 18 | N=25 (4,4/5,5,7,8) | 10.90 | Dry | Firm dark greyish brown, mottled reddish brown, silty CLAY with rare black silt veins (1x10mm) and rare pockets (<2mm) of lignite. Slight organic odour. (ALLUVIUM) | | 10.90 +2.23 (1.60) | | |
| 12.00 - 12.45<br>12.00 - 12.45<br>12.00 - 12.45 | UT NR<br>D 20<br>B 21 | 40 blows No Recovery | 12.00 | Dry | | | | | |
| | | | | | Soft dark brown slightly sandy SILT. (ALLUVIUM) | | 12.50 +0.63 (1.30) | | |
| 13.50 - 13.95<br>13.50<br>13.50 - 13.95<br>13.50 - 13.95 | SPTS<br>UT NR<br>D 24<br>B 23 | N=34 (6,6/8,8,9,9)<br>21 blows No Recovery | 13.00<br>13.00 | Dry<br>Dry | | | | | |
| | | | | | Firm reddish brown, mottled dark brown and greyish blue, silty CLAY. (MERCIA MUDSTONE - Class Dc) | | 13.80 -0.67 (1.65) | | |
| 15.00 - 15.45<br>15.00 - 15.45 | SPTS<br>D 25 | N=29 (6,6/5,8,8,8) | 13.00 | Dry | | | | | |
| | | | 12/12/17<br>13.00 | 1700<br>Dry | | | | | |
| | | | | | END OF EXPLORATORY HOLE | | 15.45 -2.32 | | |

| Groundwater Entries | | | | Depth Related Remarks | | Hard Boring | | |
|---|---|---|---|---|---|---|---|---|
| No. | Depth Strike (m) | Remarks | Depth Sealed (m) | Depths (m) | Remarks | Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:55

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | **WS105** |
| Carried out for | Firbeck Construction Limited | Sheet 2 of 2 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DD | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.20 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 11/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | 1.20 | 15.00 | 150 | 15.00 | Coordinates (m) | E 480244.24 |
| Checked | MS | End | | | | | | National Grid | N 386241.68 |
| Approved | | 12/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|
| | | 0.00-1.20 Hand excavated inspection pit. | | | Firm brown slightly sandy CLAY with rare subangular fine to medium gravel size fragments of ash and brick. Frequent rootlets to 0.20m. (MADE GROUND) | | (0.60) |
| 0.20 | D 1 | | | | | | |
| 0.60<br>0.60 - 1.00 | D 2<br>B 3 | | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | 0.60-1.00 rare subangular to subrounded fine to medium gravel of ash/clinker | 0.60 +12.60 |
| 1.20 - 1.65<br>1.20 | SPTS<br>D 4 | N=16 (5,6/6,4,3,3) | 1.20 | Dry | | | |
| 3.00 - 3.45 | UT 5 | 17 blows 100% rec | 3.00 | Dry | | | |
| 3.50 - 3.95<br>3.50 | SPTS<br>D 6 | N=14 (4,9/4,4,3,3) | 3.50 | Dry | | | |
| | | | | | | 3.90-3.95 firm reddish brown slightly gravelly clay. Gravel is subangular fine to medium of sandstone | |
| 4.50 - 4.95<br>4.50 - 5.00 | UT NR<br>B 7 | 23 blows No Recovery | 4.50 | Damp | | | |
| 5.00 - 5.45<br>5.00 | SPTS<br>D 8 | N=14 (4,4/4,3,3,4) | 5.00 | Damp | | | |
| | | | 11/12/17<br>5.00 | 1731<br>Damp | | | (9.60) |
| 5.50 | D 9 | | 12/12/17<br>5.00 | 0752<br>Damp | | 5.50 firm reddish brown slightly gravelly clay. Gravel is subangular fine to medium of sandstone | |
| 5.90<br>6.00 - 6.45 | D 10<br>UT 11 | 24 blows 100% rec | 6.00 | Dry | | | |
| 6.50 - 6.95<br>6.50<br>6.50 | SPTS<br>D 12<br>D 13 | N=15 (2,2/3,3,4,5) | 6.50 | Dry | | | |
| 7.50 - 7.95 | UT 14 | 27 blows 100% rec | 7.50 | Dry | | | |
| 8.00 - 8.45<br>8.00<br>8.00 | SPTS<br>D 15<br>D 16 | N=17 (2,3/4,4,4,5) | 8.00 | Dry | | | |
| 9.00 - 9.45<br>9.00 - 9.50<br>9.10 | UT NR<br>B 18<br>D 17 | 52 blows No Recovery | 9.00 | Dry | | 9.10-9.50 dark grey gravelly silty fine to coarse sand. Gravel is subangular fine to medium of clinker | |
| 9.50 - 9.95<br>9.50 | SPTS<br>D 19 | N=15 (4,4/4,4,4,3) | 9.50 | 8.90 | | | |

Legend / Backfill: 1, 1

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|
| 1 | 9.10 | Rose to 7.70 m after 20 minutes. Medium inflow | 9.10 |

**Depth Related Remarks**

Depths (m) Remarks

**Hard Boring**

Depths (m) Duration (mins) Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:55

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS106**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DD | Start | 11/12/2017 |
|---|---|---|---|
| Logged | RT | | |
| Checked | MS | End | 12/12/2017 |
| Approved | | | |

**Equipment, Methods and Remarks**

Dando 175.
Cable percussion boring.
SPT Hammer ID: ESG01, Rod type: 54mm Whitworth.

| Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) |
|---|---|---|---|
| 1.20 | 15.00 | 150 | 15.00 |

| | |
|---|---|
| Ground Level | 13.20 mOD |
| Coordinates (m) | E 480244.24 |
| National Grid | N 386241.68 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|
| 10.20 | D 20 | | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 10.20 +3.00 |
| 10.50 - 10.95 | UT 21 | 37 blows 100% rec | 10.50 | Dry | Soft reddish brown slightly sandy slightly clayey SILT. (ALLUVIUM) | | |
| 11.00 - 11.45<br>11.00 | SPTS<br>D 22 | N=7 (1,1/1,2,2,2) | 11.00 | Dry | | 10.95 very soft reddish brown mottled grey silty clay | (1.80) |
| 12.00 - 12.45 | UT 23 | 37 blows 100% rec | 12.00 | Dry | | | 12.00 +1.20 |
| 12.50 - 12.95<br>12.50<br>12.50 | SPTS<br>D 24<br>D 25 | N=28 (3,3/5,7,8,8) | 12.50 | Dry | Soft to firm dark brown, mottled reddish brown, silty CLAY with frequent lenses of reddish brown silt. (MERCIA MUDSTONE - Class Dc) | | |
| 13.50 - 13.95 | UT 26 | 89 blows 56% rec | 13.50 | Dry | | | (3.00) |
| 14.00 - 14.45<br>14.00 | SPTS<br>D 27 | N=26 (3,3/4,7,7,8) | 14.00 | Dry | | | |
| | | | 12/12/17<br>15.00 | 1707<br>Dry | | | |
| | | | | | END OF EXPLORATORY HOLE | | 15.00 -1.80 |

Legend | Backfill

**Groundwater Entries**

No. | Depth Strike (m) | Remarks | Depth Sealed (m)

**Depth Related Remarks**

Depths (m) | Remarks

**Hard Boring**

Depths (m) | Duration (mins) | Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:55

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**WS106**

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | SS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.16 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 05/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: ARI777, Rod type: 54mm Whitworth. | 1.20 | 15.45 | 150 | 14.20 | Coordinates (m) | E 480327.97 |
| Checked | MS | End | | | | | | National Grid | N 386173.12 |
| Approved | | 06/12/2017 | | | | | | | |

## Samples and Tests

| Depth | Type & No. | Records | Date / Casing | Time / Water |
|---|---|---|---|---|
| | | 0.00-1.20 Hand excavated inspection pit. | | |
| 0.50 | D 1 | | | |
| 1.00 | D 2 | | | |
| 1.20 - 1.65 | UT 3 | 100 blows 100% rec | 1.20 | Dry |
| 1.65 - 1.85 | D 4 | | | |
| 1.85 - 2.14 | SPTS | 34 (7,10/12,22 for 70mm) | 1.50 | Dry |
| 1.85 - 2.15 | D 5 | | | |
| 3.00 - 3.45 | UT 6 | 32 blows 100% rec | 3.00 | Dry |
| 3.45 - 3.65 | D 7 | | | |
| 3.65 - 4.10 | SPTS | N=16 (3,4/4,4,4,4) | 3.00 | Dry |
| 3.65 - 4.10 | D 8 | | | |
| 4.40 | D 9 | | | |
| 4.50 - 4.95 | UT 10 | 34 blows 100% rec | 4.50 | Dry |
| 4.95 - 5.15 | D 11 | | | |
| 5.15 - 5.60 | SPTS | N=20 (3,4/5,5,6,4) | 4.50 | Dry |
| 5.15 - 5.60 | D 12 | | | |
| | | | 05/12/17 6.00 | 1600 Dry |
| 6.00 - 6.45 | UT 13 | 52 blows 100% rec | 06/12/17 6.00 | 0750 Dry |
| 6.45 - 6.65 | D 14 | | | |
| 6.65 - 7.10 | SPTS | N=12 (5,3/3,3,3,3) | 6.00 | Dry |
| 6.65 - 7.10 | D 15 | | | |
| 7.50 - 7.95 | UT 16 | 28 blows 100% rec | 7.50 | Dry |
| 7.95 - 8.10 | D 17 | | | |
| 8.10 - 8.55 | SPTS | N=12 (4,3/3,3,3,3) | 7.50 | Dry |
| 8.10 - 8.55 | D 18 | | | |
| 9.00 - 9.45 | UT 19 | 48 blows 100% rec | 9.00 | Damp |
| 9.45 - 9.65 | D 20 | | | |
| 9.65 - 10.10 | SPTS | N=17 (4,3/5,4,5,3) | 9.00 | 1.20 |
| 9.65 - 10.10 | D 21 | | | |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| Soft dark grey slightly gravelly SILT. Gravel is subangular fine to coarse of concrete. Occasional soft dark brown clay pockets (<25mm). (MADE GROUND) | | 0.50 | +12.66 | (0.50) |
| Dark greyish brown, locally mottled orangish brown, slightly sandy SILT. (MADE GROUND) | | 1.65 | +11.51 | (1.15) |
| Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 4.40 | +8.76 | (2.75) |
| Firm reddish brown, mottled dark brown, slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine to coarse of sandstone and clinker. (MADE GROUND) | | 4.95 | +8.21 | (0.55) |
| Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | 5.00-5.15 rare fine to medium gravel of clinker<br>6.45-6.65 occasional pockets (<10mm) of soft reddish brown clay<br>9.00-9.45 rare subangular fine to medium gravel of lignite | | | (6.75) |

Legend | Backfill

1 1

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|
| 1 | 9.60 | Rose to 1.20 m after 20 minutes. | 12.20 |

**Depth Related Remarks**

Depths (m) | Remarks

**Hard Boring**

Depths (m) | Duration (mins) | Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:55

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**WS107**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | SS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.16 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 05/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: ARI777, Rod type: 54mm Whitworth. | 1.20 | 15.45 | 150 | 14.20 | Coordinates (m) | E 480327.97 |
| Checked | MS | End | | | | | | National Grid | N 386173.12 |
| Approved | | 06/12/2017 | | | | | | | |

## Samples and Tests

| Depth | Type & No. | Records | Date / Casing | Time / Water |
|---|---|---|---|---|
| 10.50 - 11.15 | UT NR | 16 blows No Recovery | 10.50 | Damp |
| 11.00 | D 22 | | | |
| 11.15 - 11.60 | SPTS | N=10 (1,2/3,2,3,2) | 10.50 | Damp |
| 11.15 - 11.60 | D 23 | | | |
| 11.70 | D 24 | | | |
| 12.00 - 12.45 | UT 25 | 22 blows 100% rec | 12.00 | Damp |
| 12.45 - 12.65 | D 26 | | | |
| 12.65 - 13.10 | SPTS | N=13 (2,3/3,3,3,4) | 12.00 | Damp |
| 12.65 - 13.10 | D 27 | | | |
| 13.40 | D 28 | | | |
| 13.50 - 13.95 | SPTS | N=16 (2,3/4,4,4,4) | 13.50 | 10.00 |
| 13.50 - 13.95 | D 29 | | | |
| 14.50 | D 30 | | | |
| 15.00 - 15.45 | SPTS | N=17 (3,3/4,4,4,5) | 14.20 | Dry |
| 15.00 - 15.45 | D 31 | | | |
| | | | 06/12/17 14.20 | 1500 Dry |

## Strata Description

| Main | Detail | Depth | Level | (Thickness) |
|---|---|---|---|---|
| Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 11.70 | +1.46 | |
| Very soft reddish brown, mottled grey, slightly sandy clayey SILT. (Possible ALLUVIUM | | 12.00 | +1.16 | (0.30) |
| Soft dark brown SILT with occasional pockets (<5mm) of lignite. (ALLUVIUM) | 12.45-12.65 rare subangular fine to medium gravel of sandstone | 13.40 | -0.24 | (1.40) |
| Soft to firm reddish brown, mottled light greyish blue, silty CLAY with occasional grey silt veins. (MERCIA MUDSTONE - Class Dc) | 13.40 occasional gravel size pockets of fine to coarse sand, occasional subangular fine to medium gravel of sandstone 13.50-14.00 occasional gravel size pockets of grey fine sand | 15.45 | -2.29 | (2.05) |

END OF EXPLORATORY HOLE

Legend | Backfill

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|
| 2 | 13.10 | Rose to 10.05 m after 20 minutes. | 13.70 |

**Depth Related Remarks**

Depths (m) | Remarks

**Hard Boring**

Depths (m) | Duration (mins) | Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:55

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS107**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | SS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.48 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 07/12/2017 | Dando 175. | 0.00 | 14.60 | 150 | 13.50 | Coordinates (m) | E 480245.66 |
| Checked | MS | End | Cable percussion boring. | | | | | National Grid | N 386190.35 |
| Approved | | 07/12/2017 | SPT Hammer ID: ARI777, Rod type: 54mm Whitworth. | | | | | | |

## Samples and Tests

| Depth | Type & No. | Records | Date Casing | Time Water |
|---|---|---|---|---|
| 0.00 - 0.50 | B 1 | 0.00-1.20 Hand excavated inspection pit. | | |
| 0.50 - 1.00 | B 2 | | | |
| 1.20 - 1.65 | UT 3 | 98 blows 100% rec | 1.20 | Dry |
| 1.65 - 1.85 | D 4 | | | |
| 1.85 - 2.30 | SPTS | N=36 (5,7/8,9,11,8) | 1.20 | Dry |
| 1.85 - 2.30 | D 5 | | | |
| 3.00 - 3.45 | UT 6 | 22 blows 100% rec | 3.00 | Dry |
| 3.45 - 3.65 | D 7 | | | |
| 3.65 - 4.10 | SPTS | N=13 (3,3/4,3,3,3) | 3.00 | Dry |
| 3.65 - 4.10 | D 8 | | | |
| 4.50 - 4.95 | UT 9 | 15 blows 100% rec | 4.50 | Dry |
| 4.95 - 5.15 | D 10 | | | |
| 5.15 - 5.60 | SPTS | N=42 (4,5/5,5,10,22) | 4.50 | Dry |
| 5.15 - 5.60 | D 11 | | | |
| 6.00 - 6.45 | UT 12 | 88 blows 100% rec | 6.00 | Dry |
| 6.45 - 6.65 | D 13 | | | |
| 6.65 - 7.10 | SPTS | N=31 (5,5/7,8,9,7) | 6.00 | Dry |
| 6.65 - 7.10 | D 14 | | | |
| 7.50 - 8.15 | UT NR | 10 blows No Recovery | 7.50 | Damp |
| 7.90 | D 15 | | | |
| 8.15 - 8.60 | SPTS | N=1 (1,0/0,0,1,0) | 8.15 | Damp |
| 8.50 | D 16 | | | |
| 9.00 - 9.45 | SPTS | N=10 (1,2/2,3,3,2) | 9.00 | Damp |
| 9.00 - 9.45 | D 17 | | | |

## Strata Description

| Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|
| TOPSOIL. | | (0.20) 0.20 +13.28 | | |
| Firm brown slightly sandy CLAY with frequent rootlets. (MADE GROUND) | | (0.40) 0.60 +12.88 | | |
| Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | 0.50-1.00 occasional pockets (<2mm) of soft reddish brown clay<br>1.65-1.85 slightly gravelly. Gravel is subangular fine of pulverised fuel ash<br>4.95-5.15 firm reddish brown slightly sandy slightly gravelly clay. Gravel is angular to subangular fine to medium of sandstone. Occasional gravel size pockets of light grey silt.<br>5.15-5.60 firm grey slightly sandy silty clay. Occasional gravel size pockets of grey and greenish grey fine sand/silt. Rare fine gravel size fragments of brick<br>6.45-6.65 occasional coarse gravel size fragments of slightly cemented slightly sandy silt | (10.90) | | 1 |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Hard Boring | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:56

| Project | WEST BURTON C/D POWER STATION |
|---|---|
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS108**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | SS | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.48 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 07/12/2017 | Dando 175. | 0.00 | 14.60 | 150 | 13.50 | Coordinates (m) | E 480245.66 |
| Checked | MS | End | Cable percussion boring. | | | | | National Grid | N 386190.35 |
| Approved | | 07/12/2017 | SPT Hammer ID: ARI777, Rod type: 54mm Whitworth. | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Strata Description (Main) | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | | | |
| 10.50 - 10.95<br>10.50 - 10.95 | SPTS<br>D 18 | N=7 (1,0/2,1,2,2) | 10.50 | 8.70 | | | | | 1 |
| 11.50 | D 19 | | | | Very soft reddish brown, mottled grey, clayey SILT with occasional pockets of orange fine sand. (ALLUVIUM) | | 11.50 +1.98 | | |
| 12.00 - 12.45 | UT 20 | 15 blows 100% rec | 12.00 | Damp | | | (1.40) | | |
| 12.45 - 12.65 | D 21 | | | | | | | | |
| 12.65 - 13.10<br>12.65 - 13.10 | SPTS<br>D 22 | N=18 (3,3/3,5,5,5) | 12.00 | Damp | | | | | |
| | | | | | Firm reddish brown, mottled blush grey silty CLAY. (MERCIA MUDSTONE - Class Dc) | | 12.90 +0.58 | | |
| 13.50 - 13.95 | UT 23 | 9 blows 100% rec | 13.50 | Damp | | | (1.70) | | |
| 13.95 - 14.10 | D 24 | | | | | | | | |
| 14.10 - 14.55<br>14.10 - 14.60 | SPTS<br>D 25 | N=13 (2,2/3,2,3,5) | 13.50 | Damp | | | | | |
| | | | 07/12/17<br>13.50 | 1630<br>Damp | | | | | |
| | | | | | END OF EXPLORATORY HOLE | | 14.60 -1.12 | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|
| 1 | 10.40 | Rose to 8.70 m after 20 minutes. | 12.00 |

**Depth Related Remarks**

Depths (m) Remarks

**Hard Boring**

Depths (m) Duration (mins) Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:56

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | WS108 |
| Carried out for | Firbeck Construction Limited | Sheet 2 of 2 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | KP | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.38 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 07/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | 1.20 | 15.45 | 150 | 15.00 | Coordinates (m) | E 480283.38 |
| Checked | MS | End | | | | | | National Grid | N 386135.14 |
| Approved | | 08/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | 0.00-1.20 Hand excavated inspection pit. | | | TOPSOIL. | | (0.40) | | |
| | | | | | | | 0.40 +12.98 | | |
| 0.50 | D 1 | | | | Dark grey slightly sandy SILT with occasional pockets (<10mm) of soft reddish brown slightly sandy clay to 1.00m. (MADE GROUND - Pulverised Fuel Ash) | | | | |
| 0.50 - 1.00 | B 2 | | | | | | | | |
| 1.00 | D 3 | | | | | | | | |
| 1.20 - 1.65 | SPTS | N=30 (3,4/4,8,10,8) | 1.20 | Dry | | | | | |
| 1.20 | D 4 | | | | | | | | |
| 3.00 - 3.45 | SPTS | N=18 (2,4/4,4,5,5) | 3.00 | Dry | | 3.00-3.45 rare gravel size lenses of slightly gravelly fine to coarse sand. Gravel is subangular fine of clinker | | | |
| 3.00 | D 5 | | | | | | | | |
| 4.50 - 4.95 | UT 6 | 54 blows 100% rec | 4.50 | Dry | | | | | |
| 5.05 - 5.50 | SPTS | N=23 (3,4/5,6,6,6) | 5.05 | Dry | | | | | |
| 5.05 | D 7 | | | | | | | | |
| 5.05 | D 8 | | | | | | | | |
| 6.00 - 6.65 | UT 9 | 70 blows 100% rec | 6.00 | Dry | | | | | |
| | | | | | | | (12.00) | | |
| 6.55 - 7.00 | SPTS | N=13 (4,4/3,3,4,3) | 6.55 | Dry | | | | | |
| 6.55 | D 10 | | | | | | | | |
| 6.55 | D 11 | | | | | | | | |
| 7.50 - 7.95 | UT 12 | 25 blows 100% rec | 7.50 | Dry | | | | | |
| 8.05 - 8.50 | SPTS | N=38 (8,10/11,9,9,9) | 8.05 | Dry | | | | | |
| 8.05 | D 13 | | | | | | | | |
| 8.05 | D 14 | | | | | | | | |
| 9.00 - 9.45 | UT 15 | 15 blows 100% rec | 9.00 | Damp | | | | | |
| 9.65 - 10.10 | SPTS | N=47 (7,9/9,10,15,13) | 9.65 | Damp | | | | | |
| 9.65 | D 16 | | | | | | | | |
| 9.65 | D 17 | | 07/12/17 10.10 | 1630 Damp | | | | | |

| Groundwater Entries | | | | Depth Related Remarks | | Hard Boring | | |
|---|---|---|---|---|---|---|---|---|
| No. | Depth Strike (m) | Remarks | Depth Sealed (m) | Depths (m) | Remarks | Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:56

| | | | |
|---|---|---|---|
| Project | WEST BURTON C/D POWER STATION | Borehole | WS109 |
| Project No. | A7102-17 | | |
| Carried out for | Firbeck Construction Limited | | Sheet 1 of 2 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | KP | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.38 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 07/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | 1.20 | 15.45 | 150 | 15.00 | Coordinates (m) | E 480283.38 |
| Checked | MS | End | | | | | | National Grid | N 386135.14 |
| Approved | | 08/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | | 08/12/17 10.10 | 0800 Damp | Dark grey slightly sandy SILT with occasional pockets (<10mm) of soft reddish brown slightly sandy clay to 1.00m. (MADE GROUND - Pulverised Fuel Ash) | | | | |
| 10.50 - 10.95<br>10.50 | SPTS<br>D 18 | N=7 (1,2/2,1,2,2) | 10.50 | 7.00 | | | | | |
| 12.00 - 12.45 | UT 19 | 72 blows 67% rec | 12.00 | Damp | | | | | |
| | | | | | Dark brownish grey slightly sandy SILT. | | 12.40 +0.98<br>(1.00) | | |
| 13.40<br>13.50 - 13.95 | D 20<br>UT 21 | 45 blows 100% rec | 13.50 | Damp | Firm reddish brown, mottled grey and brown, slightly sandy silty CLAY. (MERCIA MUDSTONE - Class Dc) | | 13.40 -0.02<br>(2.05) | | |
| 14.05 - 14.50<br>14.05<br>14.05 | SPTS<br>D 22<br>D 23 | N=10 (3,3/2,2,3,3) | 14.05 | Damp | | | | | |
| 15.00 - 15.45<br>15.00 | SPTS<br>D 24 | N=16 (4,3/4,3,4,5) | 15.00 | Damp | | | | | |
| | | | 08/12/17 15.45 | 1600 Damp | | | 15.45 -2.07 | | |
| | | | | | END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:56

| | | |
|---|---|---|
| Project | WEST BURTON C/D POWER STATION | Borehole |
| Project No. | A7102-17 | WS109 |
| Carried out for | Firbeck Construction Limited | Sheet 2 of 2 |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DD | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 11.58 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT/DP | 13/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | 1.20 | 15.00 | 150 | 15.00 | Coordinates (m) | E 480341.80 |
| Checked | MS | End | | | | | | National Grid | N 386305.04 |
| Approved | | 14/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|
| 0.10 | D 1 | 0.00-1.20 Hand excavated inspection pit. | | | Soft dark brown slightly gravelly CLAY with frequent rootlets. Gravel is subangular to subrounded fine to medium of flint, brick and sandstone. (MADE GROUND) | | (0.20) |
| 0.20 | D 2 | | | | | | 0.20 +11.38 |
| | | | | | Soft brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone and concrete. Occasional rootlets. (MADE GROUND) | 0.40 plastic geotextile mesh | (0.40) |
| 0.60 - 1.00 | B 3 | | | | | 0.60-1.00 rare subangular to subrounded fine to medium gravel of clinker | 0.60 +10.98 |
| 1.20 - 1.65<br>1.20 | SPTS<br>D 4 | N=23 (2,4/4,5,5,9) | 1.20 | Dry | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | |
| 3.00 - 3.45 | UT 5 | 79 blows 89% rec | 3.00 | Dry | | | |
| 3.50 - 3.95<br>3.50 | SPTS<br>D 6 | N=37 (4,6/8,9,10,10) | 3.50 | Dry | | | |
| | | | | | | | (7.40) |
| 4.50 - 4.95 | UT 7 | 68 blows 100% rec | 4.50 | Dry | | | |
| 5.00 - 5.45<br>5.00<br>5.00 | SPTS<br>D 8<br>D 9 | N=30 (4,5/5,7,9,9) | 5.00 | Dry | | | |
| | | | 13/12/17<br>5.00 | 1708<br>Dry | | | |
| | | | 14/12/17<br>5.00 | 0800<br>Dry | | | |
| 6.00 - 6.45 | UT 10 | 48 blows 100% rec | 6.00 | Dry | | | |
| 6.50 - 6.95<br>6.50<br>6.50 | SPTS<br>D 11<br>D 12 | N=25 (4,5/5,6,6,8) | 6.50 | Dry | | | |
| | | | | | | 7.00-7.50 mottled light greyish brown | |
| 7.50 - 7.95<br>7.50 - 8.00 | UT NR<br>B 13 | 37 blows No Recovery | 7.50 | Damp | | | |
| 8.00 - 8.45<br>8.00<br>8.20 | SPTS<br>D 14<br>D 15 | N=18 (4,4/4,4,5,5) | 8.00 | Damp | Dark greyish brown, mottled orangish brown, slightly sandy SILT with rare relict rootlets. Rare pockets (<10mm) of dark orange fine sand. (ALLUVIUM) | | 8.00 +3.58 |
| | | | | | | | (1.50) |
| 9.00 - 9.45 | UT 16 | 39 blows 89% rec | 9.00 | Damp | | | |
| 9.50 - 9.95<br>9.50<br>9.50 | SPTS<br>D 17<br>D 18 | N=12 (2,3/3,3,3,3) | 9.50 | Dry | Dark greyish brown slightly sandy SILT with rare relict rootlets. (ALLUVIUM) | | 9.50 +2.08 |

Legend | Backfill

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:57

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS110**

DRAFT

# Borehole Log

SOCOTEC

| Drilled | DD | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 11.58 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT/DP | 13/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | 1.20 | 15.00 | 150 | 15.00 | Coordinates (m) | E 480341.80 |
| Checked | MS | End | | | | | | National Grid | N 386305.04 |
| Approved | | 14/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Dark greyish brown slightly sandy SILT with rare relict rootlets. (ALLUVIUM) | | (1.50) | | |
| 10.50 - 10.95 | UT 19 | 34 blows 100% rec | 10.50 | Dry | | | | | |
| 11.00 - 11.45<br>11.00<br>11.00<br>11.30 | SPTS<br>D 20<br>D 21<br>D 22 | N=16 (2,2/3,3,4,6) | 11.00 | Dry | Firm to stiff dark reddish brown silty CLAY with occasional pockets of light bluish grey clayey SILT (<10mm). (MERCIA MUDSTONE - Class Dc) | | 11.00 +0.58 | | |
| 12.00 - 12.45 | UT 23 | 84 blows 100% rec | 12.00 | Dry | | | | | |
| 12.50 - 12.95<br>12.50<br>12.50 | SPTS<br>D 24<br>D 25 | N=24 (3,3/5,6,6,7) | 12.50 | Dry | | | | | |
| | | | | | | | (4.00) | | |
| 13.50 - 13.95 | UT 26 | 87 blows 100% rec | 13.50 | Dry | | | | | |
| 14.00 - 14.45<br>14.00<br>14.00 | SPTS<br>D 27<br>D 28 | N=25 (4,5/5,7,7,6) | 14.00 | Dry | | | | | |
| | | | 14/12/17<br>15.00 | 1748<br>Dry | | | | | |
| 15.00 | D 29 | | | | END OF EXPLORATORY HOLE | | 15.00 -3.42 | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:57

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**WS110**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | KP | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.41 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 05/12/2017 | Dando 175.<br>Cable percussion boring.<br>SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | 0.00 | 15.60 | 150 | 15.60 | Coordinates (m) | E 480324.71 |
| Checked | MS | End | | | | | | National Grid | N 386100.72 |
| Approved | | 06/12/2017 | | | | | | | |

## Samples and Tests

| Depth | Type & No. | Records | Date / Casing | Time / Water |
|---|---|---|---|---|
| | | 0.00-1.20 Hand excavated inspection pit. | | |
| 0.50 - 1.00 | B 1 | | | |
| 1.00 | D 2 | | | |
| 1.00 | D 3 | | | |
| 1.20 - 1.65 | SPTS | N=17 (4,4/3,5,4,5) | 1.20 | Dry |
| 1.20 | D 4 | | | |
| 2.70 - 3.15 | SPTS | N=26 (7,7/6,5,8,7) | 2.70 | Dry |
| 2.70 | D 5 | | | |
| 4.20 - 4.65 | SPTS | N=7 (2,1/2,1,2,2) | 4.65 | Dry |
| 4.20 | D 6 | | | |
| 5.60 | D 7 | | | |
| 5.70 - 6.15 | UT 8 | 60 blows 100% rec | 5.70 | Dry |
| 6.25 - 6.70 | SPTS | N=14 (3,4/3,4,3,4) | 6.25 | Damp |
| 6.25 | D 10 | | | |
| 6.25 | D 9 | | | |
| 7.65 - 8.10 | SPTS | N=13 (4,2/2,3,2,6) | 7.65 | Damp |
| 7.65 | D 12 | | | |
| | | | 05/12/17<br>8.15 | 1630<br>Damp |
| | | | 06/12/17<br>8.15 | 0800<br>Damp |
| 8.70 - 9.15 | SPTS | N=18 (2,3/4,3,5,6) | 8.70 | Dry |

## Strata Description

| Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|
| Soft to firm dark reddish brown and dark grey silty CLAY. Occasional subangular to subrounded fine to coarse gravel of sandstone. (MADE GROUND) | | (0.40)<br>0.40 +13.01 | | |
| Dark grey, frequently slightly sandy, SILT. (MADE GROUND - Pulverised Fuel Ash) | | (11.30) | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:57

| | | | |
|---|---|---|---|
| Project | WEST BURTON C/D POWER STATION | Borehole | WS111 |
| Project No. | A7102-17 | | |
| Carried out for | Firbeck Construction Limited | | |

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | KP | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 13.41 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | RT | 05/12/2017 | Dando 175. Cable percussion boring. SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | 0.00 | 15.60 | 150 | 15.60 | Coordinates (m) | E 480324.71 |
| Checked | MS | End | | | | | | National Grid | N 386100.72 |
| Approved | | 06/12/2017 | | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|
| 10.20 - 10.70<br>10.20 - 10.70 | UT NR<br>B 14 | 31 blows No Recovery | 10.20 | Damp | Dark grey, frequently slightly sandy, SILT.<br>(MADE GROUND - Pulverised Fuel Ash) | | |
| 10.80 | D 15 | | | | | | |
| 11.70 - 12.15<br>11.70 | SPTS<br>D 16 | N=8 (1,1/2,3,1,2) | 11.70 | Damp | Reddish brown, mottled light grey and grey, slightly sandy clayey SILT.<br>(ALLUVIUM) | | 11.70 +1.71<br>(1.50) |
| 13.20 - 13.65<br>13.20 | SPTS<br>D 17 | N=9 (1,1/1,2,2,4) | 13.20 | Damp | Soft to firm, mottled greyish brown and reddish brown, silty CLAY.<br>(MERCIA MUDSTONE - Class Dc) | 13.20-13.65 slightly organic odour | 13.20 +0.21<br>(2.40) |
| 13.65 - 14.10 | UT 18 | 44 blows 100% rec | 13.65 | Damp | | | |
| 14.20 | D 19 | | | | | | |
| 15.00 - 15.45 | UT 20 | 31 blows 100% rec | 15.00 | Damp | | | |
| | | | 06/12/17<br>15.60 | 1600<br>Dry | | | |
| 15.60 | D 21 | | | | END OF EXPLORATORY HOLE | | 15.60 -2.19 |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|

**Depth Related Remarks**

| Depths (m) | Remarks |
|---|---|

**Hard Boring**

| Depths (m) | Duration (mins) | Tools used |
|---|---|---|

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50

11/01/2018 10:38:57

| Project | WEST BURTON C/D POWER STATION |
|---|---|
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole **WS111**

# Borehole Log

**DRAFT**

SOCOTEC

| Drilled | DD | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 9.42 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP/RT | 15/12/2017 | Dando 175. | 1.20 | 15.00 | 150 | 14.50 | Coordinates (m) | E 480186.50 |
| Checked | MS | End | Cable percussion boring. | | | | | National Grid | N 386432.19 |
| Approved | | 18/12/2017 | SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date / Casing | Time / Water | Strata Description – Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|---|---|
| 0.10 | D 1 | 0.00-1.20 Hand excavated inspection pit. | | | Brown slightly sandy SILT with frequent rootlets and frequent pockets (<50mm) of soft reddish brown clay from 0.50m. (MADE GROUND) | | | | |
| 0.50 - 1.00 | B 2 | | | | | | (1.00) | | |
| 1.00 | D 3 | | | | Stiff dark brown slightly sandy gravelly CLAY. Gravel is angular to subangular fine to medium of brick, ceramics and siltstone. (MADE GROUND) | | 1.00 +8.42 | | |
| 1.20 - 1.50<br>1.20 | SPTS<br>D 4 | 50 (7,12/24,26 for 70mm) | 1.20 | Dry | | | | | |
| | | | | | | | (0.70) | | |
| 1.70 | D 5 | | | | Dark grey slightly gravelly sandy SILT. Gravel is angular to subangular fine to medium of brick and clinker. (MADE GROUND - Pulverised Fuel Ash) | 1.70 clayey | 1.70 +7.72 | | |
| | | | | | | | (1.30) | | |
| 3.00 - 3.45 | UT 6 | 24 blows 89% rec | 3.00 | Dry | Light brownish grey slightly sandy slightly gravelly SILT. Gravel is angular fine of clinker/slag. (MADE GROUND - Pulverised Fuel Ash) | | 3.00 +6.42 | | |
| 3.50 - 3.95<br>3.50<br>3.50 | SPTS<br>D 7<br>D 8 | N=6 (1,2/2,2,1,1) | 3.50 | Dry | | 3.50-3.95 some subangular medium gravel size nodules of poorly cemented silt | | | |
| 4.50 - 4.95 | UT 9 | 19 blows 100% rec | 4.50 | Dry | | | | | |
| | | | 15/12/17<br>4.50 | 1734<br>Dry | | | (3.30) | | |
| 5.00 - 5.45<br>5.00 | SPTS<br>D 10 | N=7 (2,2/2,2,2,1) | 18/12/17<br>4.50 | 0400<br>Dry | | 5.00-5.45 occasional gravel size pockets of black silt | | | |
| 6.00 - 6.45 | UT 11 | 30 blows 100% rec | 6.00 | Dry | | | | | |
| | | | | | Brownish grey slightly sandy SILT with rare gravel size pockets of black silt and rare relict rootlets. (ALLUVIUM) | | 6.30 +3.12 | | |
| 6.50 - 6.95<br>6.50<br>6.50 | SPTS<br>D 12<br>D 13 | N=7 (1,2/2,2,2,1) | 6.50 | Dry | | | | | |
| 7.50 - 7.95 | UT 14 | 26 blows 100% rec | 7.50 | Dry | | 7.50-7.95 occasionally mottled grey | | | |
| 8.00 - 8.45<br>8.00<br>8.00 | SPTS<br>D 15<br>D 16 | N=8 (1,1/1,2,2,3) | 8.00 | Dry | | 8.00-9.30 orangish brown mottled, occasional gravel size pockets of angular fine sand | (3.40) | | |
| 9.00 - 9.45 | UT 17 | 17 blows 100% rec | 9.00 | Dry | | | | | |
| 9.50 - 9.95<br>9.50<br>9.50 | SPTS<br>D 18<br>D 19 | N=6 (1,1/1,2,2,1) | 9.50 | Dry | | | | | |
| | | | | | Loose reddish brown SAND and GRAVEL with lenses of soft brownish grey clay (<50mm). Gravel | | 9.70 -0.28 | | 1 |

| Groundwater Entries | | | |
|---|---|---|---|
| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |

| Depth Related Remarks | |
|---|---|
| Depths (m) | Remarks |

| Hard Boring | | |
|---|---|---|
| Depths (m) | Duration (mins) | Tools used |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:58

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Borehole

**WS112**

# DRAFT

# Borehole Log

SOCOTEC

| Drilled | DD | Start | Equipment, Methods and Remarks | Depth from (m) | to (m) | Diameter (mm) | Casing Depth (m) | Ground Level | 9.42 mOD |
|---|---|---|---|---|---|---|---|---|---|
| Logged | DP/RT | 15/12/2017 | Dando 175. | 1.20 | 15.00 | 150 | 14.50 | Coordinates (m) | E 480186.50 |
| Checked | MS | End | Cable percussion boring. | | | | | National Grid | N 386432.19 |
| Approved | | 18/12/2017 | SPT Hammer ID: ESG01, Rod type: 54mm Whitworth. | | | | | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Date Casing | Time Water | Main | Detail | Depth, Level (Thickness) |
|---|---|---|---|---|---|---|---|
| | | | | | is subangular to rounded fine to coarse of flint, mudstone and sandstone. (RIVER TERRACE DEPOSTS) | | (1.40) |
| 10.50 - 10.95<br>10.50 - 11.00 | UT NR<br>B 20 | 36 blows No Recovery | 10.50 | Dry | | | |
| 11.00 - 11.45<br>11.00<br>11.00 - 11.50 | SPTS<br>D 21<br>B 22 | N=14 (2,3/3,3,4,4) | 11.00 | Dry | | | 11.10 -1.68 |
| | | | | | Medium dense reddish brown fine to coarse SAND with rare subangular to subrounded fine to coarse gravel of mudstone and sandstone. (RIVER TERRACE DEPOSITS) | | (1.80) |
| 12.50 - 12.95<br>12.50<br>12.50 - 13.00 | SPTS<br>D 0<br>B 23 | N=12 (4,2/2,2,4,4) | 12.50 | 7.90 | | | |
| 12.90 | D 24 | | | | | | 12.90 -3.48 |
| | | | | | Soft to firm reddish brown, mottled bluish grey, slightly sandy silty CLAY. (MERCIA MUDSTONE - Class Dc) | | (2.10) |
| 14.00 - 14.45 | UT 25 | 72 blows 100% rec | 14.00 | Dry | | 14.00-15.00 bluish grey and light grey, mottled reddish brown, slightly gravelly. Gravel is subangular to subrounded fine to coarse of poorly cemented grey mudstone. Abundant gravel size pockets of dark grey silt | |
| 14.50 - 14.95<br>14.50<br>14.50 | SPTS<br>D 26<br>D 27 | N=18 (3,3/4,4,5,5) | 14.50 | Dry | | | |
| | | | 18/12/17<br>14.50 | 1737<br>Dry | | | 15.00 -5.58 |
| | | | | | END OF EXPLORATORY HOLE | | |

Legend | Backfill

1

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks | Depth Sealed (m) |
|---|---|---|---|
| 1 | 11.10 | Rose to 9.90 m after 20 minutes. Medium inflow | 11.10 |

**Depth Related Remarks**

Depths (m) Remarks

**Hard Boring**

Depths (m) Duration (mins) Tools used

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:50 11/01/2018 10:38:58

| Project | WEST BURTON C/D POWER STATION | Borehole |
|---|---|---|
| Project No. | A7102-17 | **WS112** |
| Carried out for | Firbeck Construction Limited | Sheet 2 of 2 |

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 4.47 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 14/12/2017 | 360 tracked excavator. Machine excavated. | Width 0.60 m, Length 2.70 m, 290 (Deg) | Coordinates (m) | E 480408.46 |
| Approved | | End 14/12/2017 | | | National Grid | N 386336.14 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| 0.50 | D1 | | Dark brown slightly sandy slightly gravelly SILT. (MADE GROUND - Pulverised Fuel Ash) | | (0.60) 0.60 +3.87 | | |
| | | | Soft to firm reddish brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of brick and concrete. (MADE GROUND) | | (0.30) 0.90 +3.57 | | |
| 1.00 | D2 | | Soft to firm light brown slightly sandy silty CLAY. (ALLUVIUM) | | (0.90) 1.80 +2.67 | | |
| 1.50 | D3 | | | | | | |
| 2.00 | D4 | | Light brown, mottled orangish brown, slightly sandy clayey SILT. (ALLUVIUM) | | (1.20) 3.00 +1.47 | | |
| 2.50 | D5 | 14/12/17 | | 2.50-3.00 wet | | 1 | |
| 3.00 | D6 | | END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|
| 1 | 2.50 | Wet |

**Remarks**

| Depth (m) | Remarks |
|---|---|
| 3.00 | Trial pit terminated due to collapse. |

**Stability** Unstable

**Shoring** None

**Weather** Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25

11/01/2018 11:06:05

AGS

Project **WEST BURTON C/D POWER STATION**

Project No. **A7102-17**

Carried out for **Firbeck Construction Limited**

Trial Pit **TP102**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 3.87 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 14/12/2017 | 360 tracked excavator. Machine excavated. | Width 0.60 m, Length 2.80 m, 105 (Deg) | Coordinates (m) | E 480453.61 |
| Approved | | End 14/12/2017 | | | National Grid | N 386316.81 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Black organic SILT with abundant rootlets. (TOPSOIL) | | (0.50) | | |
| 0.50 | D1 | | Soft light brown, mottled orangish brown, slightly sandy silty CLAY with rare relict rootlets. (ALLUVIUM) | | 0.50 +3.37 (0.70) | | |
| 1.00 | D2 | | | | | | |
| | | | Light brown, mottled orange, slightly sandy clayey SILT. (ALLUVIUM) | | 1.20 +2.67 (0.80) | | |
| 1.50 | D3 | | | | | | |
| 2.00 | D4 | | Dark grey clayey SILT with abundant relict roots. Strong organic odour. Frequent bands of fine dark grey sand (up to 30mm). (ALLUVIUM) | | 2.00 +1.87 (1.50) | | |
| 2.50 | D5 | | | | | | |
| 3.00 | D6 | | | | | | |
| | | 14/12/17 3.50 | | | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | 3.50 +0.37 | 1 | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|
| 1 | 3.50 | Fast inflow |

**Remarks**

| Depth (m) | Remarks |
|---|---|

**Stability** Stable

**Shoring** None

**Weather** Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:05

AGS

Project **WEST BURTON C/D POWER STATION**

Project No. **A7102-17**

Carried out for **Firbeck Construction Limited**

Trial Pit **TP103**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 13.09 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 13/12/2017 | 360 tracked excavator. Machine excavated. | Width 0.60 m | Coordinates (m) | E 480252.25 |
| Approved | | End | | Length 2.80 m | National Grid | N 386159.36 |
| | | 13/12/2017 | | 140 (Deg) | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Soft brown slightly sandy CLAY with abundant rootlets. (TOPSOIL) | | (0.20) 0.20 +12.89 | | |
| 0.50 | D1 | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | 0.40-0.60 soft brown silty clay lenses (80x30mm) | (1.00) | | |
| 1.00 | D2 | | | | 1.20 +11.89 | | |
| 1.50 | D3 | | Dark grey slightly sandy slightly gravelly SILT. Gravel is angular to subangular fine to coarse of extremely weak siltstone. Rare angular cobbles of siltstone. (MADE GROUND - Pulverised Fuel Ash) | | (1.10) | | |
| 2.00 | D4 | | | | 2.30 +10.79 | | |
| 2.50 | D5 | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | | | |
| 3.00 | D6 | | | | (1.40) | | |
| 3.50 | D7 | 13/12/17 Dry | | | 3.70 +9.39 | | |
| | | | END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|
| 0.00 - 3.70 | No groundwater encountered during excavation. |

**Stability** Stable

**Shoring** None

**Weather** Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:05

AGS

Project **WEST BURTON C/D POWER STATION**

Project No. **A7102-17**

Carried out for **Firbeck Construction Limited**

Trial Pit **TP104**

Sheet 1 of 1

# Trial Pit Log

**DRAFT**

SOCOTEC

| | | | | |
|---|---|---|---|---|
| **Logged** DP<br>**Checked** MS<br>**Approved** | **Start** 12/12/2017<br>**End** 12/12/2017 | **Equipment, Methods and Remarks**<br>360 tracked excavator.<br>Machine excavated. | **Dimension and Orientation**<br>Width 2.80 m<br>Length 0.60 m<br>A B C D<br>150 (Deg) | **Ground Level** 13.44 mOD<br>**Coordinates (m)** E 480285.71<br>**National Grid** N 386122.08 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Soft brown slightly sandy CLAY with abundant rootlets. (TOPSOIL) | | (0.30) | | |
| | | | Dark grey, becoming light brownish grey, slightly sandy SILT with rare, becoming frequent, gravel size pockets of fine sand. (MADE GROUND - Pulverised Fuel Ash) | 0.30 rare angular coarse gravel of brick in Face D | 0.30 +13.14 | | |
| 0.50 | D1 | | | | | | |
| 1.00 | D2 | | | | | | |
| 1.50 | D3 | | | | | | |
| | | | | | (3.20) | | |
| 2.00 | D4 | | | | | | |
| 2.50 | D5 | | | | | | |
| 3.00 | D6 | | | | | | |
| | | 12/12/17 Dry | | | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | 3.50 +9.94 | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|
| 0.00 - 3.50 | No groundwater encountered during excavation. |

**Stability** Stable

**Shoring** None

**Weather** Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:25

11/01/2018 11:06:06

Project **WEST BURTON C/D POWER STATION**

Project No. **A7102-17**

Carried out for **Firbeck Construction Limited**

**Trial Pit**

**TP105**

Sheet 1 of 1

# DRAFT

# Trial Pit Log

| | | | | | |
|---|---|---|---|---|---|
| Logged | DP | Start 12/12/2017 | Equipment, Methods and Remarks: 360 tracked excavator. Machine excavated. | Dimension and Orientation: Width 0.60 m, Length 2.70 m, 120 (Deg) | Ground Level 13.10 mOD |
| Checked | MS | End 12/12/2017 | | | Coordinates (m) E 480340.80 |
| Approved | | | | | National Grid N 386082.01 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Brown slightly sandy CLAY with abundant rootlets. (TOPSOIL) | | (0.40) 0.40 +12.70 | | |
| | | | Light brown silty angular to subrounded fine to coarse GRAVEL of brick and sandstone. (MADE GROUND) | 0.40 2mm black geomembrane | (0.10) 0.50 +12.60 | | |
| 0.50 | D1 | | Dark grey, becoming light brownish grey, slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | | | |
| 1.00 | D2 | | | | | | |
| 1.50 | D3 | | | | | | |
| | | | | 1.70-2.00 frequent roots (<40x150mm) | | | |
| 2.00 | D4 | | | 2.00 rubber (150x80mm) | (3.00) | | |
| 2.50 | D5 | | | 2.50-3.00 frequent lenses (60x20mm) of brown sandy clay | | | |
| 3.00 | D6 | | | | | | |
| | | 12/12/17 Dry | | | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | 3.50 +9.60 | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|
| 0.00 - 3.50 | No groundwater encountered during excavation. |

Stability: Stable
Shoring: None
Weather: Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:06

AGS

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Trial Pit **TP106**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | RT | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 12.45 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 20/12/2017 | Hand excavated. | Width 0.40 m | Coordinates (m) | E 480379.49 |
| Approved | | End | | Length 0.40 m | National Grid | N 385939.43 |
| | | 20/12/2017 | | A B C D → 90 (Deg) | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Firm dark brownish grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of flint, brick, concrete and glass. (MADE GROUND) | | (0.10) 0.10 +12.35 | | |
| 0.30 | D1 | | Firm dark grey slightly sandy slightly gravelly SILT with occasional pockets of firm orangish brown clay with low cobble content. Gravel is subangular to subrounded fine to coarse of flint, sandstone and brick. Cobbles are subangular of concrete 100x90x90mm. (MADE GROUND - Pulverised Fuel Ash) | | (1.10) | | |
| 0.50 - 1.00 | B2 | | | | | | |
| 1.20 | D3 | | END OF EXPLORATORY HOLE | | 1.20 +11.25 | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|
| 0.00 - 1.20 | No possible asbestos containing material identified. |

**Stability** Stable

**Shoring** None

**Weather** Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



AGS

Scale 1:25 11/01/2018 11:06:06

Project **WEST BURTON C/D POWER STATION**

Project No. **A7102-17**

Carried out for **Firbeck Construction Limited**

Trial Pit **TP107**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 12.16 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 14/12/2017 | 360 tracked excavator. Machine excavated. | Width 0.60 m, Length 2.80 m, 210 (Deg) | Coordinates (m) | E 480348.08 |
| Approved | | End 14/12/2017 | | | National Grid | N 385895.45 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Brown slightly sandy gravelly SILT with abundant rootlets. Gravel is angular to subrounded fine to coarse of brick and ceramics. (MADE GROUND) | 0.10-0.20 orangish brown gravelly silt. Gravel is angular to subangular fine to medium of brick (Face B) | (0.40) 0.40 +11.76 | | |
| 0.50 | D1 | | Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of brick and ceramics. (MADE GROUND) | 0.30 80x110mm copper pipe fragment | (0.60) 1.00 +11.16 | | |
| 1.00 | D2 | | Dark grey slightly sandy slightly gravelly SILT. Gravel is angular to subangular fine to coarse of poorly cemented silt. (MADE GROUND - Pulverised Fuel Ash) | | (2.50) 3.50 +8.66 | | |
| 1.50 | D3 | | | | | | |
| 2.00 | D4 | | | | | | |
| 2.50 | D5 | | | | | | |
| 3.00 | D6 | | | | | | |
| | | 14/12/17 Dry | | | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | | | |

| Groundwater Entries | | | Remarks | | | |
|---|---|---|---|---|---|---|
| No. | Depth Strike (m) | Remarks | Depth (m) | Remarks | Stability | Stable |
| | | | | | Shoring | None |
| | | | | | Weather | Overcast |

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:06

AGS

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Trial Pit

**TP108**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | RT | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 4.40 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 20/12/2017 | Hand excavated. | Width 0.40 m | Coordinates (m) | E 480443.30 |
| Approved | | End | | Length 0.40 m | National Grid | N 385913.17 |
| | | 20/12/2017 | | 90 (Deg) | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Dark grey slightly sandy subangular to subrounded fine to coarse GRAVEL of ash and clinker with frequent rootlets. (MADE GROUND - Pulverised Fuel Ash) | | (0.15) 0.15 +4.25 | | |
| 0.30 | D1 | | Dark grey slightly sandy slightly gravelly SILT. Gravel is subangular to subrounded fine to coarse of brick and clinker. (MADE GROUND - Pulverised Fuel Ash) | | (1.05) 1.20 +3.20 | | |
| 0.50 - 1.00 | B2 | | | | | | |
| 1.20 | D3 | | END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|
| 0.00 - 1.20 | No possible asbestos containing material identified. |

**Stability** Stable

**Shoring** None

**Weather** Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25

11/01/2018 11:06:06

AGS

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Trial Pit

**TP110**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 4.80 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 14/12/2017 | 360 tracked excavator. Machine excavated. | Width 0.60 m | Coordinates (m) | E 480507.00 |
| Approved | | End 14/12/2017 | | Length 2.70 m; 120 (Deg) | National Grid | N 385914.62 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| 0.50 | D1 | | Soft brown, becoming light brown, silty CLAY. Frequent rootlets. Rare subrounded medium gravel of siltstone. (ALLUVIUM) | | (1.30) | | |
| 1.00 | D2 | | | | 1.30 +3.50 | | |
| 1.50 | D3 | | Soft light brown silty CLAY with frequent relict rootlets. (ALLUVIUM) | | | | |
| 2.00 | D4 | | | | (1.70) | | |
| 2.50 | D5 | | | | | | |
| 3.00 | D6 | | Dark grey SILT with frequent relict rootlets. (ALLUVIUM) | | 3.00 +1.80 | | 1 |
| | | 14/12/17 | | | (0.50) | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | 3.50 +1.30 | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|
| 1 | 3.00 | Wet |

**Remarks**

| Depth (m) | Remarks |
|---|---|

**Stability** Stable

**Shoring** None

**Weather** Sunny

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:07

AGS

Project **WEST BURTON C/D POWER STATION**

Project No. **A7102-17**

Carried out for **Firbeck Construction Limited**

**Trial Pit** **TP111**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 7.01 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 14/12/2017 | 360 tracked excavator. Machine excavated. | Width 0.60 m; Length 2.80 m; A, B, C, D; 155 (Deg) | Coordinates (m) | E 480499.87 |
| Approved | | End 14/12/2017 | | | National Grid | N 385841.23 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Soft brown slightly sandy CLAY with abundant rootlets. Strong organic odour. (TOPSOIL) | | (0.15) 0.15 +6.86 | | |
| | | | Dark brown slightly sandy gravelly SILT. Gravel is angular to subrounded fine to coarse of brick. (MADE GROUND) | | (0.35) 0.50 +6.51 | | |
| 0.50 | D1 | | Stiff reddish brown, mottled light bluish grey, silty CLAY with frequent pockets (up to 50mm) of light grey silt. (Reworked MERCIA MUDSTONE) | 2.50 subangular to subrounded fine to coarse gravel of mudstone | (2.50) 3.00 +4.01 | | |
| 1.00 | D2 | | | | | | |
| 1.50 | D3 | | | | | | |
| 2.00 | D4 | | | | | | |
| 2.50 | D5 | | | | | | |
| 3.00 | D6 | | Dark greyish brown SILT. (ALLUVIUM) | | (0.50) 3.50 +3.51 | | |
| | | 14/12/17 Dry | | | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|

Stability: Stable
Shoring: None
Weather: Overcase

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:07

AGS

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Trial Pit **TP112**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start 13/12/2017 | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 13.01 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | End 13/12/2017 | 360 tracked excavator. Machine excavated. | Width 2.90 m; Length 0.60 m; 55 (Deg) | Coordinates (m) | E 480293.20 |
| Approved | | | | A / B / C / D | National Grid | N 386304.89 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| 0.50 | D1 | | Soft to firm brown, mottled orangish brown, slightly sandy CLAY with frequent rootlets. Rare angular coarse gravel of brick. (MADE GROUND) | | (0.80) 0.80 +12.21 | | |
| 1.00 | D2 | | Firm dark grey slightly sandy silty CLAY. Strong organic odour. (MADE GROUND) | 1.40-1.50 roots (<30x600mm) in centre of Face B | (1.00) 1.80 +11.21 | | |
| 1.50 | D3 | | | | | | |
| 2.00 | D4 | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | (1.70) 3.50 +9.51 | | |
| 2.50 | D5 | | | | | | |
| 3.00 | D6 | | | | | | |
| | | 13/12/17 Dry | | | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|
| 0.00 - 3.50 | No groundwater encountered during excavation. |

Stability: Stable
Shoring: None
Weather: Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:07

AGS

Project: **WEST BURTON C/D POWER STATION**
Project No. **A7102-17**
Carried out for **Firbeck Construction Limited**

Trial Pit **TP113**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 13.05 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 13/12/2017 | 360 tracked excavator. Machine excavated. | Width 0.60 m; Length 2.80 m; A, B, C, D; 36 (Deg) | Coordinates (m) | E 480277.31 |
| Approved | | End 13/12/2017 | | | National Grid | N 386312.39 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Soft to firm brown, mottled orangish brown, slightly sandy CLAY with abundant rootlets. (TOPSOIL) | | | | |
| 0.50 | D1 | | | | (1.00) | | |
| 1.00 | D2 | | Firm dark grey slightly sandy silty CLAY with abundant roots (5x60mm). (MADE GROUND) | 1.20-1.40 firm orangish brown slightly sandy slightly gravelly clay. Gravel is angular to subangular fine to coarse of brick (Face D) | 1.00 +12.05 | | |
| 1.50 | D3 | | | | (0.65) | | |
| | | | Dark grey slightly sandy SILT. (MADE GROUND - Pulverised Fuel Ash) | | 1.65 +11.40 | | |
| 2.00 | D4 | | | | | | |
| 2.50 | D5 | | | | (1.85) | | |
| 3.00 | D6 | | | | | | |
| | | 13/12/17 Dry | | | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | 3.50 +9.55 | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|
| 0.00 - 3.50 | No groundwater encountered during excavation. |

**Stability** Stable

**Shoring** None

**Weather** Overcast

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25

11/01/2018 11:06:07

AGS

| | |
|---|---|
| Project | WEST BURTON C/D POWER STATION |
| Project No. | A7102-17 |
| Carried out for | Firbeck Construction Limited |

Trial Pit **TP114**

Sheet 1 of 1

# Trial Pit Log

**DRAFT**

SOCOTEC

| | | | |
|---|---|---|---|
| **Logged** DP<br>**Checked** MS<br>**Approved** | **Start** 13/12/2017<br>**End** 13/12/2017 | **Equipment, Methods and Remarks**<br>360 tracked excavator.<br>Machine excavated. | **Dimension and Orientation**<br>Width 0.60 m<br>Length 2.70 m<br>A B C D<br>30 (Deg) |

| | |
|---|---|
| **Ground Level** | 9.12 mOD |
| **Coordinates (m)** | E 480216.45 |
| **National Grid** | N 386425.20 |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Light yellowish grey silty CLAY with abundant rootlets. (MADE GROUND) | | 0.10 +9.02 (0.10) | | |
| 0.50 | D1 | | Soft dark brown slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of brick and clinker. Rare rebar. (MADE GROUND) | | 1.00 +8.12 (0.90) | | |
| 1.00 | D2 | | Firm orangish brown gravelly CLAY. Gravel is angular fine to coarse of brick. (MADE GROUND) | | 1.20 +7.92 (0.20) | | |
| 1.50 | D3 | | Light greyish brown slightly sandy gravelly SILT. Gravel is angular to subrounded fine to coarse of clinker/slag. (MADE GROUND - Pulverised Fuel Ash) | | 3.50 +5.62 (2.30) | | |
| 2.00 | D4 | | | | | | |
| 2.50 | D5 | | | | | | |
| 3.00 | D6 | | | | | | |
| | | 13/12/17 Dry | | | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | | | |

**Groundwater Entries**

| No. | Depth Strike (m) | Remarks |
|---|---|---|

**Remarks**

| Depth (m) | Remarks |
|---|---|

**Stability** Stable
**Shoring** None
**Weather** Raining

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:08

AGS

| | |
|---|---|
| Project | **WEST BURTON C/D POWER STATION** |
| Project No. | **A7102-17** |
| Carried out for | **Firbeck Construction Limited** |

**Trial Pit**

**TP115**

# Trial Pit Log

**DRAFT**

SOCOTEC

| Logged | DP | Start | Equipment, Methods and Remarks | Dimension and Orientation | Ground Level | 13.55 mOD |
|---|---|---|---|---|---|---|
| Checked | MS | 13/12/2017 | 360 tracked excavator. Machine excavated. | Width 0.60 m | Coordinates (m) | E 480289.44 |
| Approved | | End | | Length 2.90 m | National Grid | N 386467.15 |
| | | 13/12/2017 | | 150 (Deg) | | |

## Samples and Tests / Strata Description

| Depth | Type & No. | Records | Main | Detail | Depth, Level (Thickness) | Legend | Backfill |
|---|---|---|---|---|---|---|---|
| | | | Soft to firm reddish brown slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subrounded fine to coarse of brick and concrete. Frequent rootlets. Cobbles are subangular of concrete. (MADE GROUND) | | (0.50) | | |
| 0.50 | D1 | | Dark grey slightly sandy gravelly SILT. Gravel is angular to subrounded fine to coarse of clinker, brick and concrete. Rare rebar. (MADE GROUND - Pulverised Fuel Ash) | 0.80 fabric sheeting in centre of Face A | 0.50 +13.05 (0.80) | | |
| 1.00 | D2 | | | | | | |
| 1.50 | D3 | | Firm slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse of brick, clinker and concrete. (MADE GROUND) | | 1.30 +12.25 (1.00) | | |
| 2.00 | D4 | | | | | | |
| 2.50 | D5 | | Dark grey slightly sandy gravelly SILT. Gravel is angular to subrounded fine to medium of clinker. (MADE GROUND - Pulverised Fuel Ash) | | 2.30 +11.25 (1.20) | | |
| 3.00 | D6 | | | | | | |
| | | 13/12/17 Dry | | 3.30-3.50 concrete boulder with rebar | | | |
| 3.50 | D7 | | END OF EXPLORATORY HOLE | | 3.50 +10.05 | | |

**Groundwater Entries**

No. Depth Strike (m) Remarks

**Remarks**

Depth (m) Remarks

**Stability** Stable

**Shoring** None

**Weather** Raining

Notes: For explanation of symbols and abbreviations see Key to Exploratory Hole Records. All depths and reduced levels in metres. Stratum thickness given in brackets in depth column.



Scale 1:25 11/01/2018 11:06:08

AGS

Project **WEST BURTON C/D POWER STATION**

Project No. **A7102-17**

Carried out for **Firbeck Construction Limited**

**Trial Pit**

**TP116**

**APPENDIX C**

**INSTRUMENTATION**

| | |
|---|---|
| Installation Details | Table C1 |

# Installation Details

SOCOTEC

| Instrument Reference | Instrument Type (See Notes) | Installation Date, dd/mm/yyyy | Pipe Diameter, mm | Instrument Base, mbgl | Response Zone Range, mbgl | Pipe Top Details | Headworks | Remarks |
|---|---|---|---|---|---|---|---|---|
| BH101 (1) | SP | 15/12/2017 | 90 | 30.30 | | Open | Raised cover | |
| BH104 (1) | SP | 15/12/2017 | 50 | 14.00 | 11.00 to 14.00 | Gas tap | Raised cover | |
| BH105 (1) | SP | 15/12/2017 | 50 | 14.00 | 11.00 to 14.00 | Gas tap | Raised cover | |
| BH107 (1) | SP | 18/12/2017 | 90 | 28.00 | | Open | Raised cover | |
| BH108 (1) | SP | 18/12/2017 | 90 | 28.00 | | Open | Raised cover | |
| WS101 (1) | SP | 20/12/2017 | 50 | 12.00 | 9.00 to 12.00 | Gas tap | Raised cover | |
| WS102 (1) | SP | 18/12/2017 | 50 | 10.50 | 7.50 to 10.50 | Gas tap | Raised cover | |
| WS103 (1) | SP | 14/12/2017 | 50 | 15.00 | 12.00 to 15.00 | Gas tap | Raised cover | |
| WS104 (1) | SP | 15/12/2017 | 50 | 14.50 | 9.00 to 14.50 | Gas tap | Raised cover | |
| WS106 (1) | SP | 13/12/2017 | 50 | 10.50 | 9.00 to 10.50 | Gas tap | Raised cover | |
| WS108 (1) | SP | 08/12/2017 | 50 | 11.00 | 11.00 to 14.10 | Gas tap | Raised cover | |
| WS109 (1) | SP | 08/12/2017 | 50 | 13.50 | 9.00 to 13.50 | Gas tap | Raised cover | |
| WS110 (1) | SP | 15/12/2017 | 50 | 15.00 | 12.00 to 15.00 | Gas tap | Raised cover | |
| WS111 (1) | SP | 06/12/2017 | 50 | 15.00 | 12.00 to 15.00 | Gas tap | Raised cover | |
| WS112 (1) | SP | 19/12/2017 | 50 | 14.00 | 11.00 to 14.00 | Gas tap | Raised cover | |

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer, HPIE - Hydraulic Piezometer, PPIE - Pneumatic Piezometer, EPIE - Vibrating Wire Piezometer, PWEL - Pumping Well

AGS

**Project** WEST BURTON C/D POWER STATION

**Project No.** A7102-17

**Carried out for** Firbeck Construction Limited

**Table** C1

# APPENDIX D

## GEOTECHNICAL LABORATORY TEST RESULTS



| | |
|---|---|
| Index Properties – Summary of Results | To Follow |
| Particle Size Distribution Analyses | To Follow |
| Unconsolidated Undrained Triaxial Compression Tests – Summary of Results | To Follow |
| Compaction Test Results | To Follow |
| Chemical Tests – Summary of Results | To Follow |
| Point Load Test Results | To Follow |
| Uniaxial Compressive Strength Test Results | To Follow |

**APPENDIX E**

**PHOTOGRAPHS**

| | |
|---|---|
| Trial Pits | Plate 1 to 43 |
| Rotary Cores | Plate 44 to 59 |

# WEST BURTON C AND D GAS TURBINE POWER PLANTS GROUND INVESTIGATION

# FACTUAL REPORT ON PRESSUREMETER TESTING

## Report No A7104-17

January 2018

Carried out for:
Firbeck Construction Limited
7 Lawn Court
Lawn Road Industrial Estate
Carlton-in-Lindrick
Worksop
Nottinghamshire
S81 9ED

Engineer:
Sir Robert McAlpine Design Group
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# SOCOTEC UK Limited

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## Report No A7104-17

January 2018

| Issue No Date | Status | Prepared by | Checked by | Approved by |
|---|---|---|---|---|
| 1 | Final report | NAME and QUALIFICATIONS<br>**John Holt BSc (Hons)** | NAME and QUALIFICATIONS<br>**Peter Hepton BSc PhD** | NAME and QUALIFICATIONS<br>**Peter Hepton BSc PhD** |
| Jan 2018 | | SIGNATURE<br>[redacted] | SIGNATURE<br>[redacted] | SIGNATURE<br>[redacted] |



SOCOTEC UK Limited was formerly known as Environmental Scientifics Group Limited. The Certificate of Incorporation on Change of Name was filed on 16 October 2017.

# CONTENTS

# 1 INTRODUCTION

In November 2017 SOCOTEC UK was commissioned by Firbeck Construction Limited, on behalf of EDF Energy to carry out a ground investigation which included pressuremeter testing at West Burton Power Station, Nottinghamshire. The scope of the testing was specified by Sir Robert McAlpine.

This report presents the factual fieldwork records of the pressuremeter testing carried out from 4 to 13 December 2017, together with an interpretation of the test results in terms of material parameters. The data are also presented separately in digital format following AGS (2017). The main investigation works are reported separately under SOCOTEC Report No A7102-17.

# 2 PRESSUREMETER TESTING

## 2.1 Pressuremeter Equipment

The testing was undertaken using high pressure, direct strain measuring, borehole dilatometers (HPD) and a self-boring pressuremeter (SBP) manufactured by Cambridge Insitu and PACE Geotechnics. Both pressuremeters comprise a cylindrical instrument, inflated by oil or gas pressure.

The HPD is inserted into a test pocket drilled in the ground using a rotary drilling rig (ie, a prebored type pressuremeter). The SBP has an integral cutter and is drilled into the ground using the rotary rig. During a test, strain is measured across three diameters in the same plane at the centre of the expanding section, and pressure measured by internal pressure transducers. Details of the instruments used are as follows:

SUMMARY OF PRESSUREMETER EQUIPMENT

| Instrument | Nominal Diameter (mm) | Strain Capacity (mm) | Pressure Capacity (MPa) | Instrument Details | Remarks |
|---|---|---|---|---|---|
| HPD-95 | 95 | 25<br>(per arm) | 20 | Cambridge Insitu<br>6-arm multiplex pressuremeter. | Serial No 081031 |

| | | | | | |
|---|---|---|---|---|---|
| PACE HPD | 95 | 18<br>(per arm) | 20 | Pace Geotechnics 6-arm multiplex pressuremeter. | Serial No 1005 |
| SBP-3 | 88 | 6<br>(per arm) | 7 | Cambridge Insitu 3-arm multiplex self-boring pressuremeter | Serial No 930111 |

The calibration registers for the instruments are contained in Appendix A. These present calibrations for the displacement and pressure measuring transducers, and corrections assessed for membrane stiffness (ie resistance to inflation in air) and system compliance.

### 2.2 Testing Programme

Ten pressuremeter tests were carried out in two boreholes at depths scheduled by Sir Robert McAlpine, in general accordance with BS 5930 (2015). Details of the test depths, dates, etc are included in the Summary of Pressuremeter Tests, see Table 1.

The tests were carried out in boreholes drilled by SOCOTEC using rotary drilling methods. The holes were drilled by conventional means to approximately 1 m above the scheduled test depth. The sequence of testing commenced with the shallowest test, working downwards.

For HPD tests, a 2 to 3 m long section of hole was then drilled using an H size (99 mm diameter) core barrel to form the test pocket. The HPD was inserted into the test pocket as soon as possible to minimise deterioration of the ground and the test carried out.

For SBP tests, the probe was lowered to the base of the hole and self bored to the required test depth. The cutter position and rate of progress were optimised to achieve minimum disturbance during installation.

The testing was carried out in a stress controlled manner using a manually operated compressed gas control box to pressurise the pressuremeter at an appropriate loading rate for the ground conditions. During the test unload-reload loops were performed. Where considered necessary, in the operator's judgement, a holding period was maintained to allow creep of the ground to reduce before carrying out the unloading stage of the loop.

Loading was continued until either the strain or pressure capacity of the instrument was achieved or if in the operator's opinion continuation would result in risk of damage to the equipment. The pressuremeter was then unloaded and removed from the hole to allow continuation by rotary coring.

## 3 ANALYSIS OF RESULTS

Analysis of the pressuremeter test data was carried out using proprietary software developed by Cambridge Insitu and PACE Geotechnics. Interpretation was performed on the average values obtained from all the displacement measuring positions (ie the average of the 6 arms) except where the data from one or more of the 'arms' was judged as unrepresentative. In these cases analysis has been carried out using the most reliable arm combinations.

The pressuremeter tests have been interpreted to provide, where appropriate, estimates of the following parameters:

- in situ cavity pressure after Marsland and Randolph (1977) modified by Hawkins et al (1990)
- undrained shear strength and limit pressure during loading after Gibson and Anderson (1961) modified by Windle and Wroth, 1977
- initial shear modulus from slope of early loading part of test
- shear modulus from linear fit to unload-reload loops after Windle and Wroth (1977)
- shear modulus – shear strain relationship (non-linear stiffness response) after Bolton and Whittle (1999)

Plots of total pressure against average arm displacement for each pressuremeter test, together with the results of interpretation of the data, are presented as Figures following the report text.

## REFERENCES


AGS: 2017 : Electronic transfer of geotechnical and geoenvironmental data (Edition 4.0.4). Association of Geotechnical and Geoenvironmental Specialists.

Bolton M D and Whittle R W : 1999 : A non-linear elastic/perfectly plastic analysis for plane strain undrained expansion tests. Géotechnique 49, No. 1, pp 133-141.

BS 5930 : 2015 : Code of practice for ground investigations. British Standards Institution.

Gibson R E and Anderson W F : 1961 : In situ measurement of soil properties with the pressuremeter, Civil Engineering and Public Works Review, Vol. 56, No. 658 May pp 6l5-6l8.

Hawkins P G, Mair R J, Mathieson W G and Muir Wood D :1990 : Pressuremeter measurement of total horizontal stress in stiff clay. Proc. ISP.3 Oxford

Marsland A and Randolph M F : 1977 : Comparison of the Results from Pressuremeter Tests and Large Insitu Plate Tests in London Clay. Géotechnique 27 No. 2 pp 2l7-243.

Whittle R W : 1999: Using non-linear elasticity to obtain the engineering properties clay - a new solution for the self boring pressuremeter. Ground Engineering, Vol.32, No.5, pp 30-34.

Windle D and Wroth C P : 1977 : The Use of a Self-boring Pressuremeter to determine the Undrained Properties of Clays. Ground Engineering, September.

# Summary of Pressuremeter Tests

SOCOTEC

| Borehole No. | Test Reference | Depth (m) | Date | Test Type | Remarks |
|---|---|---|---|---|---|
| BH101 | B101T1 | 3.00 | 11-Dec-17 | SBP | Test carried out in PFA |
| | B101T2 | 5.00 | 11-Dec-17 | SBP | Test carried out in PFA |
| | B101T3 | 16.60 | 12-Dec-17 | HPD | Test carried out in Mercia Mudstone |
| | B101T4 | 20.40 | 13-Dec-17 | HPD | Test carried out in Mercia Mudstone |
| | B101T5 | 23.40 | 14-Dec-17 | HPD | Test carried out in Mercia Mudstone |
| BH102 | B102T1 | 3.00 | 05-Dec-17 | SBP | Test carried out in PFA |
| | B102T2 | 6.00 | 06-Dec-17 | SBP | Test carried out in PFA |
| | B102T3 | 14.70 | 06-Dec-17 | HPD | Test aborted due to uneven arm expansion |
| | B102T4 | 16.20 | 06-Dec-17 | HPD | Test carried out in Mercia Mudstone |
| | B102T5 | 20.70 | 07-Dec-17 | HPD | Test carried out in Mercia Mudstone |

Notes:
HPD - High Pressure Dilatometer
SBP - Self-Boring Pressuremeter

| | |
|---|---|
| **Project** | WEST BURTON C/D POWER STATION |
| **Project No.** | A7104-17 |
| **Carried out for** | Firbeck Construction Limited |

**Table** 1

# Notes on Pressuremeter Test Results

## KEY TO RESULTS

| | |
|---|---|
| $P_o$ | Pressure corresponding to regeneration of in situ strain. |
| $c_u$ | Undrained shear strength. |
| $p_L$ | Limit pressure. |
| $G_i$ | Initial shear modulus. |
| $G_{ur}$ | Shear modulus derived from unload-reload loop. |
| $\varepsilon_c$ | Cavity strain range over which loop has been performed. |
| $G_s$ | Shear modulus = $\alpha \gamma^{\beta-1}$ for non-linear stiffness model |
| $\gamma$ | Shear strain |
| $\alpha$ | Shear stress constant = $\eta \beta$ |
| $\eta$ | Radial stress constant |
| $\beta$ | Elastic exponent |

## NOTES ON RESULTS

1. Summary results are presented for the pressuremeter tests carried out at this site as Table 1. Full details of the tests and analysis are presented in Appendix B. Where appropriate, the summary results presented here are based on a graphical average of all three strain axes of the pressuremeter. Use of average readings for strain arms reduces the influence of movement of the pressuremeter relative to the test pocket and may therefore be considered to be a more reliable result. Reference should be made to graphical data and test notes to assess the reliability of individual results.

2. The material type quoted is the presumed geological horizon. Reference should be made to borehole records for a full description.

3. The depth quoted for the test is the depth of the centre of the expanding section of the pressuremeter, corresponding to the location of the strain arms.

4. The test references used are the references assigned by the logging and analysis software. These take the form of BxxTyy, where xx is a two digit abbreviation of the borehole number and yy is a two digit test number, sequential for each borehole.

5. In cohesive soils the in situ total horizontal stress ($ó_{ho}$) is usually assessed using either the 'lift-off' method or the modified Marsland and Randolph method.

6. A pressuremeter test fails the ground in shear and all moduli quoted are shear moduli. Unload-reload loops are performed in tests to provide an estimate of unload-reload shear modulus ($G_{ur}$). The actual value of $G_{ur}$ is dependant on the magnitude and range of stress and cavity strain.

7. It is normal practice to carry out two or more unload-reload loops during a test. Results from these individual loops are presented consecutively (ie $G_{ur}$ for loop 1 is presented above $G_{ur}$ for loop 2). The cavity strain range ($\varepsilon_c$) over which the loop has been performed is presented alongside the relevant $G_{ur}$ value.

8. Shear modulus (G) and Young's Modulus (E) are theoretically related by:

$$E = 2G(1+ \nu)$$

where $\nu$ is Poisson's Ratio

Due to the finite stiffness of the equipment and the potential inaccuracies associated with the methods used to assess the compression of the instrument membrane it is not possible to accurately measure shear moduli in excess of about 3000 MPa and in such circumstances the apparent accuracy of the values reported should be regarded with caution.

9. Non-linear stiffness/strain response

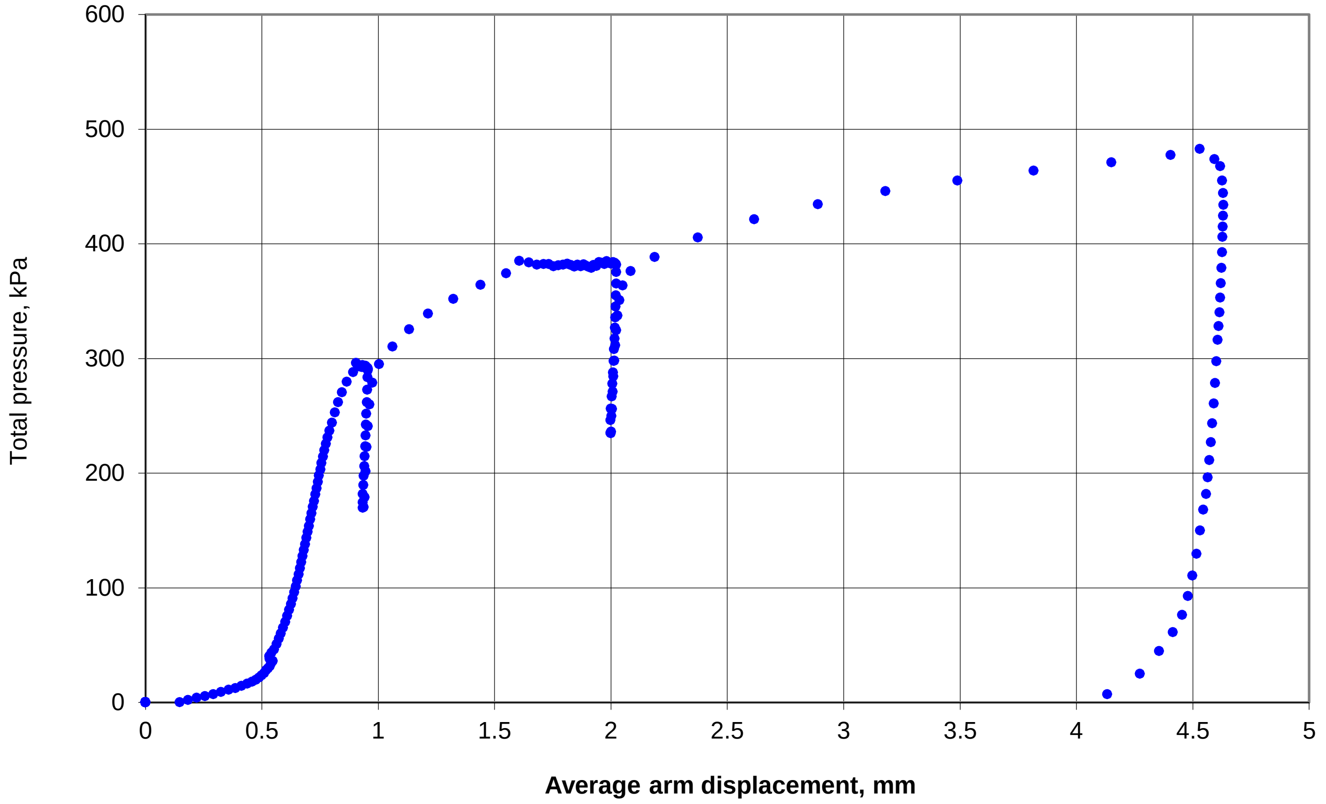
The Windle and Wroth (1977) interpretation is used to derive a value of shear modulus from the whole of an unload-reload loop; this values is quoted along with the corresponding change in strain during the loop. However, the elastic response of a soil is known to be non-linear and measurements of stiffness are therefore dependent on the magnitude of the corresponding strain. The Bolton and Whittle (1999) analysis extends the interpretation to give a comprehensive description of this non-linear relationship by looking at smaller increments of pressure and strain other than the points at the extreme ends of the loop. The shear modulus can be determined for the individual data points on the reloading part of the unload-reload loop from the increments of pressure and strain relative to an origin which is taken as the minimum values of stress and strain for the loop.

According to Bolton & Whittle (1999) the variation of stiffness (shear modulus, $G_s$) with strain (cavity strain, $\gamma_c$) seen during reloading in an unload-reload loop can be expressed as a power law, $G_s = \alpha\ \gamma_c^{\beta-1}$ . The theory indicates a linear relationship between the log of radial stress and the log of shear strain, defined by a line with gradient $\beta$ (the elastic exponent) and intercept $\eta$ (radial stress constant). The shear stress constant $\alpha$ is equal to $\eta\beta$. These values are reported on the test summary sheets.

10. Tests terminated by membrane rupture before the full testing cycle could be completed have been identified as such on the individual test summary.

# Pressuremeter Test

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | 11-Dec-17 | Test reference | B101T1 | BH | BH101 |
| Probe | SBP-3 930111 | GWL (mbgl) | 0.00 | Test | 1 |
| Material | PFA | Test pocket (mbgl) | 2.20 - 3.50 | Depth (mbgl) | 3.00 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | 110 | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | 192 |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | 71 | $c_{u\ unloading}$ (kPa) | 70 | $p_L$ (kPa) | 622 |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 22 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 113 | 0.098 | 0.746 | 14.4 | NA | NA | |
| 2 | 113 | 0.103 | 0.658 | 7.0 | NA | NA | |
| | | | | | | | |
| | | | | | | | |

**Remarks**

Max test pressure = 483 kPa. Max av displ = 4.63 mm. Max arm displ = 5.17 mm (Arm1). No of loops = 2 . Analysis type: Average arm.

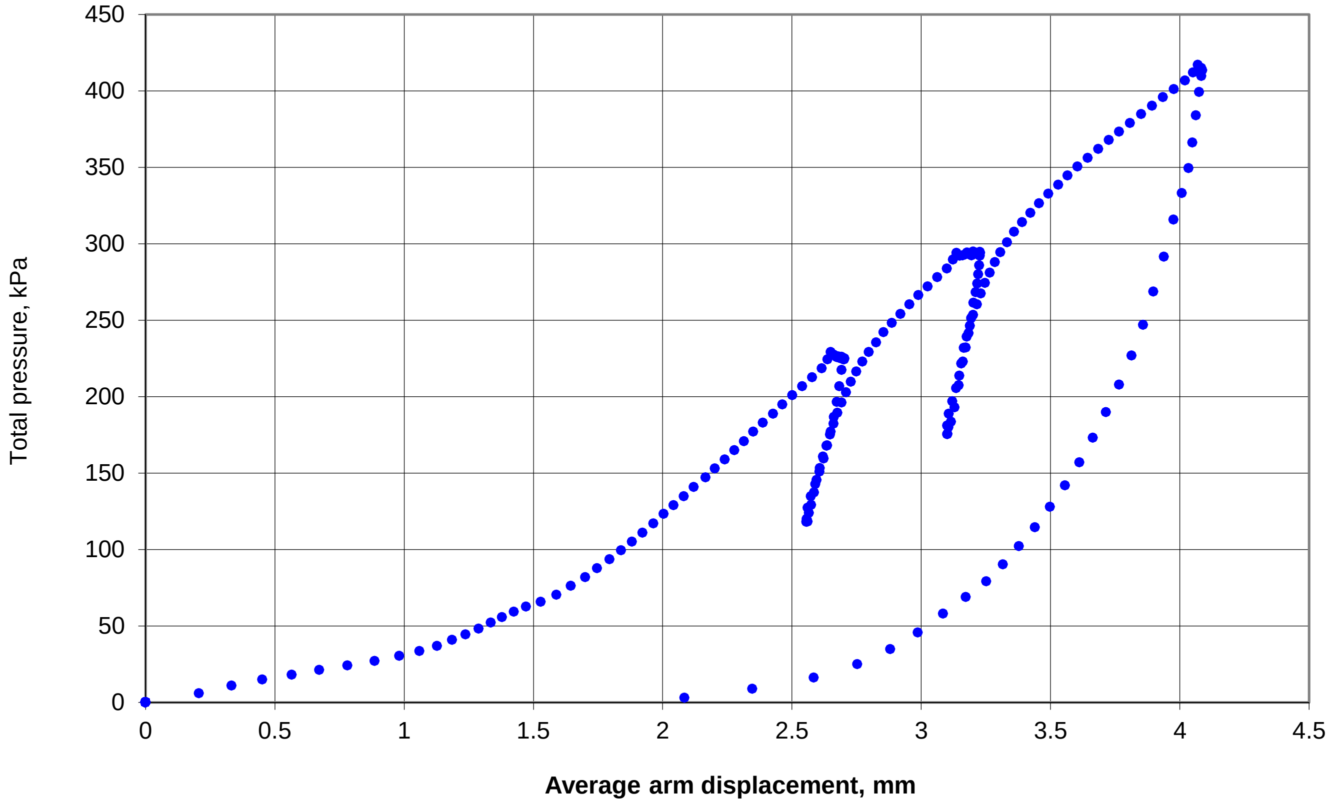
Notes:

**Project** WEST BURTON C/D POWER STATION
**Project No.** A7104-17
**Carried out for** Firbeck Construction Limited

**Figure**
**BH101 T1**

# Pressuremeter Test

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | 11-Dec-17 | Test reference | B101T2 | BH | BH101 |
| Probe | SBP-3 930111 | GWL (mbgl) | 0.00 | Test | 2 |
| Material | PFA | Test pocket (mbgl) | 4.20 - 5.50 | Depth (mbgl) | 5.00 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | 93 | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | 93 |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | 303 | $c_{u\ unloading}$ (kPa) | 61 | $p_L$ (kPa) | 1133 |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 3 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 15 | 0.622 | 0.611 | 1.3 | NA | NA | |
| 2 | 20 | 0.534 | 0.574 | 1.2 | NA | NA | |
| | | | | | | | |
| | | | | | | | |

**Remarks**

Max test pressure = 417 kPa. Max av displ = 4.09 mm. Max arm displ = 6.01 mm (Arm1). No of loops = 2 . Analysis type: Average arm.

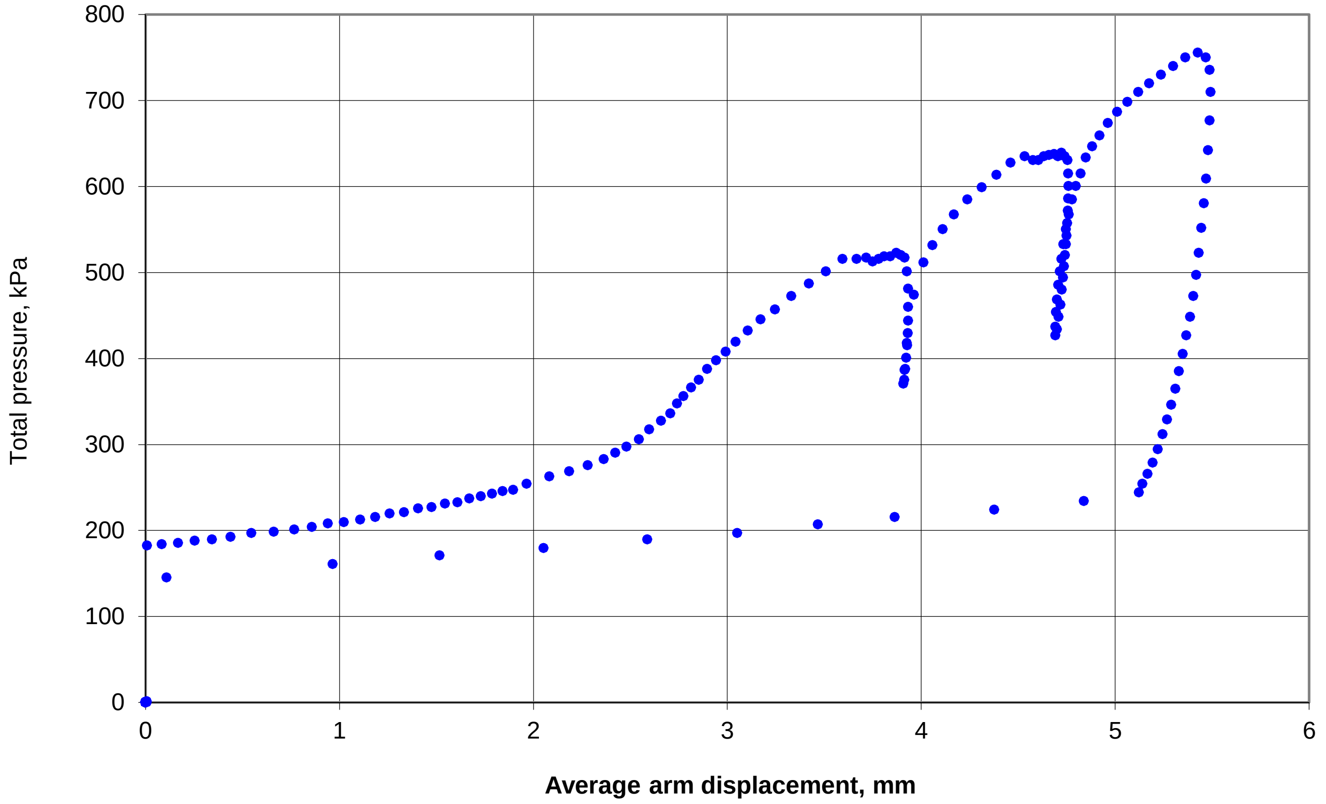
Notes:

**Project** WEST BURTON C/D POWER STATION
**Project No.** A7104-17
**Carried out for** Firbeck Construction Limited

**Figure**
**BH101 T2**

# Pressuremeter Test

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | 12-Dec-17 | Test reference | B101T3 | BH | BH101 |
| Probe | HPD-95 081031 | GWL (mbgl) | 0.00 | Test | 3 |
| Material | Mercia Mudstone | Test pocket (mbgl) | 16.00-17.50 | Depth (mbgl) | 16.60 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | 251 | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | 252 |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | 307 | $c_{u\ unloading}$ (kPa) | 85 | $p_L$ (kPa) | 1356 |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 6 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 66 | 0.087 | 0.823 | 14.0 | NA | NA | |
| 2 | 54 | 0.243 | 0.584 | 2.6 | NA | NA | |
| | | | | | | | |
| | | | | | | | |

**Remarks**

Max test pressure = 756 kPa. Max av displ = 5.49 mm. Max arm displ = 14.38 mm (Arm5). No of loops = 2 . Analysis type: Average arm.

Notes:

| | | |
|---|---|---|
| **Project** | WEST BURTON C/D POWER STATION | **Figure** |
| **Project No.** | A7104-17 | **BH101 T3** |
| **Carried out for** | Firbeck Construction Limited | |

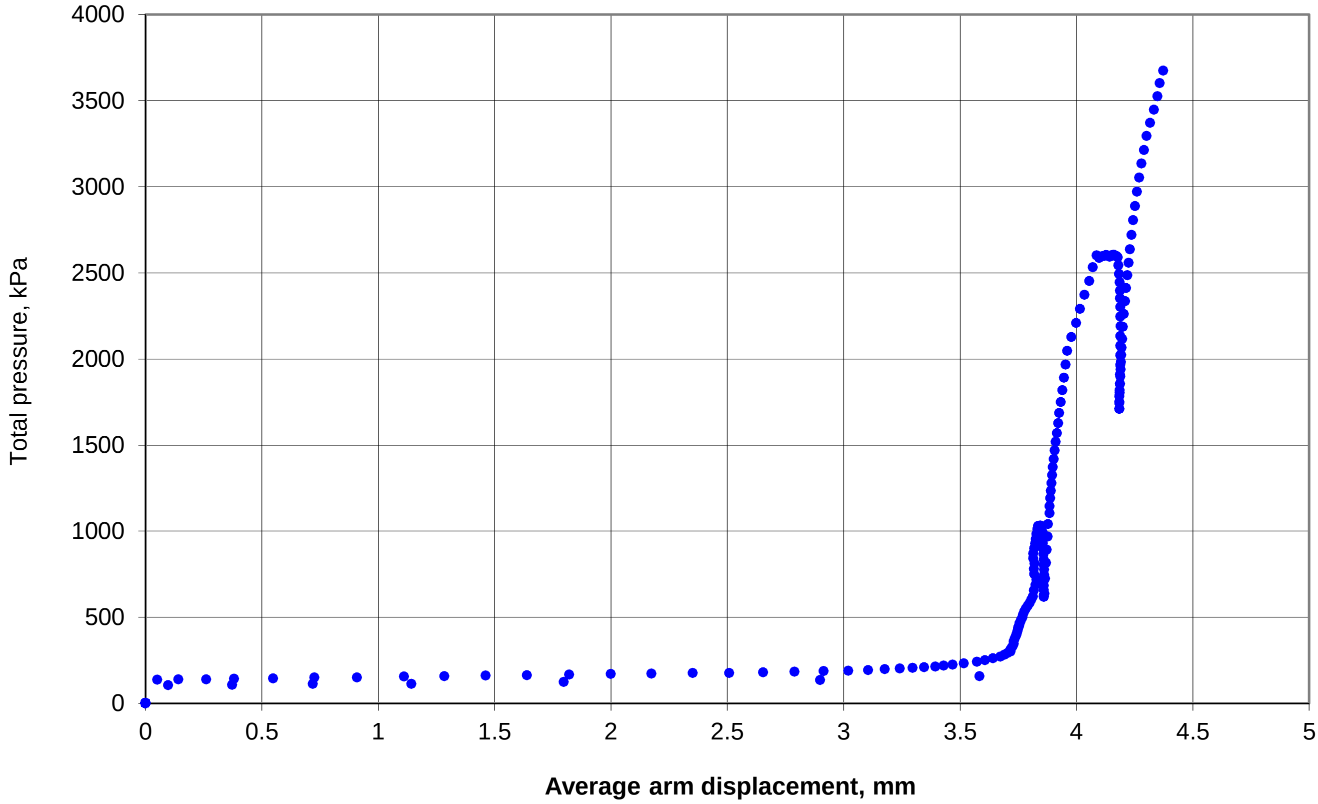
# Pressuremeter Test

SOCOTEC

| Date | 13-Dec-17 |
|---|---|
| Probe | HPD-95 081031 |
| Material | Mercia Mudstone |

| Test reference | B101T4 |
|---|---|
| GWL (mbgl) | 0.00 |
| Test pocket (mbgl) | 19.80-21.30 |

| BH | BH101 |
|---|---|
| Test | 4 |
| Depth (mbgl) | 20.40 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | 255 | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | 637 |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | NA | $c_{u\ unloading}$ (kPa) | NA | $p_L$ (kPa) | NA |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 194 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 566 | 0.061 | 1.293 | 5276.6 | NA | NA | |
| 2 | 1301 | 0.011 | 0.675 | 46.8 | NA | NA | |
| | | | | | | | |
| | | | | | | | |

**Remarks**

Max test pressure = 3674 kPa. Max av displ = 4.37 mm. Max arm displ = 8.44 mm (Arm4). No of loops = 2 . Analysis type: Average arm. Variable arm response noted during test period due to uneven cometance of the test pocket. Test results may not be reliable. Membrane burst during loading phase.

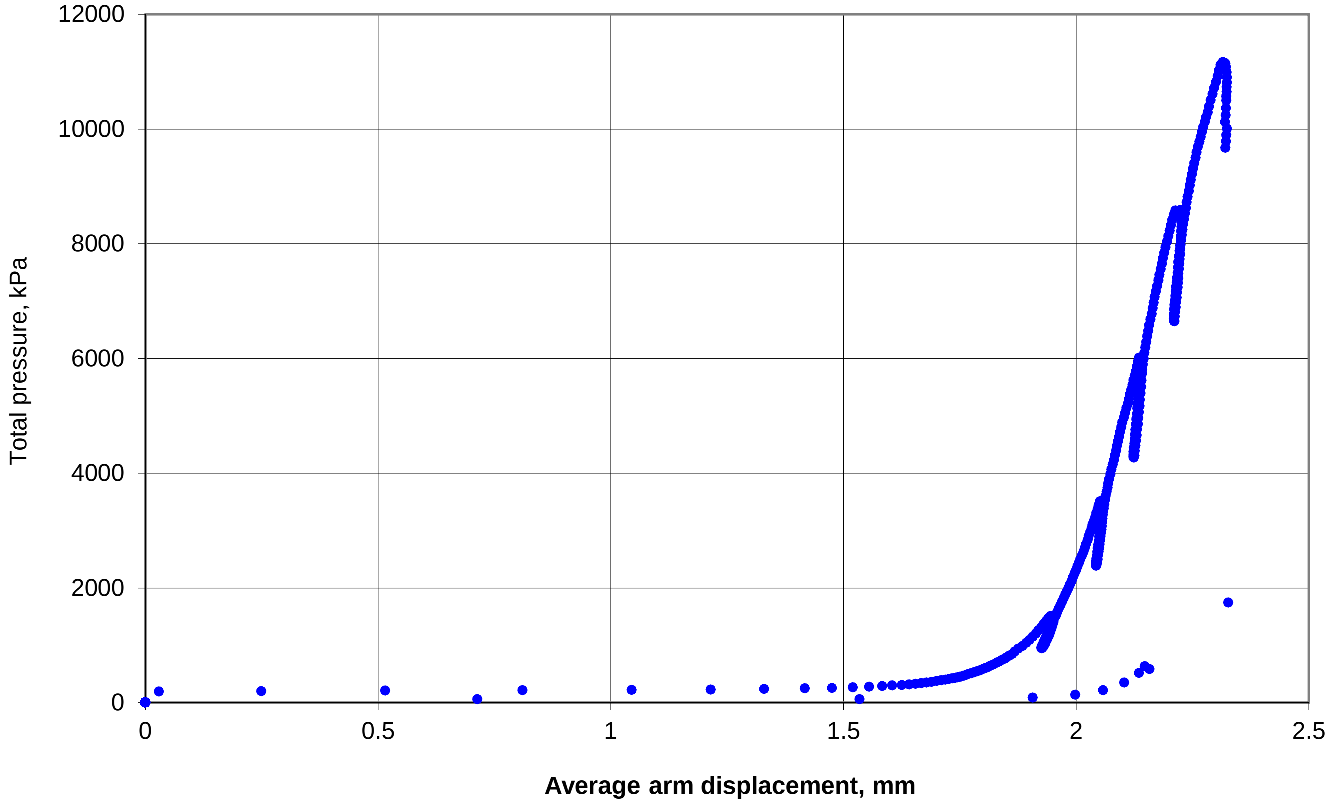
Notes:

| | |
|---|---|
| **Project** | WEST BURTON C/D POWER STATION |
| **Project No.** | A7104-17 |
| **Carried out for** | Firbeck Construction Limited |

**Figure**
**BH101 T4**

# Pressuremeter Test

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | 14-Dec-17 | Test reference | B101T5 | BH | BH101 |
| Probe | HPD-95 081031 | GWL (mbgl) | 0.00 | Test | 5 |
| Material | Mercia Mudstone | Test pocket (mbgl) | 22.80-24.30 | Depth (mbgl) | 23.40 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | 1600 | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | NA |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | 9295 | $c_{u\ unloading}$ (kPa) | NA | $p_L$ (kPa) | 50721 |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 719 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 458 | 0.112 | 0.886 | 186.6 | NA | NA | |
| 2 | 1527 | 0.062 | 0.817 | 315.2 | NA | NA | |
| 3 | 1995 | 0.076 | 0.793 | 361.8 | NA | NA | |
| 4 | 2339 | 0.057 | 0.707 | 183.3 | NA | NA | |

**Remarks**

Max test pressure = 11168 kPa. Max av displ = 2.33 mm. Max arm displ = 3.24 mm (Arm1). No of loops = 4 . Analysis type: Average arm. Loop 1 carried out at early stage of test. HPD Membrane burst on unloading phase.

