



**Factual Ground  
Investigation Report**

**Project Name:** Southampton International Airport Runway Extension

**Location:** Southampton International Airport, Southampton, SO18 2NL

**Client:** Dyer and Butler Ltd.

**Project ID:** J14044

**Report Date:** 25<sup>th</sup> July 2019

**Report Issue:** 6

## SUMMARY

The site comprises the grass area to the north of the runway at Southampton International Airport.

Geological records indicate the site to be underlain by River Terrace Deposits, overlying London Clay Formation.

An intrusive investigation was designed by Mott MacDonald, who acted as Investigation Supervisor. Southern Testing were employed as a sub-contractor to Dyer and Butler Ltd, who were the Principal Contractor for the Ground Investigation. A single phase of intrusive investigation was carried out, comprising a series of trial pits, soakage tests to BRE365, plate loads, and boreholes. The exploratory hole logs, field test results and laboratory test results are presented within this report.

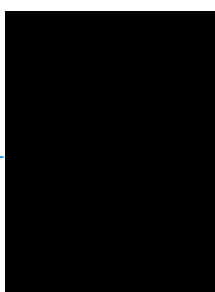
The soils encountered comprised 'Brickearth' (sandy clays), over River Terrace Deposits (Sands and Gravels), over London Clay Formation (thinly laminated sandy clays / clayey sands).

Geotechnical laboratory testing was specified by Mott MacDonald. The results are presented within this report.

Groundwater was encountered in the two boreholes. Groundwater monitoring, via a standpipe within the River Terrace Deposits and two vibrating wire piezometers within the London Clay Formation, is ongoing.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Dyer and Butler Ltd. This report shall not be relied upon or transferred to any other parties without the express written authorization of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

|                           |                                                                |                                                                                       |
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For and on behalf of Southern Testing Laboratories Limited

|                 |                                                                                                             |            |                            |
|-----------------|-------------------------------------------------------------------------------------------------------------|------------|----------------------------|
| Ref: STL J14044 | Issue 1 (Draft)                                                                                             | Issue Date | 13 <sup>th</sup> June 2019 |
|                 | Issue 2 (Revised draft, updating DCP CBR results)                                                           |            | 18 <sup>th</sup> June 2019 |
|                 | Issue 3 (containing geotechnical test results, AGS data, and monitoring results to date)                    |            | 27 <sup>th</sup> June 2019 |
|                 | Issue 4 (containing Appendix D – geotechnical test results)                                                 |            | 28 <sup>th</sup> June 2019 |
|                 | Issue 5 (containing updated groundwater monitoring results and Modulus of Subgrade Reaction test results)   |            | 10 <sup>th</sup> July 2019 |
|                 | Issue 6 (containing updated groundwater monitoring results and revisions as per Mott MacDonald suggestions) |            | 25 <sup>th</sup> July 2019 |



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## A INTRODUCTION

### 1 Authority

Our authority for carrying out this work is contained in an email from William Brock for Dyer and Butler Ltd. dated 9<sup>th</sup> April 2019 enclosing a Sub-Contract Order No. WB/AP1821/13908 dated 9<sup>th</sup> April 2019. The order refers to our quotation ref Q181753(a), dated 5<sup>th</sup> February 2019.

### 2 Location

The site is located airside within Southampton International Airport. The approximate National Grid Reference of the site centre is SU 45567 17842. The site location is indicated on Figure 1 within Appendix A.

### 3 Purpose

The purpose of the investigation is to inform Southampton International Airport Ltd. of the ground conditions in the northern part of the airfield, where an extension to the runway is planned. This will include a new highway tunnel, and new drainage systems.

### 4 Object

A Geotechnical Investigation Specification (Dated 28-01-2019) was prepared by Mott MacDonald (ref. 400602-MMD-00-XX-SP-Z-0002).

The object of the survey was to confirm Mott MacDonald's assumed geotechnical design parameters for the proposed runway extension design and pre-feasibility study of the tunnel design. Geo-environmental testing and investigation was also requested within the specification.

This is a factual ground investigation report.

### 5 Scope

This report presents our exploratory hole logs, and field and laboratory test results.

As with any site there may be differences in ground conditions between exploratory hole positions.

This report is not an engineering design and the figures and calculations contained in the report should be used by the Engineer, taking note that variations will apply, according to variations in design loading, in techniques used, and in site conditions. Our figures therefore should not supersede the Engineer's design.

The ground investigation has been completed with reference to BS 5930 Ref [1] and BS 10175 Ref [2].

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Dyer and Butler Ltd., Southampton International Airport Ltd. and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The recommendations contained in this report may not be appropriate to alternative development schemes.

Detailed information on the proposed development, such as detailed final layout, loadings and serviceability limits was not provided. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules.

## B SITE SETTING AND WALKOVER SURVEY

### 6 Geology

The British Geological Survey Map No. 315 (Southampton) indicates that the superficial site geology consists of River Terrace Deposits 1 – Clay and Silt. The Bedrock geology is the London Clay Formation.

#### 6.1.1 River Terrace Deposits

The River Terrace Deposits consist of sheets of gravel and sand often with an overlying deposit of Brickearth (really an ancient alluvium). Some variability in soils is to be expected at junctions with the various terraces, as riverbanks existed there. The remains of these former riverbanks can be soft and silty or contain clay.

#### 6.1.2 London Clay Formation

The London Clay of the Hampshire Basin is quite different from the stiff fissured clay of the London area. It consists of blue, brown and grey clay, and yellow and grey sands, interspersed with pebble beds. It includes local developments of sandstones and is a shallow sea deposit as compared with the deeper sea deposits of the London Basin.

At the base the beds are sandy and generally contain rounded flints.

### 7 Site Walkover Survey

#### 7.1 General Site Description

The subject site comprises an area of grass to the north of the existing runway. The site is generally flat and level, and is remote from buildings.

## C GROUND INVESTIGATION

### 8 Strategy and Method

The strategy adopted for the intrusive investigation comprised the following:

| Hole reference / Method                 | In Situ Tests                                                                 | Purpose                                                                                                                          | Max Depth Range (mbgl) | Installations / Notes                 |
|-----------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------|
| TP1 – TP6<br>/<br>21t tracked excavator | Plate CBR (Modulus of Subgrade Reaction)<br>Hand Vane<br>DCP CBR (TRL Method) | To determine soil properties in relation to pavement design.<br><br>Collect geotechnical and geo-environmental samples.          | 1.0                    | Reinstatement by Dyer and Butler Ltd. |
| TP7 & TP8<br>/<br>21t tracked excavator | DCP CBR (TRL Method)<br>Hand Vane                                             | To determine soils properties in relation to proposed tunnel portals.<br><br>Collect geotechnical and geo-environmental samples. | 3.5                    | Reinstatement by Dyer and Butler Ltd. |
| PT1 – PT3<br>/<br>                      | DCP CBR (TRL Method)<br>Hand Vane<br>BRE365 Soakage Test                      | To determine soakage characteristic of the River Terrace Deposits.                                                               | 3.0                    | Reinstatement by Dyer and Butler Ltd. |

| Hole reference / Method          | In Situ Tests                       | Purpose                                                                                                                                                | Max Depth Range (mbgl) | Installations / Notes                                                                                                                                                      |
|----------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21t tracked excavator            |                                     | Collect geotechnical and geo-environmental samples.                                                                                                    |                        |                                                                                                                                                                            |
| BH7 & BH8 / Cable Percussive Rig | SPTs<br>UT100s<br>Hand Penetrometer | To determine groundwater conditions and properties of soils in relation to the proposed tunnel.<br>Collect geotechnical and geo-environmental samples. | 20.0                   | Reinstatement by Dyer and Butler Ltd.<br>BH7: 2 No Vibrating Wire Piezometers (tips at 8m bgl and 14m bgl).<br>BH8: 50mm diameter HDPE pipe installed with base at 5m bgl. |

Due to the presence of utilities it was not possible to excavate TP1 and TP2 in the locations as specified by the Investigation Supervisor. By agreement with the Investigation Supervisor, the trial pits were relocated further away from the edge of the runway (see TP1A and TP2A). TP1 and TP2 were excavated by hand to expose the runway construction. 'De-lethalisation' concrete skirting was encountered in the location of TP2, extending away from the runway. As a result it was not possible to deepen this trial pit beyond 0.2m.

The Principal Contractor was Dyer and Butler Limited. Southern Testing Ltd. were employed as the ground investigation sub-contractor. The Engineer was Mott MacDonald.

All works were completed airside on night work between 22:30 and 05:00 hrs. Site access and security clearance was organised by Dyer and Butler Ltd.

All exploratory hole locations were set out and subsequently surveyed in by Dyer and Butler Ltd. who also undertook service clearance.

UXO watching brief and magnetometer clearance was undertaken by EOD Contracts Ltd. Instrumentation installation and monitoring has been undertaken by Southern Testing Ltd.

Exploratory hole locations are shown in Figure 2 in Appendix A.

In-situ test and sampling methods descriptions employed are given in Appendix B together with the test results.

## 9 Weather Conditions

The fieldwork was carried out between 14<sup>th</sup> April and 10<sup>th</sup> May 2019. The weather in this period was variable, with dry, wet, warm and cold conditions.

## 10 Ground Conditions as Found

## 11 Soils as Found

The soils encountered are described in detail in the attached exploratory hole logs (Appendix A), but in general comprised a covering River Terrace Deposits (sandy CLAY), overlying River Terrace Deposits (SAND and GRAVEL), overlying London Clay Formation (sandy CLAY). A summary is given below.



| Depth to base (m) | Thickness (m)    | Strata                 | Description                                                                                                               |
|-------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 0.2 – 0.3         | 0.2 – 0.3        | TOPSOIL                | Grass over slightly sandy silty clay topsoil.                                                                             |
| 1.2 – 1.9         | 1.2 – 1.9        | RIVER TERRACE DEPOSITS | Firm to stiff silty sandy clays / clayey silts. With greater depth becoming gravelly, and very gravelly towards the base. |
| 5.4 – 5.6         | 3.6 – 3.7        | RIVER TERRACE DEPOSITS | Medium dense gravelly sands and sandy flint gravels.                                                                      |
| 20.0 +            | Base not reached | LONDON CLAY FORMATION  | Thinly to thickly laminated fissured sandy clays, with laminations of fine sand.                                          |

### 11.1 Visual and Olfactory Evidence of Contamination

With the exception of the Made Ground soils described in our field logs, there was no other visual or olfactory evidence of possible contamination in any of the exploratory holes.

## 12 Groundwater Observations

Groundwater was observed in the exploratory holes as follows:

| Hole ID | Water Depth (m BGL) | Comment                                                                                                                     | Stratum                                         |
|---------|---------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| BH7     | 7.7                 | Rose to 5.2m within 20 minutes.                                                                                             | London Clay Formation                           |
|         | 15.0                | Rose to 9.0m within 20 minutes.                                                                                             | London Clay Formation                           |
|         | 4.1<br>4.3<br>3.4   | Water depths recorded at start of shift on 25 <sup>th</sup> , 29 <sup>th</sup> and 3 <sup>th</sup> April 2019 respectively. | River Terrace Deposits<br>London Clay Formation |
|         | 4.5<br>4.6<br>5.8   | Water depths recorded at start of shift on 3 <sup>rd</sup> , 7 <sup>th</sup> and 8 <sup>th</sup> May 2019 respectively.     | River Terrace Deposits<br>London Clay Formation |

## 13 Field Tests

### 13.1 DCP CBR (TRL Method)

DCP CBR tests (following the TRL Method) were undertaken within trial pits at a depth of 1.0m bgl. Where trial pits were deeper than this (TP7, TP8, PT1, PT2 & PT3) an additional DCP CBR was undertaken at 1.5m bgl.

Tests were also undertaken from ground level adjacent to TP1-8.

The results of the DCP CBR testing are attached in Appendix B.

### 13.2 Modulus of Subgrade Reaction

The modulus of subgrade reaction ( $K_{762}$  value) was determined using the testing procedure outlined in Mott MacDonald's document ref 400602-MMD-00-XX-SP-Z-0004 'Determination of Modulus of Sub-Grade Reaction'.

Tests were undertaken on the River Terrace Deposits at a depth of 1.0m in TP1 – TP6. The results are attached in Appendix B.

### 13.3 Soakage Testing

Soakage testing was undertaken in PT1, PT2 and PT3 in accordance with BRE365. The results are attached in Appendix B.

The trial pits were gravel-filled due to the anticipated instability of the River Terrace Deposits during testing.

### 13.4 Permeability Testing

A falling head permeability test was undertaken within the installation in BH8 following the intrusive investigation. During the test it was not possible to raise the head above the standing water level. The test results sheet is included in Appendix B.

## D LABORATORY TEST RESULTS

### 14 Geotechnical Laboratory Tests

The following laboratory testing was carried out on selected samples in order to aid material classification and characterise soil properties as specified by Mott MacDonald. The test method references and results are given in Appendix D.

| Laboratory Test                              | Number of Samples Tested | Stratum                                       |
|----------------------------------------------|--------------------------|-----------------------------------------------|
| BRE Suite D Brownfield Site – Pyrite Present | 7                        | River Terrace Deposits, London Clay Formation |
| Particle Size Distribution (wet sieve)       | 11                       | River Terrace Deposits, London Clay Formation |
| Particle Size Distribution (pipette)         | 10                       | River Terrace Deposits, London Clay Formation |
| Atterberg Limits                             | 13                       | River Terrace Deposits, London Clay Formation |
| Unconsolidated Undrained Triaxial            | 9                        | London Clay Formation                         |
| One-dimensional Consolidation                | 1                        | London Clay Formation                         |
| Swelling Pressure Test                       | 1                        | London Clay Formation                         |
| Moisture Content                             | 13                       | River Terrace Deposits, London Clay Formation |

### 15 Geo-Environmental Laboratory Tests

The following geo-environmental laboratory testing was carried out on samples selected by Mott MacDonald. The test results are attached in Appendix E.

| Laboratory Test                             | Number of Samples Tested | Stratum                |
|---------------------------------------------|--------------------------|------------------------|
| Mott MacDonald Comprehensive Soil Suite     | 16                       | River Terrace Deposits |
| Mott MacDonald Comprehensive Leachate Suite | 9                        | River Terrace Deposits |

| Laboratory Test                          | Number of Samples Tested | Stratum              |
|------------------------------------------|--------------------------|----------------------|
| Mott MacDonald Comprehensive Water Suite | 2                        | Groundwater from BH8 |

## E GROUNDWATER MONITORING

### 16 Standpipe Installation (BH8)

The groundwater level within BH8 was recorded on monitoring visits following the intrusive investigation as shown in the table below:

| Date                       | Time                                                                      | Groundwater level (m BGL) | Groundwater level (mAOD) |
|----------------------------|---------------------------------------------------------------------------|---------------------------|--------------------------|
| 23 <sup>rd</sup> May 2019  | 23:30                                                                     | 4.21                      | 9.52                     |
| 30 <sup>th</sup> May 2019  | 09:54                                                                     | 4.22                      | 9.51                     |
| 6 <sup>th</sup> June 2019  | Visit cancelled by agreement with Dyer and Butler Ltd. and Mott MacDonald |                           |                          |
| 13 <sup>th</sup> June 2019 | 22:40                                                                     | 4.20                      | 9.53                     |
| 20 <sup>th</sup> June 2019 | 11:31                                                                     | 4.12                      | 9.61                     |
| 27 <sup>th</sup> June 2019 | 11:37                                                                     | 4.16                      | 9.62                     |
| 4 <sup>th</sup> July 2019  | 22:58                                                                     | 4.15                      | 9.58                     |
| 11 <sup>th</sup> July 2019 | 10:50                                                                     | 4.16                      | 9.57                     |

The standpipe within BH8 was installed at a depth of about 5.0m bgl, with the response zone within the River Terrace Deposits.

### 17 Vibrating Wire Piezometers

The interpreted groundwater levels recorded from the two vibrating wire piezometers within BH7 are shown in the tables below. Calibration records are included within Appendix F.

#### 17.1 Piezometer Installation (8m bgl)

| Date                                    | Time                                                                      | Interpreted piezometric groundwater level (m BGL) | Interpreted piezometric groundwater level (m AOD) |
|-----------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| 1 <sup>st</sup> May 2019 (post-install) | -                                                                         | 3.54                                              | 9.58                                              |
| 19 <sup>th</sup> May 2019               | -                                                                         | 3.97                                              | 9.15                                              |
| 24 <sup>th</sup> May 2019               | 01:36                                                                     | Data not available                                |                                                   |
| 30 <sup>th</sup> May 2019               | 10:05                                                                     | 3.68                                              | 9.44                                              |
| 6 <sup>th</sup> June 2019               | Visit cancelled by agreement with Dyer and Butler Ltd. and Mott MacDonald |                                                   |                                                   |

| Date                       | Time  | Interpreted piezometric groundwater level (m BGL) | Interpreted piezometric groundwater level (m AOD) |
|----------------------------|-------|---------------------------------------------------|---------------------------------------------------|
| 13 <sup>th</sup> June 2019 | 23:49 | 3.80                                              | 9.32                                              |
| 20 <sup>th</sup> June 2019 | 11:47 | 3.67                                              | 9.45                                              |
| 27 <sup>th</sup> June 2019 | 11:30 | 3.53                                              | 9.59                                              |
| 5 <sup>th</sup> July 2019  | 00:14 | 3.63                                              | 9.49                                              |
| 11 <sup>th</sup> July 2019 | 10:57 | 3.72                                              | 9.40                                              |

## 17.2 Piezometer Installation (14m bgl)

| Date                                    | Time                                                                      | Interpreted piezometric groundwater level (m BGL) | Interpreted piezometric groundwater level (m AOD) |
|-----------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| 1 <sup>st</sup> May 2019 (post-install) | -                                                                         | 3.94                                              | 9.18                                              |
| 19 <sup>th</sup> May 2019               | -                                                                         | 4.11                                              | 9.01                                              |
| 24 <sup>th</sup> May 2019               | 01:30                                                                     | 4.05                                              | 9.07                                              |
| 30 <sup>th</sup> May 2019               | 09:54                                                                     | 4.05                                              | 9.07                                              |
| 6 <sup>th</sup> June 2019               | Visit cancelled by agreement with Dyer and Butler Ltd. and Mott MacDonald |                                                   |                                                   |
| 13 <sup>th</sup> June 2019              | 23:47                                                                     | 4.16                                              | 8.96                                              |
| 20 <sup>th</sup> June 2019              | 11:49                                                                     | 4.07                                              | 9.05                                              |
| 27 <sup>th</sup> June 2019              | 11:28                                                                     | 3.93                                              | 9.19                                              |
| 5 <sup>th</sup> July 2019               | 00:12                                                                     | 4.03                                              | 9.09                                              |
| 11 <sup>th</sup> July 2019              | 10:55                                                                     | 4.16                                              | 8.96                                              |

## REFERENCES

- [1] BSI Standards, “BS 5930 Code of practice for ground investigations,” 2015.
- [2] BSI Standards, “BS10175 Investigation of potentially contaminated sites – Code of practice,” 2013.
- [3] BSI Standards, “BS 3882:2015 Specification for Topsoil,” 2015.
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- [5] BSI Standards, “BS ISO 18400-100:2017 Soil quality. Sampling. Guidance on the selection of sampling standards,” 2017.
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- [10] Transport and Road Research Laboratory, “A user’s manual for a program to analyse dynamic cone penetrometer data.,” *Road Note 8*, 1990.
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- [14] CIRIA, “C574 Engineering in Chalk,” 2002.

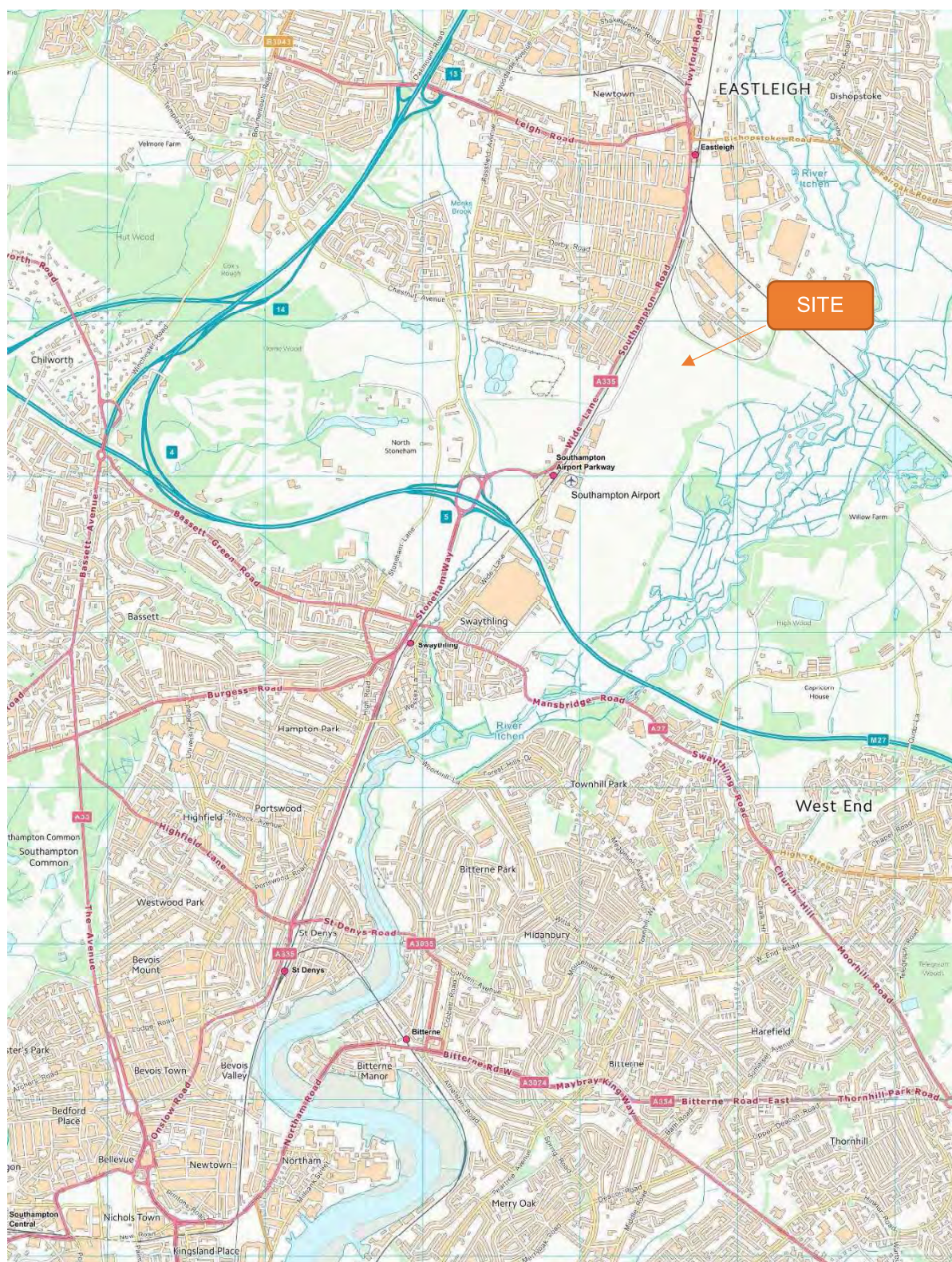


**APPENDIX A**

**Site Plans and Exploratory  
Hole Logs**







Contains Ordnance Survey Data © Crown Copyright and Database Right 2019

|          |                               |            |                             |
|----------|-------------------------------|------------|-----------------------------|
| Site:    | Southampton Runway Extensions | Project ID | J14044                      |
| Figure 1 | Site Location Plan            | Date:      | 29 <sup>th</sup> April 2019 |



|               |                                   |             |        |
|---------------|-----------------------------------|-------------|--------|
| Project Name: | Southampton Runway Extension      | Project ID: | J14044 |
| Location:     | Southampton International Airport | Figure No:  | 2      |
| Client:       | Dyer & Butler Ltd                 | Scale:      | 1:2000 |



### Key to Exploratory Hole Logs, Plans and Sections

| Backfill Symbols |                                                                                   | Pipe Symbols   |                                                                                   | Principal Soil Types |                                                                                   | Principal Rock Types |                                                                                     | Drilling Records                    |                                                                                     |
|------------------|-----------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------|
| Arisings         |  | Plain Pipe     |  | Topsoil              |  | Mudstone             |  | Water Strike                        |  |
| Concrete         |  | Slotted Pipe   |  | Made Ground          |  | Claystone            |  | Depth Water Rose                    |  |
| Blacktop         |  | Piezometer     |  | Clay                 |  | Siltstone            |  | Total Core Recovery (%) [TCR]       |                                                                                     |
| Bentonite        |  | Piezometer Tip |  | Silt                 |  | Sandstone            |  | Solid Core Recovery (%) [SCR]       |                                                                                     |
| Gravel Filter    |  | Filter Tip     |  | Sand                 |  | Limestone            |  | Rock Quality Index (%) [RQI]        |                                                                                     |
| Sand Filter      |  | Extensometer   |  | Gravel               |  | Chalk                |  | Fracture Index (fractures / m) [FI] |                                                                                     |
|                  |                                                                                   | Inclinometers  |  | Peat                 |  |                      |                                                                                     |                                     |                                                                                     |

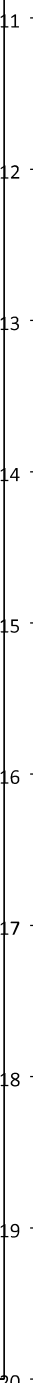
All soil and rock descriptions are in general accordance with BS5930 2015, BS EN ISO 14688-1:2002+A1:2013 and BS EN ISO 14689-1:2003. Chalk descriptions are also based on CIRIA C574 and "Logging the Chalk – R.N. Mortimer 2015". The Geology Code is only provided where a positive identification of the sample strata has been made.

| Location / Method Identifiers |                                                        | In-situ Test Location / Method |                                                          |
|-------------------------------|--------------------------------------------------------|--------------------------------|----------------------------------------------------------|
| BH                            | Borehole (undefined)                                   | DP                             | Dynamic Probe                                            |
| CP                            | Cable Percussive                                       | CPT                            | Cone Penetration Test                                    |
| RC                            | Rotary Core                                            | CBR                            | In-situ CBR Test                                         |
| RO                            | Rotary Open Hole                                       | DCP                            | CBR using Dynamic Cone Penetrometer                      |
| ODC                           | Rotary Odex/Symmetrix drilling cased                   | CBRT                           | CBR using TRL Probe                                      |
| CP+RC                         | Cable Percussive to Rotary Core                        | PB                             | Plate Bearing Test                                       |
| SNC                           | Sonic                                                  | SPT (S)                        | Standard Penetration Test (Split Barrel Sampler)         |
| CFA                           | Continuous Flight Auger                                | SPT (C)                        | Standard Penetration Test (Solid Cone )                  |
| FA                            | Flight Auger                                           | N                              | SPT Result                                               |
| VC                            | Vibro Core                                             | -/-                            | Blows/Penetration (mm) after seating drive               |
| WLS+RC                        | Windowless (Dynamic) Sampler to Rotary Core            | -*/-                           | Total Blows / Penetration (mm)                           |
| WLS                           | Windowless Sampler                                     | ( )                            | Extrapolated Value                                       |
| WS                            | Window Sampler                                         | PPT                            | Perth Penetration (In-House Method - Equivalent N Value) |
| HA                            | Hand Auger                                             | HP / UCS                       | Strength from Hand Penetrometer (kN/m <sup>2</sup> )     |
| C                             | Road / Pavement Core                                   | IVN                            | Strength from Hand Vane ((kN/m <sup>2</sup> )            |
| IP                            | Inspection Pit (Hand Excavation)                       | PID                            | Photo Ionisation Detector (ppm)                          |
| TP                            | Trial Pit (Machine Excavated)                          | MEXE                           | Mexi-Cone CBR (%)                                        |
| OP                            | Observation Pit (Supported Excavation Hand or Machine) |                                |                                                          |

| Samples / Test Type |                              |
|---------------------|------------------------------|
| B                   | Bulk Sample                  |
| BLK                 | Block Sample                 |
| C                   | Core Sample                  |
| CBRS                | CBR Mould Sample             |
| D                   | Small Disturbed Sample       |
| ES                  | Environmental Sample (Soil)  |
| EW                  | Environmental Sample (Water) |
| GS                  | Environmental Sample (Gas)   |

| Samples / Test Type |                                                         |
|---------------------|---------------------------------------------------------|
| SPTLS               | Standard Penetration Test Split Barrel Sample           |
| TW                  | Thin Wall Push In Sample (e.g. Shelby Sampler)          |
| U                   | Undisturbed Open Drive Sample (blows to take)           |
| UT                  | Thin Wall Undisturbed Open Drive Sample (blows to take) |
| W                   | Water Sample (Geotechnical)                             |
| SP                  | Sample from Stockpile                                   |
| P                   | Piston Sample                                           |
| AMAL                | Amalgamated Sample                                      |

|                                                                                                                                                                                           |                                                                                     |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|-------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div></div> <div>www.southerntesting.co.uk tel:01342 333100    www.stconsult.co.uk tel:01604 500020</div> |                                                                                     |                                   |             |                                    | Start - End Date                                                                                                                                                                                                                                                                                                                 |               | Project ID:                                                                         |               | Hole Type:                                                                                                                                                                                                                           |                             | BH7          |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     |                                   |             |                                    | 24/04/2019                                                                                                                                                                                                                                                                                                                       |               | J14044                                                                              |               | CP                                                                                                                                                                                                                                   |                             | Sheet 1 of 2 |      |                                                                                                                                                                        |
| Project Name:                                                                                                                                                                             |                                                                                     | Southampton Runway Extension      |             |                                    | Remarks:                                                                                                                                                                                                                                                                                                                         |               | Co-ordinates:                                                                       |               | Level:                                                                                                                                                                                                                               |                             | Logger:      |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               | 445637E - 117843N                                                                   |               | 13.12                                                                                                                                                                                                                                |                             | TRL/JMW      |      |                                                                                                                                                                        |
| Location:                                                                                                                                                                                 |                                                                                     | Southampton International Airport |             |                                    | Hole set out by Dyer & Butler Ltd. SPT Hammer SEDS 10. Vibrating wire piezometers installed upon completion, with tips at 8m bgl and 14m bgl. The tips were installed within a filter sand cell, with the remainder of the borehole backfilled with cement-bentonite grout and bentonite granules as specified by the Engineers. |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| Client:                                                                                                                                                                                   |                                                                                     | Dyer & Butler Ltd.                |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| Well                                                                                                                                                                                      | Water Strikes                                                                       | Samples and Insitu Testing        |             |                                    | Level (m AOD)                                                                                                                                                                                                                                                                                                                    | Thickness (m) | Legend                                                                              | Depth (m bgl) | Stratum Description                                                                                                                                                                                                                  |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | Depth (m bgl)                     | Type        | Results                            |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                         |  | 0.10                              | B<br>ES     |                                    | 12.9                                                                                                                                                                                                                                                                                                                             | (0.20)        |    | 0.20          | TOPSOIL: firm brown silty sandy CLAY with roots.<br><br>Firm yellowish brown mottled greyish brown silty sandy CLAY. Occasionally slightly gravelly. Gravel is fine to coarse subangular to subrounded flint. RIVER TERRACE DEPOSITS |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 0.50                              | B<br>ES     |                                    |                                                                                                                                                                                                                                                                                                                                  | (1.00)        |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 1.00                              | B<br>ES     |                                    | 11.9                                                                                                                                                                                                                                                                                                                             | (0.60)        |                                                                                     | 1.20          |                                                                                                                                                                                                                                      |                             |              |      | Soft brown silty CLAY. RIVER TERRACE DEPOSITS                                                                                                                          |
|                                                                                                                                                                                           |                                                                                     | 2.20                              | D<br>B      | N=13 (4,4/3,4,3,3)                 | 11.3                                                                                                                                                                                                                                                                                                                             |               |    | 1.80          | Medium dense mid brown very sandy clayey GRAVEL. Gravel is fine to medium subangular to subrounded flint. Sand is medium to coarse. RIVER TERRACE DEPOSITS                                                                           |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 2.20 - 2.70                       | SPT(C)      |                                    |                                                                                                                                                                                                                                                                                                                                  | (1.20)        |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 2.20                              |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 3.20                              | ES<br>B     | N=24 (4,4/6,6,6,6)                 | 10.1                                                                                                                                                                                                                                                                                                                             | (0.60)        |    | 3.00          | Medium dense light brown clayey GRAVEL. Gravel is fine to coarse subangular flint and fine subrounded chalk. RIVER TERRACE DEPOSITS                                                                                                  |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 3.20 - 3.70                       | SPT(C)      |                                    | 9.5                                                                                                                                                                                                                                                                                                                              |               |                                                                                     | 3.60          |                                                                                                                                                                                                                                      |                             |              |      | Medium dense mid brown and white slightly sandy GRAVEL. Gravel is fine to medium rounded to subangular flint and rounded chalk. Sand is coarse. RIVER TERRACE DEPOSITS |
|                                                                                                                                                                                           |                                                                                     | 3.20                              |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 4.20 - 4.70                       | B<br>SPT(C) | N=14 (1,3/3,3,4,4)                 |                                                                                                                                                                                                                                                                                                                                  | (1.80)        |  | 5.40          | Firm becoming stiff grey fissured silty CLAY with with frequent thick laminae of light grey silty fine sand. LONDON CLAY                                                                                                             |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 4.20                              |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 5.20 - 5.70                       | B<br>SPT(C) | N=15 (1,2/2,4,4,5)                 | 7.7                                                                                                                                                                                                                                                                                                                              |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 5.20                              |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 5.70                              | W           |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     | 6.00                              | D<br>ES     | UCS(kPa)=150<br>N=17 (2,3/3,4,4,6) |                                                                                                                                                                                                                                                                                                                                  |               |  |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| 6.50 - 6.95                                                                                                                                                                               | HP<br>SPTLS                                                                         |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| 6.50                                                                                                                                                                                      | SPT(S)                                                                              |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| 7.00 - 7.50                                                                                                                                                                               | B                                                                                   | Ublow=25                          |             |                                    |                                                                                                                                                                                                                                               |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| 8.00 - 8.45                                                                                                                                                                               | U                                                                                   |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| 8.50                                                                                                                                                                                      | D                                                                                   |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| 9.00                                                                                                                                                                                      | D                                                                                   | N=27 (3,5/7,7,6,7)                |             |                                    |                                                                                                                                                                                                                                               |               | At 19.0m: Sample water-softened, occasional sand interlaminae.                      |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| 9.50 - 9.95                                                                                                                                                                               | SPTLS                                                                               |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| 9.50                                                                                                                                                                                      | SPT(S)                                                                              |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
|                                                                                                                                                                                           |                                                                                     |                                   |             |                                    |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      |                             |              |      |                                                                                                                                                                        |
| Hole Details                                                                                                                                                                              |                                                                                     | Casing Details                    |             | Waterstrike (m bgl)                |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                     |               |                                                                                                                                                                                                                                      | Standing/Chiselling (m bgl) |              |      |                                                                                                                                                                        |
| Depth (m bgl)                                                                                                                                                                             | Dia. (mm)                                                                           | Depth (m bgl)                     | Dia. (mm)   | Date                               | Depth Strike                                                                                                                                                                                                                                                                                                                     | Depth Casing  | Depth Sealed                                                                        | Rose to:      | Time (mins)                                                                                                                                                                                                                          | From                        | To           | Time | Remarks                                                                                                                                                                |
| 13.00                                                                                                                                                                                     | 200                                                                                 | 13.00                             | 200         | 26-04-2019                         | 7.70                                                                                                                                                                                                                                                                                                                             | 5.50          |                                                                                     | 5.20          | 20                                                                                                                                                                                                                                   |                             |              |      |                                                                                                                                                                        |
| 20.00                                                                                                                                                                                     | 150                                                                                 | 15.00                             | 150         | 30-04-2019                         | 15.00                                                                                                                                                                                                                                                                                                                            | 13.00         |                                                                                     | 9.00          | 20                                                                                                                                                                                                                                   |                             |              |      |                                                                                                                                                                        |

|                                                                                                                                                                                           |                                                                                     |                            |      |          |                                   |               |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                                                        |  |              |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| <div></div> <div>www.southerntesting.co.uk tel:01342 333100    www.stconsult.co.uk tel:01604 500020</div> |                                                                                     |                            |      |          | Start - End Date                  |               | Project ID:                                                                                                                                                                                                                                                                                                                      |               | Hole Type:                                                                                                             |  | BH7          |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                           |                                                                                     |                            |      |          | 24/04/2019                        |               | J14044                                                                                                                                                                                                                                                                                                                           |               | CP                                                                                                                     |  | Sheet 2 of 2 |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Project Name:                                                                                                                                                                             |                                                                                     |                            |      |          | Southampton Runway Extension      |               | Remarks:                                                                                                                                                                                                                                                                                                                         |               | Co-ordinates:                                                                                                          |  | Level:       |  | Logger:                                                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                           |                                                                                     |                            |      |          |                                   |               |                                                                                                                                                                                                                                                                                                                                  |               | 445637E - 117843N                                                                                                      |  | 13.12        |  | TRL/JMW                                                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Location:                                                                                                                                                                                 |                                                                                     |                            |      |          | Southampton International Airport |               | Hole set out by Dyer & Butler Ltd. SPT Hammer SEDS 10. Vibrating wire piezometers installed upon completion, with tips at 8m bgl and 14m bgl. The tips were installed within a filter sand cell, with the remainder of the borehole backfilled with cement-bentonite grout and bentonite granules as specified by the Engineers. |               |                                                                                                                        |  |              |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Client:                                                                                                                                                                                   |                                                                                     |                            |      |          | Dyer & Butler Ltd.                |               |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                                                        |  |              |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Well                                                                                                                                                                                      | Water Strikes                                                                       | Samples and Insitu Testing |      |          | Level (m AOD)                     | Thickness (m) | Legend                                                                                                                                                                                                                                                                                                                           | Depth (m bgl) | Stratum Description                                                                                                    |  |              |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                           |                                                                                     | Depth (m bgl)              | Type | Results  |                                   |               |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                                                        |  |              |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                         |  | 10.50                      | D    |          | -6.9                              | (14.60)       |                                                                                                                                                                                                                                                |               | Firm becoming stiff grey fissured silty CLAY with frequent thick laminae of light grey silty fine sand.<br>LONDON CLAY |  |              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                           |                                                                                     | 11.00 - 11.45              | U    | Ublow=30 |                                   |               |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                                                        |  |              |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                           |                                                                                     | 11.50                      | D    |          |                                   |               |                                                                                                                                                                                                                                                                                                                                  |               |                                                                                                                        |  |              |  |                                                                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



|                                                                                       |            |                                   |                      |                     |                                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
|---------------------------------------------------------------------------------------|------------|-----------------------------------|----------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------|---------------|------------------------|--------------|--------------------|--|
|      |            |                                   |                      | Start - End Date:   |                                                                                                                                                                                                                                                                                                                                  | Project ID: |                                    | Machine Type: |                        | BH7          |                    |  |
| www.southerntesting.co.uk   tel:01342 333100   www.stconsult.co.uk   tel:01604 500020 |            |                                   |                      | 24/04/2019          |                                                                                                                                                                                                                                                                                                                                  | J14044      |                                    | Dando 2000    |                        | Sheet 1 of 1 |                    |  |
| Project Name:                                                                         |            | Southampton Runway Extension      |                      |                     | Remarks:                                                                                                                                                                                                                                                                                                                         |             | Co-ordinates:<br>E445637 - N117843 |               | Level (m AOD)<br>13.12 |              | Logger:<br>TRL/JMW |  |
| Location:                                                                             |            | Southampton International Airport |                      |                     | Hole set out by Dyer & Butler Ltd. SPT Hammer SEDS 10. Vibrating wire piezometers installed upon completion, with tips at 8m bgl and 14m bgl. The tips were installed within a filter sand cell, with the remainder of the borehole backfilled with cement-bentonite grout and bentonite granules as specified by the Engineers. |             |                                    |               |                        |              |                    |  |
| Client                                                                                |            | Dyer & Butler Ltd.                |                      |                     |                                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| Drilling Progress by Time                                                             |            |                                   |                      |                     |                                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| Date and Time                                                                         |            | Depth (m bgl)                     | Casing (m bgl)       | Water (m bgl)       | Remarks                                                                                                                                                                                                                                                                                                                          |             |                                    |               |                        |              |                    |  |
| 30/01/2019 23:00:00                                                                   |            | 18.00                             | 15.00                | 3.4                 | Start of shift.                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| 25/04/2019 22:30:00                                                                   |            | 4.70                              | 4.70                 | 4.1                 | Start of shift.                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| 29/04/2019 23:00:00                                                                   |            | 13.50                             | 8.50                 | 4.3                 | Start of shift.                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| Rotary Coring Information                                                             |            |                                   |                      |                     |                                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| Depth Top                                                                             | Depth Base | Diameter                          | Duration             | TCR                 | SCR                                                                                                                                                                                                                                                                                                                              | RQD         | Remarks                            |               |                        |              |                    |  |
|                                                                                       |            |                                   |                      |                     |                                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| Standard Penetration Test Summary                                                     |            |                                   |                      |                     |                                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| Depth Top (m bgl)                                                                     |            | Test Type                         | Depth Casing (m bgl) | Depth Water (m bgl) | Reported Result                                                                                                                                                                                                                                                                                                                  |             |                                    |               |                        |              |                    |  |
| 2.20                                                                                  |            | C                                 | 2.20                 | 1.5                 | N=13 (4,4/3,4,3,3)                                                                                                                                                                                                                                                                                                               |             |                                    |               |                        |              |                    |  |
| 3.20                                                                                  |            | C                                 | 3.20                 | 3                   | N=24 (4,4/6,6,6,6)                                                                                                                                                                                                                                                                                                               |             |                                    |               |                        |              |                    |  |
| 4.20                                                                                  |            | C                                 | 4.20                 | 3.5                 | N=14 (1,3/3,3,4,4)                                                                                                                                                                                                                                                                                                               |             |                                    |               |                        |              |                    |  |
| 5.20                                                                                  |            | C                                 | 5.20                 | 3.5                 | N=15 (1,2/2,4,4,5)                                                                                                                                                                                                                                                                                                               |             |                                    |               |                        |              |                    |  |
| 6.50                                                                                  |            | S                                 | 5.50                 | None recorded       | N=17 (2,3/3,4,4,6)                                                                                                                                                                                                                                                                                                               |             |                                    |               |                        |              |                    |  |
| 9.50                                                                                  |            | S                                 | 8.50                 | 6.5                 | N=27 (3,5/7,7,6,7)                                                                                                                                                                                                                                                                                                               |             |                                    |               |                        |              |                    |  |
| 12.50                                                                                 |            | S                                 | 8.50                 | 6                   | N=20 (3,4/5,4,5,6)                                                                                                                                                                                                                                                                                                               |             |                                    |               |                        |              |                    |  |
| 14.50                                                                                 |            | S                                 | 13.00                | 12.5                | N=41 (6,6/10,10,10,11)                                                                                                                                                                                                                                                                                                           |             |                                    |               |                        |              |                    |  |
| 16.50                                                                                 |            | S                                 | 16.00                | 10.5                | N=34 (6,6/6,10,8,10)                                                                                                                                                                                                                                                                                                             |             |                                    |               |                        |              |                    |  |
| 18.50                                                                                 |            | S                                 | 15.00                | 6                   | N=35 (6,7/10,9,8,8)                                                                                                                                                                                                                                                                                                              |             |                                    |               |                        |              |                    |  |





JMW

Hole set out by Dyer & Butler Ltd. SPT Hammer SEDS 10. 50mm standpipe installed upon completion. GL to 3.5m: bentonite. 3.5m to 5.0m: gravel. GL to 4.0m: plain pipe. 4.0m to 5.0m: slotted pipe as specified by the Engineers. No water strikes recorded.

[illegible]



|                                                                                                |            |                      |                     |                                                                                                                                                                                                                                                            |                 |                                           |         |                                    |  |                            |  |
|------------------------------------------------------------------------------------------------|------------|----------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------|---------|------------------------------------|--|----------------------------|--|
|               |            |                      |                     | <b>Start - End Date:</b><br>26/04/2019 - 09/05/2019                                                                                                                                                                                                        |                 | <b>Project ID:</b><br>J14044              |         | <b>Machine Type:</b><br>Dando 2000 |  | <b>BH8</b><br>Sheet 1 of 1 |  |
| <small>www.southerntesting.co.uk tel:01342 333100 www.stconsult.co.uk tel:01604 500020</small> |            |                      |                     |                                                                                                                                                                                                                                                            |                 |                                           |         |                                    |  |                            |  |
| <b>Project Name:</b> Southampton Runway Extension                                              |            |                      |                     | <b>Remarks:</b>                                                                                                                                                                                                                                            |                 | <b>Co-ordinates:</b><br>E445542 - N117877 |         | <b>Level (m AOD)</b><br>13.68      |  | <b>Logger:</b><br>JMW      |  |
| <b>Location:</b> Southampton International Airport                                             |            |                      |                     | Hole set out by Dyer & Butler Ltd. SPT Hammer SEDS 10. 50mm standpipe installed upon completion. GL to 3.5m: bentonite. 3.5m to 5.0m: gravel. GL to 4.0m: plain pipe. 4.0m to 5.0m: slotted pipe as specified by the Engineers. No water strikes recorded. |                 |                                           |         |                                    |  |                            |  |
| <b>Client:</b> Dyer & Butler Ltd.                                                              |            |                      |                     |                                                                                                                                                                                                                                                            |                 |                                           |         |                                    |  |                            |  |
| <b>Drilling Progress by Time</b>                                                               |            |                      |                     |                                                                                                                                                                                                                                                            |                 |                                           |         |                                    |  |                            |  |
| Date and Time                                                                                  |            | Depth (m bgl)        | Casing (m bgl)      | Water (m bgl)                                                                                                                                                                                                                                              | Remarks         |                                           |         |                                    |  |                            |  |
| 03/05/2019 22:45:00                                                                            |            | 7.50                 | 6.00                | 4.5                                                                                                                                                                                                                                                        | Start of shift. |                                           |         |                                    |  |                            |  |
| 07/05/2019 22:30:00                                                                            |            | 11.00                | 9.00                | 4.6                                                                                                                                                                                                                                                        | Start of shift. |                                           |         |                                    |  |                            |  |
| 08/05/2019 22:30:00                                                                            |            | 15.50                | 9.00                | 5.8                                                                                                                                                                                                                                                        | Start of shift. |                                           |         |                                    |  |                            |  |
| <b>Rotary Coring Information</b>                                                               |            |                      |                     |                                                                                                                                                                                                                                                            |                 |                                           |         |                                    |  |                            |  |
| Depth Top                                                                                      | Depth Base | Diameter             | Duration            | TCR                                                                                                                                                                                                                                                        | SCR             | RQD                                       | Remarks |                                    |  |                            |  |
|                                                                                                |            |                      |                     |                                                                                                                                                                                                                                                            |                 |                                           |         |                                    |  |                            |  |
| <b>Standard Penetration Test Summary</b>                                                       |            |                      |                     |                                                                                                                                                                                                                                                            |                 |                                           |         |                                    |  |                            |  |
| Depth Top (m bgl)                                                                              | Test Type  | Depth Casing (m bgl) | Depth Water (m bgl) | Reported Result                                                                                                                                                                                                                                            |                 |                                           |         |                                    |  |                            |  |
| 2.50                                                                                           | C          | 2.50                 | 1.0                 | N=41 (7,7/9,10,12,10)                                                                                                                                                                                                                                      |                 |                                           |         |                                    |  |                            |  |
| 3.50                                                                                           | C          | 3.00                 | 3.0                 | N=26 (2,4/6,6,7,7)                                                                                                                                                                                                                                         |                 |                                           |         |                                    |  |                            |  |
| 4.50                                                                                           | C          | 4.00                 | None recorded       | N=14 (3,4/3,4,3,4)                                                                                                                                                                                                                                         |                 |                                           |         |                                    |  |                            |  |
| 5.50                                                                                           | C          | 5.50                 | 2.5                 | N=13 (1,2/2,3,5,3)                                                                                                                                                                                                                                         |                 |                                           |         |                                    |  |                            |  |
| 7.50                                                                                           | S          | 6.00                 | 5.5                 | N=28 (2,4/7,7,6,8)                                                                                                                                                                                                                                         |                 |                                           |         |                                    |  |                            |  |
| 9.50                                                                                           | S          | 7.50                 | 5.5                 | N=25 (3,5/6,7,6,6)                                                                                                                                                                                                                                         |                 |                                           |         |                                    |  |                            |  |
| 11.50                                                                                          | S          | 9.00                 | 4.5                 | N=50 (4,7/50 for 230mm)                                                                                                                                                                                                                                    |                 |                                           |         |                                    |  |                            |  |
| 13.50                                                                                          | S          | 10.50                | 7.5                 | 50 (5,7/50 for 190mm)                                                                                                                                                                                                                                      |                 |                                           |         |                                    |  |                            |  |
| 15.50                                                                                          | S          | 13.50                | 9.0                 | 50 (7,12/50 for 185mm)                                                                                                                                                                                                                                     |                 |                                           |         |                                    |  |                            |  |
| 17.50                                                                                          | S          | 16.50                | 10.0                | N=35 (5,7/8,9,9,9)                                                                                                                                                                                                                                         |                 |                                           |         |                                    |  |                            |  |
| 19.50                                                                                          | S          | 16.50                | 9.50                | N=35 (7,7/8,9,9,9)                                                                                                                                                                                                                                         |                 |                                           |         |                                    |  |                            |  |

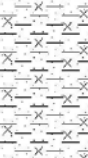


|                                                                                  |  |  |  |                                                                                  |  |                                             |                                        |                                       |                       |
|----------------------------------------------------------------------------------|--|--|--|----------------------------------------------------------------------------------|--|---------------------------------------------|----------------------------------------|---------------------------------------|-----------------------|
|  |  |  |  | <b>Start - End Date:</b><br>25/04/2019 - 26/04/2019                              |  | <b>Project ID:</b><br><b>J14044</b>         | <b>Machine Type:</b><br>21T excavator. | <b>PT1</b><br><br><b>Sheet 1 of 1</b> |                       |
| <b>Project Name:</b> Southampton Runway Extension                                |  |  |  | <b>Remarks:</b>                                                                  |  | <b>Co-ordinates:</b><br>E 445659 - N 117770 |                                        | <b>Level (m AOD):</b><br>13.05        | <b>Logger:</b><br>JMW |
| <b>Location:</b> Southampton International Airport                               |  |  |  | Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. |  |                                             |                                        |                                       |                       |
| <b>Client:</b> Dyer & Butler Ltd.                                                |  |  |  |                                                                                  |  |                                             |                                        |                                       |                       |

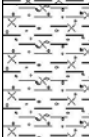
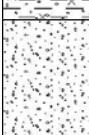
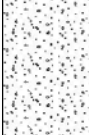
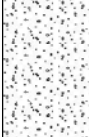
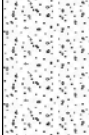
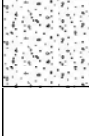
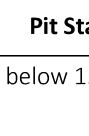
| Samples and Insitu Testing |         |              | Level<br>(m AOD) | Thickness<br>(m) | Legend                                                                            | Depth<br>(m bgl) | Stratum Description                                                                                                                                   |   |
|----------------------------|---------|--------------|------------------|------------------|-----------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Depth (m)                  | Type    | Results      |                  |                  |                                                                                   |                  |                                                                                                                                                       |   |
| 0.10                       | B<br>ES | UCS(kPa)=270 | 12.8             | (0.30)           |  | 0.30             | TOPSOIL: Grass over dark brown silty CLAY with abundant rootlets.                                                                                     |   |
| 0.30                       | B<br>ES |              |                  | (0.30)           |  | 0.60             | Stiff mid brown silty CLAY with rare to occasional fine subangular flint gravel.<br>RIVER TERRACE DEPOSITS                                            |   |
| 0.50                       | B<br>ES |              | 12.4             |                  |                                                                                   |                  | Stiff mid brown/ orangish brown silty slightly sandy CLAY.<br>RIVER TERRACE DEPOSITS                                                                  |   |
| 0.80                       | HP      |              |                  |                  |                                                                                   |                  |                                                                                                                                                       |   |
| 1.00                       | B<br>ES |              |                  | (0.80)           |  | 1.40             | Mid brown slightly sandy very clayey GRAVEL. Gravel is fine to medium subrounded to subangular flint.<br>RIVER TERRACE DEPOSITS                       | 1 |
| 1.50                       | B<br>ES |              | 11.6             | (0.20)           |  | 1.60             | Mid brown silty slightly sandy GRAVEL. Gravel is fine to coarse subangular to rounded flint with frequent cobbles of flint.<br>RIVER TERRACE DEPOSITS | 2 |
| 2.00                       | B       |              | 11.4             |                  |                                                                                   |                  |                                                                                                                                                       |   |
| 2.50                       | B<br>ES |              |                  | (1.40)           |  | 3.00             | Pit terminated at 3.000m.                                                                                                                             | 3 |
| 3.00                       | B<br>ES |              | 10.0             |                  |                                                                                   |                  |                                                                                                                                                       | 4 |
|                            |         |              |                  |                  |                                                                                   |                  |                                                                                                                                                       |   |

|                          |      |                              |                       |
|--------------------------|------|------------------------------|-----------------------|
| <b>Pit Dimension (m)</b> |      | <b>Pit Stability:</b>        | <b>Water Strikes:</b> |
| <b>Width:</b>            | 0.60 | Spalling of sides below 1.9m | Dry.                  |
| <b>Length:</b>           | 3.00 |                              |                       |
| <b>Depth:</b>            | 3.00 |                              |                       |

|                                                                                  |  |  |  |                                                                                  |  |                                             |  |                                     |  |                            |  |
|----------------------------------------------------------------------------------|--|--|--|----------------------------------------------------------------------------------|--|---------------------------------------------|--|-------------------------------------|--|----------------------------|--|
|  |  |  |  | <b>Start - End Date:</b><br>24/04/2019                                           |  | <b>Project ID:</b><br>J14044                |  | <b>Machine Type:</b><br>21t tracked |  | <b>PT2</b><br>Sheet 1 of 1 |  |
| <b>Project Name:</b> Southampton Runway Extension                                |  |  |  | <b>Remarks:</b>                                                                  |  | <b>Co-ordinates:</b><br>E 445676 - N 117716 |  | <b>Level (m AOD):</b><br>12.81      |  | <b>Logger:</b><br>TL       |  |
| <b>Location:</b> Southampton International Airport                               |  |  |  | Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. |  |                                             |  |                                     |  |                            |  |
| <b>Client:</b> Dyer & Butler Ltd.                                                |  |  |  |                                                                                  |  |                                             |  |                                     |  |                            |  |

| Samples and Insitu Testing |      |         | Level<br>(m AOD) | Thickness<br>(m) | Legend                                                                             | Depth<br>(m bgl) | Stratum Description                                                                                                                                                                                              |   |
|----------------------------|------|---------|------------------|------------------|------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Depth (m)                  | Type | Results |                  |                  |                                                                                    |                  |                                                                                                                                                                                                                  |   |
| 0.30                       | B    |         | 12.6             | (0.20)           |   | 0.20             | TOPSOIL: firm brown silty sandy CLAY with roots.                                                                                                                                                                 | 1 |
| 0.50                       | B    |         |                  |                  |   |                  | Firm to stiff yellowish brown mottled greyish brown silty sandy CLAY. Sand is fine. Rarely to occasionally slightly gravelly. Gravel is fine to coarse subangular to subrounded flint.<br>RIVER TERRACE DEPOSITS |   |
| 1.00                       | B    |         |                  | (1.10)           |   |                  |                                                                                                                                                                                                                  |   |
| 1.50                       | B    |         | 11.5             | (0.50)           |   | 1.30             | Stiff brown gravelly CLAY. Gravel is fine to coarse subangular to subrounded flint. With occasional pockets of sandy gravelly CLAY.<br>RIVER TERRACE DEPOSITS                                                    |   |
| 2.10                       | B    |         | 11.0             | (1.20)           |  | 1.80             | Yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subangular to subrounded flint.<br>RIVER TERRACE DEPOSITS                                                                                 | 2 |
|                            | ES   |         | 9.8              |                  |                                                                                    | 3.00             | Pit terminated at 3.000m.                                                                                                                                                                                        | 3 |
|                            |      |         |                  |                  |                                                                                    |                  |                                                                                                                                                                                                                  | 4 |
|                            |      |         |                  |                  |                                                                                    |                  |                                                                                                                                                                                                                  | 5 |

|                          |      |                           |  |                       |  |
|--------------------------|------|---------------------------|--|-----------------------|--|
| <b>Pit Dimension (m)</b> |      | <b>Pit Stability:</b>     |  | <b>Water Strikes:</b> |  |
| <b>Width:</b>            | 0.55 | Pit stable on completion. |  | Dry.                  |  |
| <b>Length:</b>           | 5.80 |                           |  |                       |  |
| <b>Depth:</b>            | 3.00 |                           |  |                       |  |

|                                                                                                                                                                                           |      |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--|
| <div></div> <div>www.southerntesting.co.uk tel:01342 333100    www.stconsult.co.uk tel:01604 500020</div> |      |                                   |                  | Start - End Date:                                                                                                                                                                                                           |                                                                                     | Project ID:                                                                                                                                             | Machine Type:                                                                                                                                           | PT3          |  |
|                                                                                                                                                                                           |      |                                   |                  | 23/04/2019 - 24/04/2019                                                                                                                                                                                                     |                                                                                     | J14044                                                                                                                                                  | 21t tracked                                                                                                                                             | Sheet 1 of 1 |  |
| Project Name:                                                                                                                                                                             |      | Southampton Runway Extension      |                  | Remarks:                                                                                                                                                                                                                    | Co-ordinates:                                                                       |                                                                                                                                                         | Level (m AOD):                                                                                                                                          | Logger:      |  |
|                                                                                                                                                                                           |      |                                   |                  |                                                                                                                                                                                                                             | E 445710 - N 117784                                                                 |                                                                                                                                                         | 12.67                                                                                                                                                   | TRL          |  |
| Location:                                                                                                                                                                                 |      | Southampton International Airport |                  | Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. BRE365 test undertaken in trial pit. Hole reinstated by D&B. Hole was dry upon completion. Slight instability in sands/gravels below 1.5m. |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| Client:                                                                                                                                                                                   |      | Dyer & Butler Ltd.                |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| Samples and Insitu Testing                                                                                                                                                                |      |                                   | Level<br>(m AOD) | Thickness<br>(m)                                                                                                                                                                                                            | Legend                                                                              | Depth<br>(m bgl)                                                                                                                                        | Stratum Description                                                                                                                                     |              |  |
| Depth (m)                                                                                                                                                                                 | Type | Results                           |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 0.10                                                                                                                                                                                      | B    | P= 105                            | 12.4             | (0.25)                                                                                                                                                                                                                      |    | 0.25                                                                                                                                                    | TOPSOIL: firm brown sandy SILT/CLAY with rootlets.                                                                                                      |              |  |
| 0.30                                                                                                                                                                                      | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 0.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | 12.0                              | (0.45)           |                                                                                                                                            | 0.70                                                                                | Firm brown sandy SILT/CLAY, with rootlets and rare to occasional fine to coarse subangular flint gravel. RIVER TERRACE DEPOSITS                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | IVN  |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 1.00                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | 11.5                              | (0.50)           |                                                                                                                                            | 1.20                                                                                | Firm to stiff brown gravelly CLAY. Gravel is fine to coarse subangular to subrounded flint. RIVER TERRACE DEPOSITS                                      |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | IVN  |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 1.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | 11.5                              | (0.50)           |                                                                                                                                            | 1.20                                                                                | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |   | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.00                                                                                                                                                                                      | B    | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  | 1.20                                                                                                                                                    | Light yellowish brown gravelly fine to coarse SAND. Gravel is fine to coarse subrounded to subangular flint. Rare flint cobbles. RIVER TERRACE DEPOSITS |              |  |
|                                                                                                                                                                                           | ES   |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
| 2.50                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                             |                                                                                     |                                                                                                                                                         |                                                                                                                                                         |              |  |
|                                                                                                                                                                                           | ES   | P= 100                            | 11.5             | (0.50)                                                                                                                                                                                                                      |  |                                                                                                                                                         |                                                                                                                                                         |              |  |

|                                                                                                     |      |         |                       |                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                                                                                                              |                                             |  |                                       |  |                       |  |
|-----------------------------------------------------------------------------------------------------|------|---------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--|---------------------------------------|--|-----------------------|--|
|                     |      |         |                       | <b>Start - End Date:</b><br>15/04/2019 - 16/04/2019                                                                                                                                                                        |                                                                                   | <b>Project ID:</b><br><b>J14044</b> |                                                                                                                                                                                              | <b>Machine Type:</b><br>Hand Dug            |  | <b>TP1</b><br><br><b>Sheet 1 of 1</b> |  |                       |  |
| <small>www.southerntesting.co.uk tel:01342 333100      www.stconsult.co.uk tel:01604 500020</small> |      |         |                       | <b>Project Name:</b> Southampton Runway Extension                                                                                                                                                                          |                                                                                   | <b>Remarks:</b>                     |                                                                                                                                                                                              | <b>Co-ordinates:</b><br>E 445573 - N 117760 |  | <b>Level (m AOD):</b><br>13.22        |  | <b>Logger:</b><br>TRL |  |
| <b>Location:</b> Southampton International Airport                                                  |      |         |                       | Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. Hole was dry upon completion. Hand dug pit in original TP1 location. DCP CBR (TRL Method) undertaken at ground level, and at base of pit. |                                                                                   |                                     |                                                                                                                                                                                              |                                             |  |                                       |  |                       |  |
| <b>Client:</b> Dyer & Butler Ltd.                                                                   |      |         |                       |                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                                                                                                              |                                             |  |                                       |  |                       |  |
| <b>Samples and Insitu Testing</b>                                                                   |      |         | Level<br>(m AOD)      | Thickness<br>(m)                                                                                                                                                                                                           | Legend                                                                            | Depth<br>(m bgl)                    | Stratum Description                                                                                                                                                                          |                                             |  |                                       |  |                       |  |
| Depth (m)                                                                                           | Type | Results |                       |                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                                                                                                              |                                             |  |                                       |  |                       |  |
|                                                                                                     |      |         | 13.0                  | (0.20)                                                                                                                                                                                                                     |  | 0.20                                | TOPSOIL: firm brown SILT/CLAY with rootlets. Rarely slightly gravelly, comprising fine to coarse subangular flint.<br>Firm yellowish brown silty CLAY / SILT/CLAY.<br>RIVER TERRACE DEPOSITS |                                             |  |                                       |  | 1                     |  |
|                                                                                                     |      |         | 12.2                  | (0.80)                                                                                                                                                                                                                     |  | 1.00                                | 0.6m to 1.0m: becoming silty sandy CLAY. Sand is fine.<br>Pit terminated at 1.000m.                                                                                                          |                                             |  |                                       |  |                       |  |
| <b>Pit Dimension (m)</b>                                                                            |      |         | <b>Pit Stability:</b> |                                                                                                                                                                                                                            |                                                                                   |                                     | <b>Water Strikes:</b>                                                                                                                                                                        |                                             |  |                                       |  |                       |  |
| <b>Width:</b>                                                                                       | 1.20 | Stable  |                       |                                                                                                                                                                                                                            |                                                                                   | Dry.                                |                                                                                                                                                                                              |                                             |  |                                       |  |                       |  |
| <b>Length:</b>                                                                                      | 1.00 |         |                       |                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                                                                                                              |                                             |  |                                       |  |                       |  |
| <b>Depth:</b>                                                                                       | 1.00 |         |                       |                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                                                                                                              |                                             |  |                                       |  |                       |  |

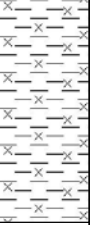
|                                                                                                   |  |  |  |                                                                                                                                                                                                                                                                                                 |  |                                     |  |                                             |  |                                        |  |                       |  |
|---------------------------------------------------------------------------------------------------|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------|--|---------------------------------------------|--|----------------------------------------|--|-----------------------|--|
|                   |  |  |  | <b>Start - End Date:</b><br>15/04/2019 - 16/04/2019                                                                                                                                                                                                                                             |  | <b>Project ID:</b><br><b>J14044</b> |  | <b>Machine Type:</b><br>Komatsu 21t         |  | <b>TP1A</b><br><br><b>Sheet 1 of 1</b> |  |                       |  |
| <small>www.southerntesting.co.uk tel:01342 333100    www.stconsult.co.uk tel:01604 500020</small> |  |  |  | <b>Project Name:</b> Southampton Runway Extension                                                                                                                                                                                                                                               |  | <b>Remarks:</b>                     |  | <b>Co-ordinates:</b><br>E 445583 - N 117754 |  | <b>Level (m AOD):</b><br>13.24         |  | <b>Logger:</b><br>TRL |  |
| <b>Location:</b> Southampton International Airport                                                |  |  |  | Hole set out by Dyer & Butler Ltd. Moved east by approx. 10m due to presence of utilities. Hole excavated by D&B with STL in attendance. Plate load test undertaken at base of trial pit. Hole reinstated by D&B. Hole was dry upon completion. DCP CBR (TRL Method) undertaken at base of pit. |  |                                     |  |                                             |  |                                        |  |                       |  |
| <b>Client:</b> Dyer & Butler Ltd.                                                                 |  |  |  |                                                                                                                                                                                                                                                                                                 |  |                                     |  |                                             |  |                                        |  |                       |  |

| Samples and Insitu Testing |      |         | Level<br>(m AOD) | Thickness<br>(m) | Legend                                                                            | Depth<br>(m bgl) | Stratum Description                                                                                                |   |
|----------------------------|------|---------|------------------|------------------|-----------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------|---|
| Depth (m)                  | Type | Results |                  |                  |                                                                                   |                  |                                                                                                                    |   |
| 0.10                       | D    | P= 90   | 13.0             | (0.25)           |  | 0.25             | TOPSOIL: firm brown SILT/CLAY with rootlets. Rarely slightly gravelly, comprising fine to coarse subangular flint. | 1 |
| 0.30                       | D    |         |                  |                  |                                                                                   |                  | Firm to stiff yellowish brown SILT/CLAY.                                                                           |   |
| 0.50                       | D    |         |                  |                  |                                                                                   |                  | RIVER TERRACE DEPOSITS                                                                                             |   |
|                            | ES   | P= 105  |                  | (0.75)           |  |                  | 0.6m to 1.0m: becoming silty slightly sandy CLAY. Sand is fine.                                                    |   |
|                            | ES   |         |                  |                  |                                                                                   |                  |                                                                                                                    |   |
|                            | IVN  |         |                  |                  |                                                                                   |                  |                                                                                                                    |   |
| 1.00                       | D    | P= 85   | 12.2             |                  |                                                                                   | 1.00             | Pit terminated at 1.000m.                                                                                          | 5 |
|                            | ES   |         |                  |                  |                                                                                   |                  |                                                                                                                    |   |
|                            | IVN  |         |                  |                  |                                                                                   |                  |                                                                                                                    |   |

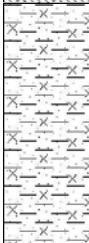
|                          |      |                       |  |                       |  |
|--------------------------|------|-----------------------|--|-----------------------|--|
| <b>Pit Dimension (m)</b> |      | <b>Pit Stability:</b> |  | <b>Water Strikes:</b> |  |
| <b>Width:</b>            | 3.90 | Stable                |  | Dry.                  |  |
| <b>Length:</b>           | 5.80 |                       |  |                       |  |
| <b>Depth:</b>            | 1.00 |                       |  |                       |  |

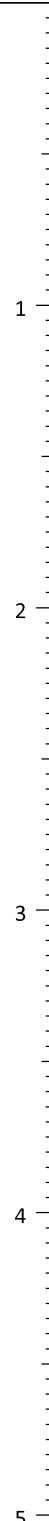


|                                                                                                                                                                                      |      |         |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
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| <div><br/>www.southerntesting.co.uk tel:01342 333100      www.stconsult.co.uk tel:01604 500020</div> |      |         |                  | Start - End Date:                 |                                                                                   | Project ID:                                                                                                                                                    |                                                                                                                                                                                                                                                         | Machine Type:       |  | TP2            |  |         |  |
|                                                                                                                                                                                      |      |         |                  | 16/04/2019 - 17/04/2019           |                                                                                   | J14044                                                                                                                                                         |                                                                                                                                                                                                                                                         | Vacuum Extraction   |  | Sheet 1 of 1   |  |         |  |
| Project Name:                                                                                                                                                                        |      |         |                  | Southampton Runway Extension      |                                                                                   | Remarks:                                                                                                                                                       |                                                                                                                                                                                                                                                         | Co-ordinates:       |  | Level (m AOD): |  | Logger: |  |
|                                                                                                                                                                                      |      |         |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         | E 445522 - N 117777 |  | 13.20          |  | TRL     |  |
| Location:                                                                                                                                                                            |      |         |                  | Southampton International Airport |                                                                                   | Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. Hole was dry upon completion. Vacuum extraction pit in original TP2 location. |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
| Client:                                                                                                                                                                              |      |         |                  | Dyer & Butler Ltd.                |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
| Samples and Insitu Testing                                                                                                                                                           |      |         | Level<br>(m AOD) | Thickness<br>(m)                  | Legend                                                                            | Depth<br>(m bgl)                                                                                                                                               | Stratum Description                                                                                                                                                                                                                                     |                     |  |                |  |         |  |
| Depth (m)                                                                                                                                                                            | Type | Results |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
|                                                                                                                                                                                      |      |         | 13.0             | (0.20)                            |  | 0.20                                                                                                                                                           | <div>TOPSOIL (MADE GROUND): firm brown silty gravelly CLAY.<br/>Gravel is fine to coarse subangular flint.<br/>0.2m: refusal on 'delethalisation' concrete, comprising flint aggregate in cement matrix.<br/><div>Pit terminated at 0.200m.</div></div> |                     |  |                |  |         |  |
|                                                                                                                                                                                      |      |         |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
|                                                                                                                                                                                      |      |         |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
|                                                                                                                                                                                      |      |         |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
|                                                                                                                                                                                      |      |         |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
| Pit Dimension (m)                                                                                                                                                                    |      |         | Pit Stability:   |                                   |                                                                                   |                                                                                                                                                                | Water Strikes:                                                                                                                                                                                                                                          |                     |  |                |  |         |  |
| Width:                                                                                                                                                                               |      | 1.00    | Stable           |                                   |                                                                                   |                                                                                                                                                                | Dry.                                                                                                                                                                                                                                                    |                     |  |                |  |         |  |
| Length:                                                                                                                                                                              |      | 2.00    |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |
| Depth:                                                                                                                                                                               |      | 0.20    |                  |                                   |                                                                                   |                                                                                                                                                                |                                                                                                                                                                                                                                                         |                     |  |                |  |         |  |

|                   |      |         |                       | <b>Start - End Date:</b><br>16/04/2019 - 17/04/2019                                                                                                                                                                                                                                                                        |                                                                                   | <b>Project ID:</b><br><b>J14044</b> |                                                                                                      | <b>Machine Type:</b><br>Komatsu 21t         |  | <b>TP2A</b><br><br><b>Sheet 1 of 1</b> |  |                       |  |
|---------------------------------------------------------------------------------------------------|------|---------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------|--|----------------------------------------|--|-----------------------|--|
| <small>www.southerntesting.co.uk tel:01342 333100    www.stconsult.co.uk tel:01604 500020</small> |      |         |                       | <b>Project Name:</b> Southampton Runway Extension                                                                                                                                                                                                                                                                          |                                                                                   | <b>Remarks:</b>                     |                                                                                                      | <b>Co-ordinates:</b><br>E 445512 - N 117782 |  | <b>Level (m AOD):</b><br>13.60         |  | <b>Logger:</b><br>TRL |  |
| <b>Location:</b> Southampton International Airport                                                |      |         |                       | Hole set out by Dyer & Butler Ltd. Moved west by approx. 10m due to presence of utilities.<br>Hole excavated by D&B with STL in attendance. Plate load test undertaken at base of trial pit.<br>Hole reinstated by D&B. Hole was dry upon completion. DCP CBR (TRL Method) undertaken at ground level, and at base of pit. |                                                                                   |                                     |                                                                                                      |                                             |  |                                        |  |                       |  |
| <b>Client:</b> Dyer & Butler Ltd.                                                                 |      |         |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                      |                                             |  |                                        |  |                       |  |
| Samples and Insitu Testing                                                                        |      |         | Level<br>(m AOD)      | Thickness<br>(m)                                                                                                                                                                                                                                                                                                           | Legend                                                                            | Depth<br>(m bgl)                    | Stratum Description                                                                                  |                                             |  |                                        |  |                       |  |
| Depth (m)                                                                                         | Type | Results |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                      |                                             |  |                                        |  |                       |  |
| 0.10                                                                                              | D    | P= 135  | 13.4                  | (0.25)                                                                                                                                                                                                                                                                                                                     |  | 0.25                                | TOPSOIL: Firm brown SILT/CLAY with rootlets                                                          | 1                                           |  |                                        |  |                       |  |
| 0.30                                                                                              | D    |         |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     | Firm to stiff brown to yellowish brown silty CLAY to SILT/CLAY.                                      |                                             |  |                                        |  |                       |  |
| 0.50                                                                                              | D    |         |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     | RIVER TERRACE DEPOSITS                                                                               |                                             |  |                                        |  |                       |  |
|                                                                                                   | ES   | P= 95   |                       | (0.75)                                                                                                                                                                                                                                                                                                                     |  |                                     | 0.4m to 0.6m: becoming silty slightly sandy CLAY.                                                    |                                             |  |                                        |  |                       |  |
|                                                                                                   | IVN  |         |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     | 0.6m to 1.0m: sandy (fine), and rarely slightly gravelly. Gravel is fine to medium subangular flint. |                                             |  |                                        |  |                       |  |
| 1.00                                                                                              | D    | P= 115  | 12.6                  |                                                                                                                                                                                                                                                                                                                            |                                                                                   | 1.00                                | Pit terminated at 1.000m.                                                                            | 5                                           |  |                                        |  |                       |  |
|                                                                                                   | ES   |         |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                      |                                             |  |                                        |  |                       |  |
|                                                                                                   | IVN  |         |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                      |                                             |  |                                        |  |                       |  |
| <b>Pit Dimension (m)</b>                                                                          |      |         | <b>Pit Stability:</b> |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     | <b>Water Strikes:</b>                                                                                |                                             |  |                                        |  |                       |  |
| <b>Width:</b>                                                                                     |      | 3.80    | Stable                |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     | Dry.                                                                                                 |                                             |  |                                        |  |                       |  |
| <b>Length:</b>                                                                                    |      | 5.50    |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                      |                                             |  |                                        |  |                       |  |
| <b>Depth:</b>                                                                                     |      | 1.00    |                       |                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                     |                                                                                                      |                                             |  |                                        |  |                       |  |

|                                                                                                                                                                                                                                                                                                                           |      |                                   |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  |                                                                                                                    |              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------|--------------|
| <div><div>Southern Testing</div><div>ST Consult</div></div> <div>www.southerntesting.co.uk tel:01342 333100    www.stconsult.co.uk tel:01604 500020</div> |      |                                   |                  | Start - End Date:                                                                                                                                                                                                                                             |                                                                                   | Project ID:      | Machine Type:                                                                                                      | TP3          |
|                                                                                                                                                                                                                                                                                                                           |      |                                   |                  | 17/04/2019 - 18/04/2019                                                                                                                                                                                                                                       |                                                                                   | J14044           | Komatsu 21t                                                                                                        | Sheet 1 of 1 |
| Project Name:                                                                                                                                                                                                                                                                                                             |      | Southampton Runway Extension      |                  | Remarks:                                                                                                                                                                                                                                                      | Co-ordinates:                                                                     |                  | Level (m AOD):                                                                                                     | Logger:      |
|                                                                                                                                                                                                                                                                                                                           |      |                                   |                  |                                                                                                                                                                                                                                                               | E 445606 - N 117810                                                               |                  | 13.24                                                                                                              | TRL          |
| Location:                                                                                                                                                                                                                                                                                                                 |      | Southampton International Airport |                  | Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. Plate load test undertaken at base of trial pit. Hole reinstated by D&B.. Hole was dry upon completion. DCP CBR (TRL Method) undertaken at ground level, and at base of pit. |                                                                                   |                  |                                                                                                                    |              |
| Client:                                                                                                                                                                                                                                                                                                                   |      | Dyer & Butler Ltd.                |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  |                                                                                                                    |              |
| Samples and Insitu Testing                                                                                                                                                                                                                                                                                                |      |                                   | Level<br>(m AOD) | Thickness<br>(m)                                                                                                                                                                                                                                              | Legend                                                                            | Depth<br>(m bgl) | Stratum Description                                                                                                |              |
| Depth (m)                                                                                                                                                                                                                                                                                                                 | Type | Results                           |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  |                                                                                                                    |              |
| 0.10                                                                                                                                                                                                                                                                                                                      | B    | P= 85                             | 13.0             | (0.20)                                                                                                                                                                                                                                                        |  | 0.20             | TOPSOIL: firm brown silty CLAY with rootlets. Rarely slightly gravelly. Gravel is fine to coarse subangular flint. |              |
| 0.30                                                                                                                                                                                                                                                                                                                      | B    |                                   |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  | Firm brown silty sandy CLAY. With occasional fine rootlets                                                         |              |
| 0.50                                                                                                                                                                                                                                                                                                                      | ES   |                                   |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  | RIVER TERRACE DEPOSITS                                                                                             |              |
| 0.80                                                                                                                                                                                                                                                                                                                      | IVN  |                                   |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  | Firm yellowish brown mottled greyish brown silty slightly sandy to sandy CLAY. With occasional fine rootlets.      |              |
| 1.00                                                                                                                                                                                                                                                                                                                      | B    | P= 120                            | 12.2             | (0.65)                                                                                                                                                                                                                                                        |  | 1.00             | RIVER TERRACE DEPOSITS                                                                                             |              |
|                                                                                                                                                                                                                                                                                                                           | ES   | P= 130                            |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  | 0.8m to 1.0m: with rare fine subangular to subrounded flint gravel.                                                |              |
|                                                                                                                                                                                                                                                                                                                           | IVN  | P= 100                            |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  | Pit terminated at 1.000m.                                                                                          |              |
|                                                                                                                                                                                                                                                                                                                           |      |                                   |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  |                                                                                                                    |              |
| Pit Dimension (m)                                                                                                                                                                                                                                                                                                         |      |                                   | Pit Stability:   |                                                                                                                                                                                                                                                               |                                                                                   | Water Strikes:   |                                                                                                                    |              |
| Width:                                                                                                                                                                                                                                                                                                                    | 3.80 |                                   | Stable           |                                                                                                                                                                                                                                                               |                                                                                   | Dry.             |                                                                                                                    |              |
| Length:                                                                                                                                                                                                                                                                                                                   | 5.50 |                                   |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  |                                                                                                                    |              |
| Depth:                                                                                                                                                                                                                                                                                                                    | 1.00 |                                   |                  |                                                                                                                                                                                                                                                               |                                                                                   |                  |                                                                                                                    |              |