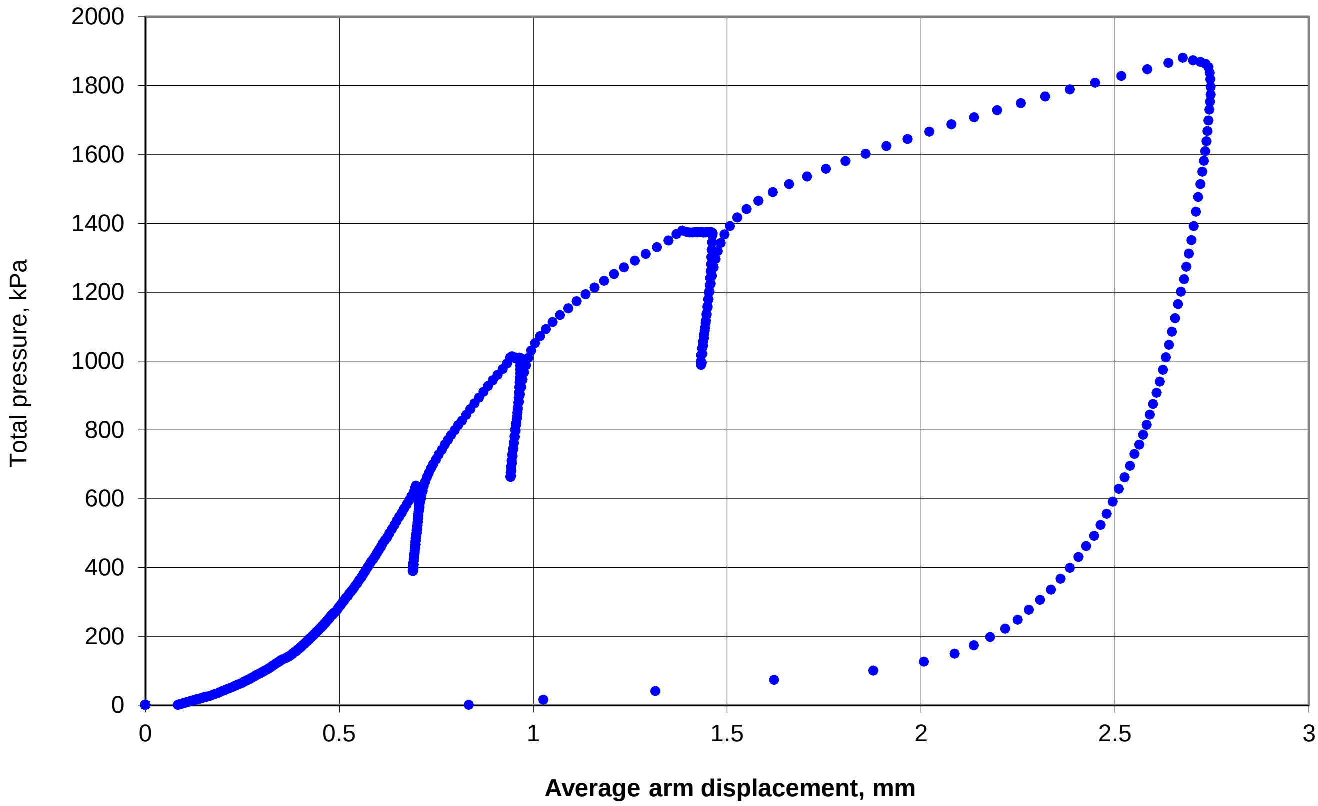
Notes:

| | | |
|---|---|---|
| **Project** | WEST BURTON C/D POWER STATION | **Figure** |
| **Project No.** | A7104-17 | **BH101 T5** |
| **Carried out for** | Firbeck Construction Limited | |

# Pressuremeter Test

SOCOTEC

| | | | | | |
|---|---|---|---|---|---|
| Date | 05-Dec-17 | Test reference | B102T1 | BH | BH102 |
| Probe | SBP-3 930111 | GWL (mbgl) | 0.00 | Test | 1 |
| Material | PFA | Test pocket (mbgl) | 2.50-3.50 | Depth (mbgl) | 3.00 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | 350 | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | 350 |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | 549 | $c_{u\ unloading}$ (kPa) | 269 | $p_L$ (kPa) | 3226 |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 41 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 278 | 0.075 | 0.753 | 35.7 | NA | NA | |
| 2 | 255 | 0.110 | 0.672 | 18.4 | NA | NA | |
| 3 | 248 | 0.120 | 0.663 | 16.9 | NA | NA | |
| | | | | | | | |

**Remarks**

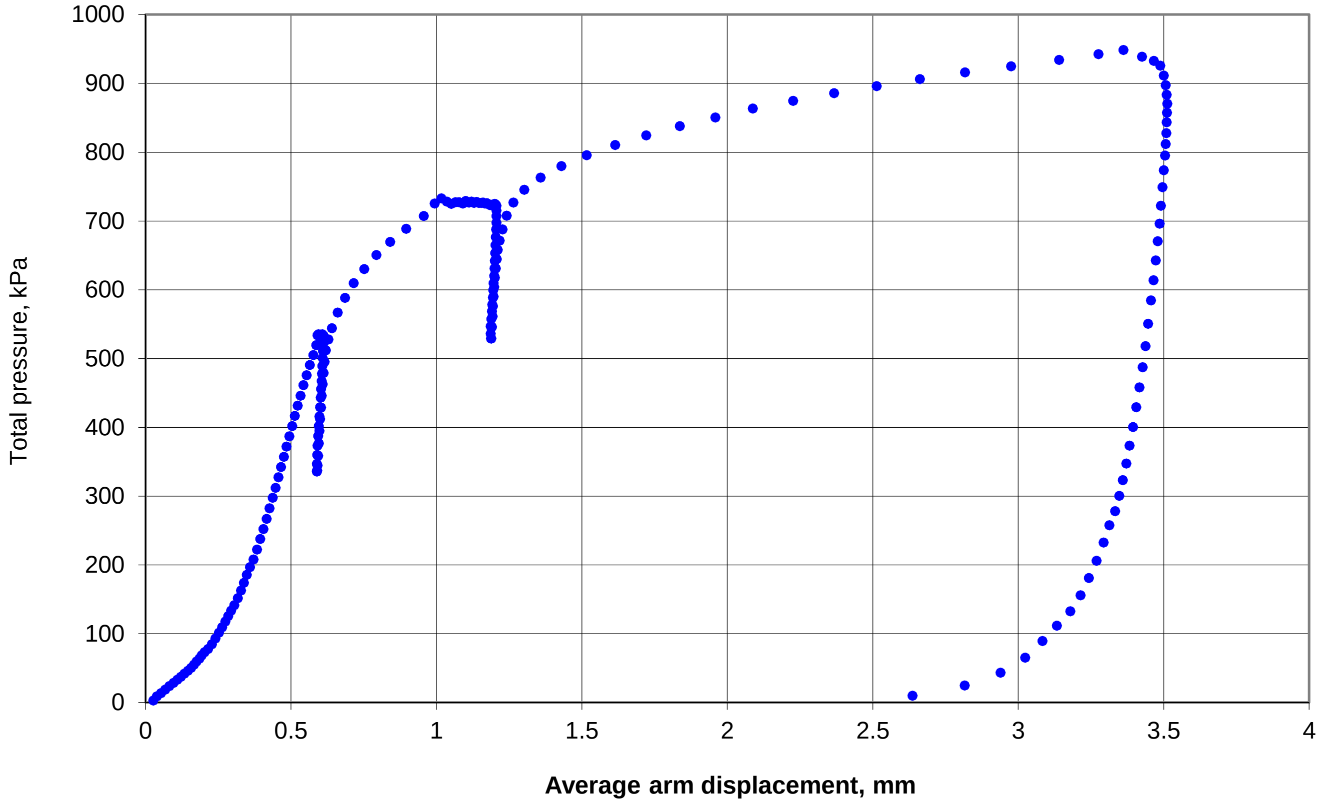
Max test pressure = 1881 kPa. Max av displ = 2.75 mm. Max arm displ = 3.57 mm (Arm2). No of loops = 3 . Analysis type: Average arm.

# Pressuremeter Test

| Date | 06-Dec-17 |
|---|---|
| Probe | SBP-3 930111 |
| Material | PFA |

| Test reference | B102T2 |
|---|---|
| GWL (mbgl) | 0.00 |
| Test pocket (mbgl) | 5.50-6.50 |

| BH | BH102 |
|---|---|
| Test | 2 |
| Depth (mbgl) | 6.00 |




**In situ horizontal stress (Average arm)**

| $P_{o\ BE}$ (kPa) | 291 | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | 369 |
|---|---|---|---|---|---|
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| $c_{u\ loading}$ (kPa) | 145 | $c_{u\ unloading}$ (kPa) | 129 | $p_L$ (kPa) | 1268 |
|---|---|---|---|---|---|
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| $G_i$ (MPa) | 35 |
|---|---|

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 172 | 0.102 | 0.734 | 20.5 | NA | NA | |
| 2 | 165 | 0.082 | 0.720 | 16.3 | NA | NA | |
| | | | | | | | |
| | | | | | | | |

**Remarks**

Max test pressure = 948 kPa. Max av displ = 3.51 mm. Max arm displ = 3.56 mm (Arm3). No of loops = 2 . Analysis type: Average arm.

Notes:

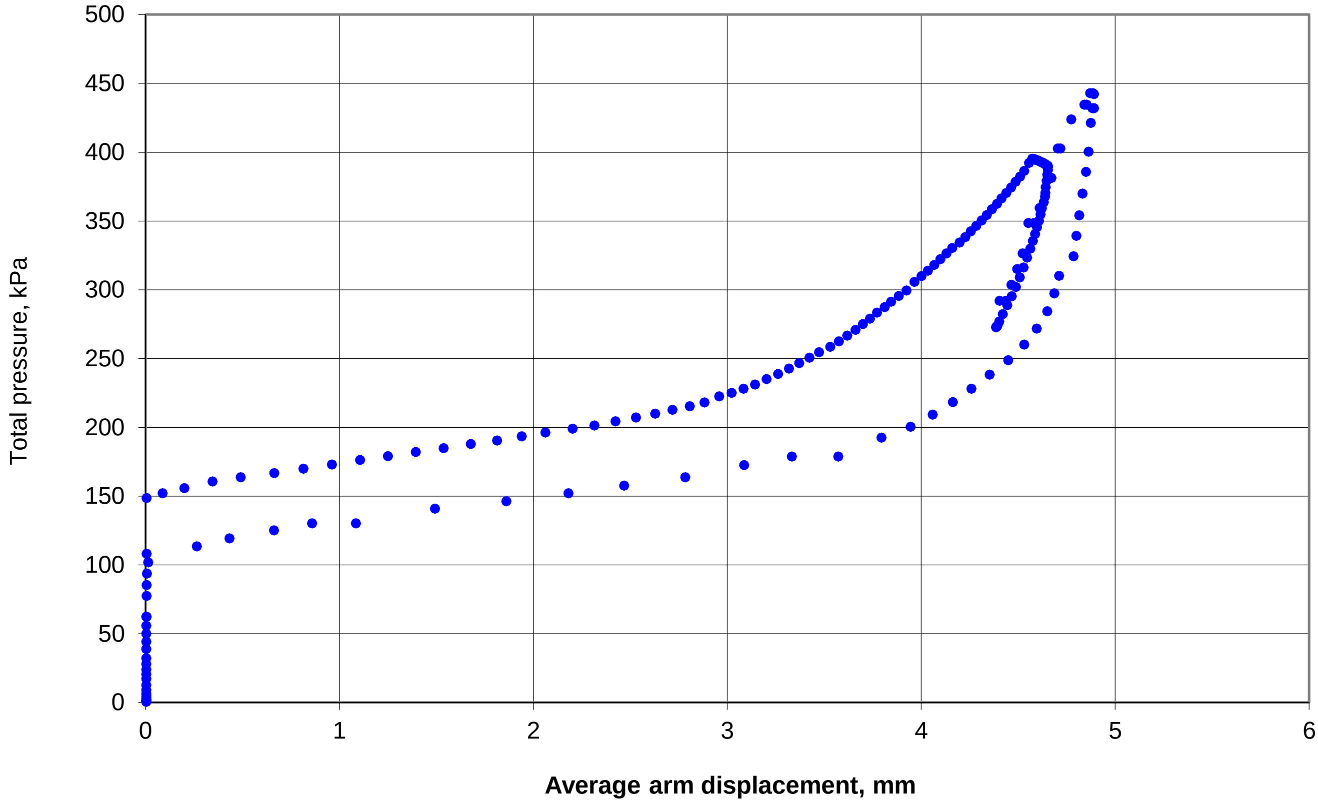
| | |
|---|---|
| **Project** | WEST BURTON C/D POWER STATION |
| **Project No.** | A7104-17 |
| **Carried out for** | Firbeck Construction Limited |

**Figure**

**BH102 T2**

# Pressuremeter Test

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | 06-Dec-17 | Test reference | B102T3 | BH | BH102 |
| Probe | PACE HPD 1005 | GWL (mbgl) | 0.00 | Test | 3 |
| Material | Mercia Mudstone | Test pocket (mbgl) | 13.80-15.30 | Depth (mbgl) | 14.70 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | NA | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | NA |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | NA | $c_{u\ unloading}$ (kPa) | NA | $p_L$ (kPa) | NA |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 0 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | NA | NA | NA | NA | NA | NA | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Remarks**

Max test pressure = 443 kPa. Max av displ = 4.89 mm. Max arm displ = 12.31 mm (Arm4). No of loops = 1 . Analysis type: Average arm. Variable arm response noted during test period due to uneven competance of the test pocket. Test terminated.

Notes:

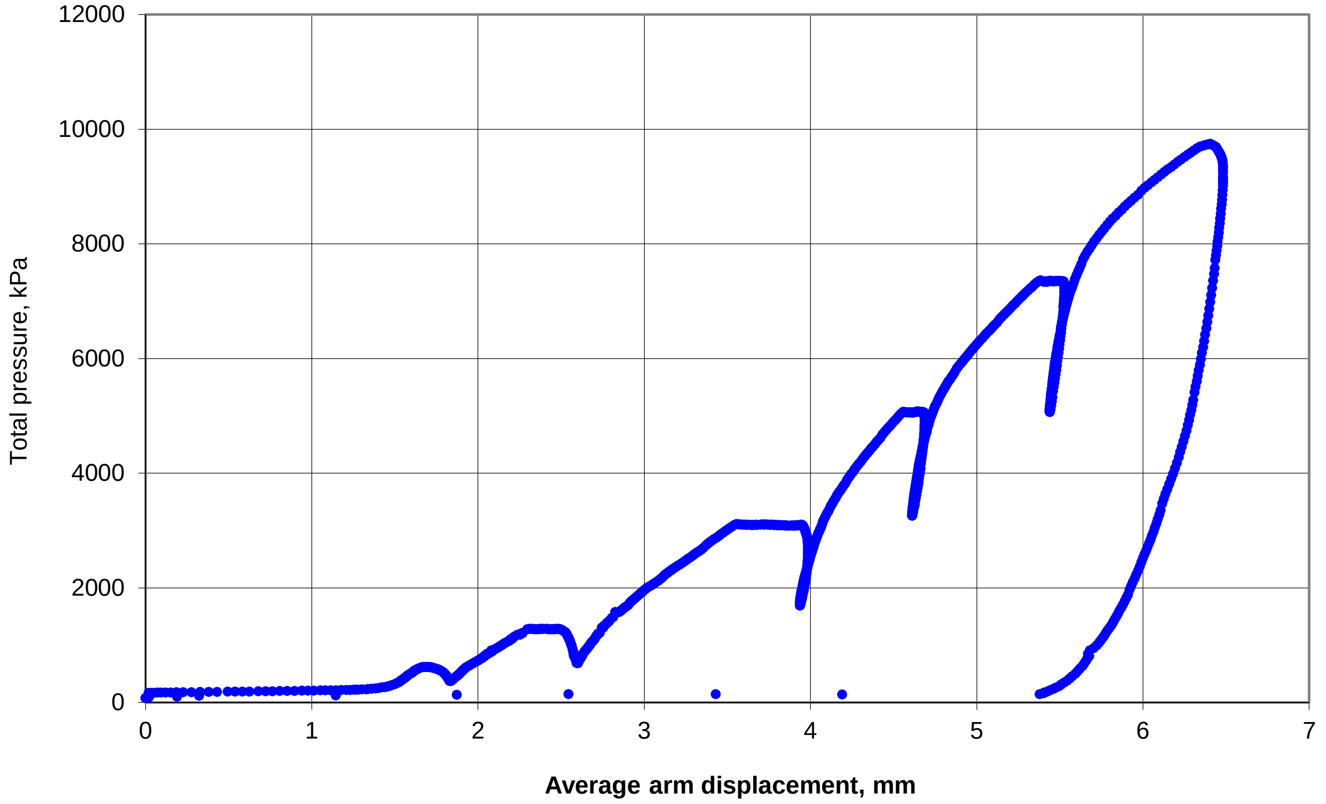
| | |
|---|---|
| **Project** | WEST BURTON C/D POWER STATION |
| **Project No.** | A7104-17 |
| **Carried out for** | Firbeck Construction Limited |

**Figure**
**BH102 T3**

# Pressuremeter Test

SOCOTEC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | 06-Dec-17 | | Test reference | B102T4 | | BH | BH102 |
| Probe | PACE HPD 1005 | | GWL (mbgl) | 0.00 | | Test | 4 |
| Material | Mercia Mudstone | | Test pocket (mbgl) | 13.80-16.80 | | Depth (mbgl) | 16.20 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | NA | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | 550 |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | 8085 | $c_{u\ unloading}$ (kPa) | NA | $p_L$ (kPa) | 27021 |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 68 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 497 | 0.071 | 0.483 | 9.8 | NA | NA | |
| 2 | 616 | 0.105 | 0.559 | 28.3 | NA | NA | |
| 3 | 711 | 0.117 | 0.818 | 353.9 | NA | NA | |
| | | | | | | | |

**Remarks**

Max test pressure = 5592 kPa. Max av displ = 4.83 mm. Max arm displ = 6.37 mm (Arm1). No of loops = 3 . Analysis type: Average arm.

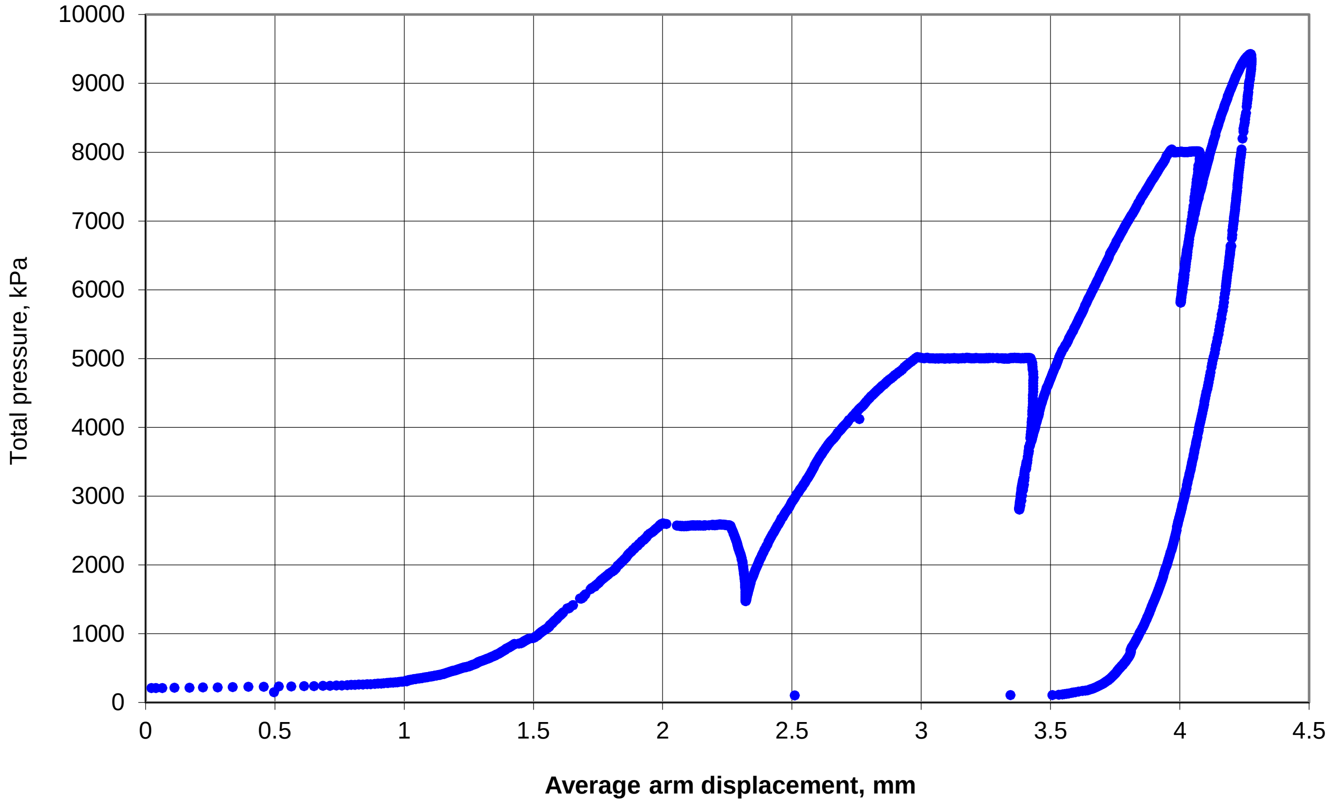
Notes:

| | | |
|---|---|---|
| **Project** | WEST BURTON C/D POWER STATION | **Figure** |
| **Project No.** | A7104-17 | **BH102 T4** |
| **Carried out for** | Firbeck Construction Limited | |

# Pressuremeter Test

SOCOTEC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Date | 07-Dec-17 | Test reference | B102T5 | BH | BH102 |
| Probe | PACE HPD 1005 | GWL (mbgl) | 0.00 | Test | 5 |
| Material | Mercia Mudstone | Test pocket (mbgl) | 19.80-21.30 | Depth (mbgl) | 20.70 |




**In situ horizontal stress (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $P_{o\ BE}$ (kPa) | NA | $P_{o\ LO}$ (kPa) | NA | $P_{o\ MR}$ (kPa) | 800 |
| $P_{o\ curve\ modelling}$ (kPa) | NA | | | $P_{o\ drained}$ (kPa) | NA |

**Shear strength (Average arm)**

| | | | | | |
|---|---|---|---|---|---|
| $c_{u\ loading}$ (kPa) | 17200 | $c_{u\ unloading}$ (kPa) | NA | $p_L$ (kPa) | 51440 |
| $\phi_{cv}$ (deg) | NA | $\phi$ (deg) | NA | $\nu$ (deg) | NA |

**Initial shear modulus (Average arm)**

| | |
|---|---|
| $G_i$ (MPa) | 107 |

**Unload-reload loop shear modulus (Average arm)**

| Loop ref | $G_{ur}$ (MPa) | $\varepsilon_c$ (%) | Non linear stiffness interpretation | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | | | Undrained | | Drained | | |
| | | | $\beta$ | $\alpha$ (MPa) | Gradient | Intercept, MPa | |
| 1 | 436 | 0.130 | 0.998 | 786.5 | NA | NA | |
| 2 | 784 | 0.066 | 0.694 | 103.7 | NA | NA | |
| 3 | 960 | 0.053 | 0.948 | 1390.3 | NA | NA | |
| | | | | | | | |

**Remarks**

Max test pressure = 5020 kPa. Max av displ = 3.48 mm. Max arm displ = 5.3 mm (Arm6). No of loops = 3 . Analysis type: Average arm. Loop 1 open. Interpretation carried out using reloading data.

Notes:

| | | |
|---|---|---|
| **Project** | WEST BURTON C/D POWER STATION | **Figure** |
| **Project No.** | A7104-17 | **BH102 T5** |
| **Carried out for** | Firbeck Construction Limited | |

**APPENDIX A**

**CALIBRATION REGISTER**

| | |
|---|---|
| High Pressure Dilatometer | HPD-95 - 081031<br>PACE HPD - 1005 |
| Self-Boring Pressuremeter | SBP-3 - 930111 |

# Pressuremeter Calibration Register

SOCOTEC

**Instrument :** **Digital High Pressure Dilatometer 95** **Serial No.** **081031**

| | Arm calibrations (mV / mm) | | | | | | Pressure cell calibrations (mV / MPa) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | Arm 1 | Arm 2 | Arm 3 | Arm 4 | Arm 5 | Arm 6 | TPC A | TPC B | | Cable (m) |
| 16-Jun-16 | 127.6 | 126.4 | 125.5 | 130.2 | 123.9 | 136.0 | | 70.0 | | |
| 06-Sep-16 | 140.1 | | | | | | 70.8 | 70.6 | new Arm 1 | |
| 09-Nov-16 | 141.3 | 129.9 | 126.0 | 132.4 | 124.7 | 137.1 | 70.3 | 69.7 | | |
| 03-Feb-17 | 140.6 | 127.2 | 124.5 | 130.2 | 124.2 | 137.1 | 70.3 | 70.1 | | |
| 04-May-17 | 140.7 | 129.1 | 125.8 | 131.8 | 124.3 | 136.6 | 70.6 | 70.3 | | |
| 03-Jul-17 | 140.8 | 129.0 | 126.2 | 131.8 | 125.0 | 136.6 | 70.6 | 70.3 | | |
| 05-Oct-17 | 139.5 | 126.8 | 125.5 | 130.8 | 123.7 | 132.3 | 69.7 | 69.6 | | |
| 01-Dec-17 | 138.4 | 125.1 | 124.3 | 136.6 | 123.0 | 134.6 | | | | |
| **Average** | **140** | **128** | **125** | **132** | **124** | **136** | **70** | **70** | | |

| | Calculated arm zeroes (mV) | | | | | | Calculated pressure cell zeroes (mV) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 16-Jun-16 | -840.4 | -2603.9 | -2585.4 | -2538.9 | -1821.5 | -1656.1 | | 338.5 | | |
| 06-Sep-16 | -2480.1 | | | | | | -275.5 | 347.2 | new Arm 1 | |
| 09-Nov-16 | -2524.7 | -2586.9 | -2550.7 | -2470.6 | -1799.5 | -1585.2 | -267.8 | 353.0 | | |
| 03-Feb-17 | -2505.8 | -2562.7 | -2503.4 | -2415.7 | -1807.6 | -1615.2 | -270.3 | 355.0 | | |
| 04-May-17 | -2487.5 | -2591.2 | -2549.8 | -2420.1 | -1817.7 | -1611.8 | -268.9 | 350.0 | | |
| 03-Jul-17 | -2540.1 | -2602.4 | -2501.1 | -2463.3 | -1856.7 | -1647.6 | -268.7 | 351.3 | | |
| 05-Oct-17 | -2528.2 | -2591.0 | -2535.3 | -2381.1 | -1803.8 | -1653.1 | -257.4 | 350.4 | | |
| 01-Dec-17 | -2517.4 | -2584.7 | -2535.6 | -2594.2 | -1835.9 | -1648.0 | | | | |
| **Average** | **-2512** | **-2593** | **-2544** | **-2472** | **-1824** | **-1636** | **-268** | **351** | | |

| Date | Membrane and system compliance calibrations | | | | | Tests | Remarks |
|---|---|---|---|---|---|---|---|
| | File ref. | Intercept (kPa) | Slope (kPa/mm) | Compress (mm/GPa) | Cylinder (mm/GPa) | | |
| 29-Apr-16 | C95T1 | 6.1 | 8.1 | 7.2 | 2.7 | | 4.5 to 9.5 MPa |
| 16-Jun-16 | C1T1 | 17.2 | 6.5 | 5.4 | 2.7 | | |
| 09-Nov-16 | C1T1 | | | 4.6 | 2.7 | | 4 to 10 MPa |
| 10-Jan-17 | C1T1 | | | 1.8 | 2.7 | | 4 to 8 Mpa |
| 03-Feb-17 | C1T1 | | | 5.4 | 2.7 | | 5 to 10 Mpa |
| 04-May-17 | C1T1 | | | 6.2 | 2.7 | | |
| 03-Jul-17 | C1T1 | | | 6.2 | 2.7 | | 3 to 9MPa |
| 05-Oct-17 | C1T1 | | | 5.2 | 2.7 | | |
| 14-Dec-17 | C101T1 | 32.3 | 12.2 | | | | |
| **Average** | | | | **5.3** | | | |

| | | |
|---|---|---|
| Diameter over probe | 94.00 | mm |
| Diameter under membrane | 82.00 | mm |
| Chinese lantern thickness | 0.53 | mm |

Notes:
Detachable cable with 6 pin plug
System compliance calibrations without Christmas Trees fitted

Notes:

**Project**

**Project No.**

**Carried out for**

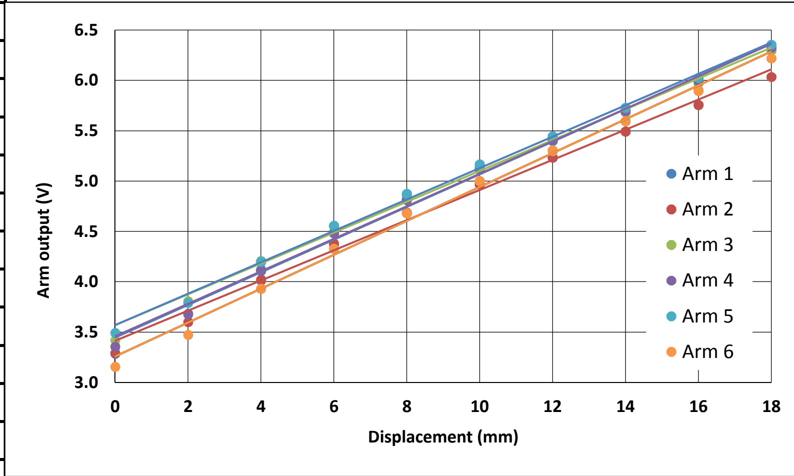
**Table**
**HPD95CAL**

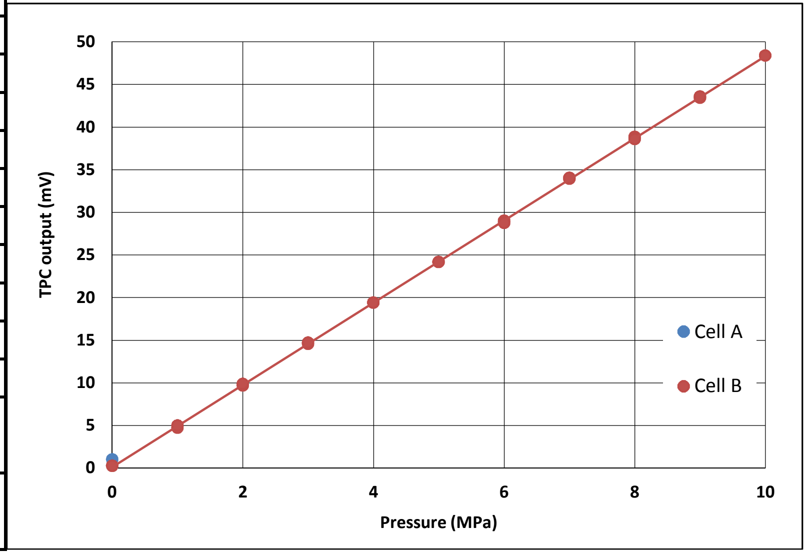
# HPD-1005

PACE GEOTECHNICS

| Arms | 19/11/2017 | | | | | |
|---|---|---|---|---|---|---|
| Displacement | Arm 1 | Arm 2 | Arm 3 | Arm 4 | Arm 5 | Arm 6 |
| mm | mV | mV | mV | mV | mV | mV |
| 0 | 3.2848 | 3.2909 | 3.4197 | 3.3549 | 3.4919 | 3.1541 |
| 2 | 3.6845 | 3.6004 | 3.8074 | 3.6781 | 3.7906 | 3.4721 |
| 4 | 4.1127 | 4.0129 | 4.2076 | 4.1093 | 4.1996 | 3.9299 |
| 6 | 4.4848 | 4.3706 | 4.5531 | 4.4826 | 4.5587 | 4.3277 |
| 8 | 4.8125 | 4.6849 | 4.8605 | 4.8147 | 4.8746 | 4.6805 |
| 10 | 5.1134 | 4.9683 | 5.1416 | 5.1182 | 5.1669 | 4.9986 |
| 12 | 5.4011 | 5.2343 | 5.4139 | 5.4069 | 5.4472 | 5.2988 |
| 14 | 5.6873 | 5.4926 | 5.6849 | 5.6944 | 5.7294 | 5.5930 |
| 16 | 5.9878 | 5.7563 | 5.9750 | 5.9954 | 6.0273 | 5.8953 |
| 18 | 6.3193 | 6.0369 | 6.2971 | 6.3244 | 6.3555 | 6.2197 |
| 16 | 5.9870 | 5.7596 | 5.9747 | 5.9952 | 6.0262 | 5.9025 |
| 14 | 5.6863 | 5.4943 | 5.6852 | 5.6954 | 5.7264 | 5.5977 |
| 12 | 5.4001 | 5.2350 | 5.4120 | 5.4077 | 5.4428 | 5.3083 |
| 10 | 5.1151 | 4.9705 | 5.1410 | 5.1192 | 5.1625 | 5.0035 |
| 8 | 4.8171 | 4.6892 | 4.8592 | 4.8148 | 4.8726 | 4.6811 |
| 6 | 4.4921 | 4.3785 | 4.5529 | 4.4886 | 4.5575 | 4.3280 |
| 4 | 4.1222 | 4.0219 | 4.2054 | 4.1149 | 4.1999 | 3.9300 |
| 2 | 3.6903 | 3.6103 | 3.8029 | 3.6847 | 3.7907 | 3.4717 |
| 0 | 3.2835 | 3.2937 | 3.4258 | 3.3561 | 3.4909 | 3.1543 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Slope (mV/mm) | 165.4 | 152.8 | 156.1 | 164.1 | 158.1 | 171.3 |
| Zero (mV) | 3.405 | 3.376 | 3.533 | 3.425 | 3.542 | 3.221 |

| Pressure Cells | 19/11/2017 | | | |
|---|---|---|---|---|
| Pressure | Cell A | | Cell B | |
| KPa | V | mV | V | mV |
| 0 | 0.00025 | 0.25 | 0.00024 | 0.24 |
| 1 | 0.00477 | 4.77 | 0.00473 | 4.73 |
| 2 | 0.00972 | 9.72 | 0.00966 | 9.66 |
| 3 | 0.01463 | 14.63 | 0.01455 | 14.55 |
| 4 | 0.01947 | 19.47 | 0.01939 | 19.39 |
| 5 | 0.02434 | 24.34 | 0.02414 | 24.14 |
| 6 | 0.02918 | 29.18 | 0.02898 | 28.98 |
| 7 | 0.03405 | 34.05 | 0.03391 | 33.91 |
| 8 | 0.03893 | 38.93 | 0.03882 | 38.82 |
| 9 | 0.04367 | 43.67 | 0.04341 | 43.41 |
| 10 | 0.04854 | 48.54 | 0.04836 | 48.36 |
| 9 | 0.04367 | 43.67 | 0.04357 | 43.57 |
| 8 | 0.03867 | 38.67 | 0.03857 | 38.57 |
| 7 | 0.03405 | 34.05 | 0.03401 | 34.01 |
| 6 | 0.02898 | 28.98 | 0.02873 | 28.73 |
| 5 | 0.02407 | 24.07 | 0.02416 | 24.16 |
| 4 | 0.01947 | 19.47 | 0.01939 | 19.39 |
| 3 | 0.01482 | 14.82 | 0.01471 | 14.71 |
| 2 | 0.00992 | 9.92 | 0.00987 | 9.87 |
| 1 | 0.00498 | 4.98 | 0.00499 | 4.99 |
| 0 | 0.00025 | 0.25 | 0.00024 | 0.24 |
| | | | | |
| Slope (mV/KPa) | 0.00483 | 4.83349 | 0.00482 | 4.81715 |
| Zero (mV) | 0.000 | 0.147 | 0.000 | 0.129 |



# Pressuremeter Calibration Register

SOCOTEC

**Instrument :** SBP-MPX 3 arm

**Serial No.** 930111

| Date | Arm calibrations (mV / mm) | | | Pressure cell calibrations (mV / MPa) | | | Remarks |
|---|---|---|---|---|---|---|---|
| | Arm 1 | Arm 2 | Arm 3 | TPC | PPA | PPB | |
| 04-Mar-11 | 316.4 | 307.8 | 278.9 | 657.9 | 216.0 | 234.9 | After repair |
| 02-May-11 | 328.6 | 318.3 | 293.6 | 664.3 | 215.4 | 236.8 | M1002-11 ST-BH04 |
| 21-Mar-12 | 324.7 | 316.5 | 302.7 | 659.6 | 216.5 | 236.5 | Tests B04T01-3 |
| 08-Jan-13 | 329.7 | 305.1 | 300.7 | 668.3 | 227.0 | 239.2 | |
| 19-Jun-14 | 316.8 | 319.1 | 294.8 | 661.7 | 216.7 | 236.5 | A4050-14 |
| 05-Aug-14 | 327.9 | 319.1 | 300.1 | 661.7 | 217.2 | 235.8 | |
| 16-Dec-15 | | | | 661.1 | | | |
| 14-Jun-16 | 327.4 | 334.7 | 309.7 | 657.2 | 216.1 | 253.2 | |
| 04-Oct-17 | 315.2 | 310.5 | 293.6 | 658.3 | 216.5 | 234.9 | |
| **Average** | **323** | **318** | **300** | **661** | **219** | **240** | |

| Date | Calculated arm zeroes (mV) | | | Calculated pressure cell zeroes (mV) | | | |
|---|---|---|---|---|---|---|---|
| 04-Mar-11 | 80.7 | -119.2 | -94.0 | -733.6 | 445.6 | -438.0 | |
| 02-May-11 | -366.1 | 544.4 | -74.4 | -795.8 | 458.2 | -444.5 | |
| 21-Mar-12 | 497.2 | -488.3 | -89.3 | -767.0 | 386.9 | -427.8 | |
| 08-Jan-13 | -492.2 | 568.7 | -17.0 | -788.0 | 327.5 | -423.2 | |
| 19-Jun-14 | -498.8 | 603.5 | 167.5 | -842.4 | 231.2 | -446.9 | |
| 05-Aug-14 | -625.0 | 641.8 | 180.0 | -868.7 | 238.5 | -444.0 | |
| 16-Dec-15 | | | | -856.5 | | | |
| 14-Jun-16 | -636.0 | 683.4 | 51.8 | -878.4 | 225.7 | -439.4 | |
| 04-Oct-17 | -625.1 | 661.8 | -26.5 | -866.9 | 225.0 | -426.2 | |
| **Average** | **-596** | **648** | **93** | **-863** | **230** | **-439** | |

| Date | Membrane stiffness and compliance calibrations | | | | | Tests |
|---|---|---|---|---|---|---|
| | File ref. | Intercept (kPa) | Slope (kPa/mm) | Complnce (mm/GPa) | Remarks | |
| 03-May-11 | | | | 4.0 | | |
| 04-May-11 | | 20 | 12 | | | |
| 17-Jun-14 | M3T176 | 24 | 15 | | A4050-14 | |
| 19-Jun-14 | P3T196 | | | 8.4 | | |
| 04-Oct-17 | | | | 2.1 | Cylinder 2.3mm/Gpa | |
| **Average** | | **20** | **12** | **4.1** | | |

| | |
|---|---|
| OD | 88.4 |
| ID | 79.1 |
| CHL | 0.52 |

Notes:

**Project**

**Project No.**

**Carried out for**

**Cal Reg**

**SBP-3 93011**

# APPENDIX B

# PRESSUREMETER TEST ANALYSES

| | |
|---|---|
| Pressuremeter Analyses | Sheet 1 to 84 |

B101T1 - SUMMARY OF RESULTS
[File made with WinSitu  Version 1.4.1.1]

[DETAILS OF TEST]

| | | |
|---|---|---|
| Project | : | A7104-17 |
| Site | : | West Burton CD Power Station |
| Borehole | : | BH101 |
| Test name | : | B101T1 |
| Test date | : | 11 Dec 17 |
| Test depth | : | 3.00 Metres |
| Water table | : | 0.00 Metres |
| Ambient PWP | : | 29.4 kPa |
| Material | : | PFA |
| Probe | : | Digital 3 arm weak rock self boring pressuremeter |
| Diameter | : | 88.4 mm |

Data analysed using average arm displacement curve
A non-linear analysis of the rebound cycles has been carried out

Analysed by  on 12 Dec 17

Remarks:  tip at 3.5m self bored from 2.2m

[RESULTS FOR CAVITY REFERENCE PRESSURE]

| | | |
|---|---|---|
| Strain Origin (mm) | : | "Arm ave=0.644" |
| Po from Marsland & Randolph (kPa) | : | "Arm ave=191.6" |
| Best estimate of Po (kPa) | : | "Arm ave=110.0" |

[UNDRAINED STRENGTH PARAMETERS]

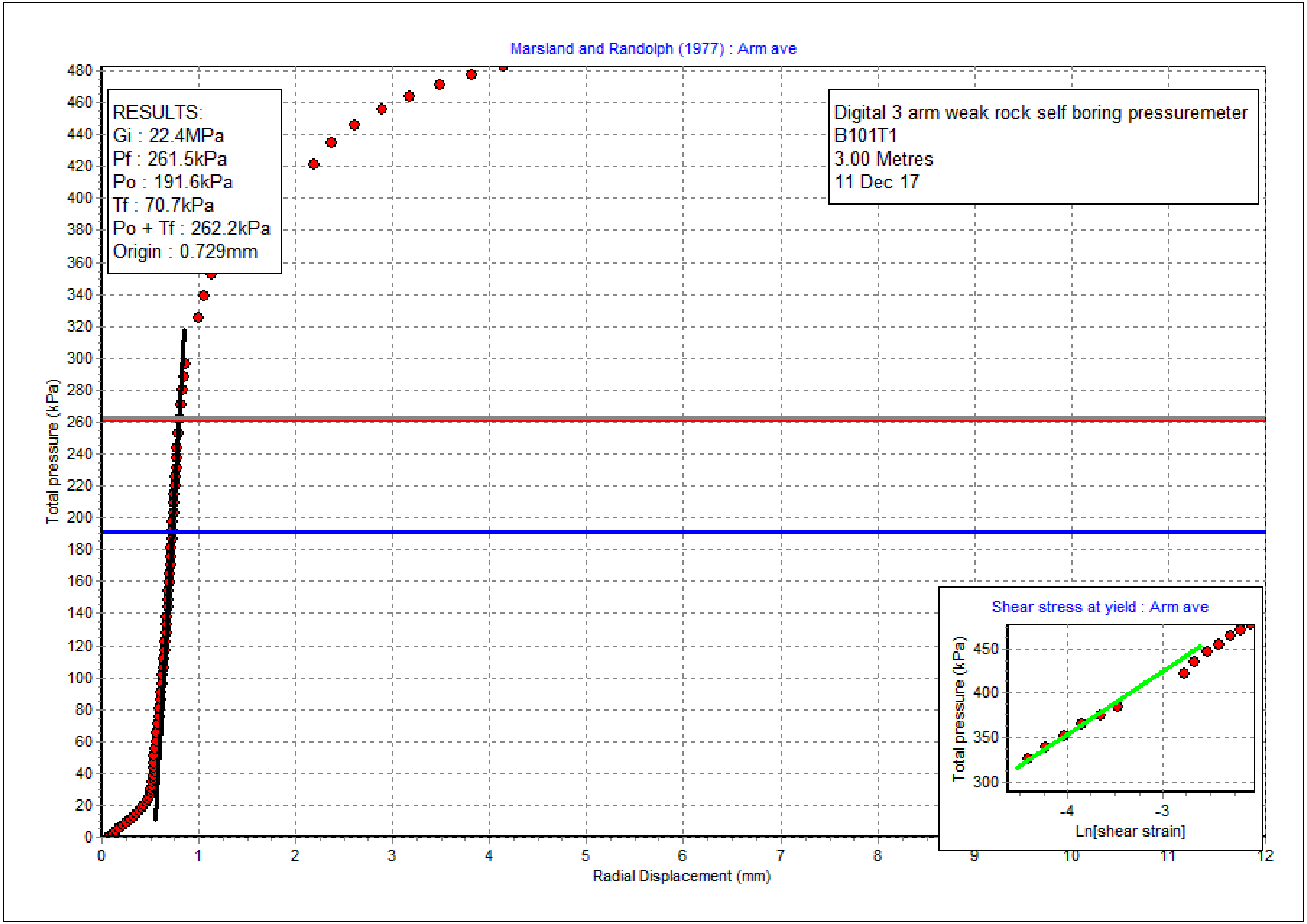
| | | |
|---|---|---|
| Gibson & Anderson 1961 - Cu (kPa) | : | "Arm ave=70.9" |
| Limit pressure (kPa) | : | "Arm ave=622" |
| Jefferies 1988 - Cu (kPa) | : | "Arm ave=70.1" |
| Undrained yield stress (kPa) | : | "Arm ave=261.5" |

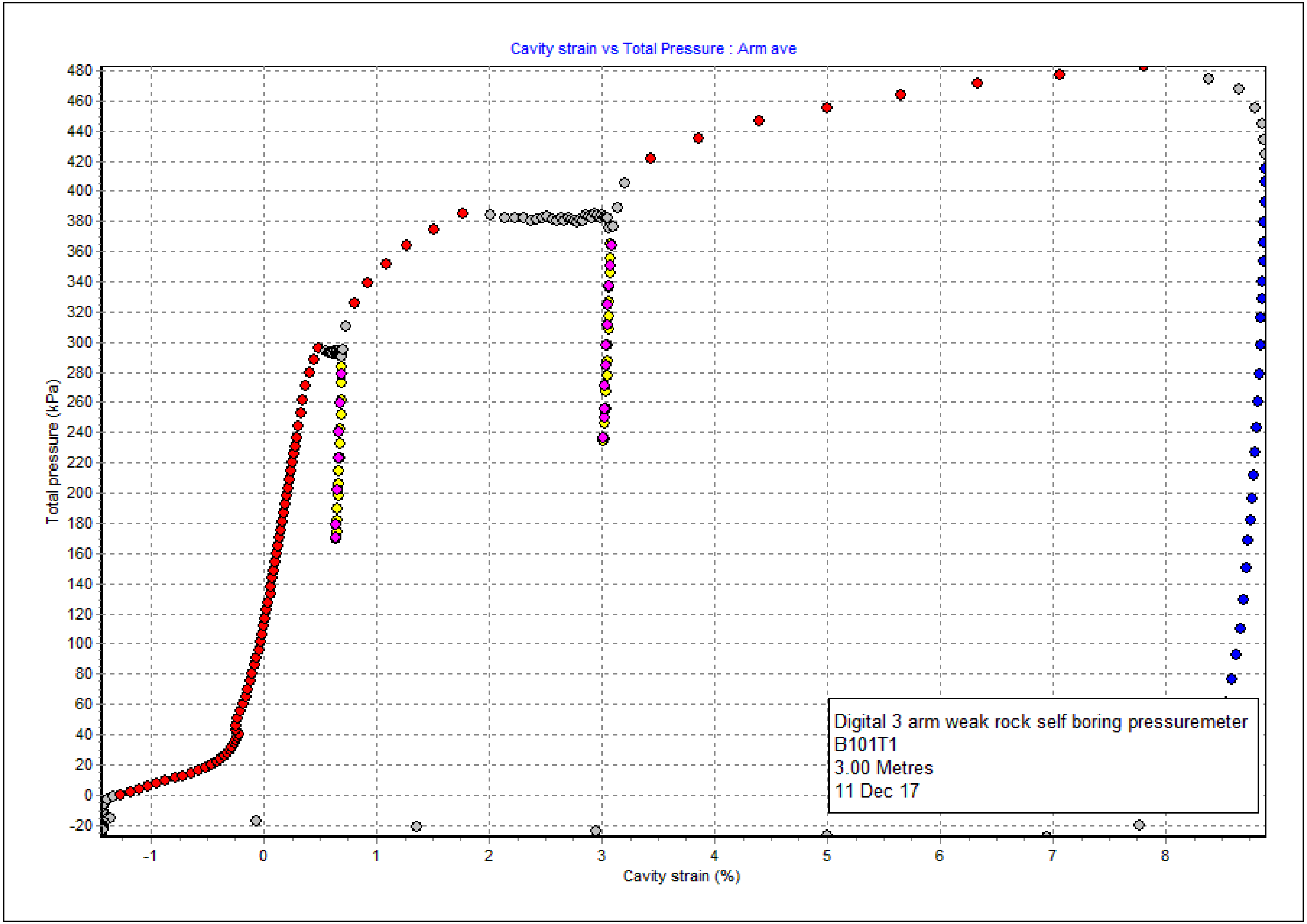
[LINEAR INTERPRETATION OF SHEAR MODULUS G]
Initial slope shear modulus (MPa) :"Arm ave=22.4"

| Axis | Loop No | Value (MPa) | Mean Strain (%) | Mean Pc (kPa) | dE (%) | dPc (kPa) |
|---|---|---|---|---|---|---|
| Arm ave | 1 | 112.7 | 0.671 | 224 | 0.098 | 110 |
| Arm ave | 2 | 112.7 | 3.048 | 293 | 0.103 | 117 |

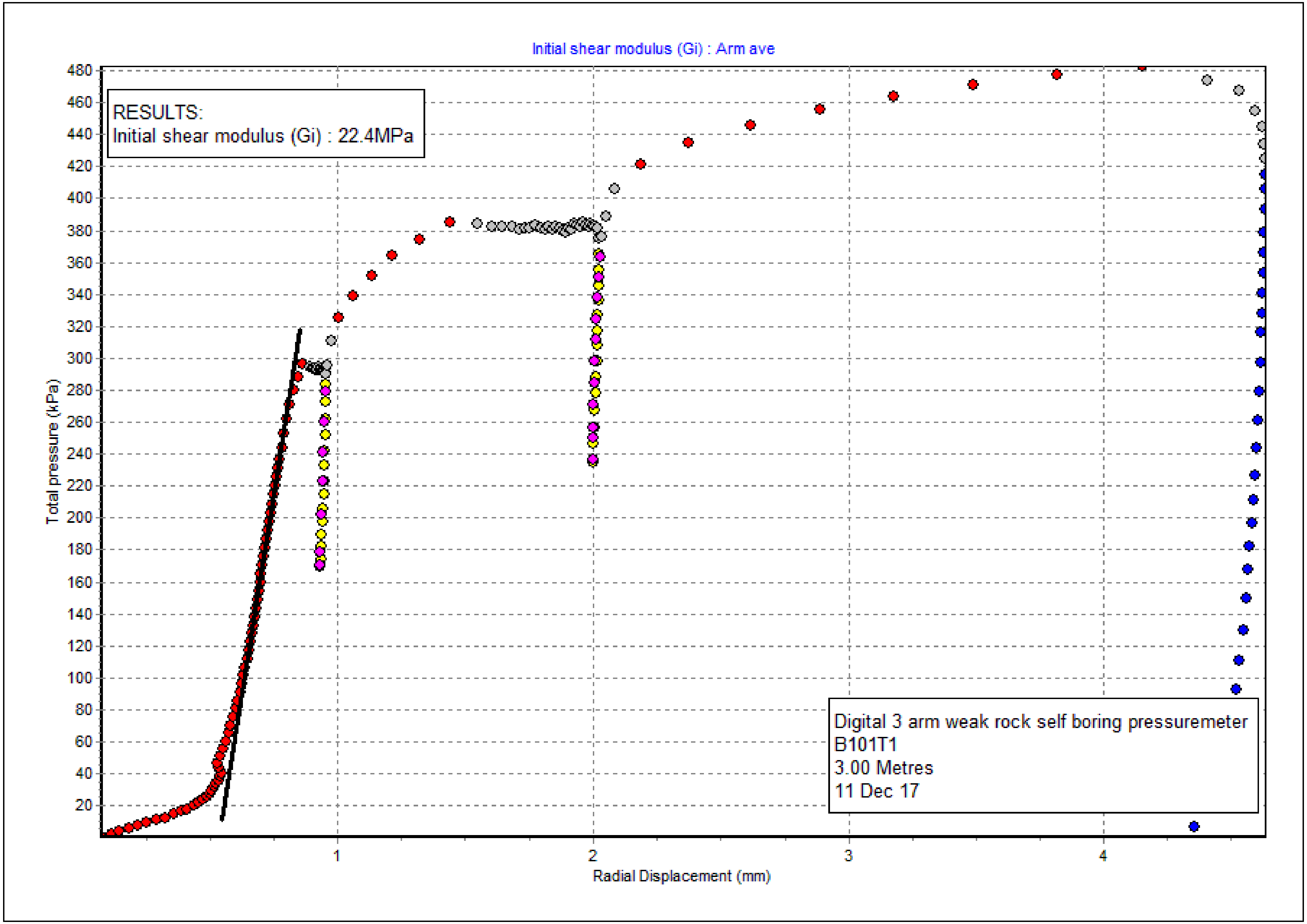
[UNDRAINED NON LINEAR INTERPRETATION OF SECANT SHEAR MODULUS]

| Axis | Loop No | Intercept (MPa) | Alpha (MPa) | Gradient |
|---|---|---|---|---|
| Arm ave | 1 | 19.242 | 14.353 | 0.746 |
| Arm ave | 2 | 10.589 | 6.969 | 0.658 |

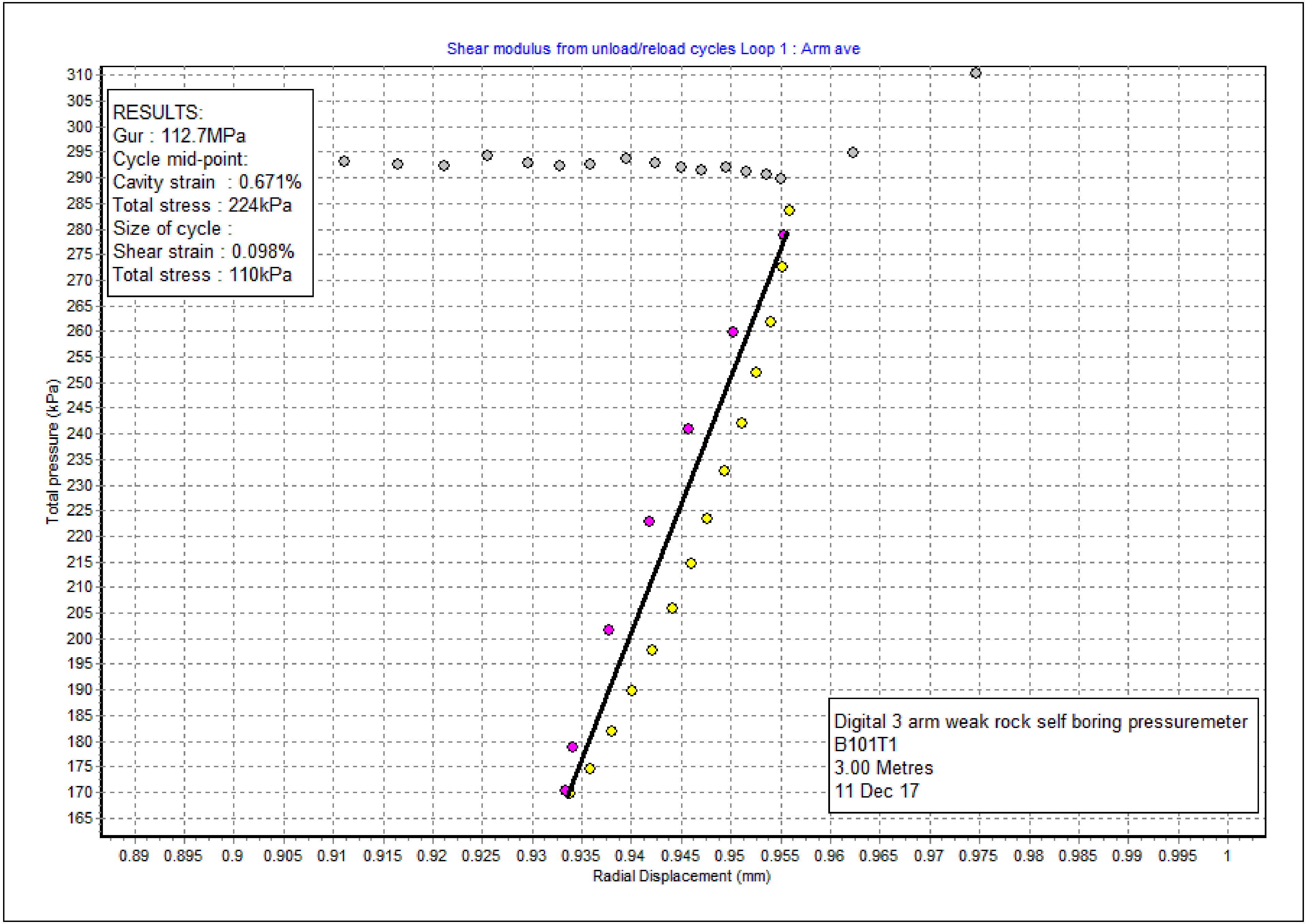

Marsland and Randolph (1977) : Arm ave
RESULTS:
Gi : 22.4MPa
Pf : 261.5kPa
Po : 191.6kPa
Tf : 70.7kPa
Po + Tf : 262.2kPa
Origin : 0.729mm
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
Shear stress at yield : Arm ave
Ln[shear strain]



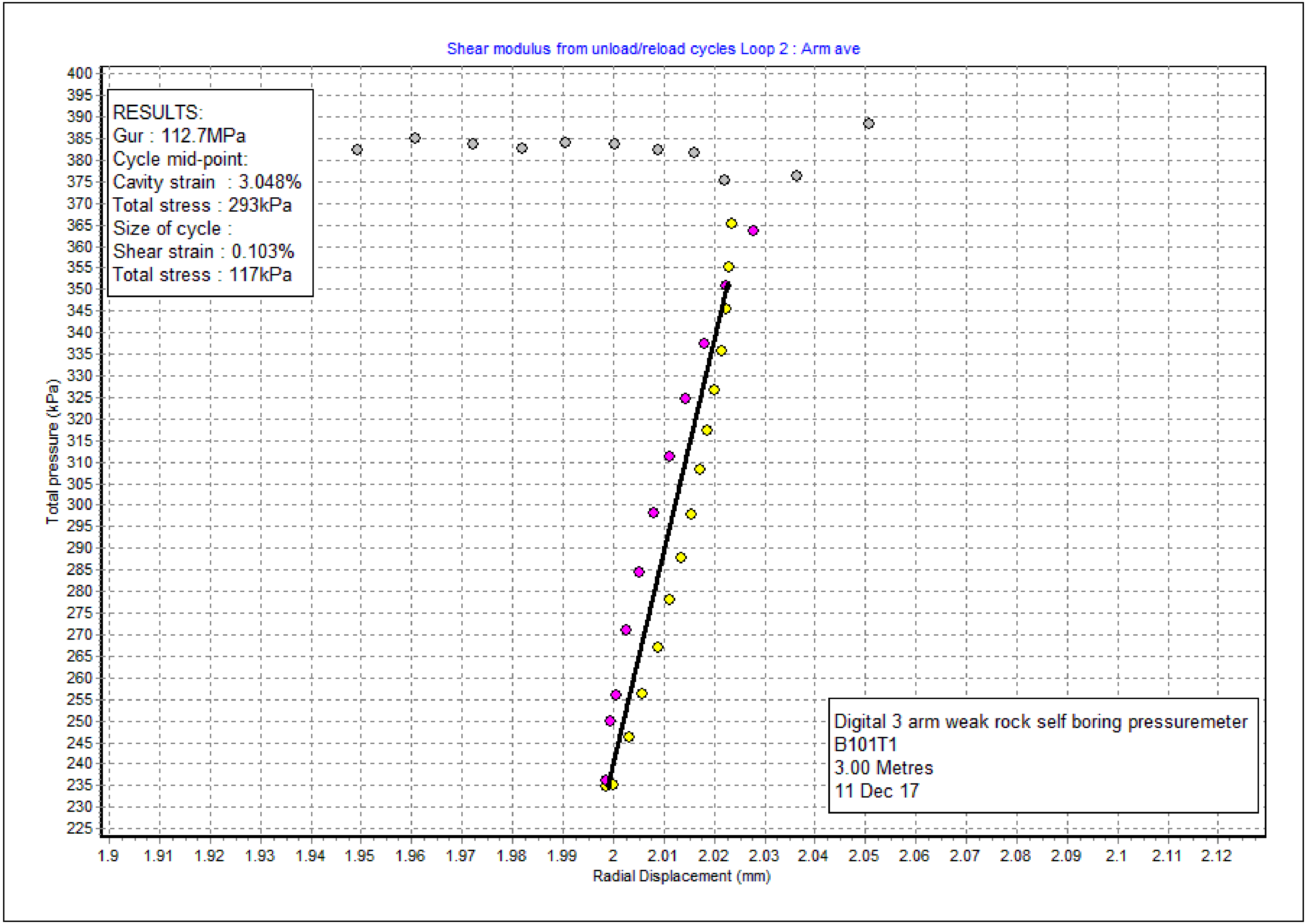
Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Cavity strain (%)
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17

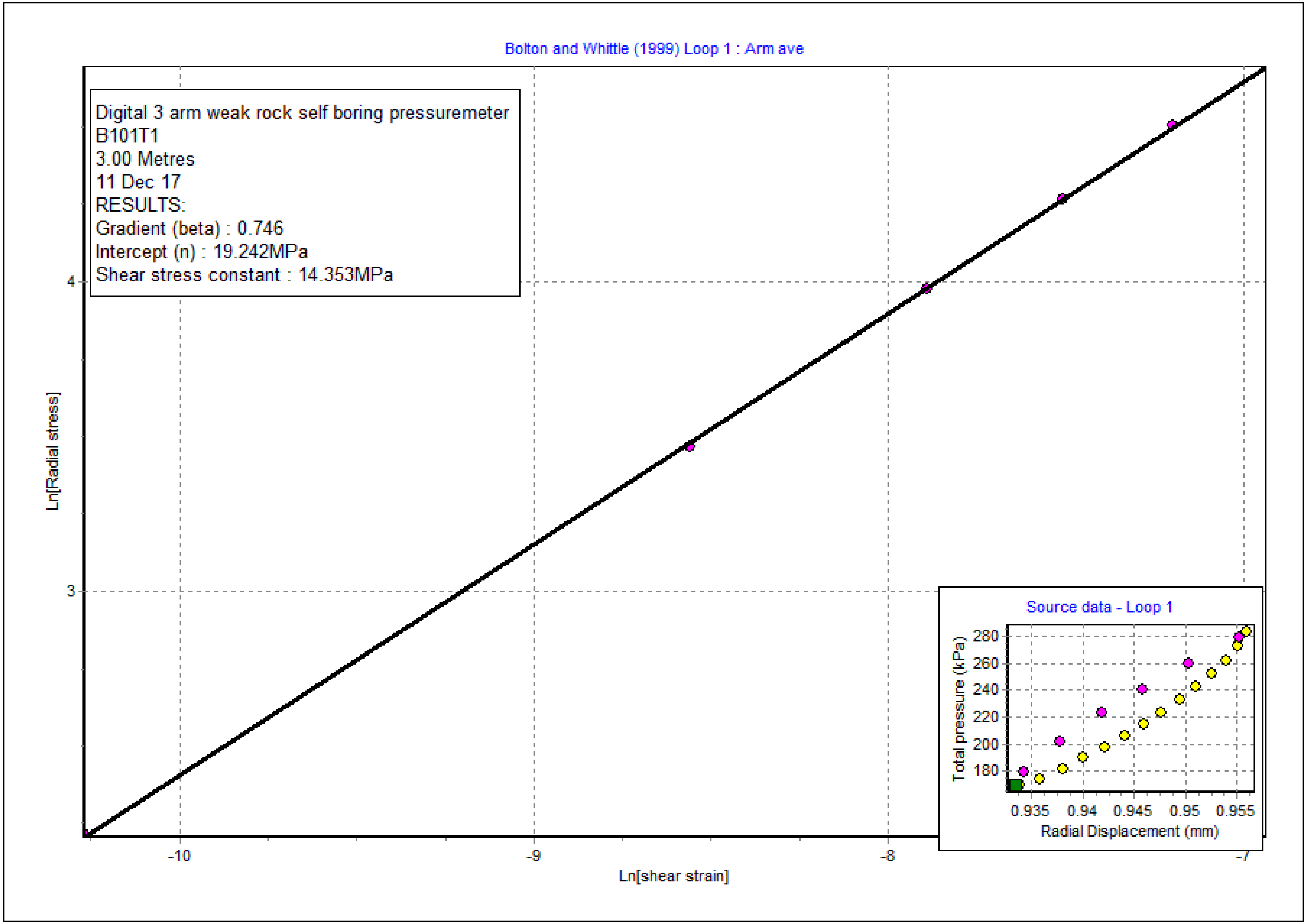


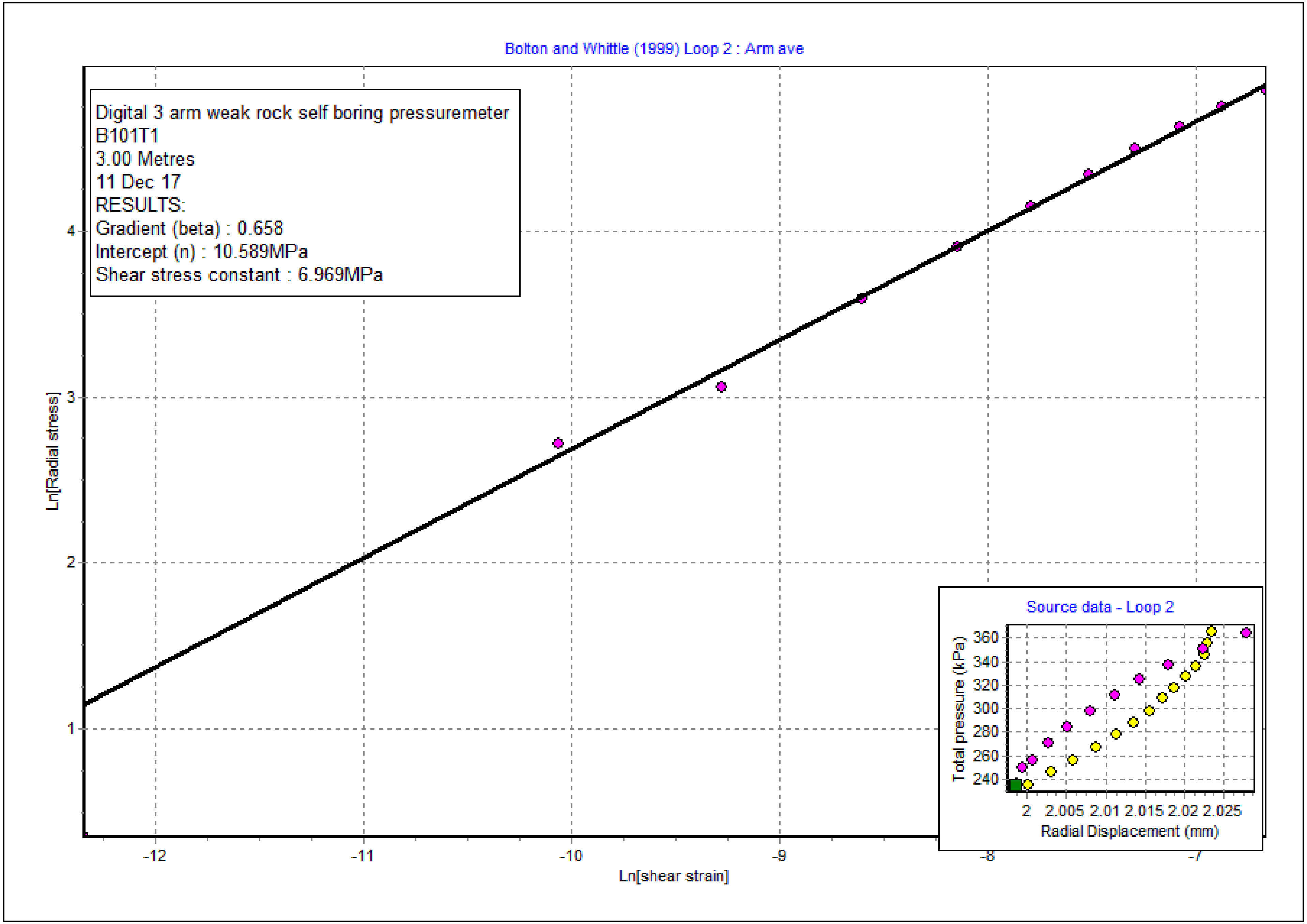
Initial shear modulus (Gi) : Arm ave
RESULTS:
Initial shear modulus (Gi) : 22.4MPa
Total pressure (kPa)
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
1
2
3
4
Radial Displacement (mm)
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17

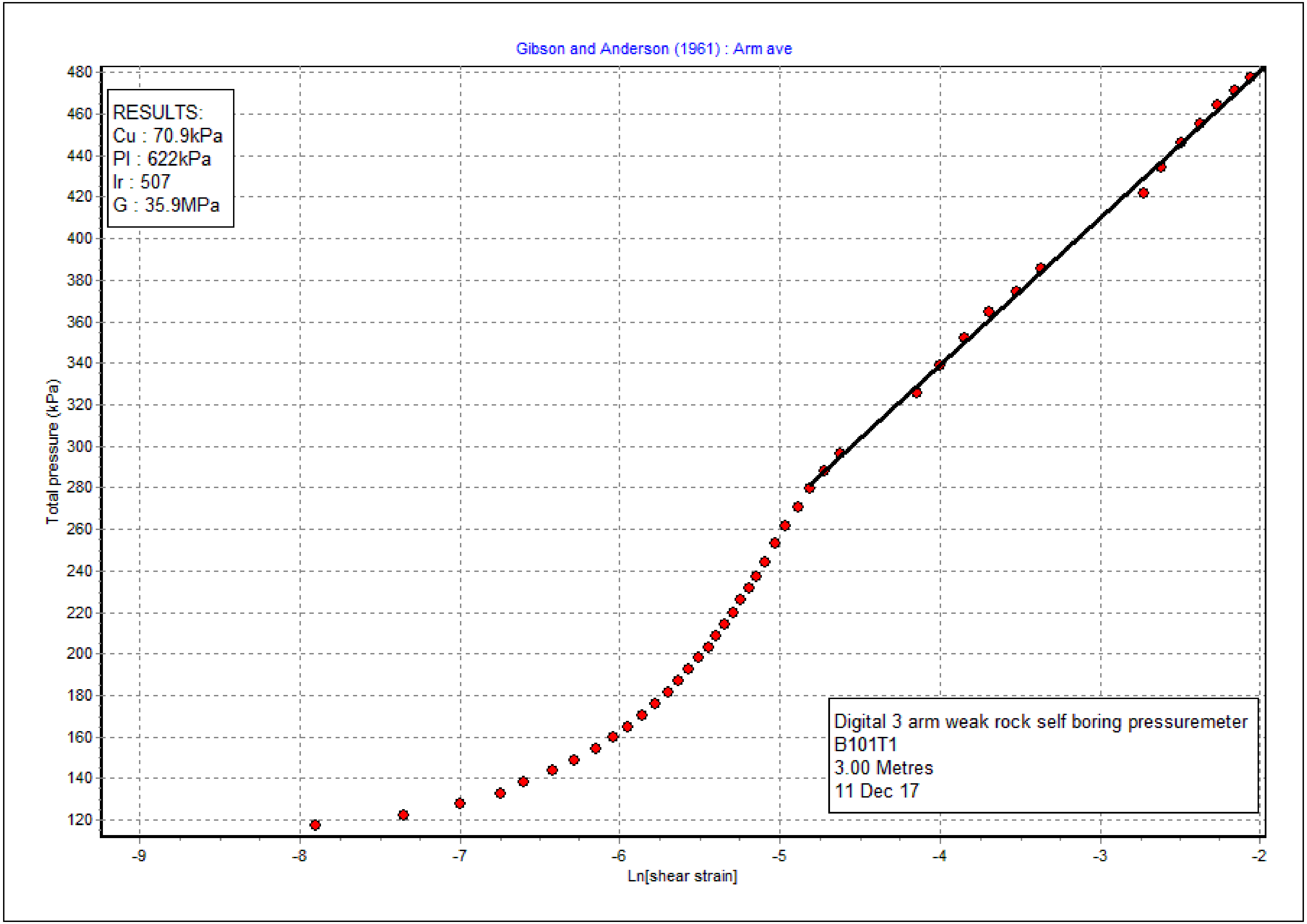


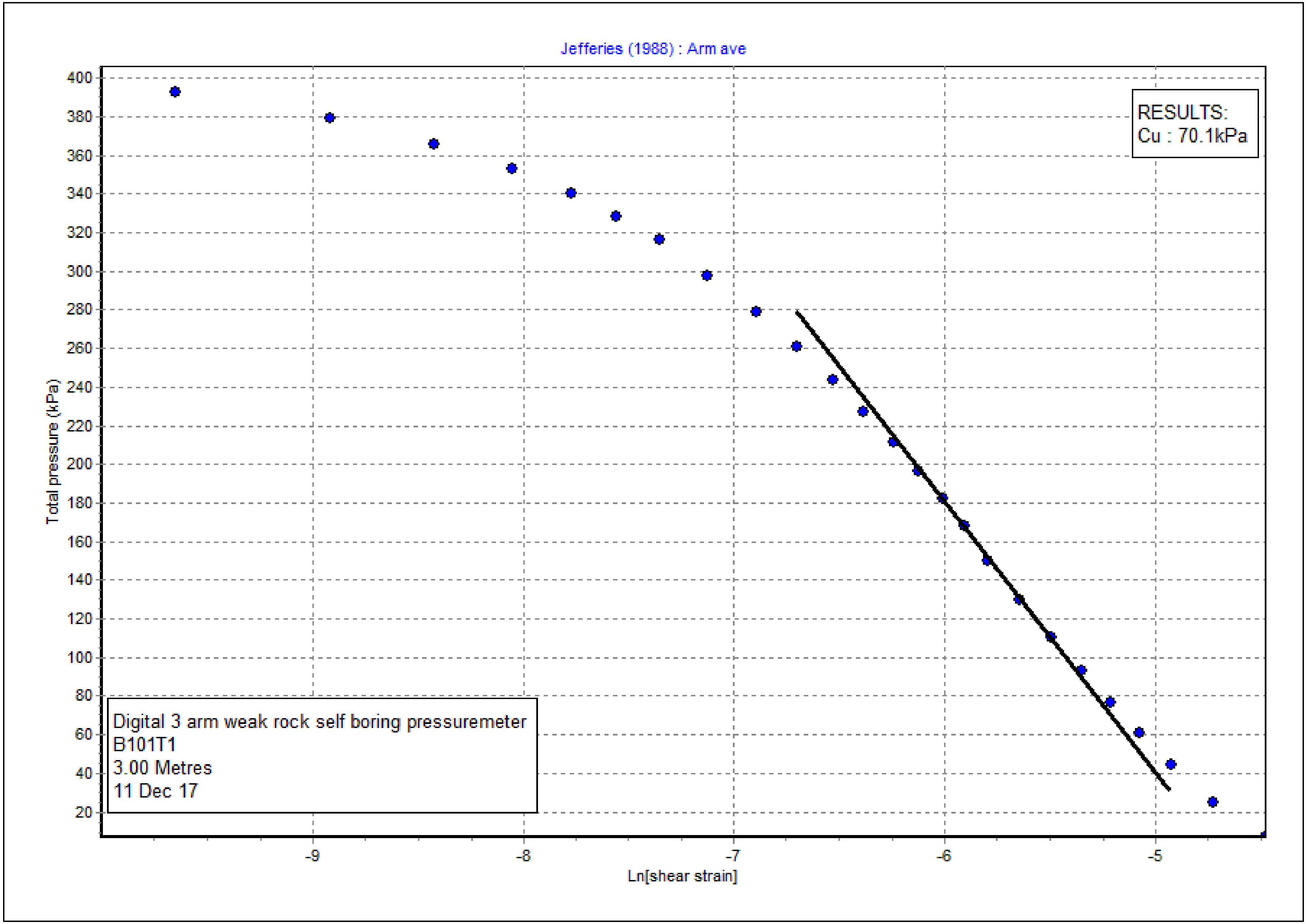
Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 112.7MPa
Cycle mid-point:
Cavity strain : 0.671%
Total stress : 224kPa
Size of cycle :
Shear strain : 0.098%
Total stress : 110kPa
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17
Total pressure (kPa)
310
305
300
295
290
285
280
275
270
265
260
255
250
245
240
235
230
225
220
215
210
205
200
195
190
185
180
175
170
165
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
0.99
0.995
1
Radial Displacement (mm)


Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 112.7MPa
Cycle mid-point:
Cavity strain : 3.048%
Total stress : 293kPa
Size of cycle :
Shear strain : 0.103%
Total stress : 117kPa
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
400
395
390
385
380
375
370
365
360
355
350
345
340
335
330
325
320
315
310
305
300
295
290
285
280
275
270
265
260
255
250
245
240
235
230
225
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
2.08
2.09
2.1
2.11
2.12


Bolton and Whittle (1999) Loop 1 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17
RESULTS:
Gradient (beta) : 0.746
Intercept (n) : 19.242MPa
Shear stress constant : 14.353MPa
Ln[Radial stress]
4
3
-10
-9
-8
-7
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
280
260
240
220
200
180
0.935
0.94
0.945
0.95
0.955
Radial Displacement (mm)


Bolton and Whittle (1999) Loop 2 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17
RESULTS:
Gradient (beta) : 0.658
Intercept (n) : 10.589MPa
Shear stress constant : 6.969MPa
Ln[Radial stress]
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)


Gibson and Anderson (1961) : Arm ave
RESULTS:
Cu : 70.9kPa
Pl : 622kPa
Ir : 507
G : 35.9MPa
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17
Total pressure (kPa)
Ln[shear strain]


Jefferies (1988) : Arm ave
RESULTS:
Cu : 70.1kPa
Digital 3 arm weak rock self boring pressuremeter
B101T1
3.00 Metres
11 Dec 17
Total pressure (kPa)
Ln[shear strain]
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
-9
-8
-7
-6
-5

B101T2 - SUMMARY OF RESULTS
[File made with WinSitu  Version 1.4.1.1]

[DETAILS OF TEST]

| | | |
|---|---|---|
| Project | : | A7104-17 |
| Site | : | West Burton CD Power Station |
| Borehole | : | BH101 |
| Test name | : | B101T2 |
| Test date | : | 11 Dec 17 |
| Test depth | : | 5.00 Metres |
| Water table | : | 0.00 Metres |
| Ambient PWP | : | 49.0 kPa |
| Material | : | Reworked Clay |
| Probe | : | Digital 3 arm weak rock self boring pressuremeter |
| Diameter | : | 88.4 mm |

Data analysed using average arm displacement curve
A non-linear analysis of the rebound cycles has been carried out

Analysed by  on 12 Dec 17

Remarks:  borer will not penetrate further

[RESULTS FOR CAVITY REFERENCE PRESSURE]

| | | |
|---|---|---|
| Strain Origin (mm) | : | "Arm ave=1.694" |
| Po from Marsland & Randolph (kPa) | : | "Arm ave=92.7" |
| Best estimate of Po (kPa) | : | "Arm ave=93.0" |

[UNDRAINED STRENGTH PARAMETERS]

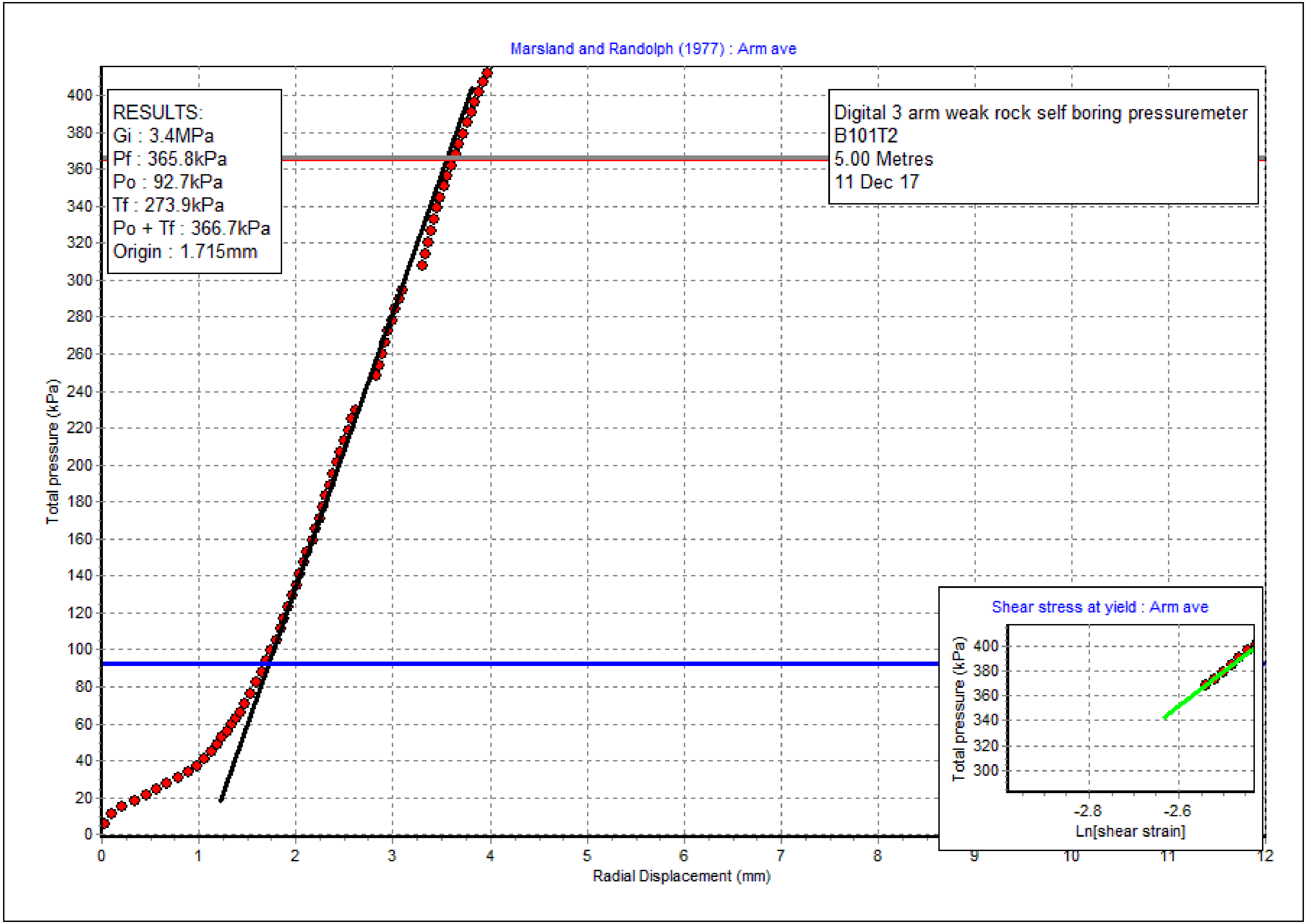
| | | |
|---|---|---|
| Gibson & Anderson 1961 - Cu (kPa) | : | "Arm ave=302.8" |
| Limit pressure (kPa) | : | "Arm ave=1133" |
| Jefferies 1988 - Cu (kPa) | : | "Arm ave=61.4" |
| Undrained yield stress (kPa) | : | "Arm ave=365.8" |

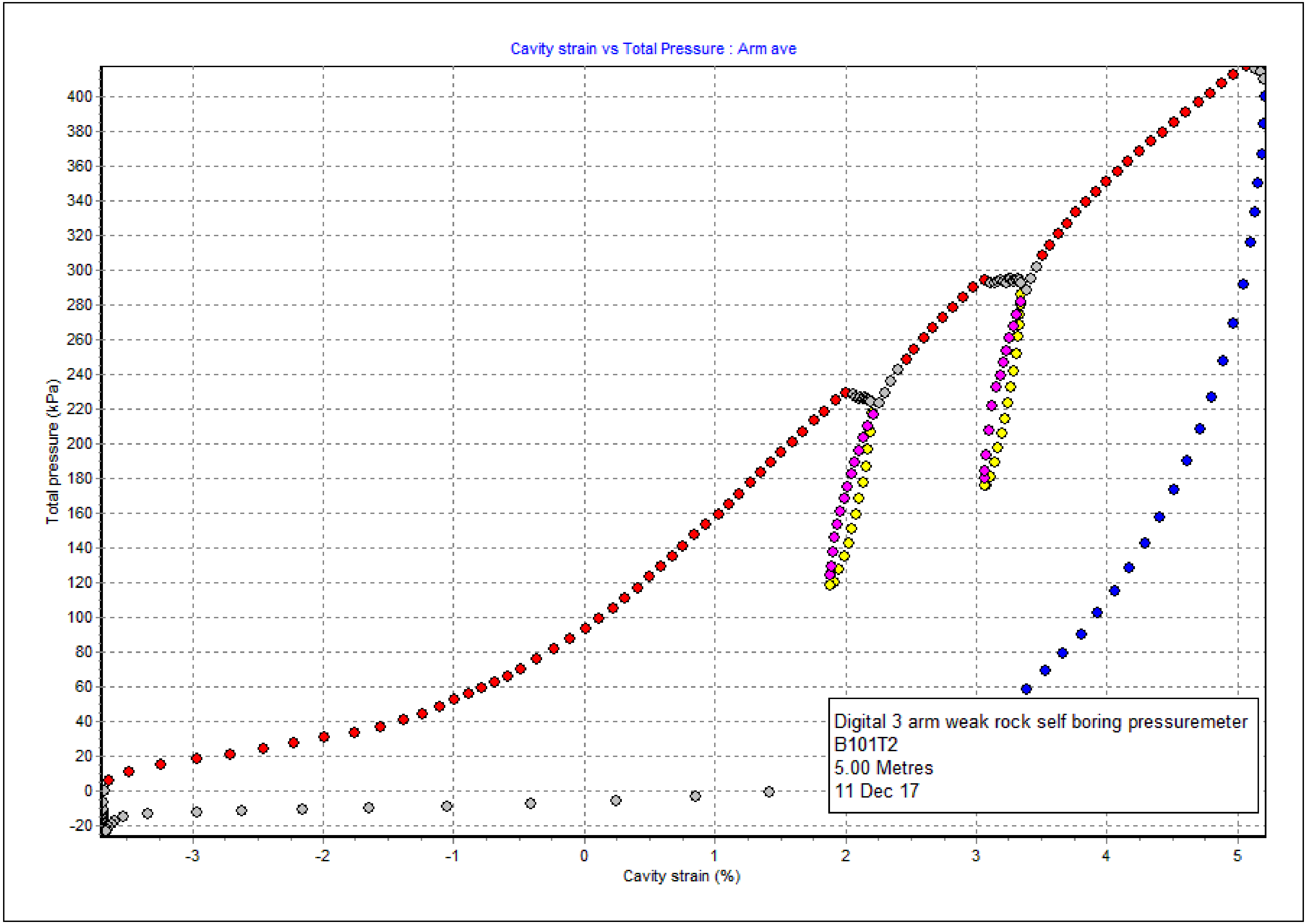
[LINEAR INTERPRETATION OF SHEAR MODULUS G]
Initial slope shear modulus (MPa) :"Arm ave=3.4"

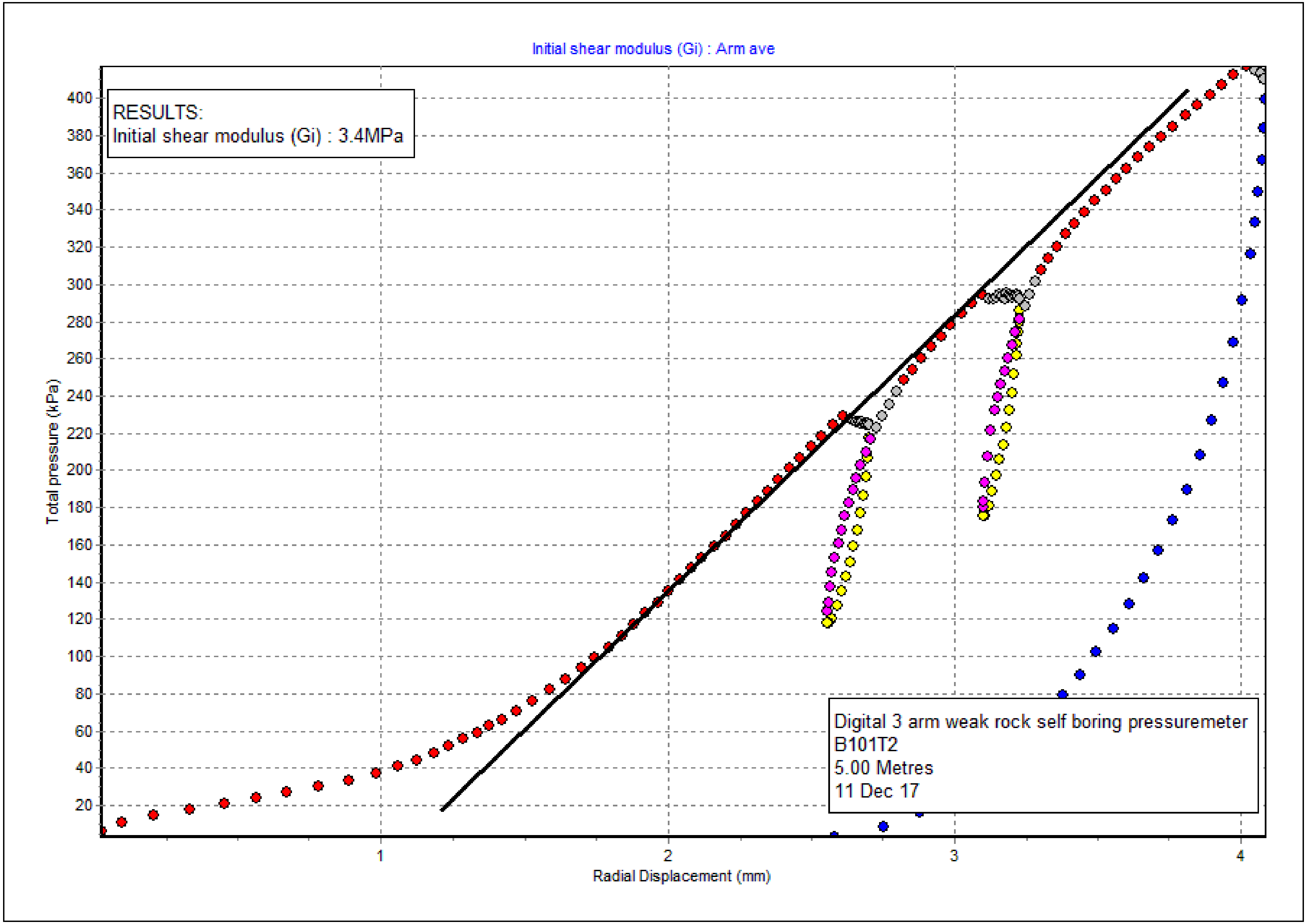
| Axis | Loop No | Value (MPa) | Mean Strain (%) | Mean Pc (kPa) | dE (%) | dPc (kPa) |
|---|---|---|---|---|---|---|
| Arm ave | 1 | 15.2 | 2.040 | 166 | 0.622 | 95 |
| Arm ave | 2 | 19.6 | 3.200 | 228 | 0.534 | 105 |

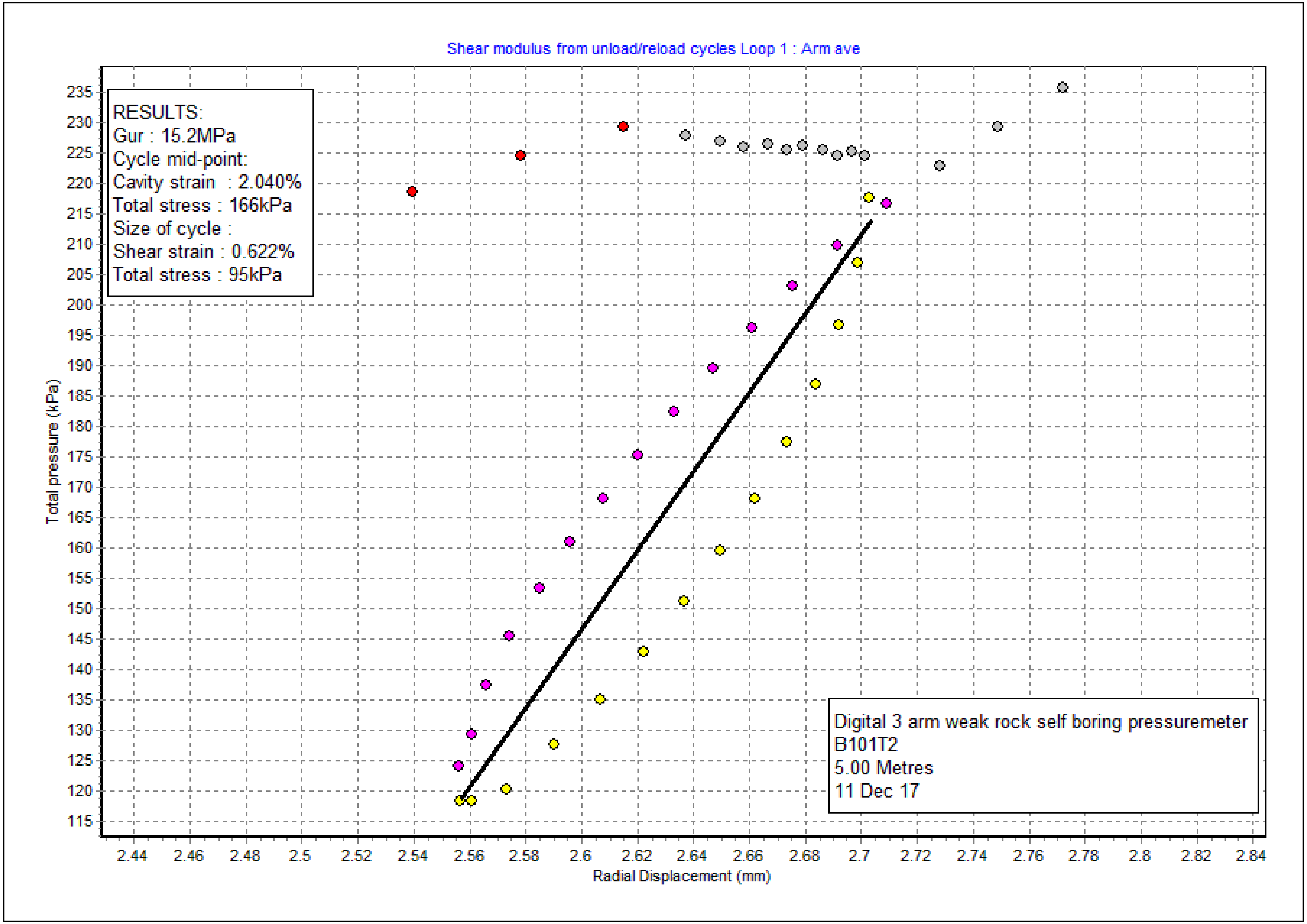
[UNDRAINED NON LINEAR INTERPRETATION OF SECANT SHEAR MODULUS]

| Axis | Loop No | Intercept (MPa) | Alpha (MPa) | Gradient |
|---|---|---|---|---|
| Arm ave | 1 | 2.119 | 1.293 | 0.611 |
| Arm ave | 2 | 2.124 | 1.219 | 0.574 |

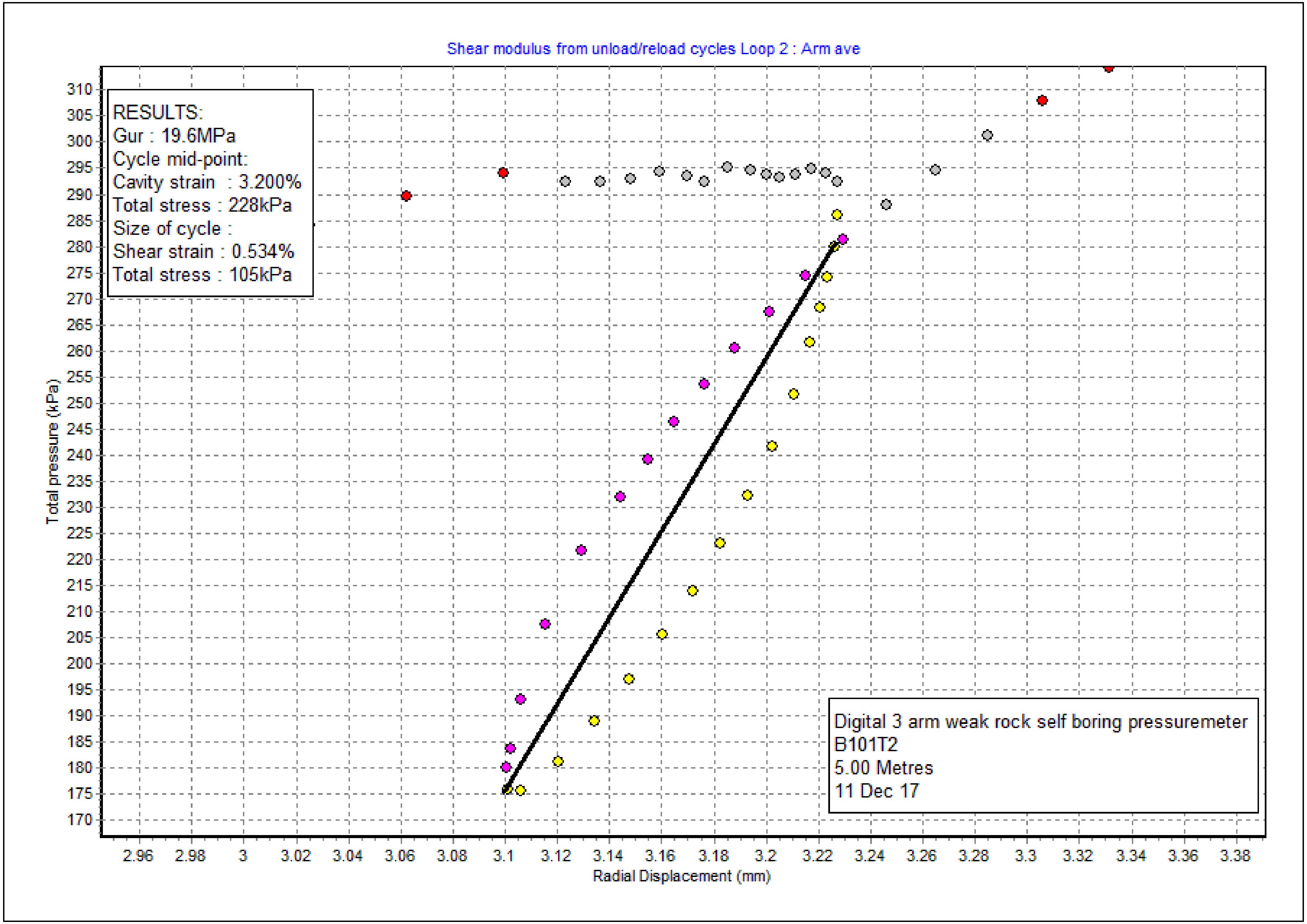

Marsland and Randolph (1977) : Arm ave
RESULTS:
Gi : 3.4MPa
Pf : 365.8kPa
Po : 92.7kPa
Tf : 273.9kPa
Po + Tf : 366.7kPa
Origin : 1.715mm
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
Shear stress at yield : Arm ave
Ln[shear strain]