|                                                                                                                                                                                      |      |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
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| <div><br/>www.southerntesting.co.uk tel:01342 333100      www.stconsult.co.uk tel:01604 500020</div> |      |         |                  | Start - End Date:<br>23/04/2019 - 24/04/2019                                                                                                                                                                                                                             |                                                                                   | Project ID:<br>J14044                |                                                                                                                                                                                                                                                                          | Machine Type:<br>21t Tracked. |  | TP4<br>Sheet 1 of 1 |  |
| Project Name: Southampton Runway Extension                                                                                                                                           |      |         |                  | Remarks:<br>Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. Plate load test undertaken at base of trial pit. Hole reinstated by D&B. Hole was dry upon completion. DCP CBR (TRL Method) undertaken at ground level, and at base of pit. |                                                                                   | Co-ordinates:<br>E 445527 - N 117839 |                                                                                                                                                                                                                                                                          | Level (m AOD):<br>13.71       |  | Logger:<br>TR:      |  |
| Location: Southampton International Airport                                                                                                                                          |      |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
| Client: Dyer & Butler Ltd.                                                                                                                                                           |      |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
| Samples and Insitu Testing                                                                                                                                                           |      |         | Level<br>(m AOD) | Thickness<br>(m)                                                                                                                                                                                                                                                         | Legend                                                                            | Depth<br>(m bgl)                     | Stratum Description                                                                                                                                                                                                                                                      |                               |  |                     |  |
| Depth (m)                                                                                                                                                                            | Type | Results |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
| 0.10                                                                                                                                                                                 | B    | P= 100  | 13.5             | (0.20)                                                                                                                                                                                                                                                                   |  | 0.20                                 | TOPSOIL: firm brown silty sandy CLAY. Sand is fine. With rootlets. Rarely gravelly. Gravel is fine to coarse subrounded flint.<br>Firm brown and greyish brown silty sandy CLAY. Sand is fine.<br>RIVER TERRACE DEPOSITS<br>0.35 to 1.0m: yellowish brown mottled brown. |                               |  |                     |  |
| 0.30                                                                                                                                                                                 | B    |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
| 0.50                                                                                                                                                                                 | ES   |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
|                                                                                                                                                                                      | IVN  | P= 115  |                  |                                                                                                                                                                                                                                                                          |  |                                      | Pit terminated at 1.000m.                                                                                                                                                                                                                                                |                               |  |                     |  |
|                                                                                                                                                                                      | B    |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
|                                                                                                                                                                                      | ES   |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
|                                                                                                                                                                                      | IVN  | P= 110  |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
| 1.00                                                                                                                                                                                 | B    | P= 110  | 12.7             |                                                                                                                                                                                                                                                                          |                                                                                   | 1.00                                 |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
|                                                                                                                                                                                      | ES   |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
|                                                                                                                                                                                      | IVN  |         |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
| Pit Dimension (m)                                                                                                                                                                    |      |         | Pit Stability:   |                                                                                                                                                                                                                                                                          |                                                                                   |                                      | Water Strikes:                                                                                                                                                                                                                                                           |                               |  |                     |  |
| Width:                                                                                                                                                                               |      | 3.20    | Stable.          |                                                                                                                                                                                                                                                                          |                                                                                   |                                      | Dry.                                                                                                                                                                                                                                                                     |                               |  |                     |  |
| Length:                                                                                                                                                                              |      | 5.50    |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |
| Depth:                                                                                                                                                                               |      | 1.00    |                  |                                                                                                                                                                                                                                                                          |                                                                                   |                                      |                                                                                                                                                                                                                                                                          |                               |  |                     |  |

|  |      |         |                           | <b>Start - End Date:</b><br>24/04/2019 - 25/04/2019                                                                                                   |                                                                                   | <b>Project ID:</b><br>J14044                                                           |                                                                                                                                | <b>Machine Type:</b><br>       |                                                                                      | <b>TP5</b><br>Sheet 1 of 1 |  |
|----------------------------------------------------------------------------------|------|---------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------|----------------------------|--|
| <b>Project Name:</b> Southampton Runway Extension                                |      |         |                           | <b>Remarks:</b>                                                                                                                                       |                                                                                   | <b>Co-ordinates:</b><br>E 445622 - N 117902                                            |                                                                                                                                | <b>Level (m AOD):</b><br>13.20 |                                                                                      | <b>Logger:</b><br>TL       |  |
| <b>Location:</b> Southampton International Airport                               |      |         |                           | Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. DCP CBR (TRL Method) undertaken at ground level, and at base of pit. |                                                                                   |                                                                                        |                                                                                                                                |                                |                                                                                      |                            |  |
| <b>Client:</b> Dyer & Butler Ltd.                                                |      |         |                           |                                                                                                                                                       |                                                                                   |                                                                                        |                                                                                                                                |                                |                                                                                      |                            |  |
| Samples and Insitu Testing                                                       |      |         | Level<br>(m AOD)          | Thickness<br>(m)                                                                                                                                      | Legend                                                                            | Depth<br>(m bgl)                                                                       | Stratum Description                                                                                                            |                                |                                                                                      |                            |  |
| Depth (m)                                                                        | Type | Results |                           |                                                                                                                                                       |                                                                                   |                                                                                        |                                                                                                                                |                                |                                                                                      |                            |  |
| 0.10                                                                             | B    |         | 13.0                      | (0.25)                                                                                                                                                |  | 0.25                                                                                   | TOPSOIL: Firm brown silty CLAY. Rarely slightly gravelly. Gravel is fine to coarse subangular to subrounded flint. With roots. |                                |  |                            |  |
| 0.30                                                                             | B    |         |                           | (0.75)                                                                                                                                                |                                                                                   |                                                                                        | Firm to stiff yellowish brown silty CLAY/ clayey SILT. RIVER TERRACE DEPOSITS                                                  |                                |                                                                                      |                            |  |
| 0.50                                                                             | B    |         |                           |                                                                                                                                                       |                                                                                   |                                                                                        | 0.5m to 1.0m: Becoming silty CLAY.                                                                                             |                                |                                                                                      |                            |  |
| 1.00                                                                             | B    |         | 12.2                      |                                                                                                                                                       | 1.00                                                                              | 0.8m to 1.0m: With pockets of silty gravel. Gravel is fine to coarse subangular flint. |                                                                                                                                |                                |                                                                                      |                            |  |
|                                                                                  |      |         |                           |                                                                                                                                                       |                                                                                   |                                                                                        | Pit terminated at 1.000m.                                                                                                      |                                |                                                                                      |                            |  |
| <b>Pit Dimension (m)</b>                                                         |      |         | <b>Pit Stability:</b>     |                                                                                                                                                       |                                                                                   |                                                                                        | <b>Water Strikes:</b>                                                                                                          |                                |                                                                                      |                            |  |
| <b>Width:</b>                                                                    |      | 3.20    | Pit stable on completion. |                                                                                                                                                       |                                                                                   |                                                                                        | Dry                                                                                                                            |                                |                                                                                      |                            |  |
| <b>Length:</b>                                                                   |      | 5.50    |                           |                                                                                                                                                       |                                                                                   |                                                                                        |                                                                                                                                |                                |                                                                                      |                            |  |
| <b>Depth:</b>                                                                    |      | 1.00    |                           |                                                                                                                                                       |                                                                                   |                                                                                        |                                                                                                                                |                                |                                                                                      |                            |  |



|  |      |         |                  | <b>Start - End Date:</b><br>14/04/2019 - 15/04/2019                                                                                                                                                                                                          |                                                                                   | <b>Project ID:</b><br><b>J14044</b>         |                                                                                                       | <b>Machine Type:</b><br>Komatsu 21t |   | <b>TP6</b><br><br><b>Sheet 1 of 1</b> |  |
|----------------------------------------------------------------------------------|------|---------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------|---|---------------------------------------|--|
| <b>Project Name:</b> Southampton Runway Extension                                |      |         |                  | <b>Remarks:</b>                                                                                                                                                                                                                                              |                                                                                   | <b>Co-ordinates:</b><br>E 445571 - N 117920 |                                                                                                       | <b>Level (m AOD):</b><br>13.50      |   | <b>Logger:</b><br>TRL                 |  |
| <b>Location:</b> Southampton International Airport                               |      |         |                  | Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. Plate load test undertaken at base of trial pit. Hole reinstated by D&B. Hole was dry upon completion. DCP CBR (TRL Method) undertaken at ground level, and at base of pit. |                                                                                   |                                             |                                                                                                       |                                     |   |                                       |  |
| <b>Client:</b> Dyer & Butler Ltd.                                                |      |         |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             |                                                                                                       |                                     |   |                                       |  |
| Samples and Insitu Testing                                                       |      |         | Level<br>(m AOD) | Thickness<br>(m)                                                                                                                                                                                                                                             | Legend                                                                            | Depth<br>(m bgl)                            | Stratum Description                                                                                   |                                     |   |                                       |  |
| Depth (m)                                                                        | Type | Results |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             |                                                                                                       |                                     |   |                                       |  |
| 0.10                                                                             | D    | P= 60   | 13.3             | (0.20)                                                                                                                                                                                                                                                       |  | 0.20                                        | TOPSOIL: Firm brown silty slightly gravelly CLAY. Gravel is fine to coarse subangular flint.          |                                     | 1 |                                       |  |
| 0.30                                                                             | D    |         |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             | Firm yellowish brown silty CLAY. Rarely slightly gravelly. Gravel is fine to coarse subangular flint. |                                     |   |                                       |  |
| 0.50                                                                             | D    |         |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             | RIVER TERRACE DEPOSITS                                                                                |                                     |   |                                       |  |
|                                                                                  | ES   | P= 105  |                  | (0.80)                                                                                                                                                                                                                                                       |  |                                             | 0.5 to 1.0m: becoming firm to stiff.                                                                  |                                     |   |                                       |  |
|                                                                                  | IVN  |         |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             |                                                                                                       |                                     |   |                                       |  |
| 1.00                                                                             | D    | P= 95   | 12.5             |                                                                                                                                                                                                                                                              |                                                                                   | 1.00                                        | Pit terminated at 1.000m.                                                                             |                                     | 5 |                                       |  |
|                                                                                  | ES   |         |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             |                                                                                                       |                                     |   |                                       |  |
|                                                                                  | IVN  |         |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             |                                                                                                       |                                     |   |                                       |  |
| Pit Dimension (m)                                                                |      |         | Pit Stability:   |                                                                                                                                                                                                                                                              |                                                                                   |                                             | Water Strikes:                                                                                        |                                     |   |                                       |  |
| Width:                                                                           | 3.80 |         | Stable           |                                                                                                                                                                                                                                                              |                                                                                   |                                             | Dry.                                                                                                  |                                     |   |                                       |  |
| Length:                                                                          | 5.90 |         |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             |                                                                                                       |                                     |   |                                       |  |
| Depth:                                                                           | 1.00 |         |                  |                                                                                                                                                                                                                                                              |                                                                                   |                                             |                                                                                                       |                                     |   |                                       |  |

**Logger:**

13 05

IMW

Hole set out by Dyer & Butler Ltd. Hole excavated by D&B with STL in attendance. Hole reinstated by D&B. Hole was dry upon completion. DCP CBR (TRL Method) undertaken at ground level, at 1.0m bgl, and at 1.5m bgl.

|                |                    |
|----------------|--------------------|
| <b>Client:</b> | Dyer & Butler Ltd. |
|----------------|--------------------|

| Samples and Insitu Testing |      |                              | Level<br>(m AOD)                     | Thickness<br>(m) | Legend                                                                 | Depth<br>(m bgl) | Stratum Description                                                                        |   |                                                                                                                               |  |                                                                                       |
|----------------------------|------|------------------------------|--------------------------------------|------------------|------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|
| Depth (m)                  | Type | Results                      |                                      |                  |                                                                        |                  |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| 0.10                       | B    | UCS(kPa)=270<br>UCS(kPa)=290 | 12.8                                 | (0.30)           |                                                                        | 0.30             | TOPSOIL: Grass over dark brown sandy SILT with abundant rootlets. Rare gravel sized brick. | 1 |                                                                                                                               |  |                                                                                       |
| 0.30                       | B    |                              |                                      |                  |                                                                        |                  | UCS(kPa)=290<br>P= 55                                                                      |   | (1.00)                                                                                                                        |  | Firm mid brown mottled grey/orangish brown sandy CLAY/SILT.<br>RIVER TERRACE DEPOSITS |
| 0.35                       | HP   |                              |                                      |                  |                                                                        |                  |                                                                                            |   |                                                                                                                               |  | 0.8m to 1.3m: Becoming very gravelly. Gravel is fine to medium subangular flint.      |
| 0.40                       | HP   |                              |                                      |                  |                                                                        |                  |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| 0.50                       | B    |                              |                                      |                  |                                                                        |                  |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| 1.00                       | ES   | 11.8                         | (1.30)                               |                  | 1.5m to 1.7m: with occasional cobbles.<br>1.7m to 1.9m: clayey gravel. | 2                |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| 1.50                       | B    |                              |                                      |                  | 10.4                                                                   |                  | (0.90)                                                                                     |   | Orangish brown slightly silty sandy GRAVEL with rare flint cobbles. Gravel is fine to coarse flint.<br>RIVER TERRACE DEPOSITS |  |                                                                                       |
| 2.00                       | B    |                              |                                      |                  |                                                                        |                  |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| 2.50                       | ES   | 9.6                          |                                      |                  | Pit terminated at 3.500m.                                              | 4                |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| 3.00                       | B    |                              |                                      |                  |                                                                        |                  |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| 3.50                       | ES   |                              |                                      |                  |                                                                        | 5                |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| Pit Dimension (m)          |      |                              | Pit Stability:                       |                  |                                                                        |                  | Water Strikes:                                                                             |   |                                                                                                                               |  |                                                                                       |
| Width:                     | 1.50 |                              | Some spalling of pit side below 1.9m |                  |                                                                        |                  | Dry.                                                                                       |   |                                                                                                                               |  |                                                                                       |
| Length:                    | 3.50 |                              |                                      |                  |                                                                        |                  |                                                                                            |   |                                                                                                                               |  |                                                                                       |
| Depth:                     | 3.50 |                              |                                      |                  |                                                                        |                  |                                                                                            |   |                                                                                                                               |  |                                                                                       |





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## APPENDIX B

### Field Sampling and In-Situ Test Methods and Results



# B

## **Soil and Rock Descriptions**

All soil and rock descriptions are in general accordance with BS5930 Ref [1].

Anthropogenic soils ('made ground' or 'fill') describe materials which have been placed by man and can be divided into those composed of reworked natural soils and those composed of or containing man-made materials. 'Fill' is used to describe material placed in a controlled manner and 'made ground' is used to describe materials placed without strict engineering control.

The classification of materials such as topsoil is based on visual description only and should not be interpreted to mean that the material complies with criteria used in BS 3882 Ref [3].

The geology code is only provided on logs where a positive identification of the sample strata has been made.

## **Inspection Pit**

Inspection pits are hand excavated from the surface (maximum depth 1.2 – 1.5m) using appropriate tools to locate and avoid existing buried services at exploratory hole positions. They are also regularly used as part of investigations on existing structures to expose and determine foundation detail.

## **Trial Pits and Trenches**

Trial pits and trenches are unsupported excavations, mechanically excavated by machine to the required depth to enable visual examination, in situ testing and sampling as required from outside the excavation.

## **Hand Penetrometer Test**

The handheld soil penetrometer consists of a spring loaded and calibrated plunger which is forced into cohesive soil. A reading of unconfined compression strength (equal to twice cohesion) is given on a calibrated scale. The average of a set of three readings shall be recorded.

In common with other hand methods of strength assessment it does not give an accurate indication of bearing capacity in stiff or fissured soils, because of the small test area.

## **Hand Vane Test**

The hand shear vane test provides a means of determining an estimate of the undrained shear strength of the tested soil. The apparatus consists of a cruciform vane on an extensible shaft. The vane is inserted into the cohesive soil and torque applied to the shaft until the soil fails, as indicated by a constant or dropping torque, by shearing on a circumscribing cylindrical surface. The average of a set of three readings shall be recorded.

It should be noted that it does not give an accurate indication of bearing capacity in stiff or fissured soils, because of the small test area.

## **Plate Bearing Test**

This test is specified within BS 1377 Part 9, and is generally undertaken within an excavation made to the required depth. In the test, a steel plate usually 300 to 750mm in diameter, is loaded by a hydraulic jack in line with a calibrated load cell bearing against a dead load. Settlement readings are taken at regular time intervals for each load increment, by means of gauges. When the settlement under a particular load is substantially complete the load is increased and further settlement readings taken. On conclusion of the series of load increments, the load is taken off and recovery monitored. Graphs of deflection against time, and maximum settlement under each loading stage against load are drawn.

## **Environmental Samples**

Environmental samples were taken from the boreholes at regular intervals in the made ground and natural soils as indicated on the exploratory hole logs. The sampling strategy was in general accordance with BS10175 Ref [4] and BS ISO 18400 Refs [5], [6], [7], [8] & [9].

These samples were collected and stored in glass jars or plastic pots and transferred to the laboratory in cool boxes as appropriate to the proposed laboratory testing.

## **Dynamic Cone Penetrometer (DCP) Test - TRL Method**

The Dynamic Cone Penetrometer is a hand held instrument which can be used for the assessment of the in situ strength of existing flexible pavements constructed with unbound materials. Where the pavement layers have different strengths, the boundaries between them can be identified and the thickness of each layer determined.

The test is undertaken to the methodology outlined within TRL technical Information Note, but involves an 8 Kg hammer dropping through a height of 575mm and a 60° cone having a maximum diameter of 20mm. The resulting penetration of the rod is measured and the number of blows recorded for a penetration of about 10mm. After the test the DCP is carefully withdrawn.

A plot of the cumulative number of blows versus depth penetrated is drawn. This plot usually takes the form of a series of straight lines, the slopes of which are measured and expressed as penetration in mm per blow. The CBR Value is calculated from the mm/blow using a relationship developed by the Transport Research Laboratory Ref [10].

### **Disturbed Samples**

Disturbed samples were taken from exploratory holes in general accordance with BS 5930 [1] and BS EN ISO 22475-1 Ref [11] as required and stored in appropriately labelled containers. Details of the type, size and depth of sample will be recorded within the exploratory hole record. Such samples can be regarded as being between Class 5 up to Class 3 quality depending upon their method of sampling.

### **Soakage Tests (after BRE DG365 2016)**

The BRE DG365 Ref [12] paper on soakaway design allows for the design of trench soakaways as well as traditional square and circular soakaways.

The test to measure the soil infiltration rate is carried out in pits which are excavated to the full depth of the proposed soakaway. The trial pits are filled and allowed to drain to empty or near empty, three times, on the same day or on consecutive days. Water levels are recorded against time. Where the sides are unstable the pit should be filled with granular material to provide stability during the test.

Calculated soakage rates are expressed as l/m<sup>2</sup>/minute, which is a convenient rate to use. The BRE use a unit of m/sec, which is the value in l/m<sup>2</sup>/minute divided by 60,000.

### **Monitoring Well**

A groundwater and/or ground gas monitoring well consists of a perforated pipe, which is installed in the ground. The standpipe is typically 50mm nominal in diameter and is installed in a lined borehole. It is perforated from the base with a sand/gravel surround through the soil horizon of interest to an appropriate depth below ground level. Above this there is a bentonite seal with solid pipework and is provided with an end cap or a gas valve at the top as appropriate.

### **Groundwater Monitoring – Dip Meter**

The dip meter is used to measure standing water levels within boreholes. The probe is lowered into the borehole until the meter detects the groundwater with an audible 'beep'. The level is then read from the tape.

### **In-situ Permeability Tests (after BS EN ISO 22282)**

Testing within boreholes can either be a variable head test (falling or rising head) where the hydraulic pressure within the borehole during the test is either increased or lowered or a constant head where the hydraulic pressure is held constant. During boring when the required depth for testing has been reached, the borehole casing is withdrawn by one metre and the borehole cleaned out if necessary. Testing can alternatively be undertaken within a piezometer sealed into the strata of interest.

Detailed guidance for such tests are given within BS EN ISO 22282 Ref [13], and are summarised below.

- **Falling Head Test** - the borehole is filled with water and the head loss is then recorded either until the level falls to the standing water level (or until dry), or a maximum two-hour period.

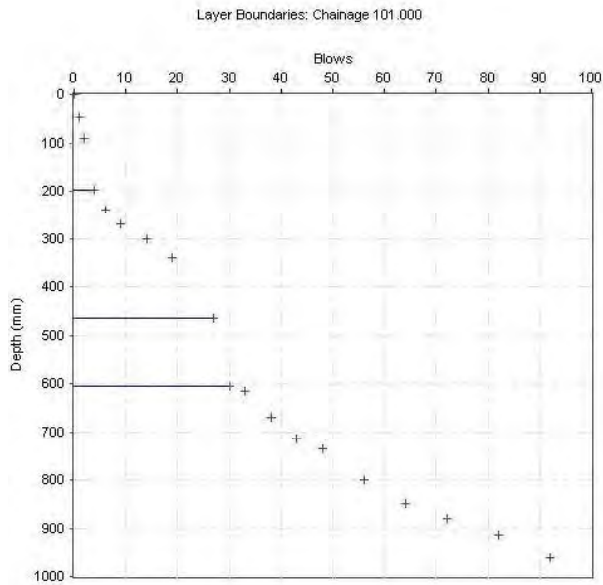


# DCP Layer Strength Analysis Report

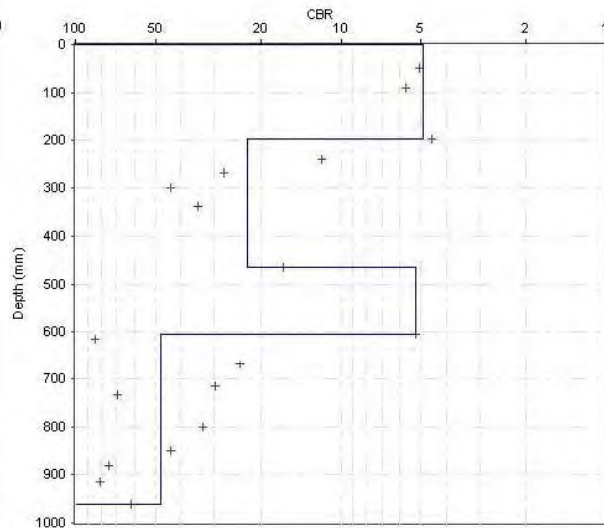
Project Name: J14044(b)

Chainage (km): 101.000  
 Direction: TP1  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 15/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 49.25                         | 5       | 197            | 197                        |
| 2   | 11.65                         | 23      | 268            | 465                        |
| 3   | 46.67                         | 5       | 140            | 605                        |
| 4   | 5.73                          | 48      | 355            | 960                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

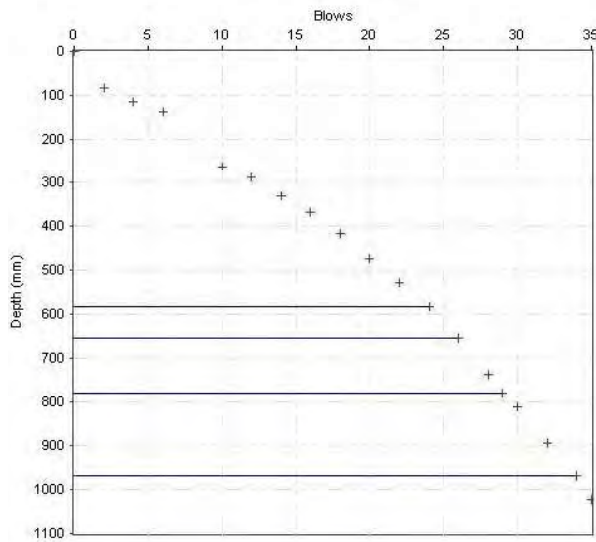
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

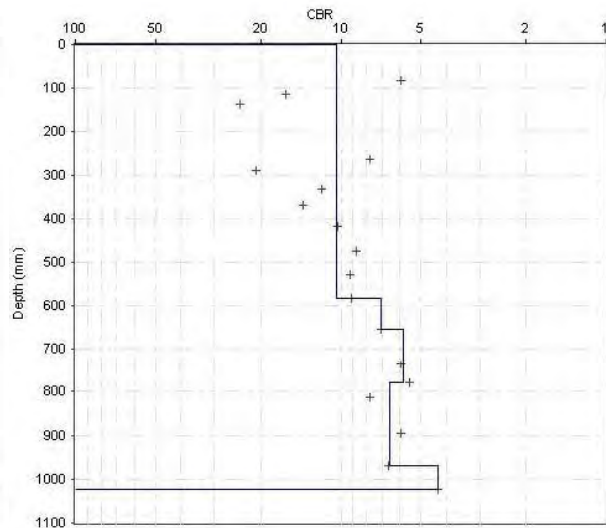
Chainage (km): 101.200  
 Direction: TP1  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 01/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: Ground level

Layer Boundaries: Chainage 101.200



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 24.33                         | 10      | 584            | 584                        |
| 2   | 35.00                         | 7       | 70             | 654                        |
| 3   | 42.00                         | 6       | 126            | 780                        |
| 4   | 37.60                         | 7       | 188            | 968                        |
| 5   | 56.00                         | 4       | 56             | 1024                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

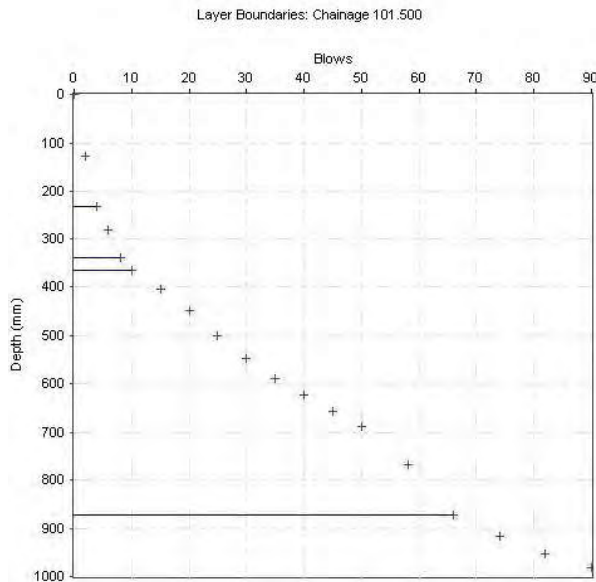
Report produced by .....

# DCP Layer Strength Analysis Report

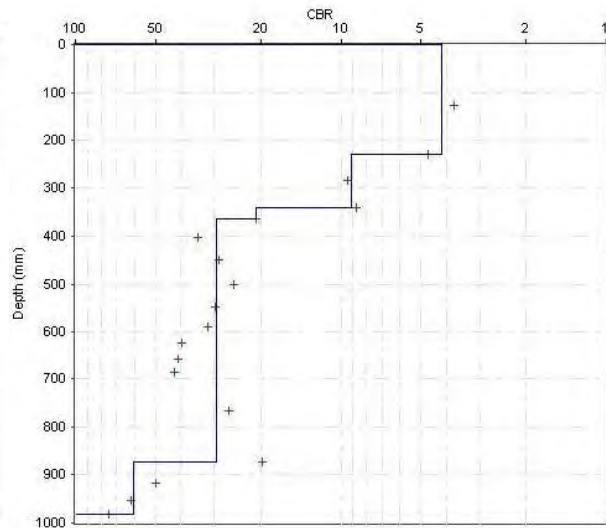
Project Name: J14044(b)

Chainage (km): 101.500  
 Direction: TP1A  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 15/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 57.50                         | 4       | 230            | 230                        |
| 2   | 27.50                         | 9       | 110            | 340                        |
| 3   | 12.50                         | 21      | 25             | 365                        |
| 4   | 9.07                          | 29      | 508            | 873                        |
| 5   | 4.58                          | 60      | 110            | 983                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

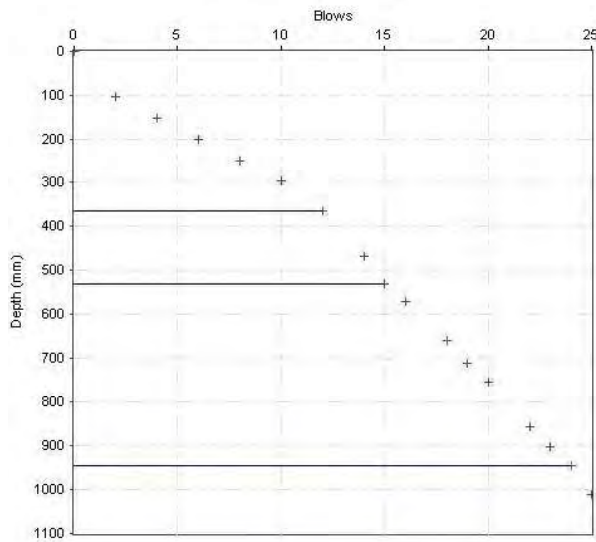
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

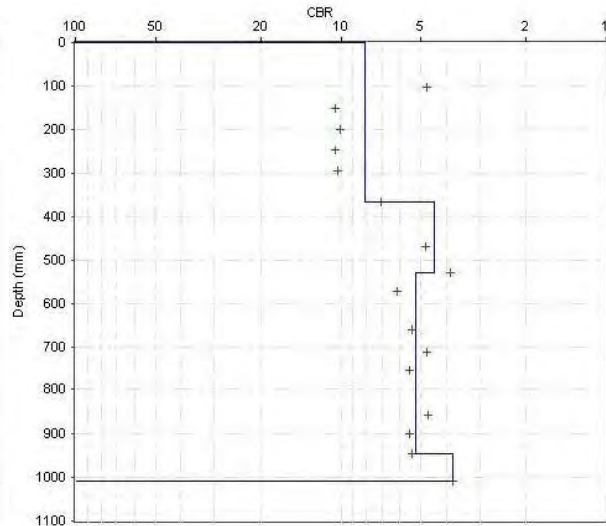
Chainage (km): 102.200  
 Direction: TP2  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 01/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: Ground level

Layer Boundaries: Chainage 102.200



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 30.58                         | 8       | 367            | 367                        |
| 2   | 54.33                         | 4       | 163            | 530                        |
| 3   | 46.33                         | 5       | 417            | 947                        |
| 4   | 63.00                         | 4       | 63             | 1010                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

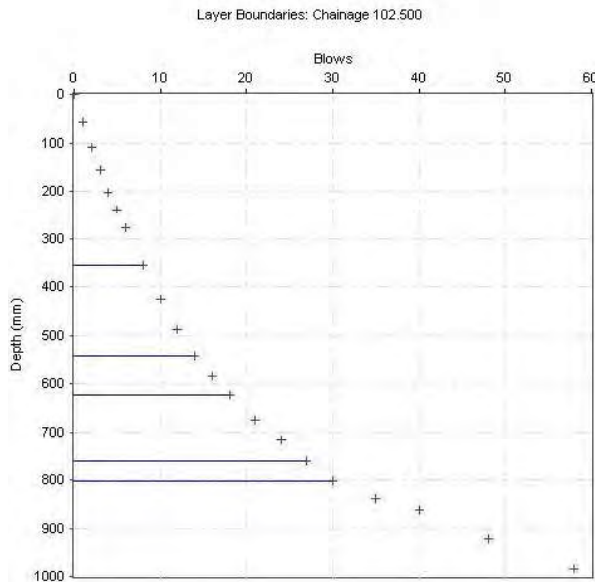
Report produced by .....

# DCP Layer Strength Analysis Report

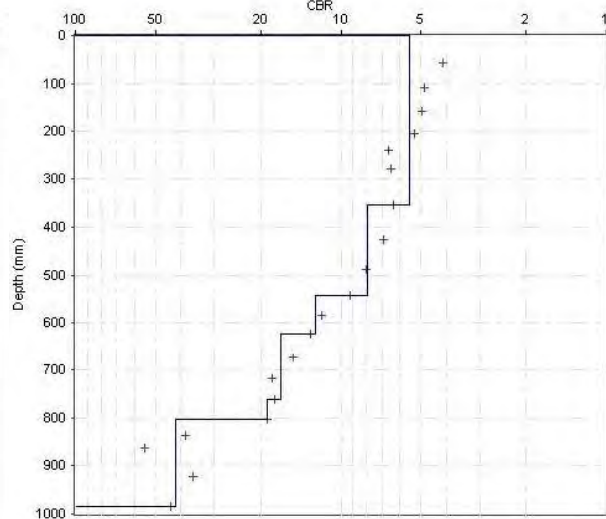
Project Name: J14044(b)

Chainage (km): 102.500  
 Direction: TP2A  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 16/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 44.38                         | 5       | 355            | 355                        |
| 2   | 31.17                         | 8       | 187            | 542                        |
| 3   | 20.50                         | 12      | 82             | 624                        |
| 4   | 15.33                         | 17      | 138            | 762                        |
| 5   | 13.67                         | 19      | 41             | 803                        |
| 6   | 6.50                          | 42      | 182            | 985                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

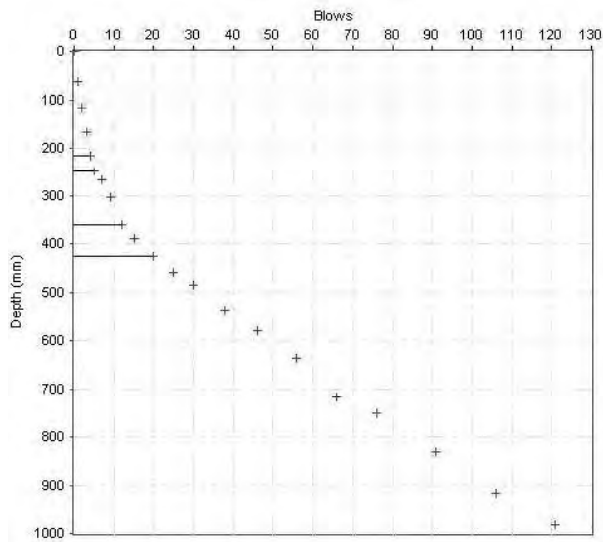
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

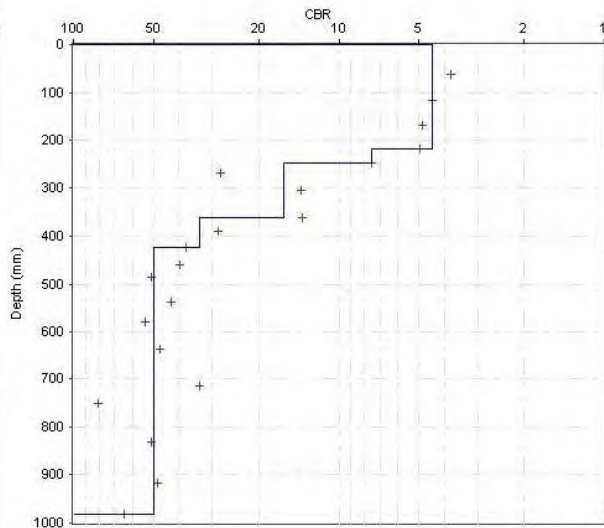
Chainage (km): 103.000  
 Direction: TP3  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 17/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL

Layer Boundaries: Chainage 103.000



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 54.00                         | 4       | 216            | 216                        |
| 2   | 33.00                         | 7       | 33             | 249                        |
| 3   | 16.00                         | 16      | 112            | 361                        |
| 4   | 8.00                          | 34      | 64             | 425                        |
| 5   | 5.51                          | 50      | 557            | 982                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

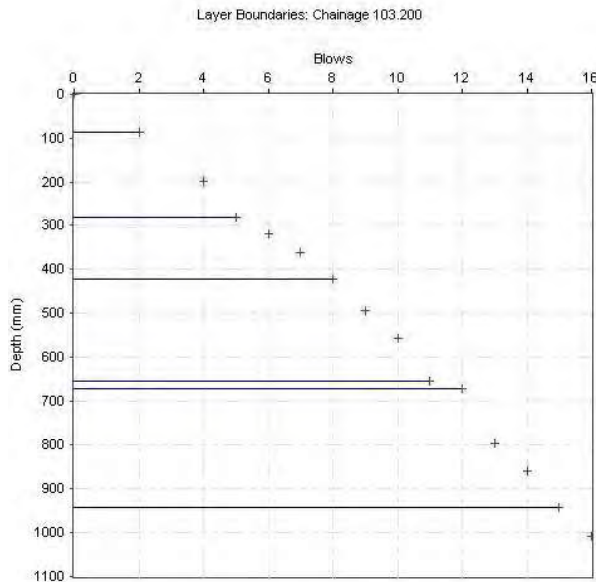


# DCP Layer Strength Analysis Report

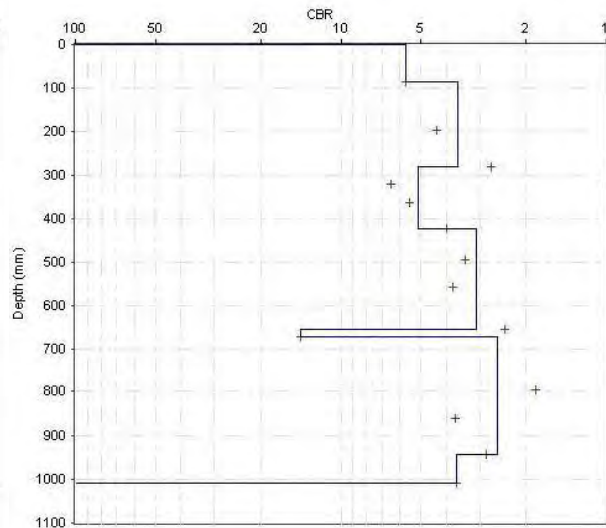
Project Name: J14044(b)

Chainage (km): 103.200  
 Direction: TP3  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 02/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: Ground level



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR<br>(%) | Thickness<br>(mm) | Depth to<br>layer bottom<br>(mm) |
|-----|-------------------------------|------------|-------------------|----------------------------------|
| 1   | 43.00                         | 6          | 86                | 86                               |
| 2   | 65.33                         | 4          | 196               | 282                              |
| 3   | 47.33                         | 5          | 142               | 424                              |
| 4   | 76.67                         | 3          | 230               | 654                              |
| 5   | 18.00                         | 14         | 18                | 672                              |
| 6   | 90.67                         | 3          | 272               | 944                              |
| 7   | 65.00                         | 4          | 65                | 1009                             |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

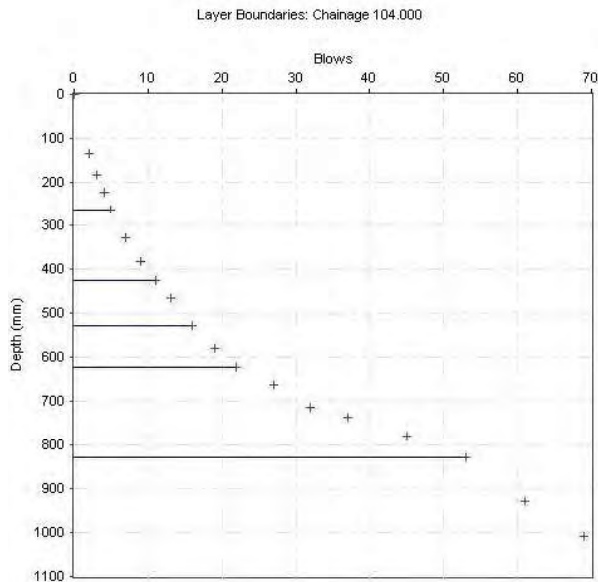
Report produced by .....