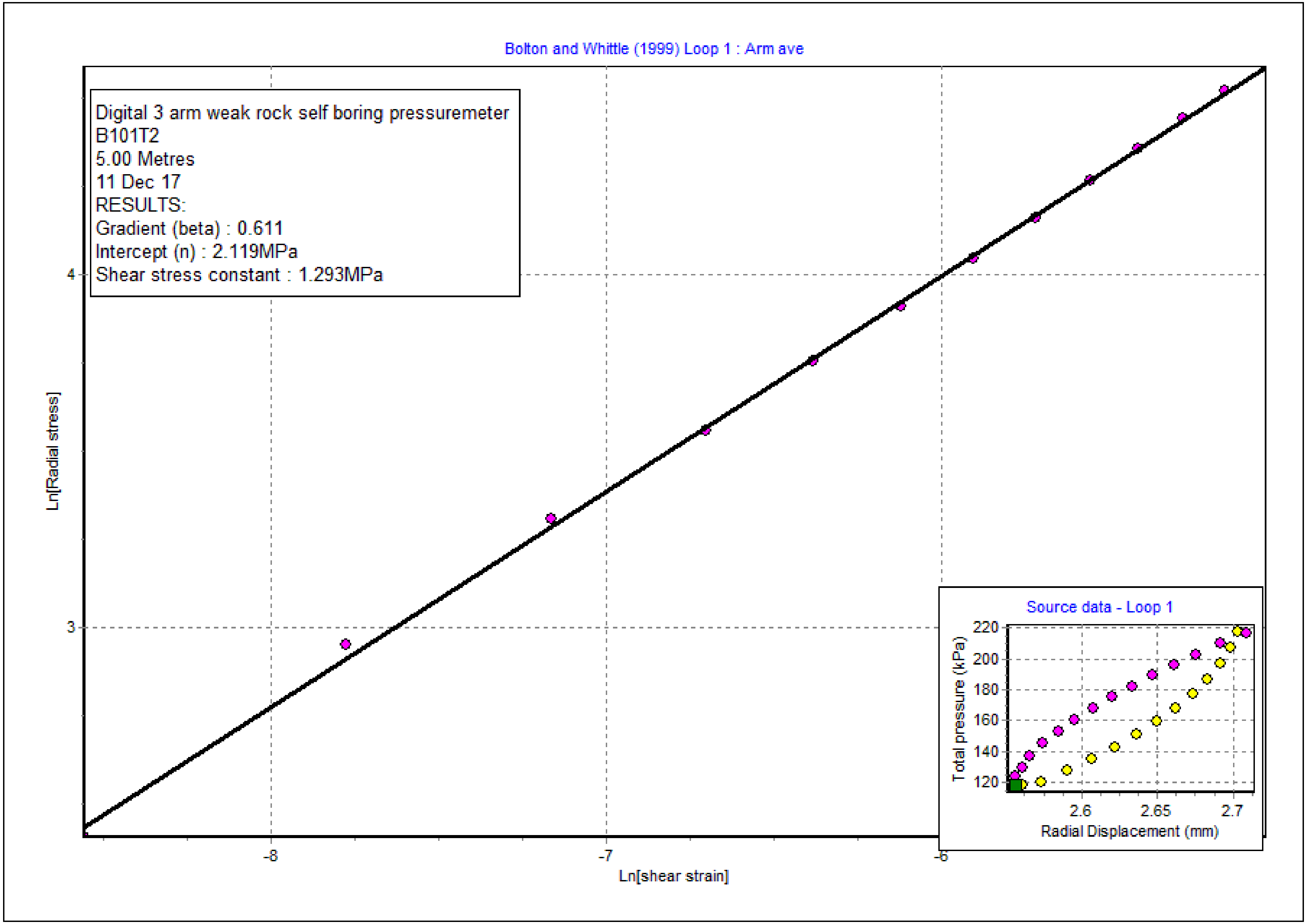

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
-3
-2
-1
0
1
2
3
4
5
Cavity strain (%)
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17


Initial shear modulus (Gi) : Arm ave
RESULTS:
Initial shear modulus (Gi) : 3.4MPa
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
1
2
3
4

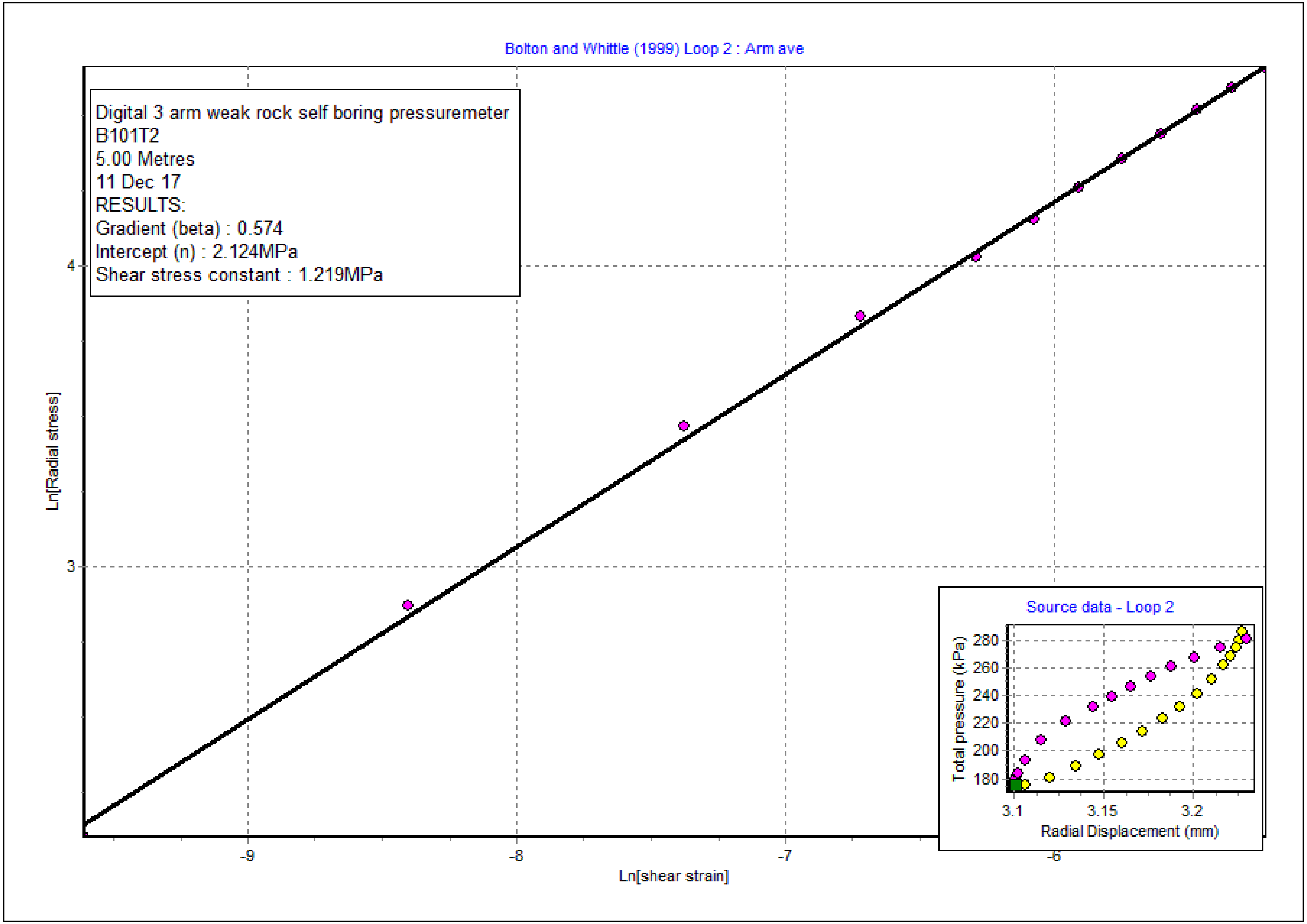


Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 15.2MPa
Cycle mid-point:
Cavity strain : 2.040%
Total stress : 166kPa
Size of cycle :
Shear strain : 0.622%
Total stress : 95kPa
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
235
230
225
220
215
210
205
200
195
190
185
180
175
170
165
160
155
150
145
140
135
130
125
120
115
2.44
2.46
2.48
2.5
2.52
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
2.84

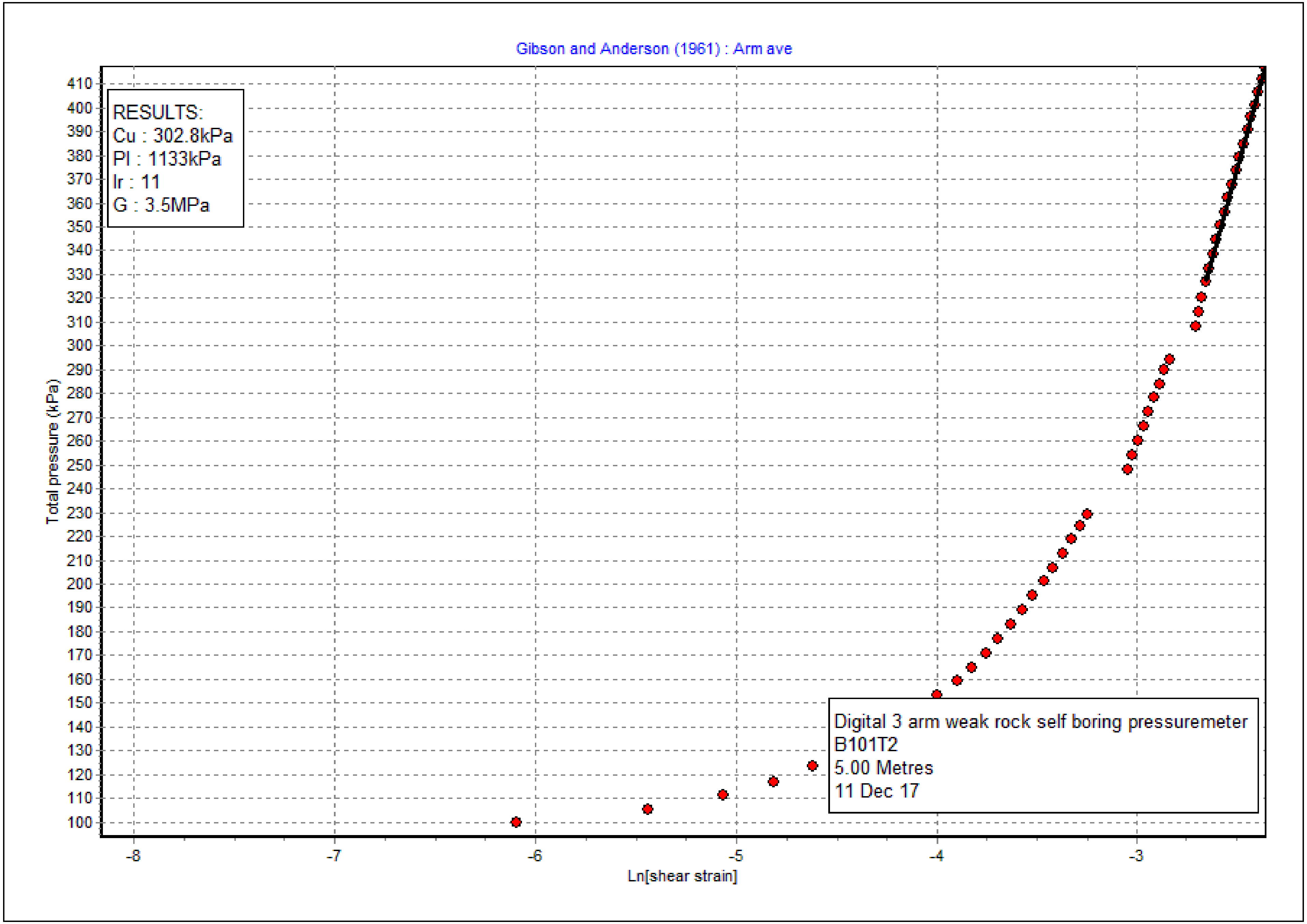

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 19.6MPa
Cycle mid-point:
Cavity strain : 3.200%
Total stress : 228kPa
Size of cycle :
Shear strain : 0.534%
Total stress : 105kPa
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17
Total pressure (kPa)
Radial Displacement (mm)

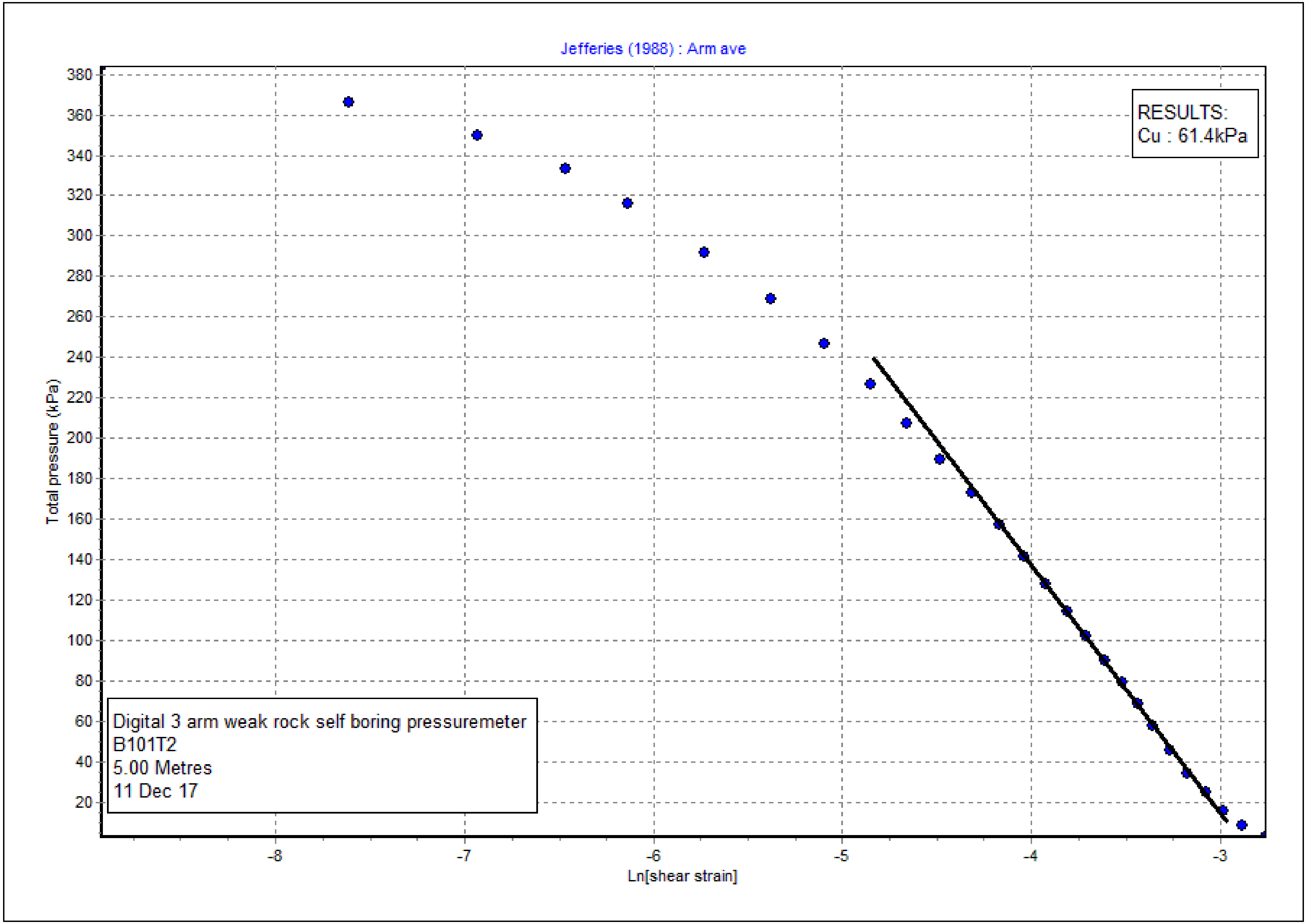


Bolton and Whittle (1999) Loop 1 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17
RESULTS:
Gradient (beta) : 0.611
Intercept (n) : 2.119MPa
Shear stress constant : 1.293MPa
Ln[Radial stress]
4
3
Ln[shear strain]
-8
-7
-6
Source data - Loop 1
Total pressure (kPa)
220
200
180
160
140
120
Radial Displacement (mm)
2.6
2.65
2.7



Bolton and Whittle (1999) Loop 2 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17
RESULTS:
Gradient (beta) : 0.574
Intercept (n) : 2.124MPa
Shear stress constant : 1.219MPa
Ln[Radial stress]
4
3
-9
-8
-7
-6
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
280
260
240
220
200
180
3.1
3.15
3.2
Radial Displacement (mm)


Gibson and Anderson (1961) : Arm ave
RESULTS:
Cu : 302.8kPa
Pl : 1133kPa
Ir : 11
G : 3.5MPa
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17
Total pressure (kPa)
Ln[shear strain]
410
400
390
380
370
360
350
340
330
320
310
300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110
100
-8
-7
-6
-5
-4
-3



Jefferies (1988) : Arm ave
RESULTS:
Cu : 61.4kPa
Digital 3 arm weak rock self boring pressuremeter
B101T2
5.00 Metres
11 Dec 17
Total pressure (kPa)
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
-8
-7
-6
-5
-4
-3
Ln[shear strain]

B101T3 - SUMMARY OF RESULTS
[File made with WinSitu  Version 1.4.1.1]

[DETAILS OF TEST]

| | | |
|---|---|---|
| Project | : | A7104-17 |
| Site | : | West Burton CD Power Station |
| Borehole | : | BH101 |
| Test name | : | B101T3 |
| Test date | : | 12 Dec 17 |
| Test depth | : | 16.60 Metres |
| Water table | : | 0.00 Metres |
| Ambient PWP | : | 162.8 kPa |
| Material | : | Weathered Mudstone |
| Probe | : | 95mm High Pressure Dilatometer |
| Diameter | : | 94.0 mm |

Data analysed using average arm displacement curve
A non-linear analysis of the rebound cycles has been carried out

Analysed by  on 13 Dec 17

Remarks:  BH at 16m pocket to 17.5m

[RESULTS FOR CAVITY REFERENCE PRESSURE]

| | | |
|---|---|---|
| Strain Origin (mm) | : | "Arm ave=2.544" |
| Po from Marsland & Randolph (kPa) | : | "Arm ave=251.5" |
| Best estimate of Po (kPa) | : | "Arm ave=251.0" |

[UNDRAINED STRENGTH PARAMETERS]

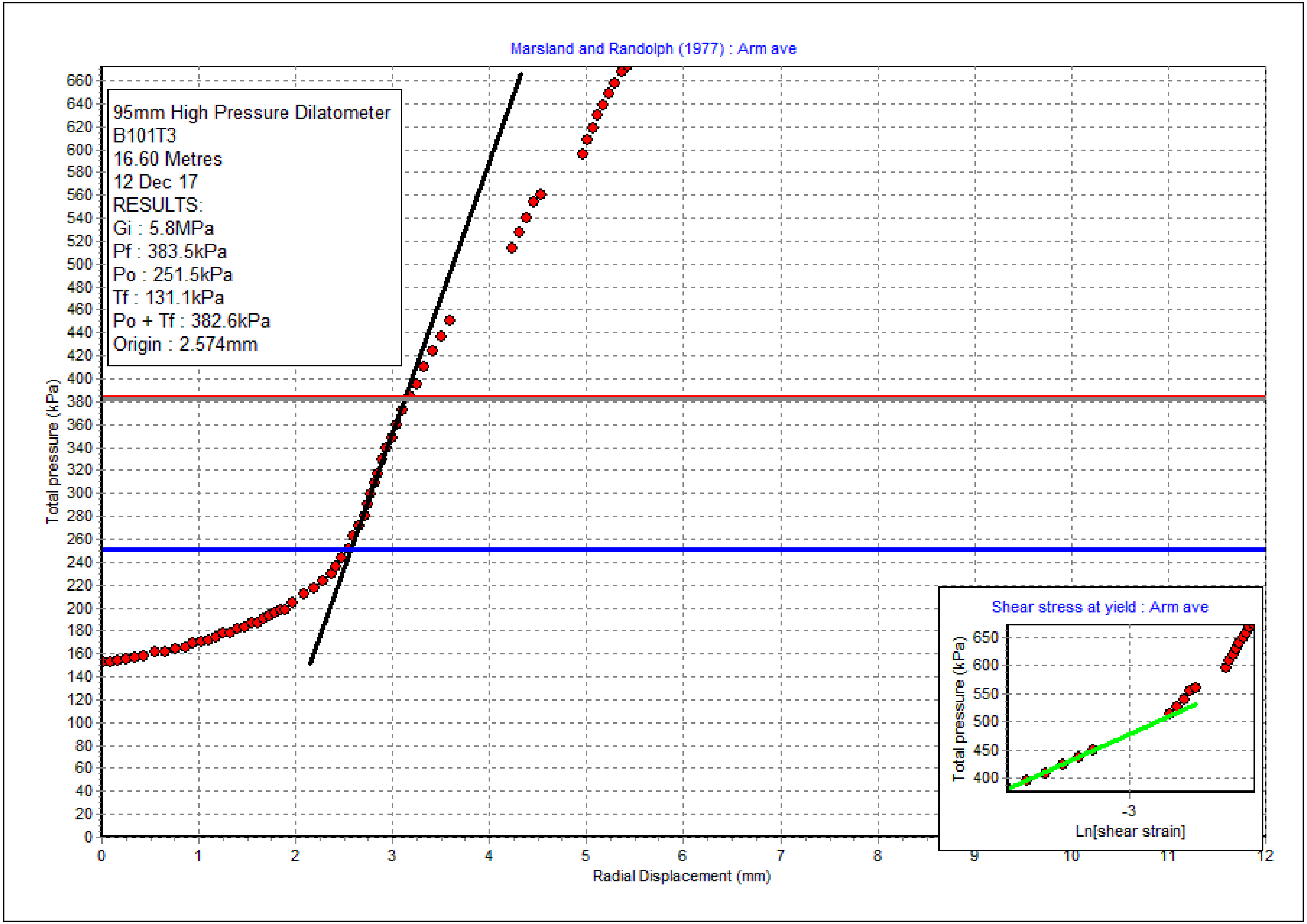
| | | |
|---|---|---|
| Gibson & Anderson 1961 - Cu (kPa) | : | "Arm ave=306.9" |
| Limit pressure (kPa) | : | "Arm ave=1356" |
| Jefferies 1988 - Cu (kPa) | : | "Arm ave=84.5" |
| Undrained yield stress (kPa) | : | "Arm ave=383.5" |

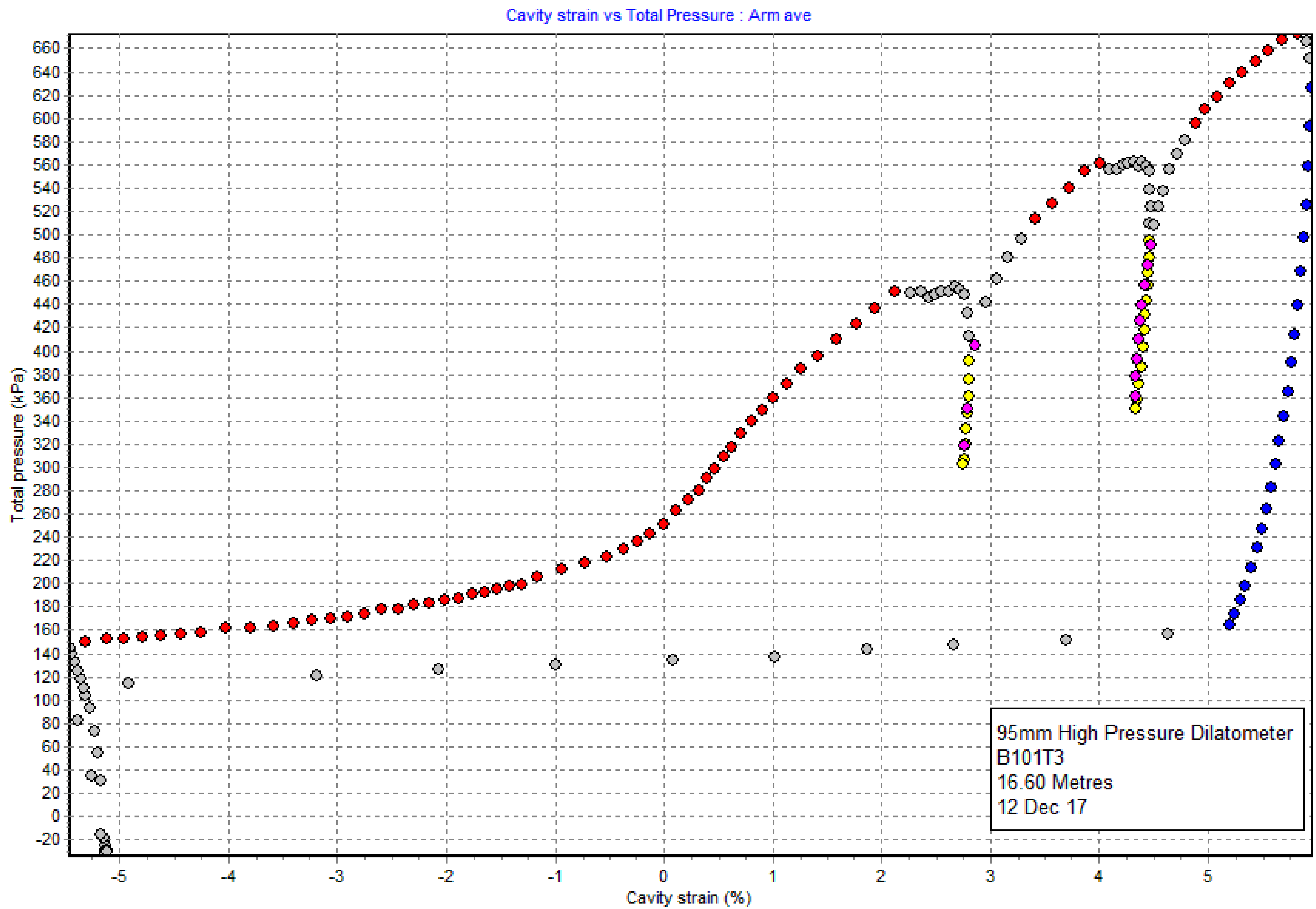
[LINEAR INTERPRETATION OF SHEAR MODULUS G]
Initial slope shear modulus (MPa) :"Arm ave=5.8"

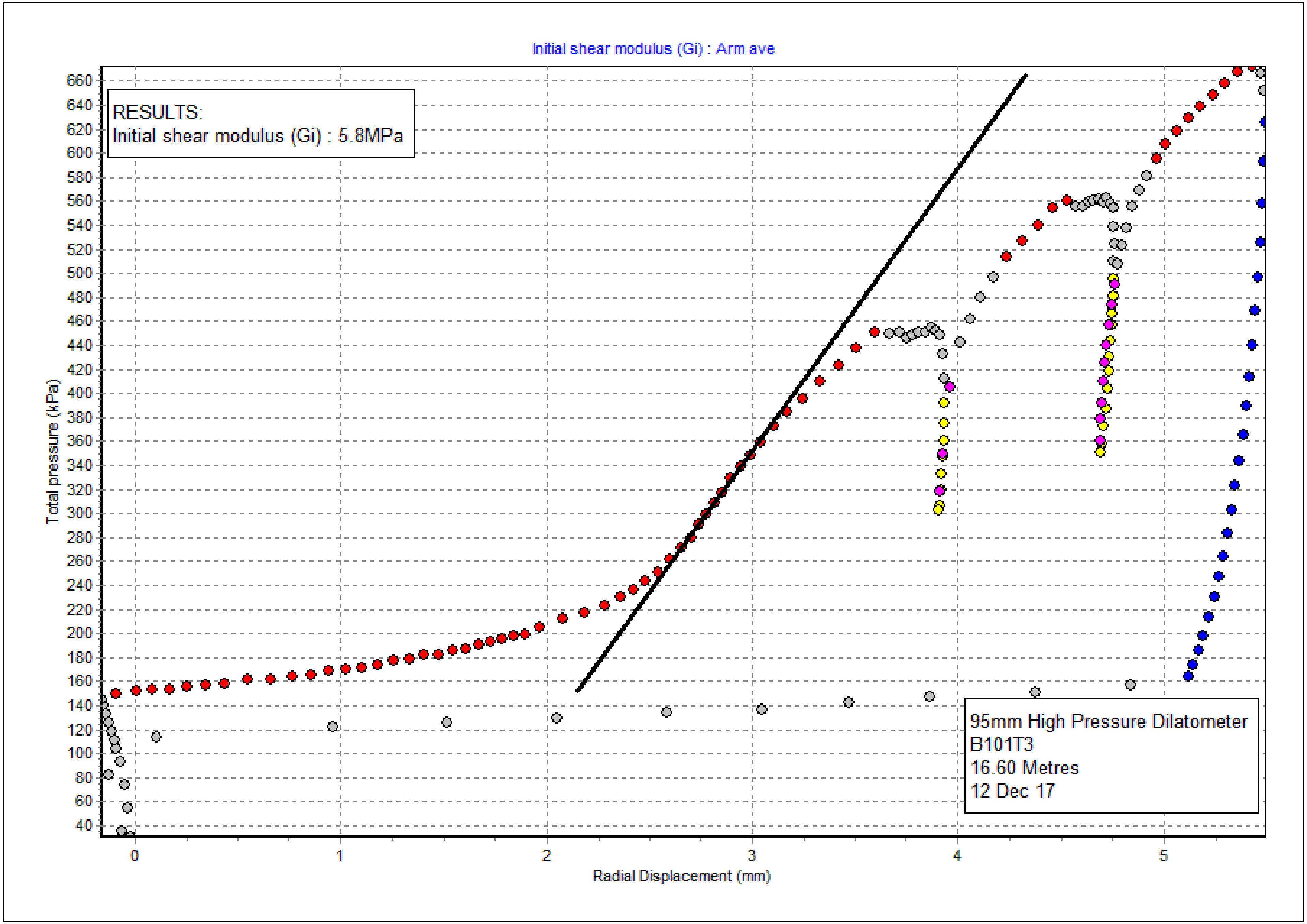
| Axis | Loop No | Value (MPa) | Mean Strain (%) | Mean Pc (kPa) | dE (%) | dPc (kPa) |
|---|---|---|---|---|---|---|
| Arm ave | 1 | 66.4 | 2.774 | 331 | 0.087 | 58 |
| Arm ave | 2 | 54.1 | 4.395 | 417 | 0.243 | 132 |

[UNDRAINED NON LINEAR INTERPRETATION OF SECANT SHEAR MODULUS]

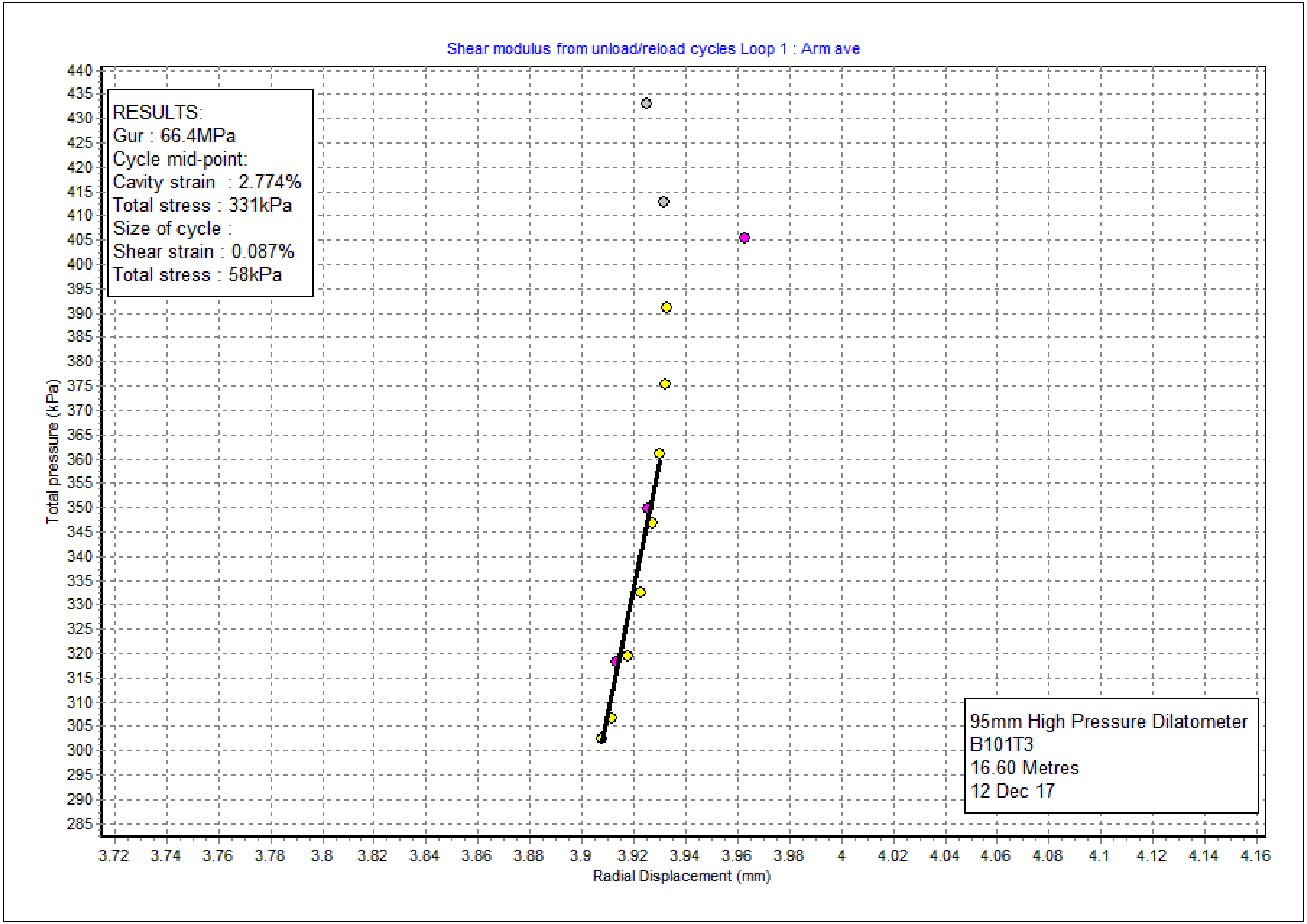
| Axis | Loop No | Intercept (MPa) | Alpha (MPa) | Gradient |
|---|---|---|---|---|
| Arm ave | 1 | 16.993 | 13.981 | 0.823 |
| Arm ave | 2 | 4.457 | 2.604 | 0.584 |


Marsland and Randolph (1977) : Arm ave
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17
RESULTS:
Gi : 5.8MPa
Pf : 383.5kPa
Po : 251.5kPa
Tf : 131.1kPa
Po + Tf : 382.6kPa
Origin : 2.574mm
Total pressure (kPa)
Radial Displacement (mm)
Shear stress at yield : Arm ave
Total pressure (kPa)
Ln[shear strain]

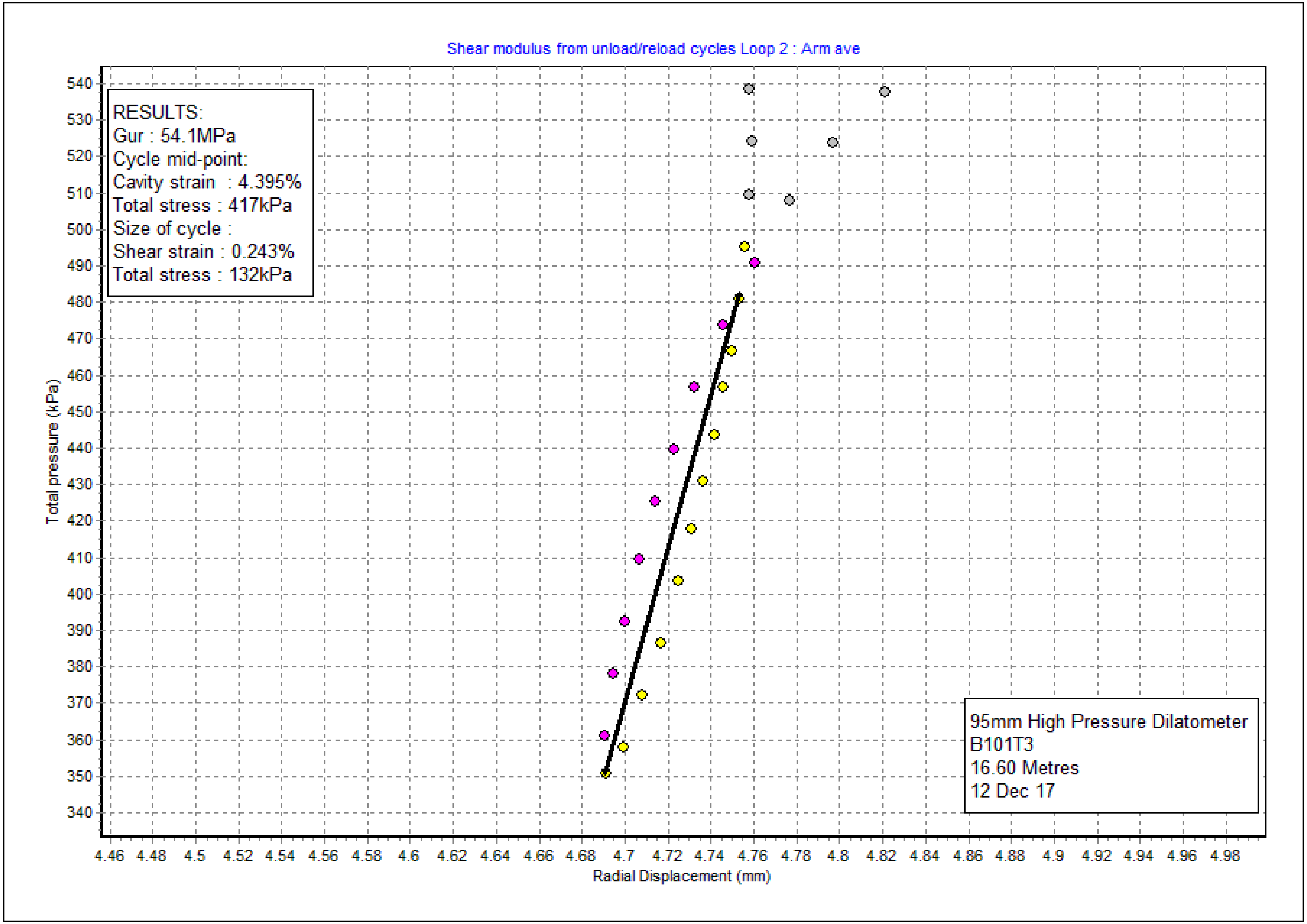

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Cavity strain (%)
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17

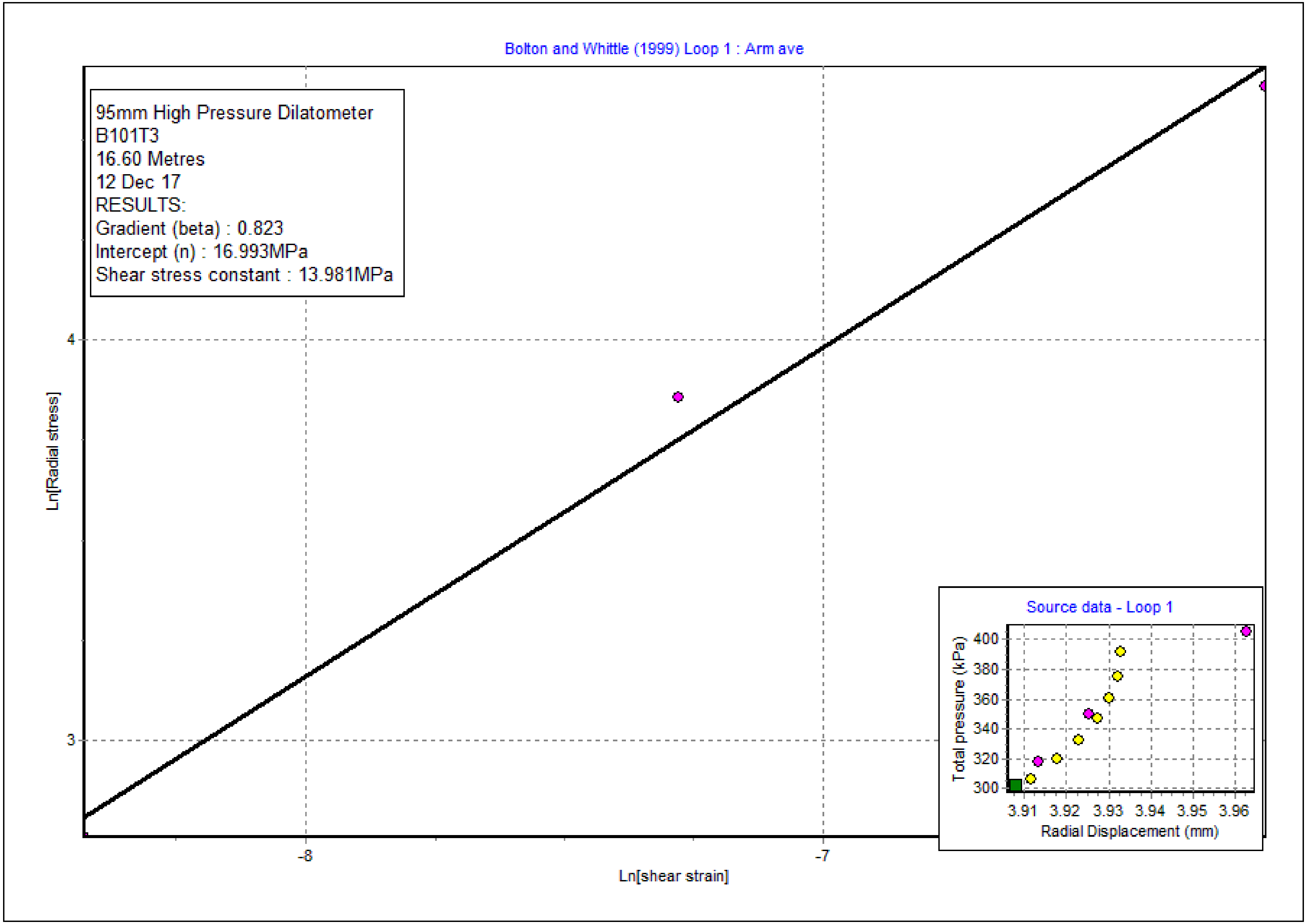


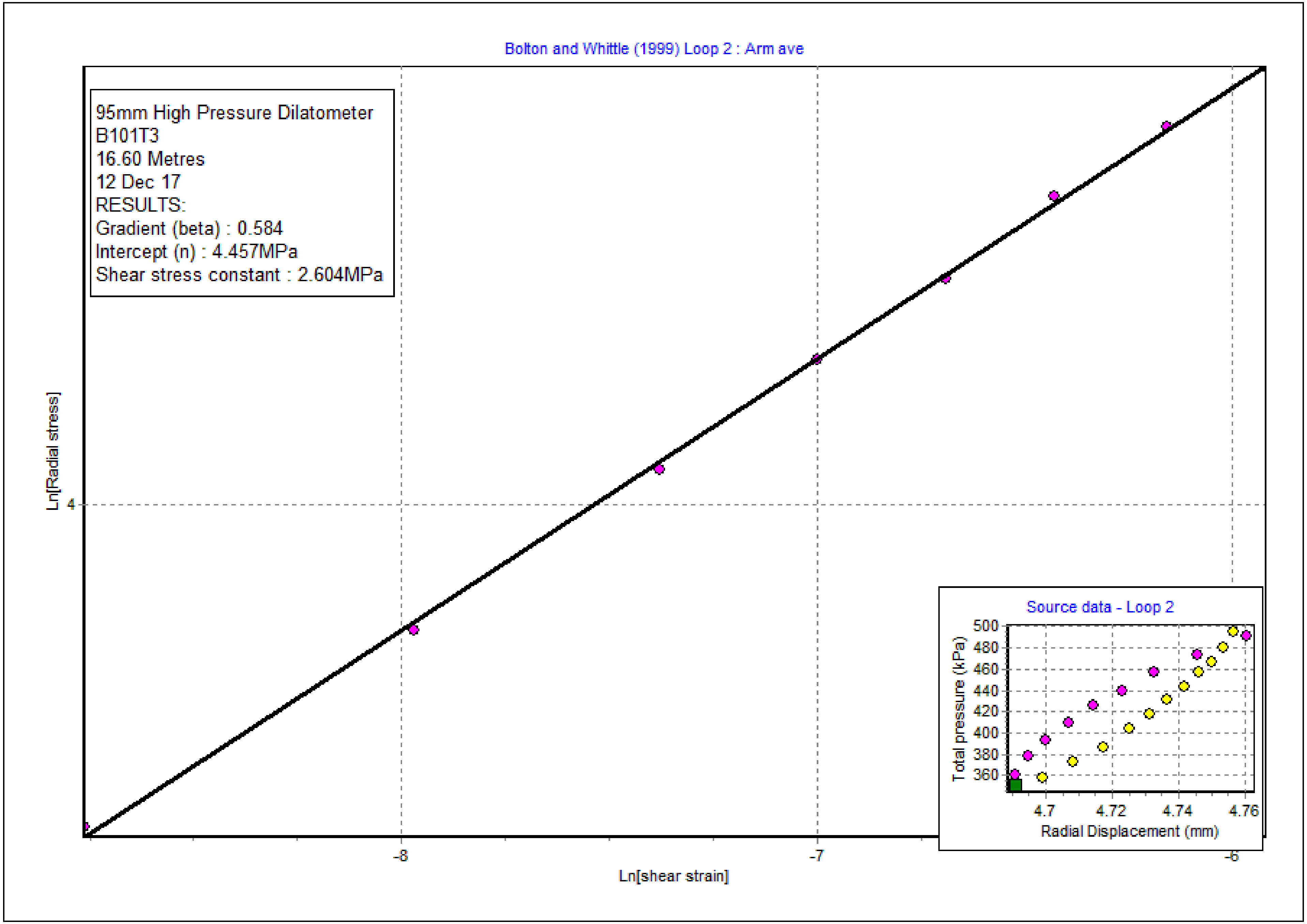
Initial shear modulus (Gi) : Arm ave
RESULTS:
Initial shear modulus (Gi) : 5.8MPa
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
660
640
620
600
580
560
540
520
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
0
1
2
3
4
5

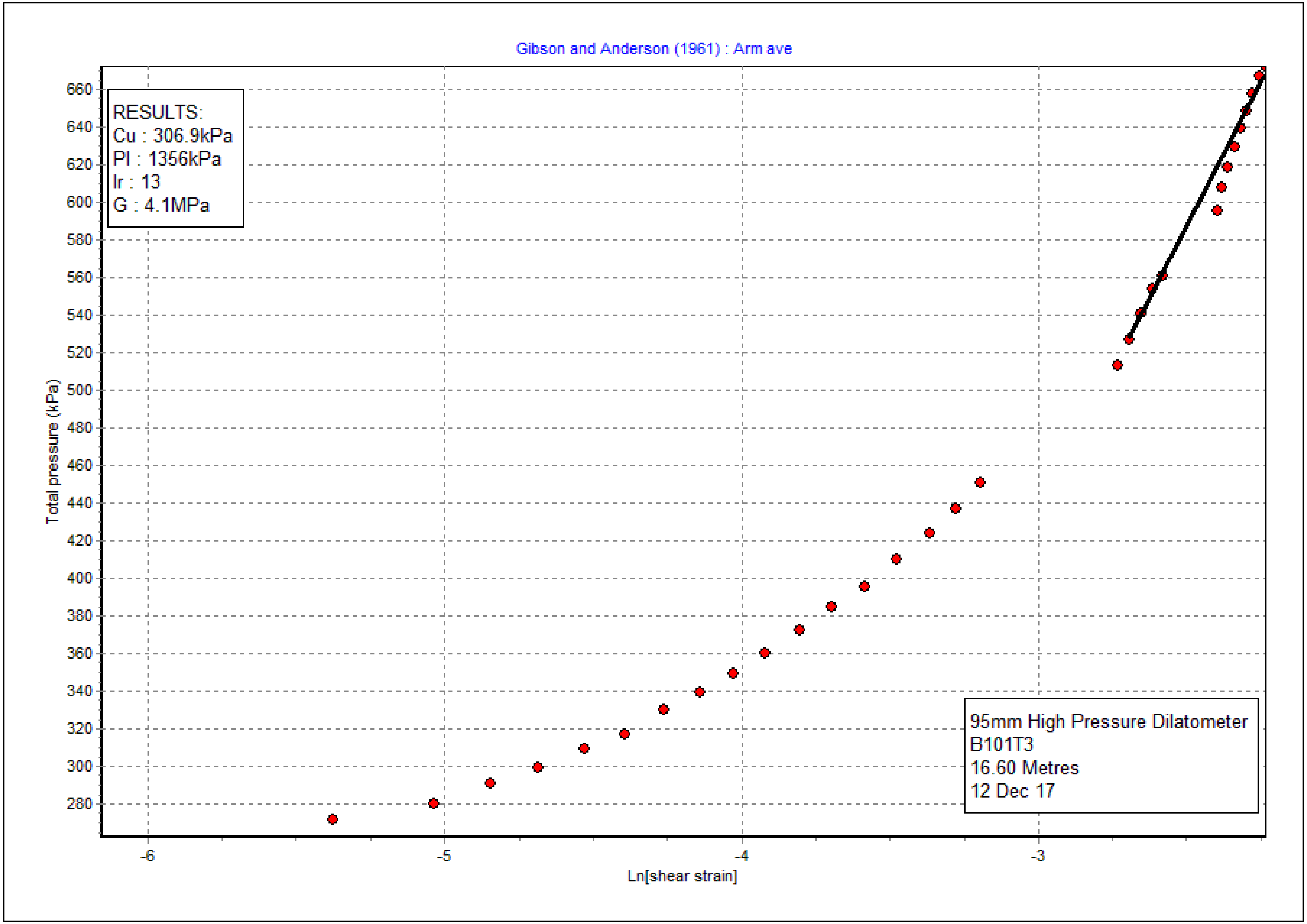


Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 66.4MPa
Cycle mid-point:
Cavity strain : 2.774%
Total stress : 331kPa
Size of cycle :
Shear strain : 0.087%
Total stress : 58kPa
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17
Total pressure (kPa)
Radial Displacement (mm)

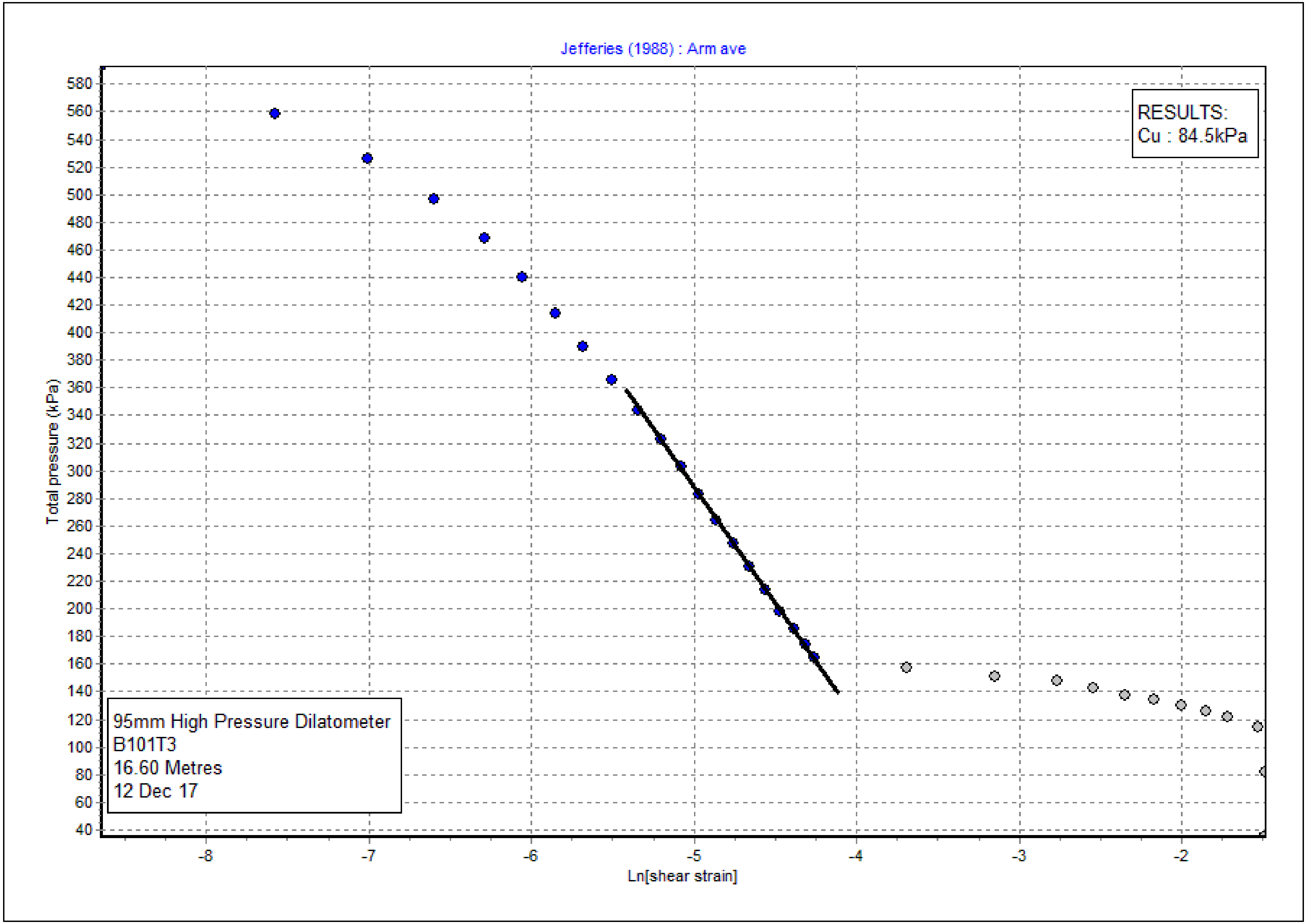

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 54.1MPa
Cycle mid-point:
Cavity strain : 4.395%
Total stress : 417kPa
Size of cycle :
Shear strain : 0.243%
Total stress : 132kPa
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
540
530
520
510
500
490
480
470
460
450
440
430
420
410
400
390
380
370
360
350
340
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 4.78 4.8 4.82 4.84 4.86 4.88 4.9 4.92 4.94 4.96 4.98


Bolton and Whittle (1999) Loop 1 : Arm ave
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17
RESULTS:
Gradient (beta) : 0.823
Intercept (n) : 16.993MPa
Shear stress constant : 13.981MPa
Ln[Radial stress]
4
3
-8
-7
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
400
380
360
340
320
300
3.91
3.92
3.93
3.94
3.95
3.96
Radial Displacement (mm)


Bolton and Whittle (1999) Loop 2 : Arm ave
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17
RESULTS:
Gradient (beta) : 0.584
Intercept (n) : 4.457MPa
Shear stress constant : 2.604MPa
Ln[Radial stress]
4
-8
-7
-6
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
500
480
460
440
420
400
380
360
4.7
4.72
4.74
4.76
Radial Displacement (mm)



Gibson and Anderson (1961) : Arm ave
RESULTS:
Cu : 306.9kPa
Pl : 1356kPa
Ir : 13
G : 4.1MPa
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17
Total pressure (kPa)
660
640
620
600
580
560
540
520
500
480
460
440
420
400
380
360
340
320
300
280
-6
-5
-4
-3
Ln[shear strain]


Jefferies (1988) : Arm ave
RESULTS:
Cu : 84.5kPa
95mm High Pressure Dilatometer
B101T3
16.60 Metres
12 Dec 17
Total pressure (kPa)
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
-8
-7
-6
-5
-4
-3
-2
Ln[shear strain]

B101T4 - SUMMARY OF RESULTS
[File made with WinSitu Version 1.4.1.1]

[DETAILS OF TEST]

| | | |
|---|---|---|
| Project | : | A7104-17 |
| Site | : | West Burton CD Power Station |
| Borehole | : | BH101 |
| Test name | : | B101T4 |
| Test date | : | 13 Dec 17 |
| Test depth | : | 20.40 Metres |
| Water table | : | 0.00 Metres |
| Ambient PWP | : | 200.1 kPa |
| Material | : | Mudstone |
| Probe | : | 95mm High Pressure Dilatometer |
| Diameter | : | 94.0 mm |

Data analysed using average arm displacement curve
A non-linear analysis of the rebound cycles has been carried out

Analysed by on 13 Dec 17

Remarks: Pocket 19.8-21.3m. Variable arm response noted during test period due to uneven competance of test strata and HPD membrane burst. Test results may not be reliabl

[RESULTS FOR CAVITY REFERENCE PRESSURE]

| | | |
|---|---|---|
| Strain Origin (mm) | : | "Arm ave=3.721" |
| Po from Marsland & Randolph (kPa) | : | "Arm ave=636.5" |
| Best estimate of Po (kPa) | : | "Arm ave=255.0" |

[UNDRAINED STRENGTH PARAMETERS]

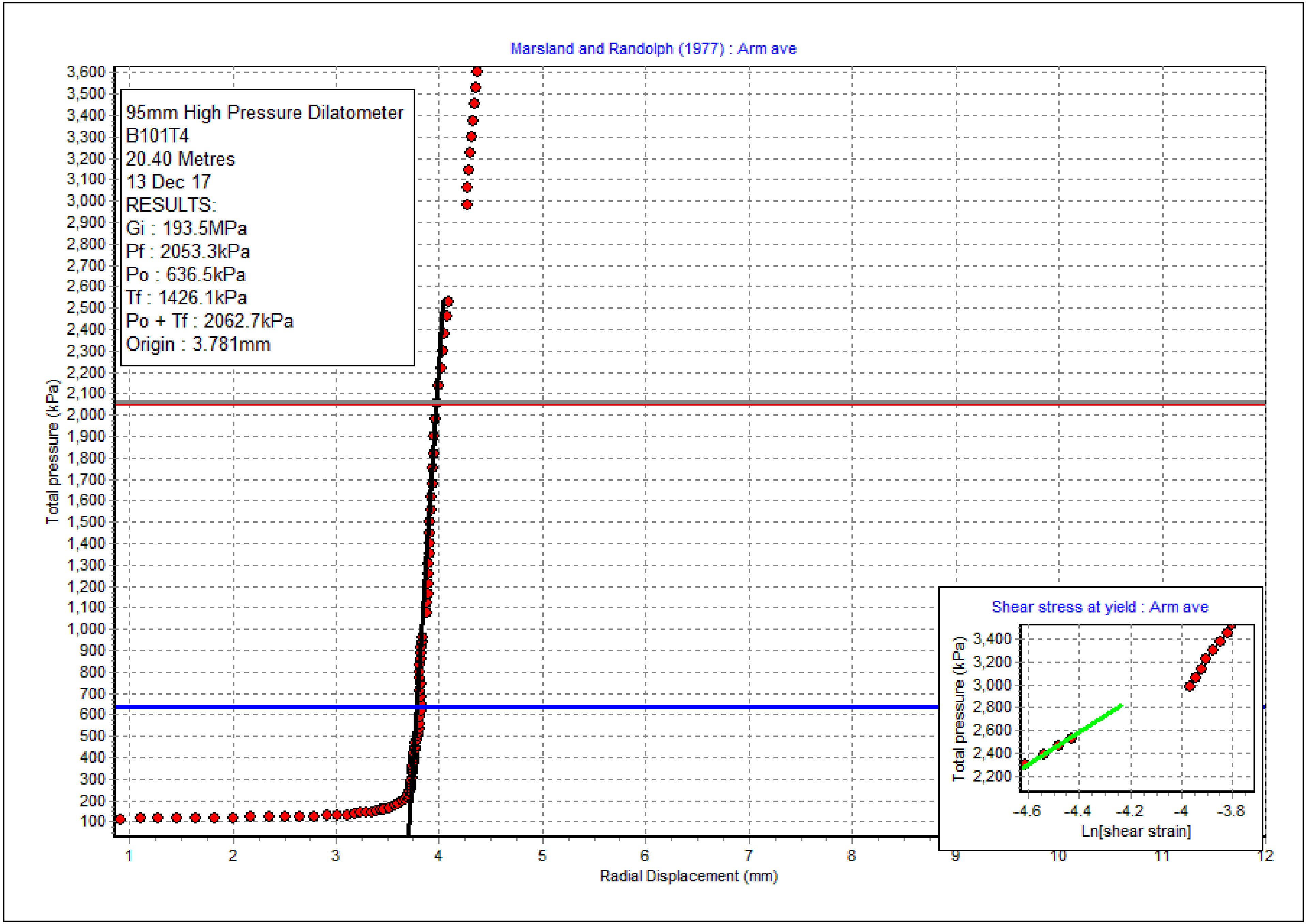
| | | |
|---|---|---|
| Undrained yield stress (kPa) | : | "Arm ave=2053.3" |

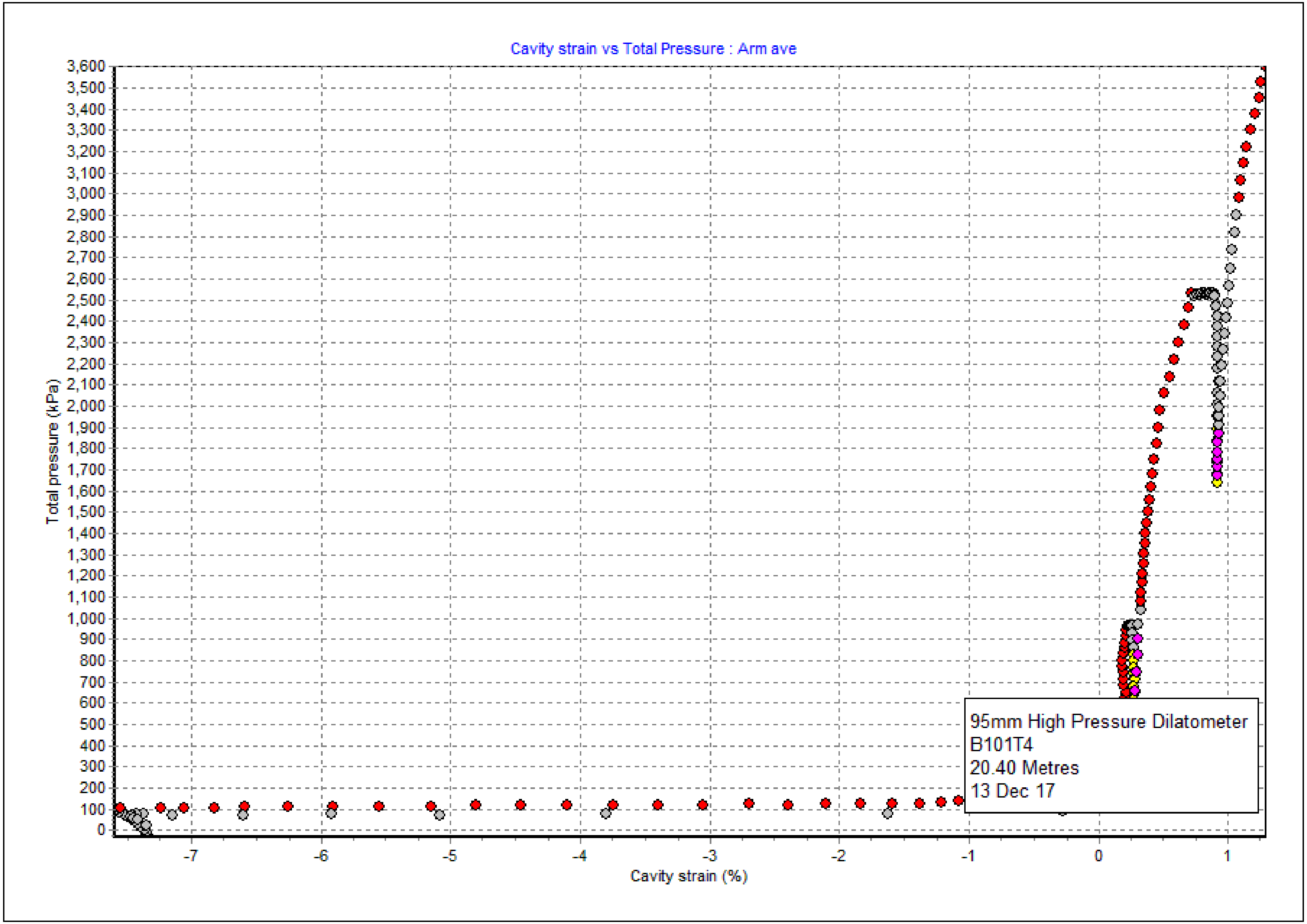
[LINEAR INTERPRETATION OF SHEAR MODULUS G]
Initial slope shear modulus (MPa) :"Arm ave=193.5"

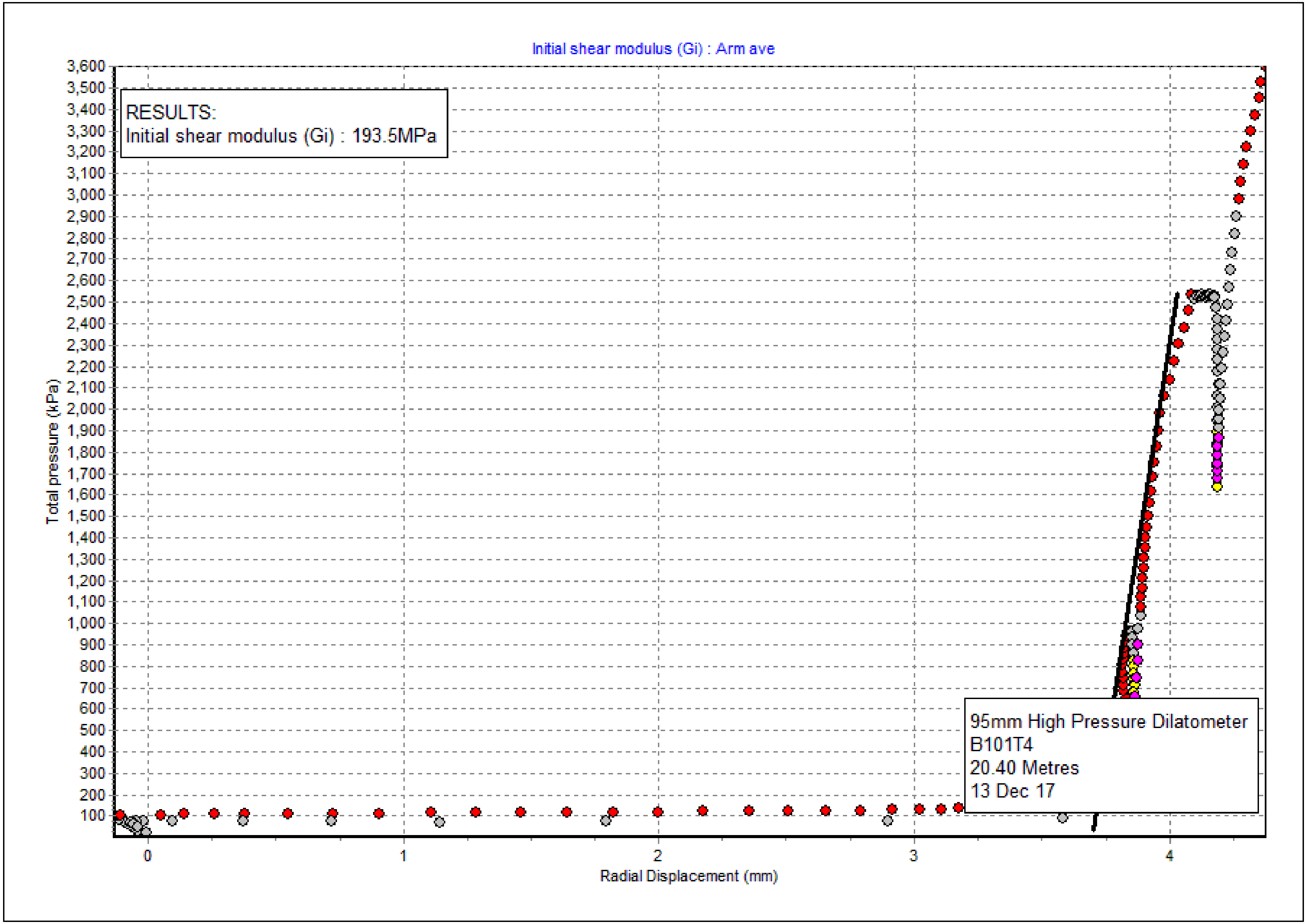
| Axis | Loop No | Value (MPa) | Mean Strain (%) | Mean Pc (kPa) | dE (%) | dPc (kPa) |
|---|---|---|---|---|---|---|
| Arm ave | 1 | 566.3 | 0.290 | 725 | 0.061 | 344 |
| Arm ave | 2 | 1300.9 | 0.916 | 1712 | 0.011 | 140 |

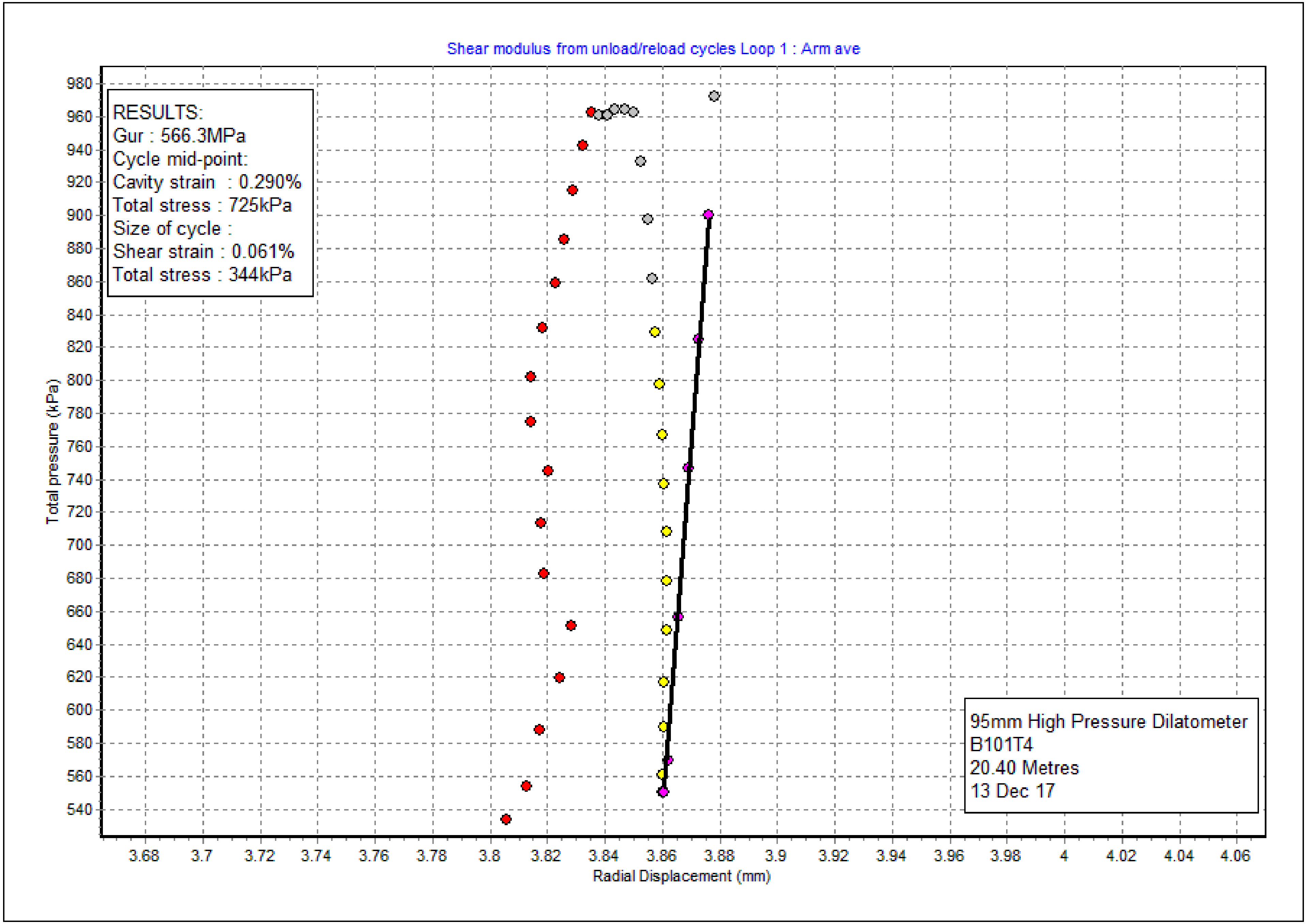
[UNDRAINED NON LINEAR INTERPRETATION OF SECANT SHEAR MODULUS]

| Axis | Loop No | Intercept (MPa) | Alpha (MPa) | Gradient |
|---|---|---|---|---|
| Arm ave | 1 | 4081.026 | 5276.596 | 1.293 |
| Arm ave | 2 | 69.293 | 46.804 | 0.675 |

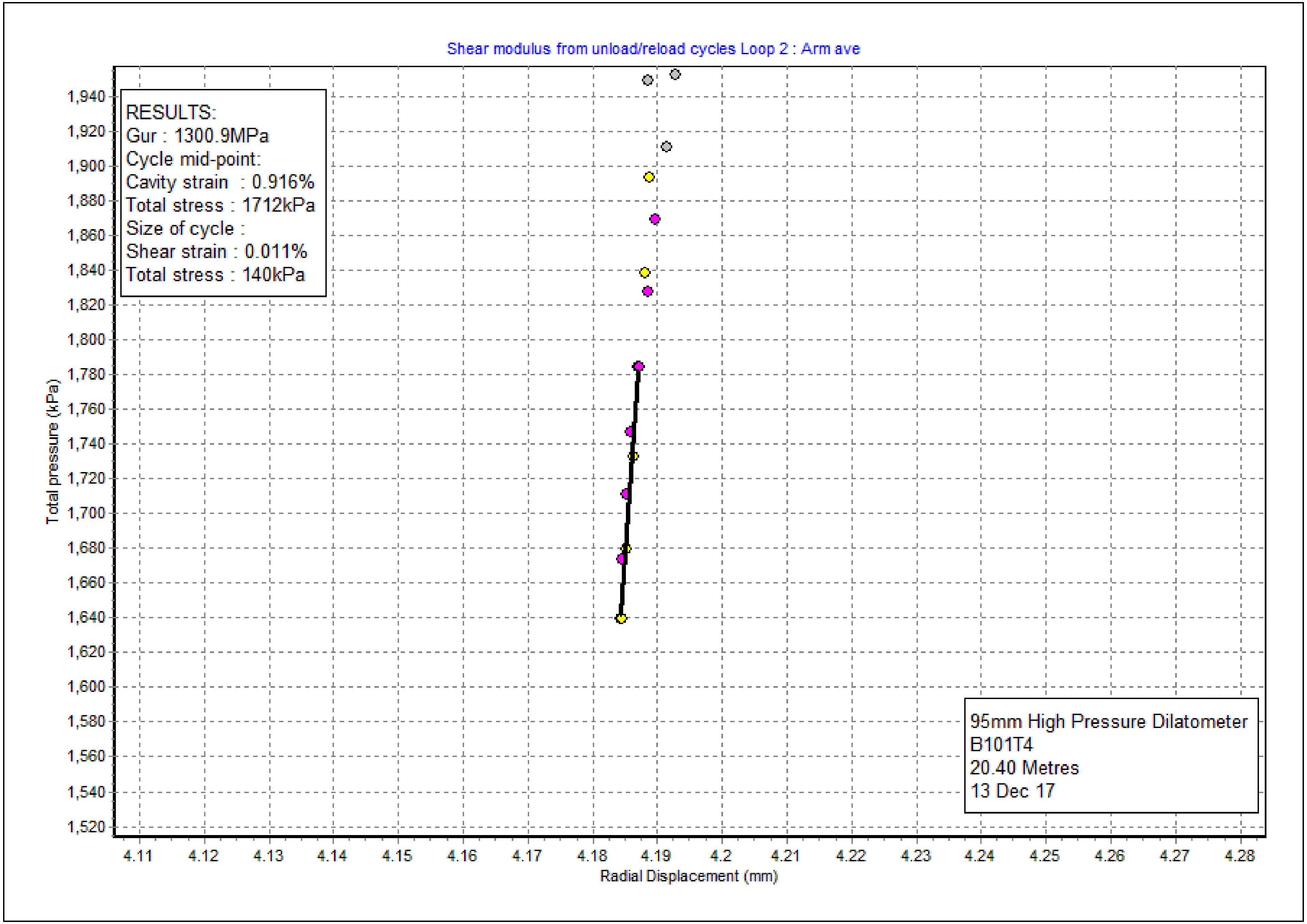

Marsland and Randolph (1977) : Arm ave
95mm High Pressure Dilatometer
B101T4
20.40 Metres
13 Dec 17
RESULTS:
Gi : 193.5MPa
Pf : 2053.3kPa
Po : 636.5kPa
Tf : 1426.1kPa
Po + Tf : 2062.7kPa
Origin : 3.781mm
Total pressure (kPa)
Radial Displacement (mm)
Shear stress at yield : Arm ave
Ln[shear strain]

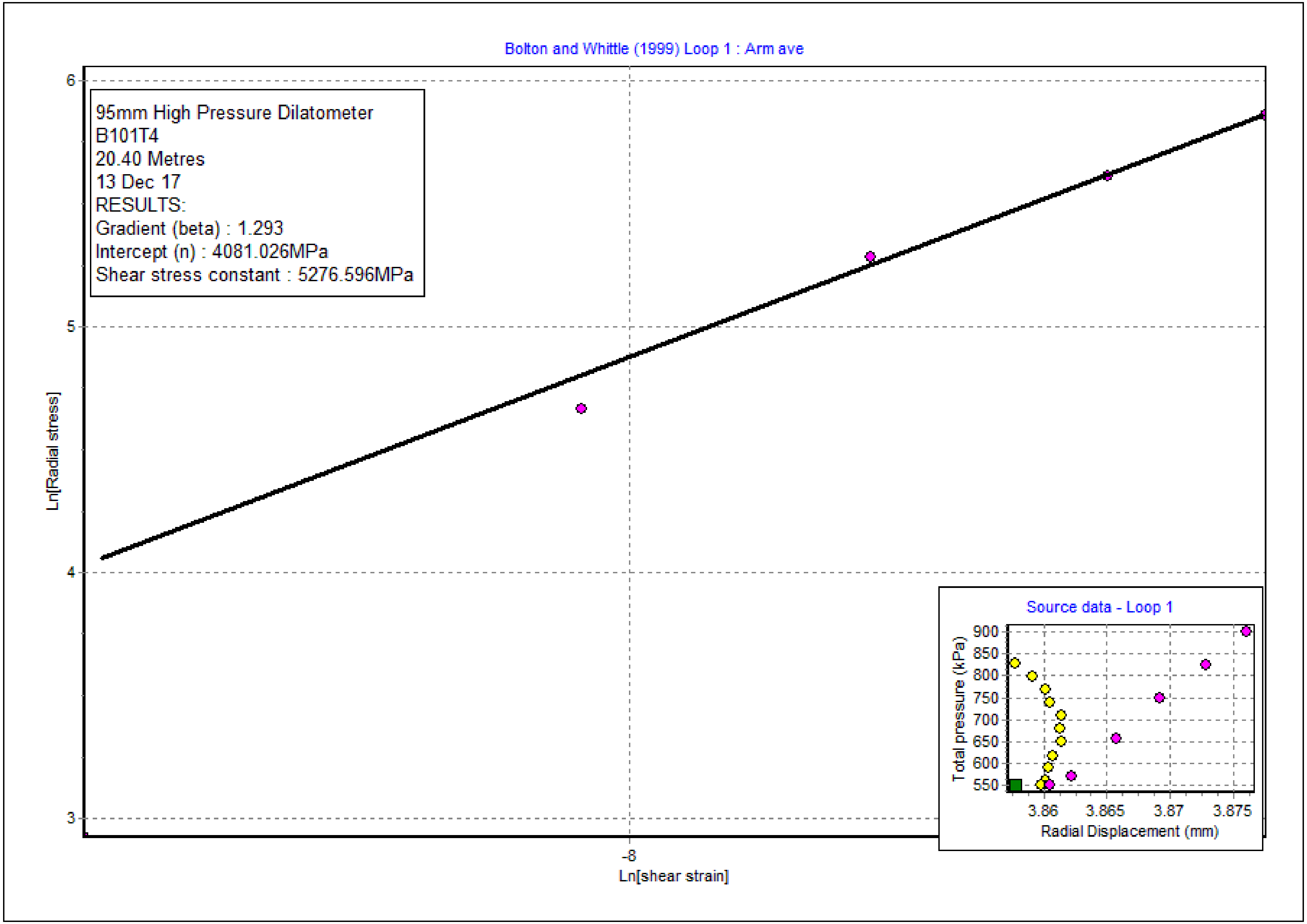

Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
Cavity strain (%)
95mm High Pressure Dilatometer
B101T4
20.40 Metres
13 Dec 17


Initial shear modulus (Gi) : Arm ave
RESULTS:
Initial shear modulus (Gi) : 193.5MPa
95mm High Pressure Dilatometer
B101T4
20.40 Metres
13 Dec 17
Total pressure (kPa)
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
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
1
2
3
4
Radial Displacement (mm)

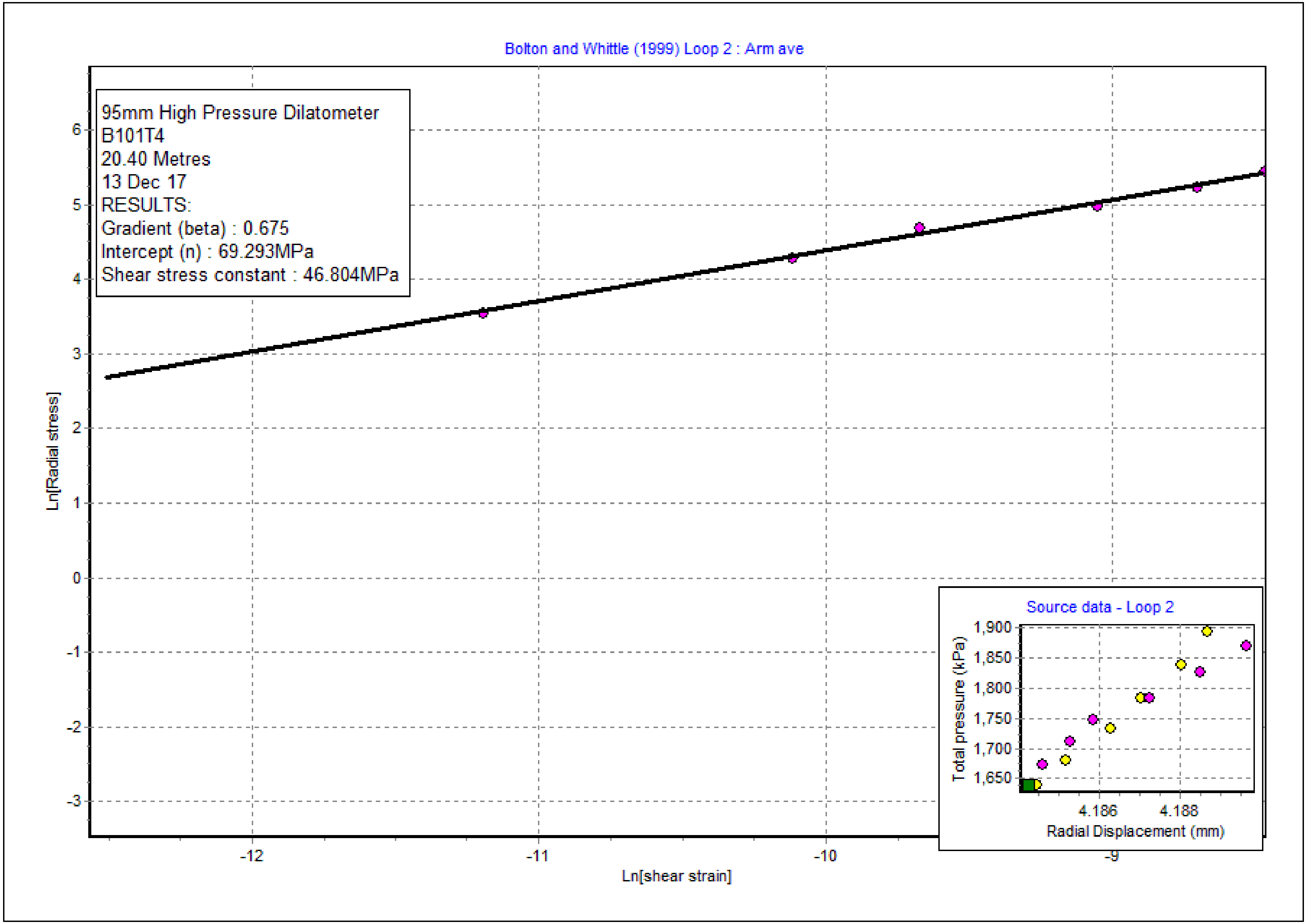


Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 566.3MPa
Cycle mid-point:
Cavity strain : 0.290%
Total stress : 725kPa
Size of cycle :
Shear strain : 0.061%
Total stress : 344kPa
95mm High Pressure Dilatometer
B101T4
20.40 Metres
13 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
980
960
940
920
900
880
860
840
820
800
780
760
740
720
700
680
660
640
620
600
580
560
540
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
4
4.02
4.04
4.06


Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 1300.9MPa
Cycle mid-point:
Cavity strain : 0.916%
Total stress : 1712kPa
Size of cycle :
Shear strain : 0.011%
Total stress : 140kPa
95mm High Pressure Dilatometer
B101T4
20.40 Metres
13 Dec 17
Total pressure (kPa)
Radial Displacement (mm)



Bolton and Whittle (1999) Loop 1 : Arm ave
95mm High Pressure Dilatometer
B101T4
20.40 Metres
13 Dec 17
RESULTS:
Gradient (beta) : 1.293
Intercept (n) : 4081.026MPa
Shear stress constant : 5276.596MPa
Ln[Radial stress]
6
5
4
3
-8
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
900
850
800
750
700
650
600
550
3.86
3.865
3.87
3.875
Radial Displacement (mm)



Bolton and Whittle (1999) Loop 2 : Arm ave
95mm High Pressure Dilatometer
B101T4
20.40 Metres
13 Dec 17
RESULTS:
Gradient (beta) : 0.675
Intercept (n) : 69.293MPa
Shear stress constant : 46.804MPa
Ln[Radial stress]
Ln[shear strain]
6
5
4
3
2
1
0
-1
-2
-3
-12
-11
-10
-9
Source data - Loop 2
Total pressure (kPa)
Radial Displacement (mm)
1,900
1,850
1,800
1,750
1,700
1,650
4.186
4.188

B101T5 - SUMMARY OF RESULTS
[File made with WinSitu  Version 1.4.1.1]

[DETAILS OF TEST]

| | | |
|---|---|---|
| Project | : | A7104-17 |
| Site | : | West Burton CD Power Station |
| Borehole | : | BH101 |
| Test name | : | B101T5 |
| Test date | : | 14 Dec 17 |
| Test depth | : | 23.40 Metres |
| Water table | : | 0.00 Metres |
| Ambient PWP | : | 229.6 kPa |
| Material | : | Mudstone |
| Probe | : | 95mm High Pressure Dilatometer |
| Diameter | : | 94.0 mm |

Data analysed using average arm displacement curve
A non-linear analysis of the rebound cycles has been carried out

Analysed by  on 14 Dec 17

Remarks:  BH at 22.8m pocket to 24.3m. Tip to base. First loop carried out at early stage of test. HPD membrane burst on unload phase of tes

[RESULTS FOR CAVITY REFERENCE PRESSURE]

| | | |
|---|---|---|
| Strain Origin (mm) | : | "Arm ave=1.964" |
| Best estimate of Po (kPa) | : | "Arm ave=1600.0" |

[UNDRAINED STRENGTH PARAMETERS]

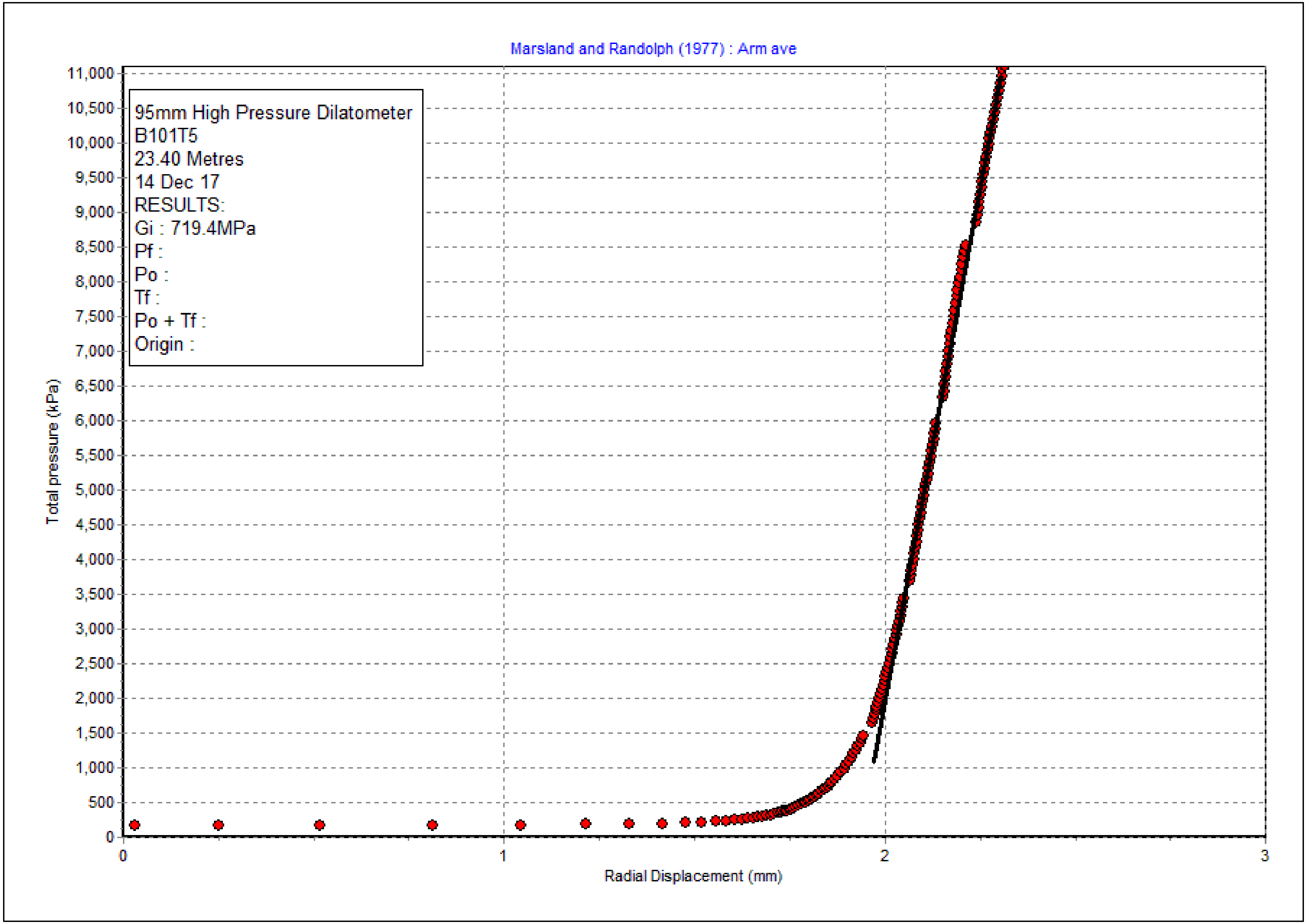
| | | |
|---|---|---|
| Gibson & Anderson 1961 - Cu (kPa) | : | "Arm ave=9295.1" |
| Limit pressure (kPa) | : | "Arm ave=50721" |

[LINEAR INTERPRETATION OF SHEAR MODULUS G]
Initial slope shear modulus (MPa) :"Arm ave=719.4"

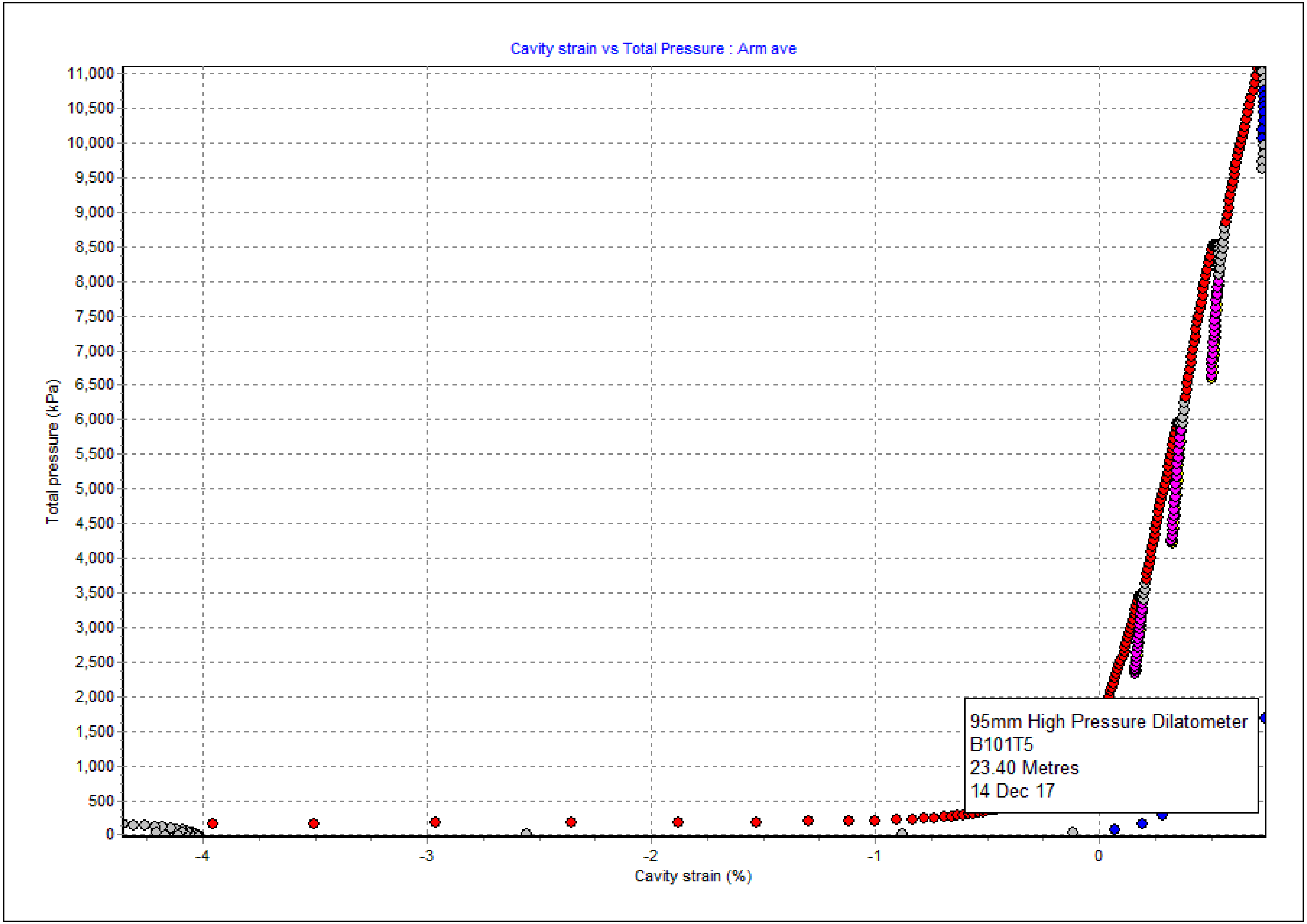
| Axis | Loop No | Value (MPa) | Mean Strain (%) | Mean Pc (kPa) | dE (%) | dPc (kPa) |
|---|---|---|---|---|---|---|
| Arm ave | 1 | 457.8 | -0.051 | 1142 | 0.112 | 513 |
| Arm ave | 2 | 1527.1 | 0.176 | 2811 | 0.062 | 953 |
| Arm ave | 3 | 1995.4 | 0.344 | 4977 | 0.076 | 1521 |
| Arm ave | 4 | 2338.9 | 0.517 | 7258 | 0.057 | 1342 |

[UNDRAINED NON LINEAR INTERPRETATION OF SECANT SHEAR MODULUS]

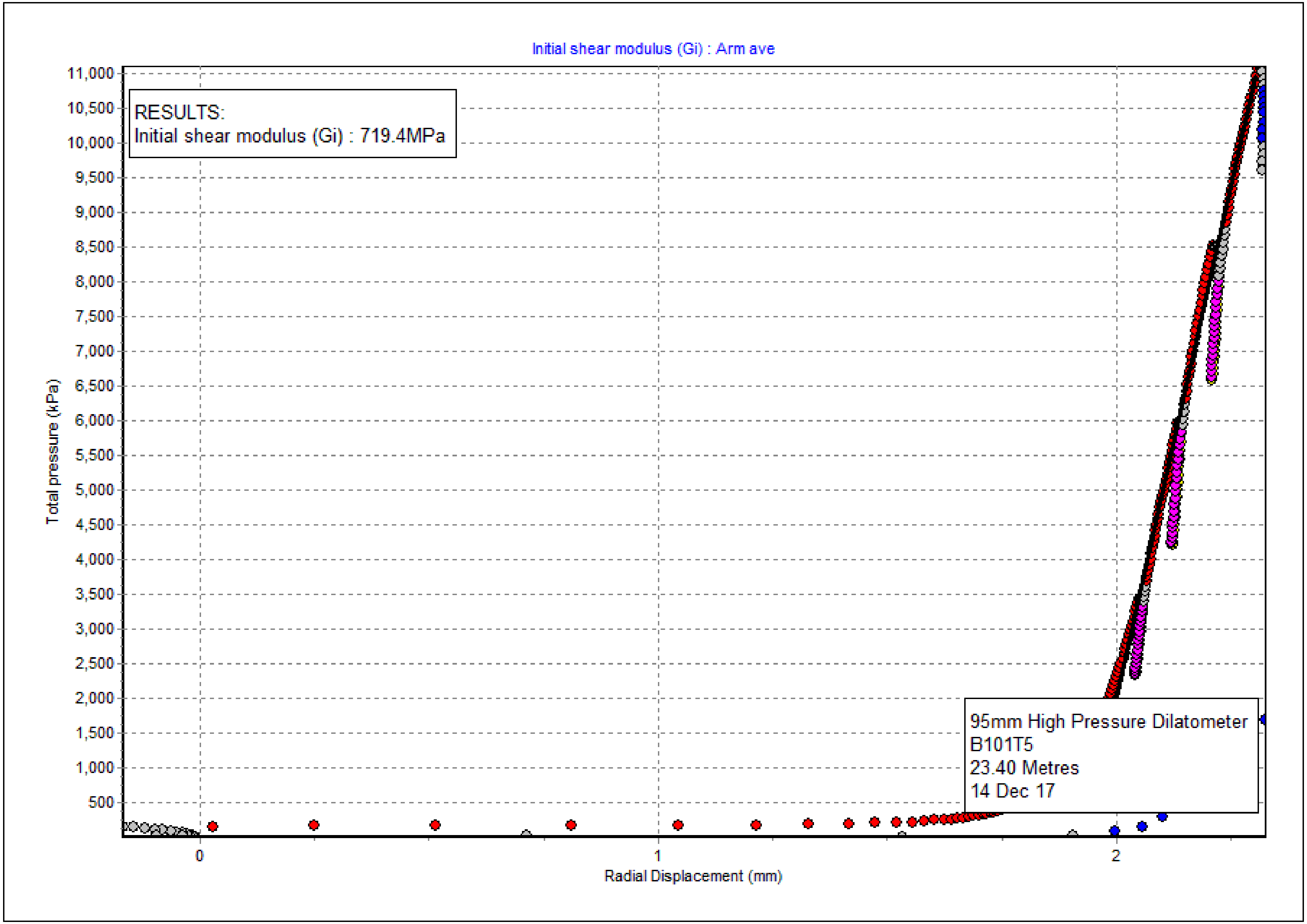
| Axis | Loop No | Intercept (MPa) | Alpha (MPa) | Gradient |
|---|---|---|---|---|
| Arm ave | 1 | 210.493 | 186.575 | 0.886 |
| Arm ave | 2 | 385.917 | 315.158 | 0.817 |
| Arm ave | 3 | 456.342 | 361.777 | 0.793 |
| Arm ave | 4 | 259.369 | 183.321 | 0.707 |

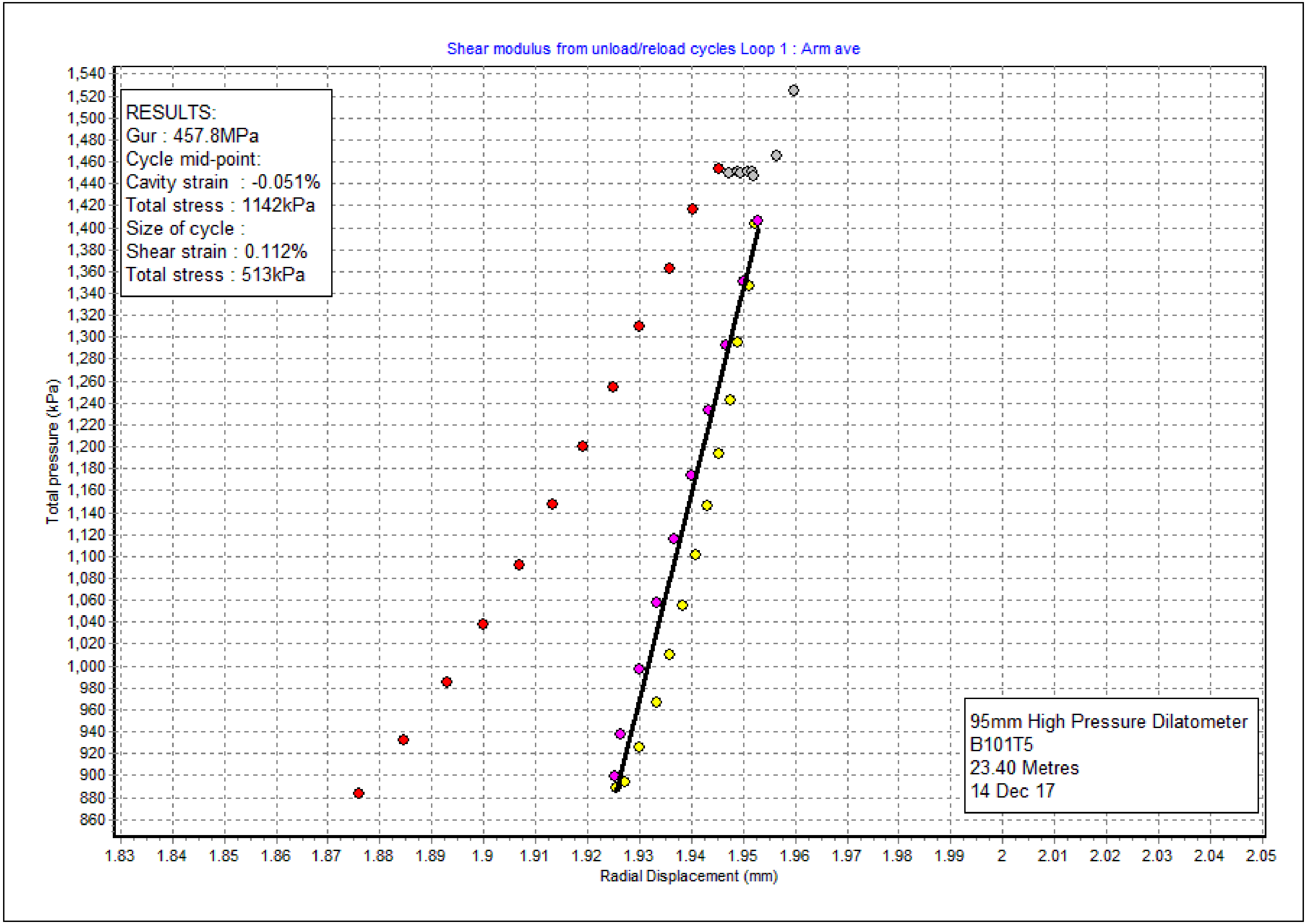


Marsland and Randolph (1977) : Arm ave
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
RESULTS:
Gi : 719.4MPa
Pf :
Po :
Tf :
Po + Tf :
Origin :
Total pressure (kPa)
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1
2
3
Radial Displacement (mm)