# DCP Layer Strength Analysis Report

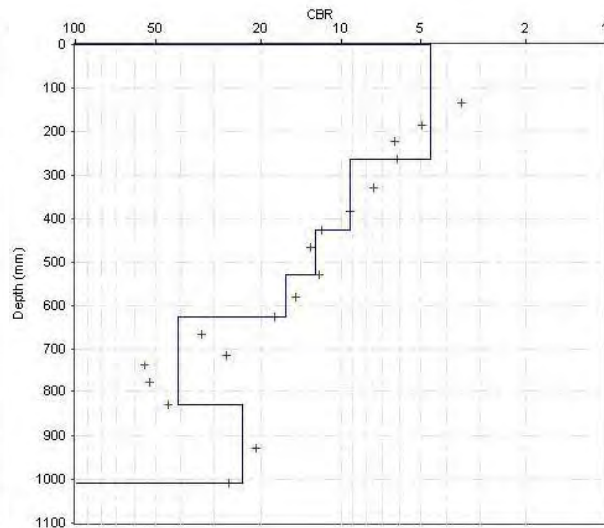
Project Name: J14044(b)

Chainage (km): 104.000  
 Direction: TP4  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 24/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 52.60                         | 5       | 263            | 263                        |
| 2   | 27.17                         | 9       | 163            | 426                        |
| 3   | 20.40                         | 12      | 102            | 528                        |
| 4   | 16.00                         | 16      | 96             | 624                        |
| 5   | 6.61                          | 41      | 205            | 829                        |
| 6   | 11.25                         | 23      | 180            | 1009                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

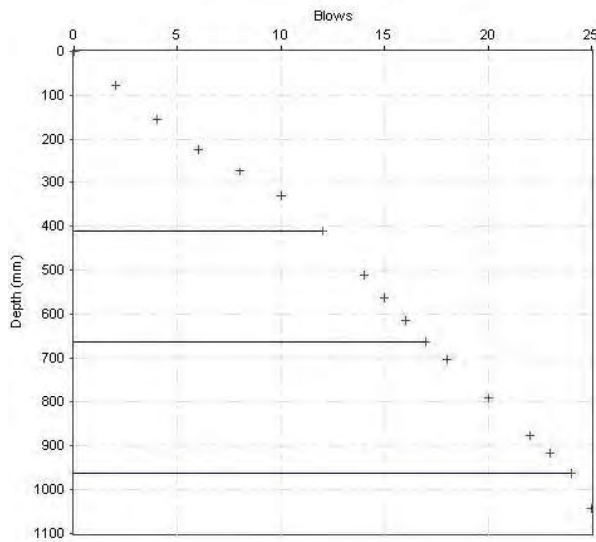
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

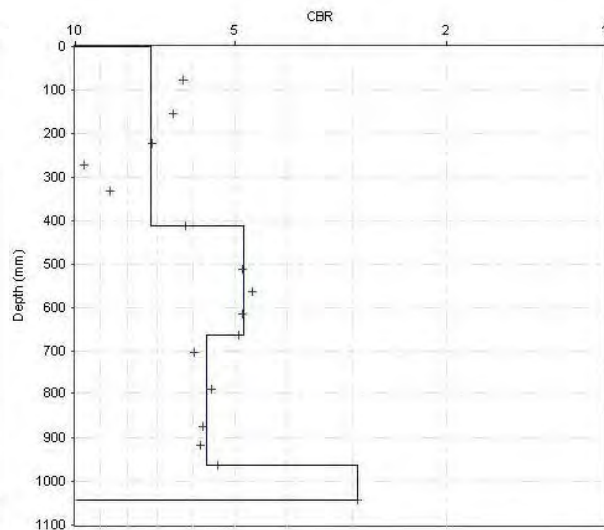
Chainage (km): 104.200  
 Direction: TP4  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 02/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: Ground level

Layer Boundaries: Chainage 104.200



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 34.25                         | 7       | 411            | 411                        |
| 2   | 50.20                         | 5       | 251            | 662                        |
| 3   | 43.00                         | 6       | 301            | 963                        |
| 4   | 80.00                         | 3       | 80             | 1043                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

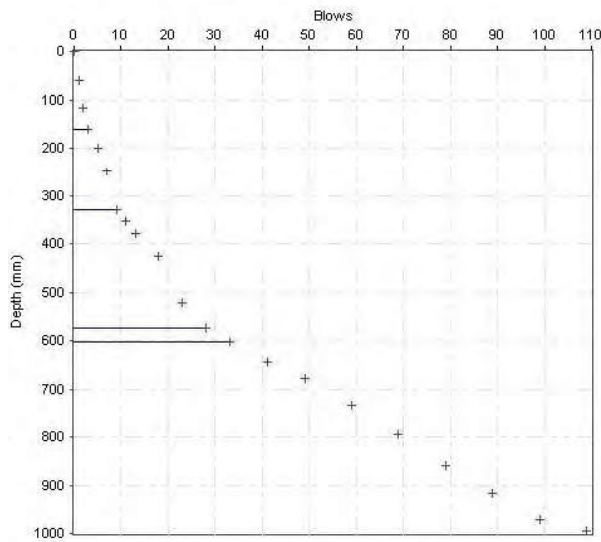
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

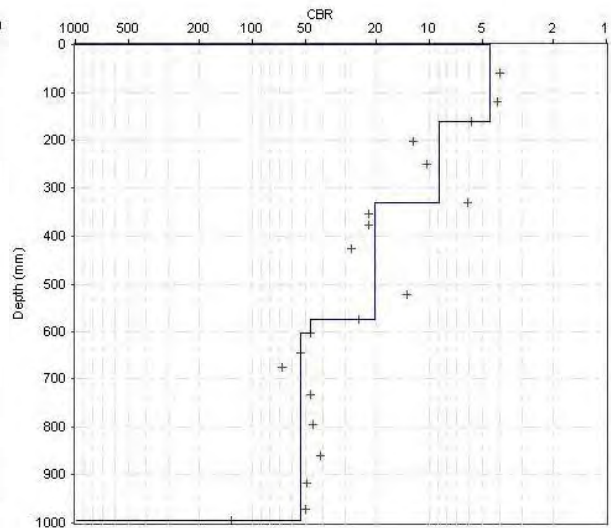
Chainage (km): 105.000  
 Direction: TP5  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 25/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL

Layer Boundaries: Chainage 105.000



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 53.33                         | 5       | 160            | 160                        |
| 2   | 28.33                         | 9       | 170            | 330                        |
| 3   | 12.84                         | 20      | 244            | 574                        |
| 4   | 5.80                          | 47      | 29             | 603                        |
| 5   | 5.14                          | 53      | 391            | 994                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

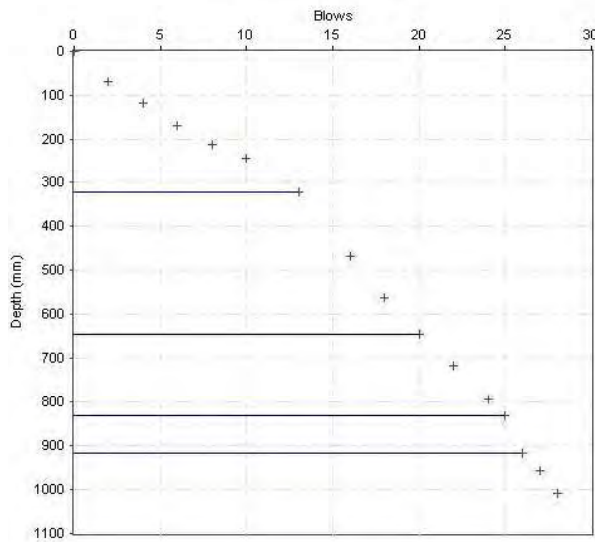
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

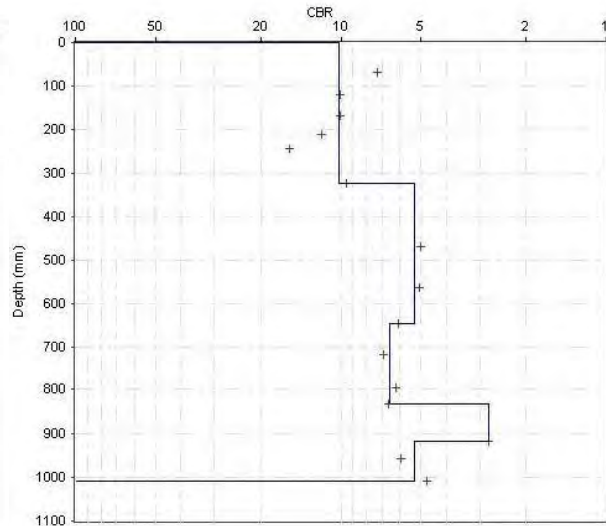
Chainage (km): 105.200  
 Direction: TP5  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 02/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: Ground level

Layer Boundaries: Chainage 105.200



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 24.85                         | 10      | 323            | 323                        |
| 2   | 46.00                         | 5       | 322            | 645                        |
| 3   | 37.40                         | 7       | 187            | 832                        |
| 4   | 85.00                         | 3       | 85             | 917                        |
| 5   | 46.00                         | 5       | 92             | 1009                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

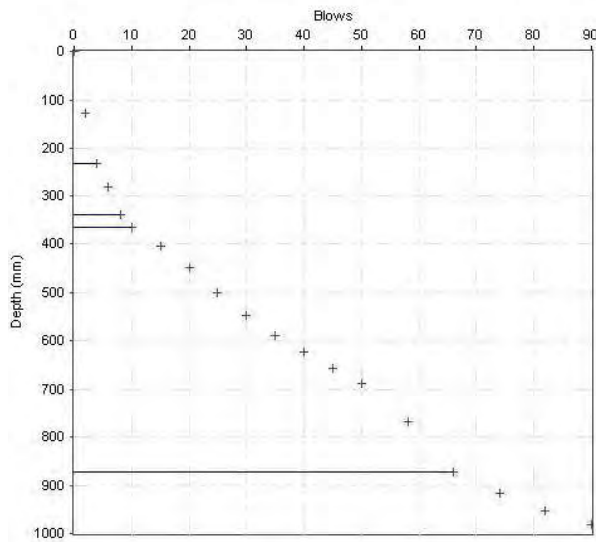
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

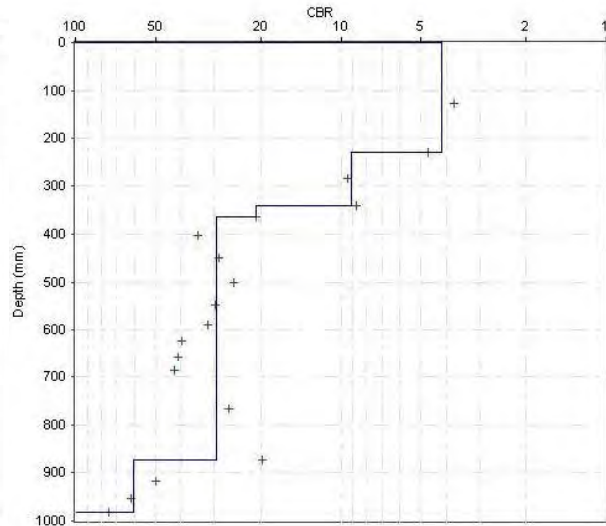
Chainage (km): 106.000  
 Direction: TP6  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 15/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL

Layer Boundaries: Chainage 106.000



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 57.50                         | 4       | 230            | 230                        |
| 2   | 27.50                         | 9       | 110            | 340                        |
| 3   | 12.50                         | 21      | 25             | 365                        |
| 4   | 9.07                          | 29      | 508            | 873                        |
| 5   | 4.58                          | 60      | 110            | 983                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

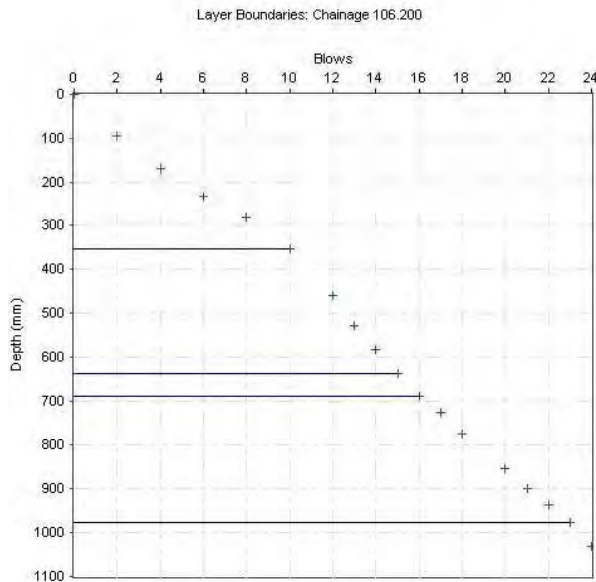


# DCP Layer Strength Analysis Report

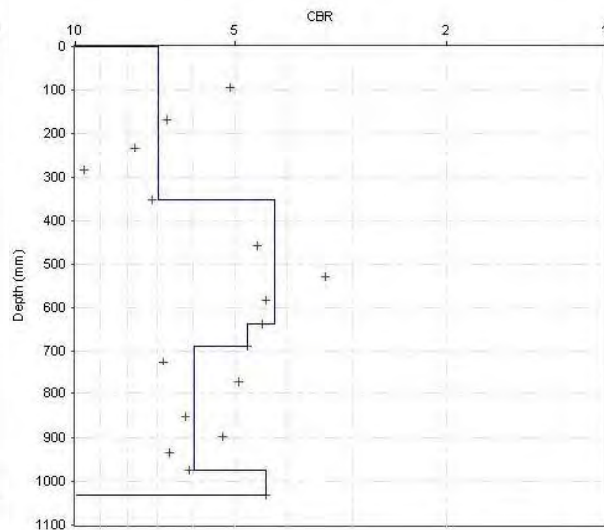
Project Name: J14044(b)

Chainage (km): 106.200  
 Direction: TP6  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 02/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: Ground level



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 35.30                         | 7       | 353            | 353                        |
| 2   | 57.00                         | 4       | 285            | 638                        |
| 3   | 51.00                         | 5       | 51             | 689                        |
| 4   | 41.00                         | 6       | 287            | 976                        |
| 5   | 55.00                         | 4       | 55             | 1031                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

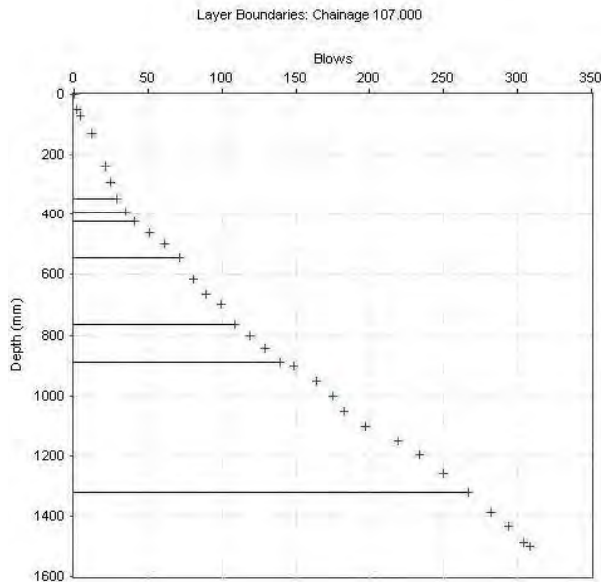
Report produced by .....

# DCP Layer Strength Analysis Report

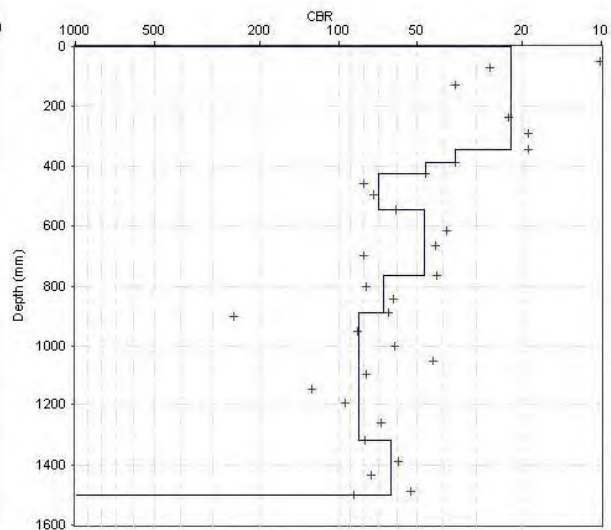
Project Name: J14044(b)

Chainage (km): 107.000  
 Direction: TP7  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 11.90                         | 22      | 345            | 345                        |
| 2   | 7.50                          | 36      | 45             | 390                        |
| 3   | 5.83                          | 47      | 35             | 425                        |
| 4   | 3.97                          | 70      | 119            | 544                        |
| 5   | 5.79                          | 47      | 220            | 764                        |
| 6   | 4.13                          | 67      | 124            | 888                        |
| 7   | 3.38                          | 83      | 432            | 1320                       |
| 8   | 4.39                          | 63      | 180            | 1500                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

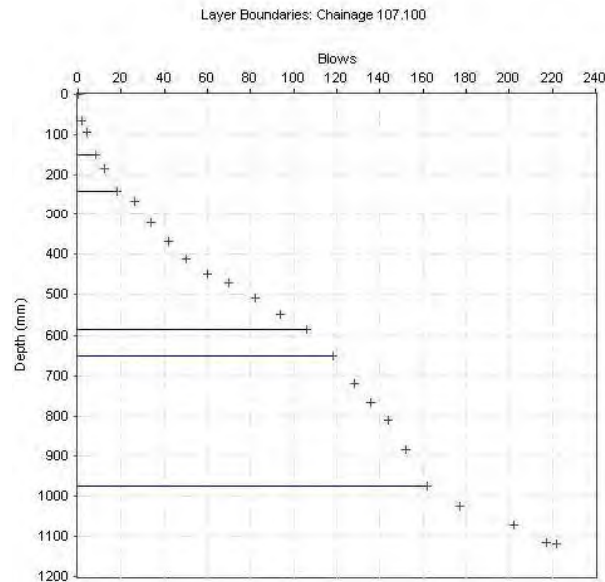
Report produced by .....

# DCP Layer Strength Analysis Report

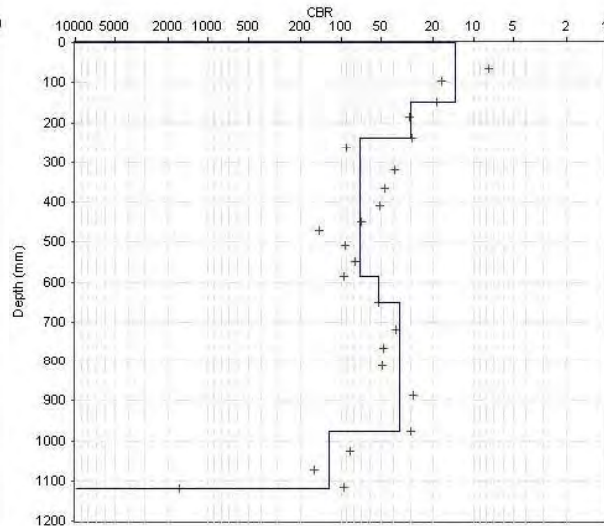
Project Name: J14044(b)

Chainage (km): 107.100  
 Direction: TP7  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.5m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 18.75                         | 14      | 150            | 150                        |
| 2   | 9.00                          | 30      | 90             | 240                        |
| 3   | 3.93                          | 71      | 346            | 586                        |
| 4   | 5.33                          | 51      | 64             | 650                        |
| 5   | 7.41                          | 36      | 326            | 976                        |
| 6   | 2.37                          | 121     | 142            | 1118                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

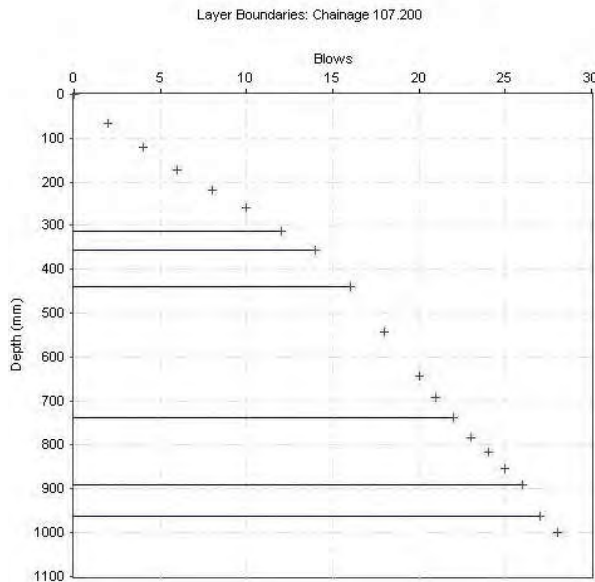
Report produced by .....

# DCP Layer Strength Analysis Report

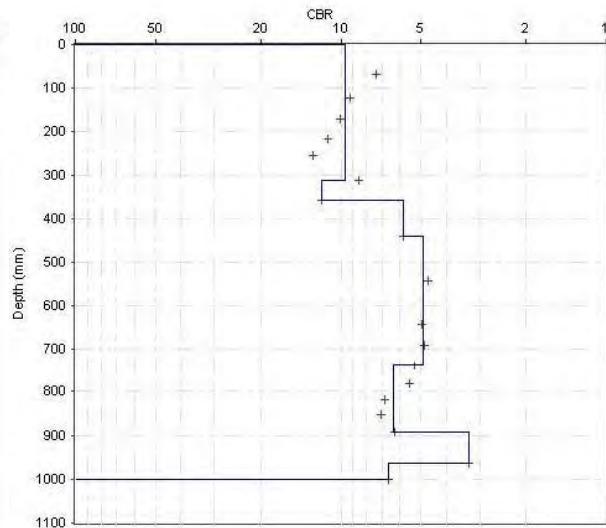
Project Name: J14044(b)

Chainage (km): 107.200  
 Direction: TP7  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 02/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: Ground level



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 26.17                         | 10      | 314            | 314                        |
| 2   | 21.50                         | 12      | 43             | 357                        |
| 3   | 42.00                         | 6       | 84             | 441                        |
| 4   | 49.50                         | 5       | 297            | 738                        |
| 5   | 38.50                         | 6       | 154            | 892                        |
| 6   | 72.00                         | 3       | 72             | 964                        |
| 7   | 37.00                         | 7       | 37             | 1001                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

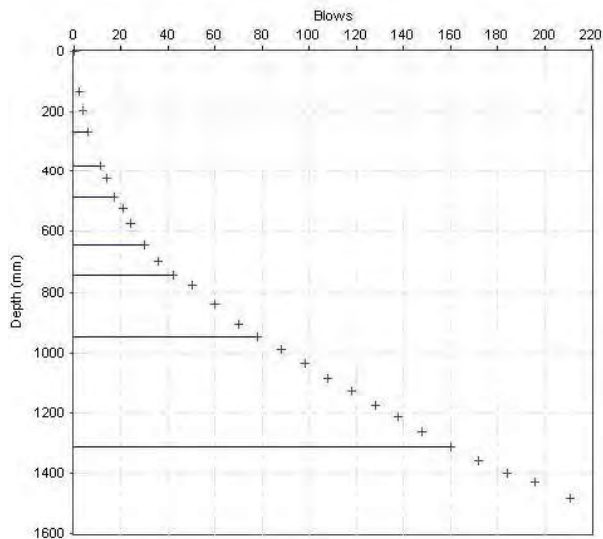
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

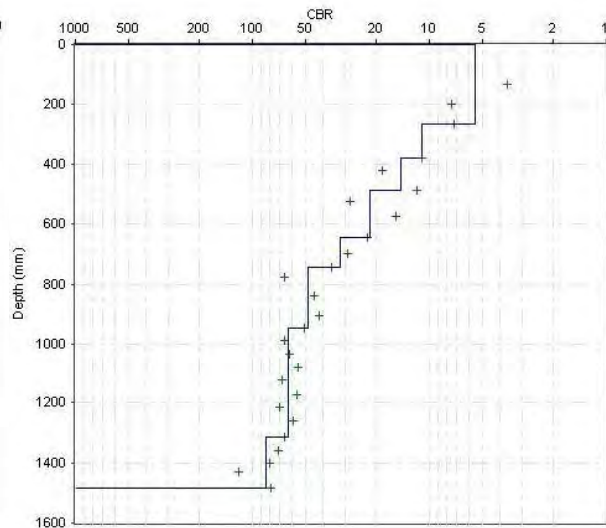
Chainage (km): 108.000  
 Direction: TP8  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL

Layer Boundaries: Chainage 108.000



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 44.17                         | 6       | 265            | 265                        |
| 2   | 23.00                         | 11      | 115            | 380                        |
| 3   | 17.83                         | 14      | 107            | 487                        |
| 4   | 12.15                         | 22      | 158            | 645                        |
| 5   | 8.33                          | 32      | 100            | 745                        |
| 6   | 5.64                          | 49      | 203            | 948                        |
| 7   | 4.45                          | 62      | 365            | 1313                       |
| 8   | 3.37                          | 84      | 172            | 1485                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

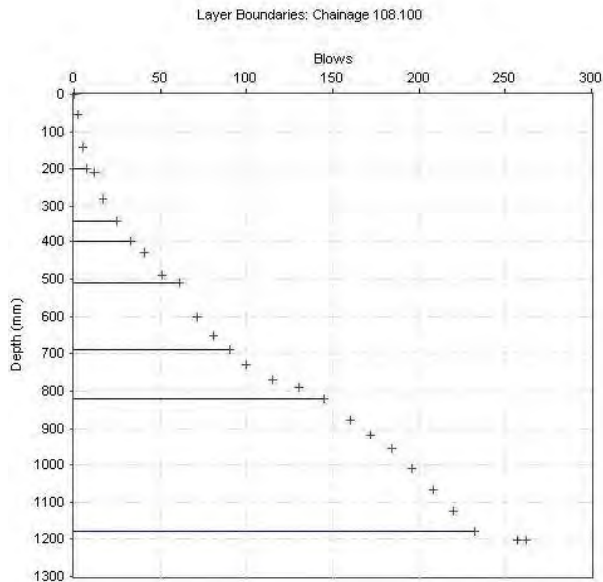
Report produced by .....

# DCP Layer Strength Analysis Report

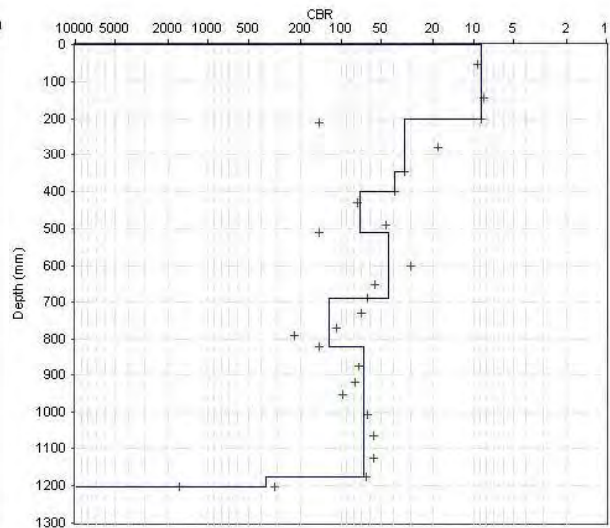
Project Name: J14044(b)

Chainage (km): 108.100  
 Direction: TP8  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.5m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR<br>(%) | Thickness<br>(mm) | Depth to<br>layer bottom<br>(mm) |
|-----|-------------------------------|------------|-------------------|----------------------------------|
| 1   | 28.57                         | 9          | 200               | 200                              |
| 2   | 8.06                          | 33         | 145               | 345                              |
| 3   | 6.88                          | 39         | 55                | 400                              |
| 4   | 3.93                          | 71         | 110               | 510                              |
| 5   | 6.21                          | 44         | 180               | 690                              |
| 6   | 2.36                          | 122        | 130               | 820                              |
| 7   | 4.10                          | 68         | 357               | 1177                             |
| 8   | 0.83                          | 366        | 25                | 1202                             |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

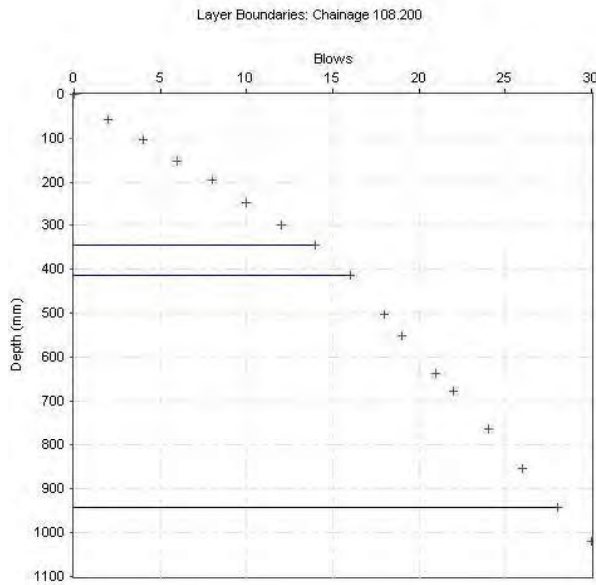


# DCP Layer Strength Analysis Report

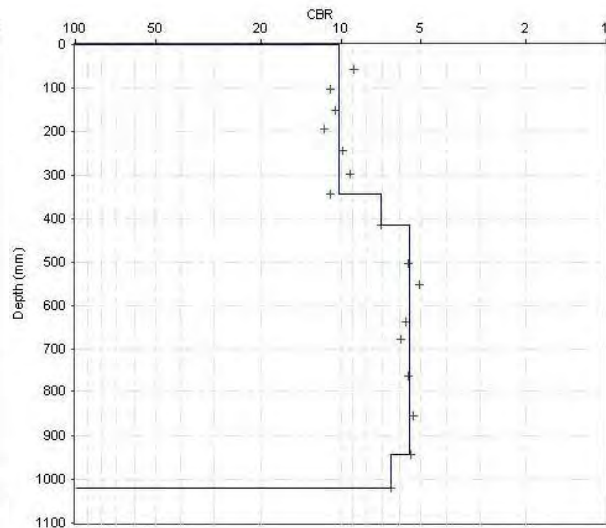
Project Name: J14044(b)

Chainage (km): 108.200  
 Direction: TP8  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 02/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: Ground level



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 24.64                         | 10      | 345            | 345                        |
| 2   | 35.00                         | 7       | 70             | 415                        |
| 3   | 44.08                         | 6       | 529            | 944                        |
| 4   | 38.00                         | 6       | 76             | 1020                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

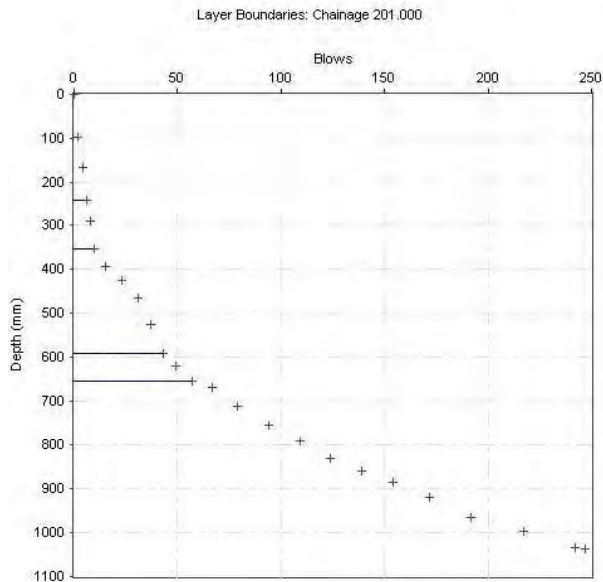
Report produced by .....

# DCP Layer Strength Analysis Report

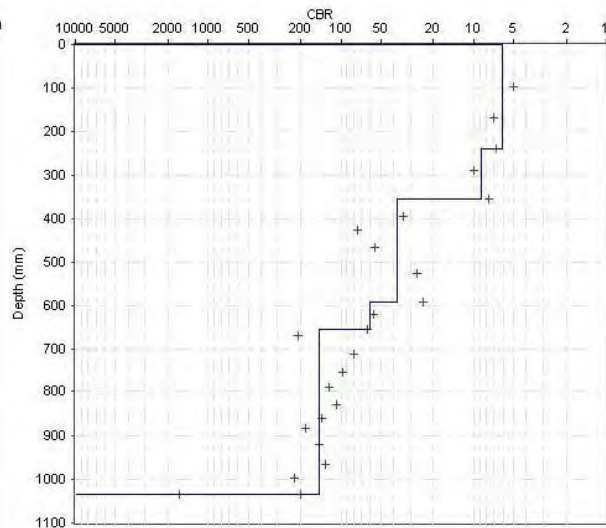
Project Name: J14044(b)

Chainage (km): 201.000  
 Direction: PT1  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 40.00                         | 6       | 240            | 240                        |
| 2   | 28.75                         | 9       | 115            | 355                        |
| 3   | 7.15                          | 38      | 236            | 591                        |
| 4   | 4.57                          | 61      | 64             | 655                        |
| 5   | 2.01                          | 145     | 381            | 1036                       |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

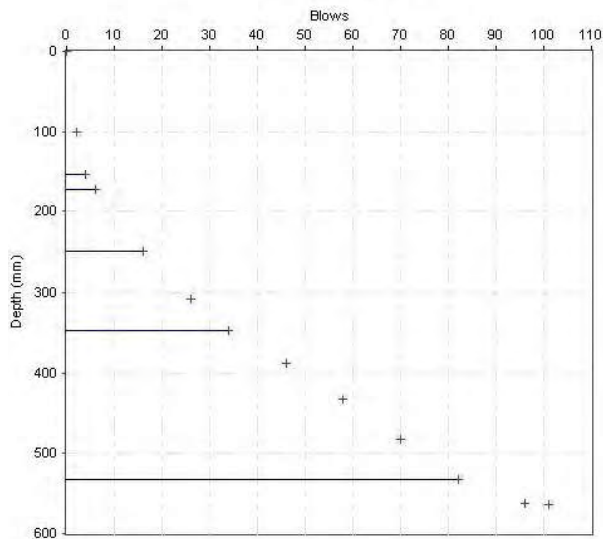
# DCP Layer Strength Analysis Report

Project Name: J14044(b)

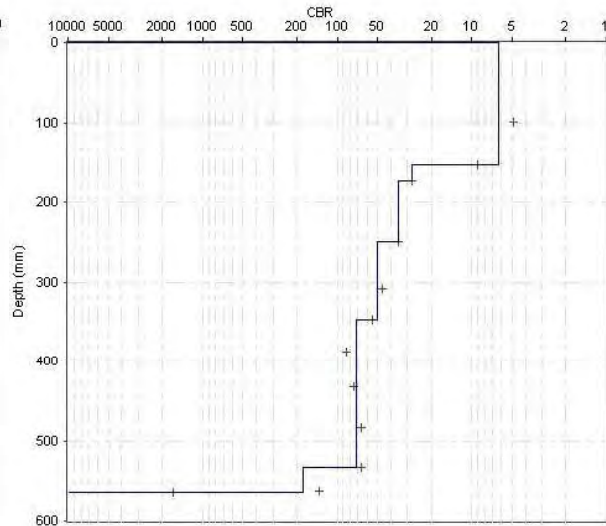
Chainage (km): 201.100  
 Direction: PT1  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.5m BGL

Layer Boundaries: Chainage 201.100



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 38.50                         | 6       | 154            | 154                        |
| 2   | 9.50                          | 28      | 19             | 173                        |
| 3   | 7.60                          | 35      | 76             | 249                        |
| 4   | 5.50                          | 50      | 99             | 348                        |
| 5   | 3.85                          | 73      | 185            | 533                        |
| 6   | 1.63                          | 180     | 31             | 564                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

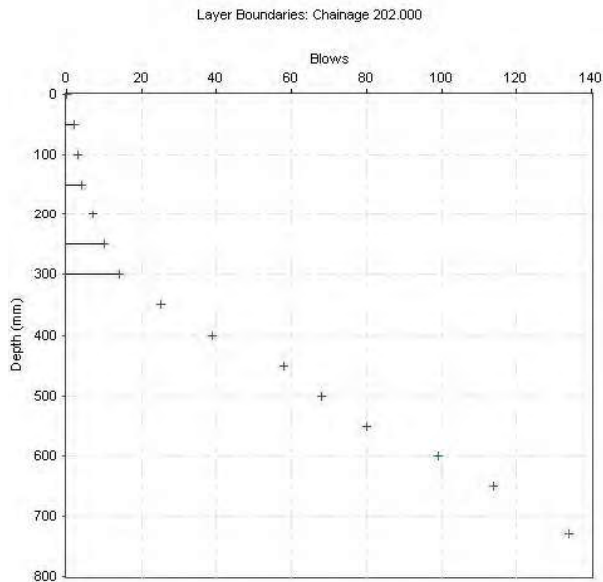
Report produced by .....