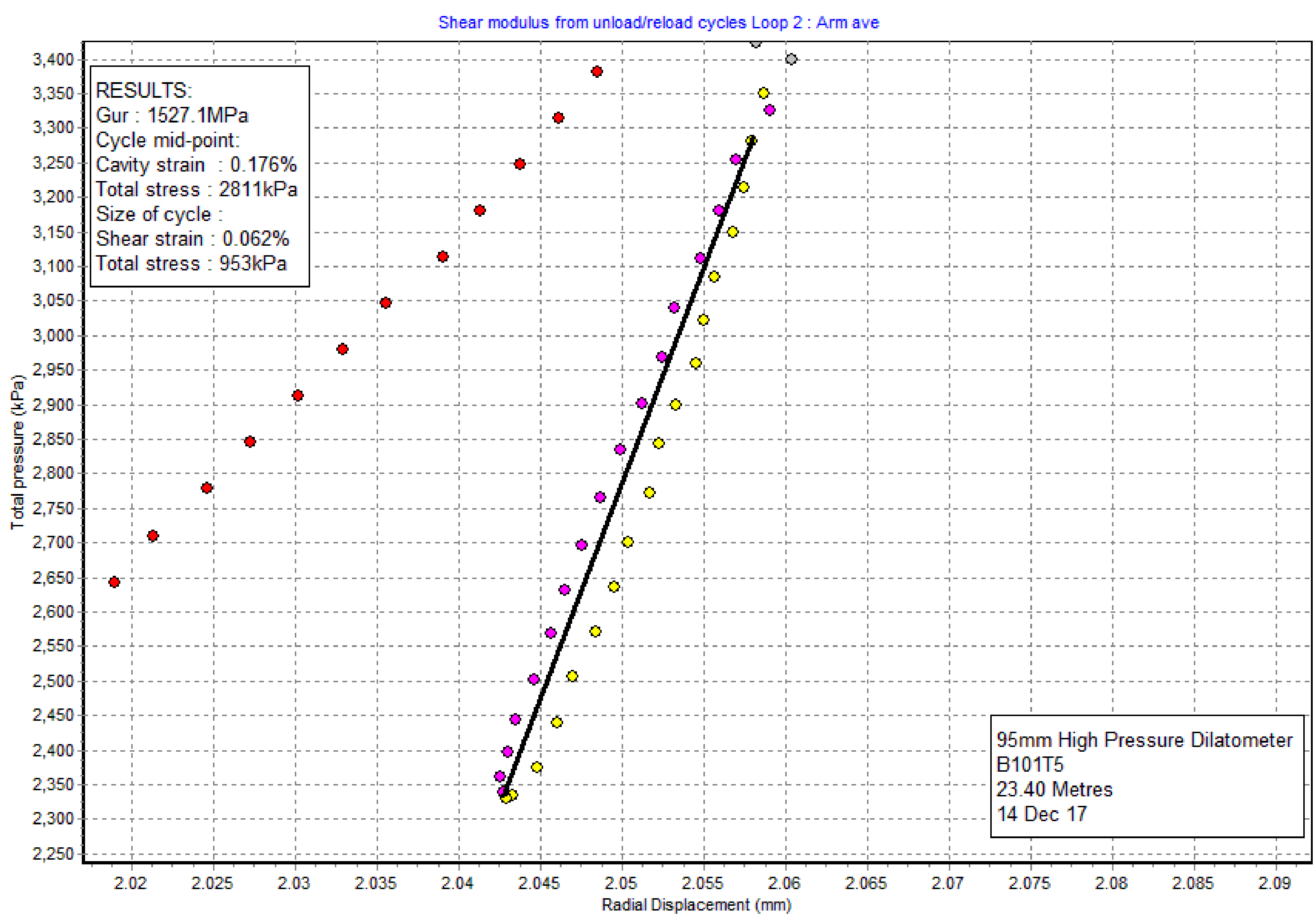


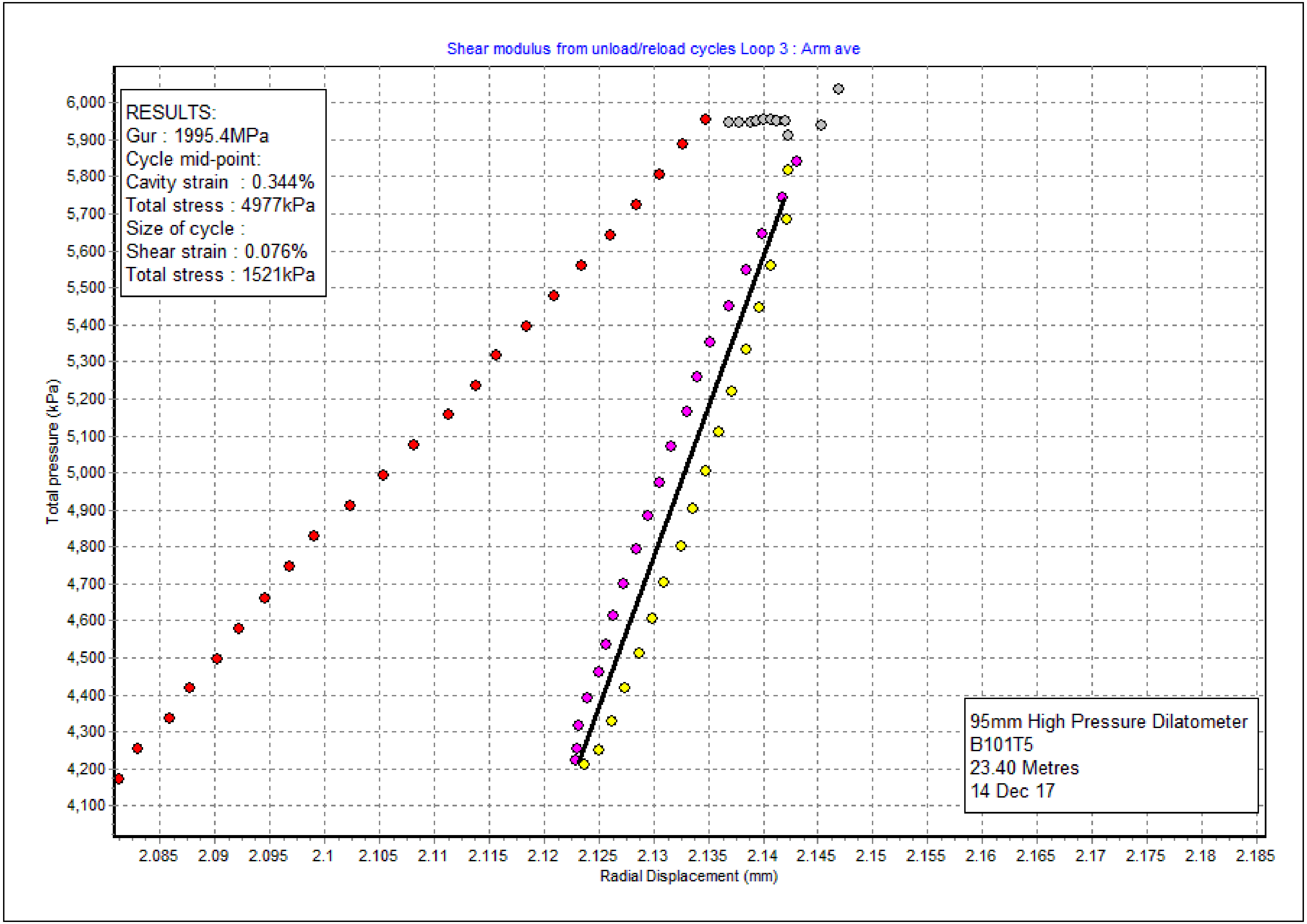
Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
-4
-3
-2
-1
0
Cavity strain (%)
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17

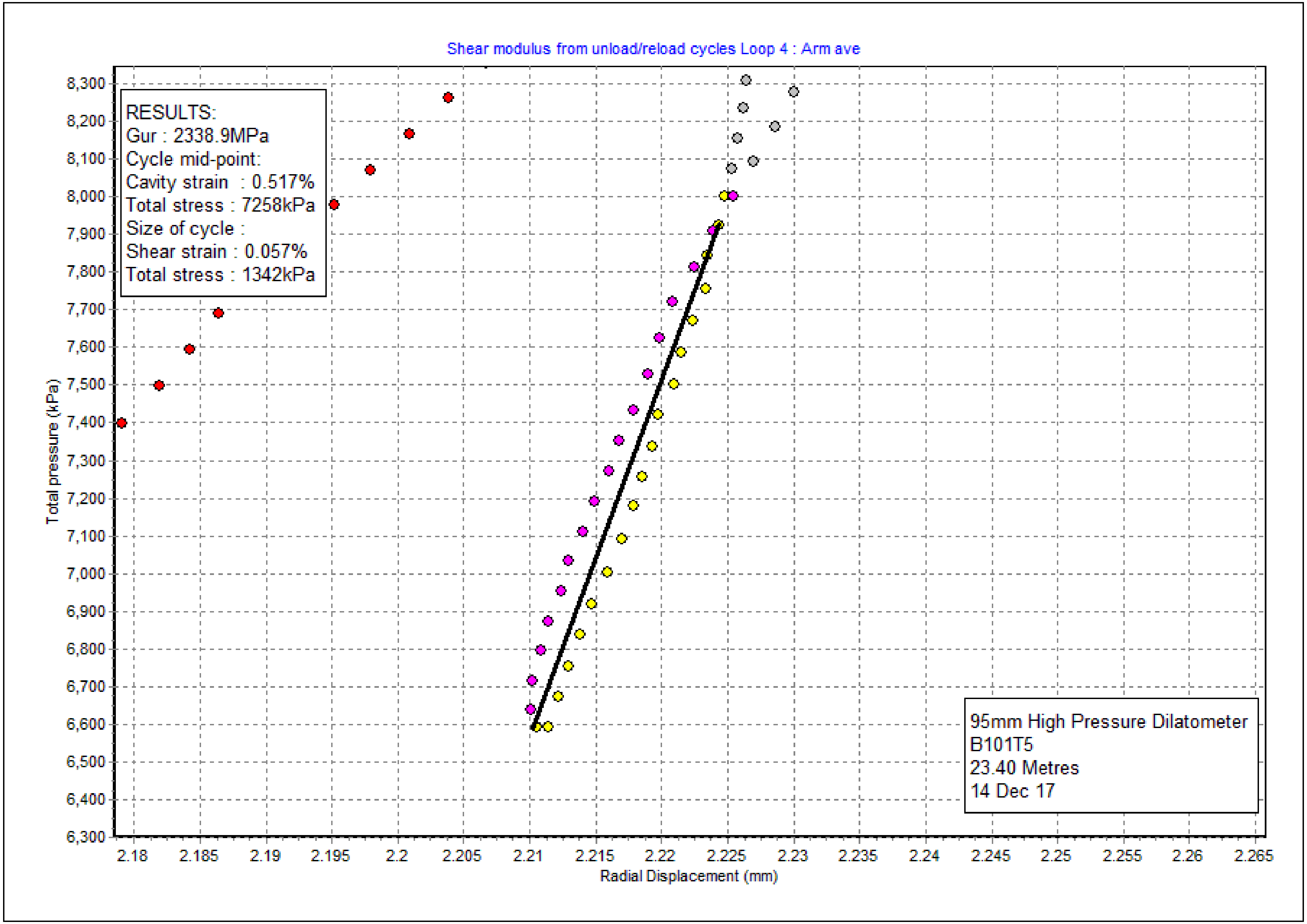

Initial shear modulus (Gi) : Arm ave
RESULTS:
Initial shear modulus (Gi) : 719.4MPa
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
Total pressure (kPa)
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1
2
Radial Displacement (mm)



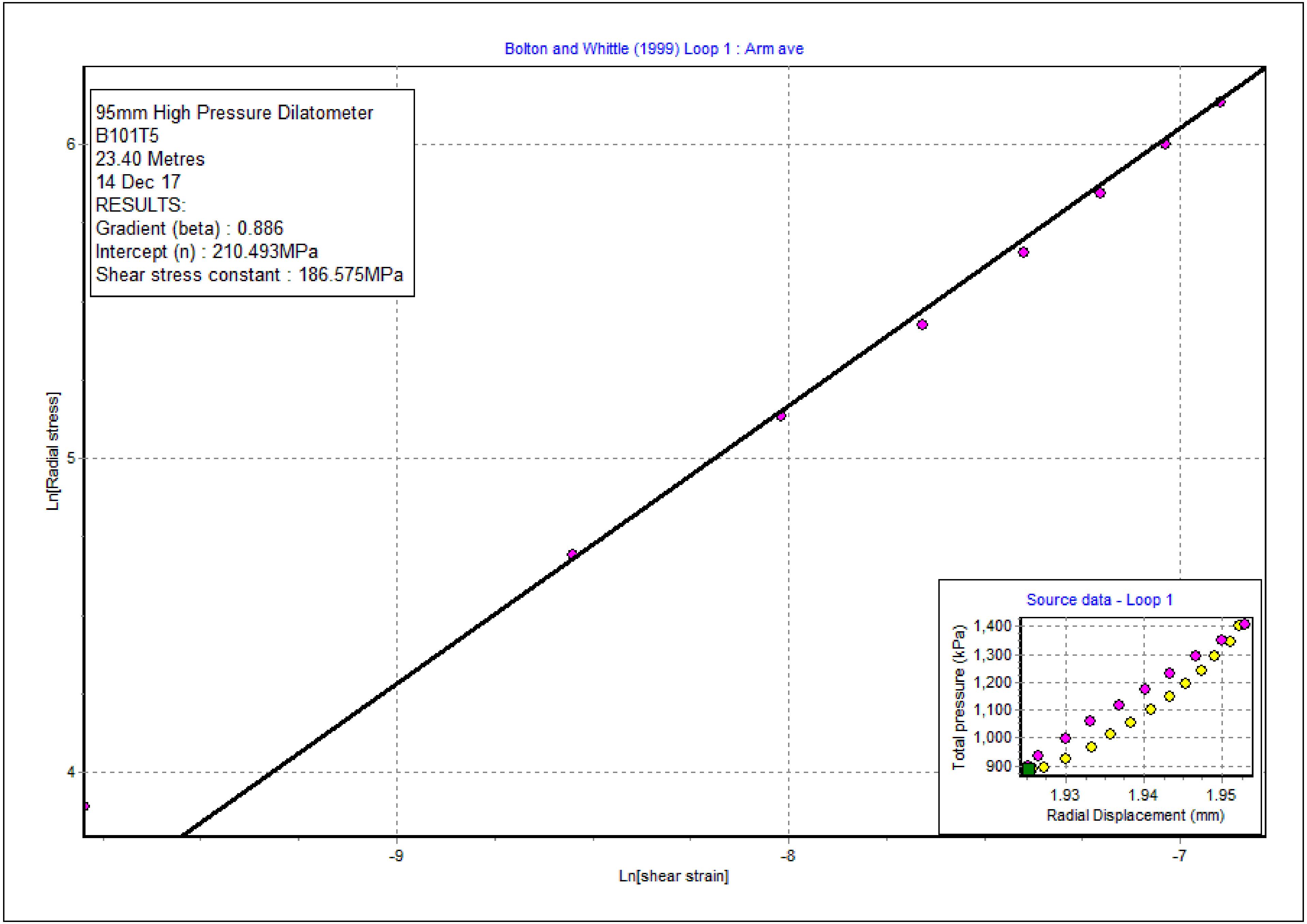
Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 457.8MPa
Cycle mid-point:
Cavity strain : -0.051%
Total stress : 1142kPa
Size of cycle :
Shear strain : 0.112%
Total stress : 513kPa
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
Total pressure (kPa)
Radial Displacement (mm)

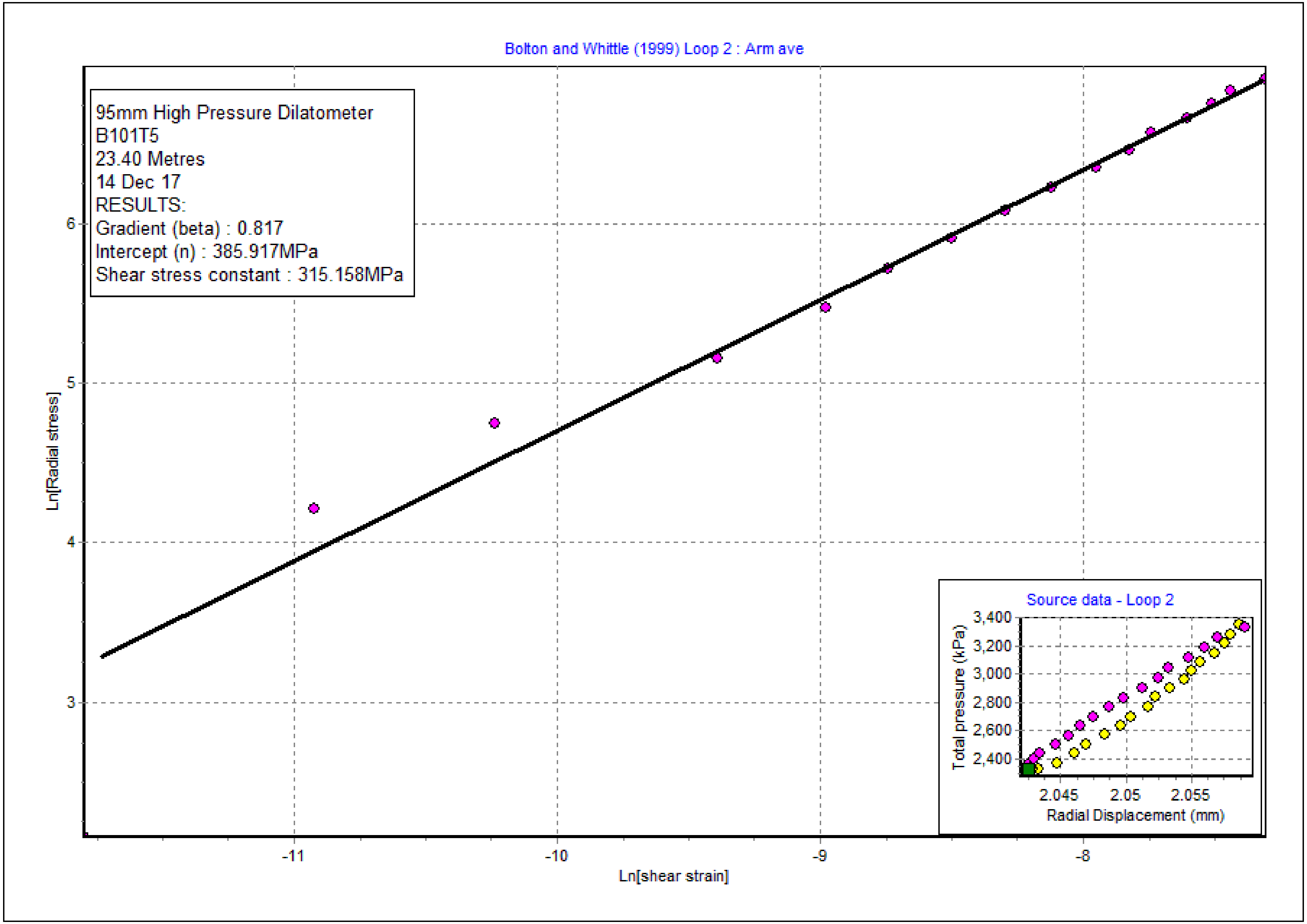

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 1527.1MPa
Cycle mid-point:
Cavity strain : 0.176%
Total stress : 2811kPa
Size of cycle :
Shear strain : 0.062%
Total stress : 953kPa
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
Total pressure (kPa)
3,400
3,350
3,300
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
2,300
2,250
2.02
2.025
2.03
2.035
2.04
2.045
2.05
2.055
2.06
2.065
2.07
2.075
2.08
2.085
2.09
Radial Displacement (mm)

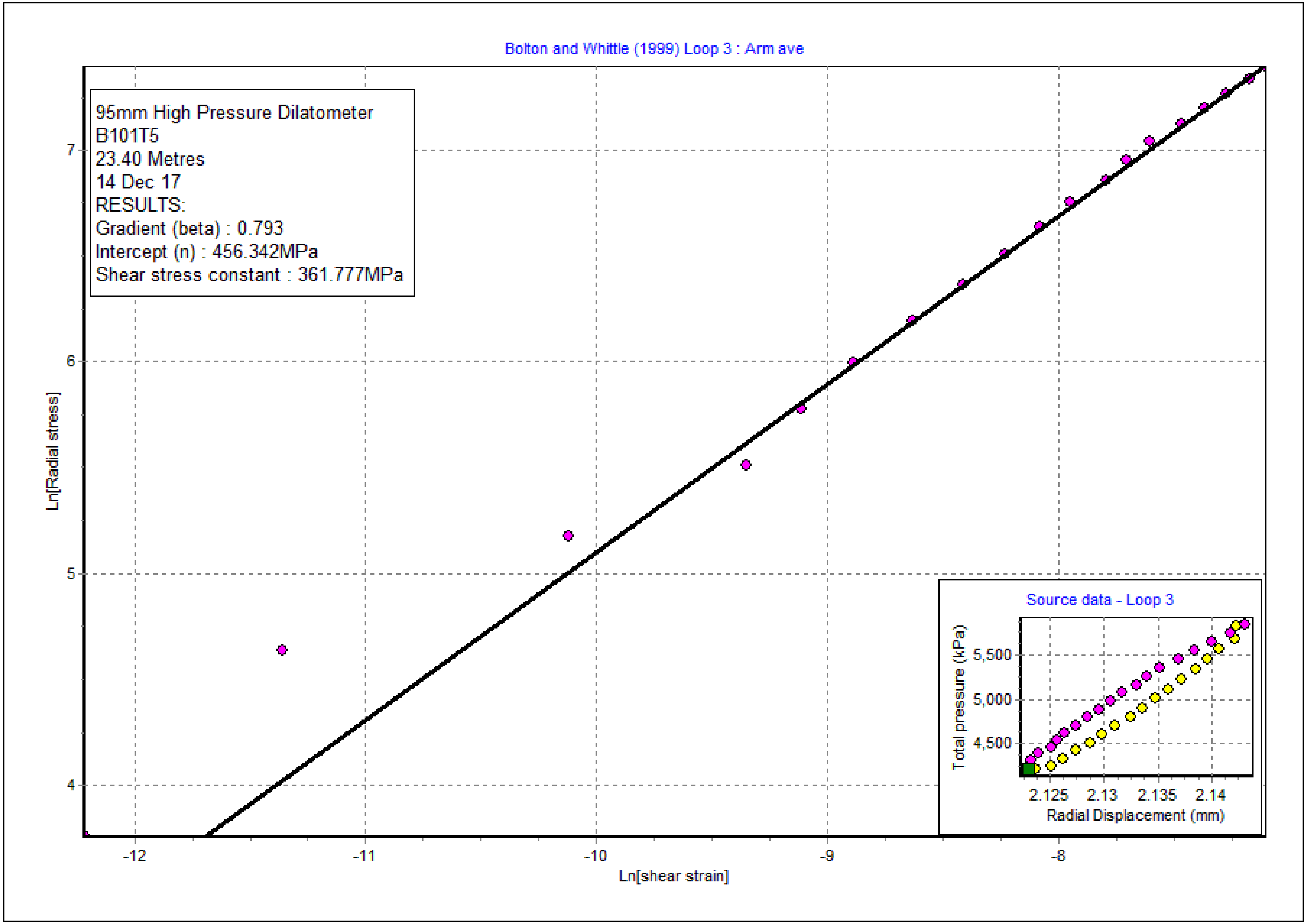

Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 1995.4MPa
Cycle mid-point:
Cavity strain : 0.344%
Total stress : 4977kPa
Size of cycle :
Shear strain : 0.076%
Total stress : 1521kPa
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
Total pressure (kPa)
6,000
5,900
5,800
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
Radial Displacement (mm)
2.085
2.09
2.095
2.1
2.105
2.11
2.115
2.12
2.125
2.13
2.135
2.14
2.145
2.15
2.155
2.16
2.165
2.17
2.175
2.18
2.185

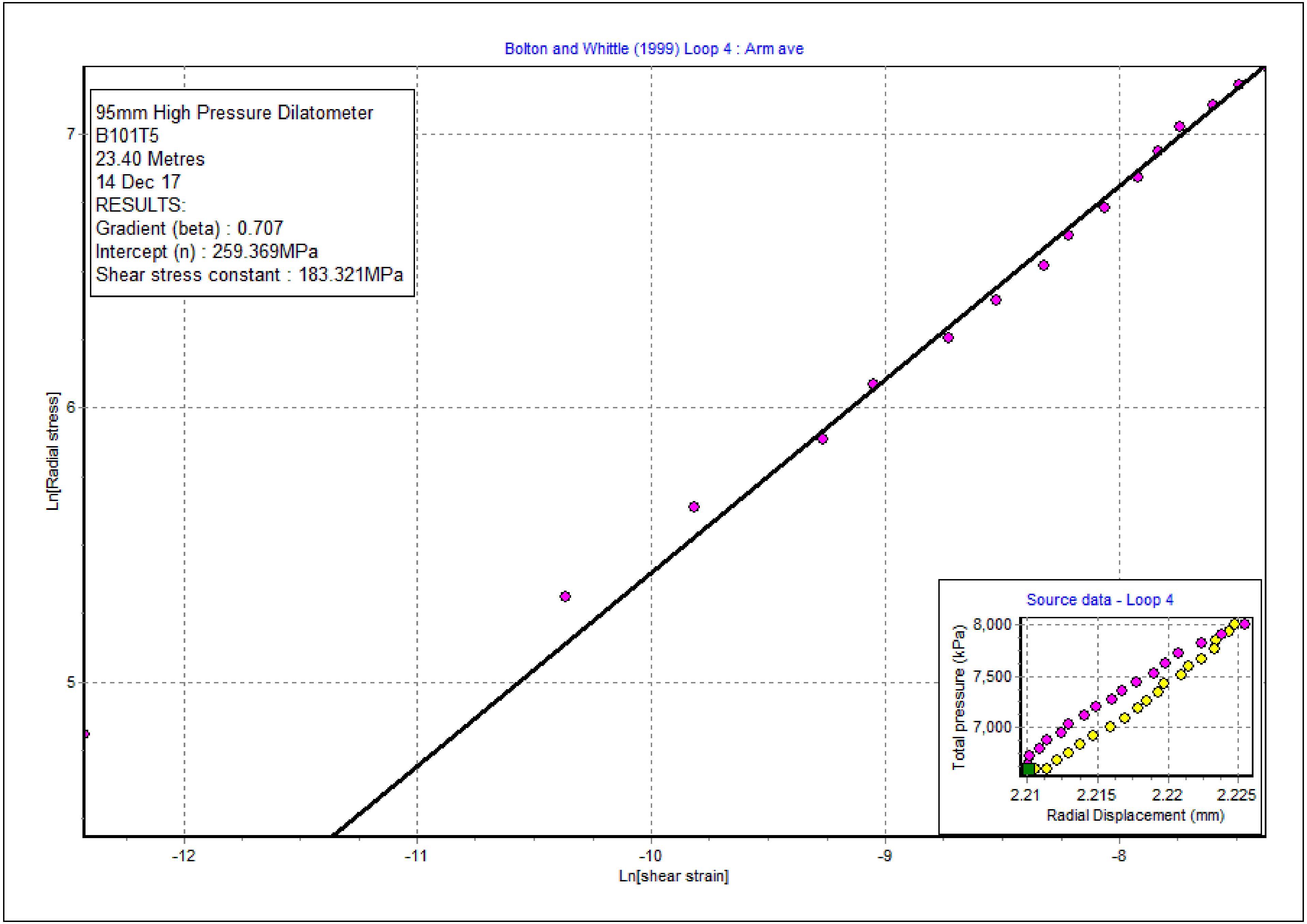


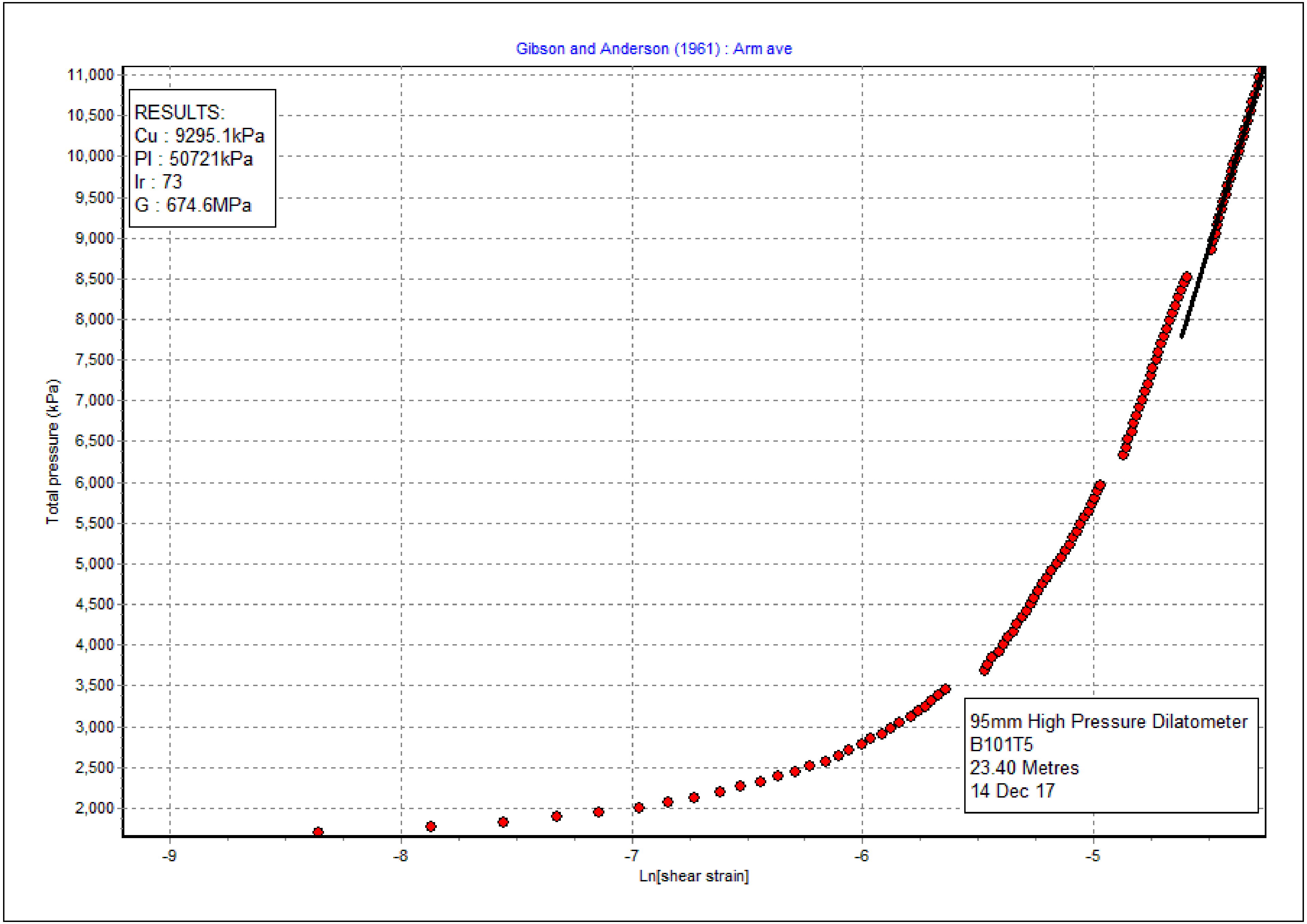
Shear modulus from unload/reload cycles Loop 4 : Arm ave
RESULTS:
Gur : 2338.9MPa
Cycle mid-point:
Cavity strain : 0.517%
Total stress : 7258kPa
Size of cycle :
Shear strain : 0.057%
Total stress : 1342kPa
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
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
2.18
2.185
2.19
2.195
2.2
2.205
2.21
2.215
2.22
2.225
2.23
2.235
2.24
2.245
2.25
2.255
2.26
2.265


Bolton and Whittle (1999) Loop 1 : Arm ave
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
RESULTS:
Gradient (beta) : 0.886
Intercept (n) : 210.493MPa
Shear stress constant : 186.575MPa
Ln[Radial stress]
6
5
4
-9
-8
-7
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
1,400
1,300
1,200
1,100
1,000
900
1.93
1.94
1.95
Radial Displacement (mm)


Bolton and Whittle (1999) Loop 2 : Arm ave
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
RESULTS:
Gradient (beta) : 0.817
Intercept (n) : 385.917MPa
Shear stress constant : 315.158MPa
Ln[Radial stress]
6
5
4
3
-11
-10
-9
-8
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
3,400
3,200
3,000
2,800
2,600
2,400
2.045
2.05
2.055
Radial Displacement (mm)


Bolton and Whittle (1999) Loop 3 : Arm ave
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
RESULTS:
Gradient (beta) : 0.793
Intercept (n) : 456.342MPa
Shear stress constant : 361.777MPa
Ln[Radial stress]
7
6
5
4
-12
-11
-10
-9
-8
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
5,500
5,000
4,500
2.125
2.13
2.135
2.14
Radial Displacement (mm)


Bolton and Whittle (1999) Loop 4 : Arm ave
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
RESULTS:
Gradient (beta) : 0.707
Intercept (n) : 259.369MPa
Shear stress constant : 183.321MPa
Ln[Radial stress]
7
6
5
-12
-11
-10
-9
-8
Ln[shear strain]
Source data - Loop 4
Total pressure (kPa)
8,000
7,500
7,000
2.21
2.215
2.22
2.225
Radial Displacement (mm)


Gibson and Anderson (1961) : Arm ave
RESULTS:
Cu : 9295.1kPa
PI : 50721kPa
Ir : 73
G : 674.6MPa
95mm High Pressure Dilatometer
B101T5
23.40 Metres
14 Dec 17
Total pressure (kPa)
Ln[shear strain]
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
-9
-8
-7
-6
-5

B102T1 - SUMMARY OF RESULTS
[File made with WinSitu  Version 1.4.1.1]

[DETAILS OF TEST]

| | | |
|---|---|---|
| Project | : | A7102-17 |
| Site | : | West Burton CD Power Station |
| Borehole | : | BH102 |
| Test name | : | B102T1 |
| Test date | : | 5 Dec 17 |
| Test depth | : | 3.00 Metres |
| Water table | : | 0.00 Metres |
| Ambient PWP | : | 29.4 kPa |
| Material | : | PFA |
| Probe | : | Digital 3 arm weak rock self boring pressuremeter |
| Diameter | : | 88.4 mm |

Data analysed using average arm displacement curve
A non-linear analysis of the rebound cycles has been carried out

Analysed by  on 5 Dec 17

Remarks:

[RESULTS FOR CAVITY REFERENCE PRESSURE]

| | | |
|---|---|---|
| Strain Origin (mm) | : | "Arm ave=0.534" |
| Po from Marsland & Randolph (kPa) | : | "Arm ave=349.6" |
| Best estimate of Po (kPa) | : | "Arm ave=350.0" |

[UNDRAINED STRENGTH PARAMETERS]

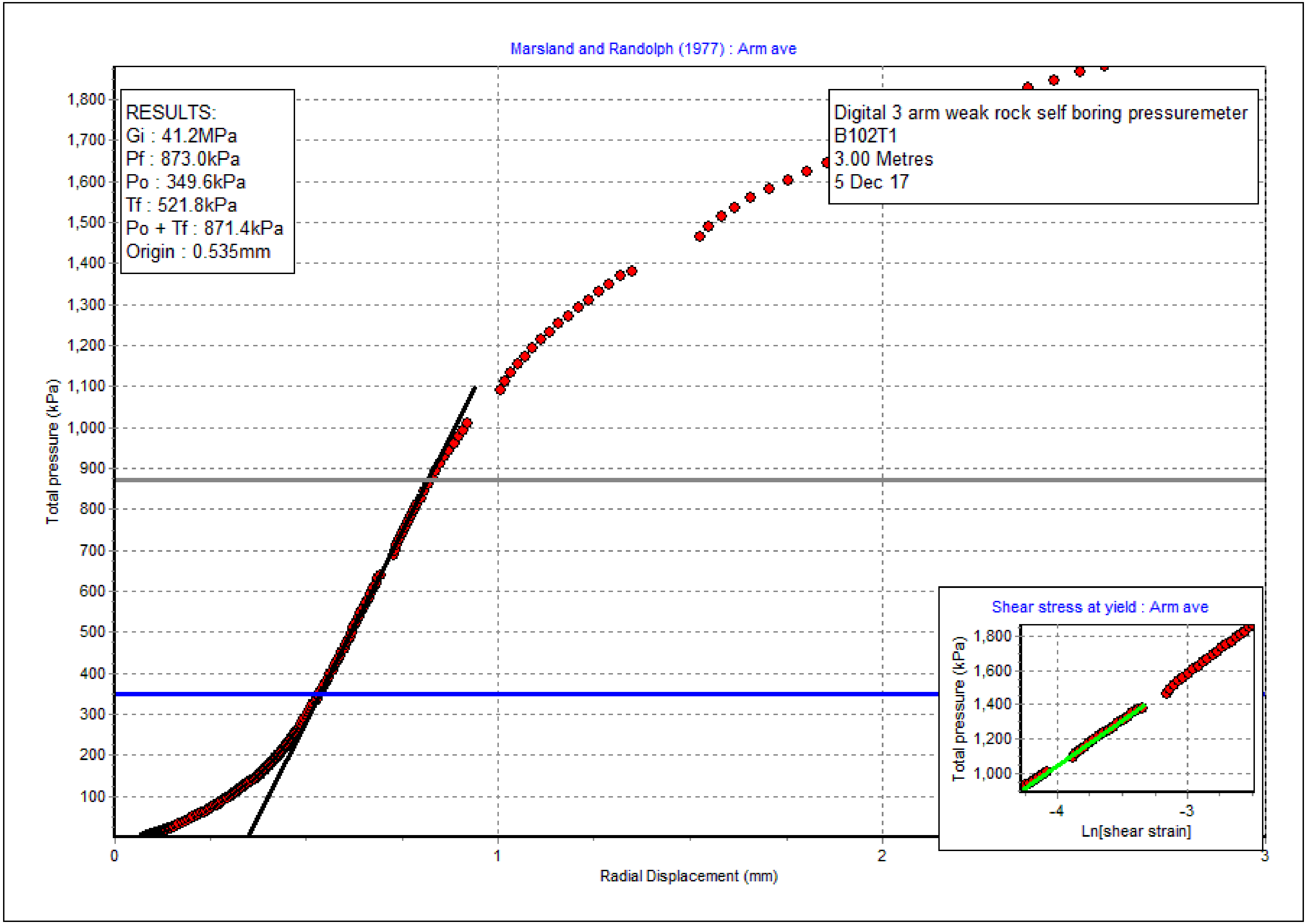
| | | |
|---|---|---|
| Gibson & Anderson 1961 - Cu (kPa) | : | "Arm ave=548.7" |
| Limit pressure (kPa) | : | "Arm ave=3226" |
| Jefferies 1988 - Cu (kPa) | : | "Arm ave=269.2" |
| Undrained yield stress (kPa) | : | "Arm ave=873.0" |

[LINEAR INTERPRETATION OF SHEAR MODULUS G]
Initial slope shear modulus (MPa) :"Arm ave=41.2"

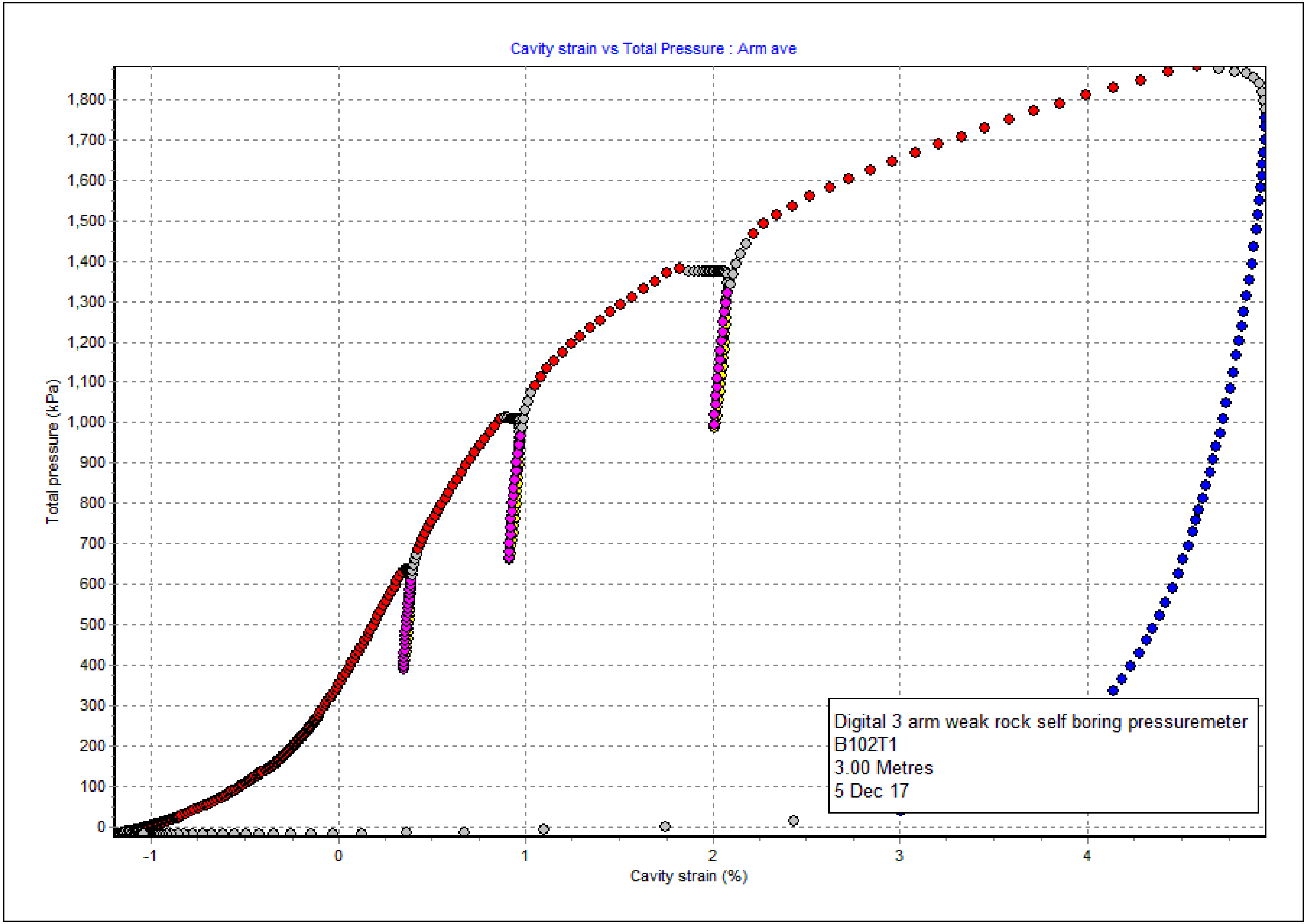
| Axis | Loop No | Value (MPa) | Mean Strain (%) | Mean Pc (kPa) | dE (%) | dPc (kPa) |
|---|---|---|---|---|---|---|
| Arm ave | 1 | 278.3 | 0.368 | 493 | 0.075 | 209 |
| Arm ave | 2 | 254.9 | 0.940 | 803 | 0.110 | 281 |
| Arm ave | 3 | 248.4 | 2.042 | 1142 | 0.120 | 299 |

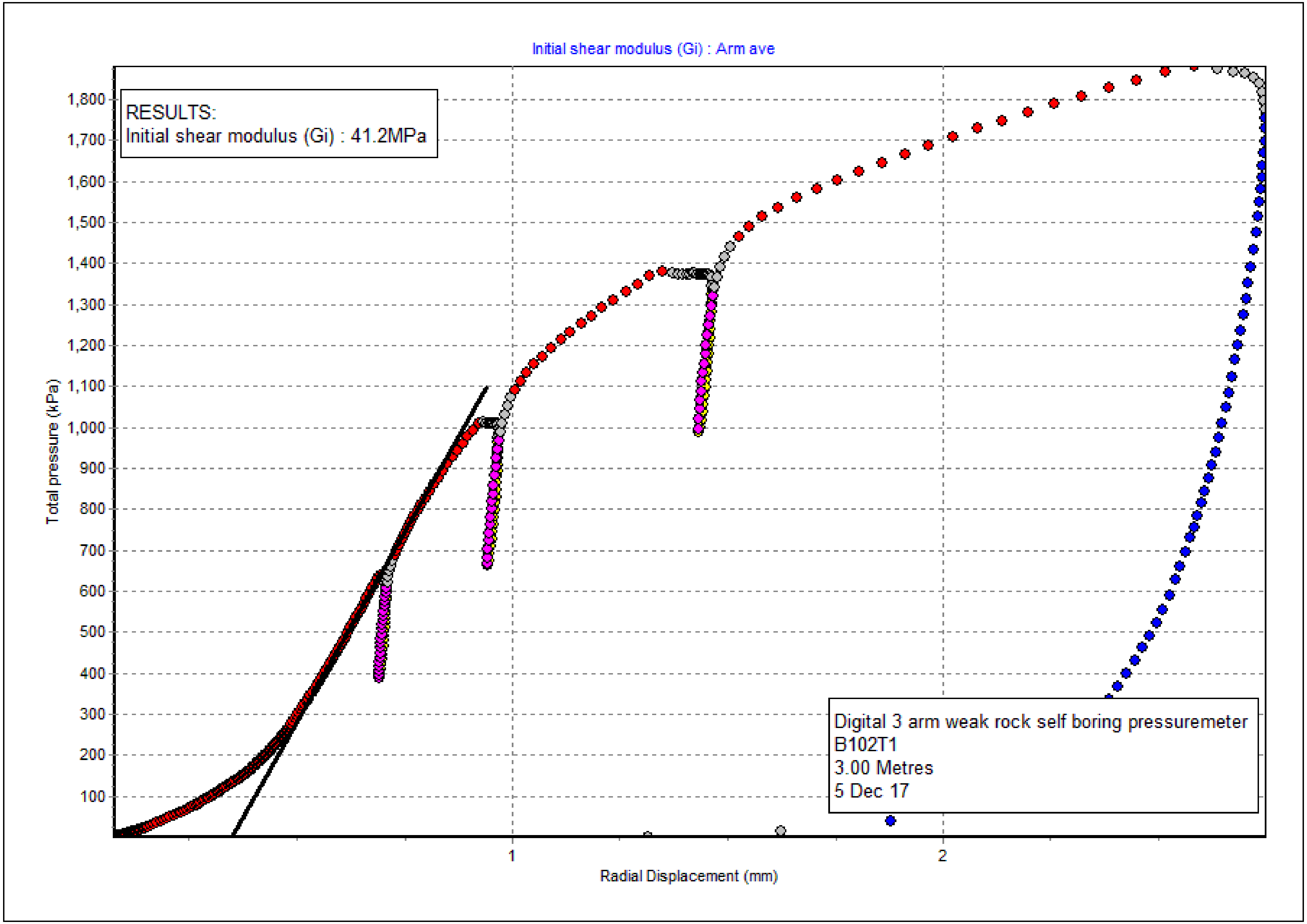
[UNDRAINED NON LINEAR INTERPRETATION OF SECANT SHEAR MODULUS]

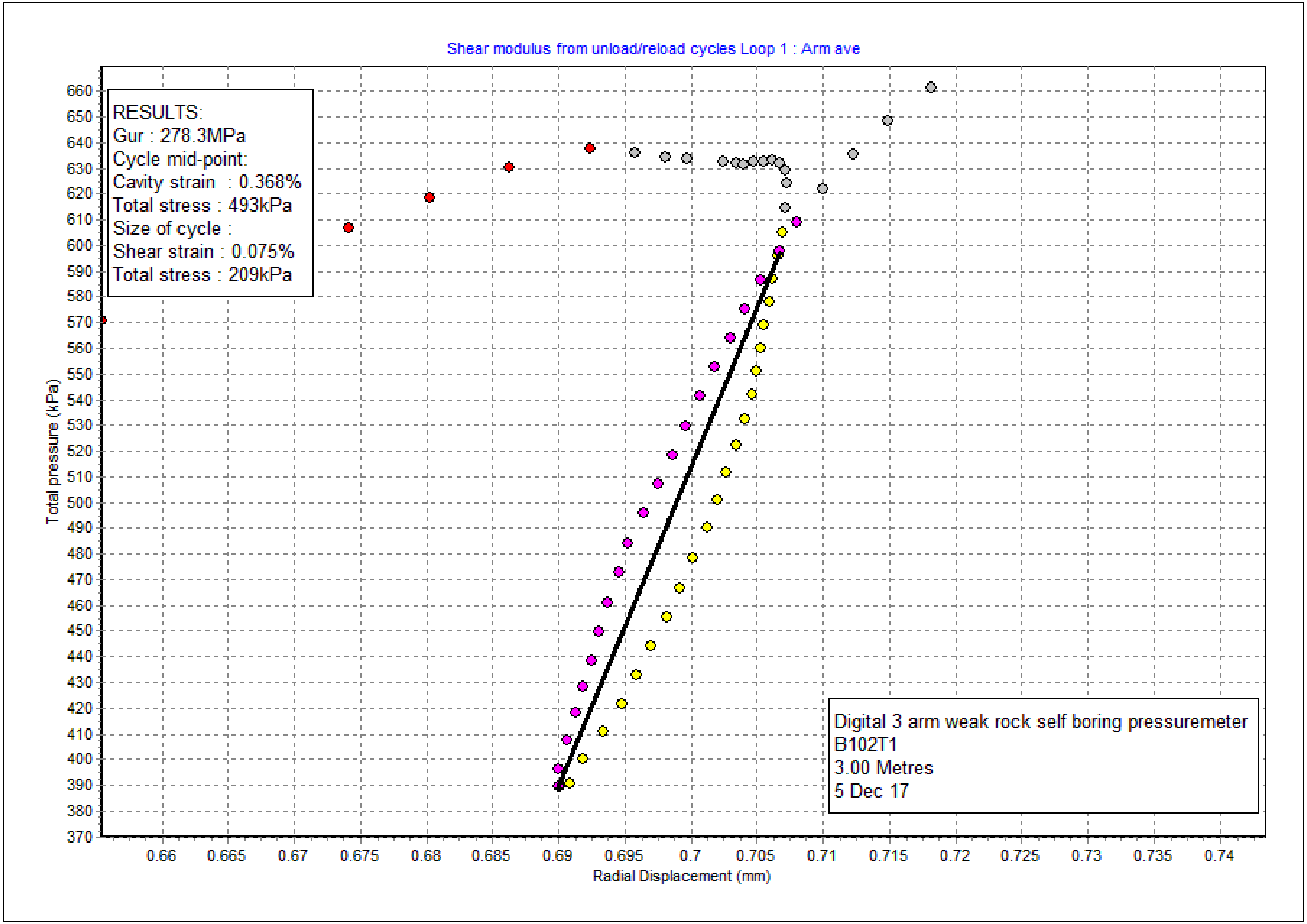
| Axis | Loop No | Intercept (MPa) | Alpha (MPa) | Gradient |
|---|---|---|---|---|
| Arm ave | 1 | 47.444 | 35.739 | 0.753 |
| Arm ave | 2 | 27.431 | 18.447 | 0.672 |
| Arm ave | 3 | 25.541 | 16.927 | 0.663 |

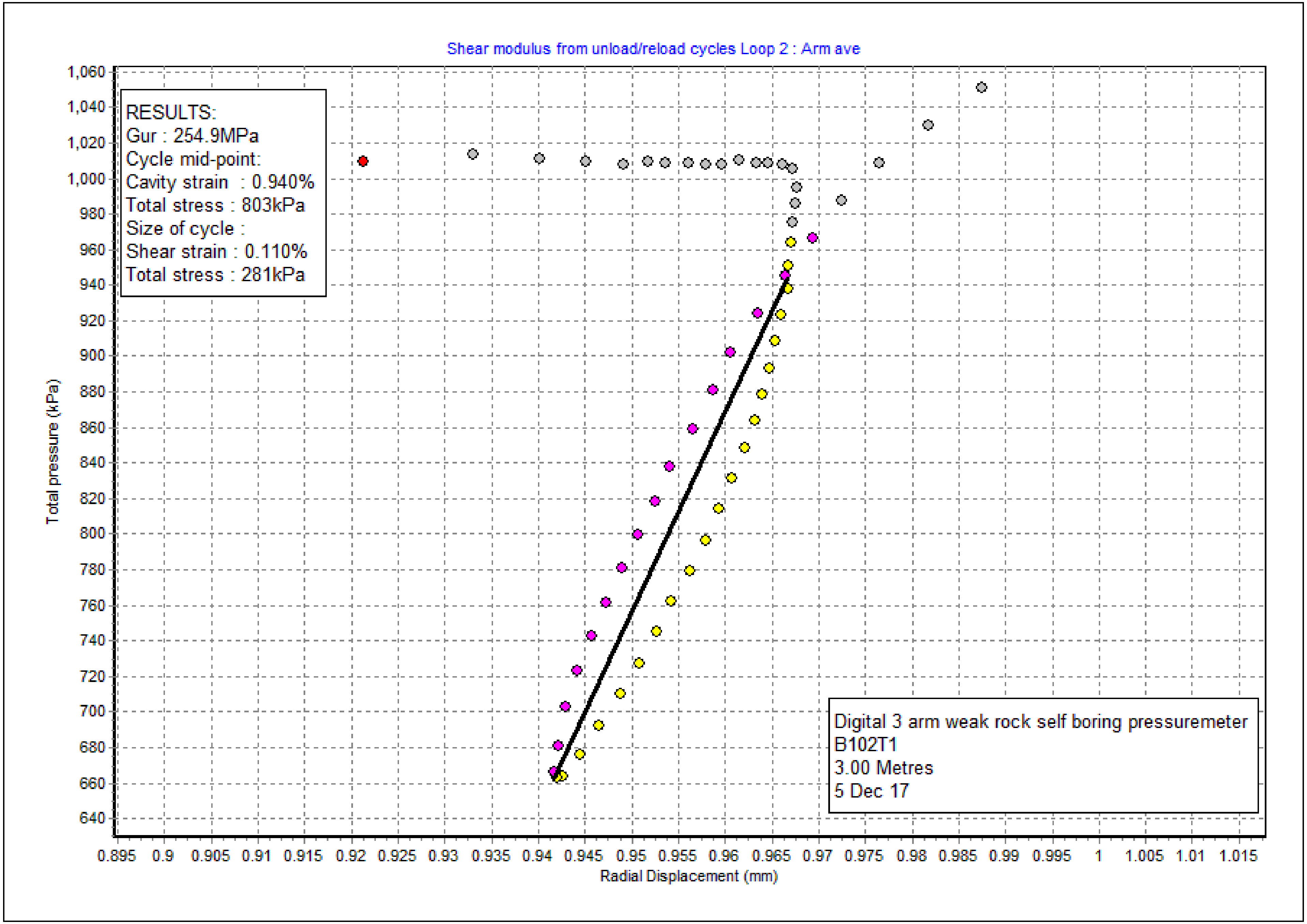


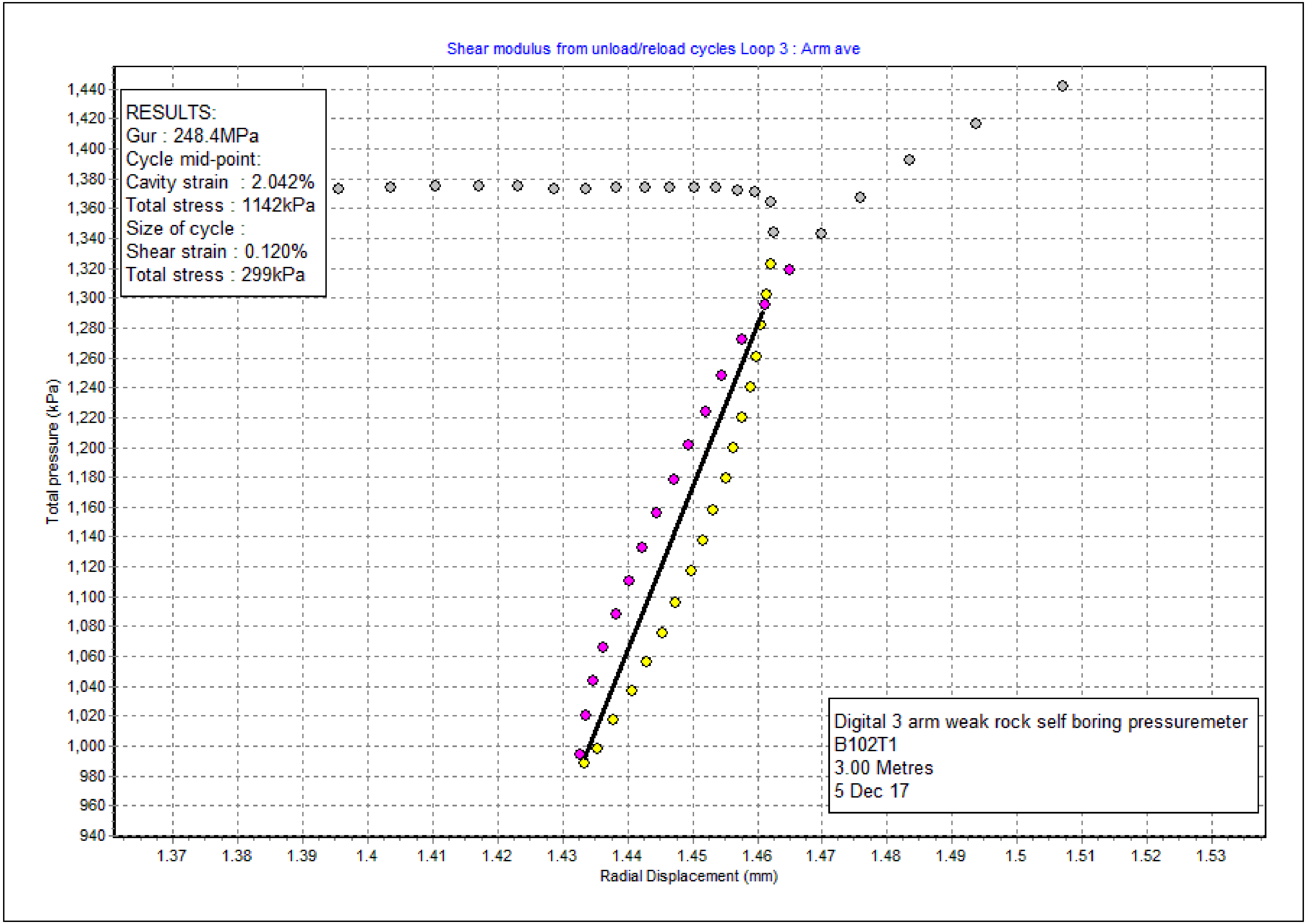
Marsland and Randolph (1977) : Arm ave
RESULTS:
Gi : 41.2MPa
Pf : 873.0kPa
Po : 349.6kPa
Tf : 521.8kPa
Po + Tf : 871.4kPa
Origin : 0.535mm
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
Total pressure (kPa)
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
1
2
3
Radial Displacement (mm)
Shear stress at yield : Arm ave
Total pressure (kPa)
1,800
1,600
1,400
1,200
1,000
-4
-3
Ln[shear strain]


Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
-1
0
1
2
3
4
Cavity strain (%)
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17

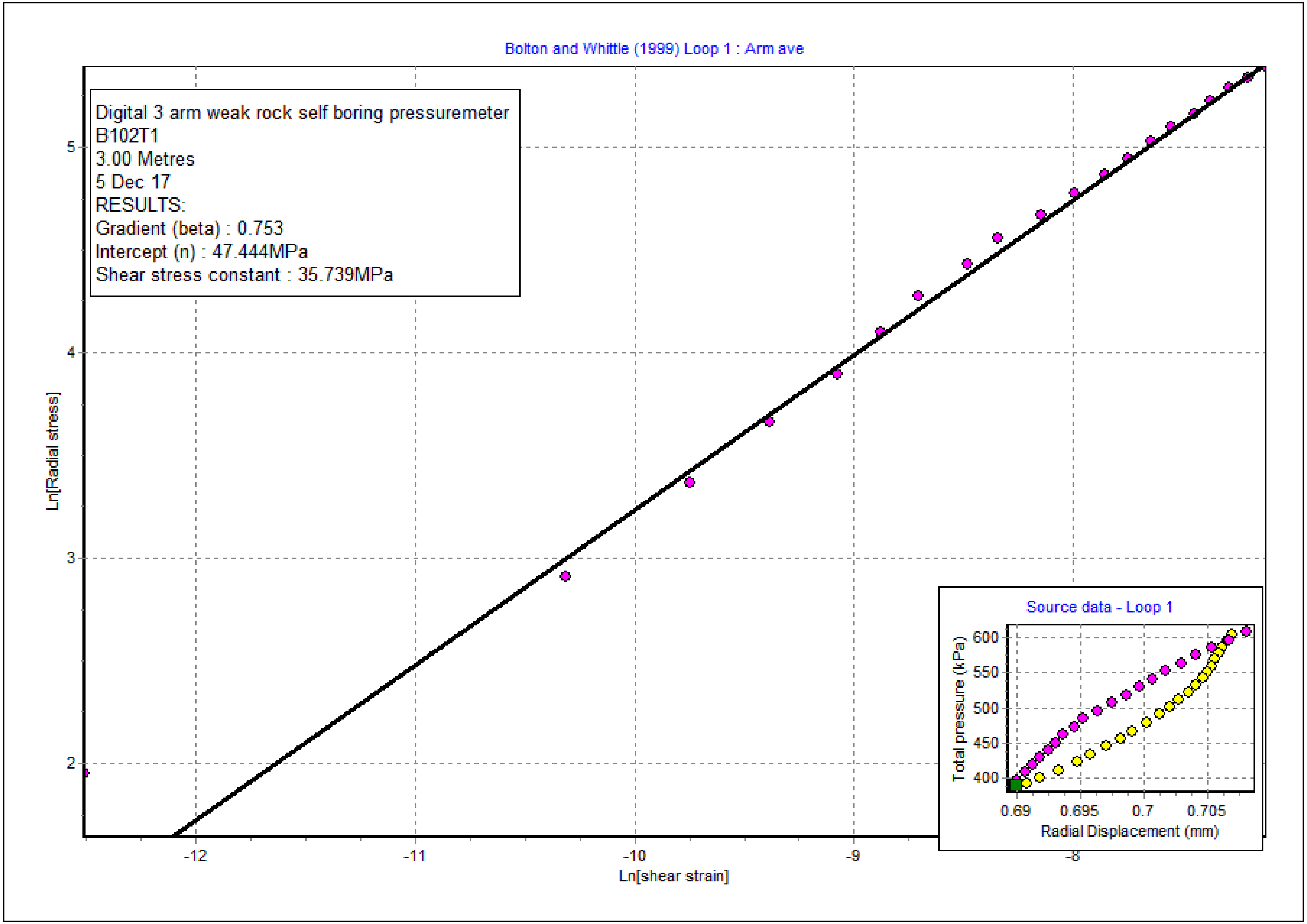

Initial shear modulus (Gi) : Arm ave
RESULTS:
Initial shear modulus (Gi) : 41.2MPa
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
Total pressure (kPa)
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
1
2
Radial Displacement (mm)

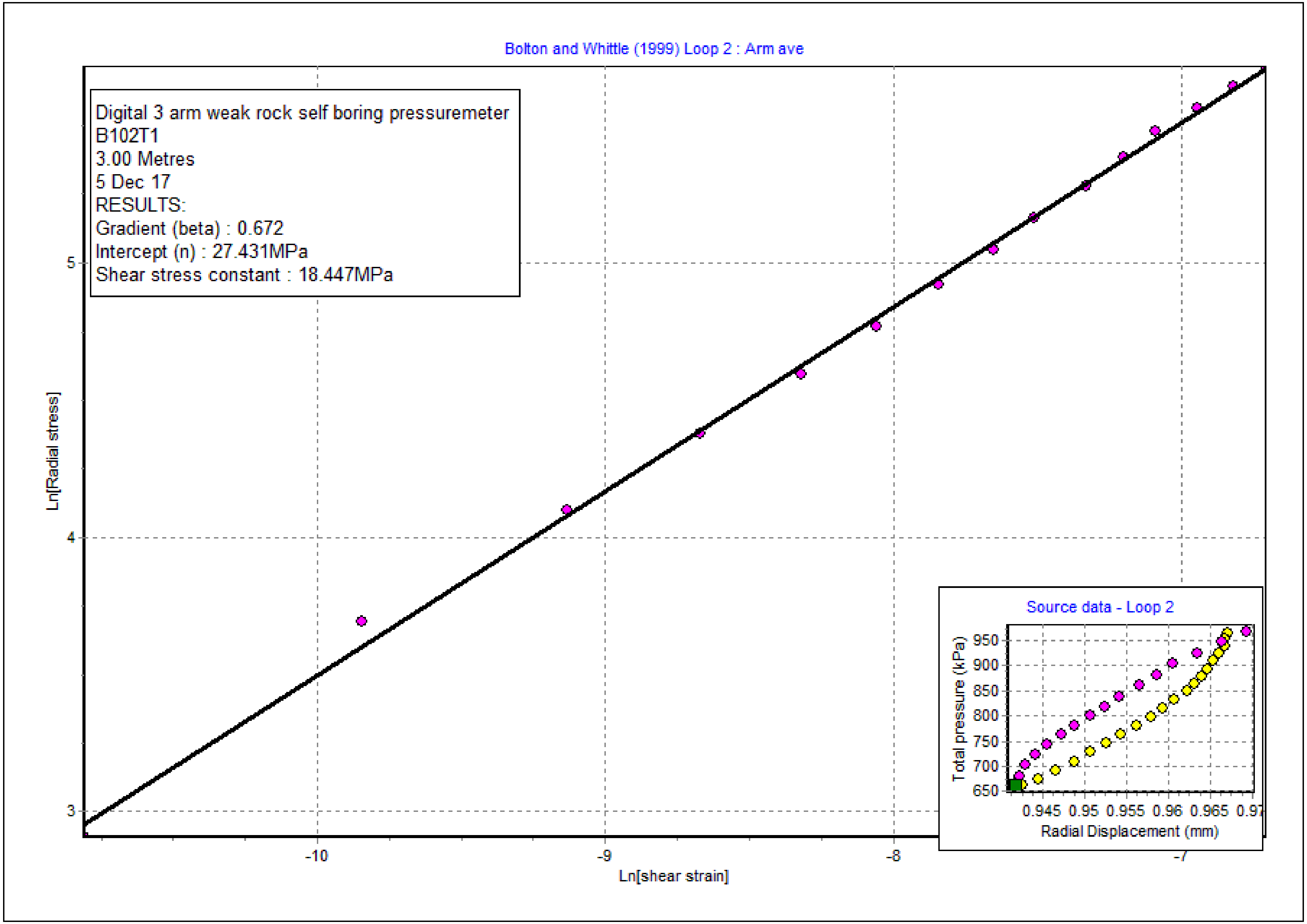

Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 278.3MPa
Cycle mid-point:
Cavity strain : 0.368%
Total stress : 493kPa
Size of cycle :
Shear strain : 0.075%
Total stress : 209kPa
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
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
380
370
0.66
0.665
0.67
0.675
0.68
0.685
0.69
0.695
0.7
0.705
0.71
0.715
0.72
0.725
0.73
0.735
0.74

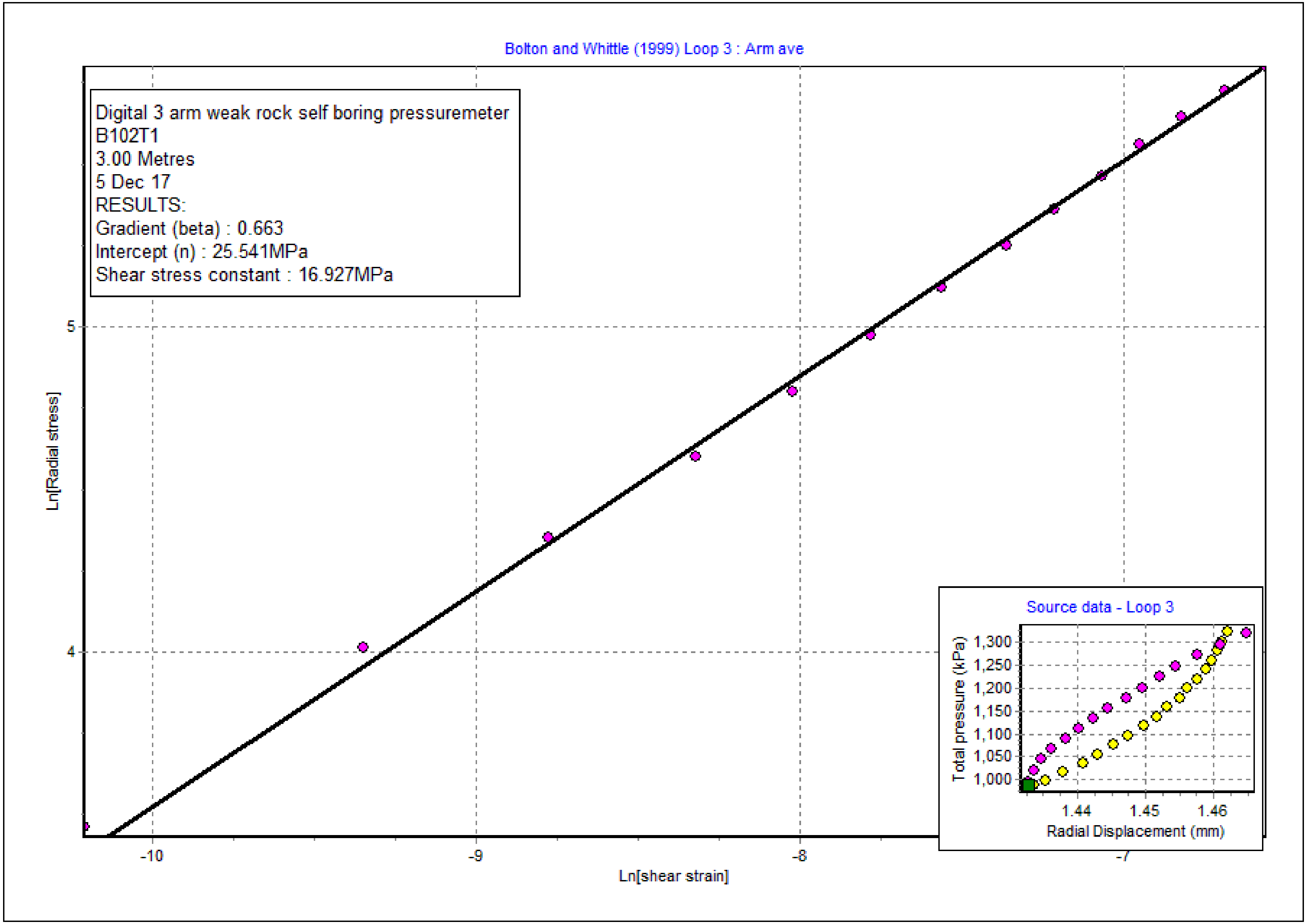

Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 254.9MPa
Cycle mid-point:
Cavity strain : 0.940%
Total stress : 803kPa
Size of cycle :
Shear strain : 0.110%
Total stress : 281kPa
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
Total pressure (kPa)
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
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
0.99
0.995
1
1.005
1.01
1.015
Radial Displacement (mm)



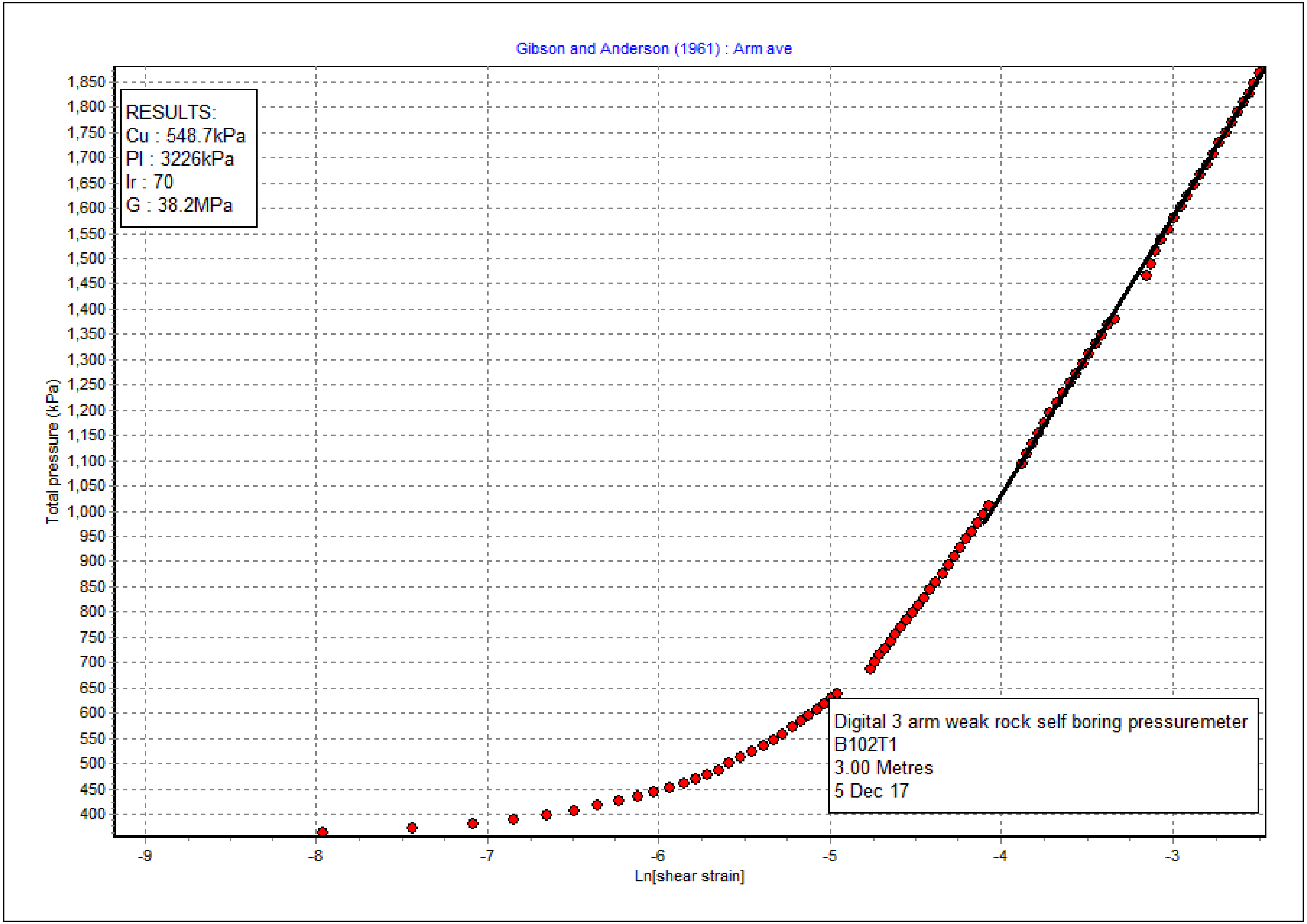
Shear modulus from unload/reload cycles Loop 3 : Arm ave
RESULTS:
Gur : 248.4MPa
Cycle mid-point:
Cavity strain : 2.042%
Total stress : 1142kPa
Size of cycle :
Shear strain : 0.120%
Total stress : 299kPa
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
Total pressure (kPa)
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
980
960
940
Radial Displacement (mm)
1.37
1.38
1.39
1.4
1.41
1.42
1.43
1.44
1.45
1.46
1.47
1.48
1.49
1.5
1.51
1.52
1.53


Bolton and Whittle (1999) Loop 1 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
RESULTS:
Gradient (beta) : 0.753
Intercept (n) : 47.444MPa
Shear stress constant : 35.739MPa
Ln[Radial stress]
5
4
3
2
-12
-11
-10
-9
-8
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
600
550
500
450
400
0.69
0.695
0.7
0.705
Radial Displacement (mm)

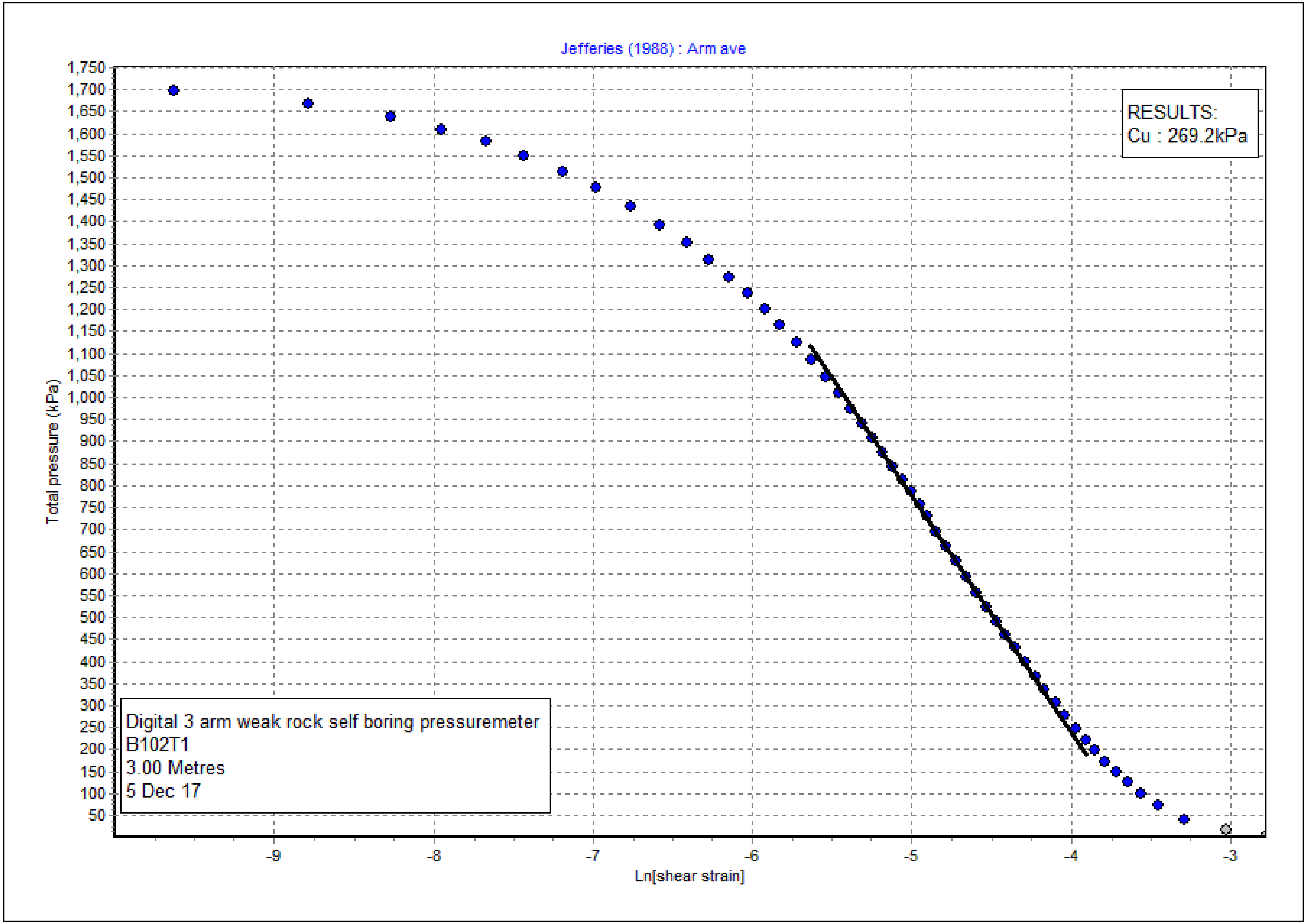

Bolton and Whittle (1999) Loop 2 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
RESULTS:
Gradient (beta) : 0.672
Intercept (n) : 27.431MPa
Shear stress constant : 18.447MPa
Ln[Radial stress]
5
4
3
Ln[shear strain]
-10
-9
-8
-7
Source data - Loop 2
Total pressure (kPa)
950
900
850
800
750
700
650
Radial Displacement (mm)
0.945
0.95
0.955
0.96
0.965



Bolton and Whittle (1999) Loop 3 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
RESULTS:
Gradient (beta) : 0.663
Intercept (n) : 25.541MPa
Shear stress constant : 16.927MPa
Ln[Radial stress]
5
4
-10
-9
-8
-7
Ln[shear strain]
Source data - Loop 3
Total pressure (kPa)
1,300
1,250
1,200
1,150
1,100
1,050
1,000
1.44
1.45
1.46
Radial Displacement (mm)



Gibson and Anderson (1961) : Arm ave
RESULTS:
Cu : 548.7kPa
PI : 3226kPa
Ir : 70
G : 38.2MPa
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
Total pressure (kPa)
Ln[shear strain]



Jefferies (1988) : Arm ave
RESULTS:
Cu : 269.2kPa
Digital 3 arm weak rock self boring pressuremeter
B102T1
3.00 Metres
5 Dec 17
Total pressure (kPa)
1,750
1,700
1,650
1,600
1,550
1,500
1,450
1,400
1,350
1,300
1,250
1,200
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
-9
-8
-7
-6
-5
-4
-3
Ln[shear strain]

B102T2 - SUMMARY OF RESULTS
[File made with WinSitu Version 1.4.1.1]

[DETAILS OF TEST]

| | | |
|---|---|---|
| Project | : | A7102-17 |
| Site | : | West Burton CD Power Station |
| Borehole | : | BH102 |
| Test name | : | B102T2 |
| Test date | : | 6 Dec 17 |
| Test depth | : | 6.00 Metres |
| Water table | : | 0.00 Metres |
| Ambient PWP | : | 58.9 kPa |
| Material | : | PFA |
| Probe | : | Digital 3 arm weak rock self boring pressuremeter |
| Diameter | : | 88.4 mm |

Data analysed using average arm displacement curve
A non-linear analysis of the rebound cycles has been carried out

Analysed by on 6 Dec 17

Remarks:

[RESULTS FOR CAVITY REFERENCE PRESSURE]

| | | |
|---|---|---|
| Strain Origin (mm) | : | "Arm ave=0.412" |
| Po from Marsland & Randolph (kPa) | : | "Arm ave=308.1" |
| Best estimate of Po (kPa) | : | "Arm ave=291.0" |

[UNDRAINED STRENGTH PARAMETERS]

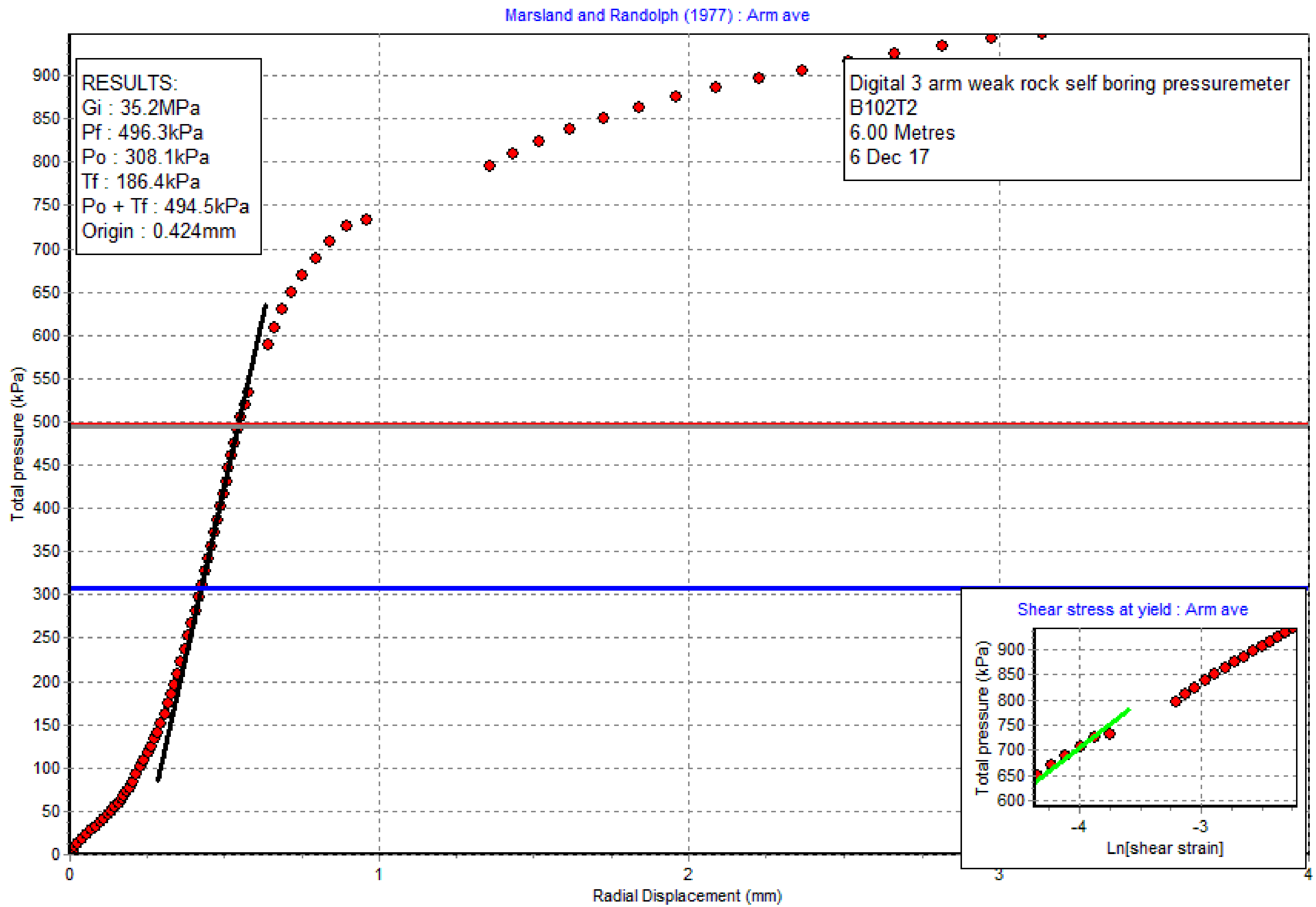
| | | |
|---|---|---|
| Gibson & Anderson 1961 - Cu (kPa) | : | "Arm ave=145.4" |
| Limit pressure (kPa) | : | "Arm ave=1268" |
| Jefferies 1988 - Cu (kPa) | : | "Arm ave=128.8" |
| Undrained yield stress (kPa) | : | "Arm ave=496.3" |

[LINEAR INTERPRETATION OF SHEAR MODULUS G]
Initial slope shear modulus (MPa) :"Arm ave=35.2"

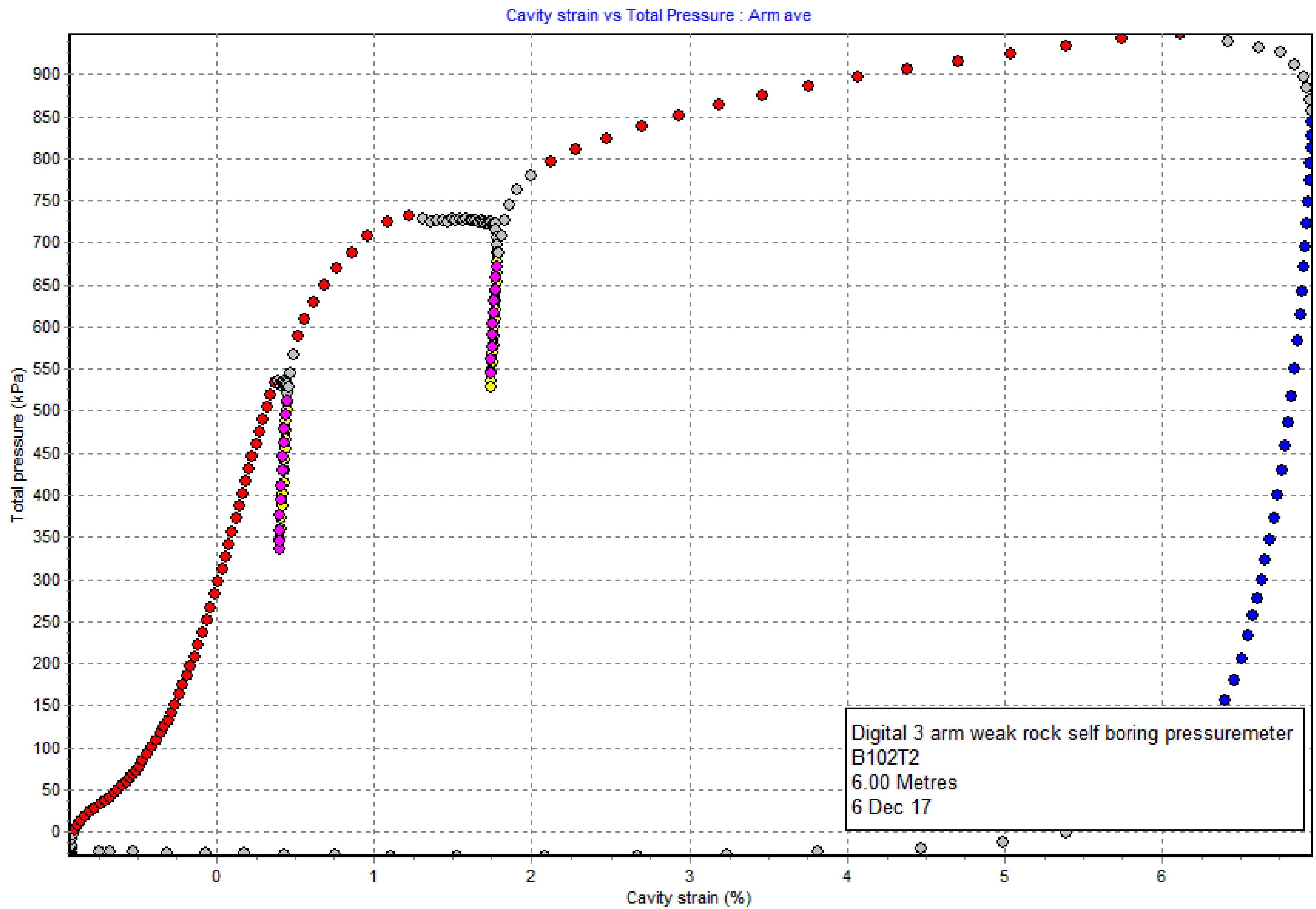
| Axis | Loop No | Value (MPa) | Mean Strain (%) | Mean Pc (kPa) | dE (%) | dPc (kPa) |
|---|---|---|---|---|---|---|
| Arm ave | 1 | 171.5 | 0.422 | 423 | 0.102 | 175 |
| Arm ave | 2 | 164.9 | 1.757 | 597 | 0.082 | 136 |

[UNDRAINED NON LINEAR INTERPRETATION OF SECANT SHEAR MODULUS]

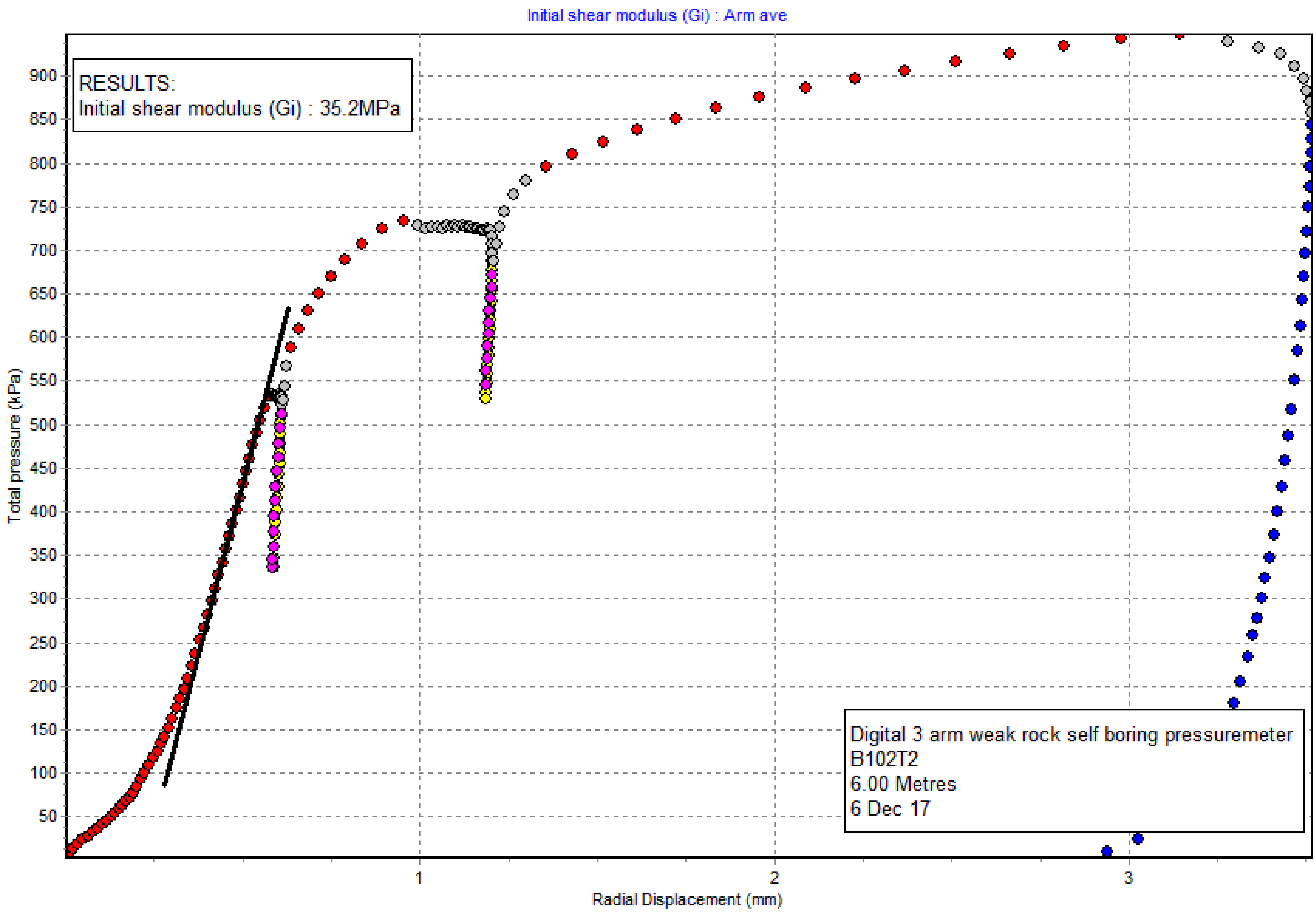
| Axis | Loop No | Intercept (MPa) | Alpha (MPa) | Gradient |
|---|---|---|---|---|
| Arm ave | 1 | 27.927 | 20.502 | 0.734 |
| Arm ave | 2 | 22.640 | 16.291 | 0.720 |



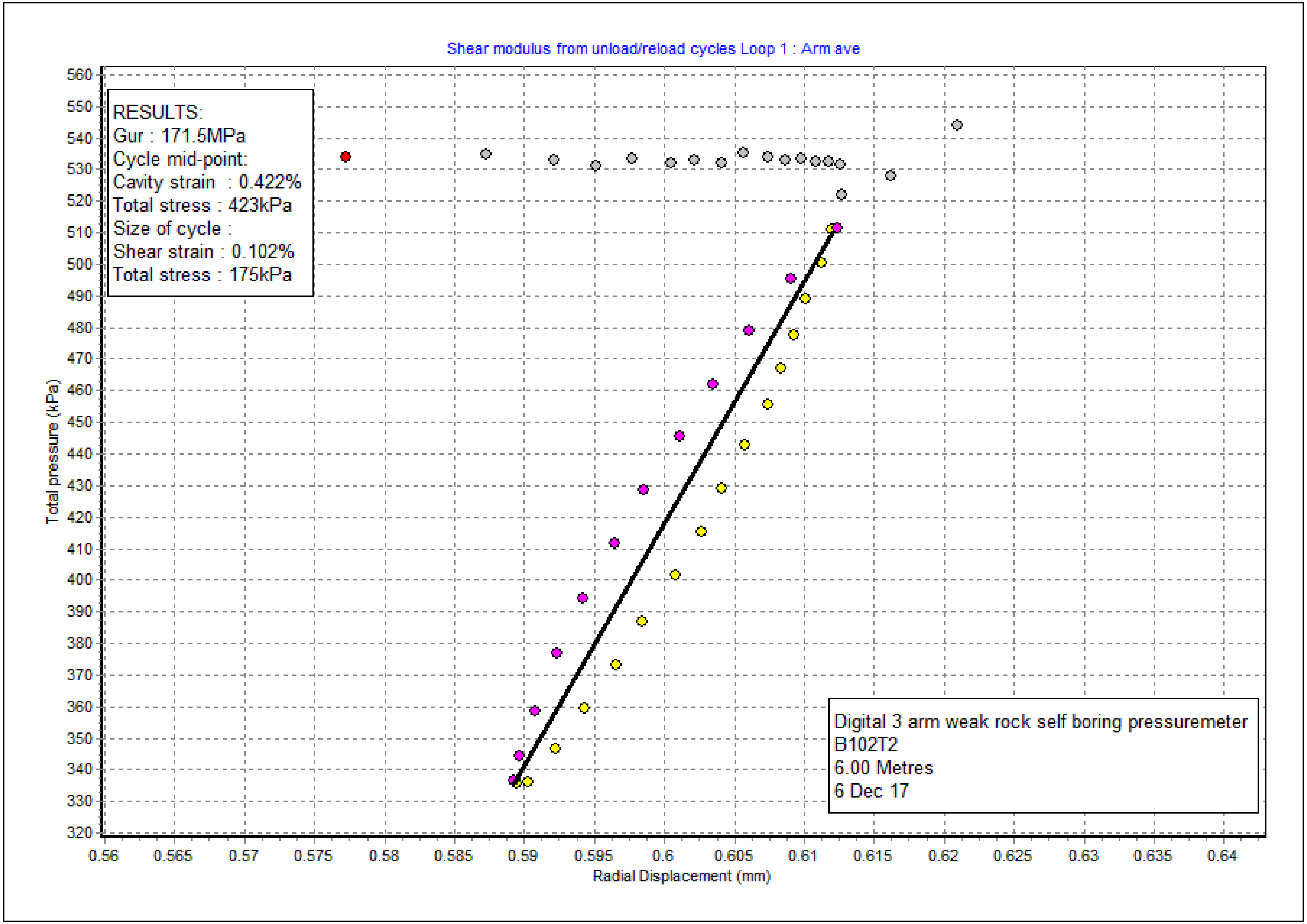
Marsland and Randolph (1977) : Arm ave
RESULTS:
Gi : 35.2MPa
Pf : 496.3kPa
Po : 308.1kPa
Tf : 186.4kPa
Po + Tf : 494.5kPa
Origin : 0.424mm
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
Shear stress at yield : Arm ave
Total pressure (kPa)
Ln[shear strain]