# DCP Layer Strength Analysis Report

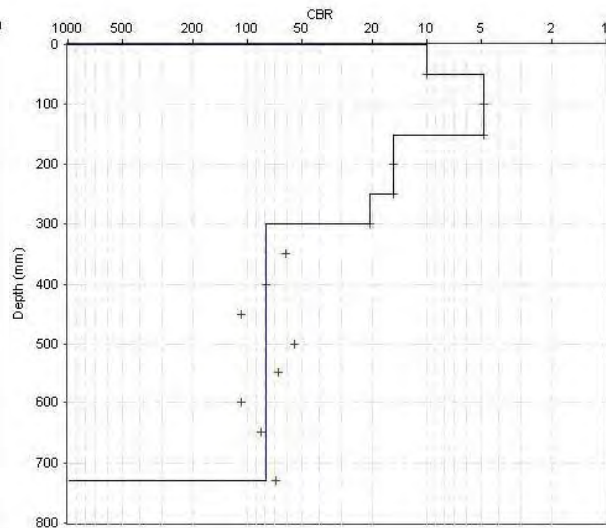
Project Name: J14044(b)

Chainage (km): 202.000  
 Direction: PT2  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 25/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 25.00                         | 10      | 50             | 50                         |
| 2   | 50.00                         | 5       | 100            | 150                        |
| 3   | 16.67                         | 15      | 100            | 250                        |
| 4   | 12.50                         | 21      | 50             | 300                        |
| 5   | 3.58                          | 78      | 430            | 730                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

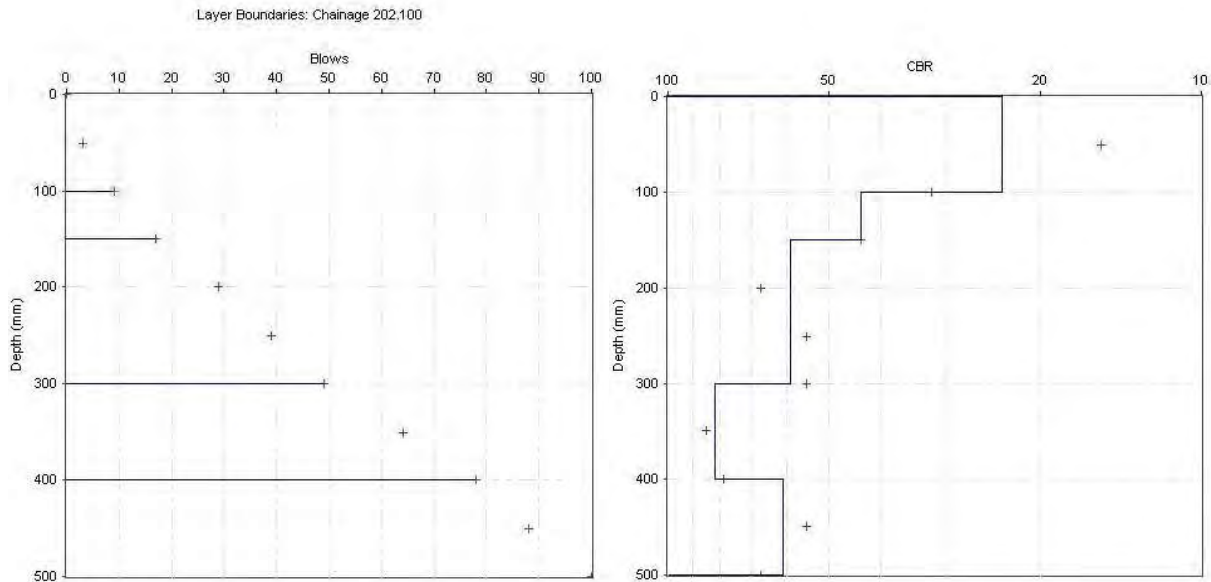
Report produced by .....

# DCP Layer Strength Analysis Report

Project Name: J14044(b)

Chainage (km): 202.100  
 Direction: PT2  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 25/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.5m BGL



Layer Boundaries Chart

CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 11.11                         | 24      | 100            | 100                        |
| 2   | 6.25                          | 44      | 50             | 150                        |
| 3   | 4.69                          | 59      | 150            | 300                        |
| 4   | 3.45                          | 82      | 100            | 400                        |
| 5   | 4.55                          | 61      | 100            | 500                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

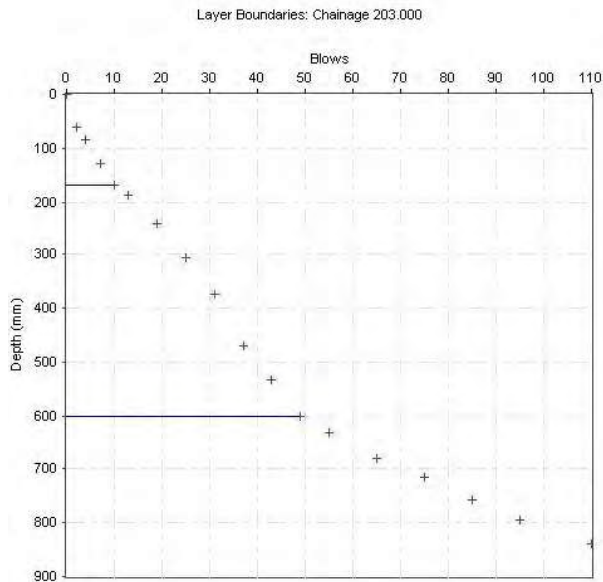
Report produced by .....

# DCP Layer Strength Analysis Report

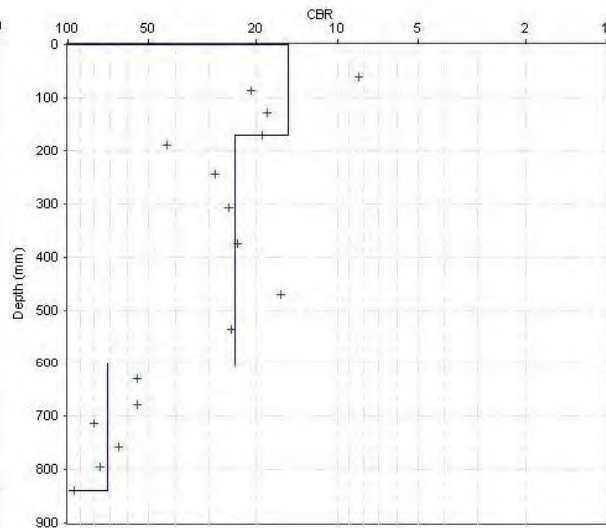
Project Name: J14044(b)

Chainage (km): 203.000  
 Direction: PT3  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 24/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.0m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration<br>Rate<br>(mm/blow) | CBR<br>(%) | Thickness<br>(mm) | Depth to<br>layer bottom<br>(mm) |
|-----|----------------------------------|------------|-------------------|----------------------------------|
| 1   | 16.90                            | 15         | 169               | 169                              |
| 2   | 11.05                            | 24         | 431               | 600                              |
| 3   | 3.93                             | 71         | 240               | 840                              |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

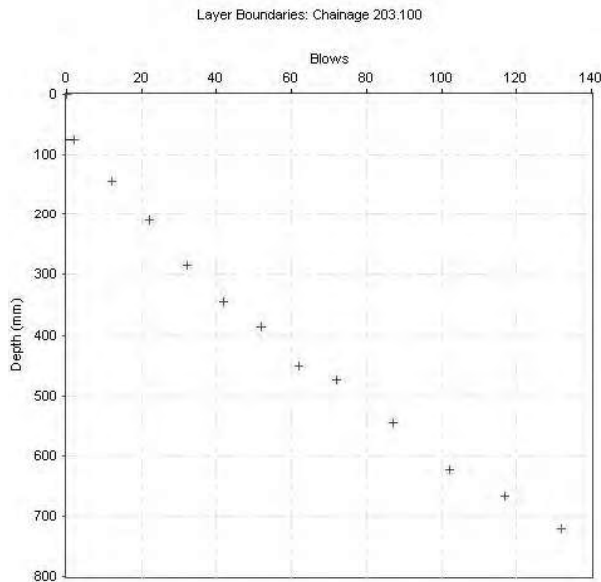


# DCP Layer Strength Analysis Report

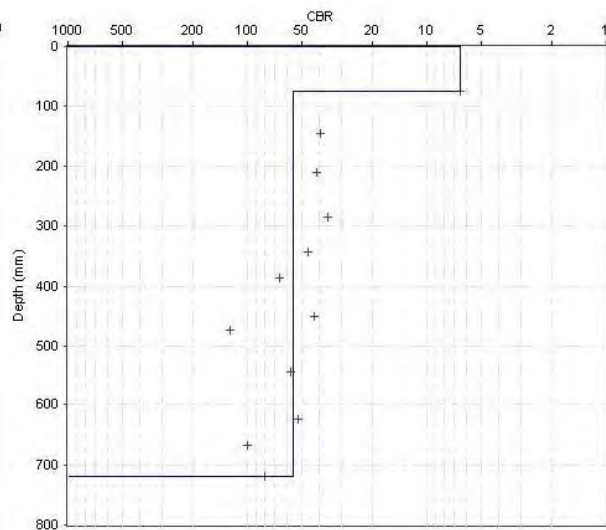
Project Name: J14044(b)

Chainage (km): 203.100  
 Direction: PT3  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 24/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted  
 Start Depth: 1.5m BGL



Layer Boundaries Chart



CBR Chart

## Layer Properties

| No. | Penetration Rate<br>(mm/blow) | CBR (%) | Thickness (mm) | Depth to layer bottom (mm) |
|-----|-------------------------------|---------|----------------|----------------------------|
| 1   | 37.50                         | 7       | 75             | 75                         |
| 2   | 4.96                          | 56      | 645            | 720                        |

## CBR Relationship:

TRL equation:  $\log_{10}(\text{CBR}) = 2.48 - 1.057 \times \log_{10}(\text{Strength})$

Report produced by .....

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 101.000  
 Direction: TP1  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 15/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 1     | 1                | 48                     | 48.00                      |     |       |                  |                        |                            |
| 3   | 1     | 2                | 91                     | 43.00                      |     |       |                  |                        |                            |
| 4   | 2     | 4                | 197                    | 53.00                      |     |       |                  |                        |                            |
| 5   | 2     | 6                | 240                    | 21.50                      |     |       |                  |                        |                            |
| 6   | 3     | 9                | 269                    | 9.67                       |     |       |                  |                        |                            |
| 7   | 5     | 14               | 300                    | 6.20                       |     |       |                  |                        |                            |
| 8   | 5     | 19               | 339                    | 7.80                       |     |       |                  |                        |                            |
| 9   | 8     | 27               | 465                    | 15.75                      |     |       |                  |                        |                            |
| 10  | 3     | 30               | 605                    | 46.67                      |     |       |                  |                        |                            |
| 11  | 3     | 33               | 615                    | 3.33                       |     |       |                  |                        |                            |
| 12  | 5     | 38               | 670                    | 11.00                      |     |       |                  |                        |                            |
| 13  | 5     | 43               | 715                    | 9.00                       |     |       |                  |                        |                            |
| 14  | 5     | 48               | 735                    | 4.00                       |     |       |                  |                        |                            |
| 15  | 8     | 56               | 800                    | 8.13                       |     |       |                  |                        |                            |
| 16  | 8     | 64               | 850                    | 6.25                       |     |       |                  |                        |                            |
| 17  | 8     | 72               | 880                    | 3.75                       |     |       |                  |                        |                            |
| 18  | 10    | 82               | 915                    | 3.50                       |     |       |                  |                        |                            |
| 19  | 10    | 92               | 960                    | 4.50                       |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken a 1.0m bgl in TP1

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 101.200  
 Direction: TP1  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 01/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 82                     | 41.00                      |     |       |                  |                        |                            |
| 3   | 2     | 4                | 114                    | 16.00                      |     |       |                  |                        |                            |
| 4   | 2     | 6                | 136                    | 11.00                      |     |       |                  |                        |                            |
| 5   | 4     | 10               | 264                    | 32.00                      |     |       |                  |                        |                            |
| 6   | 2     | 12               | 289                    | 12.50                      |     |       |                  |                        |                            |
| 7   | 2     | 14               | 332                    | 21.50                      |     |       |                  |                        |                            |
| 8   | 2     | 16               | 369                    | 18.50                      |     |       |                  |                        |                            |
| 9   | 2     | 18               | 418                    | 24.50                      |     |       |                  |                        |                            |
| 10  | 2     | 20               | 475                    | 28.50                      |     |       |                  |                        |                            |
| 11  | 2     | 22               | 529                    | 27.00                      |     |       |                  |                        |                            |
| 12  | 2     | 24               | 584                    | 27.50                      |     |       |                  |                        |                            |
| 13  | 2     | 26               | 654                    | 35.00                      |     |       |                  |                        |                            |
| 14  | 2     | 28               | 736                    | 41.00                      |     |       |                  |                        |                            |
| 15  | 1     | 29               | 780                    | 44.00                      |     |       |                  |                        |                            |
| 16  | 1     | 30               | 812                    | 32.00                      |     |       |                  |                        |                            |
| 17  | 2     | 32               | 894                    | 41.00                      |     |       |                  |                        |                            |
| 18  | 2     | 34               | 968                    | 37.00                      |     |       |                  |                        |                            |
| 19  | 1     | 35               | 1024                   | 56.00                      |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: Ground level

Remarks: Ground level at TP1

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 101.500  
 Direction: TP1A  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 15/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 127                    | 63.50                      |     |       |                  |                        |                            |
| 3   | 2     | 4                | 230                    | 51.50                      |     |       |                  |                        |                            |
| 4   | 2     | 6                | 283                    | 26.50                      |     |       |                  |                        |                            |
| 5   | 2     | 8                | 340                    | 28.50                      |     |       |                  |                        |                            |
| 6   | 2     | 10               | 365                    | 12.50                      |     |       |                  |                        |                            |
| 7   | 5     | 15               | 404                    | 7.80                       |     |       |                  |                        |                            |
| 8   | 5     | 20               | 450                    | 9.20                       |     |       |                  |                        |                            |
| 9   | 5     | 25               | 502                    | 10.40                      |     |       |                  |                        |                            |
| 10  | 5     | 30               | 547                    | 9.00                       |     |       |                  |                        |                            |
| 11  | 5     | 35               | 589                    | 8.40                       |     |       |                  |                        |                            |
| 12  | 5     | 40               | 623                    | 6.80                       |     |       |                  |                        |                            |
| 13  | 5     | 45               | 656                    | 6.60                       |     |       |                  |                        |                            |
| 14  | 5     | 50               | 688                    | 6.40                       |     |       |                  |                        |                            |
| 15  | 8     | 58               | 768                    | 10.00                      |     |       |                  |                        |                            |
| 16  | 8     | 66               | 873                    | 13.13                      |     |       |                  |                        |                            |
| 17  | 8     | 74               | 917                    | 5.50                       |     |       |                  |                        |                            |
| 18  | 8     | 82               | 953                    | 4.50                       |     |       |                  |                        |                            |
| 19  | 8     | 90               | 983                    | 3.75                       |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m bgl in base of TP1A

# Penetration Data Report

Project Name: J14044(b)

|                  |            |
|------------------|------------|
| Chainage (km):   | 102.200    |
| Direction:       | TP2        |
| Location/Offset: | Verge      |
| Cone Angle:      | 60 degrees |
| Zero Error (mm): | 0          |
| Test Date:       | 01/05/2019 |

|                             |              |
|-----------------------------|--------------|
| Surface Type:               | Unpaved      |
| Thickness (mm):             | 0            |
| Base Type:                  |              |
| Thickness (mm):             |              |
| Surface Moisture:           | Moderate     |
| Moisture adjustment factor: | Not adjusted |

[illegible]

Start Depth: Ground level

Remarks: Ground level at TP2

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 102.500  
 Direction: TP2A  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 16/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 1     | 1                | 58                     | 58.00                      |     |       |                  |                        |                            |
| 3   | 1     | 2                | 108                    | 50.00                      |     |       |                  |                        |                            |
| 4   | 1     | 3                | 157                    | 49.00                      |     |       |                  |                        |                            |
| 5   | 1     | 4                | 203                    | 46.00                      |     |       |                  |                        |                            |
| 6   | 1     | 5                | 240                    | 37.00                      |     |       |                  |                        |                            |
| 7   | 1     | 6                | 278                    | 38.00                      |     |       |                  |                        |                            |
| 8   | 2     | 8                | 355                    | 38.50                      |     |       |                  |                        |                            |
| 9   | 2     | 10               | 426                    | 35.50                      |     |       |                  |                        |                            |
| 10  | 2     | 12               | 488                    | 31.00                      |     |       |                  |                        |                            |
| 11  | 2     | 14               | 542                    | 27.00                      |     |       |                  |                        |                            |
| 12  | 2     | 16               | 585                    | 21.50                      |     |       |                  |                        |                            |
| 13  | 2     | 18               | 624                    | 19.50                      |     |       |                  |                        |                            |
| 14  | 3     | 21               | 675                    | 17.00                      |     |       |                  |                        |                            |
| 15  | 3     | 24               | 718                    | 14.33                      |     |       |                  |                        |                            |
| 16  | 3     | 27               | 762                    | 14.67                      |     |       |                  |                        |                            |
| 17  | 3     | 30               | 803                    | 13.67                      |     |       |                  |                        |                            |
| 18  | 5     | 35               | 838                    | 7.00                       |     |       |                  |                        |                            |
| 19  | 5     | 40               | 863                    | 5.00                       |     |       |                  |                        |                            |
| 20  | 8     | 48               | 923                    | 7.50                       |     |       |                  |                        |                            |
| 21  | 10    | 58               | 985                    | 6.20                       |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m bgl in base of TP2A

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 103.000  
 Direction: TP3  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 17/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 1     | 1                | 63                     | 63.00                      |     |       |                  |                        |                            |
| 3   | 1     | 2                | 117                    | 54.00                      |     |       |                  |                        |                            |
| 4   | 1     | 3                | 167                    | 50.00                      |     |       |                  |                        |                            |
| 5   | 1     | 4                | 216                    | 49.00                      |     |       |                  |                        |                            |
| 6   | 1     | 5                | 249                    | 33.00                      |     |       |                  |                        |                            |
| 7   | 2     | 7                | 268                    | 9.50                       |     |       |                  |                        |                            |
| 8   | 2     | 9                | 305                    | 18.50                      |     |       |                  |                        |                            |
| 9   | 3     | 12               | 361                    | 18.67                      |     |       |                  |                        |                            |
| 10  | 3     | 15               | 389                    | 9.33                       |     |       |                  |                        |                            |
| 11  | 5     | 20               | 425                    | 7.20                       |     |       |                  |                        |                            |
| 12  | 5     | 25               | 459                    | 6.80                       |     |       |                  |                        |                            |
| 13  | 5     | 30               | 486                    | 5.40                       |     |       |                  |                        |                            |
| 14  | 8     | 38               | 537                    | 6.38                       |     |       |                  |                        |                            |
| 15  | 8     | 46               | 578                    | 5.13                       |     |       |                  |                        |                            |
| 16  | 10    | 56               | 636                    | 5.80                       |     |       |                  |                        |                            |
| 17  | 10    | 66               | 716                    | 8.00                       |     |       |                  |                        |                            |
| 18  | 10    | 76               | 751                    | 3.50                       |     |       |                  |                        |                            |
| 19  | 15    | 91               | 832                    | 5.40                       |     |       |                  |                        |                            |
| 20  | 15    | 106              | 917                    | 5.67                       |     |       |                  |                        |                            |
| 21  | 15    | 121              | 982                    | 4.33                       |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m bgl at base of TP3



# Penetration Data Report

Project Name: J14044(b)

|                  |            |
|------------------|------------|
| Chainage (km):   | 103.200    |
| Direction:       | TP3        |
| Location/Offset: | Verge      |
| Cone Angle:      | 60 degrees |
| Zero Error (mm): | 0          |
| Test Date:       | 02/05/2019 |

|                             |              |
|-----------------------------|--------------|
| Surface Type:               | Unpaved      |
| Thickness (mm):             | 0            |
| Base Type:                  |              |
| Thickness (mm):             |              |
| Surface Moisture:           | Moderate     |
| Moisture adjustment factor: | Not adjusted |

[illegible]

Start Depth: Ground level

Remarks: Ground level at TP3

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 104.000  
 Direction: TP4  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 24/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 135                    | 67.50                      |     |       |                  |                        |                            |
| 3   | 1     | 3                | 184                    | 49.00                      |     |       |                  |                        |                            |
| 4   | 1     | 4                | 223                    | 39.00                      |     |       |                  |                        |                            |
| 5   | 1     | 5                | 263                    | 40.00                      |     |       |                  |                        |                            |
| 6   | 2     | 7                | 329                    | 33.00                      |     |       |                  |                        |                            |
| 7   | 2     | 9                | 383                    | 27.00                      |     |       |                  |                        |                            |
| 8   | 2     | 11               | 426                    | 21.50                      |     |       |                  |                        |                            |
| 9   | 2     | 13               | 465                    | 19.50                      |     |       |                  |                        |                            |
| 10  | 3     | 16               | 528                    | 21.00                      |     |       |                  |                        |                            |
| 11  | 3     | 19               | 580                    | 17.33                      |     |       |                  |                        |                            |
| 12  | 3     | 22               | 624                    | 14.67                      |     |       |                  |                        |                            |
| 13  | 5     | 27               | 664                    | 8.00                       |     |       |                  |                        |                            |
| 14  | 5     | 32               | 713                    | 9.80                       |     |       |                  |                        |                            |
| 15  | 5     | 37               | 738                    | 5.00                       |     |       |                  |                        |                            |
| 16  | 8     | 45               | 780                    | 5.25                       |     |       |                  |                        |                            |
| 17  | 8     | 53               | 829                    | 6.13                       |     |       |                  |                        |                            |
| 18  | 8     | 61               | 929                    | 12.50                      |     |       |                  |                        |                            |
| 19  | 8     | 69               | 1009                   | 10.00                      |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m bgl at base of TP4

# Penetration Data Report

Project Name: J14044(b)

|                  |            |
|------------------|------------|
| Chainage (km):   | 104.200    |
| Direction:       | TP4        |
| Location/Offset: | Verge      |
| Cone Angle:      | 60 degrees |
| Zero Error (mm): | 0          |
| Test Date:       | 02/05/2019 |

|                             |              |
|-----------------------------|--------------|
| Surface Type:               | Unpaved      |
| Thickness (mm):             | 0            |
| Base Type:                  |              |
| Thickness (mm):             |              |
| Surface Moisture:           | Moderate     |
| Moisture adjustment factor: | Not adjusted |

[illegible]

Start Depth: Ground level

Remarks: Ground level at TP4

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 105.000  
 Direction: TP5  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 25/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 1     | 1                | 60                     | 60.00                      |     |       |                  |                        |                            |
| 3   | 1     | 2                | 118                    | 58.00                      |     |       |                  |                        |                            |
| 4   | 1     | 3                | 160                    | 42.00                      |     |       |                  |                        |                            |
| 5   | 2     | 5                | 201                    | 20.50                      |     |       |                  |                        |                            |
| 6   | 2     | 7                | 250                    | 24.50                      |     |       |                  |                        |                            |
| 7   | 2     | 9                | 330                    | 40.00                      |     |       |                  |                        |                            |
| 8   | 2     | 11               | 354                    | 12.00                      |     |       |                  |                        |                            |
| 9   | 2     | 13               | 378                    | 12.00                      |     |       |                  |                        |                            |
| 10  | 5     | 18               | 426                    | 9.60                       |     |       |                  |                        |                            |
| 11  | 5     | 23               | 521                    | 19.00                      |     |       |                  |                        |                            |
| 12  | 5     | 28               | 574                    | 10.60                      |     |       |                  |                        |                            |
| 13  | 5     | 33               | 603                    | 5.80                       |     |       |                  |                        |                            |
| 14  | 8     | 41               | 644                    | 5.13                       |     |       |                  |                        |                            |
| 15  | 8     | 49               | 677                    | 4.13                       |     |       |                  |                        |                            |
| 16  | 10    | 59               | 735                    | 5.80                       |     |       |                  |                        |                            |
| 17  | 10    | 69               | 795                    | 6.00                       |     |       |                  |                        |                            |
| 18  | 10    | 79               | 861                    | 6.60                       |     |       |                  |                        |                            |
| 19  | 10    | 89               | 917                    | 5.60                       |     |       |                  |                        |                            |
| 20  | 10    | 99               | 972                    | 5.50                       |     |       |                  |                        |                            |
| 21  | 10    | 109              | 994                    | 2.20                       |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m bgl at base of TP5



# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 106.000  
 Direction: TP6  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 15/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 127                    | 63.50                      |     |       |                  |                        |                            |
| 3   | 2     | 4                | 230                    | 51.50                      |     |       |                  |                        |                            |
| 4   | 2     | 6                | 283                    | 26.50                      |     |       |                  |                        |                            |
| 5   | 2     | 8                | 340                    | 28.50                      |     |       |                  |                        |                            |
| 6   | 2     | 10               | 365                    | 12.50                      |     |       |                  |                        |                            |
| 7   | 5     | 15               | 404                    | 7.80                       |     |       |                  |                        |                            |
| 8   | 5     | 20               | 450                    | 9.20                       |     |       |                  |                        |                            |
| 9   | 5     | 25               | 502                    | 10.40                      |     |       |                  |                        |                            |
| 10  | 5     | 30               | 547                    | 9.00                       |     |       |                  |                        |                            |
| 11  | 5     | 35               | 589                    | 8.40                       |     |       |                  |                        |                            |
| 12  | 5     | 40               | 623                    | 6.80                       |     |       |                  |                        |                            |
| 13  | 5     | 45               | 656                    | 6.60                       |     |       |                  |                        |                            |
| 14  | 5     | 50               | 688                    | 6.40                       |     |       |                  |                        |                            |
| 15  | 8     | 58               | 768                    | 10.00                      |     |       |                  |                        |                            |
| 16  | 8     | 66               | 873                    | 13.13                      |     |       |                  |                        |                            |
| 17  | 8     | 74               | 917                    | 5.50                       |     |       |                  |                        |                            |
| 18  | 8     | 82               | 953                    | 4.50                       |     |       |                  |                        |                            |
| 19  | 8     | 90               | 983                    | 3.75                       |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m bgl at base of TP6

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 106.200  
 Direction: TP6  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 02/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 95                     | 47.50                      |     |       |                  |                        |                            |
| 3   | 2     | 4                | 168                    | 36.50                      |     |       |                  |                        |                            |
| 4   | 2     | 6                | 232                    | 32.00                      |     |       |                  |                        |                            |
| 5   | 2     | 8                | 284                    | 26.00                      |     |       |                  |                        |                            |
| 6   | 2     | 10               | 353                    | 34.50                      |     |       |                  |                        |                            |
| 7   | 2     | 12               | 459                    | 53.00                      |     |       |                  |                        |                            |
| 8   | 1     | 13               | 529                    | 70.00                      |     |       |                  |                        |                            |
| 9   | 1     | 14               | 584                    | 55.00                      |     |       |                  |                        |                            |
| 10  | 1     | 15               | 638                    | 54.00                      |     |       |                  |                        |                            |
| 11  | 1     | 16               | 689                    | 51.00                      |     |       |                  |                        |                            |
| 12  | 1     | 17               | 725                    | 36.00                      |     |       |                  |                        |                            |
| 13  | 1     | 18               | 774                    | 49.00                      |     |       |                  |                        |                            |
| 14  | 2     | 20               | 853                    | 39.50                      |     |       |                  |                        |                            |
| 15  | 1     | 21               | 899                    | 46.00                      |     |       |                  |                        |                            |
| 16  | 1     | 22               | 936                    | 37.00                      |     |       |                  |                        |                            |
| 17  | 1     | 23               | 976                    | 40.00                      |     |       |                  |                        |                            |
| 18  | 1     | 24               | 1031                   | 55.00                      |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: Ground level

Remarks: Ground level at TP6



# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 107.000  
 Direction: TP7  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       | 26  | 15    | 234              | 1195                   | 3.00                       |
| 2   | 2     | 2                | 50                     | 25.00                      | 27  | 16    | 250              | 1260                   | 4.06                       |
| 3   | 2     | 4                | 70                     | 10.00                      | 28  | 17    | 267              | 1320                   | 3.53                       |
| 4   | 8     | 12               | 130                    | 7.50                       | 29  | 15    | 282              | 1390                   | 4.67                       |
| 5   | 9     | 21               | 235                    | 11.67                      | 30  | 12    | 294              | 1435                   | 3.75                       |
| 6   | 4     | 25               | 290                    | 13.75                      | 31  | 10    | 304              | 1487                   | 5.20                       |
| 7   | 4     | 29               | 345                    | 13.75                      | 32  | 4     | 308              | 1500                   | 3.25                       |
| 8   | 6     | 35               | 390                    | 7.50                       |     |       |                  |                        |                            |
| 9   | 6     | 41               | 425                    | 5.83                       |     |       |                  |                        |                            |
| 10  | 10    | 51               | 460                    | 3.50                       |     |       |                  |                        |                            |
| 11  | 10    | 61               | 498                    | 3.80                       |     |       |                  |                        |                            |
| 12  | 10    | 71               | 544                    | 4.60                       |     |       |                  |                        |                            |
| 13  | 10    | 81               | 614                    | 7.00                       |     |       |                  |                        |                            |
| 14  | 8     | 89               | 665                    | 6.38                       |     |       |                  |                        |                            |
| 15  | 10    | 99               | 700                    | 3.50                       |     |       |                  |                        |                            |
| 16  | 10    | 109              | 764                    | 6.40                       |     |       |                  |                        |                            |
| 17  | 10    | 119              | 800                    | 3.60                       |     |       |                  |                        |                            |
| 18  | 10    | 129              | 845                    | 4.50                       |     |       |                  |                        |                            |
| 19  | 10    | 139              | 888                    | 4.30                       |     |       |                  |                        |                            |
| 20  | 10    | 149              | 900                    | 1.20                       |     |       |                  |                        |                            |
| 21  | 15    | 164              | 950                    | 3.33                       |     |       |                  |                        |                            |
| 22  | 11    | 175              | 1000                   | 4.55                       |     |       |                  |                        |                            |
| 23  | 8     | 183              | 1050                   | 6.25                       |     |       |                  |                        |                            |
| 24  | 14    | 197              | 1100                   | 3.57                       |     |       |                  |                        |                            |
| 25  | 22    | 219              | 1150                   | 2.27                       |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m bgl in TP7

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 107.100  
 Direction: TP7  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 65                     | 32.50                      |     |       |                  |                        |                            |
| 3   | 2     | 4                | 95                     | 15.00                      |     |       |                  |                        |                            |
| 4   | 4     | 8                | 150                    | 13.75                      |     |       |                  |                        |                            |
| 5   | 4     | 12               | 185                    | 8.75                       |     |       |                  |                        |                            |
| 6   | 6     | 18               | 240                    | 9.17                       |     |       |                  |                        |                            |
| 7   | 8     | 26               | 265                    | 3.13                       |     |       |                  |                        |                            |
| 8   | 8     | 34               | 320                    | 6.88                       |     |       |                  |                        |                            |
| 9   | 8     | 42               | 367                    | 5.88                       |     |       |                  |                        |                            |
| 10  | 8     | 50               | 410                    | 5.38                       |     |       |                  |                        |                            |
| 11  | 10    | 60               | 450                    | 4.00                       |     |       |                  |                        |                            |
| 12  | 10    | 70               | 470                    | 2.00                       |     |       |                  |                        |                            |
| 13  | 12    | 82               | 507                    | 3.08                       |     |       |                  |                        |                            |
| 14  | 12    | 94               | 550                    | 3.58                       |     |       |                  |                        |                            |
| 15  | 12    | 106              | 586                    | 3.00                       |     |       |                  |                        |                            |
| 16  | 12    | 118              | 650                    | 5.33                       |     |       |                  |                        |                            |
| 17  | 10    | 128              | 720                    | 7.00                       |     |       |                  |                        |                            |
| 18  | 8     | 136              | 766                    | 5.75                       |     |       |                  |                        |                            |
| 19  | 8     | 144              | 811                    | 5.63                       |     |       |                  |                        |                            |
| 20  | 8     | 152              | 886                    | 9.38                       |     |       |                  |                        |                            |
| 21  | 10    | 162              | 976                    | 9.00                       |     |       |                  |                        |                            |
| 22  | 15    | 177              | 1026                   | 3.33                       |     |       |                  |                        |                            |
| 23  | 25    | 202              | 1072                   | 1.84                       |     |       |                  |                        |                            |
| 24  | 15    | 217              | 1117                   | 3.00                       |     |       |                  |                        |                            |
| 25  | 5     | 222              | 1118                   | 0.20                       |     |       |                  |                        |                            |

Start Depth: 1.5m BGL

Remarks: Undertaken at 1.5m bgl in TP7

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 107.200  
 Direction: TP7  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 02/05/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 67                     | 33.50                      |     |       |                  |                        |                            |
| 3   | 2     | 4                | 121                    | 27.00                      |     |       |                  |                        |                            |
| 4   | 2     | 6                | 171                    | 25.00                      |     |       |                  |                        |                            |
| 5   | 2     | 8                | 216                    | 22.50                      |     |       |                  |                        |                            |
| 6   | 2     | 10               | 256                    | 20.00                      |     |       |                  |                        |                            |
| 7   | 2     | 12               | 314                    | 29.00                      |     |       |                  |                        |                            |
| 8   | 2     | 14               | 357                    | 21.50                      |     |       |                  |                        |                            |
| 9   | 2     | 16               | 441                    | 42.00                      |     |       |                  |                        |                            |
| 10  | 2     | 18               | 544                    | 51.50                      |     |       |                  |                        |                            |
| 11  | 2     | 20               | 642                    | 49.00                      |     |       |                  |                        |                            |
| 12  | 1     | 21               | 692                    | 50.00                      |     |       |                  |                        |                            |
| 13  | 1     | 22               | 738                    | 46.00                      |     |       |                  |                        |                            |
| 14  | 1     | 23               | 782                    | 44.00                      |     |       |                  |                        |                            |
| 15  | 1     | 24               | 818                    | 36.00                      |     |       |                  |                        |                            |
| 16  | 1     | 25               | 853                    | 35.00                      |     |       |                  |                        |                            |
| 17  | 1     | 26               | 892                    | 39.00                      |     |       |                  |                        |                            |
| 18  | 1     | 27               | 964                    | 72.00                      |     |       |                  |                        |                            |
| 19  | 1     | 28               | 1001                   | 37.00                      |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: Ground level

Remarks: Ground level at TP7

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 108.000  
 Direction: TP8  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       | 26  | 12    | 184              | 1402                   | 3.50                       |
| 2   | 2     | 2                | 131                    | 65.50                      | 27  | 12    | 196              | 1431                   | 2.42                       |
| 3   | 2     | 4                | 197                    | 33.00                      | 28  | 15    | 211              | 1485                   | 3.60                       |
| 4   | 2     | 6                | 265                    | 34.00                      |     |       |                  |                        |                            |
| 5   | 5     | 11               | 380                    | 23.00                      |     |       |                  |                        |                            |
| 6   | 3     | 14               | 422                    | 14.00                      |     |       |                  |                        |                            |
| 7   | 3     | 17               | 487                    | 21.67                      |     |       |                  |                        |                            |
| 8   | 4     | 21               | 525                    | 9.50                       |     |       |                  |                        |                            |
| 9   | 3     | 24               | 575                    | 16.67                      |     |       |                  |                        |                            |
| 10  | 6     | 30               | 645                    | 11.67                      |     |       |                  |                        |                            |
| 11  | 6     | 36               | 700                    | 9.17                       |     |       |                  |                        |                            |
| 12  | 6     | 42               | 745                    | 7.50                       |     |       |                  |                        |                            |
| 13  | 8     | 50               | 779                    | 4.25                       |     |       |                  |                        |                            |
| 14  | 10    | 60               | 840                    | 6.10                       |     |       |                  |                        |                            |
| 15  | 10    | 70               | 905                    | 6.50                       |     |       |                  |                        |                            |
| 16  | 8     | 78               | 948                    | 5.38                       |     |       |                  |                        |                            |
| 17  | 10    | 88               | 990                    | 4.20                       |     |       |                  |                        |                            |
| 18  | 10    | 98               | 1035                   | 4.50                       |     |       |                  |                        |                            |
| 19  | 10    | 108              | 1085                   | 5.00                       |     |       |                  |                        |                            |
| 20  | 10    | 118              | 1126                   | 4.10                       |     |       |                  |                        |                            |
| 21  | 10    | 128              | 1175                   | 4.90                       |     |       |                  |                        |                            |
| 22  | 10    | 138              | 1215                   | 4.00                       |     |       |                  |                        |                            |
| 23  | 10    | 148              | 1262                   | 4.70                       |     |       |                  |                        |                            |
| 24  | 12    | 160              | 1313                   | 4.25                       |     |       |                  |                        |                            |
| 25  | 12    | 172              | 1360                   | 3.92                       |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m bgl in TP8

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 108.100  
 Direction: TP8  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       | 26  | 25    | 257              | 1201                   | 0.96                       |
| 2   | 2     | 2                | 54                     | 27.00                      | 27  | 5     | 262              | 1202                   | 0.20                       |
| 3   | 3     | 5                | 143                    | 29.67                      |     |       |                  |                        |                            |
| 4   | 2     | 7                | 200                    | 28.50                      |     |       |                  |                        |                            |
| 5   | 5     | 12               | 210                    | 2.00                       |     |       |                  |                        |                            |
| 6   | 5     | 17               | 280                    | 14.00                      |     |       |                  |                        |                            |
| 7   | 8     | 25               | 345                    | 8.13                       |     |       |                  |                        |                            |
| 8   | 8     | 33               | 400                    | 6.88                       |     |       |                  |                        |                            |
| 9   | 8     | 41               | 430                    | 3.75                       |     |       |                  |                        |                            |
| 10  | 10    | 51               | 490                    | 6.00                       |     |       |                  |                        |                            |
| 11  | 10    | 61               | 510                    | 2.00                       |     |       |                  |                        |                            |
| 12  | 10    | 71               | 600                    | 9.00                       |     |       |                  |                        |                            |
| 13  | 10    | 81               | 650                    | 5.00                       |     |       |                  |                        |                            |
| 14  | 9     | 90               | 690                    | 4.44                       |     |       |                  |                        |                            |
| 15  | 10    | 100              | 730                    | 4.00                       |     |       |                  |                        |                            |
| 16  | 15    | 115              | 770                    | 2.67                       |     |       |                  |                        |                            |
| 17  | 15    | 130              | 790                    | 1.33                       |     |       |                  |                        |                            |
| 18  | 15    | 145              | 820                    | 2.00                       |     |       |                  |                        |                            |
| 19  | 15    | 160              | 877                    | 3.80                       |     |       |                  |                        |                            |
| 20  | 12    | 172              | 920                    | 3.58                       |     |       |                  |                        |                            |
| 21  | 12    | 184              | 955                    | 2.92                       |     |       |                  |                        |                            |
| 22  | 12    | 196              | 1008                   | 4.42                       |     |       |                  |                        |                            |
| 23  | 12    | 208              | 1066                   | 4.83                       |     |       |                  |                        |                            |
| 24  | 12    | 220              | 1125                   | 4.92                       |     |       |                  |                        |                            |
| 25  | 12    | 232              | 1177                   | 4.33                       |     |       |                  |                        |                            |