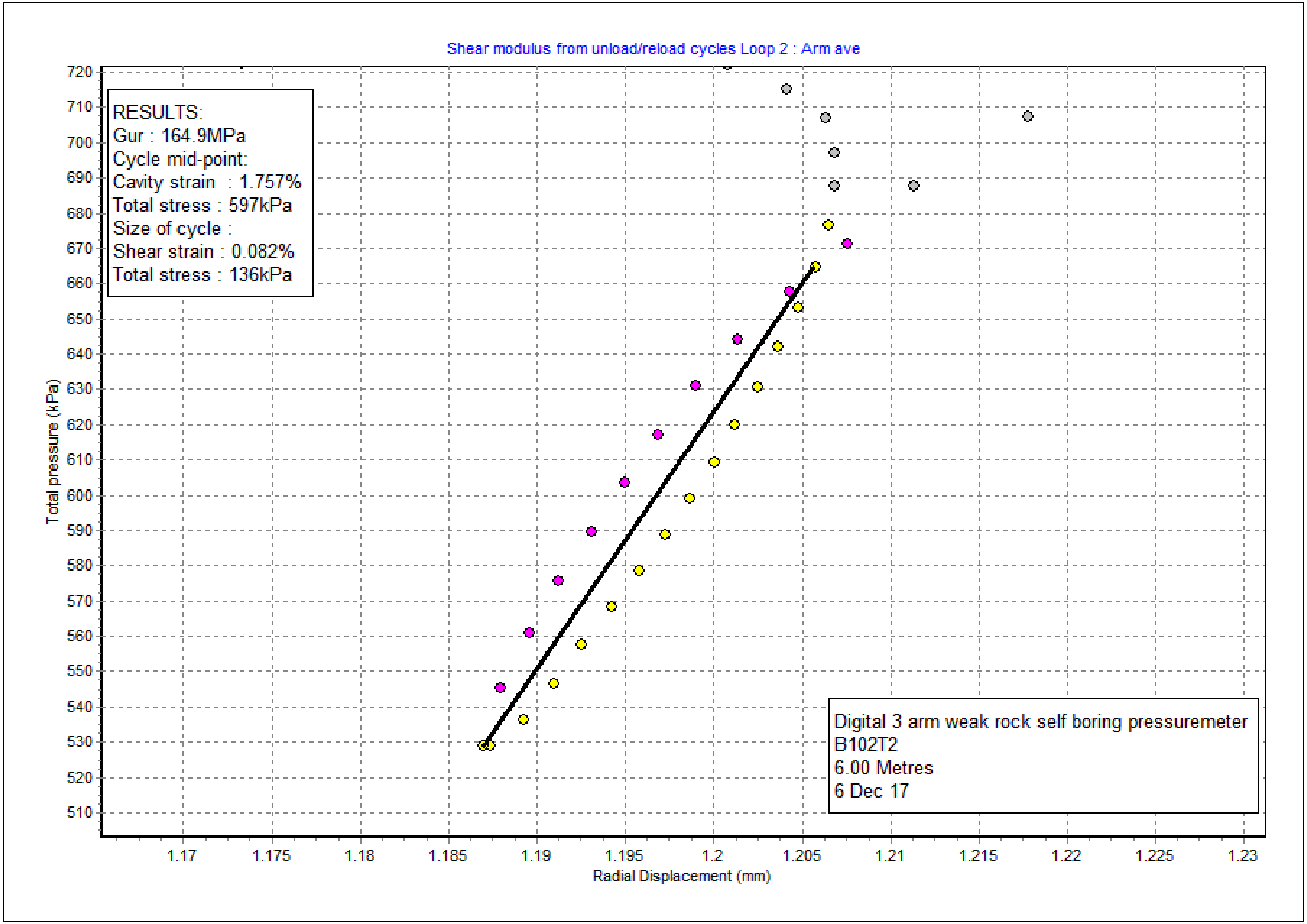
Cavity strain vs Total Pressure : Arm ave
Total pressure (kPa)
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
0
1
2
3
4
5
6
Cavity strain (%)
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17



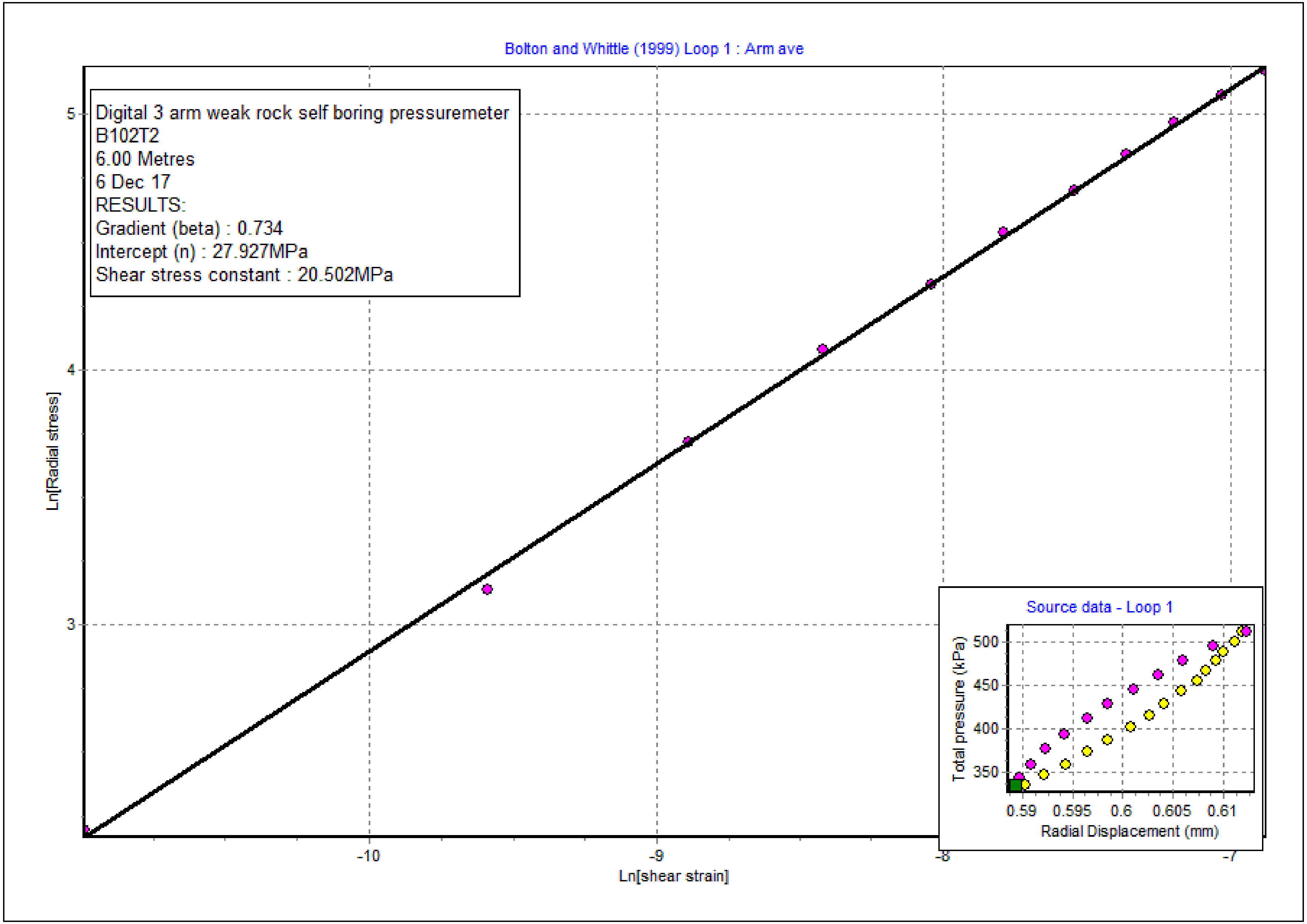
Initial shear modulus (Gi) : Arm ave
RESULTS:
Initial shear modulus (Gi) : 35.2MPa
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17
Total pressure (kPa)
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
Radial Displacement (mm)
1
2
3



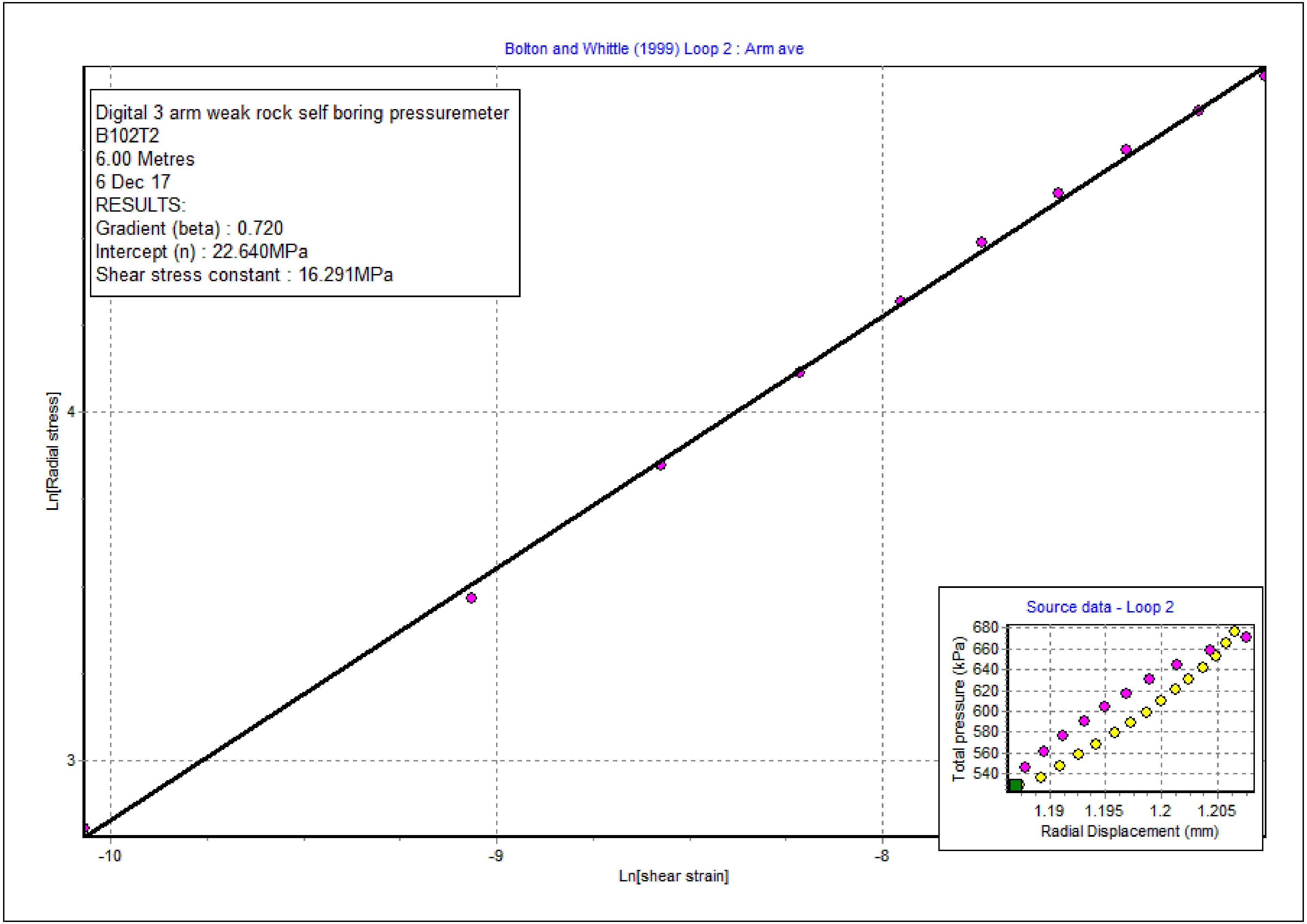
Shear modulus from unload/reload cycles Loop 1 : Arm ave
RESULTS:
Gur : 171.5MPa
Cycle mid-point:
Cavity strain : 0.422%
Total stress : 423kPa
Size of cycle :
Shear strain : 0.102%
Total stress : 175kPa
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17
Total pressure (kPa)
Radial Displacement (mm)
560
550
540
530
520
510
500
490
480
470
460
450
440
430
420
410
400
390
380
370
360
350
340
330
320
0.56
0.565
0.57
0.575
0.58
0.585
0.59
0.595
0.6
0.605
0.61
0.615
0.62
0.625
0.63
0.635
0.64



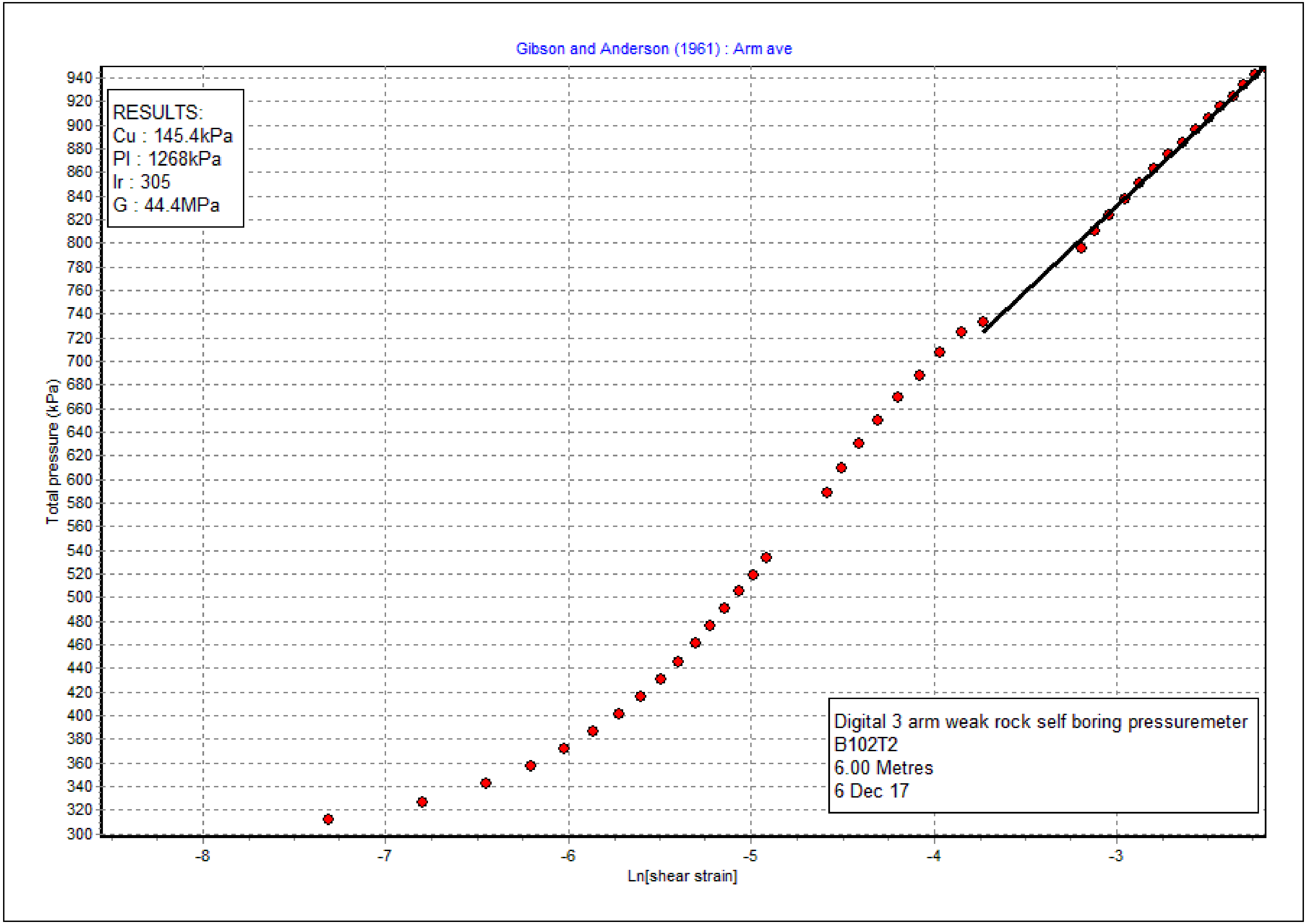
Shear modulus from unload/reload cycles Loop 2 : Arm ave
RESULTS:
Gur : 164.9MPa
Cycle mid-point:
Cavity strain : 1.757%
Total stress : 597kPa
Size of cycle :
Shear strain : 0.082%
Total stress : 136kPa
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17
Total pressure (kPa)
720
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
540
530
520
510
1.17
1.175
1.18
1.185
1.19
1.195
1.2
1.205
1.21
1.215
1.22
1.225
1.23
Radial Displacement (mm)



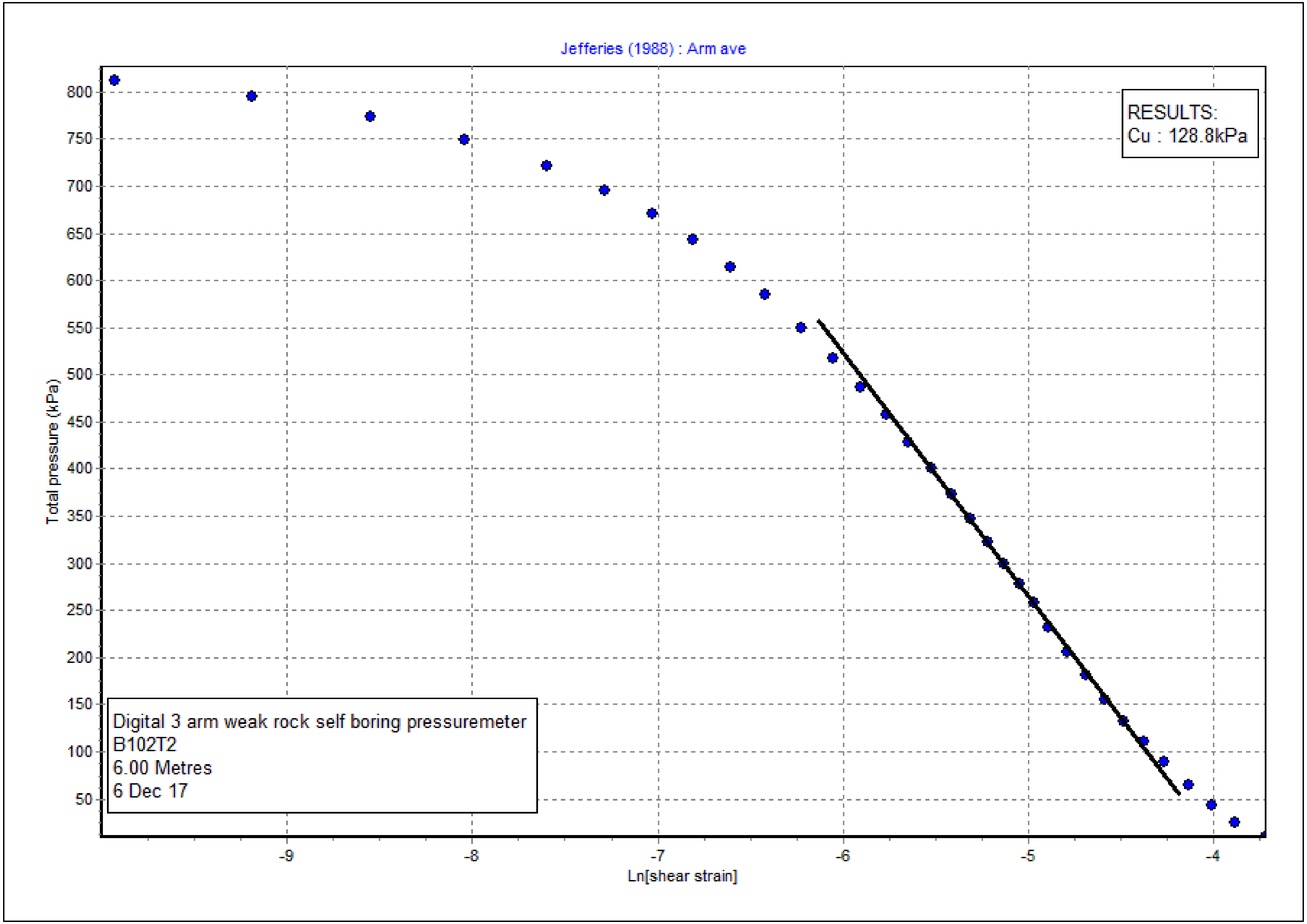
Bolton and Whittle (1999) Loop 1 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17
RESULTS:
Gradient (beta) : 0.734
Intercept (n) : 27.927MPa
Shear stress constant : 20.502MPa
Ln[Radial stress]
5
4
3
-10
-9
-8
-7
Ln[shear strain]
Source data - Loop 1
Total pressure (kPa)
500
450
400
350
0.59
0.595
0.6
0.605
0.61
Radial Displacement (mm)



Bolton and Whittle (1999) Loop 2 : Arm ave
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17
RESULTS:
Gradient (beta) : 0.720
Intercept (n) : 22.640MPa
Shear stress constant : 16.291MPa
Ln[Radial stress]
4
3
-10
-9
-8
Ln[shear strain]
Source data - Loop 2
Total pressure (kPa)
680
660
640
620
600
580
560
540
1.19
1.195
1.2
1.205
Radial Displacement (mm)

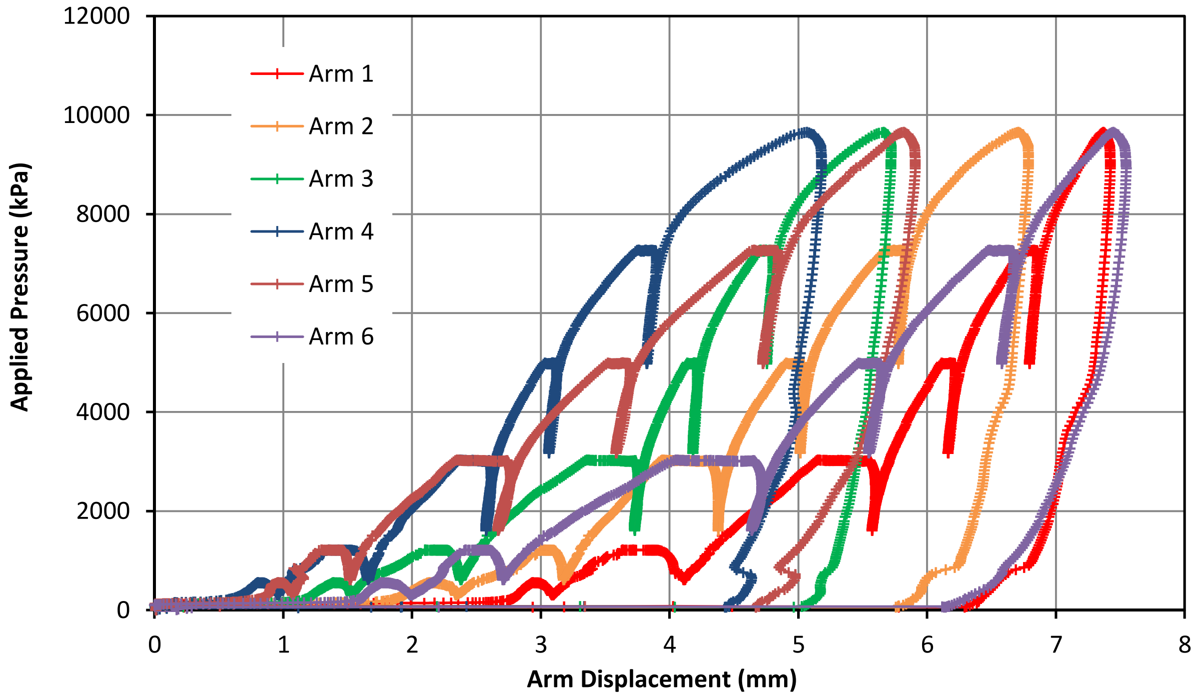


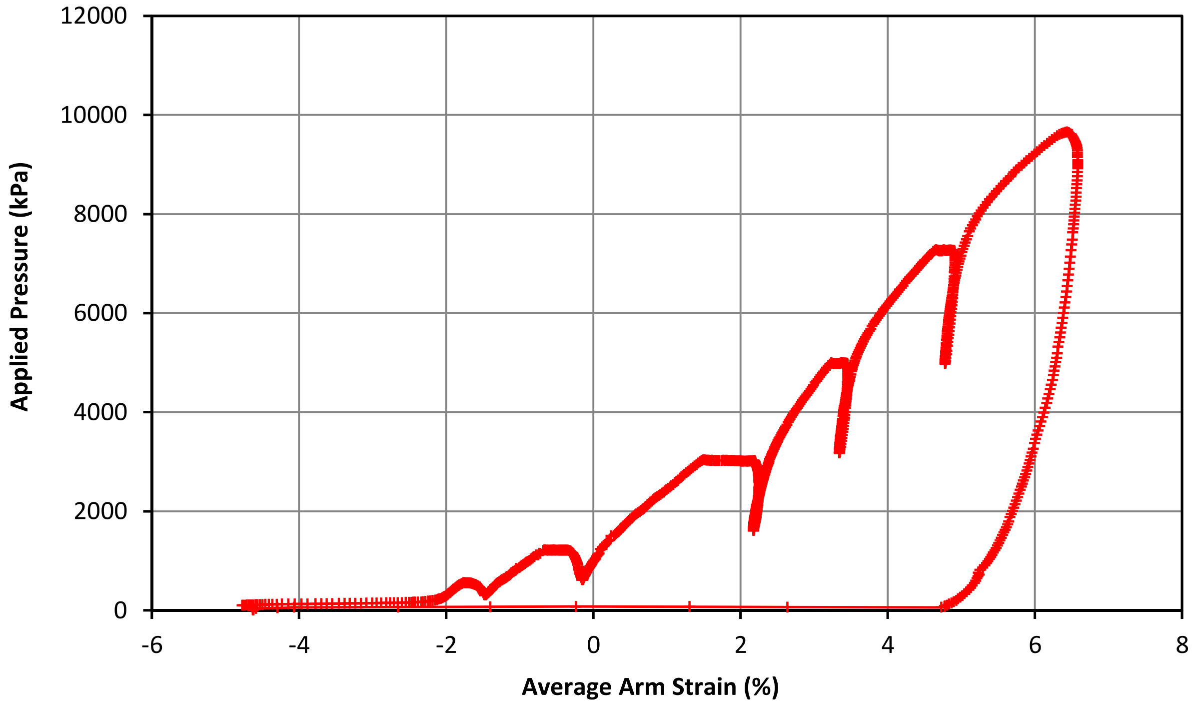
Gibson and Anderson (1961) : Arm ave
RESULTS:
Cu : 145.4kPa
Pl : 1268kPa
Ir : 305
G : 44.4MPa
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17
Total pressure (kPa)
Ln[shear strain]


Jefferies (1988) : Arm ave
RESULTS:
Cu : 128.8kPa
Digital 3 arm weak rock self boring pressuremeter
B102T2
6.00 Metres
6 Dec 17
Total pressure (kPa)
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
-9
-8
-7
-6
-5
-4
Ln[shear strain]

# Pressuremeter Test Overview

| Test Date | 06/12/2017 | Test No. | 4 |
|---|---|---|---|
| Borehole | BH102 | Test Depth (m) | 16.20 |



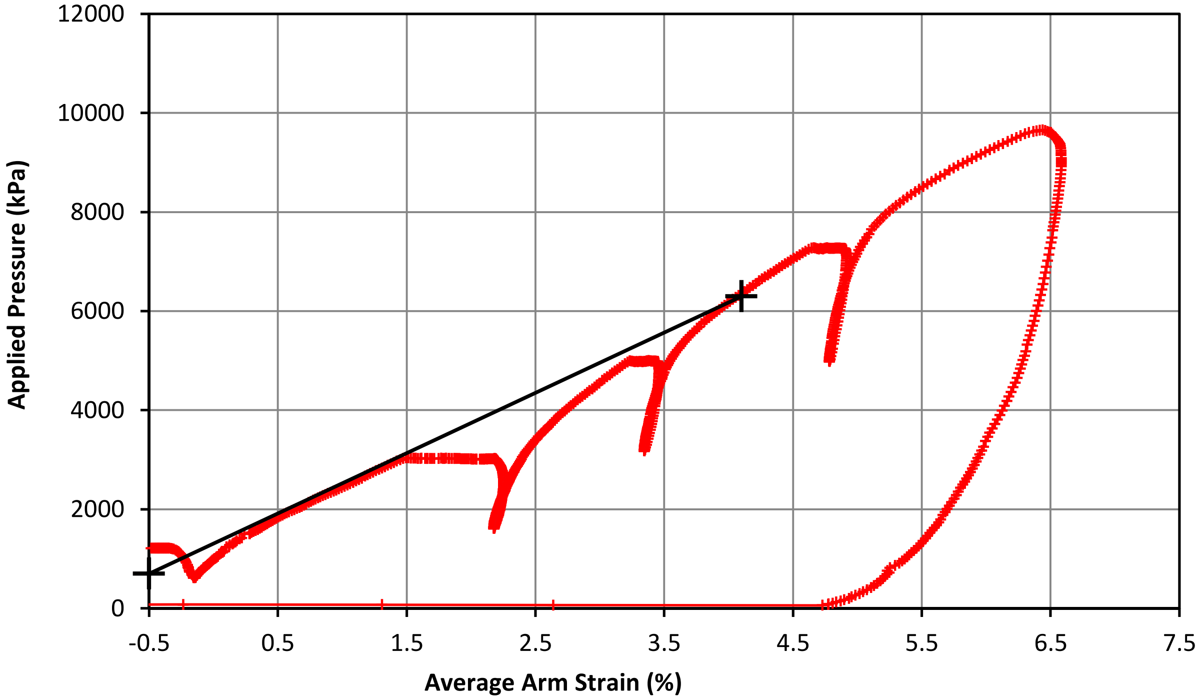

**Comments**

Marsland & Randolph analysis has been attempted, but concave form of test curve has made this analysis unrelaible and insitu horiz stress is estimated.

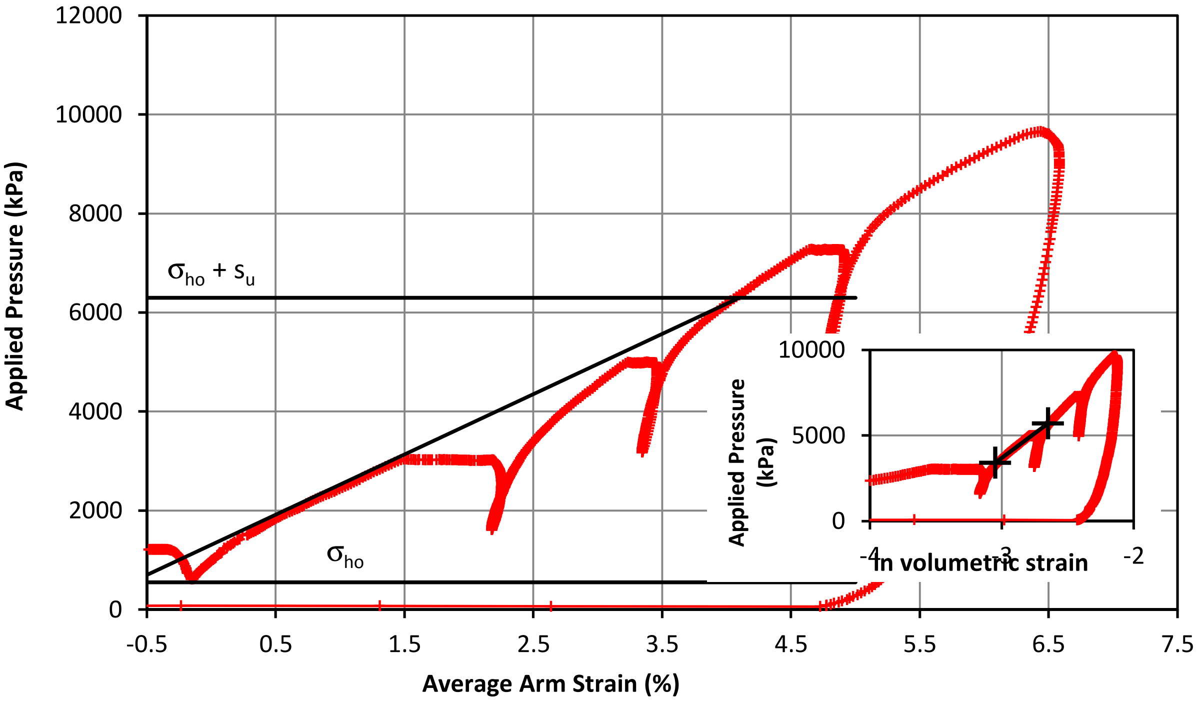
| Project | West Burton CD Power Station | Figure No. | |
|---|---|---|---|
| Client | | | |
| Project No. | A7104-17 | | |

# Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

| | | | |
|---|---|---|---|
| **Test Date** | 06/12/2017 | **Test No.** | 4 |
| **Borehole** | BH102 | **Test Depth (m)** | 16.20 |




**Initial Modulus** Shear Modulus 63 MPa

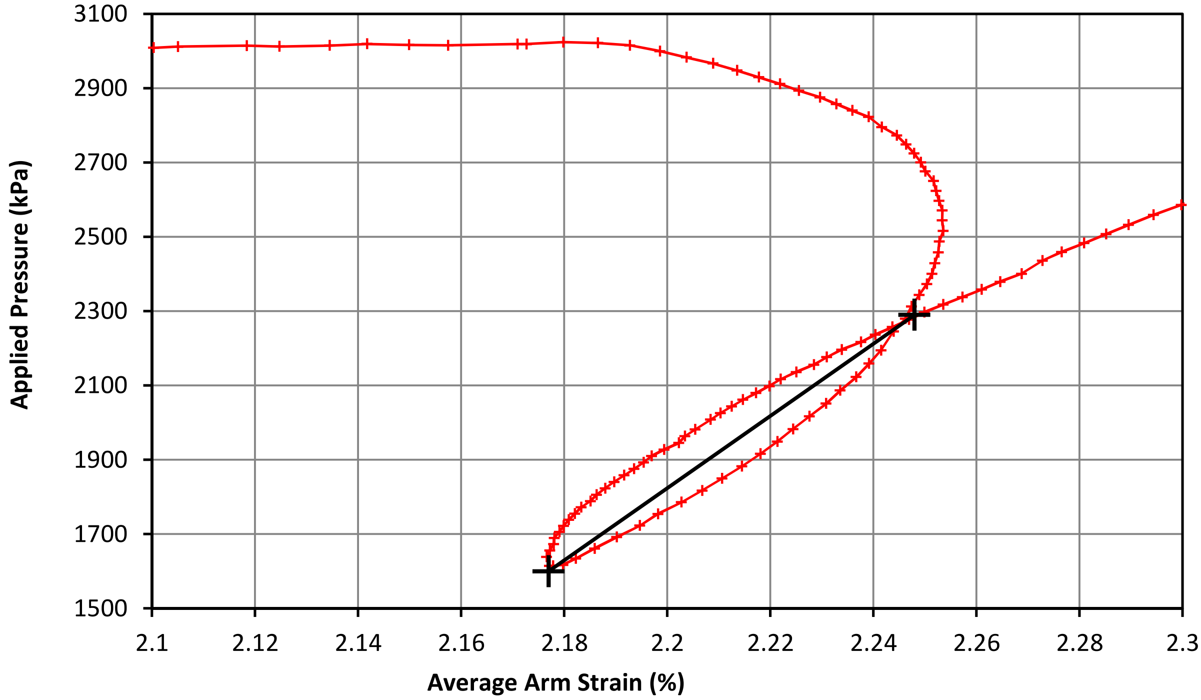



**Marsland & Randolph** In situ horizontal stress 550 kPa
(Undrained Strength) 5750 kPa)

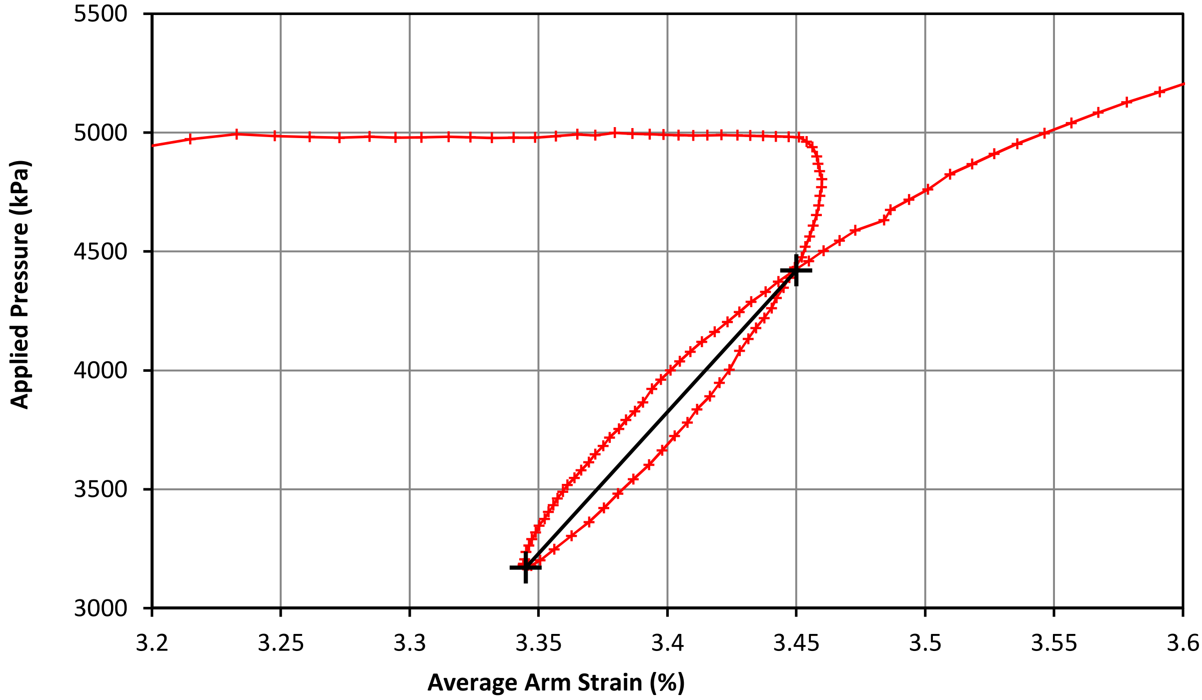
| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Pressuremeter Test Unload Reload Loop

| | | | |
|---|---|---|---|
| **Test Date** | 06/12/2017 | **Test No.** | 4 |
| **Borehole** | BH102 | **Test Depth (m)** | 16.20 |




| | | | |
|---|---|---|---|
| **Loop 1** | Shear Modulus | 497 | MPa |
| | Cavity Strain Range | 0.071 | % |

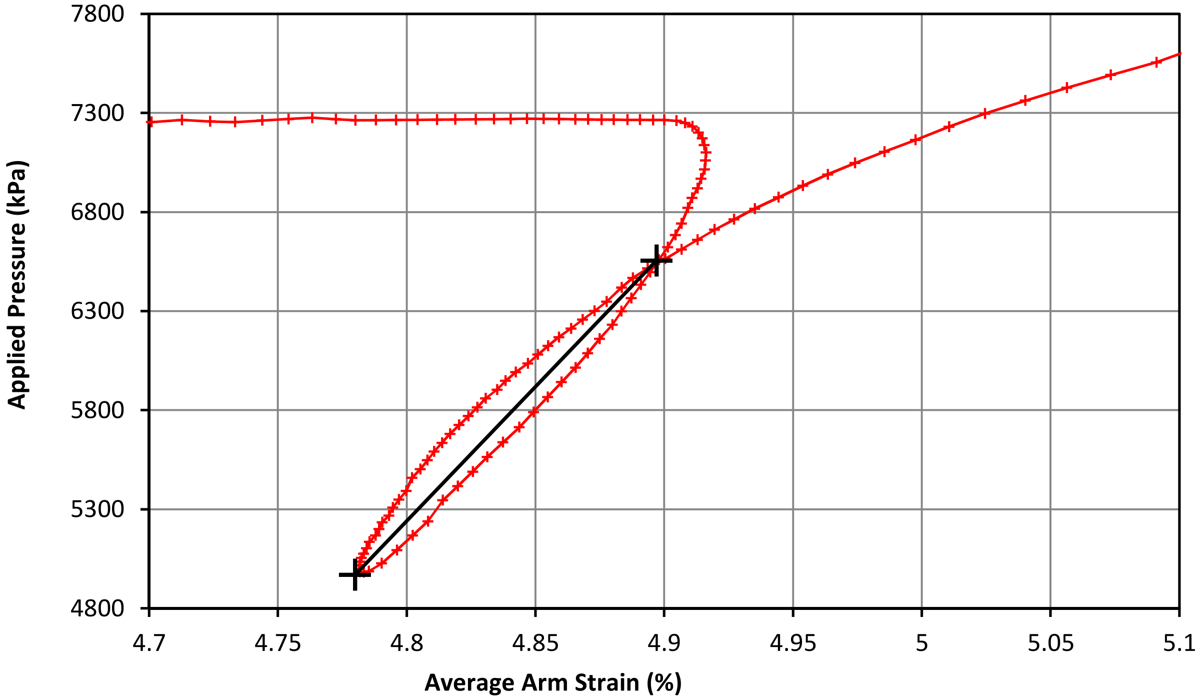



| | | | |
|---|---|---|---|
| **Loop 2** | Shear Modulus | 616 | MPa |
| | Cavity Strain Range | 0.105 | % |

| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Pressuremeter Test Unload Reload Loop

| | | | |
|---|---|---|---|
| **Test Date** | 06/12/2017 | **Test No.** | 4 |
| **Borehole** | BH102 | **Test Depth (m)** | 16.20 |



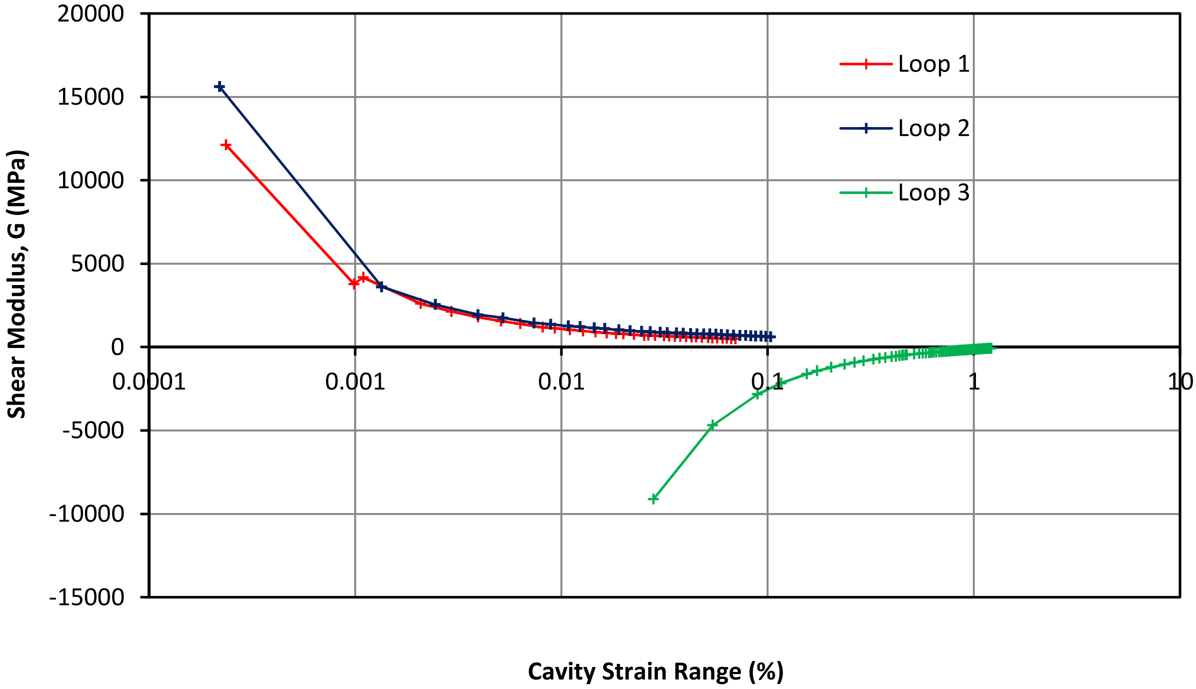

| | | | |
|---|---|---|---|
| **Loop 3** | Shear Modulus | 711 | MPa |
| | Cavity Strain Range | 0.117 | % |

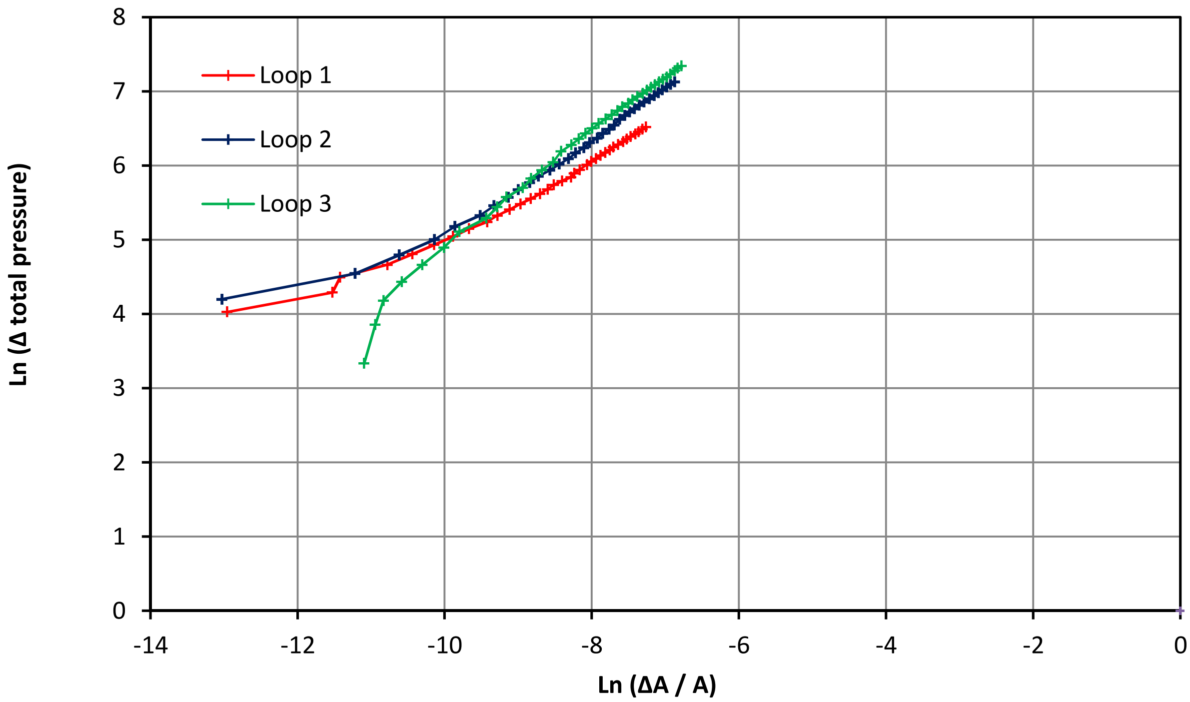
| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Pressuremeter Analysis

## Small Strain Stiffness and Bolton and Whittle (1999)

| | | | |
|---|---|---|---|
| **Test Date** | 06/12/2017 | **Test No.** | 4 |
| **Borehole** | BH102 | **Test Depth (m)** | 16.20 |



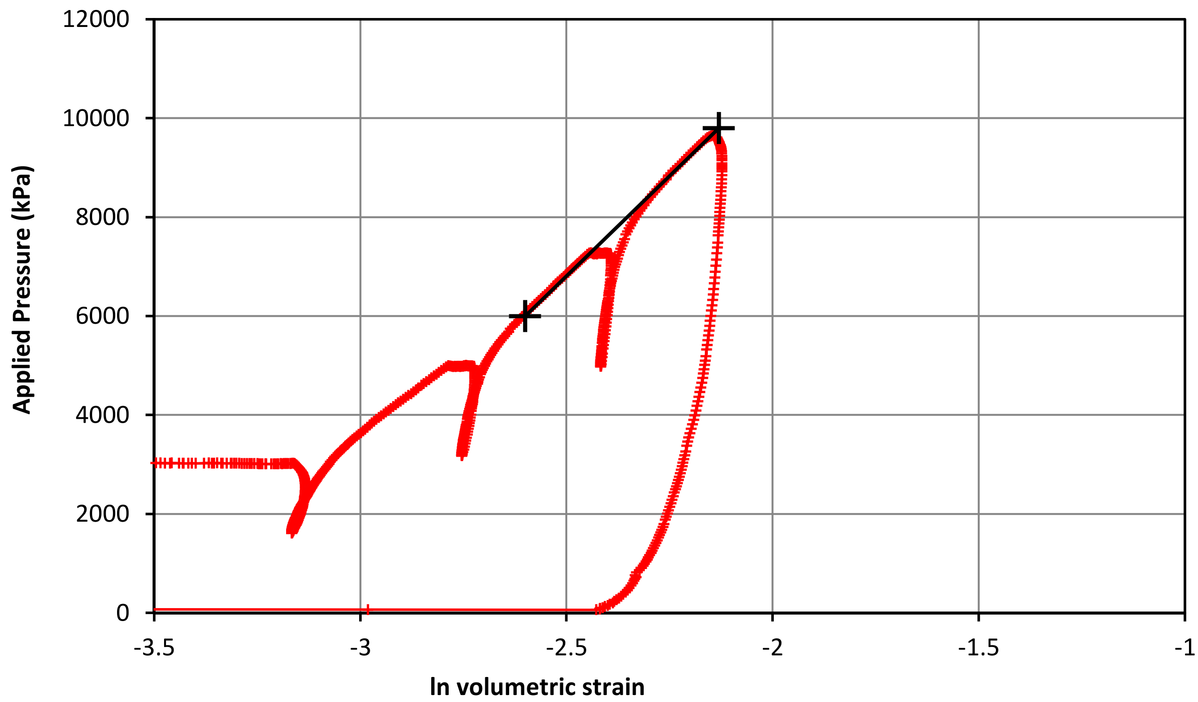




| Loop 1 | | Loop 2 | | Loop 3 | |
|---|---|---|---|---|---|
| Gradient(β) | Intercept | Gradient(β) | Intercept | Gradient(β) | Intercept |
| 0.483 | 20.24 (MPa) | 0.559 | 50.70 (MPa) | 0.818 | 432.58 (MPa) |

| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | **16** |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Pressuremeter Test - Strength

| | | | |
|---|---|---|---|
| **Test Date** | 06/12/2017 | **Test No.** | 4 |
| **Borehole** | BH102 | **Test Depth (m)** | 16.20 |

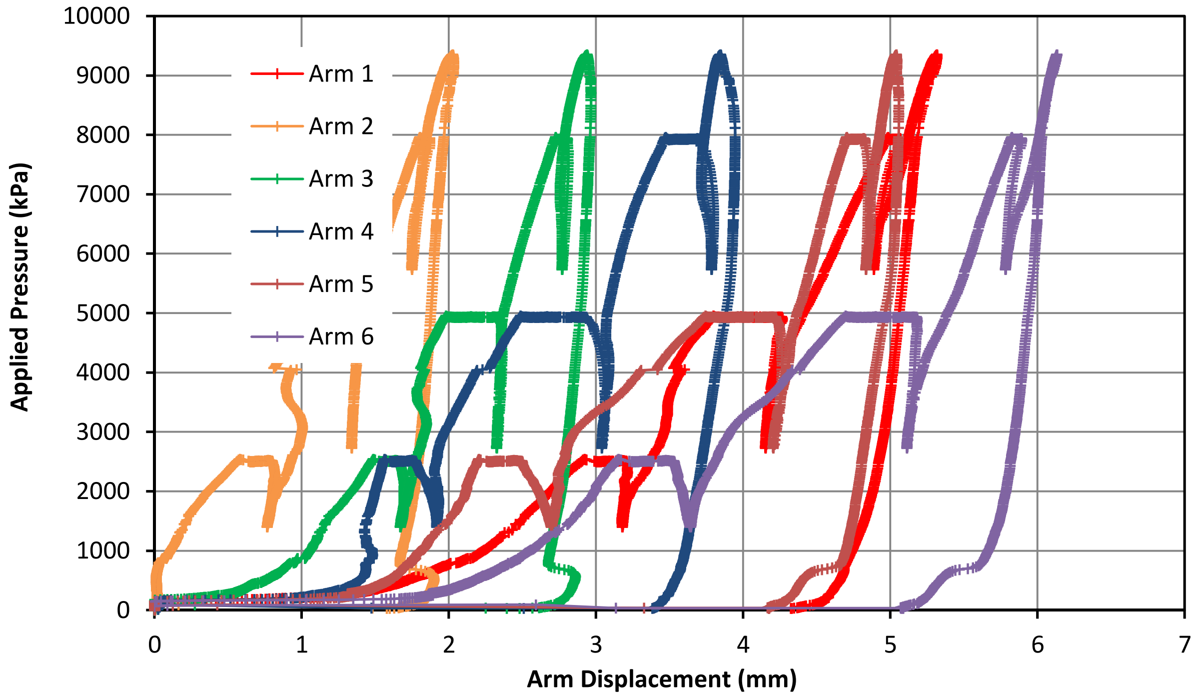


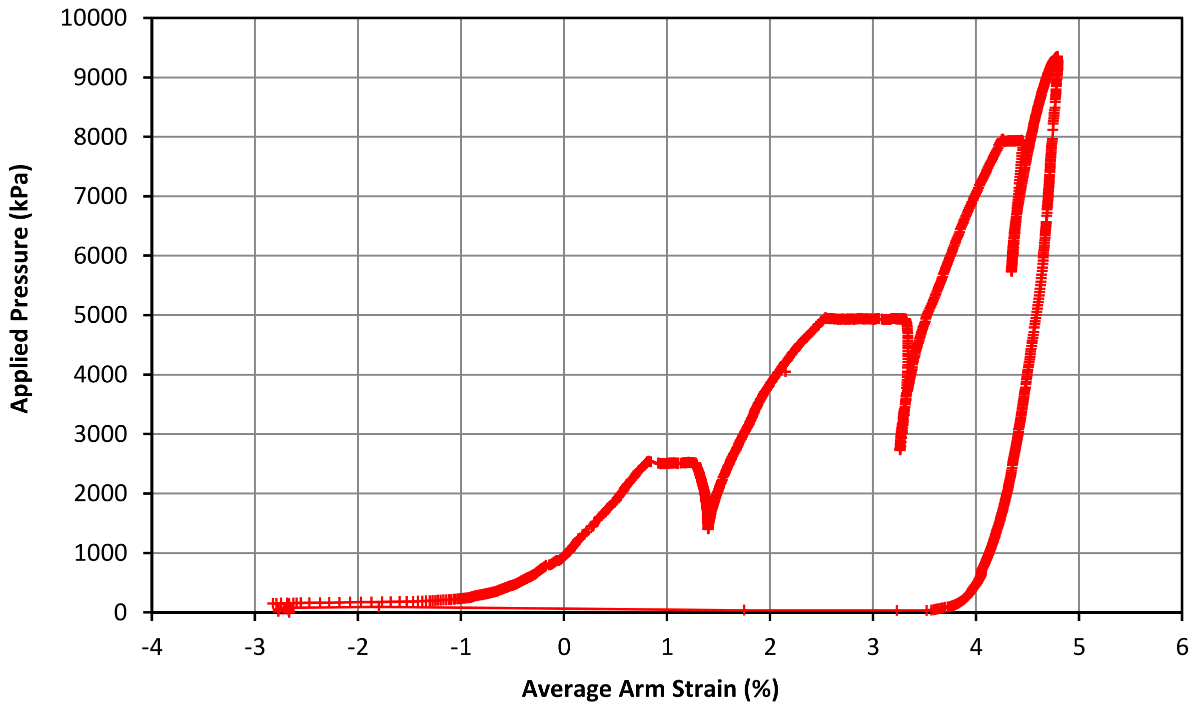

| | | |
|---|---|---|
| **Strength** | Undrained Shear | 8085 kPa |
| | Limit Pressure | 27021 kPa |

| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

## Pressuremeter Test Overview

| | | | |
|---|---|---|---|
| **Test Date** | 07/12/2017 | **Test No.** | 5 |
| **Borehole** | BH102 | **Test Depth (m)** | 20.70 |



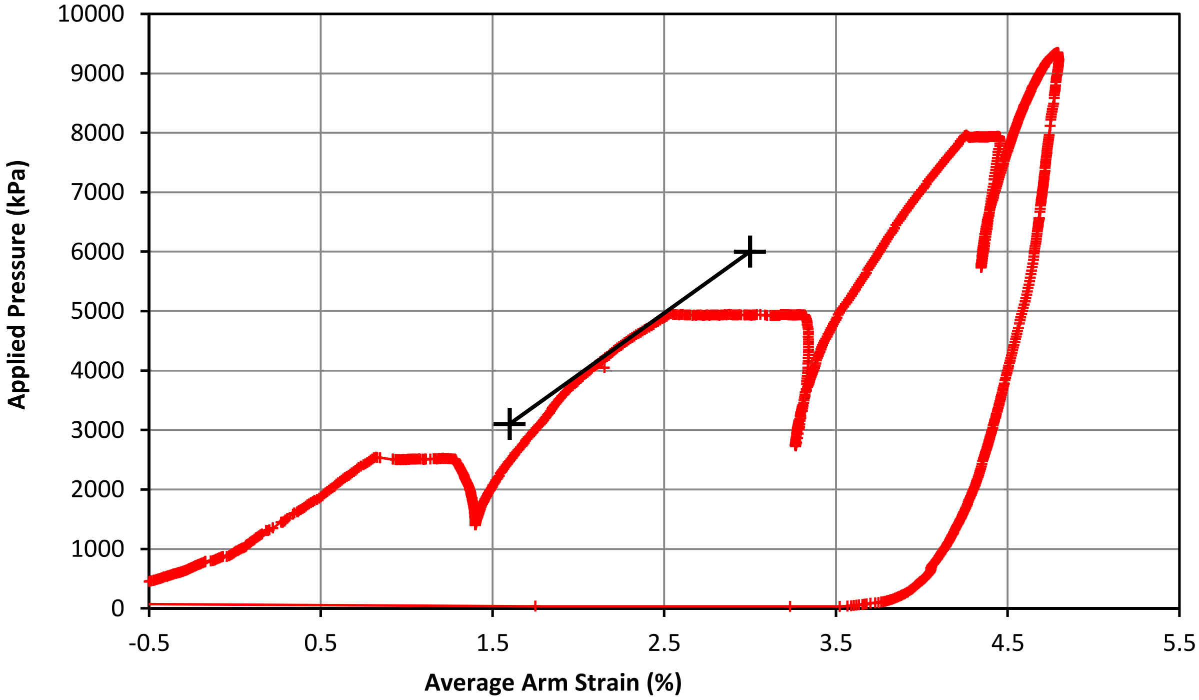

**Comments**

Signficant creep in test pocket, and concave loading curve negates

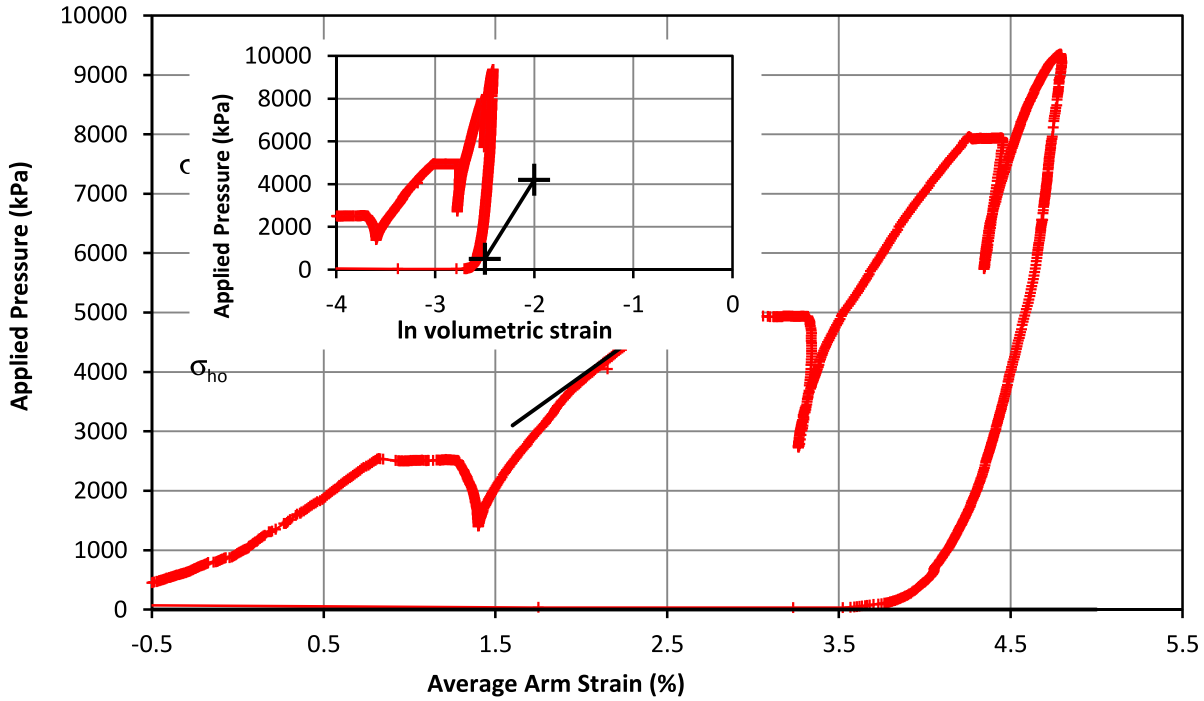
| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Pressuremeter Test Initial Modulus & In Situ Horizontal Stress

| | | | |
|---|---|---|---|
| Test Date | 07/12/2017 | Test No. | 5 |
| Borehole | BH102 | Test Depth (m) | 20.70 |




| | | | |
|---|---|---|---|
| Initial Modulus | Shear Modulus | 107 | MPa |

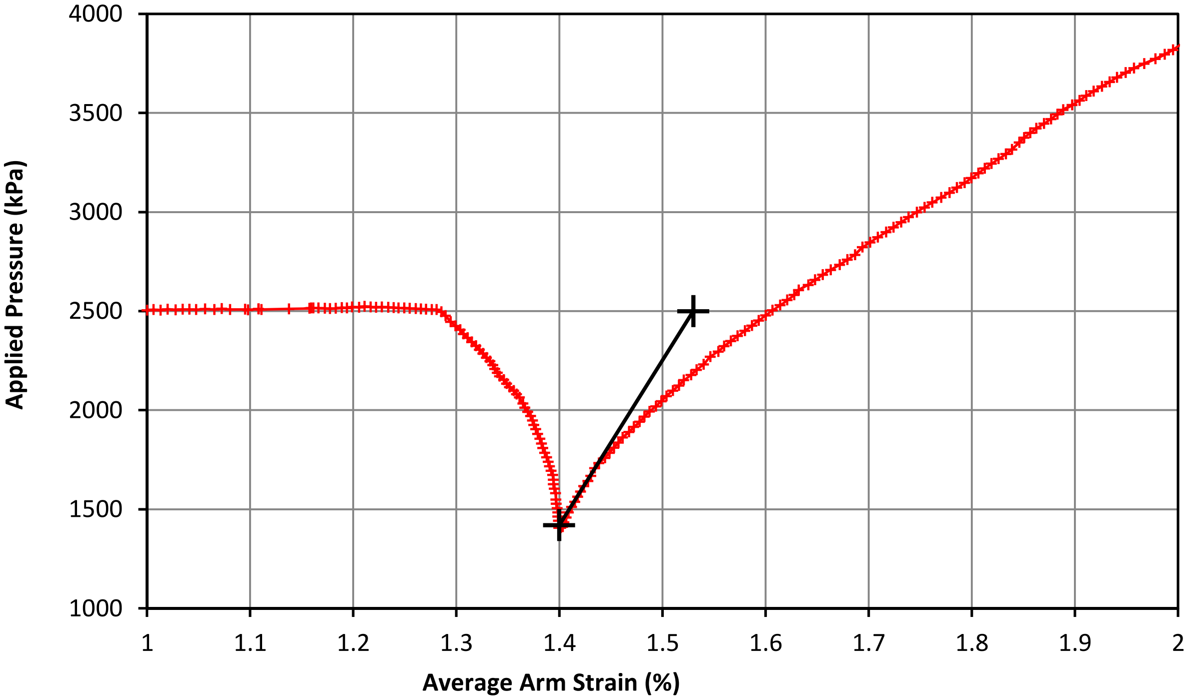



| | | | |
|---|---|---|---|
| Marsland & Randolph | In situ horizontal stress | -7400 | kPa |
| | (Undrained Strength) | 7400 | kPa) |

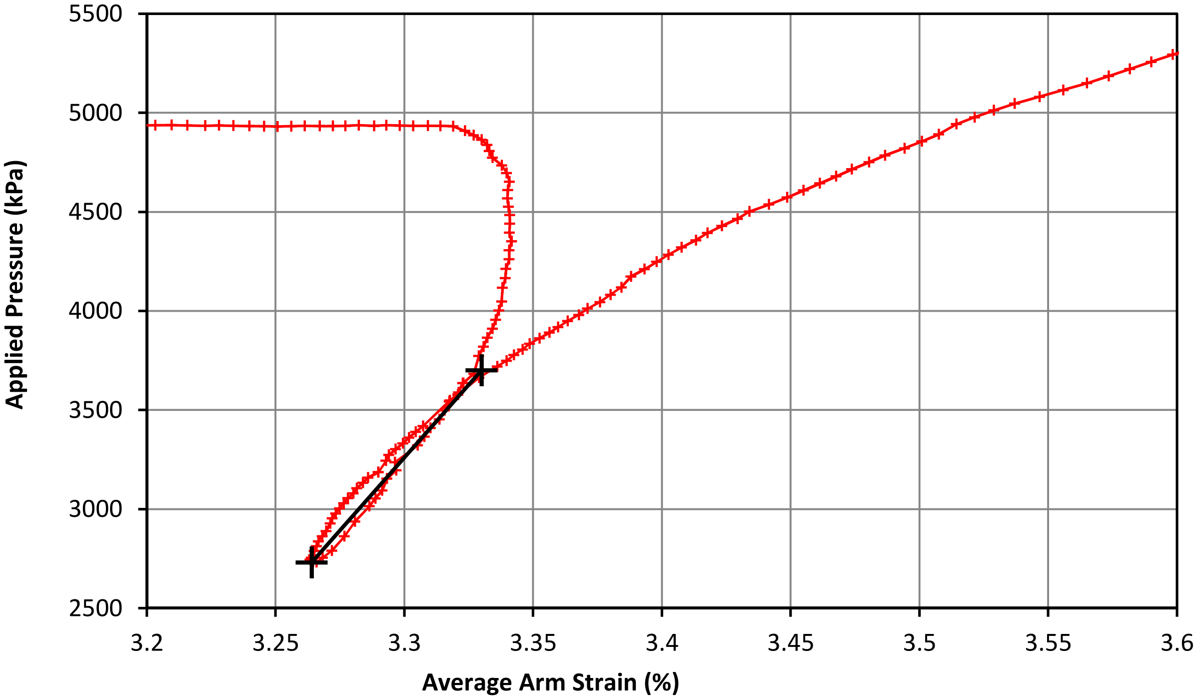
| | | | |
|---|---|---|---|
| Project | West Burton CD Power Station | Figure No. | |
| Client | | | |
| Project No. | A7104-17 | | |

# Pressuremeter Test Unload Reload Loop

| | | | |
|---|---|---|---|
| **Test Date** | 07/12/2017 | **Test No.** | 5 |
| **Borehole** | BH102 | **Test Depth (m)** | 20.70 |




| | | | |
|---|---|---|---|
| **Loop 1** | Shear Modulus | 422 | MPa |
| | Cavity Strain Range | 0.13 | % |

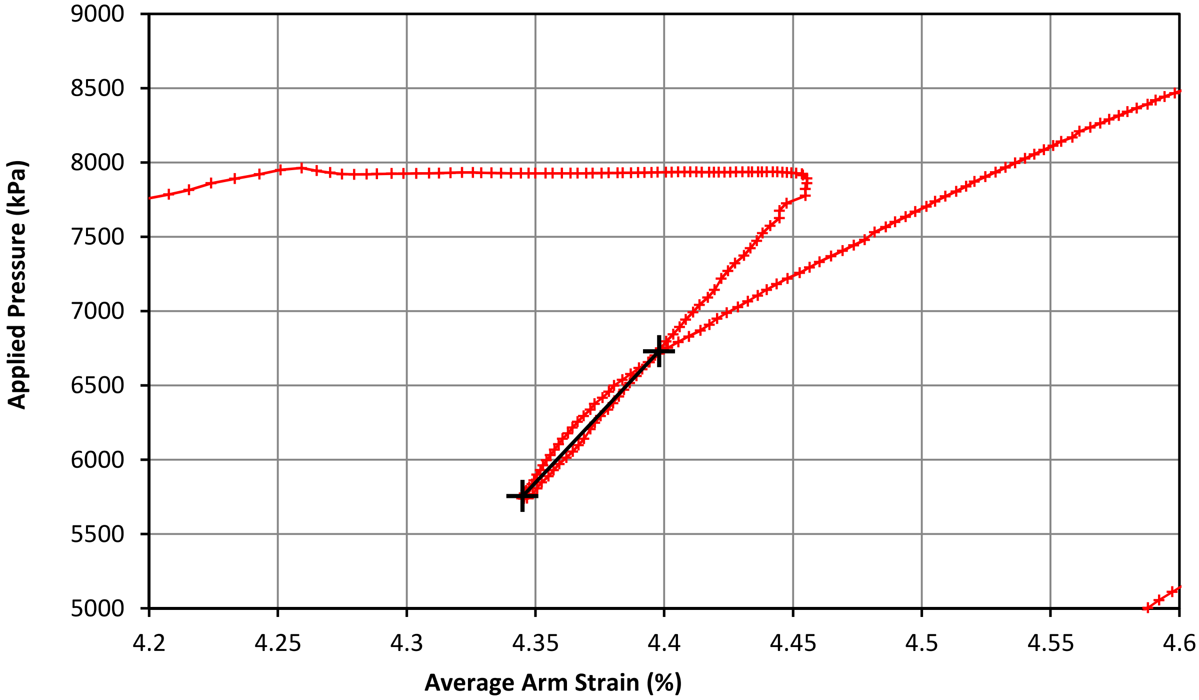



| | | | |
|---|---|---|---|
| **Loop 2** | Shear Modulus | 759 | MPa |
| | Cavity Strain Range | 0.066 | % |

| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Pressuremeter Test Unload Reload Loop

| | | | |
|---|---|---|---|
| **Test Date** | 07/12/2017 | **Test No.** | 5 |
| **Borehole** | BH102 | **Test Depth (m)** | 20.70 |




**Loop 3**

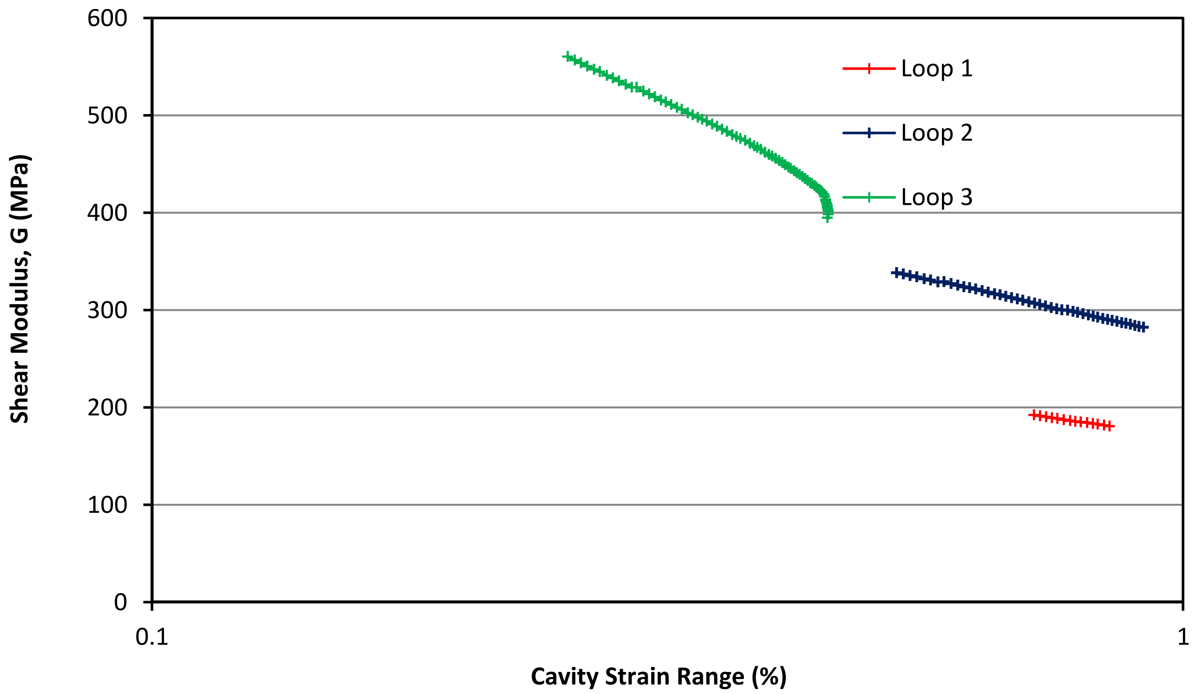
| | | |
|---|---|---|
| Shear Modulus | 960 | MPa |
| Cavity Strain Range | 0.053 | % |

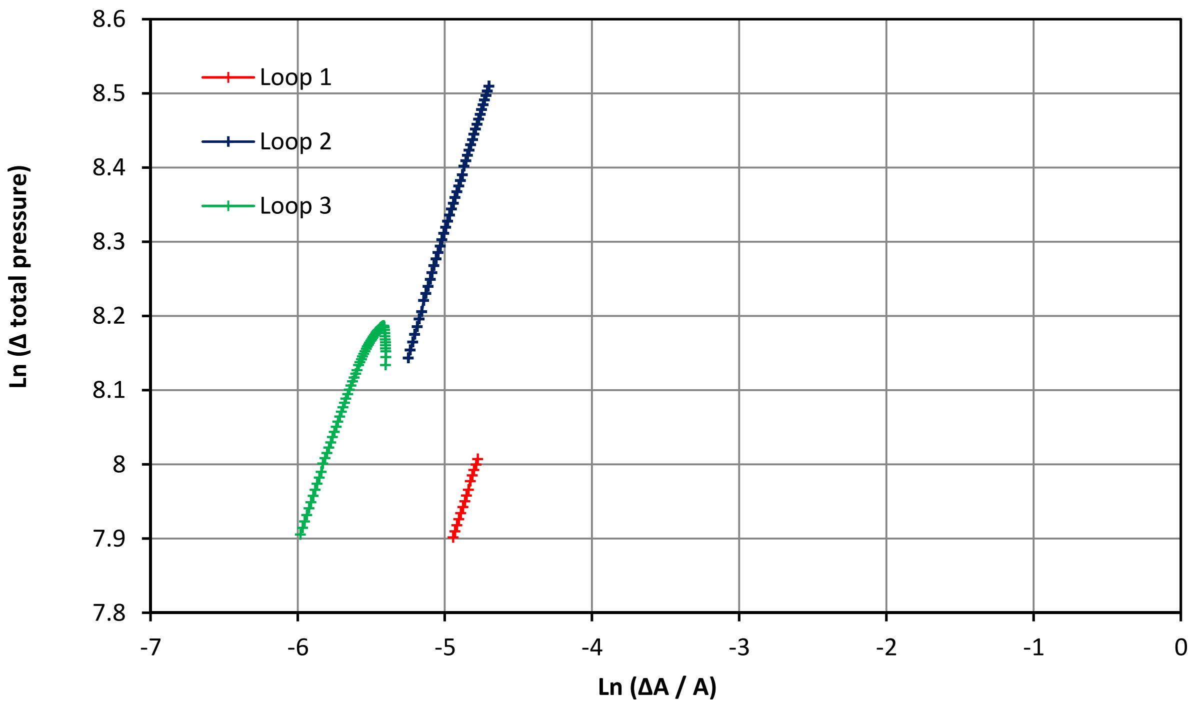
| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Pressuremeter Analysis

## Small Strain Stiffness and Bolton and Whittle (1999)

| | | | |
|---|---|---|---|
| **Test Date** | 07/12/2017 | **Test No.** | 5 |
| **Borehole** | BH102 | **Test Depth (m)** | 20.70 |



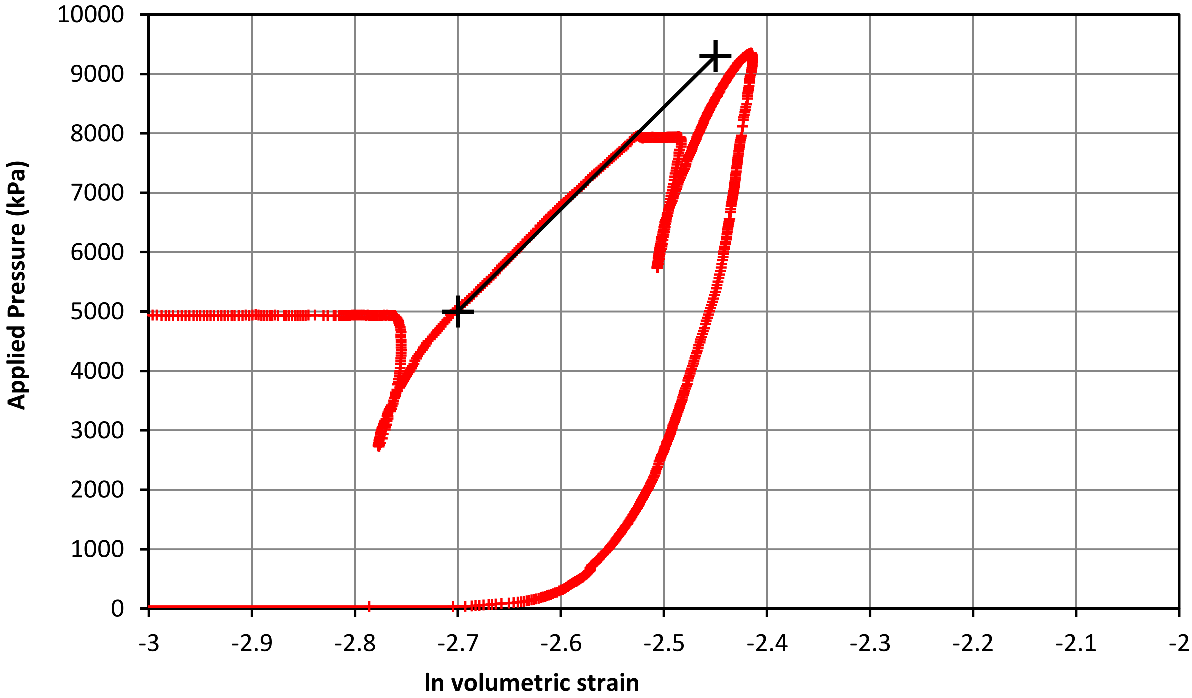




| Loop 1 | | Loop 2 | | Loop 3 | |
|---|---|---|---|---|---|
| Gradient(β) | Intercept | Gradient(β) | Intercept | Gradient(β) | Intercept |
| 0.639 | 63.59 (MPa) | 0.663 | 114.62 (MPa) | 0.456 | 42.67 (MPa) |

| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | **16** |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Pressuremeter Test - Strength

| | | | |
|---|---|---|---|
| **Test Date** | 07/12/2017 | **Test No.** | 5 |
| **Borehole** | BH102 | **Test Depth (m)** | 20.70 |




| | | |
|---|---|---|
| **Strength** | Undrained Shear | 17200 kPa |
| | Limit Pressure | 51440 kPa |

| | | | |
|---|---|---|---|
| **Project** | West Burton CD Power Station | **Figure No.** | |
| **Client** | | | |
| **Project No.** | A7104-17 | | |

# Annex B Laboratory Testing Receipts

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

AECOM
West One
Wellington Street
Leeds
LS1 1BA

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 3rd January, 2018 |
| **Your reference :** | WEST BURTON POWER STATION |
| **Our reference :** | Test Report 17/20096 Batch 1 |
| **Location :** | West Burton Power Station |
| **Date samples received :** | 6th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 2 |

Six samples were received for analysis on 6th December, 2017 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Simon Gomery BSc**
**Project Manager**

**Client Name:** AECOM
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20096

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 7-9 | 10-12 | 13-15 | 16-18 | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS111 | WS107 | BH102 | WS111 | BH103 | | | | | | | | |
| **Depth** | 1.00 | 0.50 | 2.20 | 4.00 | 0.50 | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | | | | | | | | |
| **Sample Date** | 05/12/2017 | 05/12/2017 | 05/12/2017 | 05/12/2017 | 05/12/2017 | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | | | | | | | | |
| **Date of Receipt** | 06/12/2017 | 06/12/2017 | 06/12/2017 | 06/12/2017 | 06/12/2017 | | | | | | | | |
| Antimony | 7 | 4 | 7 | 8 | 7 | | | | | | <1 | mg/kg | TM30/PM15 |
| Arsenic #M | 105.7 | 44.4 | 158.8 | 141.4 | 126.6 | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Barium #M | 594 | 365 | 328 | 349 | 624 | | | | | | <1 | mg/kg | TM30/PM15 |
| Beryllium | 4.2 | 2.3 | 3.7 | 4.2 | 4.4 | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Cadmium #M | <0.1 | 0.4 | <0.1 | <0.1 | <0.1 | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Chromium #M | 89.2 | 52.4 | 64.2 | 64.1 | 59.3 | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Copper #M | 79 | 49 | 89 | 95 | 85 | | | | | | <1 | mg/kg | TM30/PM15 |
| Iron | 42560 | 35820 | 42550 | 40230 | 43810 | | | | | | <20 | mg/kg | TM30/PM15 |
| Lead #M | 61 | 64 | 38 | 42 | 55 | | | | | | <5 | mg/kg | TM30/PM15 |
| Manganese #M | 371 | 667 | 291 | 327 | 509 | | | | | | <1 | mg/kg | TM30/PM15 |
| Mercury #M | 0.1 | <0.1 | <0.1 | 0.1 | <0.1 | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum #M | 7.1 | 3.5 | 5.0 | 6.0 | 5.4 | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Nickel #M | 63.6 | 42.7 | 55.5 | 65.9 | 63.5 | | | | | | <0.7 | mg/kg | TM30/PM15 |
| Selenium #M | 3 | 1 | 3 | 4 | 5 | | | | | | <1 | mg/kg | TM30/PM15 |
| Vanadium | 130 | 71 | 113 | 129 | 122 | | | | | | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron #M | 26.4 | 4.9 | 15.9 | 14.4 | 10.6 | | | | | | <0.1 | mg/kg | TM74/PM32 |
| Zinc #M | 78 | 120 | 62 | 71 | 90 | | | | | | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene #M | - | <0.04 | - | - | 0.05 | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | <0.03 | - | - | <0.03 | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene #M | - | <0.05 | - | - | <0.05 | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Fluorene #M | - | <0.04 | - | - | <0.04 | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene #M | - | 0.08 | - | - | 0.05 | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | <0.04 | - | - | <0.04 | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene #M | - | 0.13 | - | - | <0.03 | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | 0.13 | - | - | <0.03 | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | 0.10 | - | - | <0.06 | | | | | | <0.06 | mg/kg | TM4/PM8 |
| Chrysene #M | - | 0.08 | - | - | <0.02 | | | | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene #M | - | 0.14 | - | - | <0.07 | | | | | | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | 0.06 | - | - | <0.04 | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene #M | - | <0.04 | - | - | <0.04 | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | <0.04 | - | - | <0.04 | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | <0.04 | - | - | <0.04 | | | | | | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | - | 0.7 | - | - | <0.6 | | | | | | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | 0.10 | - | - | <0.05 | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | 0.04 | - | - | <0.02 | | | | | | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | 75 | - | - | 108 | | | | | | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Natural Moisture Content | 20.5 | 21.4 | 17.6 | 19.6 | 15.0 | | | | | | <0.1 | % | PM4/PM0 |
| | | | | | | | | | | | | | |
| Ammoniacal Nitrogen as N | - | <0.6 | 2.9 | <0.6 | <0.6 | | | | | | <0.6 | mg/kg | TM38/PM20 |
| Chloride #M | - | 79 | 5 | 7 | 5 | | | | | | <2 | mg/kg | TM38/PM20 |
| Fluoride | - | 1.5 | <0.3 | <0.3 | <0.3 | | | | | | <0.3 | mg/kg | TM173/PM20 |

**Client Name:** AECOM
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20096

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 7-9 | 10-12 | 13-15 | 16-18 | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS111 | WS107 | BH102 | WS111 | BH103 | | | | | | | | |
| Depth | 1.00 | 0.50 | 2.20 | 4.00 | 0.50 | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | V J B | V J B | V J B | V J B | | | | | | | | |
| Sample Date | 05/12/2017 | 05/12/2017 | 05/12/2017 | 05/12/2017 | 05/12/2017 | | | | | | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | | | | | | | | |
| Date of Receipt | 06/12/2017 | 06/12/2017 | 06/12/2017 | 06/12/2017 | 06/12/2017 | | | | | | | | |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | - | 29.2 | <2.5 | <2.5 | <2.5 | | | | | | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | - | 0.46 | <0.05 | <0.05 | <0.05 | | | | | | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | - | 0.4 | <0.3 | <0.3 | 2.0 | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) #M | - | 0.4837 | 1.4336 | 1.4839 | 0.2060 | | | | | | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 89.2 | 52.4 | 64.2 | 64.1 | 59.3 | | | | | | <0.5 | mg/kg | NONE/NONE |
| Total Cyanide #M | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | mg/kg | TM89/PM45 |
| Total Organic Carbon # | 6.56 | 2.90 | 3.17 | 3.65 | 4.81 | | | | | | <0.02 | % | TM21/PM24 |
| Sulphide | - | <10 | <10 | <10 | <10 | | | | | | <10 | mg/kg | TM106/PM119 |
| Total Alkalinity as CaCO3 | - | 580 | 320 | 320 | 330 | | | | | | <10 | mg/kg | TM75/PM58 |
| pH #M | 8.12 | 8.01 | 8.89 | 8.89 | 8.39 | | | | | | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clayey Sand | Clayey Sand | Clayey Sand | Clayey Sand | Clayey Sand | | | | | | | None | PM13/PM0 |
| Sample Colour | Dark Grey | Dark Grey | Dark Grey | Dark Grey | Dark Grey | | | | | | | None | PM13/PM0 |
| Other Items | NA | NA | NA | NA | NA | | | | | | | None | PM13/PM0 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20096 | 1 | WS111 | 1.00 | 3 | 18/12/2017 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20096 | 1 | WS107 | 0.50 | 9 | 18/12/2017 | **General Description (Bulk Analysis)** | Soi/Stone |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20096 | 1 | BH102 | 2.20 | 12 | 18/12/2017 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20096 | 1 | WS111 | 4.00 | 15 | 18/12/2017 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20096 | 1 | BH103 | 0.50 | 18 | 18/12/2017 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |

**Client Name:** AECOM
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20096 | 1 | BH103 | 0.50 | 18 | 18/12/2017 | **Asbestos ACM** | Unable to characterise |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |

**Client Name:** AECOM
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| No deviating sample report results for job 17/20096 | | | | | | |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/20096

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |

**JE Job No:** 17/20096

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | Yes | AD | Yes |

**JE Job No:** 17/20096

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | Yes | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | Yes | AD | Yes |
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | Yes | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Fax: +44 (0) 1244 833781

AECOM
West One
Wellington Street
Leeds
LS1 1BA

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 3rd January, 2018 |
| **Your reference :** | |
| **Our reference :** | Test Report 17/20361 Batch 1 |
| **Location :** | West Barton Power Station |
| **Date samples received :** | 9th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 2 |

Four samples were received for analysis on 9th December, 2017 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Simon Gomery BSc**
**Project Manager**

## *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:**
**Location:** West Barton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20361

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | | | |
|---|---|---|---|---|---|---|---|
| **Sample ID** | WS108 | WS108 | WS109 | BH101 | | | |
| **Depth** | 8.5 | 12.0 | 15.0 | 0.5 | | | |
| **COC No / misc** | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 07/12/2017 | 07/12/2017 | 08/12/2017 | 08/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 09/12/2017 | 09/12/2017 | 09/12/2017 | 09/12/2017 | | | |
| Antimony | 8 | 2 | 2 | 6 | <1 | mg/kg | TM30/PM15 |
| Arsenic #M | 113.9 | 11.2 | 3.6 | 119.8 | <0.5 | mg/kg | TM30/PM15 |
| Barium #M | 358 | 211 | 740 | 352 | <1 | mg/kg | TM30/PM15 |
| Beryllium | 4.5 | 1.0 | 1.7 | 3.3 | <0.5 | mg/kg | TM30/PM15 |
| Cadmium #M | <0.1 | <0.1 | 2.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Chromium #M | 69.2 | 30.7 | 88.8 | 62.9 | <0.5 | mg/kg | TM30/PM15 |
| Copper #M | 87 | 11 | 20 | 80 | <1 | mg/kg | TM30/PM15 |
| Iron | 36360 | 29620 | 31390 | 41630 | <20 | mg/kg | TM30/PM15 |
| Lead #M | 46 | 12 | <5 | 49 | <5 | mg/kg | TM30/PM15 |
| Manganese #M | 349 | 699 | 217 | 412 | <1 | mg/kg | TM30/PM15 |
| Mercury #M | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum #M | 5.4 | 1.5 | 5.9 | 3.3 | <0.1 | mg/kg | TM30/PM15 |
| Nickel #M | 65.0 | 26.0 | 56.3 | 54.3 | <0.7 | mg/kg | TM30/PM15 |
| Selenium #M | 4 | <1 | 1 | 3 | <1 | mg/kg | TM30/PM15 |
| Vanadium | 120 | 37 | 59 | 104 | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron #M | 10.6 | 3.4 | 3.7 | 2.6 | <0.1 | mg/kg | TM74/PM32 |
| Zinc #M | 62 | 64 | 88 | 87 | <5 | mg/kg | TM30/PM15 |
| | | | | | | | |
| PAH MS | | | | | | | |
| Naphthalene #M | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | - | - | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene #M | - | - | - | <0.05 | <0.05 | mg/kg | TM4/PM8 |
| Fluorene #M | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene #M | - | - | - | 0.06 | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene #M | - | - | - | 0.16 | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | - | - | 0.14 | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | - | - | 0.11 | <0.06 | mg/kg | TM4/PM8 |
| Chrysene #M | - | - | - | 0.10 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene #M | - | - | - | 0.17 | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | - | - | 0.10 | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene #M | - | - | - | 0.07 | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | - | - | 0.07 | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | - | - | - | 1.0 | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | - | - | 0.12 | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | - | - | 0.05 | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | - | - | 87 | <0 | % | TM4/PM8 |
| | | | | | | | |
| Methyl Tertiary Butyl Ether #M | $<30_{AA}$ | <6 | <6 | - | <6 | ug/kg | TM15/PM10 |
| Benzene #M | $<25_{AA}$ | <5 | <5 | - | <5 | ug/kg | TM15/PM10 |
| Toluene #M | $<15_{AA}$ | <3 | <3 | - | <3 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | $<15_{AA}$ | <3 | <3 | - | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | $<20_{AA}$ | <4 | <4 | - | <4 | ug/kg | TM15/PM10 |

**Client Name:** AECOM
**Reference:**
**Location:** West Barton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20361

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 4-6 | 7-9 | 10-12 | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS108 | WS108 | WS109 | BH101 | | | | | | | | | |
| Depth | 8.5 | 12.0 | 15.0 | 0.5 | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | V J B | V J B | V J B | | | | | | | | | |
| Sample Date | 07/12/2017 | 07/12/2017 | 08/12/2017 | 08/12/2017 | | | | | | | | | |
| Sample Type | Soil | Soil | Soil | Soil | | | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | | | | | | | |
| Date of Receipt | 09/12/2017 | 09/12/2017 | 09/12/2017 | 09/12/2017 | | | | | | | | | |
| o-Xylene #M | <20$_{AA}$ | <4 | <4 | - | | | | | | | <4 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 96$_{AA}$ | 68 | 139 | - | | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 65$_{AA}$ | 61 | 149 | - | | | | | | | <0 | % | TM15/PM10 |
| | | | | | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 #M | <0.1 | <0.1 | <0.1 | - | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 #M | <0.1 | <0.1 | <0.1 | - | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | <0.1 | <0.1 | <0.1 | - | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 #M | <0.2 | <0.2 | <0.2 | - | | | | | | | <0.2 | mg/kg | TM5/PM16 |
| >C12-C16 #M | <4 | <4 | <4 | - | | | | | | | <4 | mg/kg | TM5/PM16 |
| >C16-C21 #M | <7 | <7 | <7 | - | | | | | | | <7 | mg/kg | TM5/PM16 |
| >C21-C35 #M | <7 | <7 | <7 | - | | | | | | | <7 | mg/kg | TM5/PM16 |
| Total aliphatics C5-35 | <19 | <19 | <19 | - | | | | | | | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 | <0.1 | - | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | <0.1 | <0.1 | <0.1 | - | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 #M | <0.1 | <0.1 | <0.1 | - | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | <0.2 | <0.2 | <0.2 | - | | | | | | | <0.2 | mg/kg | TM5/PM16 |
| >EC12-EC16 # | <4 | <4 | <4 | - | | | | | | | <4 | mg/kg | TM5/PM16 |
| >EC16-EC21 # | <7 | <7 | <7 | - | | | | | | | <7 | mg/kg | TM5/PM16 |
| >EC21-EC35 # | <7 | <7 | <7 | - | | | | | | | <7 | mg/kg | TM5/PM16 |
| Total aromatics C5-35 # | <19 | <19 | <19 | - | | | | | | | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| Total aliphatics and aromatics(C5-35) | <38 | <38 | <38 | - | | | | | | | <38 | mg/kg | TM5/TM36/PM12/PM16 |
| | | | | | | | | | | | | | |
| Natural Moisture Content | 19.6 | 29.0 | 34.5 | 14.7 | | | | | | | <0.1 | % | PM4/PM0 |
| | | | | | | | | | | | | | |
| Ammoniacal Nitrogen as N | <0.6 | <0.6 | - | <0.6 | | | | | | | <0.6 | mg/kg | TM38/PM20 |
| Chloride #M | 14 | 48 | - | 4 | | | | | | | <2 | mg/kg | TM38/PM20 |
| Fluoride | <0.3 | 2.2 | - | 1.9 | | | | | | | <0.3 | mg/kg | TM173/PM20 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | <2.5 | <2.5 | - | <2.5 | | | | | | | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | <0.05 | <0.05 | - | <0.05 | | | | | | | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | <0.3 | <0.3 | - | 1.7 | | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) #M | 0.4613 | 0.9326 | - | 0.2406 | | | | | | | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 69.2 | 30.7 | 88.8 | 62.9 | | | | | | | <0.5 | mg/kg | NONE/NONE |
| | | | | | | | | | | | | | |
| Total Cyanide #M | <0.5 | - | - | <0.5 | | | | | | | <0.5 | mg/kg | TM89/PM45 |
| | | | | | | | | | | | | | |
| Total Organic Carbon # | 3.78 | 0.54 | 0.27 | 2.93 | | | | | | | <0.02 | % | TM21/PM24 |
| | | | | | | | | | | | | | |
| Sulphide | <10 | <10 | - | <10 | | | | | | | <10 | mg/kg | TM106/PM119 |
| | | | | | | | | | | | | | |
| Total Alkalinity as CaCO3 | 330 | 400 | - | 330 | | | | | | | <10 | mg/kg | TM75/PM58 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

# *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:**
**Location:** West Barton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20361

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|
| **Sample ID** | WS108 | WS108 | WS109 | BH101 | | | |
| **Depth** | 8.5 | 12.0 | 15.0 | 0.5 | | | |
| **COC No / misc** | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 07/12/2017 | 07/12/2017 | 08/12/2017 | 08/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 09/12/2017 | 09/12/2017 | 09/12/2017 | 09/12/2017 | | | |
| pH [#M] | 9.22 | 8.41 | 8.19 | 8.23 | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clayey Sand | Clay | Clay | Sand | | None | PM13/PM0 |
| Sample Colour | Dark Grey | Medium Brown | Medium Brown | Dark Brown | | None | PM13/PM0 |
| Other Items | NA | stones | stones | NA | | None | PM13/PM0 |



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**Client Name:** AECOM **SVOC Report : Solid**
**Reference:**
**Location:** West Barton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20361

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | | | |
|---|---|---|---|---|---|---|
| **Sample ID** | WS108 | WS108 | WS109 | | | |
| **Depth** | 8.5 | 12.0 | 15.0 | | | |
| **COC No / misc** | | | | | | |
| **Containers** | V J B | V J B | V J B | | | |
| **Sample Date** | 07/12/2017 | 07/12/2017 | 08/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | | | |
| **Date of Receipt** | 09/12/2017 | 09/12/2017 | 09/12/2017 | LOD/LOR | Units | Method No. |
| SVOC MS | | | | | | |
| **Phenols** | | | | | | |
| 2-Chlorophenol #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Phenol #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | | | |
| 2-Chloronaphthalene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Phenanthrene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Fluoranthene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Pyrene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Chrysene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate #M | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |



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| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **SVOC Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Barton Power Station | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20361 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | | | |
|---|---|---|---|---|---|---|
| **Sample ID** | WS108 | WS108 | WS109 | | | |
| **Depth** | 8.5 | 12.0 | 15.0 | | | |
| **COC No / misc** | | | | | | |
| **Containers** | V J B | V J B | V J B | | | |
| **Sample Date** | 07/12/2017 | 07/12/2017 | 08/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 09/12/2017 | 09/12/2017 | 09/12/2017 | | | |
| SVOC MS | | | | | | |
| **Other SVOCs** | | | | | | |
| 1,2-Dichlorobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene [#M] | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether [#M] | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran [#M] | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene [#M] | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Isophorone [#M] | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine [#M] | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene [#M] | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 110 | 113 | 113 | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 56[SV] | 96 | 98 | <0 | % | TM16/PM8 |



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| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **VOC Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Barton Power Station | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20361 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS108 | WS108 | WS109 | | | | | | | | | |
| **Depth** | 8.5 | 12.0 | 15.0 | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | | | | | | | | | |
| **Sample Date** | 07/12/2017 | 07/12/2017 | 08/12/2017 | | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | | | | | | | | | |
| **Date of Receipt** | 09/12/2017 | 09/12/2017 | 09/12/2017 | | | | | | | LOD/LOR | Units | Method No. |
| VOC MS | | | | | | | | | | | | |
| Dichlorodifluoromethane | <10$_{AA}$ | <2 | <2 | | | | | | | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether #M | <30$_{AA}$ | <6 | <6 | | | | | | | <6 | ug/kg | TM15/PM10 |
| Chloromethane # | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <10$_{AA}$ | <2 | <2 | | | | | | | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <5$_{AA}$ | <1 | <1 | | | | | | | <1 | ug/kg | TM15/PM10 |
| Chloroethane #M | <30$_{AA}$ | <6 | <6 | | | | | | | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane #M | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) #M | <30$_{AA}$ | <6 | <6 | | | | | | | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM) # | <150$_{AA}$ | <30 | <30 | | | | | | | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene # | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane #M | <30$_{AA}$ | <6 | <6 | | | | | | | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene #M | <35$_{AA}$ | <7 | <7 | | | | | | | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Chloroform #M | <25$_{AA}$ | <5 | <5 | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane #M | <25$_{AA}$ | <5 | <5 | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene # | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane #M | <25$_{AA}$ | <5 | <5 | | | | | | | <5 | ug/kg | TM15/PM10 |
| Benzene #M | <25$_{AA}$ | <5 | <5 | | | | | | | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE) #M | <25$_{AA}$ | <5 | <5 | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromomethane #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Toluene #M | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE) # | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane #M | <25$_{AA}$ | <5 | <5 | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane # | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane #M | <25$_{AA}$ | <5 | <5 | | | | | | | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| o-Xylene #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Styrene | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene # | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane #M | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <10$_{AA}$ | <2 | <2 | | | | | | | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Propylbenzene # | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <15$_{AA}$ | <3 | <3 | | | | | | | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene # | <25$_{AA}$ | <5 | <5 | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <30$_{AA}$ | <6 | <6 | | | | | | | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene # | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene # | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene # | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene # | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene #M | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane # | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene # | <35$_{AA}$ | <7 | <7 | | | | | | | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <20$_{AA}$ | <4 | <4 | | | | | | | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <135$_{AA}$ | <27 | <27 | | | | | | | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene # | <35$_{AA}$ | <7 | <7 | | | | | | | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 96$_{AA}$ | 68 | 139 | | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 65$_{AA}$ | 61 | 149 | | | | | | | <0 | % | TM15/PM10 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:**
**Location:** West Barton Power Station
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20361 | 1 | WS108 | 8.5 | 3 | 18/12/2017 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |
| 17/20361 | 1 | BH101 | 0.5 | 12 | 18/12/2017 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |

**Client Name:** AECOM **Matrix : Solid**

**Reference:**

**Location:** West Barton Power Station

**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| 17/20361 | 1 | WS108 | 8.5 | 1-3 | VOC | Sample holding time exceeded |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**

**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/20361

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |
| AA | x5 Dilution |

**JE Job No:** 17/20361

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | Yes | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |

**JE Job No:** 17/20361

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | Yes | AD | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |

**JE Job No:** 17/20361

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | Yes | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | Yes | AD | Yes |
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | Yes | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |

**JE Job No:** 17/20361

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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AECOM
2 City Walk
Leeds
LS11 9AR

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 3rd January, 2018 |
| **Your reference :** | |
| **Our reference :** | Test Report 17/20238 Batch 1 |
| **Location :** | West Burton Power Station |
| **Date samples received :** | 8th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 2 |

Six samples were received for analysis on 8th December, 2017 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Simon Gomery BSc**
**Project Manager**

*Exova Jones Environmental*

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20238

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | | | |
|---|---|---|---|---|---|---|---|
| **Sample ID** | BH103 | BH102 | WS106 | WS106 | | | |
| **Depth** | 9.30 | 13.80 | 7.00 | 4.50 | | | |
| **COC No / misc** | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 06/12/2017 | 06/12/2017 | 07/12/2017 | 07/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 08/12/2017 | 08/12/2017 | 08/12/2017 | 08/12/2017 | | | |
| Antimony | 3 | 4 | 4 | 3 | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 16.2 | 6.9 | 152.4 | 17.9 | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 472 | 185 | 922 | 192 | <1 | mg/kg | TM30/PM15 |
| Beryllium | 2.4 | 2.6 | 5.8 | 2.2 | <0.5 | mg/kg | TM30/PM15 |
| Cadmium # | 1.2 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 82.9 | 74.3 | 73.0 | 62.2 | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 24 | 10 | 117 | 29 | <1 | mg/kg | TM30/PM15 |
| Iron | 37140 | 49870 | 39560 | 38040 | <20 | mg/kg | TM30/PM15 |
| Lead # | 131 | <5 | 60 | 8 | <5 | mg/kg | TM30/PM15 |
| Manganese # | 790 | 764 | 846 | 813 | <1 | mg/kg | TM30/PM15 |
| Mercury # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | 4.7 | 4.3 | 4.9 | 5.8 | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 51.9 | 58.6 | 83.4 | 62.7 | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | 1 | <1 | 5 | 2 | <1 | mg/kg | TM30/PM15 |
| Vanadium | 81 | 72 | 169 | 51 | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron # | 13.8 | 3.1 | 30.7 | 13.9 | <0.1 | mg/kg | TM74/PM32 |
| Zinc # | 225 | 79 | 75 | 83 | <5 | mg/kg | TM30/PM15 |
| | | | | | | | |
| PAH MS | | | | | | | |
| Naphthalene # | - | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | - | <0.03 | - | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | - | - | <0.05 | - | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | - | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | - | - | <0.03 | - | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | - | - | <0.03 | - | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | - | <0.03 | - | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | - | <0.06 | - | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | - | - | <0.02 | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | - | - | <0.07 | - | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | - | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | - | - | <0.6 | - | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | - | <0.05 | - | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | - | <0.02 | - | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | - | 89 | - | <0 | % | TM4/PM8 |
| | | | | | | | |
| Methyl Tertiary Butyl Ether # | <6 | <6 | - | - | <6 | ug/kg | TM15/PM10 |
| Benzene # | <5 | <5 | - | - | <5 | ug/kg | TM15/PM10 |
| Toluene # | <3 | <3 | - | - | <3 | ug/kg | TM15/PM10 |
| Ethylbenzene # | <3 | <3 | - | - | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene # | <4 | <4 | - | - | <4 | ug/kg | TM15/PM10 |

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Burton Power Station | **Solids:** | V=60g VOC jar, J=250g glass jar, T=plastic tub |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20238 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | | | |
|---|---|---|---|---|---|---|---|
| **Sample ID** | BH103 | BH102 | WS106 | WS106 | | | |
| **Depth** | 9.30 | 13.80 | 7.00 | 4.50 | | | |
| **COC No / misc** | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 06/12/2017 | 06/12/2017 | 07/12/2017 | 07/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 08/12/2017 | 08/12/2017 | 08/12/2017 | 08/12/2017 | LOD/LOR | Units | Method No. |
| o-Xylene # | <4 | <4 | - | - | <4 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 94 | 105 | - | - | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 95 | 123 | - | - | <0 | % | TM15/PM10 |
| | | | | | | | |
| TPH CWG | | | | | | | |
| **Aliphatics** | | | | | | | |
| >C5-C6 # | <0.1 | <0.1 SV | - | - | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 # | <0.1 | <0.1 SV | - | - | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | <0.1 | <0.1 SV | - | - | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 # | <0.2 | <0.2 | - | - | <0.2 | mg/kg | TM5/PM16 |
| >C12-C16 # | <4 | <4 | - | - | <4 | mg/kg | TM5/PM16 |
| >C16-C21 # | <7 | <7 | - | - | <7 | mg/kg | TM5/PM16 |
| >C21-C35 # | <7 | <7 | - | - | <7 | mg/kg | TM5/PM16 |
| Total aliphatics C5-35 | <19 | <19 | - | - | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| **Aromatics** | | | | | | | |
| >C5-EC7 # | <0.1 | <0.1 SV | - | - | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | <0.1 | <0.1 SV | - | - | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 # | <0.1 | <0.1 SV | - | - | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | <0.2 | <0.2 | - | - | <0.2 | mg/kg | TM5/PM16 |
| >EC12-EC16 # | <4 | <4 | - | - | <4 | mg/kg | TM5/PM16 |
| >EC16-EC21 # | <7 | <7 | - | - | <7 | mg/kg | TM5/PM16 |
| >EC21-EC35 # | <7 | <7 | - | - | <7 | mg/kg | TM5/PM16 |
| Total aromatics C5-35 # | <19 | <19 | - | - | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| Total aliphatics and aromatics(C5-35) | <38 | <38 | - | - | <38 | mg/kg | TM5/TM36/PM12/PM16 |
| | | | | | | | |
| Natural Moisture Content | 33.3 | 33.0 | 21.3 | 21.4 | <0.1 | % | PM4/PM0 |
| | | | | | | | |
| Ammoniacal Nitrogen as N | - | - | <0.6 | <0.6 | <0.6 | mg/kg | TM38/PM20 |
| Chloride # | - | - | 63 | 84 | <2 | mg/kg | TM38/PM20 |
| Fluoride | - | - | <0.3 | 2.4 | <0.3 | mg/kg | TM173/PM20 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | - | - | <2.5 | <2.5 | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | - | - | 0.56 | <0.05 | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | - | - | <0.3 | 0.4 | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) # | - | - | 0.7342 | 0.2552 | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 82.9 | 74.3 | 73.0 | 62.2 | <0.5 | mg/kg | NONE/NONE |
| | | | | | | | |
| Total Cyanide # | - | - | <0.5 | <0.5 | <0.5 | mg/kg | TM89/PM45 |
| | | | | | | | |
| Total Organic Carbon # | 0.46 | 0.05 | 2.39 | 0.42 | <0.02 | % | TM21/PM24 |
| | | | | | | | |
| Sulphide | - | - | <10 | <10 | <10 | mg/kg | TM106/PM119 |
| | | | | | | | |
| Total Alkalinity as CaCO3 | - | - | 390 | 440 | <10 | mg/kg | TM75/PM58 |

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All solid results are expressed on a dry weight basis unless stated otherwise.