Start Depth: 1.5m BGL

Remarks: Undertaken at 1.5m bgl in TP8

# Penetration Data Report

Project Name: J14044(b)

|                  |            |
|------------------|------------|
| Chainage (km):   | 108.200    |
| Direction:       | TP8        |
| Location/Offset: | Verge      |
| Cone Angle:      | 60 degrees |
| Zero Error (mm): | 0          |
| Test Date:       | 02/05/2019 |

|                             |              |
|-----------------------------|--------------|
| Surface Type:               | Unpaved      |
| Thickness (mm):             | 0            |
| Base Type:                  |              |
| Thickness (mm):             |              |
| Surface Moisture:           | Moderate     |
| Moisture adjustment factor: | Not adjusted |

[illegible]

Start Depth: Ground level

Remarks: Ground level at TP8

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 201.000  
 Direction: PT1  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 26/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 97                     | 48.50                      |     |       |                  |                        |                            |
| 3   | 2     | 4                | 167                    | 35.00                      |     |       |                  |                        |                            |
| 4   | 2     | 6                | 240                    | 36.50                      |     |       |                  |                        |                            |
| 5   | 2     | 8                | 291                    | 25.50                      |     |       |                  |                        |                            |
| 6   | 2     | 10               | 355                    | 32.00                      |     |       |                  |                        |                            |
| 7   | 5     | 15               | 395                    | 8.00                       |     |       |                  |                        |                            |
| 8   | 8     | 23               | 425                    | 3.75                       |     |       |                  |                        |                            |
| 9   | 8     | 31               | 465                    | 5.00                       |     |       |                  |                        |                            |
| 10  | 6     | 37               | 525                    | 10.00                      |     |       |                  |                        |                            |
| 11  | 6     | 43               | 591                    | 11.00                      |     |       |                  |                        |                            |
| 12  | 6     | 49               | 620                    | 4.83                       |     |       |                  |                        |                            |
| 13  | 8     | 57               | 655                    | 4.38                       |     |       |                  |                        |                            |
| 14  | 10    | 67               | 669                    | 1.40                       |     |       |                  |                        |                            |
| 15  | 12    | 79               | 711                    | 3.50                       |     |       |                  |                        |                            |
| 16  | 15    | 94               | 755                    | 2.93                       |     |       |                  |                        |                            |
| 17  | 15    | 109              | 790                    | 2.33                       |     |       |                  |                        |                            |
| 18  | 15    | 124              | 830                    | 2.67                       |     |       |                  |                        |                            |
| 19  | 15    | 139              | 861                    | 2.07                       |     |       |                  |                        |                            |
| 20  | 15    | 154              | 885                    | 1.60                       |     |       |                  |                        |                            |
| 21  | 18    | 172              | 921                    | 2.00                       |     |       |                  |                        |                            |
| 22  | 20    | 192              | 965                    | 2.20                       |     |       |                  |                        |                            |
| 23  | 25    | 217              | 998                    | 1.32                       |     |       |                  |                        |                            |
| 24  | 25    | 242              | 1035                   | 1.48                       |     |       |                  |                        |                            |
| 25  | 5     | 247              | 1036                   | 0.20                       |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m in PT1

# Penetration Data Report

Project Name: J14044(b)

|                  |            |
|------------------|------------|
| Chainage (km):   | 201.100    |
| Direction:       | PT1        |
| Location/Offset: | Verge      |
| Cone Angle:      | 60 degrees |
| Zero Error (mm): | 0          |
| Test Date:       | 26/04/2019 |

|                             |              |
|-----------------------------|--------------|
| Surface Type:               | Unpaved      |
| Thickness (mm):             | 0            |
| Base Type:                  |              |
| Thickness (mm):             |              |
| Surface Moisture:           | Moderate     |
| Moisture adjustment factor: | Not adjusted |

[illegible]

Start Depth: 1.5m BGL

Remarks: Undertaken at 1.5m in PT1



# Penetration Data Report

Project Name: J14044(b)

|                  |            |
|------------------|------------|
| Chainage (km):   | 202.000    |
| Direction:       | PT2        |
| Location/Offset: | Verge      |
| Cone Angle:      | 60 degrees |
| Zero Error (mm): | 0          |
| Test Date:       | 25/04/2019 |

|                             |              |
|-----------------------------|--------------|
| Surface Type:               | Unpaved      |
| Thickness (mm):             | 0            |
| Base Type:                  |              |
| Thickness (mm):             |              |
| Surface Moisture:           | Moderate     |
| Moisture adjustment factor: | Not adjusted |

[illegible]

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m in PT2

# Penetration Data Report

Project Name: J14044(b)

|                  |            |
|------------------|------------|
| Chainage (km):   | 202.100    |
| Direction:       | PT2        |
| Location/Offset: | Verge      |
| Cone Angle:      | 60 degrees |
| Zero Error (mm): | 0          |
| Test Date:       | 25/04/2019 |

|                             |              |
|-----------------------------|--------------|
| Surface Type:               | Unpaved      |
| Thickness (mm):             | 0            |
| Base Type:                  |              |
| Thickness (mm):             |              |
| Surface Moisture:           | Moderate     |
| Moisture adjustment factor: | Not adjusted |

[illegible]

Start Depth: 1.5m BGL

Remarks: Undertaken at 1.5m in PT2

# Penetration Data Report

Project Name: J14044(b)

Chainage (km): 203.000  
 Direction: PT3  
 Location/Offset: Verge  
 Cone Angle: 60 degrees  
 Zero Error (mm): 0  
 Test Date: 24/04/2019

Surface Type: Unpaved  
 Thickness (mm): 0  
 Base Type:  
 Thickness (mm):  
 Surface Moisture: Moderate  
 Moisture adjustment factor: Not adjusted

| No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) | No. | Blows | Cumulative Blows | Penetration Depth (mm) | Penetration Rate (mm/blow) |
|-----|-------|------------------|------------------------|----------------------------|-----|-------|------------------|------------------------|----------------------------|
| 1   | 0     | 0                | 0                      | 0.00                       |     |       |                  |                        |                            |
| 2   | 2     | 2                | 60                     | 30.00                      |     |       |                  |                        |                            |
| 3   | 2     | 4                | 85                     | 12.50                      |     |       |                  |                        |                            |
| 4   | 3     | 7                | 128                    | 14.33                      |     |       |                  |                        |                            |
| 5   | 3     | 10               | 169                    | 13.67                      |     |       |                  |                        |                            |
| 6   | 3     | 13               | 188                    | 6.33                       |     |       |                  |                        |                            |
| 7   | 6     | 19               | 244                    | 9.33                       |     |       |                  |                        |                            |
| 8   | 6     | 25               | 307                    | 10.50                      |     |       |                  |                        |                            |
| 9   | 6     | 31               | 374                    | 11.17                      |     |       |                  |                        |                            |
| 10  | 6     | 37               | 470                    | 16.00                      |     |       |                  |                        |                            |
| 11  | 6     | 43               | 534                    | 10.67                      |     |       |                  |                        |                            |
| 12  | 6     | 49               | 600                    | 11.00                      |     |       |                  |                        |                            |
| 13  | 6     | 55               | 630                    | 5.00                       |     |       |                  |                        |                            |
| 14  | 10    | 65               | 680                    | 5.00                       |     |       |                  |                        |                            |
| 15  | 10    | 75               | 715                    | 3.50                       |     |       |                  |                        |                            |
| 16  | 10    | 85               | 758                    | 4.30                       |     |       |                  |                        |                            |
| 17  | 10    | 95               | 795                    | 3.70                       |     |       |                  |                        |                            |
| 18  | 15    | 110              | 840                    | 3.00                       |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |
|     |       |                  |                        |                            |     |       |                  |                        |                            |

Start Depth: 1.0m BGL

Remarks: Undertaken at 1.0m in PT3

# Penetration Data Report

Project Name: J14044(b)

|                  |            |
|------------------|------------|
| Chainage (km):   | 203.100    |
| Direction:       | PT3        |
| Location/Offset: | Verge      |
| Cone Angle:      | 60 degrees |
| Zero Error (mm): | 0          |
| Test Date:       | 24/04/2019 |

|                             |              |
|-----------------------------|--------------|
| Surface Type:               | Unpaved      |
| Thickness (mm):             | 0            |
| Base Type:                  |              |
| Thickness (mm):             |              |
| Surface Moisture:           | Moderate     |
| Moisture adjustment factor: | Not adjusted |

[illegible]

Start Depth: 1.5m BGL

Remarks: Undertaken at 1.5m in PT3

# Plate Bearing Results Table

Based on BS1377-9:4.1

|                                   |                                            |                         |           |
|-----------------------------------|--------------------------------------------|-------------------------|-----------|
| <b>Project Name</b>               | Southampton Airport, Southampton, SO97 4AA | <b>Project No.</b>      | J14044    |
| <b>Client:</b>                    | Dyer and Butler                            | <b>Test No</b>          | TP1A      |
| <b>Soil Type &amp; Condition:</b> | Orange brown silty sandy CLAY              | <b>Depth BGL (m)</b>    | 1.00      |
| <b>Moisture Content (%)</b>       | 19                                         | <b>Plate Dia. (mm)</b>  | 600       |
| <b>Test Type:</b>                 | Plate CBR                                  | <b>Tested By</b>        | FTD       |
|                                   |                                            | <b>Checked By</b>       |           |
|                                   |                                            | <b>Project Engineer</b> | TL        |
|                                   |                                            | <b>Test Date</b>        | 16-Apr-19 |

| Pressure<br>(kPa) | Time<br>(minute) | Settlement        |                   |                   | Average<br>Settlement<br>(mm) |
|-------------------|------------------|-------------------|-------------------|-------------------|-------------------------------|
|                   |                  | Gauge (a)<br>(mm) | Gauge (b)<br>(mm) | Gauge (c)<br>(mm) |                               |
| 10.3              | 1.0              | 0.26              | 0.28              | 0.29              | 0.28                          |
|                   | 2.0              | 0.27              | 0.29              | 0.30              | 0.29                          |
|                   | 3.0              | 0.27              | 0.30              | 0.30              | 0.29                          |
|                   | 4.0              | 0.28              | 0.30              | 0.31              | 0.30                          |
|                   | 5.0              | 0.28              | 0.30              | 0.31              | 0.30                          |
| 17.7              | 6.0              | 0.50              | 0.51              | 0.49              | 0.50                          |
|                   | 7.0              | 0.51              | 0.52              | 0.50              | 0.51                          |
|                   | 8.0              | 0.52              | 0.53              | 0.51              | 0.52                          |
|                   | 9.0              | 0.53              | 0.54              | 0.51              | 0.53                          |
|                   | 10.0             | 0.53              | 0.54              | 0.51              | 0.53                          |
| 29.7              | 11.0             | 0.83              | 0.83              | 0.75              | 0.80                          |
|                   | 12.0             | 0.85              | 0.85              | 0.77              | 0.82                          |
|                   | 13.0             | 0.86              | 0.86              | 0.78              | 0.83                          |
|                   | 14.0             | 0.87              | 0.87              | 0.79              | 0.84                          |
|                   | 15.0             | 0.87              | 0.87              | 0.79              | 0.84                          |
| 42.8              | 16.0             | 1.18              | 1.08              | 1.07              | 1.11                          |
|                   | 17.0             | 1.20              | 1.15              | 1.08              | 1.14                          |
|                   | 18.0             | 1.21              | 1.16              | 1.09              | 1.15                          |
|                   | 19.0             | 1.22              | 1.17              | 1.10              | 1.16                          |
|                   | 20.0             | 1.22              | 1.17              | 1.10              | 1.16                          |
| 55.5              | 21.0             | 1.50              | 1.39              | 1.26              | 1.38                          |
|                   | 22.0             | 1.53              | 1.41              | 1.28              | 1.41                          |
|                   | 23.0             | 1.54              | 1.43              | 1.29              | 1.42                          |
|                   | 24.0             | 1.56              | 1.44              | 1.30              | 1.43                          |
|                   | 25.0             | 1.57              | 1.45              | 1.31              | 1.44                          |
|                   | 26.0             | 1.58              | 1.46              | 1.32              | 1.45                          |
|                   | 27.0             | 1.58              | 1.46              | 1.32              | 1.45                          |
|                   | 28.0             | 1.97              | 1.76              | 1.65              | 1.79                          |
| 73.6              | 29.0             | 1.99              | 1.80              | 1.68              | 1.82                          |
|                   | 30.0             | 2.01              | 1.80              | 1.68              | 1.83                          |
|                   | 31.0             | 2.03              | 1.83              | 1.71              | 1.86                          |
|                   | 32.0             | 2.05              | 1.84              | 1.72              | 1.87                          |
|                   | 33.0             | 2.05              | 1.84              | 1.72              | 1.87                          |
|                   | 34.0             | 2.22              | 1.99              | 1.89              | 2.03                          |
|                   | 35.0             | 2.25              | 2.01              | 1.92              | 2.06                          |
| 83.1              | 36.0             | 2.28              | 2.03              | 1.92              | 2.08                          |
|                   | 37.0             | 2.29              | 2.05              | 1.95              | 2.10                          |
|                   | 38.0             | 2.31              | 2.06              | 1.96              | 2.11                          |
|                   | 39.0             | 2.31              | 2.06              | 1.96              | 2.11                          |

# Plate Bearing Results Table

Based on BS1377-9:4.1

|                                   |                                            |                         |           |
|-----------------------------------|--------------------------------------------|-------------------------|-----------|
| <b>Project Name</b>               | Southampton Airport, Southampton, SO97 4AA | <b>Project No.</b>      | J14044    |
| <b>Client:</b>                    | Dyer and Butler                            | <b>Test No</b>          | TP2A      |
| <b>Soil Type &amp; Condition:</b> | Orange brown silty sandy CLAY              | <b>Depth BGL (m)</b>    | 1.00      |
| <b>Moisture Content (%)</b>       | 14                                         | <b>Plate Dia. (mm)</b>  | 600       |
| <b>Test Type:</b>                 | Plate CBR                                  | <b>Tested By</b>        | FTD       |
|                                   |                                            | <b>Checked By</b>       |           |
|                                   |                                            | <b>Project Engineer</b> | TL        |
|                                   |                                            | <b>Test Date</b>        | 17-Apr-19 |

| Pressure<br>(kPa) | Time<br>(minute) | Settlement        |                   |                   | Average<br>Settlement<br>(mm) |
|-------------------|------------------|-------------------|-------------------|-------------------|-------------------------------|
|                   |                  | Gauge (a)<br>(mm) | Gauge (b)<br>(mm) | Gauge (c)<br>(mm) |                               |
| 11.3              | 1.0              | 0.48              | 0.43              | 0.29              | 0.40                          |
|                   | 2.0              | 0.50              | 0.45              | 0.31              | 0.42                          |
|                   | 3.0              | 0.52              | 0.47              | 0.32              | 0.44                          |
|                   | 4.0              | 0.53              | 0.47              | 0.32              | 0.44                          |
|                   | 5.0              | 0.53              | 0.47              | 0.32              | 0.44                          |
| 22.3              | 6.0              | 0.97              | 0.86              | 0.57              | 0.80                          |
|                   | 7.0              | 0.99              | 0.88              | 0.58              | 0.82                          |
|                   | 8.0              | 1.01              | 0.89              | 0.59              | 0.83                          |
|                   | 9.0              | 1.01              | 0.90              | 0.59              | 0.83                          |
|                   | 10.0             | 1.01              | 0.90              | 0.59              | 0.83                          |
| 31.5              | 11.0             | 1.35              | 1.20              | 0.82              | 1.12                          |
|                   | 12.0             | 1.37              | 1.22              | 0.84              | 1.14                          |
|                   | 13.0             | 1.38              | 1.22              | 0.84              | 1.15                          |
|                   | 14.0             | 1.39              | 1.24              | 0.85              | 1.16                          |
|                   | 15.0             | 1.39              | 1.24              | 0.85              | 1.16                          |
| 43.9              | 16.0             | 1.81              | 1.63              | 1.13              | 1.52                          |
|                   | 17.0             | 1.84              | 1.66              | 1.15              | 1.55                          |
|                   | 18.0             | 1.83              | 1.67              | 1.16              | 1.55                          |
|                   | 19.0             | 1.88              | 1.69              | 1.18              | 1.58                          |
|                   | 20.0             | 1.88              | 1.69              | 1.18              | 1.58                          |
| 49.5              | 21.0             | 2.03              | 1.85              | 1.31              | 1.73                          |
|                   | 22.0             | 2.06              | 1.87              | 1.33              | 1.75                          |
|                   | 23.0             | 2.08              | 1.90              | 1.35              | 1.78                          |
|                   | 24.0             | 2.09              | 1.90              | 1.36              | 1.78                          |
|                   | 25.0             | 2.09              | 1.90              | 1.36              | 1.78                          |
| 61.5              | 26.0             | 2.43              | 2.25              | 1.65              | 2.11                          |
|                   | 27.0             | 2.47              | 2.29              | 1.69              | 2.15                          |
|                   | 28.0             | 2.50              | 2.31              | 1.71              | 2.17                          |
|                   | 29.0             | 2.53              | 2.34              | 1.73              | 2.20                          |
|                   | 30.0             | 2.53              | 2.34              | 1.73              | 2.20                          |
| 72.9              | 31.0             | 2.81              | 2.65              | 2.01              | 2.49                          |
|                   | 32.0             | 2.87              | 2.71              | 2.05              | 2.54                          |
|                   | 33.0             | 2.90              | 2.73              | 2.08              | 2.57                          |
|                   | 34.0             | 2.92              | 2.74              | 2.09              | 2.58                          |
|                   | 35.0             | 2.92              | 2.74              | 2.09              | 2.58                          |

# Plate Bearing Results Table

Based on BS1377-9:4.1

|                                   |                                            |                         |           |
|-----------------------------------|--------------------------------------------|-------------------------|-----------|
| <b>Project Name</b>               | Southampton Airport, Southampton, SO97 4AA | <b>Project No.</b>      | J14044    |
| <b>Client:</b>                    | Dyer and Butler                            | <b>Test No</b>          | TP3       |
| <b>Soil Type &amp; Condition:</b> | Orange brown silty sandy CLAY              | <b>Depth BGL (m)</b>    | 1.00      |
| <b>Moisture Content (%)</b>       | 20                                         | <b>Plate Dia. (mm)</b>  | 600       |
| <b>Test Type:</b>                 | Plate CBR                                  | <b>Tested By</b>        | FTD       |
|                                   |                                            | <b>Checked By</b>       |           |
|                                   |                                            | <b>Project Engineer</b> | TL        |
|                                   |                                            | <b>Test Date</b>        | 18-Apr-19 |

| Pressure<br>(kPa) | Time<br>(minute) | Settlement        |                   |                   | Average<br>Settlement<br>(mm) |
|-------------------|------------------|-------------------|-------------------|-------------------|-------------------------------|
|                   |                  | Gauge (a)<br>(mm) | Gauge (b)<br>(mm) | Gauge (c)<br>(mm) |                               |
| 10.6              | 1.0              | 0.52              | 0.42              | 0.26              | 0.40                          |
|                   | 2.0              | 0.55              | 0.45              | 0.27              | 0.42                          |
|                   | 3.0              | 0.55              | 0.47              | 0.27              | 0.43                          |
|                   | 4.0              | 0.58              | 0.47              | 0.29              | 0.45                          |
|                   | 5.0              | 0.58              | 0.47              | 0.29              | 0.45                          |
| 17.7              | 6.0              | 0.94              | 0.73              | 0.48              | 0.72                          |
|                   | 7.0              | 0.97              | 0.76              | 0.51              | 0.75                          |
|                   | 8.0              | 0.99              | 0.77              | 0.51              | 0.76                          |
|                   | 9.0              | 0.99              | 0.78              | 0.52              | 0.76                          |
|                   | 10.0             | 0.99              | 0.78              | 0.52              | 0.76                          |
| 24.8              | 11.0             | 1.27              | 1.02              | 0.71              | 1.00                          |
|                   | 12.0             | 1.29              | 1.03              | 0.71              | 1.01                          |
|                   | 13.0             | 1.31              | 1.05              | 0.72              | 1.03                          |
|                   | 14.0             | 1.32              | 1.06              | 0.74              | 1.04                          |
|                   | 15.0             | 1.32              | 1.06              | 0.74              | 1.04                          |
| 37.1              | 16.0             | 1.79              | 1.48              | 1.08              | 1.45                          |
|                   | 17.0             | 1.82              | 1.50              | 1.11              | 1.48                          |
|                   | 18.0             | 1.84              | 1.53              | 1.12              | 1.50                          |
|                   | 19.0             | 1.86              | 1.54              | 1.13              | 1.51                          |
|                   | 20.0             | 1.86              | 1.54              | 1.13              | 1.51                          |
| 47.4              | 21.0             | 2.17              | 1.82              | 1.37              | 1.79                          |
|                   | 22.0             | 2.20              | 1.85              | 1.39              | 1.81                          |
|                   | 23.0             | 2.22              | 1.87              | 1.41              | 1.83                          |
|                   | 24.0             | 2.24              | 1.89              | 1.41              | 1.85                          |
|                   | 25.0             | 2.25              | 1.89              | 1.41              | 1.85                          |
| 58.4              | 26.0             | 2.57              | 2.19              | 1.67              | 2.14                          |
|                   | 27.0             | 2.60              | 2.21              | 1.68              | 2.16                          |
|                   | 28.0             | 2.63              | 2.24              | 1.72              | 2.20                          |
|                   | 29.0             | 2.64              | 2.25              | 1.73              | 2.21                          |
|                   | 30.0             | 2.64              | 2.25              | 1.73              | 2.21                          |
| 69.7              | 31.0             | 2.93              | 2.53              | 1.95              | 2.47                          |
|                   | 32.0             | 2.99              | 2.59              | 1.99              | 2.52                          |
|                   | 33.0             | 3.01              | 2.59              | 2.00              | 2.53                          |
|                   | 34.0             | 3.02              | 2.60              | 2.01              | 2.54                          |
|                   | 35.0             | 3.02              | 2.60              | 2.01              | 2.54                          |

# Plate Bearing Results Table

Based on BS1377-9:4.1

|                                   |                                            |                         |           |
|-----------------------------------|--------------------------------------------|-------------------------|-----------|
| <b>Project Name</b>               | Southampton Airport, Southampton, SO97 4AA | <b>Project No.</b>      | J14044    |
| <b>Client:</b>                    | Dyer and Butler                            | <b>Test No</b>          | TP4       |
| <b>Soil Type &amp; Condition:</b> | Orange brown silty sandy CLAY              | <b>Depth BGL (m)</b>    | 1.00      |
| <b>Moisture Content (%)</b>       | 21                                         | <b>Plate Dia. (mm)</b>  | 600       |
| <b>Test Type:</b>                 | Plate CBR                                  | <b>Tested By</b>        | FTD       |
|                                   |                                            | <b>Checked By</b>       |           |
|                                   |                                            | <b>Project Engineer</b> | TL        |
|                                   |                                            | <b>Test Date</b>        | 24-Apr-19 |

| Pressure<br>(kPa) | Time<br>(minute) | Settlement        |                   |                   | Average<br>Settlement<br>(mm) |
|-------------------|------------------|-------------------|-------------------|-------------------|-------------------------------|
|                   |                  | Gauge (a)<br>(mm) | Gauge (b)<br>(mm) | Gauge (c)<br>(mm) |                               |
| 10.6              | 1.0              | 0.27              | 0.20              | 0.24              | 0.24                          |
|                   | 2.0              | 0.31              | 0.21              | 0.27              | 0.26                          |
|                   | 3.0              | 0.40              | 0.28              | 0.40              | 0.36                          |
|                   | 4.0              | 0.41              | 0.29              | 0.41              | 0.37                          |
|                   | 5.0              | 0.44              | 0.30              | 0.42              | 0.39                          |
|                   | 6.0              | 0.44              | 0.30              | 0.42              | 0.39                          |
| 18.4              | 7.0              | 0.68              | 0.48              | 0.61              | 0.59                          |
|                   | 8.0              | 0.70              | 0.50              | 0.63              | 0.61                          |
|                   | 9.0              | 0.71              | 0.51              | 0.64              | 0.62                          |
|                   | 10.0             | 0.71              | 0.51              | 0.64              | 0.62                          |
| 28.3              | 11.0             | 1.03              | 0.73              | 0.86              | 0.87                          |
|                   | 12.0             | 1.05              | 0.74              | 0.88              | 0.89                          |
|                   | 13.0             | 1.06              | 0.75              | 0.89              | 0.90                          |
|                   | 14.0             | 1.07              | 0.76              | 0.90              | 0.91                          |
|                   | 15.0             | 1.07              | 0.76              | 0.90              | 0.91                          |
|                   | 16.0             | 1.34              | 0.94              | 1.07              | 1.12                          |
| 37.5              | 17.0             | 1.36              | 0.96              | 1.09              | 1.14                          |
|                   | 18.0             | 1.38              | 0.96              | 1.09              | 1.14                          |
|                   | 19.0             | 1.39              | 0.97              | 1.10              | 1.15                          |
|                   | 20.0             | 1.39              | 0.97              | 1.10              | 1.15                          |
|                   | 21.0             | 2.00              | 1.36              | 1.34              | 1.57                          |
| 56.6              | 22.0             | 2.04              | 1.38              | 1.35              | 1.59                          |
|                   | 23.0             | 2.06              | 1.41              | 1.37              | 1.61                          |
|                   | 24.0             | 2.07              | 1.41              | 1.37              | 1.62                          |
|                   | 25.0             | 2.07              | 1.41              | 1.37              | 1.62                          |
|                   | 26.0             | 2.37              | 1.61              | 1.56              | 1.85                          |
| 67.9              | 27.0             | 2.44              | 1.67              | 1.59              | 1.90                          |
|                   | 28.0             | 2.46              | 1.68              | 1.60              | 1.91                          |
|                   | 29.0             | 2.47              | 1.68              | 1.61              | 1.92                          |
|                   | 30.0             | 2.47              | 1.68              | 1.61              | 1.92                          |
|                   | 31.0             | 3.21              | 2.18              | 2.07              | 2.49                          |
| 90.5              | 32.0             | 3.28              | 2.23              | 2.11              | 2.54                          |
|                   | 33.0             | 3.34              | 2.27              | 2.14              | 2.58                          |
|                   | 34.0             | 3.37              | 2.30              | 2.16              | 2.61                          |
|                   | 35.0             | 3.38              | 2.31              | 2.16              | 2.62                          |
|                   | 36.0             | 3.39              | 2.32              | 2.18              | 2.63                          |
|                   | 37.0             | 3.39              | 2.32              | 2.18              | 2.63                          |



# Plate Bearing Results Table

Based on BS1377-9:4.1

|                                   |                                            |                         |           |
|-----------------------------------|--------------------------------------------|-------------------------|-----------|
| <b>Project Name</b>               | Southampton Airport, Southampton, SO97 4AA | <b>Project No.</b>      | J14044    |
| <b>Client:</b>                    | Dyer and Butler                            | <b>Test No</b>          | TP5       |
| <b>Soil Type &amp; Condition:</b> | Orange brown silty sandy CLAY              | <b>Depth BGL (m)</b>    | 1.00      |
| <b>Moisture Content (%)</b>       | 20                                         | <b>Plate Dia. (mm)</b>  | 600       |
| <b>Test Type:</b>                 | Plate CBR                                  | <b>Tested By</b>        | FTD       |
|                                   |                                            | <b>Checked By</b>       |           |
|                                   |                                            | <b>Project Engineer</b> | TL        |
|                                   |                                            | <b>Test Date</b>        | 25-Apr-19 |

| Pressure<br>(kPa) | Time<br>(minute) | Settlement        |                   |                   | Average<br>Settlement<br>(mm) |
|-------------------|------------------|-------------------|-------------------|-------------------|-------------------------------|
|                   |                  | Gauge (a)<br>(mm) | Gauge (b)<br>(mm) | Gauge (c)<br>(mm) |                               |
| 3.5               | 1.0              | 0.40              | 0.08              | 0.04              | 0.17                          |
|                   | 2.0              | 0.43              | 0.08              | 0.05              | 0.19                          |
|                   | 3.0              | 0.44              | 0.09              | 0.05              | 0.19                          |
|                   | 4.0              | 0.45              | 0.09              | 0.05              | 0.20                          |
|                   | 5.0              | 0.45              | 0.09              | 0.05              | 0.20                          |
| 34.0              | 6.0              | 2.67              | 0.70              | 0.42              | 1.26                          |
|                   | 7.0              | 2.71              | 0.71              | 0.43              | 1.28                          |
|                   | 8.0              | 2.74              | 0.72              | 0.44              | 1.30                          |
|                   | 9.0              | 2.76              | 0.73              | 0.45              | 1.31                          |
|                   | 10.0             | 2.76              | 0.73              | 0.45              | 1.31                          |
| 45.3              | 11.0             | 3.22              | 0.91              | 0.56              | 1.56                          |
|                   | 12.0             | 3.29              | 0.93              | 0.58              | 1.60                          |
|                   | 13.0             | 3.31              | 0.93              | 0.59              | 1.61                          |
|                   | 14.0             | 3.33              | 0.94              | 0.59              | 1.62                          |
|                   | 15.0             | 3.33              | 0.94              | 0.75              | 1.67                          |
| 60.8              | 16.0             | 3.92              | 1.20              | 0.75              | 1.96                          |
|                   | 17.0             | 3.96              | 1.22              | 0.78              | 1.99                          |
|                   | 18.0             | 4.03              | 1.25              | 0.78              | 2.02                          |
|                   | 19.0             | 4.05              | 1.26              | 0.78              | 2.03                          |
|                   | 20.0             | 4.05              | 1.26              | 0.78              | 2.03                          |
| 92.0              | 21.0             | 4.99              | 1.80              | 1.02              | 2.60                          |
|                   | 22.0             | 5.24              | 1.98              | 1.12              | 2.78                          |
|                   | 23.0             | 5.31              | 2.01              | 1.13              | 2.82                          |
|                   | 24.0             | 5.35              | 2.02              | 1.14              | 2.84                          |
|                   | 25.0             | 5.36              | 2.02              | 1.14              | 2.84                          |
|                   | 26.0             | 5.36              | 2.02              | 1.14              | 2.84                          |
| 109.6             | 27.0             | 6.04              | 2.54              | 1.37              | 3.32                          |
|                   | 28.0             | 6.12              | 2.61              | 1.40              | 3.38                          |
|                   | 29.0             | 6.21              | 2.67              | 1.43              | 3.44                          |
|                   | 30.0             | 6.26              | 2.70              | 1.44              | 3.47                          |
|                   | 31.0             | 6.30              | 2.73              | 1.46              | 3.50                          |
|                   | 32.0             | 6.34              | 2.76              | 1.48              | 3.53                          |
|                   | 33.0             | 6.35              | 2.77              | 1.48              | 3.53                          |
|                   | 34.0             | 6.35              | 2.77              | 1.48              | 3.53                          |
| 130.2             | 35.0             | 7.09              | 3.39              | 1.71              | 4.06                          |
|                   | 36.0             | 7.26              | 3.50              | 1.78              | 4.18                          |
|                   | 37.0             | 7.34              | 2.67              | 1.82              | 3.94                          |
|                   | 38.0             | 7.39              | 3.63              | 1.85              | 4.29                          |
|                   | 39.0             | 7.48              | 3.68              | 1.88              | 4.35                          |

| Pressure<br>( <i>kPa</i> ) | Time<br>( <i>minute</i> ) | Settlement                 |                            |                            | Average<br>Settlement<br>( <i>mm</i> ) |
|----------------------------|---------------------------|----------------------------|----------------------------|----------------------------|----------------------------------------|
|                            |                           | Gauge (a)<br>( <i>mm</i> ) | Gauge (b)<br>( <i>mm</i> ) | Gauge (c)<br>( <i>mm</i> ) |                                        |
|                            | 40.0                      | 7.54                       | 3.73                       | 1.90                       | 4.39                                   |
|                            | 41.0                      | 7.58                       | 3.76                       | 1.92                       | 4.42                                   |
|                            | 42.0                      | 7.63                       | 3.79                       | 1.94                       | 4.45                                   |
|                            | 43.0                      | 7.66                       | 3.80                       | 1.96                       | 4.47                                   |
|                            | 44.0                      | 7.68                       | 3.85                       | 1.97                       | 4.50                                   |
|                            | 45.0                      | 7.71                       | 3.85                       | 1.97                       | 4.51                                   |

# Plate Bearing Results Table

Based on BS1377-9:4.1

|                                   |                                            |                         |           |
|-----------------------------------|--------------------------------------------|-------------------------|-----------|
| <b>Project Name</b>               | Southampton Airport, Southampton, SO97 4AA | <b>Project No.</b>      | J14044    |
| <b>Client:</b>                    | Dyer and Butler                            | <b>Test No</b>          | TP6       |
| <b>Soil Type &amp; Condition:</b> | Orange brown silty sandy CLAY              | <b>Depth BGL (m)</b>    | 1.00      |
| <b>Moisture Content (%)</b>       | 21                                         | <b>Plate Dia. (mm)</b>  | 600       |
| <b>Test Type:</b>                 | Plate CBR                                  | <b>Tested By</b>        | FTD       |
|                                   |                                            | <b>Checked By</b>       |           |
|                                   |                                            | <b>Project Engineer</b> | TL        |
|                                   |                                            | <b>Test Date</b>        | 15-Apr-19 |

| Pressure<br>(kPa) | Time<br>(minute) | Settlement        |                   |                   | Average<br>Settlement<br>(mm) |
|-------------------|------------------|-------------------|-------------------|-------------------|-------------------------------|
|                   |                  | Gauge (a)<br>(mm) | Gauge (b)<br>(mm) | Gauge (c)<br>(mm) |                               |
| 9.5               | 1.0              | 0.32              | 0.24              | 0.26              | 0.27                          |
|                   | 2.0              | 0.31              | 0.25              | 0.27              | 0.28                          |
|                   | 3.0              | 0.31              | 0.26              | 0.27              | 0.28                          |
|                   | 4.0              | 0.32              | 0.26              | 0.28              | 0.29                          |
|                   | 5.0              | 0.32              | 0.26              | 0.28              | 0.29                          |
| 17.7              | 6.0              | 0.53              | 0.48              | 0.46              | 0.49                          |
|                   | 7.0              | 0.55              | 0.49              | 0.47              | 0.50                          |
|                   | 8.0              | 0.55              | 0.49              | 0.48              | 0.51                          |
|                   | 9.0              | 0.55              | 0.50              | 0.48              | 0.51                          |
|                   | 10.0             | 0.55              | 0.50              | 0.48              | 0.51                          |
| 28.6              | 11.0             | 0.81              | 0.73              | 0.73              | 0.76                          |
|                   | 12.0             | 0.83              | 0.75              | 0.75              | 0.78                          |
|                   | 13.0             | 0.84              | 0.76              | 0.76              | 0.79                          |
|                   | 14.0             | 0.84              | 0.76              | 0.76              | 0.79                          |
|                   | 15.0             | 0.84              | 0.76              | 0.76              | 0.79                          |
| 40.0              | 16.0             | 1.09              | 1.03              | 1.01              | 1.04                          |
|                   | 17.0             | 1.10              | 1.04              | 1.03              | 1.06                          |
|                   | 18.0             | 1.11              | 1.05              | 1.03              | 1.06                          |
|                   | 19.0             | 1.12              | 1.06              | 1.05              | 1.08                          |
|                   | 20.0             | 1.12              | 1.06              | 1.05              | 1.08                          |
| 50.6              | 21.0             | 1.30              | 1.30              | 1.27              | 1.29                          |
|                   | 22.0             | 1.32              | 1.33              | 1.28              | 1.31                          |
|                   | 23.0             | 1.32              | 1.34              | 1.30              | 1.32                          |
|                   | 24.0             | 1.33              | 1.36              | 1.30              | 1.33                          |
|                   | 25.0             | 1.33              | 1.36              | 1.30              | 1.33                          |
| 62.2              | 26.0             | 1.53              | 1.61              | 1.55              | 1.56                          |
|                   | 27.0             | 1.55              | 1.64              | 1.54              | 1.58                          |
|                   | 28.0             | 1.57              | 1.68              | 1.57              | 1.61                          |
|                   | 29.0             | 1.58              | 1.69              | 1.57              | 1.61                          |
|                   | 30.0             | 1.58              | 1.69              | 1.57              | 1.61                          |
| 72.9              | 31.0             | 1.73              | 1.92              | 1.75              | 1.80                          |
|                   | 32.0             | 1.76              | 1.96              | 1.78              | 1.83                          |
|                   | 33.0             | 1.80              | 1.99              | 1.80              | 1.86                          |
|                   | 34.0             | 1.79              | 2.01              | 1.81              | 1.87                          |
|                   | 35.0             | 1.80              | 2.03              | 1.82              | 1.88                          |
|                   | 36.0             | 1.80              | 2.04              | 1.83              | 1.89                          |
|                   | 37.0             | 1.80              | 2.04              | 1.83              | 1.89                          |

## Report on the Determination of the Californian Bearing Ratio using the Plate Load Test

BS 1377: Part 9: 1990: Clause 4.1, Design Manual for Roads & Bridges Chapter 7, IAN 73/06 (rev 1)

**Project Name:** *Southampton Airport, Southampton,  
SO97 4AA*

**Project No.:** *J14044*

**Client:** *Dyer and Butler*

**Project Eng:** *TL*

**Test Location / Ref:** *TP1A*

**Date Tested:** *16-Apr-2019*

**Material Description:** *Orange brown silty sandy CLAY*

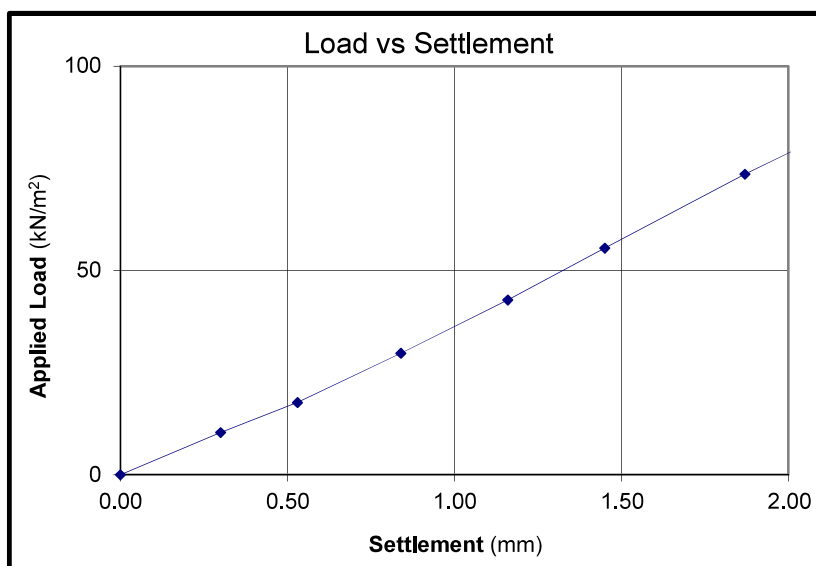
**Source (if known):**

**Depth Below Ground Level:** *1.0m*

**Reaction Load (kg):** *22000*

**Plate Diameter (mm):** *600*

| Settlement<br>(mm) | Load<br>(kN/m <sup>2</sup> ) |
|--------------------|------------------------------|
| 0.00               | 0                            |
| 0.30               | 10.3                         |
| 0.53               | 17.7                         |
| 0.84               | 29.7                         |
| 1.16               | 42.8                         |
| 1.45               | 55.5                         |
| 1.87               | 73.6                         |
| 2.11               | 83.1                         |



Apparent Modulus of Subgrade Reaction (kN/m<sup>2</sup>/mm)

**37**

(k) Modified for Plate Diameter ( $k_{762}$ )

**30**

**Equivalent CBR Value (%)**

**3.5**

\* >1.25mm settlement achieved

**Remarks:** Equivalent CBR calculated to Design Manual and Bridges Vol 7 Section 2 Part 2 IAN 73/06 Rev 1. Modulus calculated at 1.25mm penetration. If 1.25mm penetration not achieved, modulus calculated at maximum obtained penetration.