*Exova Jones Environmental*

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20238

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 4-6 | 7-9 | 10-12 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | BH103 | BH102 | WS106 | WS106 | | | | | | | | | |
| Depth | 9.30 | 13.80 | 7.00 | 4.50 | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | V J B | V J B | V J B | | | | | | | | | |
| Sample Date | 06/12/2017 | 06/12/2017 | 07/12/2017 | 07/12/2017 | | | | | | | | | |
| Sample Type | Soil | Soil | Soil | Soil | | | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | | | | | LOD/LOR | Units | Method No. |
| Date of Receipt | 08/12/2017 | 08/12/2017 | 08/12/2017 | 08/12/2017 | | | | | | | | | |
| pH # | 8.19 | 8.20 | 8.69 | 8.47 | | | | | | | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clay | Clayey Loam | - | - | | | | | | | | None | PM13/PM0 |
| Sample Colour | Medium Brown | Medium Brown | - | - | | | | | | | | None | PM13/PM0 |
| Other Items | stones, roots | stones | - | - | | | | | | | | None | PM13/PM0 |

## *Exova Jones Environmental*

**Client Name:** AECOM **SVOC Report :** **Solid**
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20238

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 4-6 | | | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | BH103 | BH102 | | | | | | | | | | | |
| Depth | 9.30 | 13.80 | | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | V J B | | | | | | | | | | | |
| Sample Date | 06/12/2017 | 06/12/2017 | | | | | | | | | | | |
| Sample Type | Soil | Soil | | | | | | | | | | | |
| Batch Number | 1 | 1 | | | | | | | | | | | |
| Date of Receipt | 08/12/2017 | 08/12/2017 | | | | | | | | | | | |
| SVOC MS | | | | | | | | | | | | | |
| **Phenols** | | | | | | | | | | | | | |
| 2-Chlorophenol # | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol # | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Phenol # | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | | | | | | | | | | |
| 2-Chloronaphthalene # | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene # | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Phenanthrene # | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Fluoranthene # | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Pyrene # | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Chrysene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | <100 | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | <100 | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | <100 | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | <100 | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | <100 | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate # | <100 | <100 | | | | | | | | | <100 | ug/kg | TM16/PM8 |



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## *Exova Jones Environmental*

**Client Name:** AECOM **SVOC Report :** **Solid**
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20238

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|
| **Sample ID** | BH103 | BH102 | | | |
| **Depth** | 9.30 | 13.80 | | | |
| **COC No / misc** | | | | | |
| **Containers** | V J B | V J B | | | |
| **Sample Date** | 06/12/2017 | 06/12/2017 | | | |
| **Sample Type** | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | | | |
| **Date of Receipt** | 08/12/2017 | 08/12/2017 | | | |
| SVOC MS | | | | | |
| **Other SVOCs** | | | | | |
| 1,2-Dichlorobenzene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene # | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether # | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran # | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene # | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Isophorone # | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine # | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene # | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 111 | 108 | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 94 | 89 | <0 | % | TM16/PM8 |


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**Client Name:** AECOM **VOC Report :** **Solid**
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20238

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | BH103 | BH102 | | | | | | | | | | | |
| **Depth** | 9.30 | 13.80 | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | | | | | | | | | | | |
| **Sample Date** | 06/12/2017 | 06/12/2017 | | | | | | | | | | | |
| **Sample Type** | Soil | Soil | | | | | | | | | | | |
| **Batch Number** | 1 | 1 | | | | | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 08/12/2017 | 08/12/2017 | | | | | | | | | | | |
| VOC MS | | | | | | | | | | | | | |
| Dichlorodifluoromethane | <2 | <2 | | | | | | | | | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether # | <6 | <6 | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Chloromethane # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <2 | <2 | | | | | | | | | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <1 | <1 | | | | | | | | | <1 | ug/kg | TM15/PM10 |
| Chloroethane # | <6 | <6 | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) # | <6 | <6 | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM) # | <30 | <30 | | | | | | | | | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane # | <6 | <6 | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene # | <7 | <7 | | | | | | | | | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Chloroform # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Benzene # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE) # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromomethane # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Toluene # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| o-Xylene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Styrene | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <2 | <2 | | | | | | | | | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Propylbenzene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <3 | <3 | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene # | <5 | <5 | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <6 | <6 | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane # | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene # | <7 | <7 | | | | | | | | | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <4 | <4 | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <27 | <27 | | | | | | | | | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene # | <7 | <7 | | | | | | | | | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 94 | 105 | | | | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 95 | 123 | | | | | | | | | <0 | % | TM15/PM10 |

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20238 | 1 | WS106 | 7.00 | 9 | 18/12/2017 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20238 | 1 | WS106 | 4.50 | 12 | 18/12/2017 | **General Description (Bulk Analysis)** | Soil/Stone |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| No deviating sample report results for job 17/20238 | | | | | | |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/20238

## SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

## WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

## DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

## SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

## DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

## BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

## NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

## REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |

**JE Job No:** 17/20238

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |

**JE Job No:** 17/20238

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | | AD | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |

**JE Job No:** 17/20238

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | | AD | Yes |
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| | | | | | | | |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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AECOM
West One
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LS1 1BA

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 3rd January, 2018 |
| **Your reference :** | |
| **Our reference :** | Test Report 17/20132 Batch 1 |
| **Location :** | West Burton Power Station |
| **Date samples received :** | 7th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Four samples were received for analysis on 7th December, 2017 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Simon Gomery BSc**
**Project Manager**

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20132

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 4-6 | 7-9 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|
| Sample ID | WS111 | WS107 | WS107 | | | |
| Depth | 8.20 | 3.00 | 11.70 | | | |
| COC No / misc | | | | | | |
| Containers | V J B | V J B | V J B | | | |
| Sample Date | 06/12/2017 | 06/12/2017 | 06/12/2017 | | | |
| Sample Type | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | | | |
| Date of Receipt | 07/12/2017 | 07/12/2017 | 07/12/2017 | | | |
| Antimony | 7 | 4 | 5 | <1 | mg/kg | TM30/PM15 |
| Arsenic #M | 107.5 | 72.9 | 17.8 | <0.5 | mg/kg | TM30/PM15 |
| Barium #M | 722 | 326 | 223 | <1 | mg/kg | TM30/PM15 |
| Beryllium | 5.1 | 2.3 | 1.2 | <0.5 | mg/kg | TM30/PM15 |
| Cadmium #M | <0.1 | <0.1 | 0.1 | <0.1 | mg/kg | TM30/PM15 |
| Chromium #M | 70.8 | 55.2 | 69.2 | <0.5 | mg/kg | TM30/PM15 |
| Copper #M | 119 | 53 | 19 | <1 | mg/kg | TM30/PM15 |
| Iron | 38880 | 34020 | 40259 | <20 | mg/kg | TM30/PM15 |
| Lead #M | 64 | 27 | 16 | <5 | mg/kg | TM30/PM15 |
| Manganese #M | 307 | 345 | 850 | <1 | mg/kg | TM30/PM15 |
| Mercury #M | 0.2 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum #M | 6.4 | 4.9 | 5.2 | <0.1 | mg/kg | TM30/PM15 |
| Nickel #M | 75.8 | 50.0 | 28.1 | <0.7 | mg/kg | TM30/PM15 |
| Selenium #M | 4 | 4 | 1 | <1 | mg/kg | TM30/PM15 |
| Vanadium | 148 | 76 | 43 | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron #M | 17.9 | 24.8 | 5.2 | <0.1 | mg/kg | TM74/PM32 |
| Zinc #M | 87 | 52 | 73 | <5 | mg/kg | TM30/PM15 |
| | | | | | | |
| PAH MS | | | | | | |
| Naphthalene #M | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | <0.03 | - | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene #M | - | <0.05 | - | <0.05 | mg/kg | TM4/PM8 |
| Fluorene #M | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene #M | - | 0.07 | - | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene #M | - | 0.09 | - | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | 0.07 | - | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | 0.09 | - | <0.06 | mg/kg | TM4/PM8 |
| Chrysene #M | - | 0.04 | - | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene #M | - | <0.07 | - | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene #M | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | <0.04 | - | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | - | <0.6 | - | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | <0.05 | - | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | <0.02 | - | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | 119 | - | <0 | % | TM4/PM8 |
| | | | | | | |
| Methyl Tertiary Butyl Ether #M | - | - | <30 AA | <6 | ug/kg | TM15/PM10 |
| Benzene #M | - | - | <25 AA | <5 | ug/kg | TM15/PM10 |
| Toluene #M | - | - | <15 AA | <3 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | - | - | <15 AA | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | - | - | <20 AA | <4 | ug/kg | TM15/PM10 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20132

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS111 | WS107 | WS107 | | | | | | | | | | |
| **Depth** | 8.20 | 3.00 | 11.70 | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | | | | | | | | | | |
| **Sample Date** | 06/12/2017 | 06/12/2017 | 06/12/2017 | | | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | | | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | | | | | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 07/12/2017 | 07/12/2017 | 07/12/2017 | | | | | | | | | | |
| o-Xylene #M | - | - | $<20_{AA}$ | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | - | - | $110_{AA}$ | | | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | - | - | $119_{AA}$ | | | | | | | | <0 | % | TM15/PM10 |
| | | | | | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 #M | - | - | <0.1 | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 #M | - | - | <0.1 | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | - | - | <0.1 | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 #M | - | - | <0.2 | | | | | | | | <0.2 | mg/kg | TM5/PM16 |
| >C12-C16 #M | - | - | <4 | | | | | | | | <4 | mg/kg | TM5/PM16 |
| >C16-C21 #M | - | - | <7 | | | | | | | | <7 | mg/kg | TM5/PM16 |
| >C21-C35 #M | - | - | <7 | | | | | | | | <7 | mg/kg | TM5/PM16 |
| Total aliphatics C5-35 | - | - | <19 | | | | | | | | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | - | - | <0.1 | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | - | - | <0.1 | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 #M | - | - | <0.1 | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | - | - | <0.2 | | | | | | | | <0.2 | mg/kg | TM5/PM16 |
| >EC12-EC16 # | - | - | <4 | | | | | | | | <4 | mg/kg | TM5/PM16 |
| >EC16-EC21 # | - | - | <7 | | | | | | | | <7 | mg/kg | TM5/PM16 |
| >EC21-EC35 # | - | - | <7 | | | | | | | | <7 | mg/kg | TM5/PM16 |
| Total aromatics C5-35 # | - | - | <19 | | | | | | | | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| Total aliphatics and aromatics(C5-35) | - | - | <38 | | | | | | | | <38 | mg/kg | TM5/TM36/PM12/PM16 |
| | | | | | | | | | | | | | |
| Natural Moisture Content | 24.3 | 23.5 | 31.9 | | | | | | | | <0.1 | % | PM4/PM0 |
| | | | | | | | | | | | | | |
| Ammoniacal Nitrogen as N | <0.6 | <0.6 | - | | | | | | | | <0.6 | mg/kg | TM38/PM20 |
| Chloride #M | 945 | 58 | - | | | | | | | | <2 | mg/kg | TM38/PM20 |
| Fluoride | 0.5 | 0.7 | - | | | | | | | | <0.3 | mg/kg | TM173/PM20 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | | | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | <2.5 | <2.5 | - | | | | | | | | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | 0.46 | 0.23 | - | | | | | | | | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | <0.3 | 0.4 | - | | | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) #M | 1.1049 | 0.8181 | - | | | | | | | | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 70.8 | 55.2 | 69.2 | | | | | | | | <0.5 | mg/kg | NONE/NONE |
| | | | | | | | | | | | | | |
| Total Cyanide #M | <0.5 | <0.5 | - | | | | | | | | <0.5 | mg/kg | TM89/PM45 |
| | | | | | | | | | | | | | |
| Total Organic Carbon # | 4.83 | 3.69 | 0.56 | | | | | | | | <0.02 | % | TM21/PM24 |
| | | | | | | | | | | | | | |
| Sulphide | <10 | <10 | - | | | | | | | | <10 | mg/kg | TM106/PM119 |
| | | | | | | | | | | | | | |
| Total Alkalinity as CaCO3 | 390 | 320 | - | | | | | | | | <10 | mg/kg | TM75/PM58 |

*Exova Jones Environmental*

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Burton Power Station | **Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20132 | | |

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS111 | WS107 | WS107 | | | | | | | | | | |
| **Depth** | 8.20 | 3.00 | 11.70 | | | | | | | | Please see attached notes for all abbreviations and acronyms | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | | | | | | | | | | |
| **Sample Date** | 06/12/2017 | 06/12/2017 | 06/12/2017 | | | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | | | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | | | | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 07/12/2017 | 07/12/2017 | 07/12/2017 | | | | | | | | | | |
| pH #M | 8.97 | 8.50 | 8.32 | | | | | | | | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clayey Loam | Sandy Loam | Clay | | | | | | | | | None | PM13/PM0 |
| Sample Colour | Dark Grey | Dark Brown | Medium Brown | | | | | | | | | None | PM13/PM0 |
| Other Items | stones | stones | n/a | | | | | | | | | None | PM13/PM0 |



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*Exova Jones Environmental*

**Client Name:** AECOM **SVOC Report :** **Solid**
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20132

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 7-9 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|
| Sample ID | WS107 | | | |
| Depth | 11.70 | | | |
| COC No / misc | | | | |
| Containers | V J B | | | |
| Sample Date | 06/12/2017 | | | |
| Sample Type | Soil | | | |
| Batch Number | 1 | | | |
| Date of Receipt | 07/12/2017 | | | |
| SVOC MS | | | | |
| **Phenols** | | | | |
| 2-Chlorophenol #M | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol #M | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| Phenol #M | <10 | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | |
| 2-Chloronaphthalene #M | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene #M | <10 | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | <10 | ug/kg | TM16/PM8 |
| Phenanthrene #M | <10 | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Fluoranthene #M | <10 | <10 | ug/kg | TM16/PM8 |
| Pyrene #M | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Chrysene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | <10 | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate #M | <100 | <100 | ug/kg | TM16/PM8 |

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM **SVOC Report :** **Solid**
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20132

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 7-9 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS107 | | | | | | | | | | | | |
| **Depth** | 11.70 | | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | | | | | | | | | | | | |
| **Sample Date** | 06/12/2017 | | | | | | | | | | | | |
| **Sample Type** | Soil | | | | | | | | | | | | |
| **Batch Number** | 1 | | | | | | | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 07/12/2017 | | | | | | | | | | | | | |
| SVOC MS | | | | | | | | | | | | | |
| **Other SVOCs** | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Isophorone #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 115 | | | | | | | | | | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 96 | | | | | | | | | | <0 | % | TM16/PM8 |

**Client Name:** AECOM  **VOC Report :** **Solid**
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20132

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 7-9 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS107 | | | | | | | | | | | | |
| Depth | 11.70 | | | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | | | | | | | | | | | | |
| Sample Date | 06/12/2017 | | | | | | | | | | | | |
| Sample Type | Soil | | | | | | | | | | | | |
| Batch Number | 1 | | | | | | | | | | | | |
| Date of Receipt | 07/12/2017 | | | | | | | | | | LOD/LOR | Units | Method No. |
| VOC MS | | | | | | | | | | | | | |
| Dichlorodifluoromethane | <10$_{AA}$ | | | | | | | | | | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether[#M] | <30$_{AA}$ | | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Chloromethane[#] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <10$_{AA}$ | | | | | | | | | | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <5$_{AA}$ | | | | | | | | | | <1 | ug/kg | TM15/PM10 |
| Chloroethane[#M] | <30$_{AA}$ | | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane[#M] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE)[#M] | <30$_{AA}$ | | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM)[#] | <150$_{AA}$ | | | | | | | | | | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene[#] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane[#M] | <30$_{AA}$ | | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene[#M] | <35$_{AA}$ | | | | | | | | | | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Chloroform[#M] | <25$_{AA}$ | | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane[#M] | <25$_{AA}$ | | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene[#] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane[#M] | <25$_{AA}$ | | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Benzene[#M] | <25$_{AA}$ | | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE)[#M] | <25$_{AA}$ | | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromomethane[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Toluene[#M] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE)[#] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane[#M] | <25$_{AA}$ | | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane[#] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane[#M] | <25$_{AA}$ | | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene[#M] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| o-Xylene[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Styrene | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene[#] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane[#M] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <10$_{AA}$ | | | | | | | | | | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Propylbenzene[#] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene[#] | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <15$_{AA}$ | | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene[#] | <25$_{AA}$ | | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene[#] | <30$_{AA}$ | | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene[#] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene[#] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene[#] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene[#] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene[#M] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane[#] | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene[#] | <35$_{AA}$ | | | | | | | | | | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <20$_{AA}$ | | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <135$_{AA}$ | | | | | | | | | | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene[#] | <35$_{AA}$ | | | | | | | | | | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 110$_{AA}$ | | | | | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 119$_{AA}$ | | | | | | | | | | <0 | % | TM15/PM10 |


Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20132 | 1 | WS111 | 8.20 | 3 | 18/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |
| 17/20132 | 1 | WS107 | 3.00 | 6 | 18/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 18/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 18/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 18/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type** | NAD |
| | | | | | 18/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 18/12/2017 | **Asbestos Level Screen** | NAD |

Exova Jones Environmental

# Notification of Deviating Samples

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman

**Matrix : Solid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| 17/20132 | 1 | WS107 | 11.70 | 7-9 | GRO, VOC | Sample holding time exceeded |
| 17/20132 | 1 | WS107 | 11.70 | 7-9 | GRO, VOC | Solid Samples were received at a temperature above 9°C. |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**

**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/20132

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |
| AA | x5 Dilution |

**JE Job No:** 17/20132

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | Yes | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |

**JE Job No:** 17/20132

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | Yes | AD | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |

**JE Job No:** 17/20132

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | Yes | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | Yes | AD | Yes |
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | Yes | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |

**JE Job No:** 17/20132

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| | | | | | | | |
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# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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AECOM
2 City Walk
Leeds
LS11 9AR

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 5th January, 2018 |
| **Your reference :** | 60527350 |
| **Our reference :** | Test Report 17/21125 Batch 1 |
| **Location :** | West Burton Power station |
| **Date samples received :** | 22nd December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Five samples were received for analysis on 22nd December, 2017 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Paul Boden BSc**
**Project Manager**

## *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman
**JE Job No.:** 17/21125

**Report : Liquid**

**Liquids/products:** V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-7 | 8-14 | 15-21 | 22-28 | 29-35 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|
| Sample ID | WS106 | WS108 | WS110 | BH104 | BH105 | | | |
| Depth | | | | | | | | |
| COC No / misc | | | | | | | | |
| Containers | V HN N P G | V HN N P G | V HN P G | V HN N P G | V HN N P G | | | |
| Sample Date | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | | | |
| Sample Type | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | |
| Dissolved Antimony # | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Arsenic # | 11.9 | 5.7 | 2.6 | 10.3 | <2.5 | <2.5 | ug/l | TM30/PM14 |
| Dissolved Cadmium # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM30/PM14 |
| Total Dissolved Chromium # | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | ug/l | TM30/PM14 |
| Dissolved Copper # | <7 | <7 | <7 | <7 | <7 | <7 | ug/l | TM30/PM14 |
| Total Dissolved Iron # | <20 | 168 | <20 | <20 | 86 | <20 | ug/l | TM30/PM14 |
| Dissolved Lead # | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM30/PM14 |
| Dissolved Manganese # | 46 | 634 | 1033 | 73 | 303 | <2 | ug/l | TM30/PM14 |
| Dissolved Mercury # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM30/PM14 |
| Dissolved Molybdenum # | $3931_{AA}$ | $2932_{AA}$ | 811 | $4110_{AA}$ | 19 | <2 | ug/l | TM30/PM14 |
| Dissolved Nickel # | <2 | <2 | 4 | 2 | 5 | <2 | ug/l | TM30/PM14 |
| Dissolved Selenium # | 68 | 11 | 38 | 16 | 16 | <3 | ug/l | TM30/PM14 |
| Dissolved Zinc # | <3 | 21 | 6 | 7 | <3 | <3 | ug/l | TM30/PM14 |
| | | | | | | | | |
| Methyl Tertiary Butyl Ether # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | ug/l | TM15/PM10 |
| Benzene # | <0.5 | <0.5 | <0.5 | 0.6 | <0.5 | <0.5 | ug/l | TM15/PM10 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM15/PM10 |
| Ethylbenzene # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| p/m-Xylene # | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| o-Xylene # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 94 | 99 | 98 | 104 | 104 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 99 | 102 | 96 | 101 | 102 | <0 | % | TM15/PM10 |
| | | | | | | | | |
| TPH CWG | | | | | | | | |
| **Aliphatics** | | | | | | | | |
| >C5-C6 # | <10 | <10 | <10 | 634 | <10 | <10 | ug/l | TM36/PM12 |
| >C6-C8 # | <10 | <10 | <10 | 40 | <10 | <10 | ug/l | TM36/PM12 |
| >C8-C10 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C10-C12 # | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM5/PM30 |
| >C12-C16 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >C16-C21 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >C21-C35 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| Total aliphatics C5-35 # | <10 | <10 | <10 | 674 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |
| **Aromatics** | | | | | | | | |
| >C5-EC7 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC7-EC8 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC8-EC10 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC10-EC12 # | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM5/PM30 |
| >EC12-EC16 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >EC16-EC21 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >EC21-EC35 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| Total aromatics C5-35 # | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |
| Total aliphatics and aromatics(C5-35) # | <10 | <10 | <10 | 674 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman
**JE Job No.:** 17/21125

**Report : Liquid**

**Liquids/products:** V=40ml vial, G=glass bottle, P=plastic bottle
H=$H_2SO_4$, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22-28 | 29-35 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS106 | WS108 | WS110 | BH104 | BH105 | | | |
| **Depth** | | | | | | | | |
| **COC No / misc** | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN P G | V HN N P G | V HN N P G | | | |
| **Sample Date** | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | | | |
| **Sample Type** | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | |
| Fluoride | <0.3 | 0.4 | <0.3 | <0.3 | <0.3 | <0.3 | mg/l | TM173/PM0 |
| Sulphate as SO4 # | 2141.3 | 2490.4 | 2360.3 | 2332.6 | 1775.2 | <0.5 | mg/l | TM38/PM0 |
| Chloride # | 176.5 | 95.6 | 96.0 | 100.9 | 117.2 | <0.3 | mg/l | TM38/PM0 |
| Nitrate as NO3 # | 10.8 | 0.8 | <0.2 | <0.2 | 17.1 | <0.2 | mg/l | TM38/PM0 |
| Nitrite as NO2 # | 4.46 | <0.02 | <0.02 | <0.02 | 1.64 | <0.02 | mg/l | TM38/PM0 |
| Ortho Phosphate as PO4 # | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | mg/l | TM38/PM0 |
| Total Cyanide # | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | mg/l | TM89/PM0 |
| Total Organic Carbon # | <2 | 8 | 3 | 347 | 3 | <2 | mg/l | TM60/PM0 |




All solid results are expressed on a dry weight basis unless stated otherwise.

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **SVOC Report :** | **Liquid** |
| **Reference:** | 60527350 | | |
| **Location:** | West Burton Power station | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/21125 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22-28 | 29-35 | | | |
|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS106 | WS108 | WS110 | BH104 | BH105 | | | |
| **Depth** | | | | | | | | |
| **COC No / misc** | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN P G | V HN N P G | V HN N P G | | | |
| **Sample Date** | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | | | |
| **Sample Type** | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | LOD/LOR | Units | Method No. |
| SVOC MS | | | | | | | | |
| **Phenols** | | | | | | | | |
| 2-Chlorophenol # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Methylphenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2-Nitrophenol | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4-Dichlorophenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4-Dimethylphenol | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2,4,5-Trichlorophenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4,6-Trichlorophenol | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Chloro-3-methylphenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 4-Methylphenol | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Nitrophenol | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM16/PM30 |
| Pentachlorophenol | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Phenol | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| **PAHs** | | | | | | | | |
| 2-Chloronaphthalene # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Methylnaphthalene # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Naphthalene # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Acenaphthylene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Acenaphthene # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Fluorene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Phenanthrene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Fluoranthene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Pyrene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(a)anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Chrysene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(bk)fluoranthene # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Benzo(a)pyrene | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Indeno(123cd)pyrene | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Dibenzo(ah)anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(ghi)perylene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| **Phthalates** | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM16/PM30 |
| Butylbenzyl phthalate | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Di-n-butyl phthalate # | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | ug/l | TM16/PM30 |
| Di-n-Octyl phthalate | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Diethyl phthalate # | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Dimethyl phthalate | <1 | 2 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **SVOC Report :** | **Liquid** |
| **Reference:** | 60527350 | | |
| **Location:** | West Burton Power station | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/21125 | | |

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22-28 | 29-35 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS106 | WS108 | WS110 | BH104 | BH105 | | | | | | | | |
| **Depth** | | | | | | | | | | | Please see attached notes for all abbreviations and acronyms | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN P G | V HN N P G | V HN N P G | | | | | | | | |
| **Sample Date** | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | | | | | | | | |
| **Sample Type** | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | | | | | | |
| SVOC MS | | | | | | | | | | | | | |
| **Other SVOCs** | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 1,2,4-Trichlorobenzene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 1,3-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 1,4-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 2-Nitroaniline | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 2,4-Dinitrotoluene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | ug/l | TM16/PM30 |
| 2,6-Dinitrotoluene | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 3-Nitroaniline | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 4-Bromophenylphenylether # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 4-Chloroaniline | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 4-Chlorophenylphenylether # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| 4-Nitroaniline | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | ug/l | TM16/PM30 |
| Azobenzene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | ug/l | TM16/PM30 |
| Bis(2-chloroethoxy)methane # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | ug/l | TM16/PM30 |
| Bis(2-chloroethyl)ether # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| Carbazole # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | ug/l | TM16/PM30 |
| Dibenzofuran # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | ug/l | TM16/PM30 |
| Hexachlorobenzene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| Hexachlorobutadiene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| Hexachlorocyclopentadiene | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| Hexachloroethane # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| Isophorone # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | ug/l | TM16/PM30 |
| N-nitrosodi-n-propylamine # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | | <0.5 | ug/l | TM16/PM30 |
| Nitrobenzene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM16/PM30 |
| Surrogate Recovery 2-Fluorobiphenyl | 129 | 110 | 127 | 118 | 123 | | | | | | <0 | % | TM16/PM30 |
| Surrogate Recovery p-Terphenyl-d14 | 126 | 120 | 124 | 125 | 125 | | | | | | <0 | % | TM16/PM30 |

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman
**JE Job No.:** 17/21125

**VOC Report :** **Liquid**

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22-28 | 29-35 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS106 | WS108 | WS110 | BH104 | BH105 | | | | | | | | |
| **Depth** | | | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN P G | V HN N P G | V HN N P G | | | | | | | | |
| **Sample Date** | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | 20/12/2017 | | | | | | | | |
| **Sample Type** | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | | | | | | | | |
| **Date of Receipt** | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | | | | LOD/LOR | Units | Method No. |
| VOC MS | | | | | | | | | | | | | |
| Dichlorodifluoromethane | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Methyl Tertiary Butyl Ether # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | | | | | <0.1 | ug/l | TM15/PM10 |
| Chloromethane # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Vinyl Chloride # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | | | | | <0.1 | ug/l | TM15/PM10 |
| Bromomethane | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM15/PM10 |
| Chloroethane # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Trichlorofluoromethane # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Dichloromethane (DCM) # | <5 | <5 | <5 | <5 | <5 | | | | | | <5 | ug/l | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,1-Dichloroethane # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| cis-1-2-Dichloroethene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 2,2-Dichloropropane | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM15/PM10 |
| Bromochloromethane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Chloroform # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,1,1-Trichloroethane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Carbon tetrachloride # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2-Dichloroethane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Benzene # | <0.5 | <0.5 | <0.5 | 0.6 | <0.5 | | | | | | <0.5 | ug/l | TM15/PM10 |
| Trichloroethene (TCE) # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,2-Dichloropropane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Dibromomethane # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Bromodichloromethane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| cis-1-3-Dichloropropene | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | | | | | | <5 | ug/l | TM15/PM10 |
| trans-1-3-Dichloropropene | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,1,2-Trichloroethane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,3-Dichloropropane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Dibromochloromethane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2-Dibromoethane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Chlorobenzene # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Ethylbenzene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM15/PM10 |
| p/m-Xylene # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| o-Xylene # | <1 | <1 | <1 | <1 | <1 | | | | | | <1 | ug/l | TM15/PM10 |
| Styrene | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Bromoform # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane | <4 | <4 | <4 | <4 | <4 | | | | | | <4 | ug/l | TM15/PM10 |
| Bromobenzene # | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2,3-Trichloropropane # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Propylbenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 2-Chlorotoluene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 4-Chlorotoluene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| tert-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| sec-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 4-Isopropyltoluene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,3-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,4-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| n-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,2-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2,4-Trichlorobenzene | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Hexachlorobutadiene | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Naphthalene | <2 | <2 | <2 | <2 | <2 | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2,3-Trichlorobenzene | <3 | <3 | <3 | <3 | <3 | | | | | | <3 | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 94 | 99 | 98 | 104 | 104 | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 99 | 102 | 96 | 101 | 102 | | | | | | <0 | % | TM15/PM10 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM **Matrix : Liquid**
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| | | | | | | |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/21125

## SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

## WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

## DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

## SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

## DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

## BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

## NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

## REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

## ABBREVIATIONS and ACRONYMS USED

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |
| AA | x5 Dilution |

**JE Job No:** 17/21125

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM30/PM12 | CWG GC-FID | Yes | | | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | | | | |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM14 | Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required. | Yes | | | |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM0 | No preparation is required. | Yes | | | |
| TM60 | Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR). | PM0 | No preparation is required. | Yes | | | |

**JE Job No:** 17/21125

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM0 | No preparation is required. | Yes | | | |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM0 | No preparation is required. | | | | |
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# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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AECOM
West One
Wellington Street
Leeds
LS1 1BA

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 5th January, 2018 |
| **Your reference :** | WEST BURTON POWER STATION |
| **Our reference :** | Test Report 17/20922 Batch 1 |
| **Location :** | West Burton Power Station |
| **Date samples received :** | 20th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Two samples were received for analysis on 20th December, 2017 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Paul Boden BSc**
**Project Manager**

# *Exova Jones Environmental*

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **Report :** | **Solid** |
| **Reference:** | WEST BURTON POWER STATION | | |
| **Location:** | West Burton Power Station | **Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20922 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS102 | BH106 | | | | | | | | | | | |
| **Depth** | 8.60 | 1.00 | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | | | | | | | | | | | |
| **Sample Date** | 18/12/2017 | 16/12/2017 | | | | | | | | | | | |
| **Sample Type** | Soil | Soil | | | | | | | | | | | |
| **Batch Number** | 1 | 1 | | | | | | | | | | | |
| **Date of Receipt** | 20/12/2017 | 20/12/2017 | | | | | | | | | LOD/LOR | Units | Method No. |
| Antimony | 2 | 8 | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Arsenic #M | 7.3 | 147.1 | | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Barium #M | 272 | 474 | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Beryllium | 2.3 | 4.3 | | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Cadmium #M | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Chromium #M | 58.0 | 104.7 | | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Copper #M | 4 | 94 | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Iron | 45140 | 48190 | | | | | | | | | <20 | mg/kg | TM30/PM15 |
| Lead #M | <5 | 52 | | | | | | | | | <5 | mg/kg | TM30/PM15 |
| Manganese #M | 530 | 333 | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Mercury #M | <0.1 | <0.1 | | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum #M | 1.1 | 7.1 | | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Nickel #M | 51.9 | 68.9 | | | | | | | | | <0.7 | mg/kg | TM30/PM15 |
| Selenium #M | <1 | 3 | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Vanadium | 61 | 136 | | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron #M | 2.3 | 10.1 | | | | | | | | | <0.1 | mg/kg | TM74/PM32 |
| Zinc #M | 81 | 80 | | | | | | | | | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| Methyl Tertiary Butyl Ether #M | <6 | - | | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Benzene #M | <5 | - | | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Toluene #M | <3 | - | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | <3 | - | | | | | | | | | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | <4 | - | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| o-Xylene #M | <4 | - | | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 110 | - | | | | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 126 | - | | | | | | | | | <0 | % | TM15/PM10 |
| | | | | | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 #M | <0.1 SV | - | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 #M | <0.1 SV | - | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | <0.1 SV | - | | | | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 #M | <0.2 | - | | | | | | | | | <0.2 | mg/kg | TM5/PM16 |
| >C12-C16 #M | <4 | - | | | | | | | | | <4 | mg/kg | TM5/PM16 |
| >C16-C21 #M | <7 | - | | | | | | | | | <7 | mg/kg | TM5/PM16 |
| >C21-C35 #M | <7 | - | | | | | | | | | <7 | mg/kg | TM5/PM16 |
| Total aliphatics C5-35 | <19 | - | | | | | | | | | <19 | mg/kg | TM5/TM36/PM12/PM16 |

# *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20922

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|
| **Sample ID** | WS102 | BH106 | | | |
| **Depth** | 8.60 | 1.00 | | | |
| **COC No / misc** | | | | | |
| **Containers** | V J B | V J B | | | |
| **Sample Date** | 18/12/2017 | 16/12/2017 | | | |
| **Sample Type** | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | | | |
| **Date of Receipt** | 20/12/2017 | 20/12/2017 | | | |
| TPH CWG | | | | | |
| **Aromatics** | | | | | |
| >C5-EC7 [#] | <0.1 [SV] | - | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 [#] | <0.1 [SV] | - | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 [#M] | <0.1 [SV] | - | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 [#] | <0.2 | - | <0.2 | mg/kg | TM5/PM16 |
| >EC12-EC16 [#] | <4 | - | <4 | mg/kg | TM5/PM16 |
| >EC16-EC21 [#] | <7 | - | <7 | mg/kg | TM5/PM16 |
| >EC21-EC35 [#] | <7 | - | <7 | mg/kg | TM5/PM16 |
| Total aromatics C5-35 [#] | <19 | - | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| Total aliphatics and aromatics(C5-35) | <38 | - | <38 | mg/kg | TM5/TM36/PM12/PM16 |
| Natural Moisture Content | 45.5 | 18.8 | <0.1 | % | PM4/PM0 |
| Ammoniacal Nitrogen as N | <0.6 | - | <0.6 | mg/kg | TM38/PM20 |
| Chloride [#M] | 17 | - | <2 | mg/kg | TM38/PM20 |
| Fluoride | 3.1 | - | <0.3 | mg/kg | TM173/PM20 |
| Hexavalent Chromium [#] | <0.3 | <0.3 | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | <2.5 | - | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | <0.05 | - | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | <0.3 | - | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) [#M] | 0.1441 | - | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 58.0 | 104.7 | <0.5 | mg/kg | NONE/NONE |
| Total Cyanide [#M] | - | <0.5 | <0.5 | mg/kg | TM89/PM45 |
| Total Organic Carbon [#] | 0.08 | 3.84 | <0.02 | % | TM21/PM24 |
| Sulphide | <10 | - | <10 | mg/kg | TM106/PM119 |
| Total Alkalinity as CaCO3 | 430 | - | <10 | mg/kg | TM75/PM58 |
| pH [#M] | 8.31 | 8.54 | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clay | Clay | | None | PM13/PM0 |
| Sample Colour | Medium Brown | Medium Brown | | None | PM13/PM0 |
| Other Items | water | silt | | None | PM13/PM0 |

**Client Name:** AECOM **SVOC Report :** **Solid**
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20922

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | | | | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS102 | | | | | | | | | | | | |
| Depth | 8.60 | | | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | | | | | | | | | | | | |
| Sample Date | 18/12/2017 | | | | | | | | | | | | |
| Sample Type | Soil | | | | | | | | | | | | |
| Batch Number | 1 | | | | | | | | | | | | |
| Date of Receipt | 20/12/2017 | | | | | | | | | | | | |
| SVOC MS | | | | | | | | | | | | | |
| **Phenols** | | | | | | | | | | | | | |
| 2-Chlorophenol #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Phenol #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | | | | | | | | | | |
| 2-Chloronaphthalene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Phenanthrene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Fluoranthene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Pyrene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Chrysene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | | | | | | | | | | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate #M | <100 | | | | | | | | | | <100 | ug/kg | TM16/PM8 |





All solid results are expressed on a dry weight basis unless stated otherwise.

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **SVOC Report :** | **Solid** |
| **Reference:** | WEST BURTON POWER STATION | | |
| **Location:** | West Burton Power Station | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20922 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | | | | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS102 | | | | | | | | | | | | |
| **Depth** | 8.60 | | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | | | | | | | | | | | | |
| **Sample Date** | 18/12/2017 | | | | | | | | | | | | |
| **Sample Type** | Soil | | | | | | | | | | | | |
| **Batch Number** | 1 | | | | | | | | | | | | |
| **Date of Receipt** | 20/12/2017 | | | | | | | | | | | | |
| SVOC MS | | | | | | | | | | | | | |
| **Other SVOCs** | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Isophorone #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene #M | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 101 | | | | | | | | | | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 88 | | | | | | | | | | <0 | % | TM16/PM8 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **VOC Report :** | **Solid** |
| **Reference:** | WEST BURTON POWER STATION | | |
| **Location:** | West Burton Power Station | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20922 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | | | |
|---|---|---|---|---|
| **Sample ID** | WS102 | | | |
| **Depth** | 8.60 | | | |
| **COC No / misc** | | | | |
| **Containers** | V J B | | | |
| **Sample Date** | 18/12/2017 | | | |
| **Sample Type** | Soil | | | |
| **Batch Number** | 1 | | | |
| **Date of Receipt** | 20/12/2017 | LOD/LOR | Units | Method No. |
| VOC MS | | | | |
| Dichlorodifluoromethane | <2 | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether #M | <6 | <6 | ug/kg | TM15/PM10 |
| Chloromethane # | <3 | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <2 | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <1 | <1 | ug/kg | TM15/PM10 |
| Chloroethane #M | <6 | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane #M | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) #M | <6 | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM) # | <30 | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane #M | <6 | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene #M | <7 | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <4 | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Chloroform #M | <5 | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane #M | <5 | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride #M | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane #M | <5 | <5 | ug/kg | TM15/PM10 |
| Benzene #M | <5 | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE) #M | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Dibromomethane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane #M | <4 | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <4 | <4 | ug/kg | TM15/PM10 |
| Toluene #M | <3 | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane #M | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane # | <3 | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene #M | <4 | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane #M | <5 | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | <3 | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | <4 | <4 | ug/kg | TM15/PM10 |
| o-Xylene #M | <4 | <4 | ug/kg | TM15/PM10 |
| Styrene | <3 | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <4 | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane #M | <3 | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <2 | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Propylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <3 | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <3 | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene # | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <6 | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene #M | <4 | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene #M | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene # | <7 | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <4 | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <27 | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene # | <7 | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 110 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 126 | <0 | % | TM15/PM10 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20922 | 1 | BH106 | 1.00 | 6 | 27/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 27/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 27/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 27/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos Type** | NAD |
| | | | | | 27/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos Level Screen** | NAD |

**Exova Jones Environmental** **Notification of Deviating Samples**

**Client Name:** AECOM
**Reference:** WEST BURTON POWER STATION
**Location:** West Burton Power Station
**Contact:** Alex Freeman

**Matrix : Solid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| 17/20922 | 1 | WS102 | 8.60 | 1-3 | GRO, VOC | Solid Samples were received at a temperature above 9°C. |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/20922

### SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

### WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

### DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

### DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

### BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |

**JE Job No:** 17/20922

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | Yes | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |

**JE Job No:** 17/20922

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | Yes | AD | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |

**JE Job No:** 17/20922

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | Yes | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | Yes | AD | Yes |
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | Yes | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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AECOM
West One
Wellington Street
Leeds
LS1 1BA

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 8th January, 2018 |
| **Your reference :** | |
| **Our reference :** | Test Report 17/20654 Batch 1 |
| **Location :** | West Burton P S |
| **Date samples received :** | 14th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Five samples were received for analysis on 14th December, 2017 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Paul Boden BSc**
**Project Manager**

**Client Name:** AECOM

**Reference:**

**Location:** West Burton P S

**Contact:** Alex Freeman

**JE Job No.:** 17/20654

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 4-6 | 10-12 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP113 | TP104 | TP114 | | | | | | | | | | |
| Depth | 2.0 | 0.8 | 1.0 | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | V J B | V J B | | | | | | | | | | |
| Sample Date | 13/12/2017 | 13/12/2017 | 13/12/2017 | | | | | | | | | | |
| Sample Type | Soil | Soil | Soil | | | | | | | | | | |
| Batch Number | 1 | 1 | 1 | | | | | | | | | | |
| Date of Receipt | 14/12/2017 | 14/12/2017 | 14/12/2017 | | | | | | | | LOD/LOR | Units | Method No. |
| Antimony | 7 | 5 | 3 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Arsenic #M | 129.5 | 79.8 | 23.9 | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Barium #M | 418 | 315 | 286 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Beryllium | 3.8 | 3.0 | 1.8 | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Cadmium #M | <0.1 | <0.1 | 0.6 | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Chromium #M | 63.9 | 52.9 | 47.7 | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Copper #M | 80 | 60 | 31 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Iron | 38040 | 35110 | 33340 | | | | | | | | <20 | mg/kg | TM30/PM15 |
| Lead #M | 49 | 30 | 101 | | | | | | | | <5 | mg/kg | TM30/PM15 |
| Manganese #M | 338 | 309 | 857 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Mercury #M | <0.1 | <0.1 | <0.1 | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum #M | 2.7 | 3.8 | 3.6 | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Nickel #M | 58.0 | 47.8 | 38.1 | | | | | | | | <0.7 | mg/kg | TM30/PM15 |
| Selenium #M | 3 | 1 | 2 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Vanadium | 116 | 90 | 57 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron #M | 3.0 | 14.2 | 5.4 | | | | | | | | <0.1 | mg/kg | TM74/PM32 |
| Zinc #M | 75 | 55 | 146 | | | | | | | | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene #M | - | - | 0.09 | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | - | <0.03 | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene #M | - | - | <0.05 | | | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Fluorene #M | - | - | <0.04 | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene #M | - | - | 0.10 | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | - | <0.04 | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene #M | - | - | 0.10 | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | - | 0.09 | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | - | 0.13 | | | | | | | | <0.06 | mg/kg | TM4/PM8 |
| Chrysene #M | - | - | 0.07 | | | | | | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene #M | - | - | 0.11 | | | | | | | | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | - | <0.04 | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene #M | - | - | <0.04 | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | - | <0.04 | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | - | 0.06 | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | - | - | 0.8 | | | | | | | | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | - | 0.08 | | | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | - | 0.03 | | | | | | | | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | - | 121 | | | | | | | | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Natural Moisture Content | 13.9 | 13.8 | 43.6 | | | | | | | | <0.1 | % | PM4/PM0 |
| | | | | | | | | | | | | | |
| Ammoniacal Nitrogen as N | 3.9 | <0.6 | 11.0 | | | | | | | | <0.6 | mg/kg | TM38/PM20 |
| Chloride #M | 6 | 3 | 24 | | | | | | | | <2 | mg/kg | TM38/PM20 |
| Fluoride | 3.2 | 2.5 | 1.9 | | | | | | | | <0.3 | mg/kg | TM173/PM20 |

**Client Name:** AECOM
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman
**JE Job No.:** 17/20654

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 4-6 | 10-12 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|
| Sample ID | TP113 | TP104 | TP114 | | | |
| Depth | 2.0 | 0.8 | 1.0 | | | |
| COC No / misc | | | | | | |
| Containers | V J B | V J B | V J B | | | |
| Sample Date | 13/12/2017 | 13/12/2017 | 13/12/2017 | | | |
| Sample Type | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | | | |
| Date of Receipt | 14/12/2017 | 14/12/2017 | 14/12/2017 | | | |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | <2.5 | <2.5 | <2.5 | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | <0.05 | <0.05 | <0.05 | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | 1.4 | 3.8 | <0.3 | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) #M | 0.0649 | 0.1957 | 0.0255 | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 63.9 | 52.9 | 47.7 | <0.5 | mg/kg | NONE/NONE |
| Total Cyanide #M | <0.5 | <0.5 | <0.5 | <0.5 | mg/kg | TM89/PM45 |
| Total Organic Carbon # | 2.62 | 3.74 | 3.66 | <0.02 | % | TM21/PM24 |
| Sulphide | <10 | <10 | <10 | <10 | mg/kg | TM106/PM119 |
| Total Alkalinity as CaCO3 | 430 | 360 | 16110 | <10 | mg/kg | TM75/PM58 |
| pH #M | 8.08 | 8.23 | 12.28 | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clayey Silt | Silt | Clay | | None | PM13/PM0 |
| Sample Colour | Medium Brown | Medium Brown | Medium Brown | | None | PM13/PM0 |
| Other Items | stones | stones | roots | | None | PM13/PM0 |

**Client Name:** AECOM **SVOC Report :** **Solid**
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman
**JE Job No.:** 17/20654

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 4-6 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|
| Sample ID | TP104 | | | |
| Depth | 0.8 | | | |
| COC No / misc | | | | |
| Containers | V J B | | | |
| Sample Date | 13/12/2017 | | | |
| Sample Type | Soil | | | |
| Batch Number | 1 | | | |
| Date of Receipt | 14/12/2017 | | | |
| SVOC MS | | | | |
| **Phenols** | | | | |
| 2-Chlorophenol #M | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol #M | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| Phenol #M | <10 | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | |
| 2-Chloronaphthalene #M | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene #M | <10 | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | <10 | ug/kg | TM16/PM8 |
| Phenanthrene #M | <10 | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Fluoranthene #M | <10 | <10 | ug/kg | TM16/PM8 |
| Pyrene #M | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Chrysene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | <10 | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate #M | <100 | <100 | ug/kg | TM16/PM8 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

## *Exova Jones Environmental*

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **SVOC Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Burton P S | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20654 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 4-6 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP104 | | | | | | | | | | | | |
| **Depth** | 0.8 | | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | | | | | | | | | | | | |
| **Sample Date** | 13/12/2017 | | | | | | | | | | | | |
| **Sample Type** | Soil | | | | | | | | | | | | |
| **Batch Number** | 1 | | | | | | | | | | | | |
| **Date of Receipt** | 14/12/2017 | | | | | | | | | | LOD/LOR | Units | Method No. |
| SVOC MS | | | | | | | | | | | | | |
| **Other SVOCs** | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene [#M] | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether [#M] | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran [#M] | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene [#M] | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Isophorone [#M] | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine [#M] | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene [#M] | <10 | | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 112 | | | | | | | | | | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 87 | | | | | | | | | | <0 | % | TM16/PM8 |

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **VOC Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Burton P S | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20654 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 4-6 | | | |
|---|---|---|---|---|
| **Sample ID** | TP104 | | | |
| **Depth** | 0.8 | | | |
| **COC No / misc** | | | | |
| **Containers** | V J B | | | |
| **Sample Date** | 13/12/2017 | | | |
| **Sample Type** | Soil | | | |
| **Batch Number** | 1 | | | |
| **Date of Receipt** | 14/12/2017 | LOD/LOR | Units | Method No. |
| VOC MS | | | | |
| Dichlorodifluoromethane | <2 | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether #M | <6 | <6 | ug/kg | TM15/PM10 |
| Chloromethane # | <3 | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <2 | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <1 | <1 | ug/kg | TM15/PM10 |
| Chloroethane #M | <6 | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane #M | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) #M | <6 | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM) # | <30 | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane #M | <6 | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene #M | <7 | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <4 | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Chloroform #M | <5 | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane #M | <5 | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride #M | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane #M | <5 | <5 | ug/kg | TM15/PM10 |
| Benzene #M | <5 | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE) #M | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Dibromomethane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane #M | <4 | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <4 | <4 | ug/kg | TM15/PM10 |
| Toluene #M | <3 | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane #M | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane # | <3 | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene #M | <4 | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane #M | <5 | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | <3 | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | <4 | <4 | ug/kg | TM15/PM10 |
| o-Xylene #M | <4 | <4 | ug/kg | TM15/PM10 |
| Styrene | <3 | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <4 | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane #M | <3 | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <2 | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane #M | <4 | <4 | ug/kg | TM15/PM10 |
| Propylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <3 | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <3 | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene # | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <6 | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene #M | <4 | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene #M | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene # | <7 | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <4 | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <27 | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene # | <7 | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 106 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 57 | <0 | % | TM15/PM10 |

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20654 | 1 | TP113 | 2.0 | 3 | 27/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 27/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 27/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 27/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos Type** | NAD |
| | | | | | 27/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos Level Screen** | NAD |
| 17/20654 | 1 | TP104 | 0.8 | 6 | 27/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 27/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 27/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 27/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos Type** | NAD |
| | | | | | 27/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos Level Screen** | NAD |
| 17/20654 | 1 | TP114 | 1.0 | 12 | 27/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 27/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 27/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 27/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos Type** | NAD |
| | | | | | 27/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 27/12/2017 | **Asbestos Level Screen** | NAD |

**Client Name:** AECOM
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman

**Matrix : Solid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| | | | | | | |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

***JE Job No.:*** 17/20654

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |

**JE Job No:** 17/20654

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |

**JE Job No:** 17/20654

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | Yes | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | Yes | AD | Yes |

**JE Job No:** 17/20654

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | Yes | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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AECOM
West One
Wellington Street
Leeds
LS1 1BA

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 8th January, 2018 |
| **Your reference :** | |
| **Our reference :** | Test Report 17/20808 Batch 1 |
| **Location :** | West Burton P S |
| **Date samples received :** | 16th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Eleven samples were received for analysis on 16th December, 2017 of which ten were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Paul Boden BSc**
**Project Manager**

**Client Name:** AECOM
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman
**JE Job No.:** 17/20808

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 31-33 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP105 | WS105 | WS106 | TP112 | TP112 | TP111 | TP111 | WS104 | WS110 | WS112 | | | |
| Depth | 2.00 | 14.2 | 10.0 | 2.50 | 0.50 | 3.00 | 2.00 | 14.0 | 15.0 | 2.00 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | | | |
| Sample Date | 12/12/2017 | 12/12/2017 | 12/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | | | |
| Antimony | 7 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | NDP | <1 | mg/kg | TM30/PM15 |
| Arsenic #M | 146.4 | 6.0 | 19.0 | 5.3 | 3.0 | 8.4 | 7.7 | 10.0 | 4.2 | NDP | <0.5 | mg/kg | TM30/PM15 |
| Barium #M | 504 | 1094 | 272 | 153 | 192 | 198 | 298 | 263 | 1671 | NDP | <1 | mg/kg | TM30/PM15 |
| Beryllium | 4.8 | 1.5 | 1.3 | 1.7 | 1.6 | 1.2 | 1.0 | 0.9 | 1.7 | NDP | <0.5 | mg/kg | TM30/PM15 |
| Cadmium #M | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.5 | 0.4 | <0.1 | NDP | <0.1 | mg/kg | TM30/PM15 |
| Chromium #M | 62.6 | 52.3 | 32.6 | 63.8 | 74.8 | 54.1 | 42.5 | 28.9 | 45.0 | NDP | <0.5 | mg/kg | TM30/PM15 |
| Copper #M | 85 | 9 | 16 | 13 | 128 | 13 | 10 | 7 | 5 | NDP | <1 | mg/kg | TM30/PM15 |
| Iron | 36180 | 31180 | 29710 | 39510 | 31510 | 32320 | 28700 | 25330 | 35230 | NDP | <20 | mg/kg | TM30/PM15 |
| Lead #M | 39 | 6 | 14 | <5 | <5 | 38 | 73 | 69 | <5 | NDP | <5 | mg/kg | TM30/PM15 |
| Manganese #M | 274 | 549 | 1013 | 509 | 545 | 881 | 853 | 634 | 509 | NDP | <1 | mg/kg | TM30/PM15 |
| Mercury #M | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | NDP | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum #M | 3.8 | 1.4 | 5.5 | 0.4 | 0.4 | 1.3 | 1.1 | 38.2$_{AA}$ | 1.2 | NDP | <0.1 | mg/kg | TM30/PM15 |
| Nickel #M | 54.8 | 34.9 | 31.0 | 61.1 | 66.0 | 31.4 | 27.1 | 23.1 | 38.8 | NDP | <0.7 | mg/kg | TM30/PM15 |
| Selenium #M | 7 | <1 | 1 | <1 | <1 | <1 | <1 | <1 | <1 | NDP | <1 | mg/kg | TM30/PM15 |
| Vanadium | 115 | 41 | 44 | 49 | 67 | 44 | 34 | 33 | 49 | NDP | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron #M | 25.7 | 4.8 | 8.1 | 1.1 | 2.0 | 1.9 | 1.4 | 9.0 | 1.4 | NDP | <0.1 | mg/kg | TM74/PM32 |
| Zinc #M | 63 | 68 | 65 | 73 | 81 | 92 | 98 | 94 | 54 | NDP | <5 | mg/kg | TM30/PM15 |
| Antimony | - | - | - | - | - | - | - | - | - | 4 | <1 | mg/kg | TM30/PM62 |
| Arsenic | - | - | - | - | - | - | - | - | - | 32.9 | <0.5 | mg/kg | TM30/PM62 |
| Barium | - | - | - | - | - | - | - | - | - | 373 | <1 | mg/kg | TM30/PM62 |
| Beryllium | - | - | - | - | - | - | - | - | - | 1.7 | <0.5 | mg/kg | TM30/PM62 |
| Cadmium | - | - | - | - | - | - | - | - | - | 0.2 | <0.1 | mg/kg | TM30/PM62 |
| Chromium | - | - | - | - | - | - | - | - | - | 27.8 | <0.5 | mg/kg | TM30/PM62 |
| Copper | - | - | - | - | - | - | - | - | - | 63 | <1 | mg/kg | TM30/PM62 |
| Iron | - | - | - | - | - | - | - | - | - | 26903 | <20 | mg/kg | TM30/PM62 |
| Lead | - | - | - | - | - | - | - | - | - | 43 | <5 | mg/kg | TM30/PM62 |
| Manganese | - | - | - | - | - | - | - | - | - | 463 | <1 | mg/kg | TM30/PM62 |
| Mercury | - | - | - | - | - | - | - | - | - | <0.1 | <0.1 | mg/kg | TM30/PM62 |
| Molybdenum | - | - | - | - | - | - | - | - | - | 3.7 | <0.1 | mg/kg | TM30/PM62 |
| Nickel | - | - | - | - | - | - | - | - | - | 37.5 | <0.7 | mg/kg | TM30/PM62 |
| Selenium | - | - | - | - | - | - | - | - | - | 4 | <1 | mg/kg | TM30/PM62 |
| Vanadium | - | - | - | - | - | - | - | - | - | 48 | <1 | mg/kg | TM30/PM62 |
| Water Soluble Boron | - | - | - | - | - | - | - | - | - | 2.8 | <0.1 | mg/kg | TM74/PM61 |
| Zinc | - | - | - | - | - | - | - | - | - | 150 | <5 | mg/kg | TM30/PM62 |

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

*Exova Jones Environmental*

**Client Name:** AECOM
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman
**JE Job No.:** 17/20808

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 31-33 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP105 | WS105 | WS106 | TP112 | TP112 | TP111 | TP111 | WS104 | WS110 | WS112 | | | |
| **Depth** | 2.00 | 14.2 | 10.0 | 2.50 | 0.50 | 3.00 | 2.00 | 14.0 | 15.0 | 2.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 12/12/2017 | 12/12/2017 | 12/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene #M | <0.04 | - | - | - | - | - | - | <0.04 | - | 1.00 | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | <0.03 | - | - | - | - | - | - | <0.03 | - | 0.09 | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene #M | <0.05 | - | - | - | - | - | - | <0.05 | - | 0.37 | <0.05 | mg/kg | TM4/PM8 |
| Fluorene #M | <0.04 | - | - | - | - | - | - | <0.04 | - | 0.38 | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene #M | <0.03 | - | - | - | - | - | - | 0.04 | - | 2.45 | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | <0.04 | - | - | - | - | - | - | <0.04 | - | 0.73 | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene #M | <0.03 | - | - | - | - | - | - | <0.03 | - | 3.00 | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | <0.03 | - | - | - | - | - | - | <0.03 | - | 2.47 | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | <0.06 | - | - | - | - | - | - | <0.06 | - | 1.51 | <0.06 | mg/kg | TM4/PM8 |
| Chrysene #M | <0.02 | - | - | - | - | - | - | <0.02 | - | 1.01 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene #M | <0.07 | - | - | - | - | - | - | <0.07 | - | 1.97 | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | <0.04 | - | - | - | - | - | - | <0.04 | - | 1.08 | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene #M | <0.04 | - | - | - | - | - | - | <0.04 | - | 0.65 | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | <0.04 | - | - | - | - | - | - | <0.04 | - | 0.15 | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | <0.04 | - | - | - | - | - | - | <0.04 | - | 0.62 | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | <0.6 | - | - | - | - | - | - | <0.6 | - | 17.5 | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | <0.05 | - | - | - | - | - | - | <0.05 | - | 1.42 | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | <0.02 | - | - | - | - | - | - | <0.02 | - | 0.55 | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | 93 | - | - | - | - | - | - | 98 | - | 92 | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Methyl Tertiary Butyl Ether #M | - | <6 | <6 | - | - | <6 | <6 | <6 | <6 | - | <6 | ug/kg | TM15/PM10 |
| Benzene #M | - | <5 | <5 | - | - | <5 | <5 | <5 | <5 | - | <5 | ug/kg | TM15/PM10 |
| Toluene #M | - | <3 | 6 | - | - | <3 | <3 | <3 | <3 | - | <3 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | - | <3 | <3 | - | - | <3 | <3 | <3 | <3 | - | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | - | <4 | <4 | - | - | <4 | <4 | <4 | <4 | - | <4 | ug/kg | TM15/PM10 |
| o-Xylene #M | - | <4 | <4 | - | - | <4 | <4 | <4 | <4 | - | <4 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | - | 109 | 107 | - | - | 104 | 111 | 108 | 116 | - | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | - | 128 | 89 | - | - | 97 | 108 | 105 | 136 | - | <0 | % | TM15/PM10 |
| | | | | | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 #M | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | <0.1 | <0.1 SV | - | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 #M | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | <0.1 | <0.1 SV | - | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | <0.1 | <0.1 SV | - | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 #M | - | <0.2 | <0.2 | - | - | <0.2 | <0.2 | <0.2 | <0.2 | - | <0.2 | mg/kg | TM5/PM16 |
| >C12-C16 #M | - | <4 | <4 | - | - | <4 | <4 | <4 | <4 | - | <4 | mg/kg | TM5/PM16 |
| >C16-C21 #M | - | <7 | <7 | - | - | <7 | <7 | <7 | <7 | - | <7 | mg/kg | TM5/PM16 |
| >C21-C35 #M | - | <7 | <7 | - | - | <7 | <7 | <7 | <7 | - | <7 | mg/kg | TM5/PM16 |
| Total aliphatics C5-35 | - | <19 | <19 | - | - | <19 | <19 | <19 | <19 | - | <19 | mg/kg | TM5/TM36/PM12/PM16 |

**Client Name:** AECOM
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman
**JE Job No.:** 17/20808

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | 19-21 | 22-24 | 25-27 | 31-33 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP105 | WS105 | WS106 | TP112 | TP112 | TP111 | TP111 | WS104 | WS110 | WS112 | | | |
| **Depth** | 2.00 | 14.2 | 10.0 | 2.50 | 0.50 | 3.00 | 2.00 | 14.0 | 15.0 | 2.00 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 12/12/2017 | 12/12/2017 | 12/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | <0.1 | <0.1 SV | - | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | <0.1 | <0.1 SV | - | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 #M | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | <0.1 | <0.1 SV | - | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | - | <0.2 | <0.2 | - | - | <0.2 | <0.2 | <0.2 | <0.2 | - | <0.2 | mg/kg | TM5/PM16 |
| >EC12-EC16 # | - | <4 | <4 | - | - | <4 | <4 | <4 | <4 | - | <4 | mg/kg | TM5/PM16 |
| >EC16-EC21 # | - | <7 | <7 | - | - | <7 | <7 | <7 | <7 | - | <7 | mg/kg | TM5/PM16 |
| >EC21-EC35 # | - | <7 | <7 | - | - | <7 | <7 | <7 | <7 | - | <7 | mg/kg | TM5/PM16 |
| Total aromatics C5-35 # | - | <19 | <19 | - | - | <19 | <19 | <19 | <19 | - | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| Total aliphatics and aromatics(C5-35) | - | <38 | <38 | - | - | <38 | <38 | <38 | <38 | - | <38 | mg/kg | TM5/TM36/PM12/PM16 |
| | | | | | | | | | | | | | |
| Natural Moisture Content | 13.6 | 29.2 | 27.9 | 22.2 | 20.6 | 36.6 | 33.5 | 38.9 | 31.7 | NDP | <0.1 | % | PM4/PM0 |
| | | | | | | | | | | | | | |
| Ammoniacal Nitrogen as N | <0.6 | - | <0.6 | <0.6 | - | - | - | 17.9 | <0.6 | 4.6 | <0.6 | mg/kg | TM38/PM20 |
| Chloride #M | 3 | - | 46 | 13 | - | - | - | 44 | 32 | NDP | <2 | mg/kg | TM38/PM20 |
| Chloride | - | - | - | - | - | - | - | - | - | 20 | <2 | mg/kg | TM38/PM60 |
| Fluoride | 0.8 | - | 1.5 | 1.8 | - | - | - | 0.5 | 1.8 | 3.4 | <0.3 | mg/kg | TM173/PM20 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | <2.5 | - | <2.5 | <2.5 | - | - | - | <2.5 | <2.5 | NDP | <2.5 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | - | - | - | - | - | - | - | - | - | 37.3 | <2.5 | mg/kg | TM38/PM60 |
| Nitrite as NO2 | <0.05 | - | 0.20 | 0.26 | - | - | - | <0.05 | <0.05 | NDP | <0.05 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | - | - | - | - | - | - | - | - | - | 5.64 | <0.05 | mg/kg | TM38/PM60 |
| Ortho Phosphate as PO4 | <0.3 | - | <0.3 | <0.3 | - | - | - | <0.3 | <0.3 | NDP | <0.3 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | - | - | - | - | - | - | - | - | - | <0.3 | <0.3 | mg/kg | TM38/PM60 |
| Sulphate as SO4 (2:1 Ext) #M | 1.4479 | - | 1.2386 | 0.0505 | - | - | - | 0.4693 | 0.1439 | NDP | <0.0015 | g/l | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) | - | - | - | - | - | - | - | - | - | 0.2045 | <0.0015 | g/l | TM38/PM60 |
| Chromium III | 62.6 | 52.3 | 32.6 | 63.8 | 74.8 | 54.1 | 42.5 | 28.9 | 45.0 | NDP | <0.5 | mg/kg | NONE/NONE |
| Chromium III | - | - | - | - | - | - | - | - | - | 27.8 | <0.5 | mg/kg | NONE/NONE |
| | | | | | | | | | | | | | |
| Total Cyanide #M | <0.5 | - | - | - | - | <0.5 | - | - | - | <0.5 | <0.5 | mg/kg | TM89/PM45 |
| | | | | | | | | | | | | | |
| Total Organic Carbon # | 3.44 | 0.28 | 0.51 | 0.22 | 0.07 | 1.20 | 0.60 | 0.95 | 0.06 | NDP | <0.02 | % | TM21/PM24 |
| | | | | | | | | | | | | | |
| Sulphide | <10 | - | <10 | <10 | - | - | - | <10 | <10 | <10 | <10 | mg/kg | TM106/PM119 |
| | | | | | | | | | | | | | |
| Total Alkalinity as CaCO3 | 190 | - | 440 | 420 | - | - | - | 560 | 480 | NDP | <10 | mg/kg | TM75/PM58 |
| | | | | | | | | | | | | | |
| pH #M | 8.58 | 8.29 | 8.12 | 8.23 | 8.32 | 7.63 | 8.50 | - | 8.77 | 7.92 | <0.01 | pH units | TM73/PM11 |
| Sample Type | Silt | - | Clay | Clay | Clay | - | - | Clay | Clay | NDP | | None | PM13/PM0 |
| Sample Colour | Medium Brown | - | Medium Brown | Medium Brown | Light Brown | - | - | Medium Brown | Medium Brown | NDP | | None | PM13/PM0 |
| Other Items | none | - | stones | none | none | - | - | sand | none | NDP | | None | PM13/PM0 |

**Client Name:** AECOM
**SVOC Report :** **Solid**
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman
**JE Job No.:** 17/20808

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 4-6 | 7-9 | 16-18 | 19-21 | 22-24 | 25-27 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS105 | WS106 | TP111 | TP111 | WS104 | WS110 | | | |
| Depth | 14.2 | 10.0 | 3.00 | 2.00 | 14.0 | 15.0 | | | |
| COC No / misc | | | | | | | | | |
| Containers | V J B | V J B | V J B | V J B | V J B | V J B | | | |
| Sample Date | 12/12/2017 | 12/12/2017 | 14/12/2017 | 14/12/2017 | 15/12/2017 | 15/12/2017 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | | | |
| SVOC MS | | | | | | | | | |
| **Phenols** | | | | | | | | | |
| 2-Chlorophenol #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Phenol #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | | | | | | |
| 2-Chloronaphthalene #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Phenanthrene #M | <10 | 41 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Fluoranthene #M | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Pyrene #M | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Chrysene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | <10 | <10 | <10 | <10 | - | <10 | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | 228 | <100 | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | <100 | <100 | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | <100 | <100 | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | <100 | <100 | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | <100 | <100 | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate #M | <100 | <100 | <100 | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **SVOC Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Burton P S | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20808 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 4-6 | 7-9 | 16-18 | 19-21 | 22-24 | 25-27 | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS105 | WS106 | TP111 | TP111 | WS104 | WS110 | | | |
| **Depth** | 14.2 | 10.0 | 3.00 | 2.00 | 14.0 | 15.0 | | | |
| **COC No / misc** | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 12/12/2017 | 12/12/2017 | 14/12/2017 | 14/12/2017 | 15/12/2017 | 15/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | LOD/LOR | Units | Method No. |
| SVOC MS | | | | | | | | | |
| **Other SVOCs** | | | | | | | | | |
| 1,2-Dichlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Isophorone #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene #M | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 110 | 105 | 102 | 101 | 120 | 114 | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 87 | 83 | 85 | 88 | 100 | 93 | <0 | % | TM16/PM8 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

*Exova Jones Environmental*

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **VOC Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Burton P S | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20808 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 4-6 | 7-9 | 16-18 | 19-21 | 22-24 | 25-27 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS105 | WS106 | TP111 | TP111 | WS104 | WS110 | | | | | | | |
| **Depth** | 14.2 | 10.0 | 3.00 | 2.00 | 14.0 | 15.0 | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | V J B | | | | | | | |
| **Sample Date** | 12/12/2017 | 12/12/2017 | 14/12/2017 | 14/12/2017 | 15/12/2017 | 15/12/2017 | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | 16/12/2017 | | | | | | | |
| VOC MS | | | | | | | | | | | | | |
| Dichlorodifluoromethane | <2 | <2 | <2 | <2 | <2 | <2 | | | | | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether #M | <6 | <6 | <6 | <6 | <6 | <6 | | | | | <6 | ug/kg | TM15/PM10 |
| Chloromethane # | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <2 | <2 | <2 | <2 | <2 | <2 | | | | | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/kg | TM15/PM10 |
| Chloroethane #M | <6 | <6 | <6 | <6 | <6 | <6 | | | | | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane #M | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) #M | <6 | <6 | <6 | <6 | <6 | <6 | | | | | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM) # | <30 | <30 | <30 | <30 | <30 | <30 | | | | | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane #M | <6 | <6 | <6 | <6 | <6 | <6 | | | | | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene #M | <7 | <7 | <7 | <7 | <7 | <7 | | | | | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Chloroform #M | <5 | <5 | <5 | <5 | <5 | <5 | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane #M | <5 | <5 | <5 | <5 | <5 | <5 | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane #M | <5 | <5 | <5 | <5 | <5 | <5 | | | | | <5 | ug/kg | TM15/PM10 |
| Benzene #M | <5 | <5 | <5 | <5 | <5 | <5 | | | | | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE) #M | <5 | <5 | <5 | <5 | <5 | <5 | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromomethane #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Toluene #M | <3 | 6 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane #M | <5 | <5 | <5 | <5 | <5 | <5 | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane # | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane #M | <5 | <5 | <5 | <5 | <5 | <5 | | | | | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| o-Xylene #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Styrene | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane #M | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <2 | <2 | <2 | <2 | <2 | <2 | | | | | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Propylbenzene # | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <3 | <3 | <3 | <3 | <3 | <3 | | | | | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene # | <5 | <5 | <5 | <5 | <5 | <5 | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <6 | <6 | <6 | <6 | <6 | <6 | | | | | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene # | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene # | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene # | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene # | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene #M | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane # | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene # | <7 | <7 | <7 | <7 | <7 | <7 | | | | | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <4 | <4 | <4 | <4 | <4 | <4 | | | | | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <27 | <27 | <27 | <27 | <27 | <27 | | | | | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene # | <7 | <7 | <7 | <7 | <7 | <7 | | | | | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 109 | 107 | 104 | 111 | 108 | 116 | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 128 | 89 | 97 | 108 | 105 | 136 | | | | | <0 | % | TM15/PM10 |

**Client Name:** AECOM
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20808 | 1 | TP105 | 2.00 | 3 | 28/12/2017 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20808 | 1 | TP111 | 3.00 | 18 | 28/12/2017 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20808 | 1 | WS104 | 14.0 | 24 | 28/12/2017 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20808 | 1 | WS112 | 2.00 | 33 | 28/12/2017 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | Fibre Bundles |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | Chrysotile |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | less than 0.1% |

**Client Name:** AECOM

**Reference:**

**Location:** West Burton P S

**Contact:** Alex Freeman

**Matrix : Solid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | NDP Reason |
|---|---|---|---|---|---|
| 17/20808 | 1 | WS112 | 2.00 | 31-33 | Asbestos detected in sample |

# Exova Jones Environmental

## Notification of Deviating Samples

**Client Name:** AECOM
**Reference:**
**Location:** West Burton P S
**Contact:** Alex Freeman

**Matrix : Solid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| | | | | | | |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/20808

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |
| AA | x5 Dilution |

**JE Job No:** 17/20808

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | Yes | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |

**JE Job No:** 17/20808

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | Yes | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM62 | Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C. | | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |

**JE Job No:** 17/20808

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM60 | As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid. | | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | Yes | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | Yes | AD | Yes |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM61 | As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP. | | | AR | Yes |

**JE Job No:** 17/20808

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | Yes | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Zone 3
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AECOM
West One
Wellington Street
Leeds
LS1 1BA

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 8th January, 2018 |
| **Your reference :** | |
| **Our reference :** | Test Report 17/20820 Batch 1 |
| **Location :** | West Burton |
| **Date samples received :** | 15th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Thirteen samples were received for analysis on 15th December, 2017 of which ten were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Paul Boden BSc**
**Project Manager**

# Exova Jones Environmental

**Client Name:** AECOM
**Reference:**
**Location:** West Burton
**Contact:** Alex Freeman
**JE Job No.:** 17/20820

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 7-9 | 10-12 | 13-15 | 19-21 | 25-27 | 28-30 | 31-33 | 34-36 | 37-39 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS103 | WS110 | TP115 | WS104 | TP116 | TP102 | TP102 | TP103 | TP108 | TP108 | | | |
| Depth | 3.20 | 2.00 | 3.00 | 0.50 | 3.00 | 2.50 | 0.60 | 3.00 | 0.50 | 1.50 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | | | |
| Sample Date | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | | | |
| Antimony | 7 | 8 | 3 | 6 | 5 | 1 | 2 | 2 | 3 | 7 | <1 | mg/kg | TM30/PM15 |
| Arsenic #M | 155.3 | 157.2 | 45.0 | 120.2 | 65.3 | 6.8 | 11.7 | 11.0 | 32.2 | 137.0 | <0.5 | mg/kg | TM30/PM15 |
| Barium #M | 370 | 421 | 198 | 601 | 330 | 188 | 202 | 402 | 323 | 379 | <1 | mg/kg | TM30/PM15 |
| Beryllium | 3.6 | 4.3 | 1.8 | 4.3 | 2.9 | 0.9 | 1.4 | 1.0 | 1.9 | 4.0 | <0.5 | mg/kg | TM30/PM15 |
| Cadmium #M | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 1.1 | 0.3 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Chromium #M | 62.4 | 99.8 | 37.6 | 88.0 | 57.9 | 58.5 | 48.4 | 54.0 | 69.7 | 93.8 | <0.5 | mg/kg | TM30/PM15 |
| Copper #M | 84 | 89 | 47 | 85 | 61 | 10 | 21 | 17 | 32 | 89 | <1 | mg/kg | TM30/PM15 |
| Iron | 36970 | 43290 | 27760 | 43640 | 32280 | 23780 | 30850 | 28560 | 31540 | 44970 | <20 | mg/kg | TM30/PM15 |
| Lead #M | 42 | 43 | 10 | 59 | 37 | 47 | 35 | 182 | 69 | 39 | <5 | mg/kg | TM30/PM15 |
| Manganese #M | 255 | 307 | 385 | 468 | 526 | 391 | 636 | 857 | 454 | 338 | <1 | mg/kg | TM30/PM15 |
| Mercury #M | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum #M | 4.1 | 8.4 | 4.7 | 6.8 | 3.3 | 3.4 | 2.2 | 1.5 | 5.0 | 5.9 | <0.1 | mg/kg | TM30/PM15 |
| Nickel #M | 56.0 | 62.4 | 38.2 | 63.0 | 48.7 | 21.4 | 41.4 | 27.5 | 36.2 | 60.4 | <0.7 | mg/kg | TM30/PM15 |
| Selenium #M | 3 | 4 | 2 | 5 | 2 | <1 | 1 | <1 | 1 | 3 | <1 | mg/kg | TM30/PM15 |
| Vanadium | 113 | 129 | 50 | 121 | 75 | 32 | 42 | 35 | 61 | 122 | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron #M | 27.5 | 40.2 | 2.2 | 17.4 | 7.6 | 1.9 | 7.8 | 2.6 | 4.5 | 5.5 | <0.1 | mg/kg | TM74/PM32 |
| Zinc #M | 75 | 68 | 27 | 95 | 82 | 68 | 87 | 163 | 117 | 67 | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene #M | - | <0.04 | - | - | - | - | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | <0.03 | - | - | - | - | - | - | - | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene #M | - | <0.05 | - | - | - | - | - | - | - | <0.05 | <0.05 | mg/kg | TM4/PM8 |
| Fluorene #M | - | <0.04 | - | - | - | - | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene #M | - | <0.03 | - | - | - | - | - | - | - | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | <0.04 | - | - | - | - | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene #M | - | <0.03 | - | - | - | - | - | - | - | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | <0.03 | - | - | - | - | - | - | - | <0.03 | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | <0.06 | - | - | - | - | - | - | - | <0.06 | <0.06 | mg/kg | TM4/PM8 |
| Chrysene #M | - | <0.02 | - | - | - | - | - | - | - | <0.02 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene #M | - | <0.07 | - | - | - | - | - | - | - | <0.07 | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | <0.04 | - | - | - | - | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene #M | - | <0.04 | - | - | - | - | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | <0.04 | - | - | - | - | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | <0.04 | - | - | - | - | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | - | <0.6 | - | - | - | - | - | - | - | <0.6 | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | <0.05 | - | - | - | - | - | - | - | <0.05 | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | <0.02 | - | - | - | - | - | - | - | <0.02 | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | 102 | - | - | - | - | - | - | - | 90 | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Methyl Tertiary Butyl Ether #M | - | - | - | - | - | - | - | <6 | - | - | <6 | ug/kg | TM15/PM10 |
| Benzene #M | - | - | - | - | - | - | - | <5 | - | - | <5 | ug/kg | TM15/PM10 |
| Toluene #M | - | - | - | - | - | - | - | <3 | - | - | <3 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | - | - | - | - | - | - | - | <3 | - | - | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | - | - | - | - | - | - | - | <4 | - | - | <4 | ug/kg | TM15/PM10 |

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Burton | **Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20820 | | |

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-3 | 7-9 | 10-12 | 13-15 | 19-21 | 25-27 | 28-30 | 31-33 | 34-36 | 37-39 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS103 | WS110 | TP115 | WS104 | TP116 | TP102 | TP102 | TP103 | TP108 | TP108 | | | |
| Depth | 3.20 | 2.00 | 3.00 | 0.50 | 3.00 | 2.50 | 0.60 | 3.00 | 0.50 | 1.50 | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | | | |
| Sample Date | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | | | |
| Sample Type | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| Date of Receipt | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | | | |
| o-Xylene #M | - | - | - | - | - | - | - | <4 | - | - | <4 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | - | - | - | - | - | - | - | 95 | - | - | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | - | - | - | - | - | - | - | 90 | - | - | <0 | % | TM15/PM10 |
| | | | | | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 #M | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 #M | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 #M | - | - | - | - | - | - | - | <0.2 | - | - | <0.2 | mg/kg | TM5/PM16 |
| >C12-C16 #M | - | - | - | - | - | - | - | <4 | - | - | <4 | mg/kg | TM5/PM16 |
| >C16-C21 #M | - | - | - | - | - | - | - | <7 | - | - | <7 | mg/kg | TM5/PM16 |
| >C21-C35 #M | - | - | - | - | - | - | - | <7 | - | - | <7 | mg/kg | TM5/PM16 |
| Total aliphatics C5-35 | - | - | - | - | - | - | - | <19 | - | - | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 #M | - | - | - | - | - | - | - | <0.1 | - | - | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | - | - | - | - | - | - | - | <0.2 | - | - | <0.2 | mg/kg | TM5/PM16 |
| >EC12-EC16 # | - | - | - | - | - | - | - | <4 | - | - | <4 | mg/kg | TM5/PM16 |
| >EC16-EC21 # | - | - | - | - | - | - | - | <7 | - | - | <7 | mg/kg | TM5/PM16 |
| >EC21-EC35 # | - | - | - | - | - | - | - | <7 | - | - | <7 | mg/kg | TM5/PM16 |
| Total aromatics C5-35 # | - | - | - | - | - | - | - | <19 | - | - | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| Total aliphatics and aromatics(C5-35) | - | - | - | - | - | - | - | <38 | - | - | <38 | mg/kg | TM5/TM36/PM12/PM16 |
| | | | | | | | | | | | | | |
| Natural Moisture Content | 22.2 | 23.1 | 16.2 | 30.0 | 16.5 | 34.4 | 28.1 | 43.2 | 26.4 | 16.1 | <0.1 | % | PM4/PM0 |
| | | | | | | | | | | | | | |
| Ammoniacal Nitrogen as N | <0.6 | - | <0.6 | - | 3.0 | - | <0.6 | - | - | - | <0.6 | mg/kg | TM38/PM20 |
| Chloride #M | 11 | - | 4 | - | 31 | - | 45 | - | - | - | <2 | mg/kg | TM38/PM20 |
| Fluoride | 0.6 | - | 1.5 | - | 2.2 | - | 2.7 | - | - | - | <0.3 | mg/kg | TM173/PM20 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | <2.5 | - | <2.5 | - | <2.5 | - | 43.0 | - | - | - | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | <0.05 | - | <0.05 | - | 0.16 | - | 0.39 | - | - | - | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | 0.5 | - | <0.3 | - | 1.2 | - | 0.7 | - | - | - | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) #M | 1.5750 | - | 0.0568 | - | 0.0521 | - | 0.0687 | - | - | - | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 62.4 | 99.8 | 37.6 | 88.0 | 57.9 | 58.5 | 48.4 | 54.0 | 69.7 | 93.8 | <0.5 | mg/kg | NONE/NONE |
| | | | | | | | | | | | | | |
| Total Cyanide #M | <0.5 | <0.5 | - | <0.5 | - | <0.5 | - | - | <0.5 | <0.5 | <0.5 | mg/kg | TM89/PM45 |
| | | | | | | | | | | | | | |
| Total Organic Carbon # | 3.39 | 3.26 | 0.16 | 6.12 | 1.95 | 0.85 | 1.53 | 0.23 | 2.50 | 3.49 | <0.02 | % | TM21/PM24 |
| | | | | | | | | | | | | | |
| Sulphide | <10 | - | <10 | - | <10 | - | <10 | - | - | - | <10 | mg/kg | TM106/PM119 |
| | | | | | | | | | | | | | |
| Total Alkalinity as CaCO3 | 320 | - | 420 | - | 620 | - | 550 | - | - | - | <10 | mg/kg | TM75/PM58 |

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

## *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:**
**Location:** West Burton
**Contact:** Alex Freeman
**JE Job No.:** 17/20820

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 7-9 | 10-12 | 13-15 | 19-21 | 25-27 | 28-30 | 31-33 | 34-36 | 37-39 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS103 | WS110 | TP115 | WS104 | TP116 | TP102 | TP102 | TP103 | TP108 | TP108 | | | |
| **Depth** | 3.20 | 2.00 | 3.00 | 0.50 | 3.00 | 2.50 | 0.60 | 3.00 | 0.50 | 1.50 | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | 15/12/2017 | | | |
| pH #M | 8.05 | 9.09 | 8.46 | 8.15 | 8.40 | 8.37 | 8.00 | 7.56 | 7.96 | 8.26 | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clayey Silt | Silt | Sand | Silt | Clay | Clay | Clay | Clay | Clay | Silt | | None | PM13/PM0 |
| Sample Colour | Medium Brown | Medium Brown | Medium Brown | Dark Brown | Medium Brown | Medium Brown | Medium Brown | Medium Brown | Medium Brown | Medium Brown | | None | PM13/PM0 |
| Other Items | none | none | stones | none | stones and vegertation | sand | stones and sand | none | silt and roots | stones | | None | PM13/PM0 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM **SVOC Report :** **Solid**
**Reference:**
**Location:** West Burton
**Contact:** Alex Freeman
**JE Job No.:** 17/20820

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 10-12 | 31-33 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|
| **Sample ID** | TP115 | TP103 | | | |
| **Depth** | 3.00 | 3.00 | | | |
| **COC No / misc** | | | | | |
| **Containers** | V J B | V J B | | | |
| **Sample Date** | 13/12/2017 | 14/12/2017 | | | |
| **Sample Type** | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | | | |
| **Date of Receipt** | 15/12/2017 | 15/12/2017 | | | |
| SVOC MS | | | | | |
| **Phenols** | | | | | |
| 2-Chlorophenol #M | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol #M | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Phenol #M | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | | |
| 2-Chloronaphthalene #M | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene #M | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Phenanthrene #M | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Fluoranthene #M | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Pyrene #M | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Chrysene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate #M | <100 | <100 | <100 | ug/kg | TM16/PM8 |


Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **SVOC Report :** | **Solid** |
| **Reference:** | | | |
| **Location:** | West Burton | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/20820 | | |

| **J E Sample No.** | 10-12 | 31-33 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP115 | TP103 | | | | | | | | | | | |
| **Depth** | 3.00 | 3.00 | | | | | | | | | Please see attached notes for all abbreviations and acronyms | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | | | | | | | | | | | |
| **Sample Date** | 13/12/2017 | 14/12/2017 | | | | | | | | | | | |
| **Sample Type** | Soil | Soil | | | | | | | | | | | |
| **Batch Number** | 1 | 1 | | | | | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 15/12/2017 | 15/12/2017 | | | | | | | | | | | |
| SVOC MS | | | | | | | | | | | | | |
| **Other SVOCs** | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene #M | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether #M | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran #M | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene #M | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Isophorone #M | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine #M | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene #M | <10 | <10 | | | | | | | | | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 96 | 108 | | | | | | | | | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 79 | 87 | | | | | | | | | <0 | % | TM16/PM8 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

## *Exova Jones Environmental*

**Client Name:** AECOM **VOC Report :** **Solid**
**Reference:**
**Location:** West Burton
**Contact:** Alex Freeman
**JE Job No.:** 17/20820

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 10-12 | 31-33 | | | | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | TP115 | TP103 | | | | | | | | | | |
| Depth | 3.00 | 3.00 | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | |
| Containers | V J B | V J B | | | | | | | | | | |
| Sample Date | 13/12/2017 | 14/12/2017 | | | | | | | | | | |
| Sample Type | Soil | Soil | | | | | | | | | | |
| Batch Number | 1 | 1 | | | | | | | | | | |
| Date of Receipt | 15/12/2017 | 15/12/2017 | | | | | | | | | | |
| VOC MS | | | | | | | | | | | | |
| Dichlorodifluoromethane | <2 | <2 | | | | | | | | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether #M | <6 | <6 | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Chloromethane # | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <2 | <2 | | | | | | | | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <1 | <1 | | | | | | | | <1 | ug/kg | TM15/PM10 |
| Chloroethane #M | <6 | <6 | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane #M | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) #M | <6 | <6 | | | | | | | | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM) # | <30 | <30 | | | | | | | | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane #M | <6 | <6 | | | | | | | | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene #M | <7 | <7 | | | | | | | | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Chloroform #M | <5 | <5 | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane #M | <5 | <5 | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane #M | <5 | <5 | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Benzene #M | <5 | <5 | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE) #M | <5 | <5 | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromomethane #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Toluene #M | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane #M | <5 | <5 | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane # | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane #M | <5 | <5 | | | | | | | | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| o-Xylene #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Styrene | <3 | <3 | | | | | | | | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane #M | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <2 | <2 | | | | | | | | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Propylbenzene # | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <3 | <3 | | | | | | | | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene # | <5 | <5 | | | | | | | | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <6 | <6 | | | | | | | | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene # | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene # | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene #M | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene # | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene # | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene #M | 30 | 23 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane # | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene # | <7 | <7 | | | | | | | | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <4 | <4 | | | | | | | | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <27 | <27 | | | | | | | | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene # | <7 | <7 | | | | | | | | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 99 | 95 | | | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 82 | 90 | | | | | | | | <0 | % | TM15/PM10 |


Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:**
**Location:** West Burton
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20820 | 1 | WS103 | 3.20 | 3 | 28/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20820 | 1 | WS110 | 2.00 | 9 | 28/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20820 | 1 | WS104 | 0.50 | 15 | 28/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20820 | 1 | TP102 | 2.50 | 27 | 28/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20820 | 1 | TP108 | 0.50 | 36 | 28/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |

**Client Name:** AECOM
**Reference:**
**Location:** West Burton
**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20820 | 1 | TP108 | 0.50 | 36 | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20820 | 1 | TP108 | 1.50 | 39 | 28/12/2017 | **General Description (Bulk Analysis)** | soil/stones |
| | | | | | 28/12/2017 | **Asbestos Fibres** | NAD |
| | | | | | 28/12/2017 | **Asbestos Fibres (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM** | NAD |
| | | | | | 28/12/2017 | **Asbestos ACM (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type** | NAD |
| | | | | | 28/12/2017 | **Asbestos Type (2)** | NAD |
| | | | | | 28/12/2017 | **Asbestos Level Screen** | NAD |

**Client Name:** AECOM **Matrix : Solid**
**Reference:**
**Location:** West Burton
**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/20820

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |

**JE Job No:** 17/20820

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | Yes | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |

**JE Job No:** 17/20820

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | Yes | AD | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |

**JE Job No:** 17/20820

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | Yes | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | Yes | AD | Yes |
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | Yes | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |

**JE Job No:** 17/20820

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Zone 3
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Deeside
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Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

AECOM
2 City Walk
Leeds
LS11 9AR

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 8th January, 2018 |
| **Your reference :** | 60527350 |
| **Our reference :** | Test Report 17/21026 Batch 1 Schedule A 17/21026 Batch 1 Schedule B 17/21026 Ba |
| **Location :** | West Burton Power Station |
| **Date samples received :** | 21st December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Five samples were received for analysis on 21st December, 2017 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Paul Boden BSc**
**Project Manager**

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **Report :** | **Liquid** |
| **Reference:** | 60527350 | | |
| **Location:** | West Burton Power Station | | |
| **Contact:** | Alex Freeman | **Liquids/products:** | V=40ml vial, G=glass bottle, P=plastic bottle |
| **JE Job No.:** | 17/21026 | | $H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HNO_3$ |

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 10-16 | 17-23 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|
| Sample ID | WS109 | WS111 | | | |
| Depth | | | | | |
| COC No / misc | | | | | |
| Containers | V HN N P G | V HN N P G | | | |
| Sample Date | 19/12/2017 | 19/12/2017 | | | |
| Sample Type | Ground Water | Ground Water | | | |
| Batch Number | 1 | 1 | | | |
| Date of Receipt | 21/12/2017 | 21/12/2017 | | | |
| Dissolved Antimony # | <2 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Arsenic # | 36.2 | 56.2 | <2.5 | ug/l | TM30/PM14 |
| Dissolved Cadmium # | <0.5 | <0.5 | <0.5 | ug/l | TM30/PM14 |
| Total Dissolved Chromium # | <1.5 | <1.5 | <1.5 | ug/l | TM30/PM14 |
| Dissolved Copper # | <7 | <7 | <7 | ug/l | TM30/PM14 |
| Total Dissolved Iron # | <20 | <20 | <20 | ug/l | TM30/PM14 |
| Dissolved Lead # | <5 | <5 | <5 | ug/l | TM30/PM14 |
| Dissolved Manganese # | 25 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Mercury # | <1 | <1 | <1 | ug/l | TM30/PM14 |
| Dissolved Molybdenum # | 1616 | $3796_{AA}$ | <2 | ug/l | TM30/PM14 |
| Dissolved Nickel # | <2 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Selenium # | <3 | 8 | <3 | ug/l | TM30/PM14 |
| Dissolved Zinc # | <3 | <3 | <3 | ug/l | TM30/PM14 |
| | | | | | |
| Methyl Tertiary Butyl Ether # | <0.1 | <0.1 | <0.1 | ug/l | TM15/PM10 |
| Benzene # | <0.5 | <0.5 | <0.5 | ug/l | TM15/PM10 |
| Toluene # | <5 | 16 | <5 | ug/l | TM15/PM10 |
| Ethylbenzene # | <1 | <1 | <1 | ug/l | TM15/PM10 |
| p/m-Xylene # | <2 | <2 | <2 | ug/l | TM15/PM10 |
| o-Xylene # | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 105 | 104 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 105 | 106 | <0 | % | TM15/PM10 |
| | | | | | |
| TPH CWG | | | | | |
| **Aliphatics** | | | | | |
| >C5-C6 # | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C6-C8 # | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C8-C10 # | <10 | 17 | <10 | ug/l | TM36/PM12 |
| >C10-C12 # | <5 | <5 | <5 | ug/l | TM5/PM30 |
| >C12-C16 # | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >C16-C21 # | <10 | 80 | <10 | ug/l | TM5/PM30 |
| >C21-C35 # | <10 | <10 | <10 | ug/l | TM5/PM30 |
| Total aliphatics C5-35 # | <10 | 97 | <10 | ug/l | TM5/TM36/PM30/PM12 |
| **Aromatics** | | | | | |
| >C5-EC7 # | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC7-EC8 # | <10 | 14 | <10 | ug/l | TM36/PM12 |
| >EC8-EC10 # | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC10-EC12 # | <5 | <5 | <5 | ug/l | TM5/PM30 |
| >EC12-EC16 # | <10 | 30 | <10 | ug/l | TM5/PM30 |
| >EC16-EC21 # | <10 | 220 | <10 | ug/l | TM5/PM30 |
| >EC21-EC35 # | <10 | <10 | <10 | ug/l | TM5/PM30 |
| Total aromatics C5-35 # | <10 | 264 | <10 | ug/l | TM5/TM36/PM30/PM12 |
| Total aliphatics and aromatics(C5-35) # | <10 | 361 | <10 | ug/l | TM5/TM36/PM30/PM12 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

## *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/21026

**Report : Liquid**

**Liquids/products:** V=40ml vial, G=glass bottle, P=plastic bottle
H=$H_2SO_4$, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 10-16 | 17-23 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|
| Sample ID | WS109 | WS111 | | | |
| Depth | | | | | |
| COC No / misc | | | | | |
| Containers | V HN N P G | V HN N P G | | | |
| Sample Date | 19/12/2017 | 19/12/2017 | | | |
| Sample Type | Ground Water | Ground Water | | | |
| Batch Number | 1 | 1 | | | |
| Date of Receipt | 21/12/2017 | 21/12/2017 | | | |
| Fluoride | <0.3 | <0.3 | <0.3 | mg/l | TM173/PM0 |
| Sulphate as SO4 # | 1948.3 | 1998.1 | <0.5 | mg/l | TM38/PM0 |
| Chloride # | 110.3 | 118.6 | <0.3 | mg/l | TM38/PM0 |
| Nitrate as NO3 # | 0.4 | <0.2 | <0.2 | mg/l | TM38/PM0 |
| Nitrite as NO2 # | 0.40 | 0.15 | <0.02 | mg/l | TM38/PM0 |
| Ortho Phosphate as PO4 # | <0.06 | <0.06 | <0.06 | mg/l | TM38/PM0 |
| Total Cyanide # | <0.01 | <0.01 | <0.01 | mg/l | TM89/PM0 |
| Total Organic Carbon # | 2 | <2 | <2 | mg/l | TM60/PM0 |

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/21026

**SVOC Report :** **Liquid**

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 10-16 | 17-23 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|
| Sample ID | WS109 | WS111 | | | |
| Depth | | | | | |
| COC No / misc | | | | | |
| Containers | V HN N P G | V HN N P G | | | |
| Sample Date | 19/12/2017 | 19/12/2017 | | | |
| Sample Type | Ground Water | Ground Water | | | |
| Batch Number | 1 | 1 | | | |
| Date of Receipt | 21/12/2017 | 21/12/2017 | | | |
| SVOC MS | | | | | |
| **Phenols** | | | | | |
| 2-Chlorophenol # | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Methylphenol # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2-Nitrophenol | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4-Dichlorophenol # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4-Dimethylphenol | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2,4,5-Trichlorophenol # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4,6-Trichlorophenol | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Chloro-3-methylphenol # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 4-Methylphenol | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Nitrophenol | <10 | <10 | <10 | ug/l | TM16/PM30 |
| Pentachlorophenol | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Phenol | <1 | <1 | <1 | ug/l | TM16/PM30 |
| **PAHs** | | | | | |
| 2-Chloronaphthalene # | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Methylnaphthalene # | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Naphthalene # | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Acenaphthylene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Acenaphthene # | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Fluorene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Phenanthrene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Anthracene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Fluoranthene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Pyrene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(a)anthracene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Chrysene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(bk)fluoranthene # | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Benzo(a)pyrene | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Indeno(123cd)pyrene | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Dibenzo(ah)anthracene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(ghi)perylene # | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| **Phthalates** | | | | | |
| Bis(2-ethylhexyl) phthalate | <5 | <5 | <5 | ug/l | TM16/PM30 |
| Butylbenzyl phthalate | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Di-n-butyl phthalate # | <1.5 | <1.5 | <1.5 | ug/l | TM16/PM30 |
| Di-n-Octyl phthalate | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Diethyl phthalate # | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Dimethyl phthalate | <1 | <1 | <1 | ug/l | TM16/PM30 |

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **SVOC Report :** | **Liquid** |
| **Reference:** | 60527350 | | |
| **Location:** | West Burton Power Station | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/21026 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 10-16 | 17-23 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS109 | WS111 | | | | | | | | | | | |
| **Depth** | | | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | | | | | | | | | | | |
| **Sample Date** | 19/12/2017 | 19/12/2017 | | | | | | | | | | | |
| **Sample Type** | Ground Water | Ground Water | | | | | | | | | | | |
| **Batch Number** | 1 | 1 | | | | | | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 21/12/2017 | 21/12/2017 | | | | | | | | | | | | |
| SVOC MS | | | | | | | | | | | | | | |
| **Other SVOCs** | | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 1,2,4-Trichlorobenzene # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 1,3-Dichlorobenzene # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 1,4-Dichlorobenzene # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 2-Nitroaniline | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 2,4-Dinitrotoluene # | <0.5 | <0.5 | | | | | | | | | <0.5 | ug/l | TM16/PM30 |
| 2,6-Dinitrotoluene | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 3-Nitroaniline | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 4-Bromophenylphenylether # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 4-Chloroaniline | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 4-Chlorophenylphenylether # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| 4-Nitroaniline | <0.5 | <0.5 | | | | | | | | | <0.5 | ug/l | TM16/PM30 |
| Azobenzene # | <0.5 | <0.5 | | | | | | | | | <0.5 | ug/l | TM16/PM30 |
| Bis(2-chloroethoxy)methane # | <0.5 | <0.5 | | | | | | | | | <0.5 | ug/l | TM16/PM30 |
| Bis(2-chloroethyl)ether # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| Carbazole # | <0.5 | <0.5 | | | | | | | | | <0.5 | ug/l | TM16/PM30 |
| Dibenzofuran # | <0.5 | <0.5 | | | | | | | | | <0.5 | ug/l | TM16/PM30 |
| Hexachlorobenzene # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| Hexachlorobutadiene # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| Hexachlorocyclopentadiene | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| Hexachloroethane # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| Isophorone # | <0.5 | <0.5 | | | | | | | | | <0.5 | ug/l | TM16/PM30 |
| N-nitrosodi-n-propylamine # | <0.5 | <0.5 | | | | | | | | | <0.5 | ug/l | TM16/PM30 |
| Nitrobenzene # | <1 | <1 | | | | | | | | | <1 | ug/l | TM16/PM30 |
| Surrogate Recovery 2-Fluorobiphenyl | 123 | 114 | | | | | | | | | <0 | % | TM16/PM30 |
| Surrogate Recovery p-Terphenyl-d14 | 121 | 117 | | | | | | | | | <0 | % | TM16/PM30 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM **VOC Report :** **Liquid**
**Reference:** 60527350
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/21026

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 10-16 | 17-23 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS109 | WS111 | | | | | | | | | | | |
| Depth | | | | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V HN N P G | V HN N P G | | | | | | | | | | | |
| Sample Date | 19/12/2017 | 19/12/2017 | | | | | | | | | | | |
| Sample Type | Ground Water | Ground Water | | | | | | | | | | | |
| Batch Number | 1 | 1 | | | | | | | | | | | |
| Date of Receipt | 21/12/2017 | 21/12/2017 | | | | | | | | | | LOD/LOR | Units | Method No. |
| VOC MS | | | | | | | | | | | | | |
| Dichlorodifluoromethane | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Methyl Tertiary Butyl Ether # | <0.1 | <0.1 | | | | | | | | <0.1 | ug/l | TM15/PM10 |
| Chloromethane # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Vinyl Chloride # | <0.1 | <0.1 | | | | | | | | <0.1 | ug/l | TM15/PM10 |
| Bromomethane | <1 | <1 | | | | | | | | <1 | ug/l | TM15/PM10 |
| Chloroethane # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Trichlorofluoromethane # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Dichloromethane (DCM) # | <5 | <5 | | | | | | | | <5 | ug/l | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,1-Dichloroethane # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| cis-1-2-Dichloroethene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 2,2-Dichloropropane | <1 | <1 | | | | | | | | <1 | ug/l | TM15/PM10 |
| Bromochloromethane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Chloroform # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,1,1-Trichloroethane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Carbon tetrachloride # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2-Dichloroethane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Benzene # | <0.5 | <0.5 | | | | | | | | <0.5 | ug/l | TM15/PM10 |
| Trichloroethene (TCE) # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,2-Dichloropropane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Dibromomethane # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Bromodichloromethane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| cis-1-3-Dichloropropene | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Toluene # | <5 | 16 | | | | | | | | <5 | ug/l | TM15/PM10 |
| trans-1-3-Dichloropropene | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,1,2-Trichloroethane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,3-Dichloropropane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Dibromochloromethane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2-Dibromoethane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Chlorobenzene # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Ethylbenzene # | <1 | <1 | | | | | | | | <1 | ug/l | TM15/PM10 |
| p/m-Xylene # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| o-Xylene # | <1 | <1 | | | | | | | | <1 | ug/l | TM15/PM10 |
| Styrene | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Bromoform # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane | <4 | <4 | | | | | | | | <4 | ug/l | TM15/PM10 |
| Bromobenzene # | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2,3-Trichloropropane # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Propylbenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 2-Chlorotoluene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 4-Chlorotoluene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| tert-Butylbenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| sec-Butylbenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 4-Isopropyltoluene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,3-Dichlorobenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,4-Dichlorobenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| n-Butylbenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,2-Dichlorobenzene # | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2,4-Trichlorobenzene | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Hexachlorobutadiene | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Naphthalene | <2 | <2 | | | | | | | | <2 | ug/l | TM15/PM10 |
| 1,2,3-Trichlorobenzene | <3 | <3 | | | | | | | | <3 | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 105 | 104 | | | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 105 | 106 | | | | | | | | <0 | % | TM15/PM10 |

**Client Name:** AECOM

**Reference:** 60527350

**Location:** West Burton Power Station

**Contact:** Alex Freeman

**Matrix : Liquid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**

**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/21026

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |
| AA | x5 Dilution |

**JE Job No:** 17/21026

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM30/PM12 | CWG GC-FID | Yes | | | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | | | | |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM14 | Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required. | Yes | | | |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM0 | No preparation is required. | Yes | | | |
| TM60 | Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR). | PM0 | No preparation is required. | Yes | | | |

**JE Job No:** 17/21026

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM0 | No preparation is required. | Yes | | | |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM0 | No preparation is required. | | | | |
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# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

Unit 3 Deeside Point
Zone 3
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Deeside
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AECOM
2 City Walk
Leeds
LS11 9AR

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 9th January, 2018 |
| **Your reference :** | 60527350 |
| **Our reference :** | Test Report 17/21125 Batch 2 |
| **Location :** | West Burton Power station |
| **Date samples received :** | 22nd December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Four samples were received for analysis on 22nd December, 2017 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Simon Gomery BSc**
**Project Manager**

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **Report :** | **Solid** |
| **Reference:** | 60527350 | | |
| **Location:** | West Burton Power station | **Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/21125 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 36-38 | 42-44 | 45-47 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP107 | TP110 | TP110 | | | | | | | | | | |
| **Depth** | 0.20 | 0.20 | 1.40 | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | | | | | | | | | | |
| **Sample Date** | 20/12/2017 | 20/12/2017 | 20/12/2017 | | | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | | | | | | | | | | |
| **Batch Number** | 2 | 2 | 2 | | | | | | | | | | |
| **Date of Receipt** | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | | | | | | LOD/LOR | Units | Method No. |
| Antimony | 4 | 2 | 2 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Arsenic # | 49.6 | 24.7 | 21.0 | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Barium # | 320 | 256 | 286 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Beryllium | 2.1 | 1.3 | 1.2 | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Cadmium # | 0.3 | <0.1 | <0.1 | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Chromium # | 57.7 | 44.6 | 29.4 | | | | | | | | <0.5 | mg/kg | TM30/PM15 |
| Copper # | 54 | 28 | 31 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Iron | 29710 | 20150 | 19030 | | | | | | | | <20 | mg/kg | TM30/PM15 |
| Lead # | 50 | 12 | 8 | | | | | | | | <5 | mg/kg | TM30/PM15 |
| Manganese # | 530 | 217 | 287 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Mercury # | <0.1 | <0.1 | <0.1 | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum # | 3.9 | 4.1 | 2.9 | | | | | | | | <0.1 | mg/kg | TM30/PM15 |
| Nickel # | 37.8 | 27.3 | 29.3 | | | | | | | | <0.7 | mg/kg | TM30/PM15 |
| Selenium # | 2 | <1 | <1 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Vanadium | 64 | 39 | 31 | | | | | | | | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron # | 5.1 | 0.6 | 1.2 | | | | | | | | <0.1 | mg/kg | TM74/PM32 |
| Zinc # | 198 | 27 | 22 | | | | | | | | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | | | | | | |
| PAH MS | | | | | | | | | | | | | |
| Naphthalene # | 0.05 | <0.04 | - | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | <0.03 | <0.03 | - | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene # | <0.05 | <0.05 | - | | | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Fluorene # | <0.04 | <0.04 | - | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene # | 1.33 | <0.03 | - | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | 0.40 | <0.04 | - | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene # | 7.61 | <0.03 | - | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | 6.31 | <0.03 | - | | | | | | | | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | 7.18 | <0.06 | - | | | | | | | | <0.06 | mg/kg | TM4/PM8 |
| Chrysene # | 11.34 | <0.02 | - | | | | | | | | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene # | 13.17 | <0.07 | - | | | | | | | | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | 3.30 | <0.04 | - | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene # | 1.47 | <0.04 | - | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | 0.65 | <0.04 | - | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | 1.41 | <0.04 | - | | | | | | | | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | 54.2 | <0.6 | - | | | | | | | | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | 9.48 | <0.05 | - | | | | | | | | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | 3.69 | <0.02 | - | | | | | | | | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | 109 | 112 | - | | | | | | | | <0 | % | TM4/PM8 |
| | | | | | | | | | | | | | |
| Natural Moisture Content | 13.6 | 8.8 | 24.0 | | | | | | | | <0.1 | % | PM4/PM0 |
| | | | | | | | | | | | | | |
| Ammoniacal Nitrogen as N | <0.6 | <0.6 | <0.6 | | | | | | | | <0.6 | mg/kg | TM38/PM20 |
| Chloride # | 32 | 6 | 29 | | | | | | | | <2 | mg/kg | TM38/PM20 |
| Fluoride | 2.1 | 1.2 | 2.4 | | | | | | | | <0.3 | mg/kg | TM173/PM20 |





All solid results are expressed on a dry weight basis unless stated otherwise.