**Checked By:** NPB

**Dated:** 08-Jul-19

## Report on the Determination of the Californian Bearing Ratio using the Plate Load Test

BS 1377: Part 9: 1990: Clause 4.1, Design Manual for Roads & Bridges Chapter 7, IAN 73/06 (rev 1)

**Project Name:** *Southampton Airport, Southampton,  
SO97 4AA*

**Project No.:** *J14044*

**Client:** *Dyer and Butler*

**Project Eng:** *TL*

**Test Location / Ref:** *TP2A*

**Date Tested:** *17-Apr-2019*

**Material Description:** *Orange brown silty sandy CLAY*

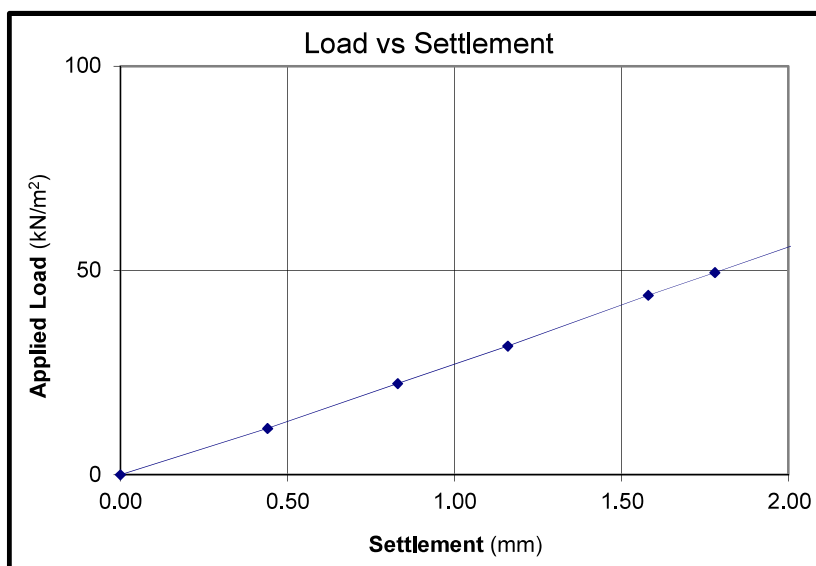
**Source (if known):**

**Depth Below Ground Level:** *1.0m*

**Reaction Load (kg):** *22000*

**Plate Diameter (mm):** *600*

| Settlement<br>(mm) | Load<br>(kN/m <sup>2</sup> ) |
|--------------------|------------------------------|
| 0.00               | 0                            |
| 0.44               | 11.3                         |
| 0.83               | 22.3                         |
| 1.16               | 31.5                         |
| 1.58               | 43.9                         |
| 1.78               | 49.5                         |
| 2.20               | 61.5                         |
| 2.58               | 72.9                         |



Apparent Modulus of Subgrade Reaction (kN/m<sup>2</sup>/mm)

**27**

(k) Modified for Plate Diameter ( $k_{762}$ )

**22**

**Equivalent CBR Value (%)**

**2.0**

\* >1.25mm settlement achieved

**Remarks:** Equivalent CBR calculated to Design Manual and Bridges Vol 7 Section 2 Part 2 IAN 73/06 Rev 1. Modulus calculated at 1.25mm penetration. If 1.25mm penetration not achieved, modulus calculated at maximum obtained penetration.

**Checked By:** NPB

**Dated:** 08-Jul-19

## Report on the Determination of the Californian Bearing Ratio using the Plate Load Test

BS 1377: Part 9: 1990: Clause 4.1, Design Manual for Roads & Bridges Chapter 7, IAN 73/06 (rev 1)

**Project Name:** *Southampton Airport, Southampton,  
SO97 4AA*

**Project No.:** *J14044*

**Client:** *Dyer and Butler*

**Project Eng:** *TL*

**Test Location / Ref:** *TP3*

**Date Tested:** *18-Apr-2019*

**Material Description:** *Orange brown silty sandy CLAY*

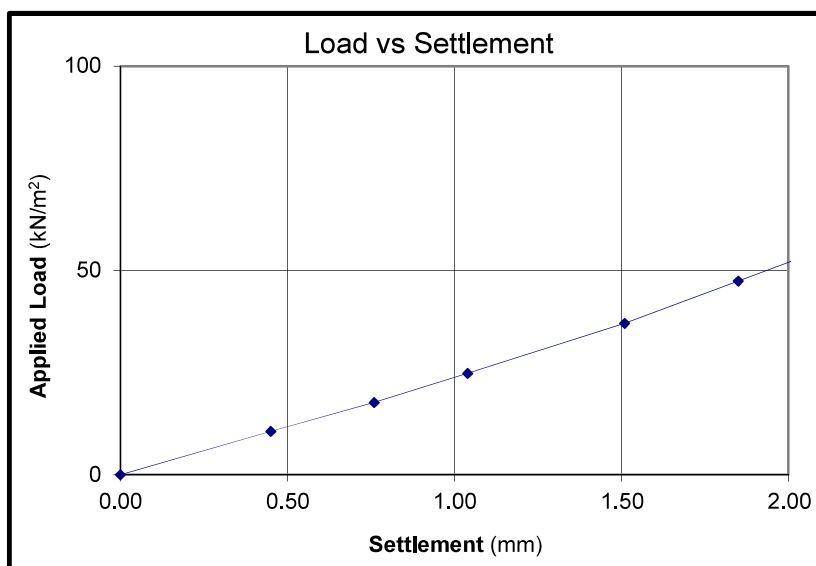
**Source** (if known):

**Depth Below Ground Level:** *1.0m*

**Reaction Load (kg):** *22000*

**Plate Diameter (mm):** *600*

| Settlement<br>(mm) | Load<br>(kN/m <sup>2</sup> ) |
|--------------------|------------------------------|
| 0.00               | 0                            |
| 0.45               | 10.6                         |
| 0.76               | 17.7                         |
| 1.04               | 24.8                         |
| 1.51               | 37.1                         |
| 1.85               | 47.4                         |
| 2.21               | 58.4                         |
| 2.54               | 69.7                         |



Apparent Modulus of Subgrade Reaction (kN/m<sup>2</sup>/mm)

**24**

(k) Modified for Plate Diameter ( $k_{762}$ )

**19**

**Equivalent CBR Value (%)**

**1.7**

\* >1.25mm settlement achieved

**Remarks:** Equivalent CBR calculated to Design Manual and Bridges Vol 7 Section 2 Part 2 IAN 73/06 Rev 1. Modulus calculated at 1.25mm penetration. If 1.25mm penetration not achieved, modulus calculated at maximum obtained penetration.

**Checked By:** NPB

**Dated:** 08-Jul-19

## Report on the Determination of the Californian Bearing Ratio using the Plate Load Test

BS 1377: Part 9: 1990: Clause 4.1, Design Manual for Roads & Bridges Chapter 7, IAN 73/06 (rev 1)

**Project Name:** *Southampton Airport, Southampton,  
SO97 4AA*

**Project No.:** *J14044*

**Client:** *Dyer and Butler*

**Project Eng:** *TL*

**Test Location / Ref:** *TP4*

**Date Tested:** *23-Apr-2019*

**Material Description:** *Orange brown slightly sandy clay*

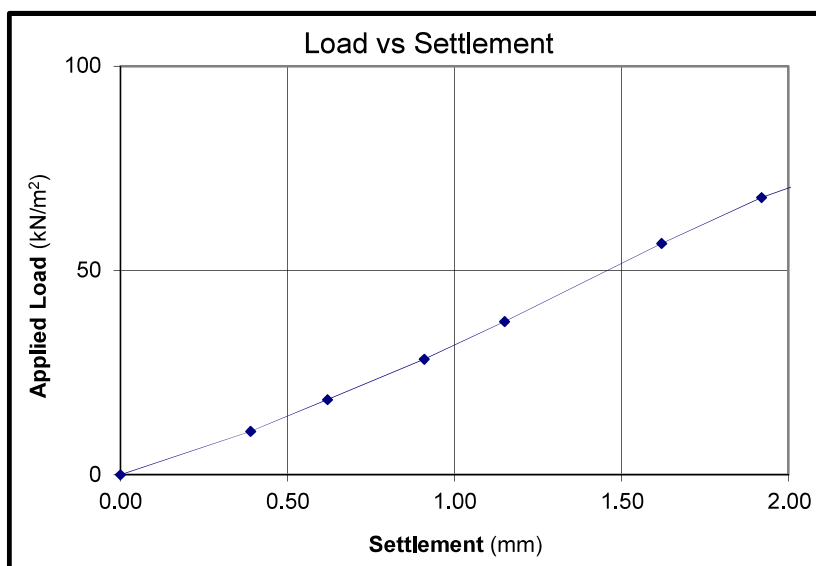
**Source** (if known):

**Depth Below Ground Level:** *1.0m*

**Reaction Load (kg):** *22500*

**Plate Diameter (mm):** *600*

| Settlement<br>(mm) | Load<br>(kN/m <sup>2</sup> ) |
|--------------------|------------------------------|
| 0.00               | 0                            |
| 0.39               | 10.6                         |
| 0.62               | 18.4                         |
| 0.91               | 28.3                         |
| 1.15               | 37.5                         |
| 1.62               | 56.6                         |
| 1.92               | 67.9                         |
| 2.63               | 88.4                         |



Apparent Modulus of Subgrade Reaction (kN/m<sup>2</sup>/mm)

**33**

(k) Modified for Plate Diameter ( $k_{762}$ )

**27**

**Equivalent CBR Value (%)**

**2.9**

\* >1.25mm settlement achieved

**Remarks:** Equivalent CBR calculated to Design Manual and Bridges Vol 7 Section 2 Part 2 IAN 73/06 Rev 1. Modulus calculated at 1.25mm penetration. If 1.25mm penetration not achieved, modulus calculated at maximum obtained penetration.

**Checked By:** N P Burrows

**Dated:** 08-Jul-19

## Report on the Determination of the Californian Bearing Ratio using the Plate Load Test

BS 1377: Part 9: 1990: Clause 4.1, Design Manual for Roads & Bridges Chapter 7, IAN 73/06 (rev 1)

**Project Name:** *Southampton Airport, Southampton,  
SO97 4AA*

**Project No.:** *J14044*

**Client:** *Dyer and Butler*

**Project Eng:** *TL*

**Test Location / Ref:** *TP5*

**Date Tested:** *24-Apr-2019*

**Material Description:** *Orange brown slightly sandy clay*

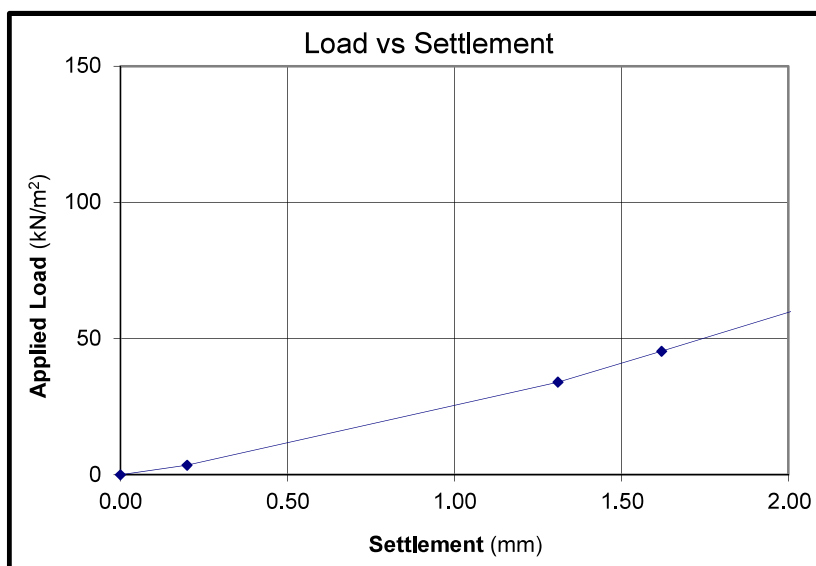
**Source** (if known):

**Depth Below Ground Level:** *1.0m*

**Reaction Load (kg):** *22500*

**Plate Diameter (mm):** *600*

| Settlement<br>(mm) | Load<br>(kN/m <sup>2</sup> ) |
|--------------------|------------------------------|
| 0.00               | 0                            |
| 0.20               | 3.5                          |
| 1.31               | 34.0                         |
| 1.62               | 45.3                         |
| 2.03               | 60.8                         |
| 2.84               | 92.0                         |
| 3.53               | 109.6                        |
| 4.51               | 130.2                        |



Apparent Modulus of Subgrade Reaction (kN/m<sup>2</sup>/mm)

**26**

(k) Modified for Plate Diameter ( $k_{762}$ )

**21**

**Equivalent CBR Value (%)**

**1.9**

\* >1.25mm settlement achieved

**Remarks:** Equivalent CBR calculated to Design Manual and Bridges Vol 7 Section 2 Part 2 IAN 73/06 Rev 1. Modulus calculated at 1.25mm penetration. If 1.25mm penetration not achieved, modulus calculated at maximum obtained penetration.

**Checked By:** N P Burrows

**Dated:** 08-Jul-19



## Report on the Determination of the Californian Bearing Ratio using the Plate Load Test

BS 1377: Part 9: 1990: Clause 4.1, Design Manual for Roads & Bridges Chapter 7, IAN 73/06 (rev 1)

**Project Name:** *Southampton Airport, Southampton,  
SO97 4AA*

**Project No.:** *J14044*

**Client:** *Dyer and Butler*

**Project Eng:** *TL*

**Test Location / Ref:** *TP6*

**Date Tested:** *15-Apr-2019*

**Material Description:** *Orange brown silty sandy CLAY*

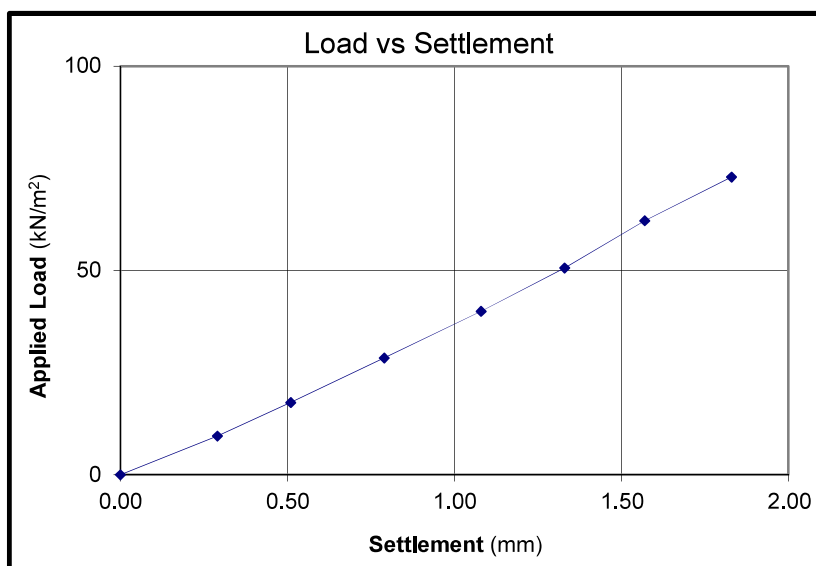
**Source (if known):**

**Depth Below Ground Level:** *1.0m*

**Reaction Load (kg):** *22000*

**Plate Diameter (mm):** *600*

| Settlement<br>(mm) | Load<br>(kN/m <sup>2</sup> ) |
|--------------------|------------------------------|
| 0.00               | 0                            |
| 0.29               | 9.5                          |
| 0.51               | 17.7                         |
| 0.79               | 28.6                         |
| 1.08               | 40.0                         |
| 1.33               | 50.6                         |
| 1.57               | 62.2                         |
| 1.83               | 72.9                         |



Apparent Modulus of Subgrade Reaction (kN/m<sup>2</sup>/mm)

**38**

(k) Modified for Plate Diameter ( $k_{762}$ )

**30**

**Equivalent CBR Value (%)**

**3.6**

\* >1.25mm settlement achieved

**Remarks:** Equivalent CBR calculated to Design Manual and Bridges Vol 7 Section 2 Part 2 IAN 73/06 Rev 1. Modulus calculated at 1.25mm penetration. If 1.25mm penetration not achieved, modulus calculated at maximum obtained penetration.

**Checked By:** NPB

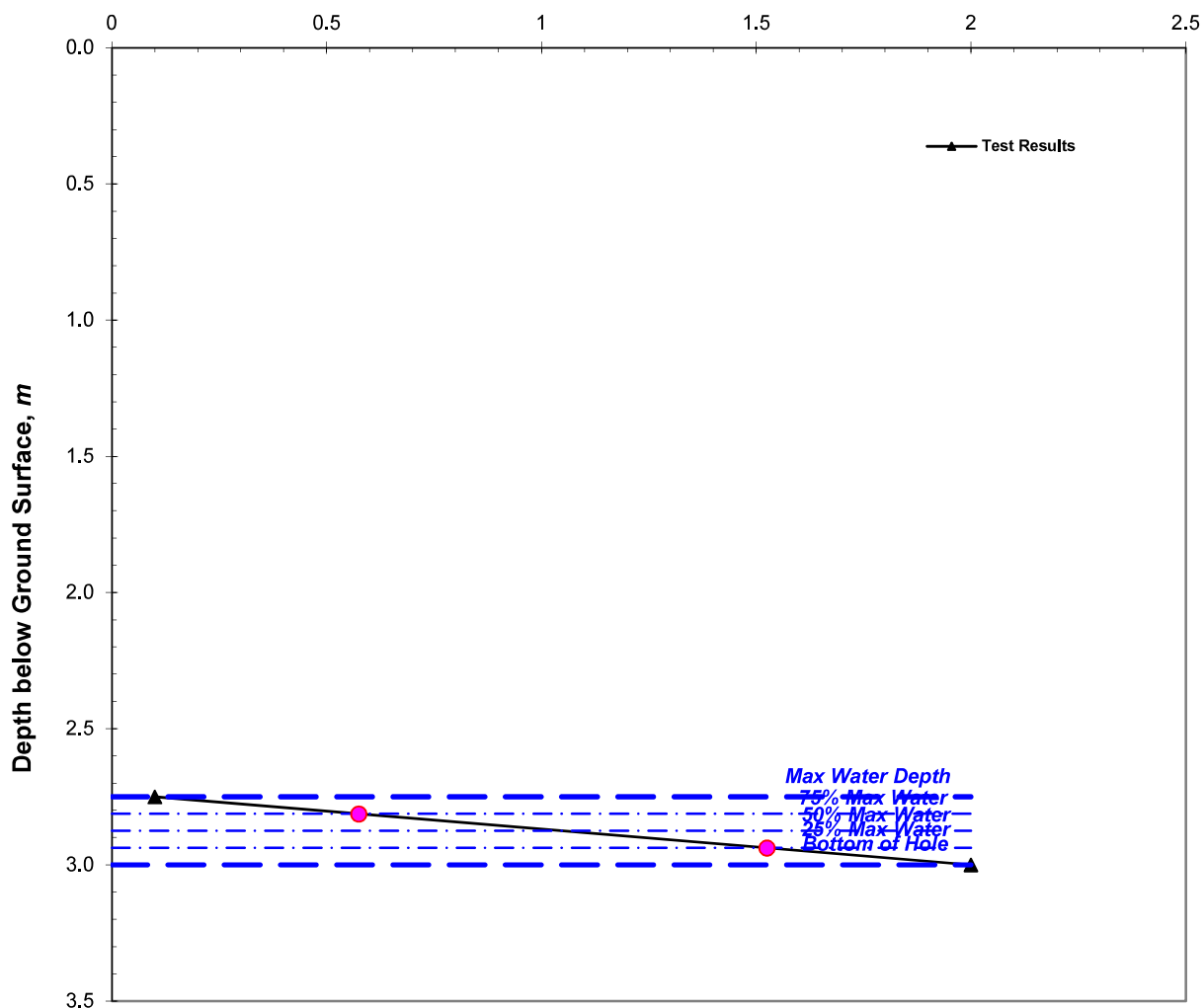
**Dated:** 08-Jul-19

## BRE Digest DG365 Soakage Test

Test Hole No: PT1

Test No: Test No 1 (Initial)

Time from Filling to Maximum Water Depth, *minute*



|                                    |       |                                              |                 |
|------------------------------------|-------|----------------------------------------------|-----------------|
| Pit Length, m                      | 3.000 | Depth to Water at Start of Test, m           | 2.750           |
| Pit Width, m                       | 0.600 | Max Water Dropdown during Test, m            | 0.250           |
| Depth to Pit Base, m               | 3.000 | Total Soakage Test Time, min                 | 2.0             |
| Depth to Top of Permeable Soils, m |       | Mean Internal Discharge Area, m <sup>2</sup> | 2.700           |
| Depth to Groundwater Surface, m    |       | Discharge Rate, litre/min                    | 82.895          |
| Depth to Top of Granular Fill, m   | 1.600 | Soakage Rate, litre/m <sup>2</sup> /min      | <b>30.70</b>    |
| Voids Assumed for Granular Fill, % | 35%   | BRE Soil Infiltration Rate, m/sec            | <b>5.12E-04</b> |

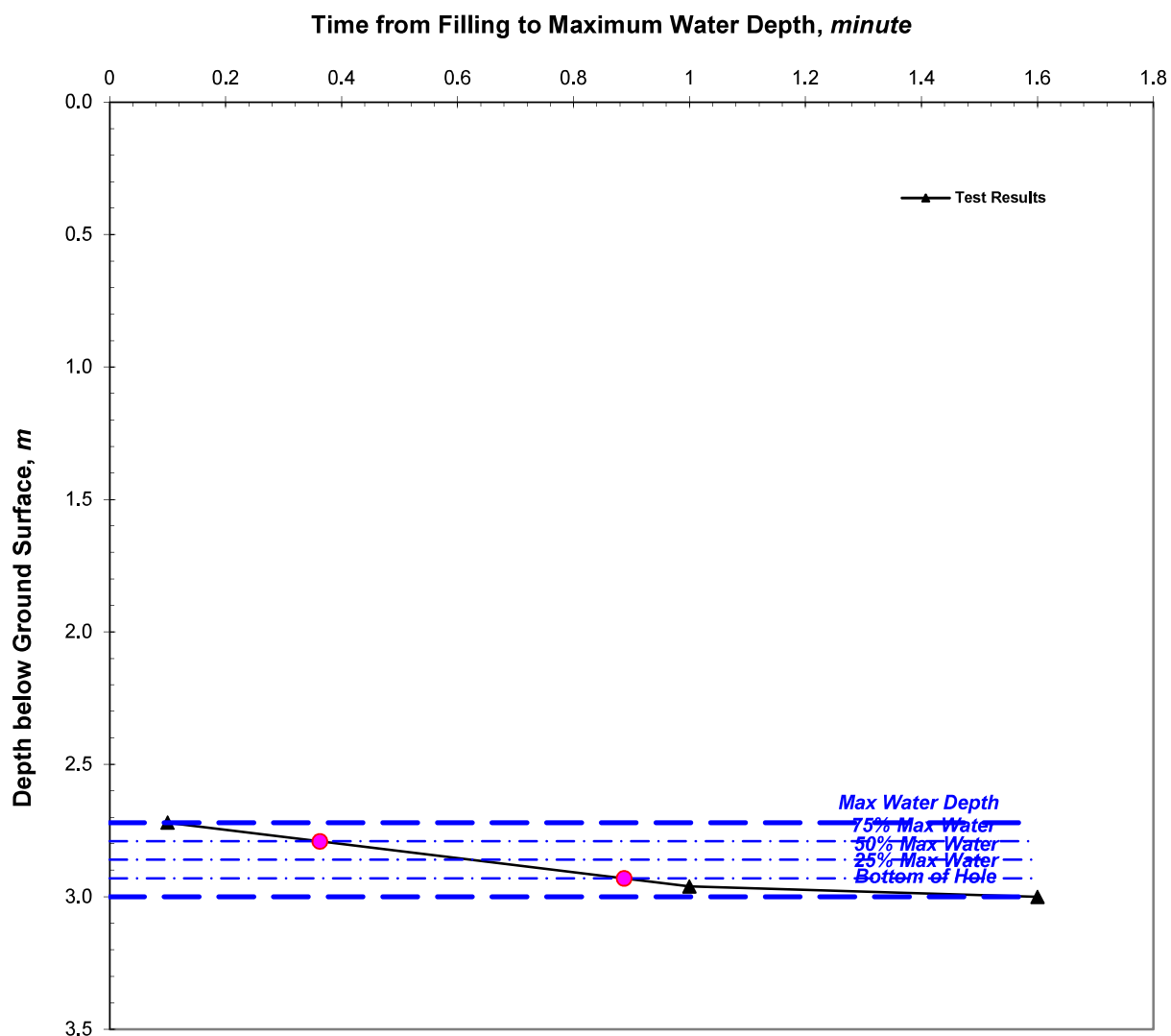
Comments: 1800L  
Pit was emptied at finish of test.

|                           |                   |                        |
|---------------------------|-------------------|------------------------|
| Client: Dyer and Butler   | Job No: J14044    | Test Date: 24/Apr/2019 |
| Site: Southampton Airport | Tested By: FTD/JS | Engineer: TL Fig. S7   |

## BRE Digest DG365 Soakage Test

**Test Hole No:** PT1

**Test No:** Test No 2 (Repeated)



|                                    |       |                                              |                 |
|------------------------------------|-------|----------------------------------------------|-----------------|
| Pit Length, m                      | 3.000 | Depth to Water at Start of Test, m           | 2.720           |
| Pit Width, m                       | 0.600 | Max Water Dropdown during Test, m            | 0.280           |
| Depth to Pit Base, m               | 3.000 | Total Soakage Test Time, min                 | 1.6             |
| Depth to Top of Permeable Soils, m |       | Mean Internal Discharge Area, m <sup>2</sup> | 2.808           |
| Depth to Groundwater Surface, m    |       | Discharge Rate, litre/min                    | 168.000         |
| Depth to Top of Granular Fill, m   | 1.600 | Soakage Rate, litre/m <sup>2</sup> /min      | <b>59.83</b>    |
| Voids Assumed for Granular Fill, % | 35%   | BRE Soil Infiltration Rate, m/sec            | <b>9.97E-04</b> |

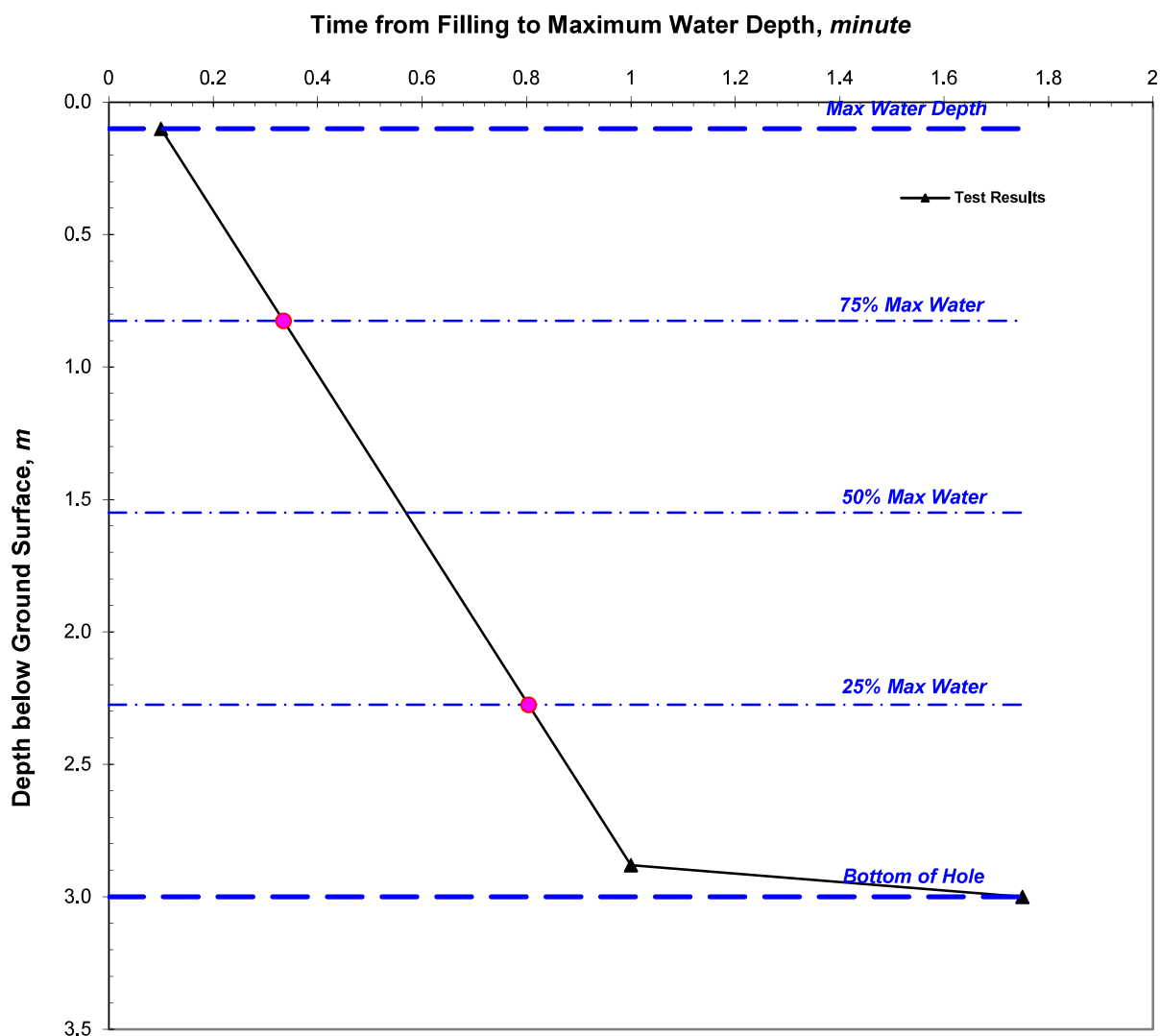
Comments: 1800L  
Pit was emptied at finish of test.

|                                  |                          |                                    |
|----------------------------------|--------------------------|------------------------------------|
| <b>Client:</b> Dyer and Butler   | <b>Job No:</b> J14044    | <b>Test Date:</b> 24/Apr/2019      |
| <b>Site:</b> Southampton Airport | <b>Tested By:</b> FTD/JS | <b>Engineer:</b> TL <b>Fig. S8</b> |

## BRE Digest DG365 Soakage Test

Test Hole No: PT1

Test No: Test No 3 (Repeated)



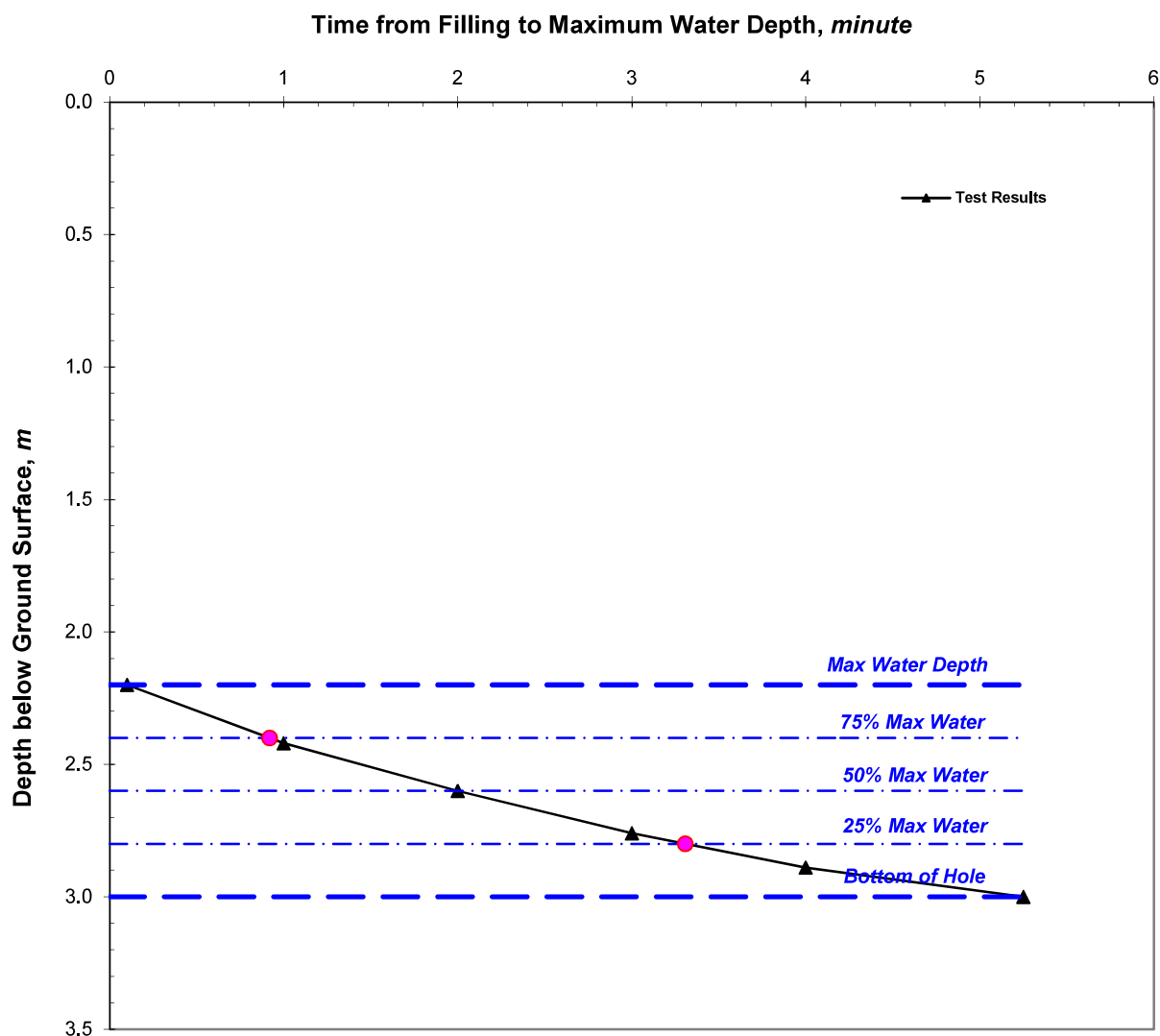
|                                    |       |                                              |                 |
|------------------------------------|-------|----------------------------------------------|-----------------|
| Pit Length, m                      | 3.000 | Depth to Water at Start of Test, m           | 0.100           |
| Pit Width, m                       | 0.600 | Max Water Dropdown during Test, m            | 2.900           |
| Depth to Pit Base, m               | 3.000 | Total Soakage Test Time, min                 | 1.8             |
| Depth to Top of Permeable Soils, m |       | Mean Internal Discharge Area, m <sup>2</sup> | 12.240          |
| Depth to Groundwater Surface, m    |       | Discharge Rate, litre/min                    | 3877.621        |
| Depth to Top of Granular Fill, m   | 1.600 | Soakage Rate, litre/m <sup>2</sup> /min      | <b>316.80</b>   |
| Voids Assumed for Granular Fill, % | 35%   | BRE Soil Infiltration Rate, m/sec            | <b>5.28E-03</b> |

Comments: 1900L  
Pit was emptied at finish of test.

|                                  |                          |                                    |
|----------------------------------|--------------------------|------------------------------------|
| <b>Client:</b> Dyer and Butler   | <b>Job No:</b> J14044    | <b>Test Date:</b> 24/Apr/2019      |
| <b>Site:</b> Southampton Airport | <b>Tested By:</b> FTD/JS | <b>Engineer:</b> TL <b>Fig. S9</b> |

## BRE Digest DG365 Soakage Test

Test Hole No: PT2  
Test No: Test No 1 (Initial)



|                                    |       |                                              |                 |
|------------------------------------|-------|----------------------------------------------|-----------------|
| Pit Length, m                      | 2.800 | Depth to Water at Start of Test, m           | 2.200           |
| Pit Width, m                       | 0.550 | Max Water Dropdown during Test, m            | 0.800           |
| Depth to Pit Base, m               | 3.000 | Total Soakage Test Time, min                 | 5.3             |
| Depth to Top of Permeable Soils, m |       | Mean Internal Discharge Area, m <sup>2</sup> | 4.220           |
| Depth to Groundwater Surface, m    |       | Discharge Rate, litre/min                    | 90.228          |
| Depth to Top of Granular Fill, m   | 1.300 | Soakage Rate, litre/m <sup>2</sup> /min      | <b>21.38</b>    |
| Voids Assumed for Granular Fill, % | 35%   | BRE Soil Infiltration Rate, m/sec            | <b>3.56E-04</b> |