## *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman
**JE Job No.:** 17/21125

**Report :** **Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 36-38 | 42-44 | 45-47 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | TP107 | TP110 | TP110 | | | | | | | | | | |
| **Depth** | 0.20 | 0.20 | 1.40 | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | | | | | | | | | | |
| **Sample Date** | 20/12/2017 | 20/12/2017 | 20/12/2017 | | | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | | | | | | | | | | |
| **Batch Number** | 2 | 2 | 2 | | | | | | | | | | |
| **Date of Receipt** | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | | | | | | LOD/LOR | Units | Method No. |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | | | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | <2.5 | <2.5 | <2.5 | | | | | | | | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | <0.05 | <0.05 | <0.05 | | | | | | | | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | 0.5 | 3.5 | 1.0 | | | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) # | 0.1779 | 0.0131 | 0.0424 | | | | | | | | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 57.7 | 44.6 | 29.4 | | | | | | | | <0.5 | mg/kg | NONE/NONE |
| Total Cyanide # | <0.5 | <0.5 | - | | | | | | | | <0.5 | mg/kg | TM89/PM45 |
| Total Organic Carbon # | 2.03 | 1.41 | 5.24 | | | | | | | | <0.02 | % | TM21/PM24 |
| Sulphide | <10 | <10 | <10 | | | | | | | | <10 | mg/kg | TM106/PM119 |
| Total Alkalinity as CaCO3 | 190 | 200 | 340 | | | | | | | | <10 | mg/kg | TM75/PM58 |
| pH # | 6.23 | 8.32 | 8.41 | | | | | | | | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clayey Loam | Sand | Sand | | | | | | | | | None | PM13/PM0 |
| Sample Colour | Medium Brown | Medium Brown | Dark Brown | | | | | | | | | None | PM13/PM0 |
| Other Items | stones | stones | stones | | | | | | | | | None | PM13/PM0 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM **SVOC Report : Solid**
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman
**JE Job No.:** 17/21125

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 45-47 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|
| **Sample ID** | TP110 | | | |
| **Depth** | 1.40 | | | |
| **COC No / misc** | | | | |
| **Containers** | V J B | | | |
| **Sample Date** | 20/12/2017 | | | |
| **Sample Type** | Soil | | | |
| **Batch Number** | 2 | | | |
| **Date of Receipt** | 22/12/2017 | | | |
| SVOC MS | | | | |
| **Phenols** | | | | |
| 2-Chlorophenol # | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol # | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | <10 | ug/kg | TM16/PM8 |
| Phenol # | <10 | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | |
| 2-Chloronaphthalene # | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene # | <10 | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | <10 | ug/kg | TM16/PM8 |
| Phenanthrene # | <10 | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Fluoranthene # | <10 | <10 | ug/kg | TM16/PM8 |
| Pyrene # | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Chrysene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | <10 | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | <10 | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate # | <100 | <100 | ug/kg | TM16/PM8 |



All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman
**JE Job No.:** 17/21125

**SVOC Report :** **Solid**

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 45-47 | | | |
|---|---|---|---|---|
| **Sample ID** | TP110 | | | |
| **Depth** | 1.40 | | | |
| **COC No / misc** | | | | |
| **Containers** | V J B | | | |
| **Sample Date** | 20/12/2017 | | | |
| **Sample Type** | Soil | | | |
| **Batch Number** | 2 | | | |
| **Date of Receipt** | 22/12/2017 | LOD/LOR | Units | Method No. |
| SVOC MS | | | | |
| **Other SVOCs** | | | | |
| 1,2-Dichlorobenzene | <10 | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene # | <10 | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether # | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran # | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene # | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | <10 | ug/kg | TM16/PM8 |
| Isophorone # | <10 | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine # | <10 | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene # | <10 | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 113 | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 97 | <0 | % | TM16/PM8 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **VOC Report :** | **Solid** |
| **Reference:** | 60527350 | | |
| **Location:** | West Burton Power station | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/21125 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 45-47 | | | |
|---|---|---|---|---|
| **Sample ID** | TP110 | | | |
| **Depth** | 1.40 | | | |
| **COC No / misc** | | | | |
| **Containers** | V J B | | | |
| **Sample Date** | 20/12/2017 | | | |
| **Sample Type** | Soil | | | |
| **Batch Number** | 2 | | | |
| **Date of Receipt** | 22/12/2017 | LOD/LOR | Units | Method No. |
| VOC MS | | | | |
| Dichlorodifluoromethane | <2 | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether # | <6 | <6 | ug/kg | TM15/PM10 |
| Chloromethane # | <3 | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <2 | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <1 | <1 | ug/kg | TM15/PM10 |
| Chloroethane # | <6 | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) # | <6 | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM) # | <30 | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane # | <6 | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene # | <7 | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <4 | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane # | <4 | <4 | ug/kg | TM15/PM10 |
| Chloroform # | <5 | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane # | <5 | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane # | <5 | <5 | ug/kg | TM15/PM10 |
| Benzene # | <5 | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE) # | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane # | <4 | <4 | ug/kg | TM15/PM10 |
| Dibromomethane # | <4 | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane # | <4 | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <4 | <4 | ug/kg | TM15/PM10 |
| Toluene # | <3 | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane # | <4 | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane # | <4 | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane # | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane # | <3 | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane # | <5 | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene # | <3 | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene # | <4 | <4 | ug/kg | TM15/PM10 |
| o-Xylene # | <4 | <4 | ug/kg | TM15/PM10 |
| Styrene | <3 | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <4 | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane # | <3 | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <2 | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane # | <4 | <4 | ug/kg | TM15/PM10 |
| Propylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <3 | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <3 | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene # | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <6 | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane # | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene # | <7 | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <4 | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <27 | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene # | <7 | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 76 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 50 | <0 | % | TM15/PM10 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/21125 | 2 | TP107 | 0.20 | 38 | 03/01/2018 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 03/01/2018 | **Asbestos Fibres** | NAD |
| | | | | | 03/01/2018 | **Asbestos Fibres (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Level Screen** | NAD |
| 17/21125 | 2 | TP110 | 0.20 | 44 | 03/01/2018 | **General Description (Bulk Analysis)** | soil.stones |
| | | | | | 03/01/2018 | **Asbestos Fibres** | NAD |
| | | | | | 03/01/2018 | **Asbestos Fibres (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Level Screen** | NAD |

**Client Name:** AECOM
**Reference:** 60527350
**Location:** West Burton Power station
**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| No deviating sample report results for job 17/21125 | | | | | | |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

***JE Job No.:*** 17/21125

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |

**JE Job No:** 17/21125

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |

**JE Job No:** 17/21125

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | | AD | Yes |
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | | AR | Yes |

**JE Job No:** 17/21125

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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AECOM
West One
Wellington Street
Leeds
LS1 1BA

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 9th January, 2018 |
| **Your reference :** | |
| **Our reference :** | Test Report 17/20488 Batch 1 |
| **Location :** | West Burton Power Station |
| **Date samples received :** | 13th December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Six samples were received for analysis on 13th December, 2017 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Paul Boden BSc**
**Project Manager**

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20488

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|
| **Sample ID** | BH104 | WS105 | WS105 | BH101 | TP106 | | | |
| **Depth** | 1.00 | 1.30 | 6.50 | 14.7 | 0.50 | | | |
| **COC No / misc** | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | | | |
| **Sample Date** | 11/12/2017 | 11/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | | | |
| Antimony | 5 | 7 | 4 | 2 | 2 | <1 | mg/kg | TM30/PM15 |
| Arsenic #M | 100.9 | 139.4 | 63.6 | 4.7 | 33.2 | <0.5 | mg/kg | TM30/PM15 |
| Barium #M | 352 | 420 | 443 | 1575 | 265 | <1 | mg/kg | TM30/PM15 |
| Beryllium | 3.1 | 3.9 | 2.7 | 1.6 | 1.4 | <0.5 | mg/kg | TM30/PM15 |
| Cadmium #M | <0.1 | <0.1 | 0.8 | <0.1 | 0.4 | <0.1 | mg/kg | TM30/PM15 |
| Chromium #M | 64.6 | 69.5 | 73.4 | 52.2 | 41.3 | <0.5 | mg/kg | TM30/PM15 |
| Copper #M | 70 | 85 | 50 | 3 | 27 | <1 | mg/kg | TM30/PM15 |
| Iron | 38650 | 43320 | 45970 | 36540 | 19220 | <20 | mg/kg | TM30/PM15 |
| Lead #M | 54 | 48 | 98 | <5 | 49 | <5 | mg/kg | TM30/PM15 |
| Manganese #M | 415 | 383 | 670 | 647 | 417 | <1 | mg/kg | TM30/PM15 |
| Mercury #M | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | mg/kg | TM30/PM15 |
| Molybdenum #M | 3.4 | 4.8 | 9.4 | 1.4 | 3.5 | <0.1 | mg/kg | TM30/PM15 |
| Nickel #M | 53.4 | 59.8 | 97.8 | 36.2 | 22.2 | <0.7 | mg/kg | TM30/PM15 |
| Selenium #M | 2 | 3 | 3 | <1 | 1 | <1 | mg/kg | TM30/PM15 |
| Vanadium | 98 | 116 | 86 | 45 | 37 | <1 | mg/kg | TM30/PM15 |
| Water Soluble Boron #M | 2.7 | 8.9 | 19.0 | 2.9 | 3.3 | <0.1 | mg/kg | TM74/PM32 |
| Zinc #M | 82 | 72 | 161 | 53 | 92 | <5 | mg/kg | TM30/PM15 |
| | | | | | | | | |
| PAH MS | | | | | | | | |
| Naphthalene #M | - | - | - | - | <0.04 | <0.04 | mg/kg | TM4/PM8 |
| Acenaphthylene | - | - | - | - | 0.06 | <0.03 | mg/kg | TM4/PM8 |
| Acenaphthene #M | - | - | - | - | 0.22 | <0.05 | mg/kg | TM4/PM8 |
| Fluorene #M | - | - | - | - | 0.15 | <0.04 | mg/kg | TM4/PM8 |
| Phenanthrene #M | - | - | - | - | 2.20 | <0.03 | mg/kg | TM4/PM8 |
| Anthracene # | - | - | - | - | 0.56 | <0.04 | mg/kg | TM4/PM8 |
| Fluoranthene #M | - | - | - | - | 3.48 | <0.03 | mg/kg | TM4/PM8 |
| Pyrene # | - | - | - | - | 2.88 | <0.03 | mg/kg | TM4/PM8 |
| Benzo(a)anthracene # | - | - | - | - | 1.50 | <0.06 | mg/kg | TM4/PM8 |
| Chrysene #M | - | - | - | - | 1.48 | <0.02 | mg/kg | TM4/PM8 |
| Benzo(bk)fluoranthene #M | - | - | - | - | 2.44 | <0.07 | mg/kg | TM4/PM8 |
| Benzo(a)pyrene # | - | - | - | - | 1.32 | <0.04 | mg/kg | TM4/PM8 |
| Indeno(123cd)pyrene #M | - | - | - | - | 0.87 | <0.04 | mg/kg | TM4/PM8 |
| Dibenzo(ah)anthracene # | - | - | - | - | 0.20 | <0.04 | mg/kg | TM4/PM8 |
| Benzo(ghi)perylene # | - | - | - | - | 0.84 | <0.04 | mg/kg | TM4/PM8 |
| PAH 16 Total | - | - | - | - | 18.2 | <0.6 | mg/kg | TM4/PM8 |
| Benzo(b)fluoranthene | - | - | - | - | 1.76 | <0.05 | mg/kg | TM4/PM8 |
| Benzo(k)fluoranthene | - | - | - | - | 0.68 | <0.02 | mg/kg | TM4/PM8 |
| PAH Surrogate % Recovery | - | - | - | - | 118 | <0 | % | TM4/PM8 |
| | | | | | | | | |
| Methyl Tertiary Butyl Ether #M | - | - | - | <6 | - | <6 | ug/kg | TM15/PM10 |
| Benzene #M | - | - | - | <5 | - | <5 | ug/kg | TM15/PM10 |
| Toluene #M | - | - | - | <3 | - | <3 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | - | - | - | <3 | - | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | - | - | - | <4 | - | <4 | ug/kg | TM15/PM10 |

## *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20488

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | BH104 | WS105 | WS105 | BH101 | TP106 | | | | | | | | |
| **Depth** | 1.00 | 1.30 | 6.50 | 14.7 | 0.50 | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | | | | | | | | |
| **Sample Date** | 11/12/2017 | 11/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | | | | | | | | |
| **Date of Receipt** | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | | | | | | LOD/LOR | Units | Method No. |
| o-Xylene #M | - | - | - | <4 | - | | | | | | <4 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | - | - | - | 108 | - | | | | | | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | - | - | - | 126 | - | | | | | | <0 | % | TM15/PM10 |
| | | | | | | | | | | | | | |
| TPH CWG | | | | | | | | | | | | | |
| **Aliphatics** | | | | | | | | | | | | | |
| >C5-C6 #M | - | - | - | <0.1 | - | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C6-C8 #M | - | - | - | <0.1 | - | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C8-C10 | - | - | - | <0.1 | - | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >C10-C12 #M | - | - | - | <0.2 | - | | | | | | <0.2 | mg/kg | TM5/PM16 |
| >C12-C16 #M | - | - | - | <4 | - | | | | | | <4 | mg/kg | TM5/PM16 |
| >C16-C21 #M | - | - | - | <7 | - | | | | | | <7 | mg/kg | TM5/PM16 |
| >C21-C35 #M | - | - | - | <7 | - | | | | | | <7 | mg/kg | TM5/PM16 |
| Total aliphatics C5-35 | - | - | - | <19 | - | | | | | | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| **Aromatics** | | | | | | | | | | | | | |
| >C5-EC7 # | - | - | - | <0.1 | - | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC7-EC8 # | - | - | - | <0.1 | - | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC8-EC10 #M | - | - | - | <0.1 | - | | | | | | <0.1 | mg/kg | TM36/PM12 |
| >EC10-EC12 # | - | - | - | <0.2 | - | | | | | | <0.2 | mg/kg | TM5/PM16 |
| >EC12-EC16 # | - | - | - | <4 | - | | | | | | <4 | mg/kg | TM5/PM16 |
| >EC16-EC21 # | - | - | - | <7 | - | | | | | | <7 | mg/kg | TM5/PM16 |
| >EC21-EC35 # | - | - | - | <7 | - | | | | | | <7 | mg/kg | TM5/PM16 |
| Total aromatics C5-35 # | - | - | - | <19 | - | | | | | | <19 | mg/kg | TM5/TM36/PM12/PM16 |
| Total aliphatics and aromatics(C5-35) | - | - | - | <38 | - | | | | | | <38 | mg/kg | TM5/TM36/PM12/PM16 |
| | | | | | | | | | | | | | |
| Natural Moisture Content | 13.5 | 19.2 | 18.7 | 27.4 | 11.5 | | | | | | <0.1 | % | PM4/PM0 |
| | | | | | | | | | | | | | |
| Ammoniacal Nitrogen as N | <0.6 | <0.6 | 7.9 | - | <0.6 | | | | | | <0.6 | mg/kg | TM38/PM20 |
| Chloride #M | <2 | 15 | 18 | - | 58 | | | | | | <2 | mg/kg | TM38/PM20 |
| Fluoride | 2.8 | 2.7 | 4.1 | - | 0.9 | | | | | | <0.3 | mg/kg | TM173/PM20 |
| Hexavalent Chromium # | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Nitrate as NO3 | <2.5 | <2.5 | <2.5 | - | 14.6 | | | | | | <2.5 | mg/kg | TM38/PM20 |
| Nitrite as NO2 | <0.05 | <0.05 | <0.05 | - | 0.99 | | | | | | <0.05 | mg/kg | TM38/PM20 |
| Ortho Phosphate as PO4 | 1.8 | 1.8 | <0.3 | - | <0.3 | | | | | | <0.3 | mg/kg | TM38/PM20 |
| Sulphate as SO4 (2:1 Ext) #M | 0.1190 | 0.2830 | 0.6682 | - | 1.3462 | | | | | | <0.0015 | g/l | TM38/PM20 |
| Chromium III | 64.6 | 69.5 | 73.4 | 52.2 | 41.3 | | | | | | <0.5 | mg/kg | NONE/NONE |
| | | | | | | | | | | | | | |
| Total Cyanide #M | <0.5 | <0.5 | <0.5 | - | <0.5 | | | | | | <0.5 | mg/kg | TM89/PM45 |
| | | | | | | | | | | | | | |
| Total Organic Carbon # | 2.85 | 3.31 | 2.55 | 0.08 | 1.30 | | | | | | <0.02 | % | TM21/PM24 |
| | | | | | | | | | | | | | |
| Sulphide | <10 | <10 | <10 | - | <10 | | | | | | <10 | mg/kg | TM106/PM119 |
| | | | | | | | | | | | | | |
| Total Alkalinity as CaCO3 | 190 | 320 | 180 | - | 180 | | | | | | <10 | mg/kg | TM75/PM58 |

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20488

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | BH104 | WS105 | WS105 | BH101 | TP106 | | | | | | | | |
| **Depth** | 1.00 | 1.30 | 6.50 | 14.7 | 0.50 | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V J B | V J B | V J B | V J B | V J B | | | | | | | | |
| **Sample Date** | 11/12/2017 | 11/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | | | | | | | | |
| **Sample Type** | Soil | Soil | Soil | Soil | Soil | | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | 13/12/2017 | | | | | | | | |
| pH #M | 8.14 | 6.18 | 6.43 | 8.01 | 6.17 | | | | | | <0.01 | pH units | TM73/PM11 |
| Sample Type | Clay | Clay | Clay | Clay | Clay | | | | | | | None | PM13/PM0 |
| Sample Colour | Medium Brown | Medium Brown | Dark Brown | Medium Brown | Medium Brown | | | | | | | None | PM13/PM0 |
| Other Items | loam, stones, brick | n/a | loam, roots, stones | stones | roots, sand, stones, brick | | | | | | | None | PM13/PM0 |

**Client Name:** AECOM
**SVOC Report :** **Solid**
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20488

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 7-9 | 10-12 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|
| **Sample ID** | BH104 | WS105 | BH101 | | | |
| **Depth** | 1.00 | 6.50 | 14.7 | | | |
| **COC No / misc** | | | | | | |
| **Containers** | V J B | V J B | V J B | | | |
| **Sample Date** | 11/12/2017 | 12/12/2017 | 12/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | | | |
| **Date of Receipt** | 13/12/2017 | 13/12/2017 | 13/12/2017 | | | |
| SVOC MS | | | | | | |
| **Phenols** | | | | | | |
| 2-Chlorophenol #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylphenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitrophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dichlorophenol #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dimethylphenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,5-Trichlorophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4,6-Trichlorophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloro-3-methylphenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Methylphenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitrophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Pentachlorophenol | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Phenol #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| **PAHs** | | | | | | |
| 2-Chloronaphthalene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Methylnaphthalene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Naphthalene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthylene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Acenaphthene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Fluorene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Phenanthrene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Anthracene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Fluoranthene #M | 42 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Pyrene #M | 43 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)anthracene | 26 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Chrysene | 35 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(bk)fluoranthene | 49 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(a)pyrene | 32 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Indeno(123cd)pyrene | 22 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzo(ah)anthracene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(ghi)perylene | 29 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(b)fluoranthene | 35 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Benzo(k)fluoranthene | 14 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| **Phthalates** | | | | | | |
| Bis(2-ethylhexyl) phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Butylbenzyl phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-butyl phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Di-n-Octyl phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Diethyl phthalate | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |
| Dimethyl phthalate #M | <100 | <100 | <100 | <100 | ug/kg | TM16/PM8 |



All solid results are expressed on a dry weight basis unless stated otherwise.

## *Exova Jones Environmental*

**Client Name:** AECOM

**SVOC Report :** **Solid**

**Reference:**

**Location:** West Burton Power Station

**Contact:** Alex Freeman

**JE Job No.:** 17/20488

| **J E Sample No.** | 1-3 | 7-9 | 10-12 | | | |
|---|---|---|---|---|---|---|
| **Sample ID** | BH104 | WS105 | BH101 | | | |
| **Depth** | 1.00 | 6.50 | 14.7 | Please see attached notes for all abbreviations and acronyms | | |
| **COC No / misc** | | | | | | |
| **Containers** | V J B | V J B | V J B | | | |
| **Sample Date** | 11/12/2017 | 12/12/2017 | 12/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 13/12/2017 | 13/12/2017 | 13/12/2017 | | | |
| SVOC MS | | | | | | |
| **Other SVOCs** | | | | | | |
| 1,2-Dichlorobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,2,4-Trichlorobenzene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,3-Dichlorobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 1,4-Dichlorobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2-Nitroaniline | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,4-Dinitrotoluene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 2,6-Dinitrotoluene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 3-Nitroaniline | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Bromophenylphenylether #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chloroaniline | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Chlorophenylphenylether | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| 4-Nitroaniline | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Azobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethoxy)methane | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Bis(2-chloroethyl)ether | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Carbazole | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Dibenzofuran #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobenzene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorobutadiene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachlorocyclopentadiene | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Hexachloroethane | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Isophorone #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| N-nitrosodi-n-propylamine #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Nitrobenzene #M | <10 | <10 | <10 | <10 | ug/kg | TM16/PM8 |
| Surrogate Recovery 2-Fluorobiphenyl | 115 | 119 | 118 | <0 | % | TM16/PM8 |
| Surrogate Recovery p-Terphenyl-d14 | 101 | 101 | 103 | <0 | % | TM16/PM8 |

**Client Name:** AECOM
**VOC Report :** **Solid**
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman
**JE Job No.:** 17/20488

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-3 | 7-9 | 10-12 | | | |
|---|---|---|---|---|---|---|
| **Sample ID** | BH104 | WS105 | BH101 | | | |
| **Depth** | 1.00 | 6.50 | 14.7 | | | |
| **COC No / misc** | | | | | | |
| **Containers** | V J B | V J B | V J B | | | |
| **Sample Date** | 11/12/2017 | 12/12/2017 | 12/12/2017 | | | |
| **Sample Type** | Soil | Soil | Soil | | | |
| **Batch Number** | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 13/12/2017 | 13/12/2017 | 13/12/2017 | | | |
| VOC MS | | | | | | |
| Dichlorodifluoromethane | <2 | <2 | <2 | <2 | ug/kg | TM15/PM10 |
| Methyl Tertiary Butyl Ether #M | <6 | <6 | <6 | <6 | ug/kg | TM15/PM10 |
| Chloromethane # | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| Vinyl Chloride | <2 | <2 | <2 | <2 | ug/kg | TM15_A/PM10 |
| Bromomethane | <1 | <1 | <1 | <1 | ug/kg | TM15/PM10 |
| Chloroethane #M | <6 | <6 | <6 | <6 | ug/kg | TM15/PM10 |
| Trichlorofluoromethane #M | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) #M | <6 | <6 | <6 | <6 | ug/kg | TM15/PM10 |
| Dichloromethane (DCM) # | <30 | <30 | <30 | <30 | ug/kg | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1-Dichloroethane #M | <6 | <6 | <6 | <6 | ug/kg | TM15/PM10 |
| cis-1-2-Dichloroethene #M | <7 | <7 | <7 | <7 | ug/kg | TM15/PM10 |
| 2,2-Dichloropropane | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Bromochloromethane #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Chloroform #M | <5 | <5 | <5 | <5 | ug/kg | TM15/PM10 |
| 1,1,1-Trichloroethane #M | <5 | <5 | <5 | <5 | ug/kg | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| Carbon tetrachloride #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichloroethane #M | <5 | <5 | <5 | <5 | ug/kg | TM15/PM10 |
| Benzene #M | <5 | <5 | <5 | <5 | ug/kg | TM15/PM10 |
| Trichloroethene (TCE) #M | <5 | <5 | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2-Dichloropropane #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Dibromomethane #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Bromodichloromethane #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| cis-1-3-Dichloropropene | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Toluene #M | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| trans-1-3-Dichloropropene | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1,2-Trichloroethane #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| 1,3-Dichloropropane #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Dibromochloromethane #M | <5 | <5 | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2-Dibromoethane # | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| Chlorobenzene #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane #M | <5 | <5 | <5 | <5 | ug/kg | TM15/PM10 |
| Ethylbenzene #M | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| p/m-Xylene #M | <4 | 11 | <4 | <4 | ug/kg | TM15/PM10 |
| o-Xylene #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Styrene | <3 | <3 | <3 | <3 | ug/kg | TM15_A/PM10 |
| Bromoform | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane #M | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| Bromobenzene | <2 | <2 | <2 | <2 | ug/kg | TM15/PM10 |
| 1,2,3-Trichloropropane #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Propylbenzene # | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 2-Chlorotoluene | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| 4-Chlorotoluene | <3 | <3 | <3 | <3 | ug/kg | TM15/PM10 |
| tert-Butylbenzene # | <5 | <5 | <5 | <5 | ug/kg | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <6 | <6 | <6 | <6 | ug/kg | TM15/PM10 |
| sec-Butylbenzene # | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 4-Isopropyltoluene # | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 1,3-Dichlorobenzene #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 1,4-Dichlorobenzene # | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| n-Butylbenzene # | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dichlorobenzene #M | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane # | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| 1,2,4-Trichlorobenzene # | <7 | <7 | <7 | <7 | ug/kg | TM15/PM10 |
| Hexachlorobutadiene | <4 | <4 | <4 | <4 | ug/kg | TM15/PM10 |
| Naphthalene | <27 | <27 | <27 | <27 | ug/kg | TM15/PM10 |
| 1,2,3-Trichlorobenzene # | <7 | <7 | <7 | <7 | ug/kg | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 84 | 98 | 108 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 59 | 91 | 126 | <0 | % | TM15/PM10 |

**Client Name:** AECOM
**Reference:**
**Location:** West Burton Power Station
**Contact:** Alex Freeman

**Note:**

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Date Of Analysis | Analysis | Result |
|---|---|---|---|---|---|---|---|
| 17/20488 | 1 | BH104 | 1.00 | 3 | 03/01/2018 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 03/01/2018 | **Asbestos Fibres** | NAD |
| | | | | | 03/01/2018 | **Asbestos Fibres (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20488 | 1 | WS105 | 1.30 | 6 | 03/01/2018 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 03/01/2018 | **Asbestos Fibres** | NAD |
| | | | | | 03/01/2018 | **Asbestos Fibres (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20488 | 1 | WS105 | 6.50 | 9 | 03/01/2018 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 03/01/2018 | **Asbestos Fibres** | NAD |
| | | | | | 03/01/2018 | **Asbestos Fibres (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Level Screen** | NAD |
| | | | | | | | |
| 17/20488 | 1 | TP106 | 0.50 | 15 | 03/01/2018 | **General Description (Bulk Analysis)** | Soil/Stones |
| | | | | | 03/01/2018 | **Asbestos Fibres** | NAD |
| | | | | | 03/01/2018 | **Asbestos Fibres (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM** | NAD |
| | | | | | 03/01/2018 | **Asbestos ACM (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type** | NAD |
| | | | | | 03/01/2018 | **Asbestos Type (2)** | NAD |
| | | | | | 03/01/2018 | **Asbestos Level Screen** | NAD |

*Exova Jones Environmental*

## Notification of Deviating Samples

**Client Name:** AECOM

**Reference:**

**Location:** West Burton Power Station

**Contact:** Alex Freeman

**Matrix : Solid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**

**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

***JE Job No.:*** 17/20488

### SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

### WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

### DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

### DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

### BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |

**JE Job No:** 17/20488

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| PM4 | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377. | PM0 | No preparation is required. | | | | |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | | AR | Yes |
| TM4 | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16 | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | Yes | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | | | AR | Yes |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM12/PM16 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE. | Yes | | AR | Yes |
| PM13 | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description. | PM0 | No preparation is required. | | | AR | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |

**JE Job No:** 17/20488

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | | | AR | Yes |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM8 | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes | Yes | AR | Yes |
| TM21 | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4. | PM24 | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis. | Yes | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | | | AD | Yes |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM15 | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground. | Yes | Yes | AD | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | AR | Yes |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | Yes | AR | Yes |

**JE Job No:** 17/20488

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | Yes | AD | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | Yes | | AR | Yes |
| TM65 | Asbestos Bulk Identification method based on HSG 248. | PM42 | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065. | Yes | | AR | |
| TM73 | Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser. | PM11 | Extraction of as received solid samples using one part solid to 2.5 parts deionised water. | Yes | Yes | AR | No |
| TM74 | Analysis of water soluble boron (20:1 extract) by ICP-OES. | PM32 | Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio. | Yes | Yes | AD | Yes |
| TM75 | Modified US EPA method 310.1. Determination of Alkalinity by Metrohm automated titration analyser. | PM58 | Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker. | | | AD | Yes |
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM45 | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis. | Yes | Yes | AR | Yes |
| TM106 | Determination of Sulphide by Skalar Continuous Flow Analyser | PM119 | As received solid samples are extracted with 1M NaOH by orbital shaker for Sulphide and Thiocyanate analysis. | | | AR | Yes |

**JE Job No:** 17/20488

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM20 | Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker. | | | AR | Yes |
| NONE | No Method Code | NONE | No Method Code | | | AR | Yes |
| TM15_A | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | AR | Yes |
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# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

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AECOM
2 City Walk
Leeds
LS11 9AR

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 9th January, 2018 |
| **Your reference :** | |
| **Our reference :** | Test Report 17/21155 Batch 1 |
| **Location :** | |
| **Date samples received :** | 23rd December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Four samples were received for analysis on 23rd December, 2017 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Simon Gomery BSc**
**Project Manager**

# *Exova Jones Environmental*

**Client Name:** AECOM
**Reference:**
**Location:**
**Contact:** Alex Freeman
**JE Job No.:** 17/21155

**Report :** **Liquid**

**Liquids/products:** V=40ml vial, G=glass bottle, P=plastic bottle
H=$H_2SO_4$, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22-24 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|
| **Sample ID** | SW01 | SW02 | DUP02 | TRIP BLANK | | | |
| **Depth** | | | | | | | |
| **COC No / misc** | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN N P G | V P G | | | |
| **Sample Date** | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | |
| **Sample Type** | Surface Water | Surface Water | Surface Water | Trip Blank | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | |
| Dissolved Antimony # | <2 | <2 | 4 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Arsenic # | <2.5 | <2.5 | <2.5 | <2.5 | <2.5 | ug/l | TM30/PM14 |
| Dissolved Cadmium # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM30/PM14 |
| Total Dissolved Chromium # | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | ug/l | TM30/PM14 |
| Dissolved Copper # | <7 | <7 | <7 | <7 | <7 | ug/l | TM30/PM14 |
| Total Dissolved Iron # | <20 | <20 | <20 | <20 | <20 | ug/l | TM30/PM14 |
| Dissolved Lead # | <5 | <5 | <5 | <5 | <5 | ug/l | TM30/PM14 |
| Dissolved Manganese # | 18 | 35 | 18 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Mercury # | <1 | <1 | <1 | <1 | <1 | ug/l | TM30/PM14 |
| Dissolved Molybdenum # | 7 | 4 | 8 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Nickel # | <2 | <2 | <2 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Selenium # | <3 | <3 | <3 | <3 | <3 | ug/l | TM30/PM14 |
| Dissolved Zinc # | <3 | 6 | <3 | <3 | <3 | ug/l | TM30/PM14 |
| | | | | | | | |
| Methyl Tertiary Butyl Ether # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | ug/l | TM15/PM10 |
| Benzene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM15/PM10 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | ug/l | TM15/PM10 |
| Ethylbenzene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| p/m-Xylene # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| o-Xylene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 99 | 97 | 98 | 98 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 103 | 102 | 104 | 103 | <0 | % | TM15/PM10 |
| | | | | | | | |
| TPH CWG | | | | | | | |
| **Aliphatics** | | | | | | | |
| >C5-C6 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C6-C8 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C8-C10 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C10-C12 # | <5 | <5 | <5 | <5 | <5 | ug/l | TM5/PM30 |
| >C12-C16 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >C16-C21 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >C21-C35 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| Total aliphatics C5-35 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |
| **Aromatics** | | | | | | | |
| >C5-EC7 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC7-EC8 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC8-EC10 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC10-EC12 # | <5 | <5 | <5 | <5 | <5 | ug/l | TM5/PM30 |
| >EC12-EC16 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >EC16-EC21 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >EC21-EC35 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| Total aromatics C5-35 # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |
| Total aliphatics and aromatics(C5-35) # | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:**
**Location:**
**Contact:** Alex Freeman
**JE Job No.:** 17/21155

**Report : Liquid**

**Liquids/products:** V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-7 | 8-14 | 15-21 | 22-24 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | SW01 | SW02 | DUP02 | TRIP BLANK | | | | | | | | | |
| Depth | | | | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V HN N P G | V HN N P G | V HN N P G | V P G | | | | | | | | | |
| Sample Date | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | | | | | | | |
| Sample Type | Surface Water | Surface Water | Surface Water | Trip Blank | | | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | | | | | | | |
| Date of Receipt | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | | | | | LOD/LOR | Units | Method No. |
| Fluoride | 0.3 | 0.4 | 0.3 | <0.3 | | | | | | | <0.3 | mg/l | TM173/PM0 |
| Sulphate as SO4 # | 44.9 | 1095.8 | 45.9 | <0.5 | | | | | | | <0.5 | mg/l | TM38/PM0 |
| Chloride # | 58.8 | 101.6 | 59.6 | <0.3 | | | | | | | <0.3 | mg/l | TM38/PM0 |
| Nitrate as NO3 # | 0.8 | 38.8 | 0.8 | <0.2 | | | | | | | <0.2 | mg/l | TM38/PM0 |
| Nitrite as NO2 # | <0.02 | 0.05 | <0.02 | <0.02 | | | | | | | <0.02 | mg/l | TM38/PM0 |
| Ortho Phosphate as PO4 # | 0.21 | 0.80 | 0.21 | <0.06 | | | | | | | <0.06 | mg/l | TM38/PM0 |
| Total Cyanide # | <0.01 | <0.01 | <0.01 | <0.01 | | | | | | | <0.01 | mg/l | TM89/PM0 |
| Total Organic Carbon # | 5 | <2 | 5 | <2 | | | | | | | <2 | mg/l | TM60/PM0 |


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**Client Name:** AECOM **SVOC Report :** **Liquid**
**Reference:**
**Location:**
**Contact:** Alex Freeman
**JE Job No.:** 17/21155

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-7 | 8-14 | 15-21 | 22-24 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|
| Sample ID | SW01 | SW02 | DUP02 | TRIP BLANK | | | |
| Depth | | | | | | | |
| COC No / misc | | | | | | | |
| Containers | V HN N P G | V HN N P G | V HN N P G | V P G | | | |
| Sample Date | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | |
| Sample Type | Surface Water | Surface Water | Surface Water | Trip Blank | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | |
| SVOC MS | | | | | | | |
| **Phenols** | | | | | | | |
| 2-Chlorophenol # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Methylphenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2-Nitrophenol | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4-Dichlorophenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4-Dimethylphenol | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2,4,5-Trichlorophenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4,6-Trichlorophenol | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Chloro-3-methylphenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 4-Methylphenol | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Nitrophenol | <10 | <10 | <10 | <10 | <10 | ug/l | TM16/PM30 |
| Pentachlorophenol | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Phenol | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| **PAHs** | | | | | | | |
| 2-Chloronaphthalene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Methylnaphthalene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Naphthalene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Acenaphthylene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Acenaphthene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Fluorene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Phenanthrene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Fluoranthene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Pyrene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(a)anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Chrysene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(bk)fluoranthene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Benzo(a)pyrene | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Indeno(123cd)pyrene | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Dibenzo(ah)anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(ghi)perylene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| **Phthalates** | | | | | | | |
| Bis(2-ethylhexyl) phthalate | <5 | <5 | <5 | <5 | <5 | ug/l | TM16/PM30 |
| Butylbenzyl phthalate | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Di-n-butyl phthalate # | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | ug/l | TM16/PM30 |
| Di-n-Octyl phthalate | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Diethyl phthalate # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Dimethyl phthalate | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |


Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM **SVOC Report :** **Liquid**
**Reference:**
**Location:**
**Contact:** Alex Freeman
**JE Job No.:** 17/21155

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-7 | 8-14 | 15-21 | 22-24 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|
| Sample ID | SW01 | SW02 | DUP02 | TRIP BLANK | | | |
| Depth | | | | | | | |
| COC No / misc | | | | | | | |
| Containers | V HN N P G | V HN N P G | V HN N P G | V P G | | | |
| Sample Date | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | |
| Sample Type | Surface Water | Surface Water | Surface Water | Trip Blank | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | |
| SVOC MS | | | | | | | |
| **Other SVOCs** | | | | | | | |
| 1,2-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 1,2,4-Trichlorobenzene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 1,3-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 1,4-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Nitroaniline | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2,4-Dinitrotoluene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,6-Dinitrotoluene | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 3-Nitroaniline | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Bromophenylphenylether # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Chloroaniline | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Chlorophenylphenylether # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Nitroaniline | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Azobenzene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Bis(2-chloroethoxy)methane # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Bis(2-chloroethyl)ether # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Carbazole # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Dibenzofuran # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Hexachlorobenzene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Hexachlorobutadiene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Hexachlorocyclopentadiene | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Hexachloroethane # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Isophorone # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| N-nitrosodi-n-propylamine # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Nitrobenzene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Surrogate Recovery 2-Fluorobiphenyl | 75 | 78 | 80 | 130 | <0 | % | TM16/PM30 |
| Surrogate Recovery p-Terphenyl-d14 | 100 | 67 SV | 68 SV | 120 | <0 | % | TM16/PM30 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

**Client Name:** AECOM
**Reference:**
**Location:**
**Contact:** Alex Freeman
**JE Job No.:** 17/21155

**VOC Report :** **Liquid**

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-7 | 8-14 | 15-21 | 22-24 | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|
| Sample ID | SW01 | SW02 | DUP02 | TRIP BLANK | | | |
| Depth | | | | | | | |
| COC No / misc | | | | | | | |
| Containers | V HN N P G | V HN N P G | V HN N P G | V P G | | | |
| Sample Date | 22/12/2017 | 22/12/2017 | 22/12/2017 | 22/12/2017 | | | |
| Sample Type | Surface Water | Surface Water | Surface Water | Trip Blank | | | |
| Batch Number | 1 | 1 | 1 | 1 | | | |
| Date of Receipt | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | |
| VOC MS | | | | | | | |
| Dichlorodifluoromethane | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Methyl Tertiary Butyl Ether # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | ug/l | TM15/PM10 |
| Chloromethane # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Vinyl Chloride # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | ug/l | TM15/PM10 |
| Bromomethane | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Chloroethane # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Trichlorofluoromethane # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Dichloromethane (DCM) # | <5 | <5 | <5 | <5 | <5 | ug/l | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,1-Dichloroethane # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| cis-1-2-Dichloroethene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 2,2-Dichloropropane | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Bromochloromethane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Chloroform # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,1,1-Trichloroethane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Carbon tetrachloride # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2-Dichloroethane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Benzene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM15/PM10 |
| Trichloroethene (TCE) # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,2-Dichloropropane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Dibromomethane # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Bromodichloromethane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| cis-1-3-Dichloropropene | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | ug/l | TM15/PM10 |
| trans-1-3-Dichloropropene | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,1,2-Trichloroethane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,3-Dichloropropane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Dibromochloromethane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2-Dibromoethane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Chlorobenzene # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Ethylbenzene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| p/m-Xylene # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| o-Xylene # | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Styrene | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Bromoform # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane | <4 | <4 | <4 | <4 | <4 | ug/l | TM15/PM10 |
| Bromobenzene # | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2,3-Trichloropropane # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Propylbenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 2-Chlorotoluene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 4-Chlorotoluene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| tert-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| sec-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 4-Isopropyltoluene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,3-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,4-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| n-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,2-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2,4-Trichlorobenzene | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Hexachlorobutadiene | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Naphthalene | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2,3-Trichlorobenzene | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 99 | 97 | 98 | 98 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 103 | 102 | 104 | 103 | <0 | % | TM15/PM10 |

Exova Jones Environmental

# Notification of Deviating Samples

**Client Name:** AECOM
**Reference:**
**Location:**
**Contact:** Alex Freeman

**Matrix : Liquid**

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| 17/21155 | 1 | DUP02 | | 15-21 | GRO | Sample holding time exceeded |
| 17/21155 | 1 | TRIP BLANK | | 22-24 | GRO, Mercury, Metals | Sample holding time exceeded |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/21155

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |

**JE Job No:** 17/21155

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM30/PM12 | CWG GC-FID | Yes | | | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | | | | |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM14 | Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required. | Yes | | | |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM0 | No preparation is required. | Yes | | | |
| TM60 | Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR). | PM0 | No preparation is required. | Yes | | | |

**JE Job No:** 17/21155

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM0 | No preparation is required. | Yes | | | |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM0 | No preparation is required. | | | | |

# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780
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AECOM
2 City Walk
Leeds
LS11 9AR

| | |
|---|---|
| **Attention :** | Alex Freeman |
| **Date :** | 9th January, 2018 |
| **Your reference :** | 60527350 |
| **Our reference :** | Test Report 17/21149 Batch 1 |
| **Location :** | |
| **Date samples received :** | 23rd December, 2017 |
| **Status :** | Final report |
| **Issue :** | 1 |

Six samples were received for analysis on 23rd December, 2017 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**

[redacted]

**Simon Gomery BSc**
**Project Manager**

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **Report :** | **Liquid** |
| **Reference:** | 60527350 | | |
| **Location:** | | | |
| **Contact:** | Alex Freeman | **Liquids/products:** | V=40ml vial, G=glass bottle, P=plastic bottle |
| **JE Job No.:** | 17/21149 | | $H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$ |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22,37-42 | 23-29 | 30-36 | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS103 | WS104 | WS102 | DUP01 | WS101 | WS112 | | | |
| **Depth** | | | | | | | | | |
| **COC No / misc** | | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN N P G | G V HN N P | V HN N P G | V HN N P G | | | |
| **Sample Date** | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | | | |
| **Sample Type** | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | |
| Dissolved Antimony # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM30/PM14 |
| Dissolved Arsenic # | 8.0 | 8.1 | 8.1 | 9.4 | <2.5 | <2.5 | <2.5 | ug/l | TM30/PM14 |
| Dissolved Cadmium # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM30/PM14 |
| Total Dissolved Chromium # | <1.5 | 2.0 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | ug/l | TM30/PM14 |
| Dissolved Copper # | <7 | <7 | <7 | <7 | <7 | <7 | <7 | ug/l | TM30/PM14 |
| Total Dissolved Iron # | 692 | <20 | 74 | 82 | 7453 | 12440AA | <20 | ug/l | TM30/PM14 |
| Dissolved Lead # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM30/PM14 |
| Dissolved Manganese # | 645 | 172 | 564 | 577 | 1464 | 1116 | <2 | ug/l | TM30/PM14 |
| Dissolved Mercury # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM30/PM14 |
| Dissolved Molybdenum # | 5227AA | 2214 | 5 | 7 | 592 | 247 | <2 | ug/l | TM30/PM14 |
| Dissolved Nickel # | <2 | <2 | <2 | <2 | 2 | 5 | <2 | ug/l | TM30/PM14 |
| Dissolved Selenium # | 5 | 95 | <3 | <3 | <3 | 8 | <3 | ug/l | TM30/PM14 |
| Dissolved Zinc # | 4 | <3 | 4 | 5 | 31 | 88 | <3 | ug/l | TM30/PM14 |
| | | | | | | | | | |
| Methyl Tertiary Butyl Ether # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | ug/l | TM15/PM10 |
| Benzene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM15/PM10 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM15/PM10 |
| Ethylbenzene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| p/m-Xylene # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| o-Xylene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 110 | 109 | 112 | 117 | 110 | 110 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 100 | 98 | 101 | 105 | 99 | 100 | <0 | % | TM15/PM10 |
| | | | | | | | | | |
| TPH CWG | | | | | | | | | |
| **Aliphatics** | | | | | | | | | |
| >C5-C6 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C6-C8 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C8-C10 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >C10-C12 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM5/PM30 |
| >C12-C16 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >C16-C21 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >C21-C35 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| Total aliphatics C5-35 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |
| **Aromatics** | | | | | | | | | |
| >C5-EC7 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC7-EC8 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC8-EC10 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM36/PM12 |
| >EC10-EC12 # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM5/PM30 |
| >EC12-EC16 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >EC16-EC21 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| >EC21-EC35 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/PM30 |
| Total aromatics C5-35 # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |
| Total aliphatics and aromatics(C5-35) # | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM5/TM36/PM30/PM12 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

## *Exova Jones Environmental*

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **Report :** | **Liquid** |
| **Reference:** | 60527350 | | |
| **Location:** | | | |
| **Contact:** | Alex Freeman | **Liquids/products:** | V=40ml vial, G=glass bottle, P=plastic bottle |
| **JE Job No.:** | 17/21149 | | $H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$ |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22,37-42 | 23-29 | 30-36 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS103 | WS104 | WS102 | DUP01 | WS101 | WS112 | | | | | | | |
| **Depth** | | | | | | | | | | | | | |
| **COC No / misc** | | | | | | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN N P G | G V HN N P | V HN N P G | V HN N P G | | | | | | | |
| **Sample Date** | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | | | | | | | |
| **Sample Type** | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | | | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | | | | | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | | | | | |
| Fluoride | <0.3 | <0.3 | 0.4 | 0.4 | <0.3 | <0.3 | | | | | <0.3 | mg/l | TM173/PM0 |
| Sulphate as SO4 # | 3310.0 | 1918.0 | 941.3 | 922.6 | 1587.5 | 1436.6 | | | | | <0.5 | mg/l | TM38/PM0 |
| Chloride # | 121.4 | 66.9 | 128.2 | 132.0 | 143.1 | 223.5 | | | | | <0.3 | mg/l | TM38/PM0 |
| Nitrate as NO3 # | <0.2 | 26.0 | <0.2 | <0.2 | 4.4 | <0.2 | | | | | <0.2 | mg/l | TM38/PM0 |
| Nitrite as NO2 # | <0.02 | 3.82 | 0.06 | 0.06 | 0.25 | 0.08 | | | | | <0.02 | mg/l | TM38/PM0 |
| Ortho Phosphate as PO4 # | <0.06 | <0.06 | 0.14 | 0.19 | <0.06 | <0.06 | | | | | <0.06 | mg/l | TM38/PM0 |
| Total Cyanide # | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | | | | | <0.01 | mg/l | TM89/PM0 |
| Total Organic Carbon # | <2 | <2 | <2 | <2 | <2 | <2 | | | | | <2 | mg/l | TM60/PM0 |



Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

| | | | | |
|---|---|---|---|---|
| **Client Name:** | AECOM | | **SVOC Report :** | **Liquid** |
| **Reference:** | 60527350 | | | |
| **Location:** | | | | |
| **Contact:** | Alex Freeman | | | |
| **JE Job No.:** | 17/21149 | | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22,37-42 | 23-29 | 30-36 | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS103 | WS104 | WS102 | DUP01 | WS101 | WS112 | | | |
| **Depth** | | | | | | | | | |
| **COC No / misc** | | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN N P G | G V HN N P | V HN N P G | V HN N P G | | | |
| **Sample Date** | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | | | |
| **Sample Type** | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| **Date of Receipt** | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | LOD/LOR | Units | Method No. |
| SVOC MS | | | | | | | | | |
| **Phenols** | | | | | | | | | |
| 2-Chlorophenol # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Methylphenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2-Nitrophenol | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4-Dichlorophenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4-Dimethylphenol | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2,4,5-Trichlorophenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 2,4,6-Trichlorophenol | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Chloro-3-methylphenol # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| 4-Methylphenol | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 4-Nitrophenol | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ug/l | TM16/PM30 |
| Pentachlorophenol | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Phenol | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| **PAHs** | | | | | | | | | |
| 2-Chloronaphthalene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| 2-Methylnaphthalene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Naphthalene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Acenaphthylene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Acenaphthene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Fluorene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Phenanthrene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Fluoranthene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Pyrene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(a)anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Chrysene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(bk)fluoranthene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Benzo(a)pyrene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Indeno(123cd)pyrene | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Dibenzo(ah)anthracene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| Benzo(ghi)perylene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM16/PM30 |
| **Phthalates** | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM16/PM30 |
| Butylbenzyl phthalate | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Di-n-butyl phthalate # | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | ug/l | TM16/PM30 |
| Di-n-Octyl phthalate | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Diethyl phthalate # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |
| Dimethyl phthalate | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM16/PM30 |

**Client Name:** AECOM　　**SVOC Report :** **Liquid**
**Reference:** 60527350
**Location:**
**Contact:** Alex Freeman
**JE Job No.:** 17/21149

Please see attached notes for all abbreviations and acronyms

| J E Sample No. | 1-7 | 8-14 | 15-21 | 22,37-42 | 23-29 | 30-36 | | | | | LOD/LOR | Units | Method No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | WS103 | WS104 | WS102 | DUP01 | WS101 | WS112 | | | | | | | |
| Depth | | | | | | | | | | | | | |
| COC No / misc | | | | | | | | | | | | | |
| Containers | V HN N P G | V HN N P G | V HN N P G | G V HN N P | V HN N P G | V HN N P G | | | | | | | |
| Sample Date | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | | | | | | | |
| Sample Type | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | | | | | |
| Batch Number | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | |
| Date of Receipt | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | | | | | |
| SVOC MS | | | | | | | | | | | | | |
| **Other SVOCs** | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 1,2,4-Trichlorobenzene # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 1,3-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 1,4-Dichlorobenzene # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 2-Nitroaniline | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 2,4-Dinitrotoluene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | <0.5 | ug/l | TM16/PM30 |
| 2,6-Dinitrotoluene | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 3-Nitroaniline | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 4-Bromophenylphenylether # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 4-Chloroaniline | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 4-Chlorophenylphenylether # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| 4-Nitroaniline | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | <0.5 | ug/l | TM16/PM30 |
| Azobenzene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | <0.5 | ug/l | TM16/PM30 |
| Bis(2-chloroethoxy)methane # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | <0.5 | ug/l | TM16/PM30 |
| Bis(2-chloroethyl)ether # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| Carbazole # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | <0.5 | ug/l | TM16/PM30 |
| Dibenzofuran # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | <0.5 | ug/l | TM16/PM30 |
| Hexachlorobenzene # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| Hexachlorobutadiene # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| Hexachlorocyclopentadiene | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| Hexachloroethane # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| Isophorone # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | <0.5 | ug/l | TM16/PM30 |
| N-nitrosodi-n-propylamine # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | | | | | <0.5 | ug/l | TM16/PM30 |
| Nitrobenzene # | <1 | <1 | <1 | <1 | <1 | <1 | | | | | <1 | ug/l | TM16/PM30 |
| Surrogate Recovery 2-Fluorobiphenyl | 125 | 92 | 127 | 129 | 92 | 129 | | | | | <0 | % | TM16/PM30 |
| Surrogate Recovery p-Terphenyl-d14 | 121 | 96 | 123 | 137 | 104 | 127 | | | | | <0 | % | TM16/PM30 |

## *Exova Jones Environmental*

| | | | |
|---|---|---|---|
| **Client Name:** | AECOM | **VOC Report :** | **Liquid** |
| **Reference:** | 60527350 | | |
| **Location:** | | | |
| **Contact:** | Alex Freeman | | |
| **JE Job No.:** | 17/21149 | | |

Please see attached notes for all abbreviations and acronyms

| **J E Sample No.** | 1-7 | 8-14 | 15-21 | 22,37-42 | 23-29 | 30-36 | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | WS103 | WS104 | WS102 | DUP01 | WS101 | WS112 | | | |
| **Depth** | | | | | | | | | |
| **COC No / misc** | | | | | | | | | |
| **Containers** | V HN N P G | V HN N P G | V HN N P G | G V HN N P | V HN N P G | V HN N P G | | | |
| **Sample Date** | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | | | |
| **Sample Type** | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | Ground Water | | | |
| **Batch Number** | 1 | 1 | 1 | 1 | 1 | 1 | LOD/LOR | Units | Method No. |
| **Date of Receipt** | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | 23/12/2017 | | | |
| VOC MS | | | | | | | | | |
| Dichlorodifluoromethane | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Methyl Tertiary Butyl Ether # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | ug/l | TM15/PM10 |
| Chloromethane # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Vinyl Chloride # | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | ug/l | TM15/PM10 |
| Bromomethane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Chloroethane # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Trichlorofluoromethane # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,1-Dichloroethene (1,1 DCE) # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Dichloromethane (DCM) # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM15/PM10 |
| trans-1-2-Dichloroethene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,1-Dichloroethane # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| cis-1-2-Dichloroethene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 2,2-Dichloropropane | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Bromochloromethane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Chloroform # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,1,1-Trichloroethane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,1-Dichloropropene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Carbon tetrachloride # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2-Dichloroethane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Benzene # | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ug/l | TM15/PM10 |
| Trichloroethene (TCE) # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,2-Dichloropropane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Dibromomethane # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Bromodichloromethane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| cis-1-3-Dichloropropene | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Toluene # | <5 | <5 | <5 | <5 | <5 | <5 | <5 | ug/l | TM15/PM10 |
| trans-1-3-Dichloropropene | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,1,2-Trichloroethane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Tetrachloroethene (PCE) # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,3-Dichloropropane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Dibromochloromethane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2-Dibromoethane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Chlorobenzene # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,1,1,2-Tetrachloroethane # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Ethylbenzene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| p/m-Xylene # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| o-Xylene # | <1 | <1 | <1 | <1 | <1 | <1 | <1 | ug/l | TM15/PM10 |
| Styrene | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Bromoform # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| Isopropylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,1,2,2-Tetrachloroethane | <4 | <4 | <4 | <4 | <4 | <4 | <4 | ug/l | TM15/PM10 |
| Bromobenzene # | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2,3-Trichloropropane # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Propylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 2-Chlorotoluene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,3,5-Trimethylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 4-Chlorotoluene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| tert-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,2,4-Trimethylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| sec-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 4-Isopropyltoluene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,3-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,4-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| n-Butylbenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,2-Dichlorobenzene # | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| 1,2-Dibromo-3-chloropropane | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2,4-Trichlorobenzene | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Hexachlorobutadiene | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Naphthalene | <2 | <2 | <2 | <2 | <2 | <2 | <2 | ug/l | TM15/PM10 |
| 1,2,3-Trichlorobenzene | <3 | <3 | <3 | <3 | <3 | <3 | <3 | ug/l | TM15/PM10 |
| Surrogate Recovery Toluene D8 | 110 | 109 | 112 | 117 | 110 | 110 | <0 | % | TM15/PM10 |
| Surrogate Recovery 4-Bromofluorobenzene | 100 | 98 | 101 | 105 | 99 | 100 | <0 | % | TM15/PM10 |

**Client Name:** AECOM
**Reference:** 60527350
**Location:**
**Contact:** Alex Freeman

| J E Job No. | Batch | Sample ID | Depth | J E Sample No. | Analysis | Reason |
|---|---|---|---|---|---|---|
| No deviating sample report results for job 17/21149 | | | | | | |

**Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.**
**Only analyses which are accredited are recorded as deviating if set criteria are not met.**

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

***JE Job No.:*** 17/21149

**SOILS**

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

**WATERS**

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

**DEVIATING SAMPLES**

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

**SURROGATES**

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

**DILUTIONS**

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

**BLANKS**

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

**NOTE**

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**REPORTS FROM THE SOUTH AFRICA LABORATORY**

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

**ABBREVIATIONS and ACRONYMS USED**

| | |
|---|---|
| # | ISO17025 (UKAS Ref No. 4225) accredited - UK. |
| SA | ISO17025 (SANAS Ref No.T0729) accredited - South Africa. |
| B | Indicates analyte found in associated method blank. |
| DR | Dilution required. |
| M | MCERTS accredited. |
| NA | Not applicable |
| NAD | No Asbestos Detected. |
| ND | None Detected (usually refers to VOC and/SVOC TICs). |
| NDP | No Determination Possible |
| SS | Calibrated against a single substance |
| SV | Surrogate recovery outside performance criteria. This may be due to a matrix effect. |
| W | Results expressed on as received basis. |
| + | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++ | Result outside calibration range, results should be considered as indicative only and are not accredited. |
| * | Analysis subcontracted to a Jones Environmental approved laboratory. |
| AD | Samples are dried at 35°C ±5°C |
| CO | Suspected carry over |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS |
| ME | Matrix Effect |
| NFD | No Fibres Detected |
| BS | AQC Sample |
| LB | Blank Sample |
| N | Client Sample |
| TB | Trip Blank Sample |
| OC | Outside Calibration Range |
| AA | x5 Dilution |

**JE Job No:** 17/21149

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM5 | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM5/TM36 | please refer to TM5 and TM36 for method details | PM30/PM12 | CWG GC-FID | Yes | | | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | | | | |
| TM15 | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS. | PM10 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | | | | |
| TM16 | Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS. | PM30 | Water samples are extracted with solvent using a magnetic stirrer to create a vortex. | Yes | | | |
| TM30 | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009 | PM14 | Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required. | Yes | | | |
| TM36 | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. | PM12 | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis. | Yes | | | |
| TM38 | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1 | PM0 | No preparation is required. | Yes | | | |
| TM60 | Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR). | PM0 | No preparation is required. | Yes | | | |

**JE Job No:** 17/21149

| Test Method No. | Description | Prep Method No. (if appropriate) | Description | ISO 17025 (UKAS/SANAS) | MCERTS (UK soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|---|---|---|---|---|---|---|---|
| TM89 | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis. | PM0 | No preparation is required. | Yes | | | |
| TM173 | Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2 | PM0 | No preparation is required. | | | | |

# Annex C QA/QC Table

| Method Type | Units | MDL | DUP01 | WS102 | **RPD (%)** | DUP02 | SW01 | **RPD (%)** | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|
| **TPH** | | | | | | | | | |
| >C5-C6 Aliphatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >C6-C8 Aliphatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >C8-C10 Aliphatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >C10-C12 Aliphatics | µg/L | 5 | <5 | <5 | 0 | <5 | <5 | 0 | <5 |
| >C12-C16 Aliphatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >C16-C21 Aliphatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >C16-C35 Aliphatics | µg/L | | - | - | - | - | - | - | - |
| >C21-C35 Aliphatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >C5-C35 Aliphatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >EC5-EC7 Aromatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >EC7-EC8 Aromatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >EC8-EC10 Aromatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >EC10-EC12 Aromatics | µg/L | 5 | <5 | <5 | 0 | <5 | <5 | 0 | <5 |
| >EC12-EC16 Aromatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >EC16-EC21 Aromatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >EC21-EC35 Aromatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >EC5-EC35 Aromatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| >C5-C35 Aliphatics & Aromatics | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| **VOC** | | | | | | | | | |
| Dichlorodifluoromethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| MTBE | µg/L | 0.1 | <0.1 | <0.1 | 0 | <0.1 | <0.1 | 0 | <0.1 |
| Chloromethane | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| Vinyl chloride | µg/L | 0.1 | <0.1 | <0.1 | 0 | <0.1 | <0.1 | 0 | <0.1 |
| Bromomethane | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Chloroethane | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| Trichlorofluoromethane | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,1-dichloroethene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| Dichloromethane | µg/L | 5 | <5 | <5 | 0 | <5 | <5 | 0 | <5 |
| trans-1,2-dichloroethene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,1-dichloroethane | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| cis-1,2-dichloroethene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 2,2-dichloropropane | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Bromochloromethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Chloroform | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| 1,1,1-trichloroethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| 1,1-dichloropropene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| Carbon tetrachloride | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| 1,2-dichloroethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Benzene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Trichloroethene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,2-dichloropropane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Dibromomethane | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| Bromodichloromethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| cis-1,3-dichloropropene | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Toluene | µg/L | 5 | <5 | <5 | 0 | <5 | <5 | 0 | <5 |
| trans-1,3-dichloropropene | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| 1,1,2-trichloroethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Tetrachloroethene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,3-dichloropropane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Sum of PCE and TCE | µg/L | | - | - | - | - | - | - | - |
| Chlorodibromomethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| TCE+DCE+VC | µg/L | | - | - | - | - | - | - | - |
| 1,2-dibromoethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| PCE+TCE+DCE+VC | µg/L | | - | - | - | - | - | - | - |
| 1,1,1,2-tetrachloroethane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Ethylbenzene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Xylene (m & p) | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Xylene Total | µg/L | | - | - | - | - | - | - | - |
| Xylene (o) | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Total BTEX | µg/L | | - | - | - | - | - | - | - |
| Styrene | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Bromoform | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Isopropylbenzene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,1,2,2-tetrachloroethane | µg/L | 4 | <4 | <4 | 0 | <4 | <4 | 0 | <4 |
| 1,2,3-trichloropropane | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| n-propylbenzene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,3,5-trimethylbenzene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| tert-butylbenzene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,2,4-trimethylbenzene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| sec-butylbenzene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| p-isopropyltoluene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| n-butylbenzene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,2-dibromo-3-chloropropane | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| 1,2-Dichloroethene | µg/L | | - | - | - | - | - | - | - |
| Trihalomethanes | µg/L | | - | - | - | - | - | - | - |
| **PAH** | | | | | | | | | |
| Naphthalene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Acenaphthylene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Acenaphthene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Fluorene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Phenanthrene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Anthracene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Fluoranthene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Pyrene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Benzo(a)anthracene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Chrysene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Benzo(a)pyrene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Indeno(1,2,3-c,d)pyrene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Dibenzo(a,h)anthracene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Benzo(g,h,i)perylene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Benzo(b)&(k)fluoranthene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| PAHs (sum of 4) | µg/L | | - | - | - | - | - | - | - |
| benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene | µg/L | | - | - | - | - | - | - | - |
| Coal Tar (Bap as surrogate marker) | µg/L | | - | - | - | - | - | - | - |

| Method Type | Units | MDL | DUP01 | WS102 | **RPD (%)** | DUP02 | SW01 | **RPD (%)** | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|
| **SVOC** | | | | | | | | | |
| Chlorobenzene | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Bromobenzene | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| 2-chlorotoluene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 4-chlorotoluene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 1,3-dichlorobenzene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 1,4-dichlorobenzene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 1,2-dichlorobenzene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 1,2,4-trichlorobenzene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Hexachlorobutadiene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 1,2,3-trichlorobenzene | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| 2-chlorophenol | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 2-methylphenol | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| 2-nitrophenol | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| 2,4-dichlorophenol | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| 2,4-dimethylphenol | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 2,4,5-trichlorophenol | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| 2,4,6-trichlorophenol | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 4-chloro-3-methylphenol | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| 4-methylphenol | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 4-nitrophenol | µg/L | 10 | <10 | <10 | 0 | <10 | <10 | 0 | <10 |
| Pentachlorophenol | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Phenol | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 2-chloronaphthalene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 2-methylnaphthalene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Bis(2-ethylhexyl) phthalate | µg/L | 5 | <5 | <5 | 0 | <5 | <5 | 0 | <5 |
| Butyl benzyl phthalate | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Di-n-butyl phthalate | µg/L | 1.5 | <1.5 | <1.5 | 0 | <1.5 | <1.5 | 0 | <1.5 |
| Di-n-octyl phthalate | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Diethylphthalate | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Dimethyl phthalate | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 2-nitroaniline | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 2,4-Dinitrotoluene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| 2,6-dinitrotoluene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 3-nitroaniline | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 4-bromophenyl phenyl ether | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 4-chloroaniline | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 4-chlorophenyl phenyl ether | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| 4-nitroaniline | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Azobenzene | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Bis(2-chloroethoxy) methane | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Bis(2-chloroethyl)ether | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Carbazole | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Dibenzofuran | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Hexachlorobenzene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Hexachlorocyclopentadiene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Hexachloroethane | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Isophorone | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| N-nitrosodi-n-propylamine | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Nitrobenzene | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| **Halogenated Benzenes** | | | | | | | | | |
| Trichlorobenzene (total) | µg/L | | - | - | **-** | - | - | **-** | - |
| **Metals** | | | | | | | | | |
| Antimony (Filtered) | µg/L | 2 | <2 | <2 | 0 | 4 | <2 | **67** | <2 |
| Arsenic (Filtered) | µg/L | 2.5 | 9.4 | 8.1 | 15 | <2.5 | <2.5 | 0 | <2.5 |
| Cadmium (Filtered) | µg/L | 0.5 | <0.5 | <0.5 | 0 | <0.5 | <0.5 | 0 | <0.5 |
| Chromium (III+VI) (Filtered) | µg/L | 1.5 | <1.5 | <1.5 | 0 | <1.5 | <1.5 | 0 | <1.5 |
| Copper (Filtered) | µg/L | 7 | <7 | <7 | 0 | <7 | <7 | 0 | <7 |
| Iron (Filtered) | µg/L | 20 | 82 | 74 | 10 | <20 | <20 | 0 | <20 |
| Lead (Filtered) | µg/L | 5 | <5 | <5 | 0 | <5 | <5 | 0 | <5 |
| Manganese (Filtered) | µg/L | 2 | 577 | 564 | 2 | 18 | 18 | 0 | <2 |
| Mercury (Filtered) | µg/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 | <1 |
| Molybdenum (Filtered) | µg/L | 2 | 7 | 5 | **33** | 8 | 7 | 13 | <2 |
| Nickel (Filtered) | µg/L | 2 | <2 | <2 | 0 | <2 | <2 | 0 | <2 |
| Selenium (Filtered) | µg/L | 3 | <3 | <3 | 0 | <3 | <3 | 0 | <3 |
| Zinc (Filtered) | µg/L | 3 | 5 | 4 | 22 | <3 | <3 | 0 | <3 |
| **Organics** | | | | | | | | | |
| TOC | mg/L | 2 | <2 | <2 | 0 | 5 | 5 | 0 | <2 |
| **Inorganics** | | | | | | | | | |
| Fluoride | mg/L | 0.3 | 0.4 | 0.4 | 0 | 0.3 | 0.3 | 0 | <0.3 |
| Sulphate | mg/L | 0.5 | 922.6 | 941.3 | -2 | 45.9 | 44.9 | 2 | <0.5 |
| Chloride | mg/L | 0.3 | 132 | 128.2 | 3 | 59.6 | 58.8 | 1 | <0.3 |
| Nitrate (as NO3-) | mg/L | 0.2 | <0.2 | <0.2 | 0 | 0.8 | 0.8 | 0 | <0.2 |
| Nitrite (as NO2-) | mg/L | 0.02 | 0.06 | 0.06 | 0 | <0.02 | <0.02 | 0 | <0.02 |
| Ortho Phosphate as PO4 | mg/l | 0.06 | 0.19 | 0.14 | **30** | 0.21 | 0.21 | 0 | <0.06 |
| Cyanide Total | mg/L | 0.01 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 | <0.01 |

**Notes:**
MDL - Method detection limit
"DUP" - Duplicate sample
RPD - Relative Percentage Difference
Bold values exceed acceptable RPD of ±30%
All concentrations are in µg/l

# Annex D Soil and Water Analysis Screening Tables

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | BH101 | | BH102 | | BH103 | | BH104 | BH106 | TP102 | | TP103 | TP104 | TP105 | TP106 | TP107 | TP108 | | TP110 | | TP111 | | TP112 | | TP113 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.5 | 14.7 | 13.8 | 2.2 | 0.5 | 9.3 | 1 | 1 | 0.6 | 2.5 | 3 | 0.8 | 2 | 0.5 | 0.2 | 0.5 | 1.5 | 0.2 | 1.4 | 2 | 3 | 0.5 | 2.5 | 2 |
| | | | | 08/12/2017 | 12/12/2017 | 06/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 11/12/2017 | 16/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 | 12/12/2017 | 12/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 20/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 |
| **TPH** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >C5-C6 Aliphatics | mg/kg | 0.1 | 6,500[#3] | - | <0.1 | <0.1 | - | - | <0.1 | - | - | - | - | <0.1 | - | - | - | - | - | - | - | - | <0.1 | <0.1 | - | - | - |
| >C6-C8 Aliphatics | mg/kg | 0.1 | 21,000[#3] | - | <0.1 | <0.1 | - | - | <0.1 | - | - | - | - | <0.1 | - | - | - | - | - | - | - | - | <0.1 | <0.1 | - | - | - |
| >C8-C10 Aliphatics | mg/kg | 0.1 | 5,900[#3] | - | <0.1 | <0.1 | - | - | <0.1 | - | - | - | - | <0.1 | - | - | - | - | - | - | - | - | <0.1 | <0.1 | - | - | - |
| >C10-C12 Aliphatics | mg/kg | 0.2 | 27,000[#3] | - | <0.2 | <0.2 | - | - | <0.2 | - | - | - | - | <0.2 | - | - | - | - | - | - | - | - | <0.2 | <0.2 | - | - | - |
| >C12-C16 Aliphatics | mg/kg | 4 | 84,000[#3] | - | <4 | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - | - | - | - | - | <4 | <4 | - | - | - |
| >C16-C21 Aliphatics | mg/kg | 7 | | - | <7 | <7 | - | - | <7 | - | - | - | - | <7 | - | - | - | - | - | - | - | - | <7 | <7 | - | - | - |
| >C16-C35 Aliphatics | mg/kg | | 1,800,000[#3] | - | <14 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| >C21-C35 Aliphatics | mg/kg | 7 | | - | <7 | <7 | - | - | <7 | - | - | - | - | <7 | - | - | - | - | - | - | - | - | <7 | <7 | - | - | - |
| >C5-C35 Aliphatics | mg/kg | 19 | | - | <19 | <19 | - | - | <19 | - | - | - | - | <19 | - | - | - | - | - | - | - | - | <19 | <19 | - | - | - |
| >EC5-EC7 Aromatics | mg/kg | 0.1 | 46,000[#3] | - | <0.1 | <0.1 | - | - | <0.1 | - | - | - | - | <0.1 | - | - | - | - | - | - | - | - | <0.1 | <0.1 | - | - | - |
| >EC7-EC8 Aromatics | mg/kg | 0.1 | 110,000[#3] | - | <0.1 | <0.1 | - | - | <0.1 | - | - | - | - | <0.1 | - | - | - | - | - | - | - | - | <0.1 | <0.1 | - | - | - |
| >EC8-EC10 Aromatics | mg/kg | 0.1 | 9,700[#3] | - | <0.1 | <0.1 | - | - | <0.1 | - | - | - | - | <0.1 | - | - | - | - | - | - | - | - | <0.1 | <0.1 | - | - | - |
| >EC10-EC12 Aromatics | mg/kg | 0.2 | 30,000[#3] | - | <0.2 | <0.2 | - | - | <0.2 | - | - | - | - | <0.2 | - | - | - | - | - | - | - | - | <0.2 | <0.2 | - | - | - |
| >EC12-EC16 Aromatics | mg/kg | 4 | 37,000[#3] | - | <4 | <4 | - | - | <4 | - | - | - | - | <4 | - | - | - | - | - | - | - | - | <4 | <4 | - | - | - |
| >EC16-EC21 Aromatics | mg/kg | 7 | 28,000[#3] | - | <7 | <7 | - | - | <7 | - | - | - | - | <7 | - | - | - | - | - | - | - | - | <7 | <7 | - | - | - |
| >EC21-EC35 Aromatics | mg/kg | 7 | 28,000[#3] | - | <7 | <7 | - | - | <7 | - | - | - | - | <7 | - | - | - | - | - | - | - | - | <7 | <7 | - | - | - |
| >EC5-EC35 Aromatics | mg/kg | 19 | | - | <19 | <19 | - | - | <19 | - | - | - | - | <19 | - | - | - | - | - | - | - | - | <19 | <19 | - | - | - |
| >C5-C35 Aliphatics & Aromatics | mg/kg | 38 | | - | <38 | <38 | - | - | <38 | - | - | - | - | <38 | - | - | - | - | - | - | - | - | <38 | <38 | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | BH101 | | BH102 | | BH103 | | BH104 | BH106 | TP102 | | TP103 | TP104 | TP105 | TP106 | TP107 | TP108 | | TP110 | | TP111 | | TP112 | | TP113 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.5 | 14.7 | 13.8 | 2.2 | 0.5 | 9.3 | 1 | 1 | 0.6 | 2.5 | 3 | 0.8 | 2 | 0.5 | 0.2 | 0.5 | 1.5 | 0.2 | 1.4 | 2 | 3 | 0.5 | 2.5 | 2 |
| | | | | 08/12/2017 | 12/12/2017 | 06/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 11/12/2017 | 16/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 | 12/12/2017 | 12/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 20/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 |
| **VOC** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dichlorodifluoromethane | mg/kg | 0.002 | 370[#1] | - | <0.002 | <0.002 | - | - | <0.002 | <0.002 | - | - | - | <0.002 | <0.002 | - | - | - | - | - | - | <0.002 | <0.002 | <0.002 | - | - | - |
| MTBE | mg/kg | 0.006 | 11,300[#4] | - | <0.006 | <0.006 | - | - | <0.006 | <0.006 | - | - | - | <0.006 | <0.006 | - | - | - | - | - | - | <0.006 | <0.006 | <0.006 | - | - | - |
| Chloromethane | mg/kg | 0.003 | 0.788[#4] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| Vinyl chloride | mg/kg | 0.002 | 0.061[#3] | - | <0.002 | <0.002 | - | - | <0.002 | <0.002 | - | - | - | <0.002 | <0.002 | - | - | - | - | - | - | <0.002 | <0.002 | <0.002 | - | - | - |
| Bromomethane | mg/kg | 0.001 | 30[#1] | - | <0.001 | <0.001 | - | - | <0.001 | <0.001 | - | - | - | <0.001 | <0.001 | - | - | - | - | - | - | <0.001 | <0.001 | <0.001 | - | - | - |
| Chloroethane | mg/kg | 0.006 | 1,050[#4] | - | <0.006 | <0.006 | - | - | <0.006 | <0.006 | - | - | - | <0.006 | <0.006 | - | - | - | - | - | - | <0.006 | <0.006 | <0.006 | - | - | - |
| Trichlorofluoromethane | mg/kg | 0.003 | 350,000[#1] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| 1,1-dichloroethene | mg/kg | 0.006 | 45.8[#4] | - | <0.006 | <0.006 | - | - | <0.006 | <0.006 | - | - | - | <0.006 | <0.006 | - | - | - | - | - | - | <0.006 | <0.006 | <0.006 | - | - | - |
| Dichloromethane | mg/kg | 0.03 | 269[#4] | - | <0.03 | <0.03 | - | - | <0.03 | <0.03 | - | - | - | <0.03 | <0.03 | - | - | - | - | - | - | <0.03 | <0.03 | <0.03 | - | - | - |
| trans-1,2-dichloroethene | mg/kg | 0.003 | 39.5[#4] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| 1,1-dichloroethane | mg/kg | 0.006 | 406[#4] | - | <0.006 | <0.006 | - | - | <0.006 | <0.006 | - | - | - | <0.006 | <0.006 | - | - | - | - | - | - | <0.006 | <0.006 | <0.006 | - | - | - |
| cis-1,2-dichloroethene | mg/kg | 0.007 | 22.7[#4] | - | <0.007 | <0.007 | - | - | <0.007 | <0.007 | - | - | - | <0.007 | <0.007 | - | - | - | - | - | - | <0.007 | <0.007 | <0.007 | - | - | - |
| 2,2-dichloropropane | mg/kg | 0.004 | | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Bromochloromethane | mg/kg | 0.004 | 630[#1] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Chloroform | mg/kg | 0.005 | 170[#3] | - | <0.005 | <0.005 | - | - | <0.005 | <0.005 | - | - | - | <0.005 | <0.005 | - | - | - | - | - | - | <0.005 | <0.005 | <0.005 | - | - | - |
| 1,1,1-trichloroethane | mg/kg | 0.005 | 1,400[#3] | - | <0.005 | <0.005 | - | - | <0.005 | <0.005 | - | - | - | <0.005 | <0.005 | - | - | - | - | - | - | <0.005 | <0.005 | <0.005 | - | - | - |
| 1,1-dichloropropene | mg/kg | 0.003 | | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| Carbon tetrachloride | mg/kg | 0.004 | 6.8[#3] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| 1,2-dichloroethane | mg/kg | 0.005 | 0.77[#3] | - | <0.005 | <0.005 | - | - | <0.005 | <0.005 | - | - | - | <0.005 | <0.005 | - | - | - | - | - | - | <0.005 | <0.005 | <0.005 | - | - | - |
| Benzene | mg/kg | 0.005 | 48[#3] | - | <0.005 | <0.005 | - | - | <0.005 | <0.005 | - | - | - | <0.005 | <0.005 | - | - | - | - | - | - | <0.005 | <0.005 | <0.005 | - | - | - |
| Trichloroethene | mg/kg | 0.005 | 2.7[#3] | - | <0.005 | <0.005 | - | - | <0.005 | <0.005 | - | - | - | <0.005 | <0.005 | - | - | - | - | - | - | <0.005 | <0.005 | <0.005 | - | - | - |
| 1,2-dichloropropane | mg/kg | 0.004 | 5.51[#4] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Dibromomethane | mg/kg | 0.004 | 99[#1] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Bromodichloromethane | mg/kg | 0.004 | 1.3[#1] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| cis-1,3-dichloropropene | mg/kg | 0.004 | | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Toluene | mg/kg | 0.003 | 110,000[#3] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| trans-1,3-dichloropropene | mg/kg | 0.003 | | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| 1,1,2-trichloroethane | mg/kg | 0.004 | 198[#4] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Tetrachloroethene | mg/kg | 0.003 | 45[#3] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| 1,3-dichloropropane | mg/kg | 0.004 | 23,000[#1] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Sum of PCE and TCE | mg/kg | | | - | <0.008 | - | - | - | - | <0.008 | - | - | - | - | - | - | - | - | - | - | - | <0.008 | - | - | - | - | - |
| Chlorodibromomethane | mg/kg | 0.005 | 39[#1] | - | <0.005 | <0.005 | - | - | <0.005 | <0.005 | - | - | - | <0.005 | <0.005 | - | - | - | - | - | - | <0.005 | <0.005 | <0.005 | - | - | - |
| TCE+DCE+VC | mg/kg | | | - | <0.023 | - | - | - | - | <0.023 | - | - | - | - | - | - | - | - | - | - | - | <0.023 | - | - | - | - | - |
| 1,2-dibromoethane | mg/kg | 0.003 | 0.16[#1] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| PCE+TCE+DCE+VC | mg/kg | | | - | <0.026 | - | - | - | - | <0.026 | - | - | - | - | - | - | - | - | - | - | - | <0.026 | - | - | - | - | - |
| 1,1,1,2-tetrachloroethane | mg/kg | 0.005 | 270[#3] | - | <0.005 | <0.005 | - | - | <0.005 | <0.005 | - | - | - | <0.005 | <0.005 | - | - | - | - | - | - | <0.005 | <0.005 | <0.005 | - | - | - |
| Ethylbenzene | mg/kg | 0.003 | 14,000[#3] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| Xylene (m & p) | mg/kg | 0.004 | | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Xylene Total | mg/kg | | 15,000[#3] | - | <0.008 | - | - | - | - | <0.008 | - | - | - | - | - | - | - | - | - | - | - | <0.008 | - | - | - | - | - |
| Xylene (o) | mg/kg | 0.004 | 16,000[#3] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Total BTEX | mg/kg | | | - | <0.019 | - | - | - | - | <0.019 | - | - | - | - | - | - | - | - | - | - | - | <0.019 | - | - | - | - | - |
| Styrene | mg/kg | 0.003 | 6,860[#4] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| Bromoform | mg/kg | 0.004 | 1,590[#4] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Isopropylbenzene | mg/kg | 0.003 | 3,610[#4] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| 1,1,2,2-tetrachloroethane | mg/kg | 0.003 | 560[#3] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| 1,2,3-trichloropropane | mg/kg | 0.004 | 0.11[#1] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| n-propylbenzene | mg/kg | 0.004 | 10,400[#4] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| 1,3,5-trimethylbenzene | mg/kg | 0.003 | 1,500[#1] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| tert-butylbenzene | mg/kg | 0.005 | 120,000[#1] | - | <0.005 | <0.005 | - | - | <0.005 | <0.005 | - | - | - | <0.005 | <0.005 | - | - | - | - | - | - | <0.005 | <0.005 | <0.005 | - | - | - |
| 1,2,4-trimethylbenzene | mg/kg | 0.006 | 107[#4] | - | <0.006 | <0.006 | - | - | <0.006 | <0.006 | - | - | - | <0.006 | <0.006 | - | - | - | - | - | - | <0.006 | <0.006 | <0.006 | - | - | - |
| sec-butylbenzene | mg/kg | 0.004 | 120,000[#1] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| p-isopropyltoluene | mg/kg | 0.004 | | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| n-butylbenzene | mg/kg | 0.004 | 58,000[#1] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| 1,2-dibromo-3-chloropropane | mg/kg | 0.004 | 0.064[#1] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| 1,2-Dichloroethene | mg/kg | | | - | <0.01 | - | - | - | - | <0.01 | - | - | - | - | - | - | - | - | - | - | - | <0.01 | - | - | - | - | - |
| Trihalomethanes | mg/kg | | | - | <0.018 | - | - | - | - | <0.018 | - | - | - | - | - | - | - | - | - | - | - | <0.018 | - | - | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | BH101 | | BH102 | | BH103 | | BH104 | BH106 | TP102 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.5 | 14.7 | 13.8 | 2.2 | 0.5 | 9.3 | 1 | 1 | 0.6 | 2.5 |
| | | | | 08/12/2017 | 12/12/2017 | 06/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 11/12/2017 | 16/12/2017 | 14/12/2017 | 14/12/2017 |
| **PAH** | | | | | | | | | | | | | |
| Naphthalene | mg/kg | 0.01 | 520[#3] | <0.04 | <0.01 | <0.01 | - | 0.05 | <0.01 | <0.01 | - | - | - |
| Acenaphthylene | mg/kg | 0.01 | 100,000[#3] | <0.03 | <0.01 | <0.01 | - | <0.03 | <0.01 | <0.01 | - | - | - |
| Acenaphthene | mg/kg | 0.01 | 100,000[#3] | <0.05 | <0.01 | <0.01 | - | <0.05 | <0.01 | <0.01 | - | - | - |
| Fluorene | mg/kg | 0.01 | 70,000[#3] | <0.04 | <0.01 | <0.01 | - | <0.04 | <0.01 | <0.01 | - | - | - |
| Phenanthrene | mg/kg | 0.01 | 23,000[#3] | 0.06 | <0.01 | <0.01 | - | 0.05 | <0.01 | <0.01 | - | - | - |
| Anthracene | mg/kg | 0.01 | 540,000[#3] | <0.04 | <0.01 | <0.01 | - | <0.04 | <0.01 | <0.01 | - | - | - |
| Fluoranthene | mg/kg | 0.01 | 23,000[#3] | 0.16 | <0.01 | <0.01 | - | <0.03 | <0.01 | 0.042 | - | - | - |
| Pyrene | mg/kg | 0.01 | 54,000[#3] | 0.14 | <0.01 | <0.01 | - | <0.03 | <0.01 | 0.043 | - | - | - |
| Benzo(a)anthracene | mg/kg | 0.01 | 180[#3] | 0.11 | <0.01 | <0.01 | - | <0.06 | <0.01 | 0.026 | - | - | - |
| Chrysene | mg/kg | 0.01 | 360[#3] | 0.1 | <0.01 | <0.01 | - | <0.02 | <0.01 | 0.035 | - | - | - |
| Benzo(a)pyrene | mg/kg | 0.01 | 36[#3] | 0.1 | <0.01 | <0.01 | - | <0.04 | <0.01 | 0.032 | - | - | - |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.01 | 510[#3] | 0.07 | <0.01 | <0.01 | - | <0.04 | <0.01 | 0.022 | - | - | - |
| Dibenzo(a,h)anthracene | mg/kg | 0.01 | 3.6[#3] | <0.04 | <0.01 | <0.01 | - | <0.04 | <0.01 | <0.01 | - | - | - |
| Benzo(g,h,i)perylene | mg/kg | 0.01 | 4,000[#3] | 0.07 | <0.01 | <0.01 | - | <0.04 | <0.01 | 0.029 | - | - | - |
| Benzo(b)fluoranthene | mg/kg | 0.01 | 45[#3] | 0.12 | <0.01 | <0.01 | - | <0.05 | <0.01 | 0.035 | - | - | - |
| Benzo(k)fluoranthene | mg/kg | 0.01 | 1,200[#3] | 0.05 | <0.01 | <0.01 | - | <0.02 | <0.01 | 0.014 | - | - | - |
| Benzo(b)&(k)fluoranthene | mg/kg | 0.01 | | 0.17 | <0.01 | <0.01 | - | <0.07 | <0.01 | 0.049 | - | - | - |
| PAHs (sum of 4) | mg/kg | | | 0.31 | <0.04 | - | - | <0.15 | - | 0.1 | - | - | - |
| PAH 16 Total | mg/kg | 0.6 | | 1 | - | - | - | <0.6 | - | - | - | - | - |
| benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene | mg/kg | | | 0.14 | <0.02 | - | - | <0.08 | - | 0.051 | - | - | - |
| Coal Tar (Bap as surrogate marker) | mg/kg | | 15[#3] | 0.1 | <0.01 | - | - | <0.04 | - | 0.032 | - | - | - |

| | TP103 | TP104 | TP105 | TP106 | TP107 | TP108 | | TP110 | | TP111 | | TP112 | | TP113 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 0.8 | 2 | 0.5 | 0.2 | 0.5 | 1.5 | 0.2 | 1.4 | 2 | 3 | 0.5 | 2.5 | 2 |
| | 14/12/2017 | 13/12/2017 | 12/12/2017 | 12/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 20/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 |
| **PAH** | | | | | | | | | | | | | | |
| Naphthalene | <0.01 | <0.01 | <0.04 | <0.04 | 0.05 | - | <0.04 | <0.04 | <0.01 | <0.01 | <0.01 | - | - | - |
| Acenaphthylene | <0.01 | <0.01 | <0.03 | 0.06 | <0.03 | - | <0.03 | <0.03 | <0.01 | <0.01 | <0.01 | - | - | - |
| Acenaphthene | <0.01 | <0.01 | <0.05 | 0.22 | <0.05 | - | <0.05 | <0.05 | <0.01 | <0.01 | <0.01 | - | - | - |
| Fluorene | <0.01 | <0.01 | <0.04 | 0.15 | <0.04 | - | <0.04 | <0.04 | <0.01 | <0.01 | <0.01 | - | - | - |
| Phenanthrene | <0.01 | <0.01 | <0.03 | 2.2 | 1.33 | - | <0.03 | <0.03 | <0.01 | <0.01 | <0.01 | - | - | - |
| Anthracene | <0.01 | <0.01 | <0.04 | 0.56 | 0.4 | - | <0.04 | <0.04 | <0.01 | <0.01 | <0.01 | - | - | - |
| Fluoranthene | <0.01 | <0.01 | <0.03 | 3.48 | 7.61 | - | <0.03 | <0.03 | <0.01 | <0.01 | <0.01 | - | - | - |
| Pyrene | <0.01 | <0.01 | <0.03 | 2.88 | 6.31 | - | <0.03 | <0.03 | <0.01 | <0.01 | <0.01 | - | - | - |
| Benzo(a)anthracene | <0.01 | <0.01 | <0.06 | 1.5 | 7.18 | - | <0.06 | <0.06 | <0.01 | <0.01 | <0.01 | - | - | - |
| Chrysene | <0.01 | <0.01 | <0.02 | 1.48 | 11.34 | - | <0.02 | <0.02 | <0.01 | <0.01 | <0.01 | - | - | - |
| Benzo(a)pyrene | <0.01 | <0.01 | <0.04 | 1.32 | 3.3 | - | <0.04 | <0.04 | <0.01 | <0.01 | <0.01 | - | - | - |
| Indeno(1,2,3-c,d)pyrene | <0.01 | <0.01 | <0.04 | 0.87 | 1.47 | - | <0.04 | <0.04 | <0.01 | <0.01 | <0.01 | - | - | - |
| Dibenzo(a,h)anthracene | <0.01 | <0.01 | <0.04 | 0.2 | 0.65 | - | <0.04 | <0.04 | <0.01 | <0.01 | <0.01 | - | - | - |
| Benzo(g,h,i)perylene | <0.01 | <0.01 | <0.04 | 0.84 | 1.41 | - | <0.04 | <0.04 | <0.01 | <0.01 | <0.01 | - | - | - |
| Benzo(b)fluoranthene | <0.01 | <0.01 | <0.05 | 1.76 | 9.48 | - | <0.05 | <0.05 | <0.01 | <0.01 | <0.01 | - | - | - |
| Benzo(k)fluoranthene | <0.01 | <0.01 | <0.02 | 0.68 | 3.69 | - | <0.02 | <0.02 | <0.01 | <0.01 | <0.01 | - | - | - |
| Benzo(b)&(k)fluoranthene | <0.01 | <0.01 | <0.07 | 2.44 | 13.17 | - | <0.07 | <0.07 | <0.01 | <0.01 | <0.01 | - | - | - |
| PAHs (sum of 4) | - | - | - | 4.15 | 16.05 | - | - | <0.15 | <0.04 | - | - | - | - | - |
| PAH 16 Total | - | - | <0.6 | 18.2 | 54.2 | - | <0.6 | <0.6 | - | - | - | - | - | - |
| benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene | - | - | - | 1.71 | 2.88 | - | - | <0.08 | <0.02 | - | - | - | - | - |
| Coal Tar (Bap as surrogate marker) | - | - | - | 1.32 | 3.3 | - | - | <0.04 | <0.01 | - | - | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | BH101 | | BH102 | | BH103 | | BH104 | BH106 | TP102 | | TP103 | TP104 | TP105 | TP106 | TP107 | TP108 | | TP110 | | TP111 | | TP112 | | TP113 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.5 | 14.7 | 13.8 | 2.2 | 0.5 | 9.3 | 1 | 1 | 0.6 | 2.5 | 3 | 0.8 | 2 | 0.5 | 0.2 | 0.5 | 1.5 | 0.2 | 1.4 | 2 | 3 | 0.5 | 2.5 | 2 |
| | | | | 08/12/2017 | 12/12/2017 | 06/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 11/12/2017 | 16/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 | 12/12/2017 | 12/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 20/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 |
| **SVOC** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | mg/kg | 0.004 | 140[#3] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| Bromobenzene | mg/kg | 0.002 | 245[#4] | - | <0.002 | <0.002 | - | - | <0.002 | <0.002 | - | - | - | <0.002 | <0.002 | - | - | - | - | - | - | <0.002 | <0.002 | <0.002 | - | - | - |
| 2-chlorotoluene | mg/kg | 0.003 | 23,000[#1] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| 4-chlorotoluene | mg/kg | 0.003 | 23,000[#1] | - | <0.003 | <0.003 | - | - | <0.003 | <0.003 | - | - | - | <0.003 | <0.003 | - | - | - | - | - | - | <0.003 | <0.003 | <0.003 | - | - | - |
| 1,3-dichlorobenzene | mg/kg | 0.004 | 80[#3] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| 1,4-dichlorobenzene | mg/kg | 0.004 | 11,000[#3] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| 1,2-dichlorobenzene | mg/kg | 0.004 | 5,300[#3] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.01 - 0.023 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| 1,2,4-trichlorobenzene | mg/kg | 0.007 | 580[#3] | - | <0.007 | <0.007 | - | - | <0.007 | <0.007 | - | - | - | <0.007 | <0.007 | - | - | - | - | - | - | <0.007 | <0.007 | <0.007 | - | - | - |
| Hexachlorobutadiene | mg/kg | 0.004 | 69[#3] | - | <0.004 | <0.004 | - | - | <0.004 | <0.004 | - | - | - | <0.004 | <0.004 | - | - | - | - | - | - | <0.004 | <0.004 | <0.004 | - | - | - |
| 1,2,3-trichlorobenzene | mg/kg | 0.007 | 270[#3] | - | <0.007 | <0.007 | - | - | <0.007 | <0.007 | - | - | - | <0.007 | <0.007 | - | - | - | - | - | - | <0.007 | <0.007 | <0.007 | - | - | - |
| 2-chlorophenol | mg/kg | 0.01 | 5,800[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2-methylphenol | mg/kg | 0.01 | 41,000[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2-nitrophenol | mg/kg | 0.01 | | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2,4-dichlorophenol | mg/kg | 0.01 | 2,500[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2,4-dimethylphenol | mg/kg | 0.01 | 27,300[#4] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2,4,5-trichlorophenol | mg/kg | 0.01 | 82,000[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2,4,6-trichlorophenol | mg/kg | 0.01 | 210[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 4-chloro-3-methylphenol | mg/kg | 0.01 | 82,000[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 4-methylphenol | mg/kg | 0.01 | 82,000[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 4-nitrophenol | mg/kg | 0.01 | | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Pentachlorophenol | mg/kg | 0.01 | 400[#3] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Phenol | mg/kg | 0.01 | 1,200[#3] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2-chloronaphthalene | mg/kg | 0.01 | 1,080[#4] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2-methylnaphthalene | mg/kg | 0.01 | 3,000[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Bis(2-ethylhexyl) phthalate | mg/kg | 0.1 | 86,100[#4] | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | - | - | - | <0.1 | <0.1 | - | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | - |
| Butyl benzyl phthalate | mg/kg | 0.1 | 946,000[#4] | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | - | - | - | <0.1 | <0.1 | - | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | - |
| Di-n-butyl phthalate | mg/kg | 0.1 | 15,400[#4] | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | - | - | - | <0.1 | <0.1 | - | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | - |
| Di-n-octyl phthalate | mg/kg | 0.1 | 89,100[#4] | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | - | - | - | <0.1 | <0.1 | - | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | - |
| Diethylphthalate | mg/kg | 0.1 | 256,000[#4] | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | - | - | - | <0.1 | <0.1 | - | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | - |
| Dimethyl phthalate | mg/kg | 0.1 | | - | <0.1 | <0.1 | - | - | <0.1 | <0.1 | - | - | - | <0.1 | <0.1 | - | - | - | - | - | - | <0.1 | <0.1 | <0.1 | - | - | - |
| 2-nitroaniline | mg/kg | 0.01 | 8,000[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | 0.01 | 3,770[#4] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 2,6-dinitrotoluene | mg/kg | 0.01 | 1,890[#4] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 3-nitroaniline | mg/kg | 0.01 | | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 4-bromophenyl phenyl ether | mg/kg | 0.01 | | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 4-chloroaniline | mg/kg | 0.01 | 11[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 4-chlorophenyl phenyl ether | mg/kg | 0.01 | | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| 4-nitroaniline | mg/kg | 0.01 | 110[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Azobenzene | mg/kg | 0.01 | 26[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Bis(2-chloroethoxy) methane | mg/kg | 0.01 | 2,500[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Bis(2-chloroethyl)ether | mg/kg | 0.01 | 1[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Carbazole | mg/kg | 0.01 | | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Dibenzofuran | mg/kg | 0.01 | 1,000[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Hexachlorobenzene | mg/kg | 0.01 | 120[#3] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | 0.01 | 7.5[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Hexachloroethane | mg/kg | 0.01 | 56[#4] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Isophorone | mg/kg | 0.01 | 2,400[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| N-nitrosodi-n-propylamine | mg/kg | 0.01 | 0.33[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |
| Nitrobenzene | mg/kg | 0.01 | 22[#1] | - | <0.01 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | <0.01 | <0.01 | - | - | - | - | - | - | <0.01 | <0.01 | <0.01 | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | BH101 | | BH102 | | BH103 | | BH104 | BH106 | TP102 | | TP103 | TP104 | TP105 | TP106 | TP107 | TP108 | | TP110 | | TP111 | | TP112 | | TP113 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.5 | 14.7 | 13.8 | 2.2 | 0.5 | 9.3 | 1 | 1 | 0.6 | 2.5 | 3 | 0.8 | 2 | 0.5 | 0.2 | 0.5 | 1.5 | 0.2 | 1.4 | 2 | 3 | 0.5 | 2.5 | 2 |
| | | | | 08/12/2017 | 12/12/2017 | 06/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 11/12/2017 | 16/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 | 12/12/2017 | 12/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 20/12/2017 | 20/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 14/12/2017 | 13/12/2017 |
| **Halogenated Benzenes** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trichlorobenzene (total) | mg/kg | | | - | <0.014 | - | - | - | - | <0.014 | - | - | - | - | - | - | - | - | - | - | - | <0.014 | - | - | - | - | - |
| **Metals** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | mg/kg | 1 | 7,550[#4] | 6 | 2 | 4 | 7 | 7 | 3 | 5 | 8 | 2 | 1 | 2 | 5 | 7 | 2 | 4 | 3 | 7 | 2 | 2 | 2 | 2 | 1 | 2 | 7 |
| Arsenic | mg/kg | 0.5 | 640[#3] | 119.8 | 4.7 | 6.9 | 158.8 | 126.6 | 16.2 | 100.9 | 147.1 | 11.7 | 6.8 | 11 | 79.8 | 146.4 | 33.2 | 49.6 | 32.2 | 137 | 24.7 | 21 | 7.7 | 8.4 | 3 | 5.3 | 129.5 |
| Barium | mg/kg | 1 | 22,100[#4] | 352 | 1,575 | 185 | 328 | 624 | 472 | 352 | 474 | 202 | 188 | 402 | 315 | 504 | 265 | 320 | 323 | 379 | 256 | 286 | 298 | 198 | 192 | 153 | 418 |
| Beryllium | mg/kg | 0.5 | 12[#3] | 3.3 | 1.6 | 2.6 | 3.7 | 4.4 | 2.4 | 3.1 | 4.3 | 1.4 | 0.9 | 1 | 3 | 4.8 | 1.4 | 2.1 | 1.9 | 4 | 1.3 | 1.2 | 1 | 1.2 | 1.6 | 1.7 | 3.8 |
| Boron | mg/kg | 0.1 | 240,000[#3] | 2.6 | 2.9 | 3.1 | 15.9 | 10.6 | 13.8 | 2.7 | 10.1 | 7.8 | 1.9 | 2.6 | 14.2 | 25.7 | 3.3 | 5.1 | 4.5 | 5.5 | 0.6 | 1.2 | 1.4 | 1.9 | 2 | 1.1 | 3 |
| Cadmium | mg/kg | 0.1 | 190[#3] | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 1.2 | <0.1 | <0.1 | 0.1 | <0.1 | 1.1 | <0.1 | <0.1 | 0.4 | 0.3 | 0.3 | <0.1 | <0.1 | <0.1 | 0.5 | 0.1 | <0.1 | <0.1 | <0.1 |
| Chromium (III+VI) | mg/kg | 0.5 | Use CrIII or CrVI[#3] | 62.9 | 52.2 | 74.3 | 64.2 | 59.3 | 82.9 | 64.6 | 104.7 | 48.4 | 58.5 | 54 | 52.9 | 62.6 | 41.3 | 57.7 | 69.7 | 93.8 | 44.6 | 29.4 | 42.5 | 54.1 | 74.8 | 63.8 | 63.9 |
| Copper | mg/kg | 1 | 68,000[#3] | 80 | 3 | 10 | 89 | 85 | 24 | 70 | 94 | 21 | 10 | 17 | 60 | 85 | 27 | 54 | 32 | 89 | 28 | 31 | 10 | 13 | 128 | 13 | 80 |
| Iron | mg/kg | 20 | 820,000[#1] | 41,630 | 36,540 | 49,870 | 42,550 | 43,810 | 37,140 | 38,650 | 48,190 | 30,850 | 23,780 | 28,560 | 35,110 | 36,180 | 19,220 | 29,710 | 31,540 | 44,970 | 20,150 | 19,030 | 28,700 | 32,320 | 31,510 | 39,510 | 38,040 |
| Lead | mg/kg | 5 | 2,300[#2] | 49 | <5 | <5 | 38 | 55 | 131 | 54 | 52 | 35 | 47 | 182 | 30 | 39 | 49 | 50 | 69 | 39 | 12 | 8 | 73 | 38 | <5 | <5 | 49 |
| Manganese | mg/kg | 1 | 26,000[#1] | 412 | 647 | 764 | 291 | 509 | 790 | 415 | 333 | 636 | 391 | 857 | 309 | 274 | 417 | 530 | 454 | 338 | 217 | 287 | 853 | 881 | 545 | 509 | 338 |
| Mercury | mg/kg | 0.1 | 1,100[#3] | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Molybdenum | mg/kg | 0.1 | 17,700[#4] | 3.3 | 1.4 | 4.3 | 5 | 5.4 | 4.7 | 3.4 | 7.1 | 2.2 | 3.4 | 1.5 | 3.8 | 3.8 | 3.5 | 3.9 | 5 | 5.9 | 4.1 | 2.9 | 1.1 | 1.3 | 0.4 | 0.4 | 2.7 |
| Nickel | mg/kg | 0.7 | 980[#3] | 54.3 | 36.2 | 58.6 | 55.5 | 63.5 | 51.9 | 53.4 | 68.9 | 41.4 | 21.4 | 27.5 | 47.8 | 54.8 | 22.2 | 37.8 | 36.2 | 60.4 | 27.3 | 29.3 | 27.1 | 31.4 | 66 | 61.1 | 58 |
| Selenium | mg/kg | 1 | 12,000[#3] | 3 | <1 | <1 | 3 | 5 | 1 | 2 | 3 | 1 | <1 | <1 | 1 | 7 | 1 | 2 | 1 | 3 | <1 | <1 | <1 | <1 | <1 | <1 | 3 |
| Vanadium | mg/kg | 1 | 9,000[#3] | 104 | 45 | 72 | 113 | 122 | 81 | 98 | 136 | 42 | 32 | 35 | 90 | 115 | 37 | 64 | 61 | 122 | 39 | 31 | 34 | 44 | 67 | 49 | 116 |
| Zinc | mg/kg | 5 | 730,000[#3] | 87 | 53 | 79 | 62 | 90 | 225 | 82 | 80 | 87 | 68 | 163 | 55 | 63 | 92 | 198 | 117 | 67 | 27 | 22 | 98 | 92 | 81 | 73 | 75 |
| Chromium (hexavalent) | mg/kg | 0.3 | 33[#3] | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 |
| Chromium (Trivalent) | mg/kg | 0.5 | 8,600[#3] | 62.9 | 52.2 | 74.3 | 64.2 | 59.3 | 82.9 | 64.6 | 104.7 | 48.4 | 58.5 | 54 | 52.9 | 62.6 | 41.3 | 57.7 | 69.7 | 93.8 | 44.6 | 29.4 | 42.5 | 54.1 | 74.8 | 63.8 | 63.9 |
| **Organics** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOC | % | 0.02 | | 2.93 | 0.08 | 0.05 | 3.17 | 4.81 | 0.46 | 2.85 | 3.84 | 1.53 | 0.85 | 0.23 | 3.74 | 3.44 | 1.3 | 2.03 | 2.5 | 3.49 | 1.41 | 5.24 | 0.6 | 1.2 | 0.07 | 0.22 | 2.62 |
| **Inorganics** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fluoride | mg/kg | 0.3 | 47,000[#1] | 1.9 | - | - | <0.3 | <0.3 | - | 2.8 | - | 2.7 | - | - | 2.5 | 0.8 | 0.9 | 2.1 | - | - | 1.2 | 2.4 | - | - | - | 1.8 | 3.2 |
| Sulphate | mg/l | 1.5 | | 240.6 | - | - | 1,434 | 206 | - | 119 | - | 68.7 | - | - | 195.7 | 1,448 | 1,346 | 177.9 | - | - | 13.1 | 42.4 | - | - | - | 50.5 | 64.9 |
| Chloride | mg/kg | 2 | | 4 | - | - | 5 | 5 | - | <2 | - | 45 | - | - | 3 | 3 | 58 | 32 | - | - | 6 | 29 | - | - | - | 13 | 6 |
| Nitrate (as NO3-) | mg/kg | 2.5 | 1,900,000[#1] | <2.5 | - | - | <2.5 | <2.5 | - | <2.5 | - | 43 | - | - | <2.5 | <2.5 | 14.6 | <2.5 | - | - | <2.5 | <2.5 | - | - | - | <2.5 | <2.5 |
| Nitrite (as NO2-) | mg/kg | 0.05 | 120,000[#1] | <0.05 | - | - | <0.05 | <0.05 | - | <0.05 | - | 0.39 | - | - | <0.05 | <0.05 | 0.99 | <0.05 | - | - | <0.05 | <0.05 | - | - | - | 0.26 | <0.05 |
| Ortho Phosphate as PO4 | mg/kg | 0.3 | | 1.7 | - | - | <0.3 | 2 | - | 1.8 | - | 0.7 | - | - | 3.8 | <0.3 | <0.3 | 0.5 | - | - | 3.5 | 1 | - | - | - | <0.3 | 1.4 |
| Sulphide | mg/kg | 10 | | <10 | - | - | <10 | <10 | - | <10 | - | <10 | - | - | <10 | <10 | <10 | <10 | - | - | <10 | <10 | - | - | - | <10 | <10 |
| Cyanide Total | mg/kg | 0.5 | 1,200[#1] | <0.5 | - | - | <0.5 | <0.5 | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | - | - | <0.5 | - | - | <0.5 |
| Alkalinity (total) as CaCO3 | mg/kg | 10 | | 330 | - | - | 320 | 330 | - | 190 | - | 550 | - | - | 360 | 190 | 180 | 190 | - | - | 200 | 340 | - | - | - | 420 | 430 |
| Ammoniacal Nitrogen as N | mg/kg | 0.6 | | <0.6 | - | - | 2.9 | <0.6 | - | <0.6 | - | <0.6 | - | - | <0.6 | <0.6 | <0.6 | <0.6 | - | - | <0.6 | <0.6 | - | - | - | <0.6 | 3.9 |
| pH (Lab) | pH_Units | 0.01 | | 8.23 | 8.01 | 8.2 | 8.89 | 8.39 | 8.19 | 8.14 | 8.54 | 8 | 8.37 | 7.56 | 8.23 | 8.58 | 6.17 | 6.23 | 7.96 | 8.26 | 8.32 | 8.41 | 8.5 | 7.63 | 8.32 | 8.23 | 8.08 |
| **Other** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Natural Moisture Content | % | 0.1 | | 14.7 | 27.4 | 33 | 17.6 | 15 | 33.3 | 13.5 | 18.8 | 28.1 | 34.4 | 43.2 | 13.8 | 13.6 | 11.5 | 13.6 | 26.4 | 16.1 | 8.8 | 24 | 33.5 | 36.6 | 20.6 | 22.2 | 13.9 |
| **Asbestos** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Asbestos Type | None | | | 0 | - | - | 0 | 0 | - | 0 | 0 | - | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 0 | - | - | 0 |
| Asbestos Containing Material | None | | | 0 | - | - | 0 | 1 | - | 0 | 0 | - | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 0 | - | - | 0 |

**Comments**

#1 USEPA RSL (June 2017)
#2 Defra C4SL 12/2014
#3 AECOM (modified LQM/CIEH S4ULs)
#4 AECOM (modified EIC)
GAC: Generic Assessment Criteria
(blank): No assessment criteria available
 - : Not analysed
HH: Human Health

**Key**

XXX Exceedance of HH Soil. Commercial/Industrial. Sand. TOC >=3.48%

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | TP114 | TP115 | TP116 | WS102 | WS103 | WS104 | | WS105 | | | WS106 | WS107 | | | WS108 | | | | WS109 | WS110 | | WS111 | | | WS112 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 3 | 3 | 8.6 | 3.2 | 0.5 | 14 | 1.3 | 14.2 | 6.5 | 10 | 0.5 | 11.7 | 3 | 12 | 4.5 | 7 | 8.5 | 15 | 15 | 2 | 1 | 4 | 8.2 | 2 |
| | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 18/12/2017 | 13/12/2017 | 13/12/2017 | 15/12/2017 | 11/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 05/12/2017 | 06/12/2017 | 06/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 08/12/2017 | 15/12/2017 | 13/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 15/12/2017 |
| **TPH** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| >C5-C6 Aliphatics | mg/kg | 0.1 | 6,500$^{\#3}$ | - | - | - | <0.1 | - | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| >C6-C8 Aliphatics | mg/kg | 0.1 | 21,000$^{\#3}$ | - | - | - | <0.1 | - | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| >C8-C10 Aliphatics | mg/kg | 0.1 | 5,900$^{\#3}$ | - | - | - | <0.1 | - | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| >C10-C12 Aliphatics | mg/kg | 0.2 | 27,000$^{\#3}$ | - | - | - | <0.2 | - | - | <0.2 | - | <0.2 | - | <0.2 | - | <0.2 | - | <0.2 | - | - | <0.2 | <0.2 | <0.2 | - | - | - | - | - |
| >C12-C16 Aliphatics | mg/kg | 4 | 84,000$^{\#3}$ | - | - | - | <4 | - | - | <4 | - | <4 | - | <4 | - | <4 | - | <4 | - | - | <4 | <4 | <4 | - | - | - | - | - |
| >C16-C21 Aliphatics | mg/kg | 7 | | - | - | - | <7 | - | - | <7 | - | <7 | - | <7 | - | <7 | - | <7 | - | - | <7 | <7 | <7 | - | - | - | - | - |
| >C16-C35 Aliphatics | mg/kg | | 1,800,000$^{\#3}$ | - | - | - | - | - | - | - | - | - | - | - | - | <14 | - | <14 | - | - | <14 | <14 | - | - | - | - | - | - |
| >C21-C35 Aliphatics | mg/kg | 7 | | - | - | - | <7 | - | - | <7 | - | <7 | - | <7 | - | <7 | - | <7 | - | - | <7 | <7 | <7 | - | - | - | - | - |
| >C5-C35 Aliphatics | mg/kg | 19 | | - | - | - | <19 | - | - | <19 | - | <19 | - | <19 | - | <19 | - | <19 | - | - | <19 | <19 | <19 | - | - | - | - | - |
| >EC5-EC7 Aromatics | mg/kg | 0.1 | 46,000$^{\#3}$ | - | - | - | <0.1 | - | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| >EC7-EC8 Aromatics | mg/kg | 0.1 | 110,000$^{\#3}$ | - | - | - | <0.1 | - | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| >EC8-EC10 Aromatics | mg/kg | 0.1 | 9,700$^{\#3}$ | - | - | - | <0.1 | - | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| >EC10-EC12 Aromatics | mg/kg | 0.2 | 30,000$^{\#3}$ | - | - | - | <0.2 | - | - | <0.2 | - | <0.2 | - | <0.2 | - | <0.2 | - | <0.2 | - | - | <0.2 | <0.2 | <0.2 | - | - | - | - | - |
| >EC12-EC16 Aromatics | mg/kg | 4 | 37,000$^{\#3}$ | - | - | - | <4 | - | - | <4 | - | <4 | - | <4 | - | <4 | - | <4 | - | - | <4 | <4 | <4 | - | - | - | - | - |
| >EC16-EC21 Aromatics | mg/kg | 7 | 28,000$^{\#3}$ | - | - | - | <7 | - | - | <7 | - | <7 | - | <7 | - | <7 | - | <7 | - | - | <7 | <7 | <7 | - | - | - | - | - |
| >EC21-EC35 Aromatics | mg/kg | 7 | 28,000$^{\#3}$ | - | - | - | <7 | - | - | <7 | - | <7 | - | <7 | - | <7 | - | <7 | - | - | <7 | <7 | <7 | - | - | - | - | - |
| >EC5-EC35 Aromatics | mg/kg | 19 | | - | - | - | <19 | - | - | <19 | - | <19 | - | <19 | - | <19 | - | <19 | - | - | <19 | <19 | <19 | - | - | - | - | - |
| >C5-C35 Aliphatics & Aromatics | mg/kg | 38 | | - | - | - | <38 | - | - | <38 | - | <38 | - | <38 | - | <38 | - | <38 | - | - | <38 | <38 | <38 | - | - | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | TP114 | TP115 | TP116 | WS102 | WS103 | WS104 | | WS105 | | | WS106 | WS107 | | | WS108 | | | | WS109 | WS110 | | WS111 | | | WS112 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 3 | 3 | 8.6 | 3.2 | 0.5 | 14 | 1.3 | 14.2 | 6.5 | 10 | 0.5 | 11.7 | 3 | 12 | 4.5 | 7 | 8.5 | 15 | 15 | 2 | 1 | 4 | 8.2 | 2 |
| | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 18/12/2017 | 13/12/2017 | 13/12/2017 | 15/12/2017 | 11/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 05/12/2017 | 06/12/2017 | 06/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 08/12/2017 | 15/12/2017 | 13/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 15/12/2017 |
| **VOC** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dichlorodifluoromethane | mg/kg | 0.002 | 370[#1] | - | <0.002 | - | <0.002 | - | - | <0.002 | - | <0.002 | <0.002 | <0.002 | - | <0.01 | - | <0.002 | - | - | <0.01 | <0.002 | <0.002 | - | - | - | - | - |
| MTBE | mg/kg | 0.006 | 11,300[#4] | - | <0.006 | - | <0.006 | - | - | <0.006 | - | <0.006 | <0.006 | <0.006 | - | <0.03 | - | <0.006 | - | - | <0.03 | <0.006 | <0.006 | - | - | - | - | - |
| Chloromethane | mg/kg | 0.003 | 0.788[#4] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| Vinyl chloride | mg/kg | 0.002 | 0.061[#3] | - | <0.002 | - | <0.002 | - | - | <0.002 | - | <0.002 | <0.002 | <0.002 | - | <0.01 | - | <0.002 | - | - | <0.01 | <0.002 | <0.002 | - | - | - | - | - |
| Bromomethane | mg/kg | 0.001 | 30[#1] | - | <0.001 | - | <0.001 | - | - | <0.001 | - | <0.001 | <0.001 | <0.001 | - | <0.005 | - | <0.001 | - | - | <0.005 | <0.001 | <0.001 | - | - | - | - | - |
| Chloroethane | mg/kg | 0.006 | 1,050[#4] | - | <0.006 | - | <0.006 | - | - | <0.006 | - | <0.006 | <0.006 | <0.006 | - | <0.03 | - | <0.006 | - | - | <0.03 | <0.006 | <0.006 | - | - | - | - | - |
| Trichlorofluoromethane | mg/kg | 0.003 | 350,000[#1] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| 1,1-dichloroethene | mg/kg | 0.006 | 45.8[#4] | - | <0.006 | - | <0.006 | - | - | <0.006 | - | <0.006 | <0.006 | <0.006 | - | <0.03 | - | <0.006 | - | - | <0.03 | <0.006 | <0.006 | - | - | - | - | - |
| Dichloromethane | mg/kg | 0.03 | 269[#4] | - | <0.03 | - | <0.03 | - | - | <0.03 | - | <0.03 | <0.03 | <0.03 | - | <0.15 | - | <0.03 | - | - | <0.15 | <0.03 | <0.03 | - | - | - | - | - |
| trans-1,2-dichloroethene | mg/kg | 0.003 | 39.5[#4] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| 1,1-dichloroethane | mg/kg | 0.006 | 406[#4] | - | <0.006 | - | <0.006 | - | - | <0.006 | - | <0.006 | <0.006 | <0.006 | - | <0.03 | - | <0.006 | - | - | <0.03 | <0.006 | <0.006 | - | - | - | - | - |
| cis-1,2-dichloroethene | mg/kg | 0.007 | 22.7[#4] | - | <0.007 | - | <0.007 | - | - | <0.007 | - | <0.007 | <0.007 | <0.007 | - | <0.035 | - | <0.007 | - | - | <0.035 | <0.007 | <0.007 | - | - | - | - | - |
| 2,2-dichloropropane | mg/kg | 0.004 | | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Bromochloromethane | mg/kg | 0.004 | 630[#1] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Chloroform | mg/kg | 0.005 | 170[#3] | - | <0.005 | - | <0.005 | - | - | <0.005 | - | <0.005 | <0.005 | <0.005 | - | <0.025 | - | <0.005 | - | - | <0.025 | <0.005 | <0.005 | - | - | - | - | - |
| 1,1,1-trichloroethane | mg/kg | 0.005 | 1,400[#3] | - | <0.005 | - | <0.005 | - | - | <0.005 | - | <0.005 | <0.005 | <0.005 | - | <0.025 | - | <0.005 | - | - | <0.025 | <0.005 | <0.005 | - | - | - | - | - |
| 1,1-dichloropropene | mg/kg | 0.003 | | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| Carbon tetrachloride | mg/kg | 0.004 | 6.8[#3] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| 1,2-dichloroethane | mg/kg | 0.005 | 0.77[#3] | - | <0.005 | - | <0.005 | - | - | <0.005 | - | <0.005 | <0.005 | <0.005 | - | <0.025 | - | <0.005 | - | - | <0.025 | <0.005 | <0.005 | - | - | - | - | - |
| Benzene | mg/kg | 0.005 | 48[#3] | - | <0.005 | - | <0.005 | - | - | <0.005 | - | <0.005 | <0.005 | <0.005 | - | <0.025 | - | <0.005 | - | - | <0.025 | <0.005 | <0.005 | - | - | - | - | - |
| Trichloroethene | mg/kg | 0.005 | 2.7[#3] | - | <0.005 | - | <0.005 | - | - | <0.005 | - | <0.005 | <0.005 | <0.005 | - | <0.025 | - | <0.005 | - | - | <0.025 | <0.005 | <0.005 | - | - | - | - | - |
| 1,2-dichloropropane | mg/kg | 0.004 | 5.51[#4] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Dibromomethane | mg/kg | 0.004 | 99[#1] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Bromodichloromethane | mg/kg | 0.004 | 1.3[#1] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| cis-1,3-dichloropropene | mg/kg | 0.004 | | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Toluene | mg/kg | 0.003 | 110,000[#3] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | 0.006 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| trans-1,3-dichloropropene | mg/kg | 0.003 | | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| 1,1,2-trichloroethane | mg/kg | 0.004 | 198[#4] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Tetrachloroethene | mg/kg | 0.003 | 45[#3] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| 1,3-dichloropropane | mg/kg | 0.004 | 23,000[#1] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Sum of PCE and TCE | mg/kg | | | - | - | - | - | - | - | - | - | - | <0.008 | - | - | <0.04 | - | <0.008 | - | - | <0.04 | <0.008 | - | - | - | - | - | - |
| Chlorodibromomethane | mg/kg | 0.005 | 39[#1] | - | <0.005 | - | <0.005 | - | - | <0.005 | - | <0.005 | <0.005 | <0.005 | - | <0.025 | - | <0.005 | - | - | <0.025 | <0.005 | <0.005 | - | - | - | - | - |
| TCE+DCE+VC | mg/kg | | | - | - | - | - | - | - | - | - | - | <0.023 | - | - | <0.115 | - | <0.023 | - | - | <0.115 | <0.023 | - | - | - | - | - | - |
| 1,2-dibromoethane | mg/kg | 0.003 | 0.16[#1] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| PCE+TCE+DCE+VC | mg/kg | | | - | - | - | - | - | - | - | - | - | <0.026 | - | - | <0.13 | - | <0.026 | - | - | <0.13 | <0.026 | - | - | - | - | - | - |
| 1,1,1,2-tetrachloroethane | mg/kg | 0.005 | 270[#3] | - | <0.005 | - | <0.005 | - | - | <0.005 | - | <0.005 | <0.005 | <0.005 | - | <0.025 | - | <0.005 | - | - | <0.025 | <0.005 | <0.005 | - | - | - | - | - |
| Ethylbenzene | mg/kg | 0.003 | 14,000[#3] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| Xylene (m & p) | mg/kg | 0.004 | | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | 0.011 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Xylene Total | mg/kg | | 15,000[#3] | - | - | - | - | - | - | - | - | - | 0.015 | - | - | <0.04 | - | <0.008 | - | - | <0.04 | <0.008 | - | - | - | - | - | - |
| Xylene (o) | mg/kg | 0.004 | 16,000[#3] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Total BTEX | mg/kg | | | - | - | - | - | - | - | - | - | - | 0.026 | - | - | <0.095 | - | <0.019 | - | - | <0.095 | <0.019 | - | - | - | - | - | - |
| Styrene | mg/kg | 0.003 | 6,860[#4] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| Bromoform | mg/kg | 0.004 | 1,590[#4] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Isopropylbenzene | mg/kg | 0.003 | 3,610[#4] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| 1,1,2,2-tetrachloroethane | mg/kg | 0.003 | 560[#3] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| 1,2,3-trichloropropane | mg/kg | 0.004 | 0.11[#1] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| n-propylbenzene | mg/kg | 0.004 | 10,400[#4] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| 1,3,5-trimethylbenzene | mg/kg | 0.003 | 1,500[#1] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| tert-butylbenzene | mg/kg | 0.005 | 120,000[#1] | - | <0.005 | - | <0.005 | - | - | <0.005 | - | <0.005 | <0.005 | <0.005 | - | <0.025 | - | <0.005 | - | - | <0.025 | <0.005 | <0.005 | - | - | - | - | - |
| 1,2,4-trimethylbenzene | mg/kg | 0.006 | 107[#4] | - | <0.006 | - | <0.006 | - | - | <0.006 | - | <0.006 | <0.006 | <0.006 | - | <0.03 | - | <0.006 | - | - | <0.03 | <0.006 | <0.006 | - | - | - | - | - |
| sec-butylbenzene | mg/kg | 0.004 | 120,000[#1] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| p-isopropyltoluene | mg/kg | 0.004 | | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| n-butylbenzene | mg/kg | 0.004 | 58,000[#1] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| 1,2-dibromo-3-chloropropane | mg/kg | 0.004 | 0.064[#1] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| 1,2-Dichloroethene | mg/kg | | | - | - | - | - | - | - | - | - | - | <0.01 | - | - | <0.05 | - | <0.01 | - | - | <0.05 | <0.01 | - | - | - | - | - | - |
| Trihalomethanes | mg/kg | | | - | - | - | - | - | - | - | - | - | <0.018 | - | - | <0.09 | - | <0.018 | - | - | <0.09 | <0.018 | - | - | - | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | TP114 | TP115 | TP116 | WS102 | WS103 | WS104 | | WS105 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 3 | 3 | 8.6 | 3.2 | 0.5 | 14 | 1.3 | 14.2 | 6.5 |
| | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 18/12/2017 | 13/12/2017 | 13/12/2017 | 15/12/2017 | 11/12/2017 | 12/12/2017 | 12/12/2017 |
| **PAH** | | | | | | | | | | | | | |
| Naphthalene | mg/kg | 0.01 | 520[#3] | 0.09 | <0.01 | - | <0.01 | - | - | <0.027 | - | <0.01 | <0.01 |
| Acenaphthylene | mg/kg | 0.01 | 100,000[#3] | <0.03 | <0.01 | - | <0.01 | - | - | <0.03 | - | <0.01 | <0.01 |
| Acenaphthene | mg/kg | 0.01 | 100,000[#3] | <0.05 | <0.01 | - | <0.01 | - | - | <0.05 | - | <0.01 | <0.01 |
| Fluorene | mg/kg | 0.01 | 70,000[#3] | <0.04 | <0.01 | - | <0.01 | - | - | <0.04 | - | <0.01 | <0.01 |
| Phenanthrene | mg/kg | 0.01 | 23,000[#3] | 0.1 | <0.01 | - | <0.01 | - | - | 0.04 | - | <0.01 | <0.01 |
| Anthracene | mg/kg | 0.01 | 540,000[#3] | <0.04 | <0.01 | - | <0.01 | - | - | <0.04 | - | <0.01 | <0.01 |
| Fluoranthene | mg/kg | 0.01 | 23,000[#3] | 0.1 | <0.01 | - | <0.01 | - | - | <0.03 | - | <0.01 | <0.01 |
| Pyrene | mg/kg | 0.01 | 54,000[#3] | 0.09 | <0.01 | - | <0.01 | - | - | <0.03 | - | <0.01 | <0.01 |
| Benzo(a)anthracene | mg/kg | 0.01 | 180[#3] | 0.13 | <0.01 | - | <0.01 | - | - | <0.06 | - | <0.01 | <0.01 |
| Chrysene | mg/kg | 0.01 | 360[#3] | 0.07 | <0.01 | - | <0.01 | - | - | <0.02 | - | <0.01 | <0.01 |
| Benzo(a)pyrene | mg/kg | 0.01 | 36[#3] | <0.04 | <0.01 | - | <0.01 | - | - | <0.04 | - | <0.01 | <0.01 |
| Indeno(1,2,3-c,d)pyrene | mg/kg | 0.01 | 510[#3] | <0.04 | <0.01 | - | <0.01 | - | - | <0.04 | - | <0.01 | <0.01 |
| Dibenzo(a,h)anthracene | mg/kg | 0.01 | 3.6[#3] | <0.04 | <0.01 | - | <0.01 | - | - | <0.04 | - | <0.01 | <0.01 |
| Benzo(g,h,i)perylene | mg/kg | 0.01 | 4,000[#3] | 0.06 | <0.01 | - | <0.01 | - | - | <0.04 | - | <0.01 | <0.01 |
| Benzo(b)fluoranthene | mg/kg | 0.01 | 45[#3] | 0.08 | <0.01 | - | <0.01 | - | - | <0.05 | - | <0.01 | <0.01 |
| Benzo(k)fluoranthene | mg/kg | 0.01 | 1,200[#3] | 0.03 | <0.01 | - | <0.01 | - | - | <0.02 | - | <0.01 | <0.01 |
| Benzo(b)&(k)fluoranthene | mg/kg | 0.01 | | 0.11 | <0.01 | - | <0.01 | - | - | <0.07 | - | <0.01 | <0.01 |
| PAHs (sum of 4) | mg/kg | | | - | - | - | - | - | - | - | - | - | <0.04 |
| PAH 16 Total | mg/kg | 0.6 | | 0.8 | - | - | - | - | - | <0.6 | - | - | - |
| benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene | mg/kg | | | - | - | - | - | - | - | - | - | - | <0.02 |
| Coal Tar (Bap as surrogate marker) | mg/kg | | 15[#3] | - | - | - | - | - | - | - | - | - | <0.01 |

| | WS106 | WS107 | | | WS108 | | | | WS109 | WS110 | | WS111 | | | WS112 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 0.5 | 11.7 | 3 | 12 | 4.5 | 7 | 8.5 | 15 | 15 | 2 | 1 | 4 | 8.2 | 2 |
| | 12/12/2017 | 05/12/2017 | 06/12/2017 | 06/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 08/12/2017 | 15/12/2017 | 13/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 15/12/2017 |
| **PAH** | | | | | | | | | | | | | | | |
| Naphthalene | <0.01 | <0.04 | <0.01 | <0.04 | <0.01 | - | <0.04 | <0.01 | <0.01 | <0.01 | <0.04 | - | - | - | 1 |
| Acenaphthylene | <0.01 | <0.03 | <0.01 | <0.03 | <0.01 | - | <0.03 | <0.01 | <0.01 | <0.01 | <0.03 | - | - | - | 0.09 |
| Acenaphthene | <0.01 | <0.05 | <0.01 | <0.05 | <0.01 | - | <0.05 | <0.01 | <0.01 | <0.01 | <0.05 | - | - | - | 0.37 |
| Fluorene | <0.01 | <0.04 | <0.01 | <0.04 | <0.01 | - | <0.04 | <0.01 | <0.01 | <0.01 | <0.04 | - | - | - | 0.38 |
| Phenanthrene | 0.041 | 0.08 | <0.01 | 0.07 | <0.01 | - | <0.03 | <0.01 | <0.01 | <0.01 | <0.03 | - | - | - | 2.45 |
| Anthracene | <0.01 | <0.04 | <0.01 | <0.04 | <0.01 | - | <0.04 | <0.01 | <0.01 | <0.01 | <0.04 | - | - | - | 0.73 |
| Fluoranthene | <0.01 | 0.13 | <0.01 | 0.09 | <0.01 | - | <0.03 | <0.01 | <0.01 | <0.01 | <0.03 | - | - | - | 3 |
| Pyrene | <0.01 | 0.13 | <0.01 | 0.07 | <0.01 | - | <0.03 | <0.01 | <0.01 | <0.01 | <0.03 | - | - | - | 2.47 |
| Benzo(a)anthracene | <0.01 | 0.1 | <0.01 | 0.09 | <0.01 | - | <0.06 | <0.01 | <0.01 | <0.01 | <0.06 | - | - | - | 1.51 |
| Chrysene | <0.01 | 0.08 | <0.01 | 0.04 | <0.01 | - | <0.02 | <0.01 | <0.01 | <0.01 | <0.02 | - | - | - | 1.01 |
| Benzo(a)pyrene | <0.01 | 0.06 | <0.01 | <0.04 | <0.01 | - | <0.04 | <0.01 | <0.01 | <0.01 | <0.04 | - | - | - | 1.08 |
| Indeno(1,2,3-c,d)pyrene | <0.01 | <0.04 | <0.01 | <0.04 | <0.01 | - | <0.04 | <0.01 | <0.01 | <0.01 | <0.04 | - | - | - | 0.65 |
| Dibenzo(a,h)anthracene | <0.01 | <0.04 | <0.01 | <0.04 | <0.01 | - | <0.04 | <0.01 | <0.01 | <0.01 | <0.04 | - | - | - | 0.15 |
| Benzo(g,h,i)perylene | <0.01 | <0.04 | <0.01 | <0.04 | <0.01 | - | <0.04 | <0.01 | <0.01 | <0.01 | <0.04 | - | - | - | 0.62 |
| Benzo(b)fluoranthene | <0.01 | 0.1 | <0.01 | <0.05 | <0.01 | - | <0.05 | <0.01 | <0.01 | <0.01 | <0.05 | - | - | - | 1.42 |
| Benzo(k)fluoranthene | <0.01 | 0.04 | <0.01 | <0.02 | <0.01 | - | <0.02 | <0.01 | <0.01 | <0.01 | <0.02 | - | - | - | 0.55 |
| Benzo(b)&(k)fluoranthene | <0.01 | 0.14 | <0.01 | <0.07 | <0.01 | - | <0.07 | <0.01 | <0.01 | <0.01 | <0.07 | - | - | - | 1.97 |
| PAHs (sum of 4) | - | 0.22 | <0.04 | <0.15 | <0.04 | - | - | <0.04 | <0.04 | - | - | - | - | - | - |
| PAH 16 Total | - | 0.7 | - | <0.6 | - | - | <0.6 | - | - | - | <0.6 | - | - | - | 17.5 |
| benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene | - | <0.08 | <0.02 | <0.08 | <0.02 | - | - | <0.02 | <0.02 | - | - | - | - | - | - |
| Coal Tar (Bap as surrogate marker) | - | 0.06 | <0.01 | <0.04 | <0.01 | - | - | <0.01 | <0.01 | - | - | - | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | TP114 | TP115 | TP116 | WS102 | WS103 | WS104 | | WS105 | | | WS106 | WS107 | | | WS108 | | | | WS109 | WS110 | | WS111 | | | WS112 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 3 | 3 | 8.6 | 3.2 | 0.5 | 14 | 1.3 | 14.2 | 6.5 | 10 | 0.5 | 11.7 | 3 | 12 | 4.5 | 7 | 8.5 | 15 | 15 | 2 | 1 | 4 | 8.2 | 2 |
| | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 18/12/2017 | 13/12/2017 | 13/12/2017 | 15/12/2017 | 11/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 05/12/2017 | 06/12/2017 | 06/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 08/12/2017 | 15/12/2017 | 13/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 15/12/2017 |
| **SVOC** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | mg/kg | 0.004 | 140[#3] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.02 | - | <0.004 | - | - | <0.02 | <0.004 | <0.004 | - | - | - | - | - |
| Bromobenzene | mg/kg | 0.002 | 245[#4] | - | <0.002 | - | <0.002 | - | - | <0.002 | - | <0.002 | <0.002 | <0.002 | - | <0.01 | - | <0.002 | - | - | <0.01 | <0.002 | <0.002 | - | - | - | - | - |
| 2-chlorotoluene | mg/kg | 0.003 | 23,000[#1] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| 4-chlorotoluene | mg/kg | 0.003 | 23,000[#1] | - | <0.003 | - | <0.003 | - | - | <0.003 | - | <0.003 | <0.003 | <0.003 | - | <0.015 | - | <0.003 | - | - | <0.015 | <0.003 | <0.003 | - | - | - | - | - |
| 1,3-dichlorobenzene | mg/kg | 0.004 | 80[#3] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.01 | - | <0.004 | - | - | <0.01 | <0.004 | <0.004 | - | - | - | - | - |
| 1,4-dichlorobenzene | mg/kg | 0.004 | 11,000[#3] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.01 | - | <0.004 | - | - | <0.01 | <0.004 | <0.004 | - | - | - | - | - |
| 1,2-dichlorobenzene | mg/kg | 0.004 | 5,300[#3] | - | <0.01 - 0.03 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.01 | - | <0.004 | - | - | <0.01 | <0.004 | <0.004 | - | - | - | - | - |
| 1,2,4-trichlorobenzene | mg/kg | 0.007 | 580[#3] | - | <0.007 | - | <0.007 | - | - | <0.007 | - | <0.007 | <0.007 | <0.007 | - | <0.01 | - | <0.007 | - | - | <0.01 | <0.007 | <0.007 | - | - | - | - | - |
| Hexachlorobutadiene | mg/kg | 0.004 | 69[#3] | - | <0.004 | - | <0.004 | - | - | <0.004 | - | <0.004 | <0.004 | <0.004 | - | <0.01 | - | <0.004 | - | - | <0.01 | <0.004 | <0.004 | - | - | - | - | - |
| 1,2,3-trichlorobenzene | mg/kg | 0.007 | 270[#3] | - | <0.007 | - | <0.007 | - | - | <0.007 | - | <0.007 | <0.007 | <0.007 | - | <0.035 | - | <0.007 | - | - | <0.035 | <0.007 | <0.007 | - | - | - | - | - |
| 2-chlorophenol | mg/kg | 0.01 | 5,800[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2-methylphenol | mg/kg | 0.01 | 41,000[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2-nitrophenol | mg/kg | 0.01 | | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2,4-dichlorophenol | mg/kg | 0.01 | 2,500[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2,4-dimethylphenol | mg/kg | 0.01 | 27,300[#4] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2,4,5-trichlorophenol | mg/kg | 0.01 | 82,000[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2,4,6-trichlorophenol | mg/kg | 0.01 | 210[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 4-chloro-3-methylphenol | mg/kg | 0.01 | 82,000[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 4-methylphenol | mg/kg | 0.01 | 82,000[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 4-nitrophenol | mg/kg | 0.01 | | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Pentachlorophenol | mg/kg | 0.01 | 400[#3] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Phenol | mg/kg | 0.01 | 1,200[#3] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2-chloronaphthalene | mg/kg | 0.01 | 1,080[#4] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2-methylnaphthalene | mg/kg | 0.01 | 3,000[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Bis(2-ethylhexyl) phthalate | mg/kg | 0.1 | 86,100[#4] | - | <0.1 | - | <0.1 | - | - | <0.1 | - | <0.1 | <0.1 | 0.228 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| Butyl benzyl phthalate | mg/kg | 0.1 | 946,000[#4] | - | <0.1 | - | <0.1 | - | - | <0.1 | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| Di-n-butyl phthalate | mg/kg | 0.1 | 15,400[#4] | - | <0.1 | - | <0.1 | - | - | <0.1 | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| Di-n-octyl phthalate | mg/kg | 0.1 | 89,100[#4] | - | <0.1 | - | <0.1 | - | - | <0.1 | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| Diethylphthalate | mg/kg | 0.1 | 256,000[#4] | - | <0.1 | - | <0.1 | - | - | <0.1 | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| Dimethyl phthalate | mg/kg | 0.1 | | - | <0.1 | - | <0.1 | - | - | <0.1 | - | <0.1 | <0.1 | <0.1 | - | <0.1 | - | <0.1 | - | - | <0.1 | <0.1 | <0.1 | - | - | - | - | - |
| 2-nitroaniline | mg/kg | 0.01 | 8,000[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | 0.01 | 3,770[#4] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 2,6-dinitrotoluene | mg/kg | 0.01 | 1,890[#4] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 3-nitroaniline | mg/kg | 0.01 | | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 4-bromophenyl phenyl ether | mg/kg | 0.01 | | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 4-chloroaniline | mg/kg | 0.01 | 11[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 4-chlorophenyl phenyl ether | mg/kg | 0.01 | | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| 4-nitroaniline | mg/kg | 0.01 | 110[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Azobenzene | mg/kg | 0.01 | 26[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Bis(2-chloroethoxy) methane | mg/kg | 0.01 | 2,500[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Bis(2-chloroethyl)ether | mg/kg | 0.01 | 1[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Carbazole | mg/kg | 0.01 | | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Dibenzofuran | mg/kg | 0.01 | 1,000[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Hexachlorobenzene | mg/kg | 0.01 | 120[#3] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | 0.01 | 7.5[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Hexachloroethane | mg/kg | 0.01 | 56[#4] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Isophorone | mg/kg | 0.01 | 2,400[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| N-nitrosodi-n-propylamine | mg/kg | 0.01 | 0.33[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |
| Nitrobenzene | mg/kg | 0.01 | 22[#1] | - | <0.01 | - | <0.01 | - | - | <0.01 | - | <0.01 | <0.01 | <0.01 | - | <0.01 | - | <0.01 | - | - | <0.01 | <0.01 | <0.01 | - | - | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND >3.48%TOC | TP114 | TP115 | TP116 | WS102 | WS103 | WS104 | | WS105 | | | WS106 | WS107 | | | WS108 | | | | WS109 | WS110 | | WS111 | | | WS112 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 3 | 3 | 8.6 | 3.2 | 0.5 | 14 | 1.3 | 14.2 | 6.5 | 10 | 0.5 | 11.7 | 3 | 12 | 4.5 | 7 | 8.5 | 15 | 15 | 2 | 1 | 4 | 8.2 | 2 |
| | | | | 13/12/2017 | 13/12/2017 | 13/12/2017 | 18/12/2017 | 13/12/2017 | 13/12/2017 | 15/12/2017 | 11/12/2017 | 12/12/2017 | 12/12/2017 | 12/12/2017 | 05/12/2017 | 06/12/2017 | 06/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 07/12/2017 | 08/12/2017 | 15/12/2017 | 13/12/2017 | 05/12/2017 | 05/12/2017 | 06/12/2017 | 15/12/2017 |
| **Halogenated Benzenes** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trichlorobenzene (total) | mg/kg | | | - | - | - | - | - | - | - | - | - | <0.014 | - | - | <0.045 | - | <0.014 | - | - | <0.045 | <0.014 | - | - | - | - | - | - |
| **Metals** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | mg/kg | 1 | 7,550[#4] | 3 | 3 | 5 | 2 | 7 | 6 | 1 | 7 | 1 | 4 | 2 | 4 | 5 | 4 | 2 | 3 | 4 | 8 | 2 | 2 | 8 | 7 | 8 | 7 | 4 |
| Arsenic | mg/kg | 0.5 | 640[#3] | 23.9 | 45 | 65.3 | 7.3 | 155.3 | 120.2 | 10 | 139.4 | 6 | 63.6 | 19 | 44.4 | 17.8 | 72.9 | 11.2 | 17.9 | 152.4 | 113.9 | 3.6 | 4.2 | 157.2 | 105.7 | 141.4 | 107.5 | 32.9 |
| Barium | mg/kg | 1 | 22,100[#4] | 286 | 198 | 330 | 272 | 370 | 601 | 263 | 420 | 1,094 | 443 | 272 | 365 | 223 | 326 | 211 | 192 | 922 | 358 | 740 | 1,671 | 421 | 594 | 349 | 722 | 373 |
| Beryllium | mg/kg | 0.5 | 12[#3] | 1.8 | 1.8 | 2.9 | 2.3 | 3.6 | 4.3 | 0.9 | 3.9 | 1.5 | 2.7 | 1.3 | 2.3 | 1.2 | 2.3 | 1 | 2.2 | 5.8 | 4.5 | 1.7 | 1.7 | 4.3 | 4.2 | 4.2 | 5.1 | 1.7 |
| Boron | mg/kg | 0.1 | 240,000[#3] | 5.4 | 2.2 | 7.6 | 2.3 | 27.5 | 17.4 | 9 | 8.9 | 4.8 | 19 | 8.1 | 4.9 | 5.2 | 24.8 | 3.4 | 13.9 | 30.7 | 10.6 | 3.7 | 1.4 | 40.2 | 26.4 | 14.4 | 17.9 | 2.8 |
| Cadmium | mg/kg | 0.1 | 190[#3] | 0.6 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.4 | <0.1 | <0.1 | 0.8 | <0.1 | 0.4 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 2.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| Chromium (III+VI) | mg/kg | 0.5 | Use CrIII or CrVI[#3] | 47.7 | 37.6 | 57.9 | 58 | 62.4 | 88 | 28.9 | 69.5 | 52.3 | 73.4 | 32.6 | 52.4 | 69.2 | 55.2 | 30.7 | 62.2 | 73 | 69.2 | 88.8 | 45 | 99.8 | 89.2 | 64.1 | 70.8 | 27.8 |
| Copper | mg/kg | 1 | 68,000[#3] | 31 | 47 | 61 | 4 | 84 | 85 | 7 | 85 | 9 | 50 | 16 | 49 | 19 | 53 | 11 | 29 | 117 | 87 | 20 | 5 | 89 | 79 | 95 | 119 | 63 |
| Iron | mg/kg | 20 | 820,000[#1] | 33,340 | 27,760 | 32,280 | 45,140 | 36,970 | 43,640 | 25,330 | 43,320 | 31,180 | 45,970 | 29,710 | 35,820 | 40,259 | 34,020 | 29,620 | 38,040 | 39,560 | 36,360 | 31,390 | 35,230 | 43,290 | 42,560 | 40,230 | 38,880 | 26,903 |
| Lead | mg/kg | 5 | 2,300[#2] | 101 | 10 | 37 | <5 | 42 | 59 | 69 | 48 | 6 | 98 | 14 | 64 | 16 | 27 | 12 | 8 | 60 | 46 | <5 | <5 | 43 | 61 | 42 | 64 | 43 |
| Manganese | mg/kg | 1 | 26,000[#1] | 857 | 385 | 526 | 530 | 255 | 468 | 634 | 383 | 549 | 670 | 1,013 | 667 | 850 | 345 | 699 | 813 | 846 | 349 | 217 | 509 | 307 | 371 | 327 | 307 | 463 |
| Mercury | mg/kg | 0.1 | 1,100[#3] | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | 0.2 | <0.1 |
| Molybdenum | mg/kg | 0.1 | 17,700[#4] | 3.6 | 4.7 | 3.3 | 1.1 | 4.1 | 6.8 | 38.2 | 4.8 | 1.4 | 9.4 | 5.5 | 3.5 | 5.2 | 4.9 | 1.5 | 5.8 | 4.9 | 5.4 | 5.9 | 1.2 | 8.4 | 7.1 | 6 | 6.4 | 3.7 |
| Nickel | mg/kg | 0.7 | 980[#3] | 38.1 | 38.2 | 48.7 | 51.9 | 56 | 63 | 23.1 | 59.8 | 34.9 | 97.8 | 31 | 42.7 | 28.1 | 50 | 26 | 62.7 | 83.4 | 65 | 56.3 | 38.8 | 62.4 | 63.6 | 65.9 | 75.8 | 37.5 |
| Selenium | mg/kg | 1 | 12,000[#3] | 2 | 2 | 2 | <1 | 3 | 5 | <1 | 3 | <1 | 3 | 1 | 1 | 1 | 4 | <1 | 2 | 5 | 4 | 1 | <1 | 4 | 3 | 4 | 4 | 4 |
| Vanadium | mg/kg | 1 | 9,000[#3] | 57 | 50 | 75 | 61 | 113 | 121 | 33 | 116 | 41 | 86 | 44 | 71 | 43 | 76 | 37 | 51 | 169 | 120 | 59 | 49 | 129 | 130 | 129 | 148 | 48 |
| Zinc | mg/kg | 5 | 730,000[#3] | 146 | 27 | 82 | 81 | 75 | 95 | 94 | 72 | 68 | 161 | 65 | 120 | 73 | 52 | 64 | 83 | 75 | 62 | 88 | 54 | 68 | 78 | 71 | 87 | 150 |
| Chromium (hexavalent) | mg/kg | 0.3 | 33[#3] | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 |
| Chromium (Trivalent) | mg/kg | 0.5 | 8,600[#3] | 47.7 | 37.6 | 57.9 | 58 | 62.4 | 88 | 28.9 | 69.5 | 52.3 | 73.4 | 32.6 | 52.4 | 69.2 | 55.2 | 30.7 | 62.2 | 73 | 69.2 | 88.8 | 45 | 99.8 | 89.2 | 64.1 | 70.8 | 27.8 |
| **Organics** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOC | % | 0.02 | | 3.66 | 0.16 | 1.95 | 0.08 | 3.39 | 6.12 | 0.95 | 3.31 | 0.28 | 2.55 | 0.51 | 2.9 | 0.56 | 3.69 | 0.54 | 0.42 | 2.39 | 3.78 | 0.27 | 0.06 | 3.26 | 6.56 | 3.65 | 4.83 | - |
| **Inorganics** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fluoride | mg/kg | 0.3 | 47,000[#1] | 1.9 | 1.5 | 2.2 | 3.1 | 0.6 | - | 0.5 | 2.7 | - | 4.1 | 1.5 | 1.5 | - | 0.7 | 2.2 | 2.4 | <0.3 | <0.3 | - | 1.8 | - | - | <0.3 | 0.5 | 3.4 |
| Sulphate | mg/l | 1.5 | | 25.5 | 56.8 | 52.1 | 144.1 | 1,575 | - | 469.3 | 283 | - | 668.2 | 1,239 | 483.7 | - | 818.1 | 932.6 | 255.2 | 734.2 | 461.3 | - | 143.9 | - | - | 1,484 | 1,105 | 204.5 |
| Chloride | mg/kg | 2 | | 24 | 4 | 31 | 17 | 11 | - | 44 | 15 | - | 18 | 46 | 79 | - | 58 | 48 | 84 | 63 | 14 | - | 32 | - | - | 7 | 945 | 20 |
| Nitrate (as NO3-) | mg/kg | 2.5 | 1,900,000[#1] | <2.5 | <2.5 | <2.5 | <2.5 | <2.5 | - | <2.5 | <2.5 | - | <2.5 | <2.5 | 29.2 | - | <2.5 | <2.5 | <2.5 | <2.5 | <2.5 | - | <2.5 | - | - | <2.5 | <2.5 | 37.3 |
| Nitrite (as NO2-) | mg/kg | 0.05 | 120,000[#1] | <0.05 | <0.05 | 0.16 | <0.05 | <0.05 | - | <0.05 | <0.05 | - | <0.05 | 0.2 | 0.46 | - | 0.23 | <0.05 | <0.05 | 0.56 | <0.05 | - | <0.05 | - | - | <0.05 | 0.46 | 5.64 |
| Ortho Phosphate as PO4 | mg/kg | 0.3 | | <0.3 | <0.3 | 1.2 | <0.3 | 0.5 | - | <0.3 | 1.8 | - | <0.3 | <0.3 | 0.4 | - | 0.4 | <0.3 | 0.4 | <0.3 | <0.3 | - | <0.3 | - | - | <0.3 | <0.3 | <0.3 |
| Sulphide | mg/kg | 10 | | <10 | <10 | <10 | <10 | <10 | - | <10 | <10 | - | <10 | <10 | <10 | - | <10 | <10 | <10 | <10 | <10 | - | <10 | - | - | <10 | <10 | <10 |
| Cyanide Total | mg/kg | 0.5 | 1,200[#1] | <0.5 | - | - | - | <0.5 | <0.5 | - | <0.5 | - | <0.5 | - | <0.5 | - | <0.5 | - | <0.5 | <0.5 | <0.5 | - | - | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Alkalinity (total) as CaCO3 | mg/kg | 10 | | 640 | 420 | 620 | 430 | 320 | - | 560 | 320 | - | 180 | 440 | 580 | - | 320 | 400 | 440 | 390 | 330 | - | 480 | - | - | 320 | 390 | - |
| Ammoniacal Nitrogen as N | mg/kg | 0.6 | | 11 | <0.6 | 3 | <0.6 | <0.6 | - | 17.9 | <0.6 | - | 7.9 | <0.6 | <0.6 | - | <0.6 | <0.6 | <0.6 | <0.6 | <0.6 | - | <0.6 | - | - | <0.6 | <0.6 | 4.6 |
| pH (Lab) | pH_Units | 0.01 | | 7.42 | 8.46 | 8.4 | 8.31 | 8.05 | 8.15 | - | 6.18 | 8.29 | 6.43 | 8.12 | 8.01 | 8.32 | 8.5 | 8.41 | 8.47 | 8.69 | 9.22 | 8.19 | 8.77 | 9.09 | 8.12 | 8.89 | 8.97 | 7.92 |
| **Other** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Natural Moisture Content | % | 0.1 | | 43.6 | 16.2 | 16.5 | 45.5 | 22.2 | 30 | 38.9 | 19.2 | 29.2 | 18.7 | 27.9 | 21.4 | 31.9 | 23.5 | 29 | 21.4 | 21.3 | 19.6 | 34.5 | 31.7 | 23.1 | 20.5 | 19.6 | 24.3 | - |
| **Asbestos** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Asbestos Type | None | | | 0 | - | - | - | 0 | 0 | 0 | 0 | - | 0 | - | 0 | - | 0 | - | 0 | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 1 |
| Asbestos Containing Material | None | | | 0 | - | - | - | 0 | 0 | 0 | 0 | - | 0 | - | 0 | - | 0 | - | 0 | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 |

**Comments**

#1 USEPA RSL (June 2017)
#2 Defra C4SL 12/2014
#3 AECOM (modified LQM/CIEH S4ULs)
#4 AECOM (modified EIC)
GAC: Generic Assessment Criteria
(blank): No assessment criteria available
 - : Not analysed
HH: Human Health

**Key**

XXX Exceedance of HH Soil. Commercial/Industrial. Sand. TOC >=3.48%

| | Units | MDL | GAC HH COM/IND SAND | BH104 20/12/2017 | BH105 20/12/2017 | WS101 21/12/2017 | WS102 21/12/2017 | WS103 21/12/2017 | WS104 21/12/2017 | WS106 20/12/2017 | WS108 20/12/2017 | WS109 19/12/2017 | WS110 20/12/2017 | WS111 19/12/2017 | WS112 21/12/2017 | SW01 22/12/2017 | SW02 22/12/2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TPH** | | | | | | | | | | | | | | | | | |
| >C5-C6 Aliphatics | µg/L | 10 | Insufficiently volatile[#2] | 634 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >C6-C8 Aliphatics | µg/L | 10 | Insufficiently volatile[#2] | 40 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >C8-C10 Aliphatics | µg/L | 10 | Insufficiently volatile[#2] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 17 | <10 | <10 | <10 |
| >C10-C12 Aliphatics | µg/L | 5 | Insufficiently volatile[#2] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| >C12-C16 Aliphatics | µg/L | 10 | Insufficiently volatile[#2] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >C16-C21 Aliphatics | µg/L | 10 | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 80 | <10 | <10 | <10 |
| >C16-C35 Aliphatics | µg/L | | Insufficiently volatile[#2] | <20 | <20 | - | - | - | - | <20 | <20 | <20 | <20 | 90 | - | - | - |
| >C21-C35 Aliphatics | µg/L | 10 | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >C5-C35 Aliphatics | µg/L | 10 | | 674 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 97 | <10 | <10 | <10 |
| >EC5-EC7 Aromatics | µg/L | 10 | Insufficiently volatile[#2] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >EC7-EC8 Aromatics | µg/L | 10 | Insufficiently volatile[#2] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 14 | <10 | <10 | <10 |
| >EC8-EC10 Aromatics | µg/L | 10 | Insufficiently volatile[#2] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >EC10-EC12 Aromatics | µg/L | 5 | Insufficiently volatile[#2] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| >EC12-EC16 Aromatics | µg/L | 10 | Insufficiently volatile[#2] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 30 | <10 | <10 | <10 |
| >EC16-EC21 Aromatics | µg/L | 10 | Insufficiently volatile[#2] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 220 | <10 | <10 | <10 |
| >EC21-EC35 Aromatics | µg/L | 10 | Insufficiently volatile[#2] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >EC5-EC35 Aromatics | µg/L | 10 | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 264 | <10 | <10 | <10 |
| >C5-C35 Aliphatics & Aromatics | µg/L | 10 | | 674 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 361 | <10 | <10 | <10 |

| | Units | MDL | GAC HH COM/IND SAND | BH104 20/12/2017 | BH105 20/12/2017 | WS101 21/12/2017 | WS102 21/12/2017 | WS103 21/12/2017 | WS104 21/12/2017 | WS106 20/12/2017 | WS108 20/12/2017 | WS109 19/12/2017 | WS110 20/12/2017 | WS111 19/12/2017 | WS112 21/12/2017 | SW01 22/12/2017 | SW02 22/12/2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **VOC** | | | | | | | | | | | | | | | | | |
| Dichlorodifluoromethane | µg/L | 2 | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| MTBE | µg/L | 0.1 | 7,800,000[#2] | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chloromethane | µg/L | 3 | 1,400[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Vinyl chloride | µg/L | 0.1 | 63[#2] | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromomethane | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Chloroethane | µg/L | 3 | 1,000,000[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Trichlorofluoromethane | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,1-dichloroethene | µg/L | 3 | 16,000[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Dichloromethane | µg/L | 5 | 370,000[#2] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| trans-1,2-dichloroethene | µg/L | 3 | 16,000[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,1-dichloroethane | µg/L | 3 | 260,000[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| cis-1,2-dichloroethene | µg/L | 3 | 13,000[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 2,2-dichloropropane | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Bromochloromethane | µg/L | 2 | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Chloroform | µg/L | 2 | 85,000[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,1,1-trichloroethane | µg/L | 2 | 290,000[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,1-dichloropropene | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Carbon tetrachloride | µg/L | 2 | 770[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-dichloroethane | µg/L | 2 | 850[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Benzene | µg/L | 0.5 | 20,000[#2] | 0.6 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Trichloroethene | µg/L | 3 | 530[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,2-dichloropropane | µg/L | 2 | 2,600[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Dibromomethane | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Bromodichloromethane | µg/L | 2 | 1,600[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| cis-1,3-dichloropropene | µg/L | 2 | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Toluene | µg/L | 5 | Insufficiently volatile[#2] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 16 | <5 | <5 | <5 |
| trans-1,3-dichloropropene | µg/L | 2 | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,1,2-trichloroethane | µg/L | 2 | 49,000[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Tetrachloroethene | µg/L | 3 | 4,600[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,3-dichloropropane | µg/L | 2 | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Sum of PCE and TCE | µg/L | | 10[#1] | <6 | <6 | - | - | - | - | <6 | <6 | <6 | <6 | <6 | - | - | - |
| Chlorodibromomethane | µg/L | 2 | Use trihalomethanes[#1] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| TCE+DCE+VC | µg/L | | Use individual GAC[#1] | <12.1 | <12.1 | - | - | - | - | <12.1 | <12.1 | <12.1 | <12.1 | <12.1 | - | - | - |
| 1,2-dibromoethane | µg/L | 2 | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| PCE+TCE+DCE+VC | µg/L | | Use individual GAC[#1] | <15.1 | <15.1 | - | - | - | - | <15.1 | <15.1 | <15.1 | <15.1 | <15.1 | - | - | - |
| 1,1,1,2-tetrachloroethane | µg/L | 2 | 22,000[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Ethylbenzene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Xylene (m & p) | µg/L | 2 | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Xylene Total | µg/L | | Sat[#4] | <3 | <3 | - | - | - | - | <3 | <3 | <3 | <3 | <3 | - | - | - |
| Xylene (o) | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Total BTEX | µg/L | | | 9.6 | <9.5 | - | - | - | - | <9.5 | <9.5 | <9.5 | <9.5 | 20.5 | - | - | - |
| Styrene | µg/L | 2 | Insufficiently volatile[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Bromoform | µg/L | 2 | 400,000[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Isopropylbenzene | µg/L | 3 | Insufficiently volatile[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,1,2,2-tetrachloroethane | µg/L | 4 | 150,000[#2] | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 |
| 1,2,3-trichloropropane | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| n-propylbenzene | µg/L | 3 | Insufficiently volatile[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,3,5-trimethylbenzene | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| tert-butylbenzene | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,2,4-trimethylbenzene | µg/L | 3 | 2,200[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| sec-butylbenzene | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| p-isopropyltoluene | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| n-butylbenzene | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,2-dibromo-3-chloropropane | µg/L | 2 | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-Dichloroethene | µg/L | | | <6 | <6 | - | - | - | - | <6 | <6 | <6 | <6 | <6 | - | - | - |
| Trihalomethanes | µg/L | | 100[#1] | <8 | <8 | - | - | - | - | <8 | <8 | <8 | <8 | <8 | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND | BH104<br>20/12/2017 | BH105<br>20/12/2017 | WS101<br>21/12/2017 | WS102<br>21/12/2017 | WS103<br>21/12/2017 | WS104<br>21/12/2017 | WS106<br>20/12/2017 | WS108<br>20/12/2017 | WS109<br>19/12/2017 | WS110<br>20/12/2017 | WS111<br>19/12/2017 | WS112<br>21/12/2017 | SW01<br>22/12/2017 | SW02<br>22/12/2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PAH** | | | | | | | | | | | | | | | | | |
| Naphthalene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Acenaphthylene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Acenaphthene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Fluorene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Phenanthrene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Anthracene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Fluoranthene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Pyrene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(a)anthracene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Chrysene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Indeno(1,2,3-c,d)pyrene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Dibenzo(a,h)anthracene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(g,h,i)perylene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(b)&(k)fluoranthene | µg/L | 1 | Use individual PAHs[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| PAHs (sum of 4) | µg/L | | Use individual PAHs[#2] | <1.5 | <1.5 | - | - | - | - | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | - | - | - |
| benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene | µg/L | | Use individual PAHs[#2] | <1.5 | <1.5 | - | - | - | - | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | - | - | - |
| Coal Tar (Bap as surrogate marker) | µg/L | | Sat[#4] | <1 | <1 | - | - | - | - | <1 | <1 | <1 | <1 | <1 | - | - | - |

| | Units | MDL | GAC HH COM/IND SAND | BH104 20/12/2017 | BH105 20/12/2017 | WS101 21/12/2017 | WS102 21/12/2017 | WS103 21/12/2017 | WS104 21/12/2017 | WS106 20/12/2017 | WS108 20/12/2017 | WS109 19/12/2017 | WS110 20/12/2017 | WS111 19/12/2017 | WS112 21/12/2017 | SW01 22/12/2017 | SW02 22/12/2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SVOC** | | | | | | | | | | | | | | | | | |
| Chlorobenzene | µg/L | 2 | 15,000[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Bromobenzene | µg/L | 2 | 20,000[#2] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 2-chlorotoluene | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 4-chlorotoluene | µg/L | 3 | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,3-dichlorobenzene | µg/L | 1 | 2,800[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 1,4-dichlorobenzene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 1,2-dichlorobenzene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 1,2,4-trichlorobenzene | µg/L | 1 | 7,200[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Hexachlorobutadiene | µg/L | 1 | 230[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 1,2,3-trichlorobenzene | µg/L | 3 | 3,100[#2] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 2-chlorophenol | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2-methylphenol | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2-nitrophenol | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2,4-dichlorophenol | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2,4-dimethylphenol | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2,4,5-trichlorophenol | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2,4,6-trichlorophenol | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-chloro-3-methylphenol | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 4-methylphenol | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-nitrophenol | µg/L | 10 | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Pentachlorophenol | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Phenol | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2-chloronaphthalene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2-methylnaphthalene | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Bis(2-ethylhexyl) phthalate | µg/L | 5 | Insufficiently volatile[#2] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Butyl benzyl phthalate | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Di-n-butyl phthalate | µg/L | 1.5 | Insufficiently volatile[#2] | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 |
| Di-n-octyl phthalate | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Diethylphthalate | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Dimethyl phthalate | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 2 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2-nitroaniline | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2,4-Dinitrotoluene | µg/L | 0.5 | Insufficiently volatile[#2] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2,6-dinitrotoluene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 3-nitroaniline | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-bromophenyl phenyl ether | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-chloroaniline | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-chlorophenyl phenyl ether | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-nitroaniline | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Azobenzene | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Bis(2-chloroethoxy) methane | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Bis(2-chloroethyl)ether | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Carbazole | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Dibenzofuran | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Hexachlorobenzene | µg/L | 1 | Insufficiently volatile[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Hexachlorocyclopentadiene | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Hexachloroethane | µg/L | 1 | 740[#2] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Isophorone | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| N-nitrosodi-n-propylamine | µg/L | 0.5 | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Nitrobenzene | µg/L | 1 | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |

| | Units | MDL | GAC HH COM/IND SAND | BH104 20/12/2017 | BH105 20/12/2017 | WS101 21/12/2017 | WS102 21/12/2017 | WS103 21/12/2017 | WS104 21/12/2017 | WS106 20/12/2017 | WS108 20/12/2017 | WS109 19/12/2017 | WS110 20/12/2017 | WS111 19/12/2017 | WS112 21/12/2017 | SW01 22/12/2017 | SW02 22/12/2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Halogenated Benzenes** | | | | | | | | | | | | | | | | | |
| Trichlorobenzene (total) | µg/L | | 0.1[#1] | <4 | <4 | - | - | - | - | <4 | <4 | <4 | <4 | <4 | - | - | - |
| **Metals** | | | | | | | | | | | | | | | | | |
| Antimony (Filtered) | µg/L | 2 | No path[#3] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Arsenic (Filtered) | µg/L | 2.5 | No path[#3] | 10.3 | <2.5 | <2.5 | 8.1 | 8 | 8.1 | 11.9 | 5.7 | 36.2 | 2.6 | 56.2 | <2.5 | <2.5 | <2.5 |
| Cadmium (Filtered) | µg/L | 0.5 | No path[#3] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Chromium (III+VI) (Filtered) | µg/L | 1.5 | No path[#3] | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | 2 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 |
| Copper (Filtered) | µg/L | 7 | No path[#3] | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 |
| Iron (Filtered) | µg/L | 20 | No path[#3] | <20 | 86 | 7,453 | 74 | 692 | <20 | <20 | 168 | <20 | <20 | <20 | 12,440 | <20 | <20 |
| Lead (Filtered) | µg/L | 5 | No path[#3] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Manganese (Filtered) | µg/L | 2 | No path[#3] | 73 | 303 | 1,464 | 564 | 645 | 172 | 46 | 634 | 25 | 1,033 | <2 | 1,116 | 18 | 35 |
| Mercury (Filtered) | µg/L | 1 | No path[#3] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Molybdenum (Filtered) | µg/L | 2 | No path[#3] | 4,110 | 19 | 592 | 5 | 5,227 | 2,214 | 3,931 | 2,932 | 1,616 | 811 | 3,796 | 247 | 7 | 4 |
| Nickel (Filtered) | µg/L | 2 | No path[#3] | 2 | 5 | 2 | <2 | <2 | <2 | <2 | <2 | <2 | 4 | <2 | 5 | <2 | <2 |
| Selenium (Filtered) | µg/L | 3 | No path[#3] | 16 | 16 | <3 | <3 | 5 | 95 | 68 | 11 | <3 | 38 | 8 | 8 | <3 | <3 |
| Zinc (Filtered) | µg/L | 3 | No path[#3] | 7 | <3 | 31 | 4 | 4 | <3 | <3 | 21 | <3 | 6 | <3 | 88 | <3 | 6 |
| **Organics** | | | | | | | | | | | | | | | | | |
| TOC | mg/L | 2 | | 347 | 3 | <2 | <2 | <2 | <2 | <2 | 8 | 2 | 3 | <2 | <2 | 5 | <2 |
| **Inorganics** | | | | | | | | | | | | | | | | | |
| Fluoride | mg/L | 0.3 | 1.5[#1] | <0.3 | <0.3 | <0.3 | 0.4 | <0.3 | <0.3 | <0.3 | 0.4 | <0.3 | <0.3 | <0.3 | <0.3 | 0.3 | 0.4 |
| Sulphate | mg/L | 0.5 | 250[#1] | 2,333 | 1,775 | 1,588 | 941.3 | 3,310 | 1,918 | 2,141 | 2,490 | 1,948 | 2,360 | 1,998 | 1,437 | 44.9 | 1,096 |
| Chloride | mg/L | 0.3 | 250[#1] | 100.9 | 117.2 | 143.1 | 128.2 | 121.4 | 66.9 | 176.5 | 95.6 | 110.3 | 96 | 118.6 | 223.5 | 58.8 | 101.6 |
| Nitrate (as NO3-) | mg/L | 0.2 | 50[#1] | <0.2 | 17.1 | 4.4 | <0.2 | <0.2 | 26 | 10.8 | 0.8 | 0.4 | <0.2 | <0.2 | <0.2 | 0.8 | 38.8 |
| Nitrite (as NO2-) | mg/L | 0.02 | 0.5[#1] | <0.02 | 1.64 | 0.25 | 0.06 | <0.02 | 3.82 | 4.46 | <0.02 | 0.4 | <0.02 | 0.15 | 0.08 | <0.02 | 0.05 |
| Ortho Phosphate as PO4 | mg/l | 0.06 | | <0.06 | <0.06 | <0.06 | 0.14 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | 0.21 | 0.8 |
| Cyanide Total | mg/L | 0.01 | 0.05[#1] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |

**Comments**
#1 WS Regs 2016 (Eng/Wal)
#2 SoBRA GW GAC 2017 (Comm.)
#3 AECOM (No path)
#4 AECOM (modified LQM/CIEH S4ULs)
GAC: Generic Assessment Criteria
(blank): No assessment criteria available
Sat: Unacceptable risk not achieved due to calculated saturation of vapour pathway
 - : Not analysed
HH: Human Health

**Key**

| XXX | Exceedance of HH GW. Commercial/Industrial. Sand |
|---|---|

| | Units | MDL | GAC WTV EN/WA DWS | GAC WTV EN/WA EQS-Coast | GAC WTV EN/WA EQS-Fresh | BH104 | BH105 | WS101 | WS102 | WS103 | WS104 | WS106 | WS108 | WS109 | WS110 | WS111 | WS112 | SW01 | SW02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 20/12/2017 | 20/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 20/12/2017 | 20/12/2017 | 19/12/2017 | 20/12/2017 | 19/12/2017 | 21/12/2017 | 22/12/2017 | 22/12/2017 |
| **TPH** | | | | | | | | | | | | | | | | | | | |
| >C5-C6 Aliphatics | µg/L | 10 | ***15,000*** [#2] | | | 634 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >C6-C8 Aliphatics | µg/L | 10 | ***15,000*** [#2] | | | 40 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >C8-C10 Aliphatics | µg/L | 10 | ***300*** [#2] | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 17 | <10 | <10 | <10 |
| >C10-C12 Aliphatics | µg/L | 5 | ***300*** [#2] | | | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| >C12-C16 Aliphatics | µg/L | 10 | ***300*** [#2] | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >C16-C21 Aliphatics | µg/L | 10 | ***300*** [#2] | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 80 | <10 | <10 | <10 |
| >C16-C35 Aliphatics | µg/L | | | | | <20 | <20 | - | - | - | - | <20 | <20 | <20 | <20 | 90 | - | - | - |
| >C21-C35 Aliphatics | µg/L | 10 | ***300*** [#2] | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >C5-C35 Aliphatics | µg/L | 10 | | | | 674 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 97 | <10 | <10 | <10 |
| >EC5-EC7 Aromatics | µg/L | 10 | ***1*** [#1] | 8 [#10] | 10 [#11] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >EC7-EC8 Aromatics | µg/L | 10 | ***700*** [#2] | 74 [#6] | 74 [#9] | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 14 | <10 | <10 | <10 |
| >EC8-EC10 Aromatics | µg/L | 10 | ***300*** [#2] | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >EC10-EC12 Aromatics | µg/L | 5 | ***90*** [#2] | | | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| >EC12-EC16 Aromatics | µg/L | 10 | ***90*** [#2] | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 30 | <10 | <10 | <10 |
| >EC16-EC21 Aromatics | µg/L | 10 | ***90*** [#2] | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | ***220*** | <10 | <10 | <10 |
| >EC21-EC35 Aromatics | µg/L | 10 | ***90*** [#2] | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| >EC5-EC35 Aromatics | µg/L | 10 | | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 264 | <10 | <10 | <10 |
| >C5-C35 Aliphatics & Aromatics | µg/L | 10 | | | | 674 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 361 | <10 | <10 | <10 |

| | Units | MDL | GAC WTV EN/WA DWS | GAC WTV EN/WA EQS-Coast | GAC WTV EN/WA EQS-Fresh | BH104 | BH105 | WS101 | WS102 | WS103 | WS104 | WS106 | WS108 | WS109 | WS110 | WS111 | WS112 | SW01 | SW02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 20/12/2017 | 20/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 20/12/2017 | 20/12/2017 | 19/12/2017 | 20/12/2017 | 19/12/2017 | 21/12/2017 | 22/12/2017 | 22/12/2017 |
| **VOC** | | | | | | | | | | | | | | | | | | | |
| Dichlorodifluoromethane | µg/L | 2 | ***200*** [#14] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| MTBE | µg/L | 0.1 | ***1,800*** [#22] | 260 [#20] | 5,100 [#19] | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chloromethane | µg/L | 3 | ***190*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Vinyl chloride | µg/L | 0.1 | ***0.5*** [#1] | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Bromomethane | µg/L | 1 | ***7.5*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Chloroethane | µg/L | 3 | ***21,000*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Trichlorofluoromethane | µg/L | 3 | ***5,200*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,1-dichloroethene | µg/L | 3 | ***140*** [#3] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Dichloromethane | µg/L | 5 | ***20*** [#3] | 20 [#10] | 20 [#11] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| trans-1,2-dichloroethene | µg/L | 3 | ***Use '1,2 dichloroethene' criteria*** [#3] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,1-dichloroethane | µg/L | 3 | ***2.8*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| cis-1,2-dichloroethene | µg/L | 3 | ***Use '1,2 dichloroethene' criteria*** [#3] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 2,2-dichloropropane | µg/L | 1 | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Bromochloromethane | µg/L | 2 | ***83*** [#14] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Chloroform | µg/L | 2 | ***Use trihalomethanes*** [#1] | 2.5 [#10] | 2.5 [#11] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,1,1-trichloroethane | µg/L | 2 | ***2,000*** [#3] | 100 [#16] | 100 [#18] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,1-dichloropropene | µg/L | 3 | | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Carbon tetrachloride | µg/L | 2 | ***3*** [#1] | 12 [#10] | 12 [#11] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-dichloroethane | µg/L | 2 | ***3*** [#1] | 10 [#10] | 10 [#11] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Benzene | µg/L | 0.5 | ***1*** [#1] | 8 [#10] | 10 [#11] | 0.6 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Trichloroethene | µg/L | 3 | ***Use PCE + TCE*** [#1] | 10 [#10] | 10 [#11] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,2-dichloropropane | µg/L | 2 | ***40*** [#3] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Dibromomethane | µg/L | 3 | ***8.3*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| Bromodichloromethane | µg/L | 2 | ***Use trihalomethanes*** [#1] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| cis-1,3-dichloropropene | µg/L | 2 | | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Toluene | µg/L | 5 | ***700*** [#3] | 74 [#6] | 74 [#9] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | 16 | <5 | <5 | <5 |
| trans-1,3-dichloropropene | µg/L | 2 | | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,1,2-trichloroethane | µg/L | 2 | ***0.28*** [#14] | 300 [#16] | 400 [#18] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Tetrachloroethene | µg/L | 3 | ***Use PCE + TCE*** [#1] | 10 [#10] | 10 [#11] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,3-dichloropropane | µg/L | 2 | ***370*** [#14] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Sum of PCE and TCE | µg/L | | ***10*** [#1] | Use individual GAC [#10] | | <6 | <6 | - | - | - | - | <6 | <6 | <6 | <6 | <6 | - | - | - |
| Chlorodibromomethane | µg/L | 2 | ***Use trihalomethanes*** [#1] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| TCE+DCE+VC | µg/L | | | Use individual GAC [#10] | | <12.1 | <12.1 | - | - | - | - | <12.1 | <12.1 | <12.1 | <12.1 | <12.1 | - | - | - |
| 1,2-dibromoethane | µg/L | 2 | ***0.4*** [#3] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| PCE+TCE+DCE+VC | µg/L | | | Use individual GAC [#10] | | <15.1 | <15.1 | - | - | - | - | <15.1 | <15.1 | <15.1 | <15.1 | <15.1 | - | - | - |
| 1,1,1,2-tetrachloroethane | µg/L | 2 | ***0.57*** [#14] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Ethylbenzene | µg/L | 1 | ***300*** [#3] | 20 [#16] | 20 [#18] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Xylene (m & p) | µg/L | 2 | | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Xylene Total | µg/L | | ***500*** [#3] | 30 [#16] | 30 [#18] | <3 | <3 | - | - | - | - | <3 | <3 | <3 | <3 | <3 | - | - | - |
| Xylene (o) | µg/L | 1 | ***190*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Total BTEX | µg/L | | | | | 9.6 | <9.5 | - | - | - | - | <9.5 | <9.5 | <9.5 | <9.5 | 20.5 | - | - | - |
| Styrene | µg/L | 2 | ***20*** [#3] | 50 [#16] | 50 [#18] | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Bromoform | µg/L | 2 | ***Use trihalomethanes*** [#1] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Isopropylbenzene | µg/L | 3 | ***450*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,1,2,2-tetrachloroethane | µg/L | 4 | ***0.076*** [#14] | | 140 [#9] | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 | <4 |
| 1,2,3-trichloropropane | µg/L | 3 | ***0.00075*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| n-propylbenzene | µg/L | 3 | ***660*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,3,5-trimethylbenzene | µg/L | 3 | ***60*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| tert-butylbenzene | µg/L | 3 | ***690*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,2,4-trimethylbenzene | µg/L | 3 | ***56*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| sec-butylbenzene | µg/L | 3 | ***2,000*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| p-isopropyltoluene | µg/L | 3 | | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| n-butylbenzene | µg/L | 3 | ***1,000*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,2-dibromo-3-chloropropane | µg/L | 2 | ***1*** [#3] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 1,2-Dichloroethene | µg/L | | ***50*** [#3] | | | <6 | <6 | - | - | - | - | <6 | <6 | <6 | <6 | <6 | - | - | - |
| Trihalomethanes | µg/L | | ***100*** [#1] | | | <8 | <8 | - | - | - | - | <8 | <8 | <8 | <8 | <8 | - | - | - |

| | Units | MDL | GAC WTV EN/WA DWS | GAC WTV EN/WA EQS-Coast | GAC WTV EN/WA EQS-Fresh | BH104 | BH105 | WS101 | WS102 | WS103 | WS104 | WS106 | WS108 | WS109 | WS110 | WS111 | WS112 | SW01 | SW02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 20/12/2017 | 20/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 20/12/2017 | 20/12/2017 | 19/12/2017 | 20/12/2017 | 19/12/2017 | 21/12/2017 | 22/12/2017 | 22/12/2017 |
| **PAH** | | | | | | | | | | | | | | | | | | | |
| Naphthalene | µg/L | 1 | ***6*** [#22] | 2[#10] | 2[#11] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Acenaphthylene | µg/L | 0.5 | ***18*** [#22] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Acenaphthene | µg/L | 1 | ***18*** [#22] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Fluorene | µg/L | 0.5 | ***12*** [#22] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Phenanthrene | µg/L | 0.5 | ***4*** [#22] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Anthracene | µg/L | 0.5 | ***90*** [#22] | 0.1[#10] | 0.1[#11] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Fluoranthene | µg/L | 0.5 | ***4*** [#3] | 0.0063[#10] | 0.0063[#11] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Pyrene | µg/L | 0.5 | ***9*** [#22] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(a)anthracene | µg/L | 0.5 | ***3.5*** [#22] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Chrysene | µg/L | 0.5 | ***7*** [#22] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(a)pyrene | µg/L | 1 | ***0.01*** [#1] | 0.00017[#10] | 0.00017[#11] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Indeno(1,2,3-c,d)pyrene | µg/L | 1 | ***Use PAHs (sum of 4)*** [#1] | see BaP and notes[#13] | see BaP and notes[#12] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Dibenzo(a,h)anthracene | µg/L | 0.5 | ***0.07*** [#22] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(g,h,i)perylene | µg/L | 0.5 | ***Use PAHs (sum of 4)*** [#1] | 0.00082[#7] | 0.0082[#8] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Benzo(b)&(k)fluoranthene | µg/L | 1 | | Use individual PAHs[#10] | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| PAHs (sum of 4) | µg/L | | ***0.1*** [#1] | Use individual PAHs[#10] | | <1.5 | <1.5 | - | - | - | - | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | - | - | - |
| benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene | µg/L | | | Use individual PAHs[#10] | | <1.5 | <1.5 | - | - | - | - | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | - | - | - |
| Coal Tar (Bap as surrogate marker) | µg/L | | | | | <1 | <1 | - | - | - | - | <1 | <1 | <1 | <1 | <1 | - | - | - |

| | Units | MDL | GAC WTV EN/WA DWS | GAC WTV EN/WA EQS-Coast | GAC WTV EN/WA EQS-Fresh | BH104 | BH105 | WS101 | WS102 | WS103 | WS104 | WS106 | WS108 | WS109 | WS110 | WS111 | WS112 | SW01 | SW02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 20/12/2017 | 20/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 20/12/2017 | 20/12/2017 | 19/12/2017 | 20/12/2017 | 19/12/2017 | 21/12/2017 | 22/12/2017 | 22/12/2017 |
| **SVOC** | | | | | | | | | | | | | | | | | | | |
| Chlorobenzene | µg/L | 2 | ***300*** [#3] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Bromobenzene | µg/L | 2 | ***62*** [#14] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| 2-chlorotoluene | µg/L | 3 | ***240*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 4-chlorotoluene | µg/L | 3 | ***250*** [#14] | | | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 1,3-dichlorobenzene | µg/L | 1 | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 1,4-dichlorobenzene | µg/L | 1 | ***300*** [#3] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 1,2-dichlorobenzene | µg/L | 1 | ***1,000*** [#3] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 1,2,4-trichlorobenzene | µg/L | 1 | ***0.1*** [#1] | Refer to 'Trichlorobenzene (total)' [#13] | Refer to 'Trichlorobenzene (total)' [#12] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Hexachlorobutadiene | µg/L | 1 | ***0.1*** [#1] | 0.6 [#7] | 0.6 [#8] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 1,2,3-trichlorobenzene | µg/L | 3 | ***0.1*** [#1] | Refer to 'Trichlorobenzene (total)' [#13] | Refer to 'Trichlorobenzene (total)' [#12] | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 | <3 |
| 2-chlorophenol | µg/L | 1 | ***91*** [#14] | 50 [#16] | 50 [#18] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2-methylphenol | µg/L | 0.5 | ***930*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2-nitrophenol | µg/L | 0.5 | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2,4-dichlorophenol | µg/L | 0.5 | ***46*** [#14] | 0.42 [#6] | 4.2 [#9] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2,4-dimethylphenol | µg/L | 1 | ***360*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2,4,5-trichlorophenol | µg/L | 0.5 | ***1,200*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2,4,6-trichlorophenol | µg/L | 1 | ***200*** [#3] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-chloro-3-methylphenol | µg/L | 0.5 | ***1,400*** [#14] | 40 [#16] | 40 [#18] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 4-methylphenol | µg/L | 1 | ***1,900*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-nitrophenol | µg/L | 10 | | | | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Pentachlorophenol | µg/L | 1 | ***9*** [#3] | 0.4 [#10] | 0.4 [#11] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Phenol | µg/L | 1 | ***5,800*** [#14] | 7.7 [#6] | 7.7 [#9] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2-chloronaphthalene | µg/L | 1 | ***750*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2-methylnaphthalene | µg/L | 1 | ***36*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Bis(2-ethylhexyl) phthalate | µg/L | 5 | ***8*** [#3] | 1.3 [#10] | 1.3 [#11] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Butyl benzyl phthalate | µg/L | 1 | ***16*** [#14] | 0.75 [#6] | 7.5 [#9] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Di-n-butyl phthalate | µg/L | 1.5 | ***900*** [#14] | 8 [#16] | 8 [#18] | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 |
| Di-n-octyl phthalate | µg/L | 1 | ***200*** [#14] | 20 [#16] | 20 [#18] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Diethylphthalate | µg/L | 1 | ***15,000*** [#14] | 200 [#16] | 200 [#18] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Dimethyl phthalate | µg/L | 1 | | 800 [#16] | 800 [#18] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 2 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2-nitroaniline | µg/L | 1 | ***190*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 2,4-Dinitrotoluene | µg/L | 0.5 | ***0.24*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 2,6-dinitrotoluene | µg/L | 1 | ***0.049*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 3-nitroaniline | µg/L | 1 | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-bromophenyl phenyl ether | µg/L | 1 | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-chloroaniline | µg/L | 1 | ***0.37*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-chlorophenyl phenyl ether | µg/L | 1 | | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| 4-nitroaniline | µg/L | 0.5 | ***3.8*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Azobenzene | µg/L | 0.5 | ***0.12*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Bis(2-chloroethoxy) methane | µg/L | 0.5 | ***59*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Bis(2-chloroethyl)ether | µg/L | 1 | ***0.014*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Carbazole | µg/L | 0.5 | | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Dibenzofuran | µg/L | 0.5 | ***7.9*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Hexachlorobenzene | µg/L | 1 | ***0.1*** [#1] | 0.05 [#7] | 0.05 [#8] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Hexachlorocyclopentadiene | µg/L | 1 | ***0.41*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Hexachloroethane | µg/L | 1 | ***0.33*** [#14] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Isophorone | µg/L | 0.5 | ***78*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| N-nitrosodi-n-propylamine | µg/L | 0.5 | ***0.011*** [#14] | | | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Nitrobenzene | µg/L | 1 | ***8 to 63*** [#3] | | | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| **Halogenated Benzenes** | | | | | | | | | | | | | | | | | | | |
| Trichlorobenzene (total) | µg/L | | ***0.1*** [#1] | 0.4 [#10] | 0.4 [#11] | <4 | <4 | - | - | - | - | <4 | <4 | <4 | <4 | <4 | - | - | - |

| | Units | MDL | GAC WTV EN/WA DWS | GAC WTV EN/WA EQS-Coast | GAC WTV EN/WA EQS-Fresh | BH104 | BH105 | WS101 | WS102 | WS103 | WS104 | WS106 | WS108 | WS109 | WS110 | WS111 | WS112 | SW01 | SW02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 20/12/2017 | 20/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 21/12/2017 | 20/12/2017 | 20/12/2017 | 19/12/2017 | 20/12/2017 | 19/12/2017 | 21/12/2017 | 22/12/2017 | 22/12/2017 |
| **Metals** | | | | | | | | | | | | | | | | | | | |
| Antimony (Filtered) | µg/L | 2 | ***5*** [#1] | | | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 | <2 |
| Arsenic (Filtered) | µg/L | 2.5 | ***10*** [#1] | 25[#6] | 50[#9] | ***10.3*** | <2.5 | <2.5 | 8.1 | 8 | 8.1 | ***11.9*** | 5.7 | ***36.2*** | 2.6 | ***56.2*** | <2.5 | <2.5 | <2.5 |
| Cadmium (Filtered) | µg/L | 0.5 | ***5*** [#1] | 0.2[#10] | 0.08[#11] | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Chromium (III+VI) (Filtered) | µg/L | 1.5 | ***50*** [#1] | | | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | 2 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 | <1.5 |
| Copper (Filtered) | µg/L | 7 | ***2,000*** [#1] | 3.76[#6] | 1[#9] | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 | <7 |
| Iron (Filtered) | µg/L | 20 | ***200*** [#1] | 1,000[#6] | 1,000[#9] | <20 | 86 | ***7,453*** | 74 | ***692*** | <20 | <20 | 168 | <20 | <20 | <20 | ***12,440*** | <20 | <20 |
| Lead (Filtered) | µg/L | 5 | ***10*** [#1] | 1.3[#10] | 1.2[#11] | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 |
| Manganese (Filtered) | µg/L | 2 | ***50*** [#1] | | 123[#9] | ***73*** | ***303*** | ***1,464*** | ***564*** | ***645*** | ***172*** | 46 | ***634*** | 25 | ***1,033*** | <2 | ***1,116*** | 18 | 35 |
| Mercury (Filtered) | µg/L | 1 | ***1*** [#1] | 0.07[#7] | 0.07[#8] | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Molybdenum (Filtered) | µg/L | 2 | ***70*** [#3] | | | ***4,110*** | 19 | ***592*** | 5 | ***5,227*** | ***2,214*** | ***3,931*** | ***2,932*** | ***1,616*** | ***811*** | ***3,796*** | ***247*** | 7 | 4 |
| Nickel (Filtered) | µg/L | 2 | ***20*** [#1] | 8.6[#10] | 4[#11] | 2 | 5 | 2 | <2 | <2 | <2 | <2 | <2 | <2 | 4 | <2 | 5 | <2 | <2 |
| Selenium (Filtered) | µg/L | 3 | ***10*** [#1] | | | ***16*** | ***16*** | <3 | <3 | 5 | ***95*** | ***68*** | ***11*** | <3 | ***38*** | 8 | 8 | <3 | <3 |
| Zinc (Filtered) | µg/L | 3 | ***6,000*** [#14] | 6.8[#6] | 10.9[#9] | 7 | <3 | 31 | 4 | 4 | <3 | <3 | 21 | <3 | 6 | <3 | 88 | <3 | 6 |
| **Organics** | | | | | | | | | | | | | | | | | | | |
| TOC | mg/L | 2 | | | | 347 | 3 | <2 | <2 | <2 | <2 | <2 | 8 | 2 | 3 | <2 | <2 | 5 | <2 |
| **Inorganics** | | | | | | | | | | | | | | | | | | | |
| Fluoride | mg/L | 0.3 | ***1.5*** [#1] | 5[#16] | 1[#18] | <0.3 | <0.3 | <0.3 | 0.4 | <0.3 | <0.3 | <0.3 | 0.4 | <0.3 | <0.3 | <0.3 | <0.3 | 0.3 | 0.4 |
| Sulphate | mg/L | 0.5 | ***250*** [#4] | | 400[#18] | ***2,333*** | ***1,775*** | ***1,588*** | ***941.3*** | ***3,310*** | ***1,918*** | ***2,141*** | ***2,490*** | ***1,948*** | ***2,360*** | ***1,998*** | ***1,437*** | 44.9 | ***1,096*** |
| Chloride | mg/L | 0.3 | ***250*** [#1] | | 250[#18] | 100.9 | 117.2 | 143.1 | 128.2 | 121.4 | 66.9 | 176.5 | 95.6 | 110.3 | 96 | 118.6 | 223.5 | 58.8 | 101.6 |
| Nitrate (as NO3-) | mg/L | 0.2 | ***50*** [#1] | | | <0.2 | 17.1 | 4.4 | <0.2 | <0.2 | 26 | 10.8 | 0.8 | 0.4 | <0.2 | <0.2 | <0.2 | 0.8 | 38.8 |
| Nitrite (as NO2-) | mg/L | 0.02 | ***0.5*** [#1] | | | <0.02 | ***1.64*** | 0.25 | 0.06 | <0.02 | ***3.82*** | ***4.46*** | <0.02 | 0.4 | <0.02 | 0.15 | 0.08 | <0.02 | 0.05 |
| Ortho Phosphate as PO4 | mg/l | 0.06 | | | | <0.06 | <0.06 | <0.06 | 0.14 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | <0.06 | 0.21 | 0.8 |
| Cyanide Total | mg/L | 0.01 | ***0.05*** [#1] | 0.001[#6] | 0.001[#9] | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |

**Comments**

#1 WS Regs 2016 (Eng/Wal)
#2 WHO Petroleum DWG 2008
#3 WHO DWG 2017
#4 WHO 2017 - Taste
#5 WHO 2017 - Odour
#6 WFD England/Wales. 2015 - Saltwater Standards
#7 WFD England/Wales. 2015 - MAC-EQS Trans./Coastal
#8 WFD England/Wales. 2015 - MAC-EQS Inland
#9 WFD England/Wales. 2015 - Freshwater Standards
#10 WFD England/Wales. 2015 - AA-EQS Trans./Coastal
#11 WFD England/Wales. 2015 - AA-EQS Inland
#12 Water Env't Regs (Scotland) 2015. AA-EQS Inland
#13 Water Env't Regs (Scotland) 2015. AA-EQS Coast
#14 USEPA RSL (tapwater) [June 2017]
#15 SEPA WAT-SG-53 Marine EQS - MAC - 2015
#16 SEPA WAT-SG-53 Marine EQS - AA - 2015
#17 SEPA WAT-SG-53 Fresh EQS - MAC - 2015
#18 SEPA WAT-SG-53 Fresh EQS - AA - 2015
#19 PNEC (EU REACH) - Freshwater
#20 PNEC (EU REACH) - Coastal
#21 California Draft health protective concentration
#22 AECOM DWG (WHO method)
GAC: Generic Assessment Criteria
(blank): No assessment criteria available
 - : Not analysed
DWS: Drinking Water Standard
EQS: Environmental Quality Standard

**Key**

| | |
|---|---|
| ***XXX*** | Exceedance of CW/WE Water. DWS - England/Wales |
| XXX | Exceedance of CW/WE Water. Aquatic Toxicity - England/Wales - Transitional/Coastal |
| XXX | Exceedance of CW/WE Water. Aquatic Toxicity - England/Wales - Freshwater |