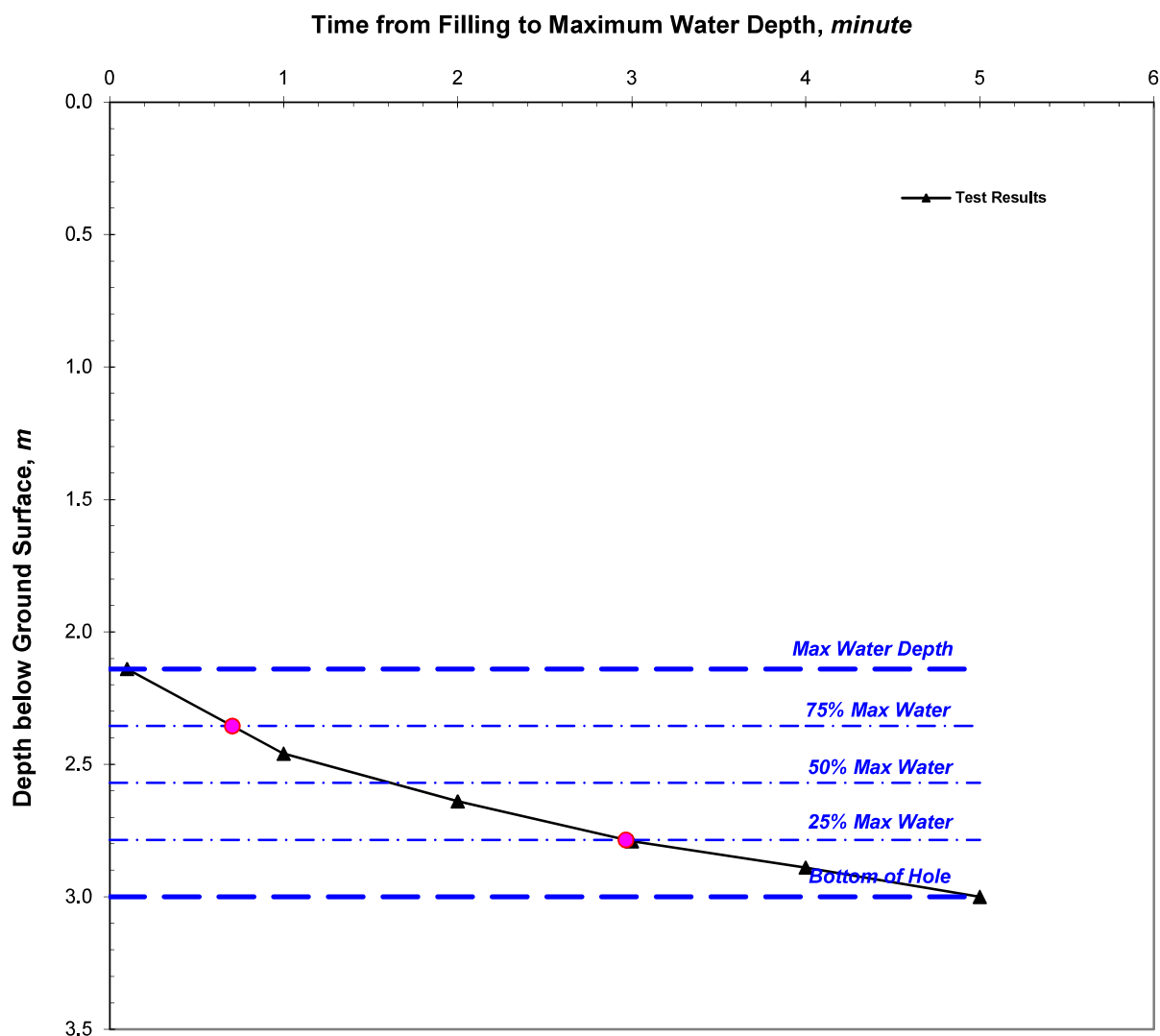
Comments: 1800L  
Pit was emptied at finish of test.

|                                  |                          |                                    |
|----------------------------------|--------------------------|------------------------------------|
| <b>Client:</b> Dyer and Butler   | <b>Job No:</b> J14044    | <b>Test Date:</b> 29/Apr/2019      |
| <b>Site:</b> Southampton Airport | <b>Tested By:</b> FTD/JS | <b>Engineer:</b> TL <b>Fig. S4</b> |

## BRE Digest DG365 Soakage Test

**Test Hole No:** PT2

**Test No:** Test No 2 (Repeated)



|                                    |       |                                              |                 |
|------------------------------------|-------|----------------------------------------------|-----------------|
| Pit Length, m                      | 2.800 | Depth to Water at Start of Test, m           | 2.140           |
| Pit Width, m                       | 0.550 | Max Water Dropdown during Test, m            | 0.860           |
| Depth to Pit Base, m               | 3.000 | Total Soakage Test Time, min                 | 5.0             |
| Depth to Top of Permeable Soils, m |       | Mean Internal Discharge Area, m <sup>2</sup> | 4.421           |
| Depth to Groundwater Surface, m    |       | Discharge Rate, litre/min                    | 102.463         |
| Depth to Top of Granular Fill, m   | 1.300 | Soakage Rate, litre/m <sup>2</sup> /min      | <b>23.18</b>    |
| Voids Assumed for Granular Fill, % | 35%   | BRE Soil Infiltration Rate, m/sec            | <b>3.86E-04</b> |

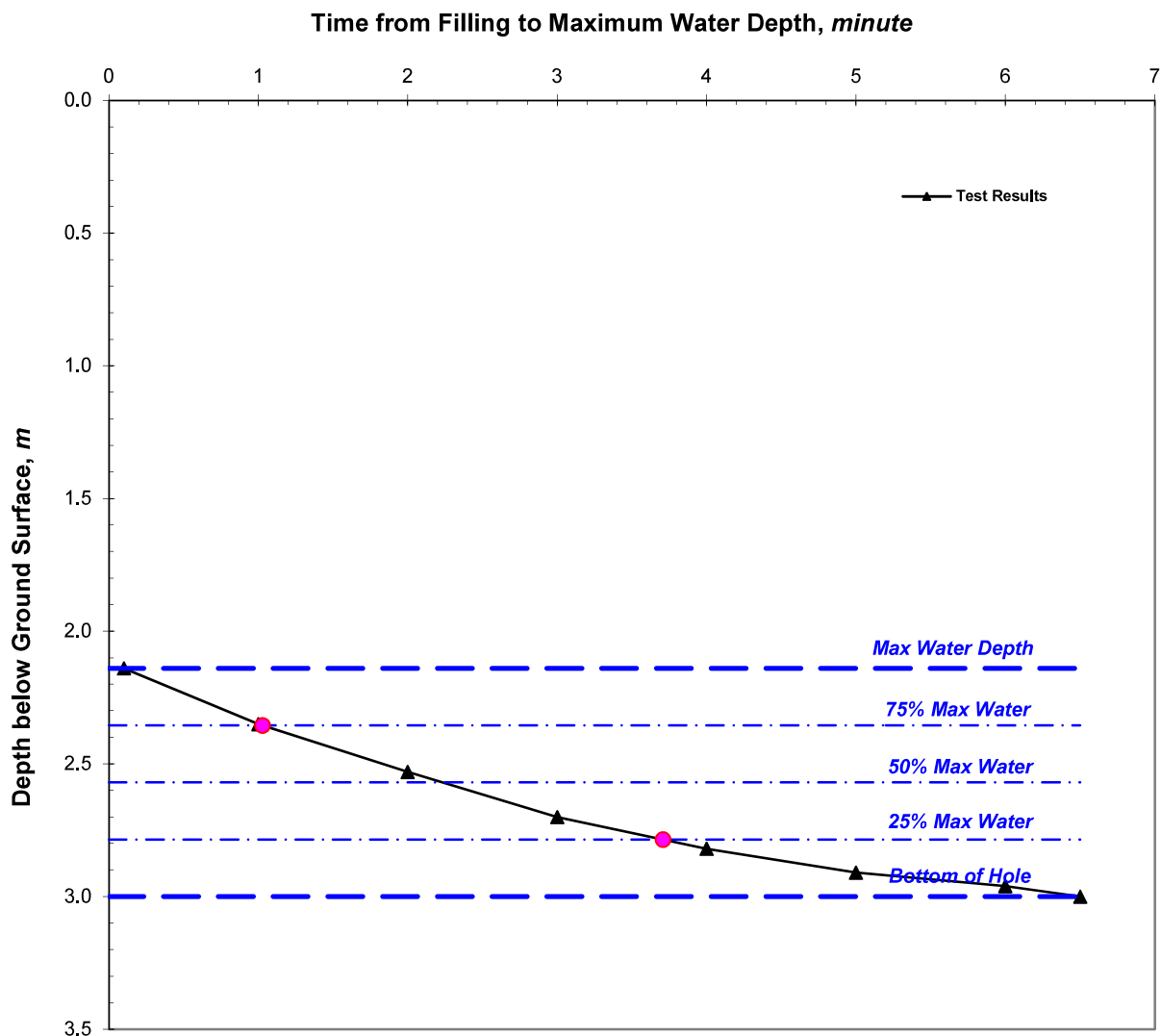
Comments: 1800L  
Pit was emptied at finish of test.

|                                  |                          |                                    |
|----------------------------------|--------------------------|------------------------------------|
| <b>Client:</b> Dyer and Butler   | <b>Job No:</b> J14044    | <b>Test Date:</b> 29/Apr/2019      |
| <b>Site:</b> Southampton Airport | <b>Tested By:</b> FTD/JS | <b>Engineer:</b> TL <b>Fig. S5</b> |

## BRE Digest DG365 Soakage Test

Test Hole No: PT2

Test No: Test No 3 (Repeated)



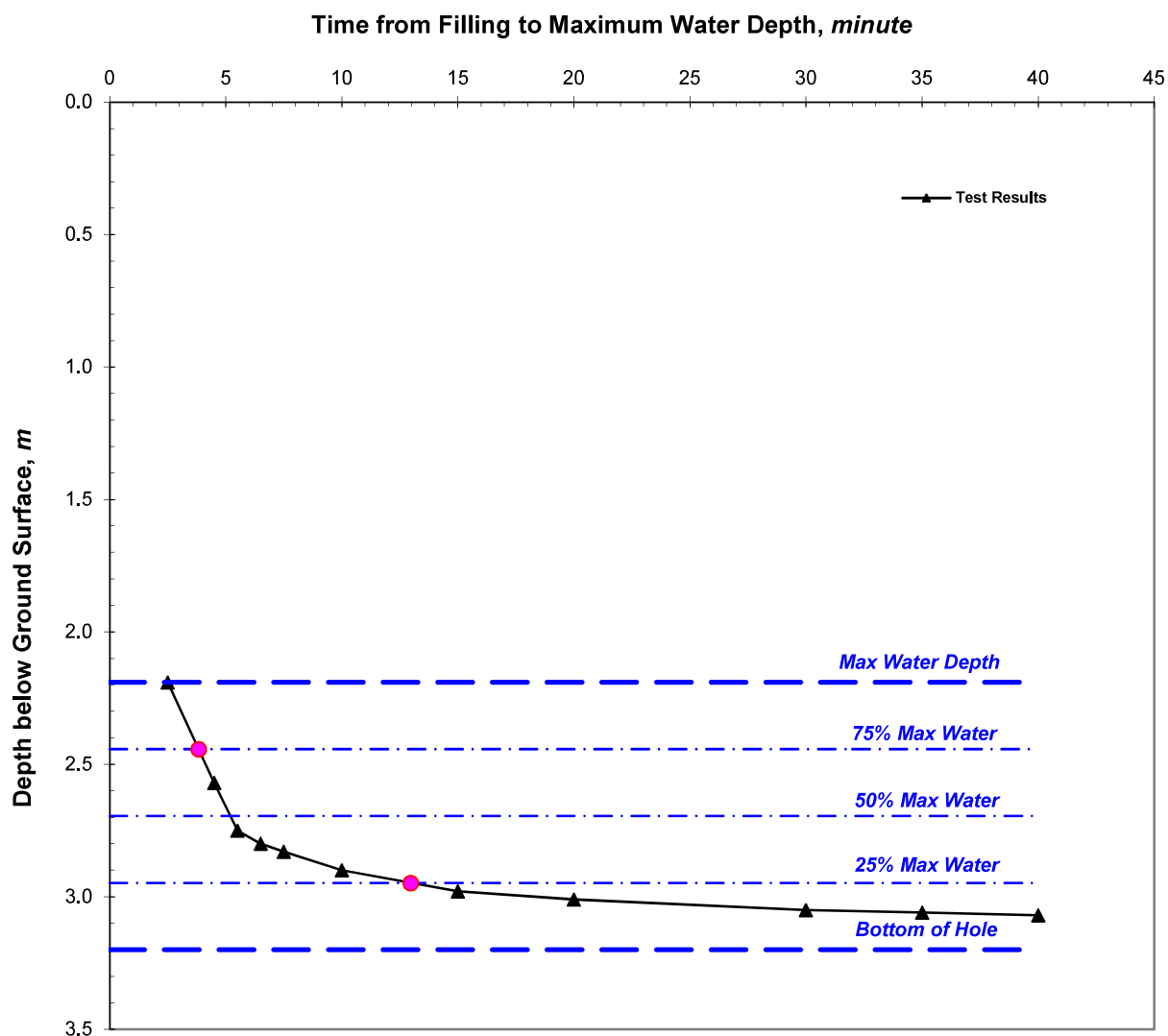
|                                    |       |                                              |                 |
|------------------------------------|-------|----------------------------------------------|-----------------|
| Pit Length, m                      | 2.800 | Depth to Water at Start of Test, m           | 2.140           |
| Pit Width, m                       | 0.550 | Max Water Dropdown during Test, m            | 0.860           |
| Depth to Pit Base, m               | 3.000 | Total Soakage Test Time, min                 | 6.5             |
| Depth to Top of Permeable Soils, m |       | Mean Internal Discharge Area, m <sup>2</sup> | 4.421           |
| Depth to Groundwater Surface, m    |       | Discharge Rate, litre/min                    | 86.463          |
| Depth to Top of Granular Fill, m   | 1.300 | Soakage Rate, litre/m <sup>2</sup> /min      | <b>19.56</b>    |
| Voids Assumed for Granular Fill, % | 35%   | BRE Soil Infiltration Rate, m/sec            | <b>3.26E-04</b> |

Comments: 1700L  
Pit was emptied at finish of test.

|                           |                   |                        |
|---------------------------|-------------------|------------------------|
| Client: Dyer and Butler   | Job No: J14044    | Test Date: 29/Apr/2019 |
| Site: Southampton Airport | Tested By: FTD/JS | Engineer: TL           |
|                           |                   | Fig. S6                |

## BRE Digest DG365 Soakage Test

Test Hole No: PT3  
Test No: Test No 1 (Initial)



|                                    |       |                                              |          |
|------------------------------------|-------|----------------------------------------------|----------|
| Pit Length, m                      | 4.100 | Depth to Water at Start of Test, m           | 2.190    |
| Pit Width, m                       | 0.600 | Max Water Dropdown during Test, m            | 0.880    |
| Depth to Pit Base, m               | 3.200 | Total Soakage Test Time, min                 | 40.0     |
| Depth to Top of Permeable Soils, m |       | Mean Internal Discharge Area, m <sup>2</sup> | 7.207    |
| Depth to Groundwater Surface, m    |       | Discharge Rate, litre/min                    | 47.573   |
| Depth to Top of Granular Fill, m   | 1.500 | Soakage Rate, litre/m <sup>2</sup> /min      | 6.60     |
| Voids Assumed for Granular Fill, % | 35%   | BRE Soil Infiltration Rate, m/sec            | 1.10E-04 |

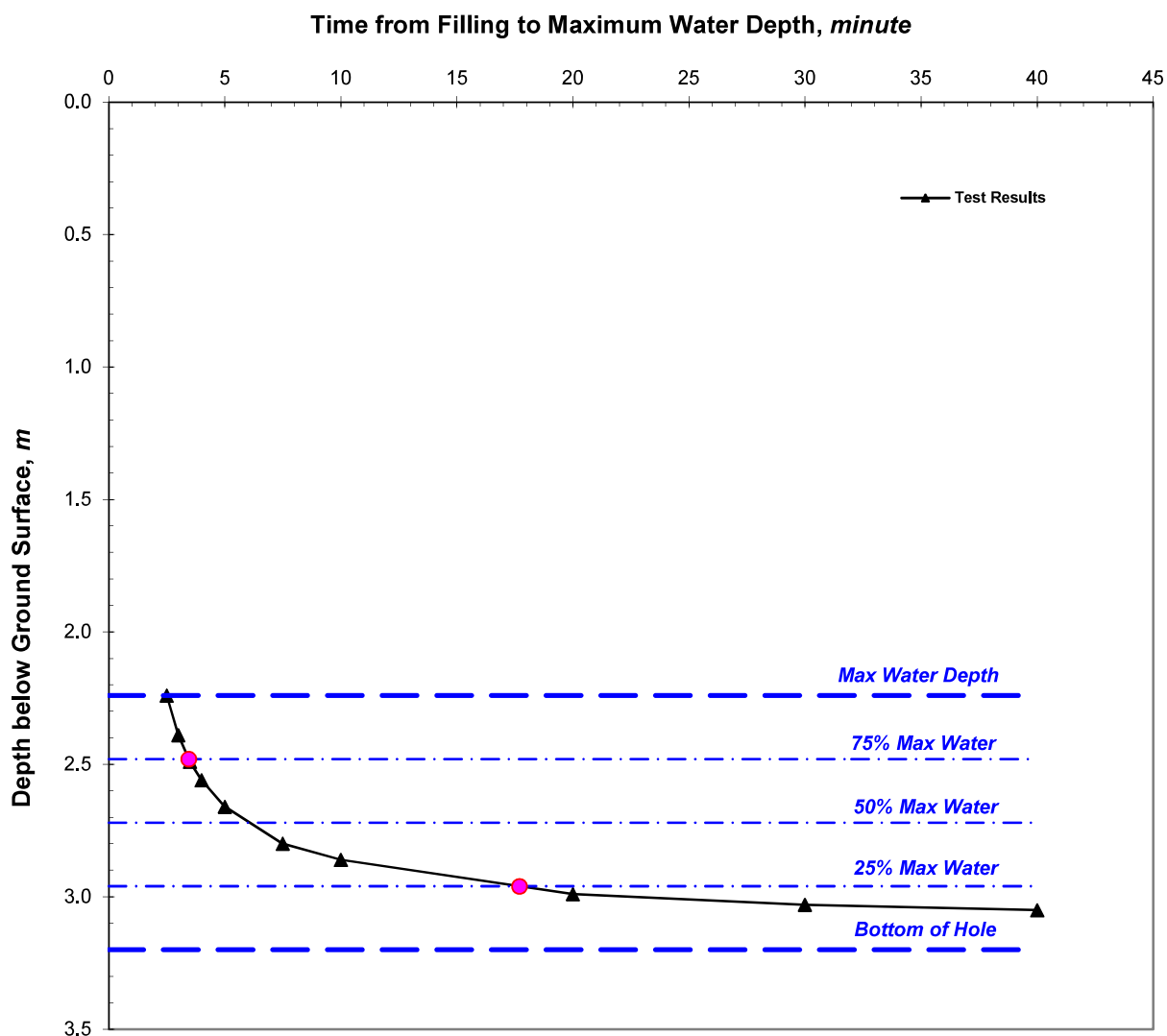
Comments: 2000L  
Pit was nearly emptied at finish of test.

|                           |                   |                        |
|---------------------------|-------------------|------------------------|
| Client: Dyer and Butler   | Job No: J14044    | Test Date: 24/Apr/2019 |
| Site: Southampton Airport | Tested By: FTD/JS | Engineer: TL           |
|                           |                   | Fig. S1                |



## BRE Digest DG365 Soakage Test

Test Hole No: PT3  
Test No: Test No 2 (Repeated)



|                                    |       |                                              |                 |
|------------------------------------|-------|----------------------------------------------|-----------------|
| Pit Length, m                      | 4.100 | Depth to Water at Start of Test, m           | 2.240           |
| Pit Width, m                       | 0.600 | Max Water Dropdown during Test, m            | 0.810           |
| Depth to Pit Base, m               | 3.200 | Total Soakage Test Time, min                 | 40.0            |
| Depth to Top of Permeable Soils, m |       | Mean Internal Discharge Area, m <sup>2</sup> | 6.972           |
| Depth to Groundwater Surface, m    |       | Discharge Rate, litre/min                    | 29.018          |
| Depth to Top of Granular Fill, m   | 1.500 | Soakage Rate, litre/m <sup>2</sup> /min      | <b>4.16</b>     |
| Voids Assumed for Granular Fill, % | 35%   | BRE Soil Infiltration Rate, m/sec            | <b>6.94E-05</b> |

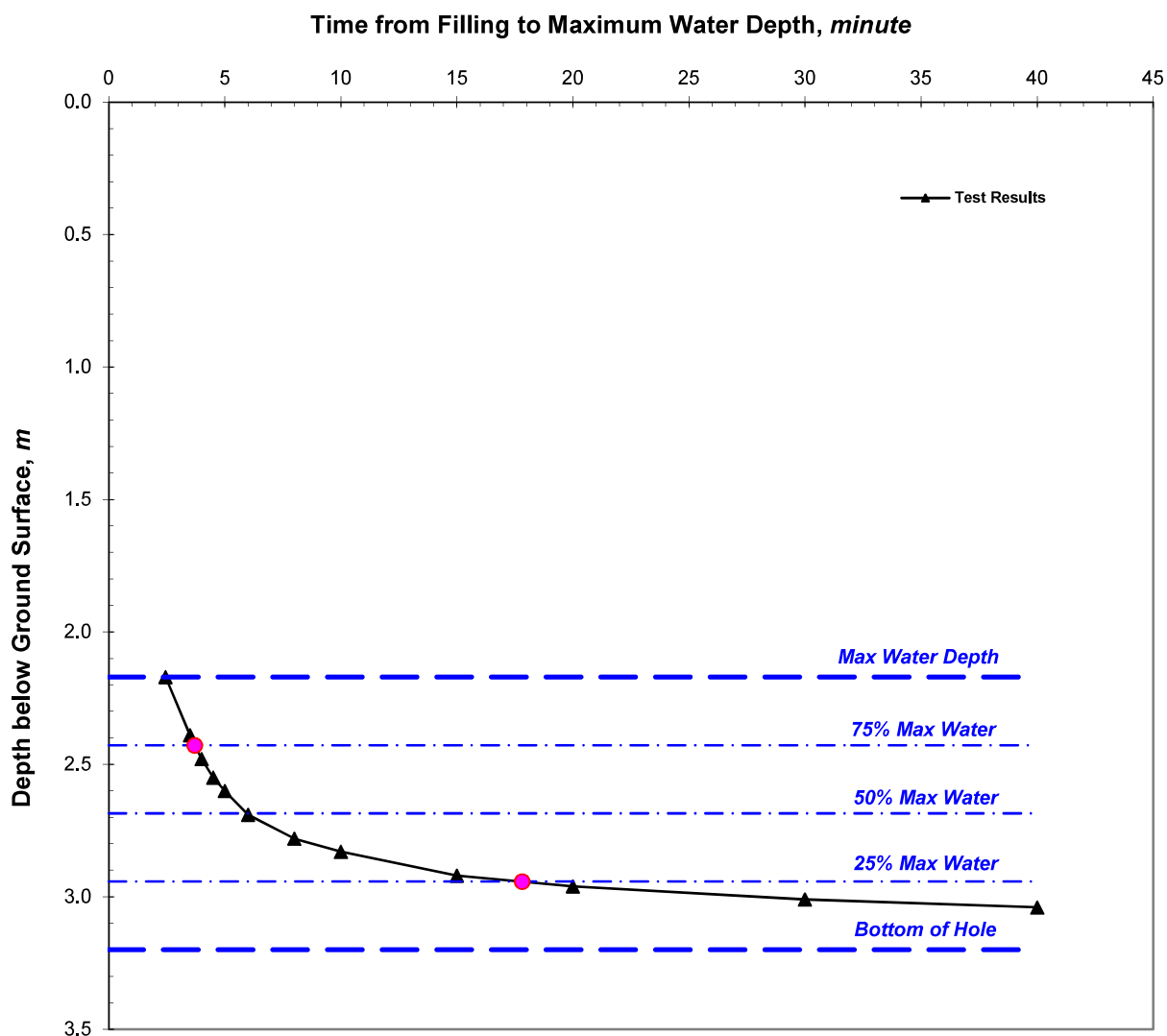
Comments: 1800L  
Pit was nearly emptied at finish of test.

|                           |                   |                        |
|---------------------------|-------------------|------------------------|
| Client: Dyer and Butler   | Job No: J14044    | Test Date: 24/Apr/2019 |
| Site: Southampton Airport | Tested By: FTD/JS | Engineer: TL Fig. S2   |

## BRE Digest DG365 Soakage Test

**Test Hole No:** PT3

**Test No:** Test No 3 (Repeated)



|                                           |       |                                                        |                 |
|-------------------------------------------|-------|--------------------------------------------------------|-----------------|
| Pit Length, m                             | 4.100 | Depth to Water at Start of Test, <i>m</i>              | 2.170           |
| Pit Width, m                              | 0.600 | Max Water Dropdown during Test, <i>m</i>               | 0.870           |
| Depth to Pit Base, m                      | 3.200 | Total Soakage Test Time, <i>min</i>                    | 40.0            |
| Depth to Top of Permeable Soils, <i>m</i> |       | Mean Internal Discharge Area, <i>m</i> <sup>2</sup>    | 7.301           |
| Depth to Groundwater Surface, <i>m</i>    |       | Discharge Rate, <i>litre/min</i>                       | 31.439          |
| Depth to Top of Granular Fill, <i>m</i>   | 1.500 | Soakage Rate, <i>litre/m</i> <sup>2</sup> / <i>min</i> | <b>4.31</b>     |
| Voids Assumed for Granular Fill, %        | 35%   | BRE Soil Infiltration Rate, <i>m/sec</i>               | <b>7.18E-05</b> |

Comments: 1900L  
Pit was nearly emptied at finish of test.

|                                  |                          |                                    |
|----------------------------------|--------------------------|------------------------------------|
| <b>Client:</b> Dyer and Butler   | <b>Job No:</b> J14044    | <b>Test Date:</b> 24/Apr/2019      |
| <b>Site:</b> Southampton Airport | <b>Tested By:</b> FTD/JS | <b>Engineer:</b> TL <b>Fig. S3</b> |

## Summary Sheet

### Results of BRE Digest DG365 Soakage Tests

| <b>Site :</b> Southampton Airport                   |         |                        |                                                              | <b>Job No :</b> J14044                                                  |                                |                               |         |
|-----------------------------------------------------|---------|------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------|-------------------------------|---------|
| <b>Client :</b> Dyer and Butler                     |         |                        |                                                              | <b>O S Reference :</b> SU 45111 16818                                   |                                |                               |         |
| <b>Tested By :</b> FTD/JS                           |         |                        | <b>Engineer:</b> TL                                          |                                                                         | <b>Test Date :</b> 24/04/2019  |                               |         |
| Hole No                                             | Test No | Hole Depth<br><i>m</i> | Soakage Rate for Each Test<br><i>litre/m<sup>2</sup>/min</i> | Soakage Rate for Each Hole<br><i>litre/m<sup>2</sup>/min      m/sec</i> |                                | Water Level at Finish of Test | Remarks |
| PT3                                                 | No 1    | 3.20                   | 6.60                                                         | 4.16                                                                    | 6.94E-5                        | Nearly empty pit.             | 2000L   |
| PT3                                                 | No 2    | 3.20                   | 4.16                                                         |                                                                         |                                | Nearly empty pit.             | 1800L   |
| PT3                                                 | No 3    | 3.20                   | 4.31                                                         |                                                                         |                                | Nearly empty pit.             | 1900L   |
| PT2                                                 | No 1    | 3.00                   | 21.38                                                        | 19.56                                                                   | 3.26E-4                        | Empty pit.                    | 1800L   |
| PT2                                                 | No 2    | 3.00                   | 23.18                                                        |                                                                         |                                | Empty pit.                    | 1800L   |
| PT2                                                 | No 3    | 3.00                   | 19.56                                                        |                                                                         |                                | Empty pit.                    | 1700L   |
| PT1                                                 | No 1    | 3.00                   | 30.70                                                        | 30.70                                                                   | 5.12E-4                        | Empty pit.                    | 1800L   |
| PT1                                                 | No 2    | 3.00                   | 59.83                                                        |                                                                         |                                | Empty pit.                    | 1800L   |
| PT1                                                 | No 3    | 3.00                   | 316.80                                                       |                                                                         |                                | Empty pit.                    | 1900L   |
| <b>Mean Value of All Calculated Soakage Rates :</b> |         |                        |                                                              | <b>18.14</b><br><i>litre/m<sup>2</sup>/min</i>                          | <b>3.02E-4</b><br><i>m/sec</i> |                               |         |

| Constant rate and Variable head tests                                                                                                                                                                                                                                                                                                                                       |                                                                  |                 |                            |                       |                     |              |                           |                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------|----------------------------|-----------------------|---------------------|--------------|---------------------------|------------------------|
| Client                                                                                                                                                                                                                                                                                                                                                                      | Dyer and Butler Ltd.                                             |                 |                            |                       | Project Eng.        | TL           | Project No.:              | J14044                 |
| Project Name                                                                                                                                                                                                                                                                                                                                                                | Southampton Runway Extension - Southampton International Airport |                 |                            |                       | Tested By           | PG           | Checked By                | TL                     |
| Borehole details                                                                                                                                                                                                                                                                                                                                                            |                                                                  |                 |                            |                       |                     |              |                           |                        |
| BH No.                                                                                                                                                                                                                                                                                                                                                                      | BH8                                                              | BH depth        | 5.0m                       | Approx Vol BH (total) | 0.22 m3 (22 litres) |              | Approx Hole Vol above SWL | 0.015 m3 (15 litres)   |
| <b>Notes:</b> Test undertaken in existing standpipe installation. Hole diameter = 200mm. Pipe diameter = 50mm. Installation details: GL to 3.5m bentonite backfill, 3.5m to 5.0m gravel backfill (35% porosity assumed). GL to 4.0m plain pipe, 4.0 to 5.0m slotted pipe. Volume of borehole from GL to base is about 0.022m3 (22 litres), allowing for bentonite backfill. |                                                                  |                 |                            |                       |                     |              |                           |                        |
| Test Data                                                                                                                                                                                                                                                                                                                                                                   |                                                                  |                 |                            |                       |                     |              |                           |                        |
| Date of Test                                                                                                                                                                                                                                                                                                                                                                | Times                                                            |                 | Volumes of water in litres |                       |                     | Soakage Rate | Level water in Borehole   | Corrected Soakage Rate |
|                                                                                                                                                                                                                                                                                                                                                                             | Clock                                                            | Time from start | In bowser                  | In Hole               | Used (diff)         |              |                           |                        |
| 23/05/2019                                                                                                                                                                                                                                                                                                                                                                  |                                                                  | 00:00:00        | 600                        |                       |                     |              | 4.25                      |                        |
| (test 1)                                                                                                                                                                                                                                                                                                                                                                    |                                                                  | 00:01:00        | 500                        |                       | 100                 |              | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:01:30        | 400                        |                       | 100                 |              | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:02:00        | 300                        |                       | 100                 | 200          | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:02:30        | 300                        |                       |                     |              | 4.25                      | 200                    |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |                 |                            |                       |                     |              |                           |                        |
| 23/05/2019                                                                                                                                                                                                                                                                                                                                                                  |                                                                  | 00:00:01        | 2100                       |                       |                     |              | 4.25                      |                        |
| (test 2)                                                                                                                                                                                                                                                                                                                                                                    |                                                                  | 00:00:30        | 1800                       |                       | 300                 |              | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:01:00        | 1500                       |                       | 300                 | 600          | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:01:30        | 1500                       |                       |                     |              | 4.25                      | 600                    |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |                 |                            |                       |                     |              |                           |                        |
| 24/05/2019                                                                                                                                                                                                                                                                                                                                                                  |                                                                  | 00:00:01        | 1500                       |                       |                     |              | 4.25                      |                        |
| (test 3)                                                                                                                                                                                                                                                                                                                                                                    |                                                                  | 00:00:30        | 1250                       |                       | 250                 |              | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:01:00        | 1000                       |                       | 250                 | 500          | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:01:20        | 1000                       |                       |                     |              | 4.25                      | 500                    |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |                 |                            |                       |                     |              |                           |                        |
| 24/05/2019                                                                                                                                                                                                                                                                                                                                                                  |                                                                  | 00:00:01        | 1000                       |                       |                     |              | 4.25                      |                        |
| (test 4)                                                                                                                                                                                                                                                                                                                                                                    |                                                                  | 00:00:30        | 900                        |                       | 100                 |              | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:01:00        | 800                        |                       | 100                 | 200          | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:01:30        | 700                        |                       | 100                 |              | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:02:00        | 650                        |                       | 50                  | 150          | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:03:00        | 550                        |                       | 100                 |              | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:04:00        | 400                        |                       | 150                 | 250          | 4.25                      |                        |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  | 00:05:00        | 400                        |                       |                     |              | 4.25                      | 200                    |
|                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |                 |                            |                       |                     |              |                           |                        |

**Neil Burrows**  
**Southern Testing Laboratories**  
**Unit 11**  
**Charlwoods Road**  
**East Grinstead**  
**RH19 2HU**

SPT Hammer Ref: SEDS10  
Test Date: 05/05/2018  
Report Date: 15/05/2018  
File Name: SEDS10.spt  
Test Operator: CHARLWOODS

## Instrumented Rod Data

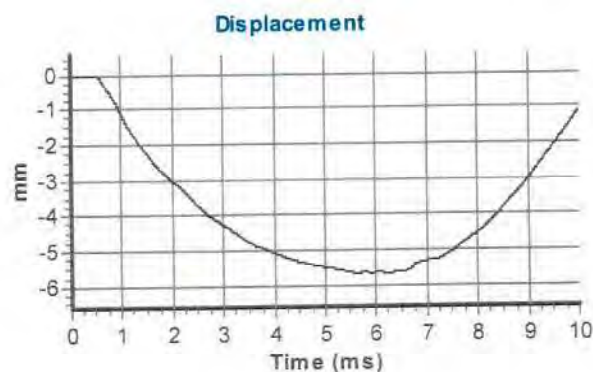
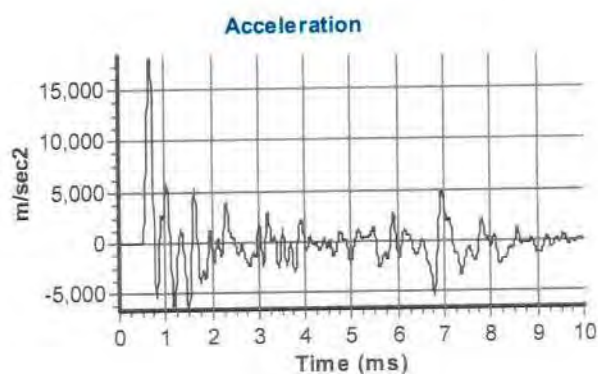
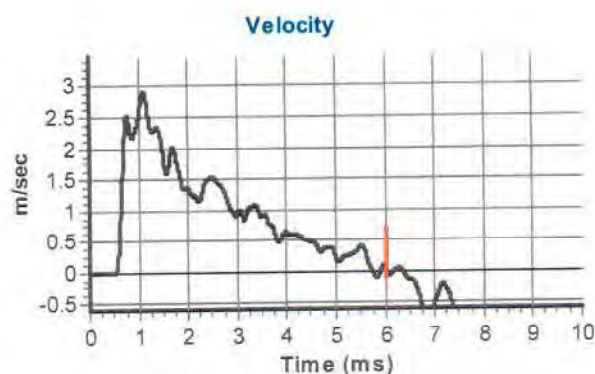
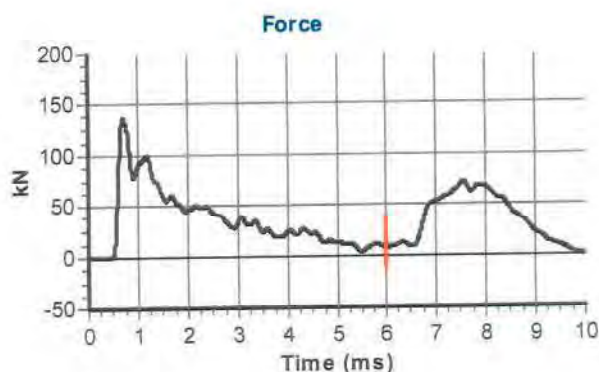
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.0  
Assumed Modulus  $E_a$  (GPa): 200  
Accelerometer No.1: 6458  
Accelerometer No.2: 9607

## SPT Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
SPT String Length  $L$  (m): 14.5

## Comments / Location

Charlwoods



## Calculations

Area of Rod  $A$  (mm<sup>2</sup>): 905  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 315

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

**67**

*N P Burrows*

Signed: N P Burrows

Title: Field Operations Manager

The recommended calibration interval is 12 months

# SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing  
Keeble House  
Stuart Way  
East Grinstead  
West Sussex  
RH19 4QA

SPT Hammer Ref: SEDS10  
Test Date: 04/05/2019  
Report Date: 04/05/2019  
File Name: SEDS10.spt  
Test Operator: NPB

## Instrumented Rod Data

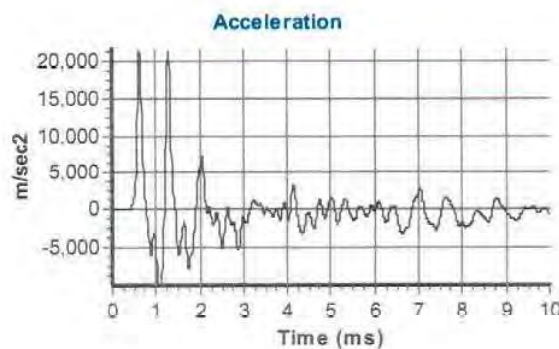
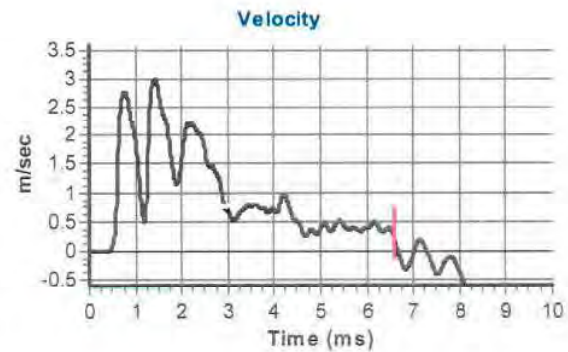
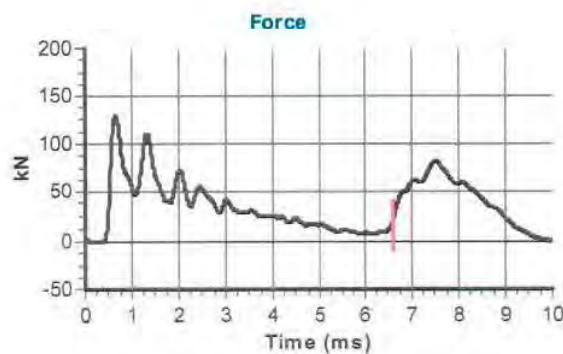
Diameter  $d_r$  (mm): 54  
Wall Thickness  $t_r$  (mm): 6.0  
Assumed Modulus  $E_a$  (GPa): 200  
Accelerometer No.1: 6458  
Accelerometer No.2: 9607

## SPT Hammer Information

Hammer Mass  $m$  (kg): 63.5  
Falling Height  $h$  (mm): 760  
SPT String Length  $L$  (m): 14.5

## Comments / Location

CHARLWOODS



## Calculations

Area of Rod  $A$  (mm<sup>2</sup>): 905  
Theoretical Energy  $E_{\text{theor}}$  (J): 473  
Measured Energy  $E_{\text{meas}}$  (J): 285

**Energy Ratio  $E_r$  (%):** **60**

Signed: [Redacted]  
Title: Field Operations Manager

The recommended calibration interval is 12 months

**Project** Northern Runway Extension  
**Client** Dyer & Butler

**Project ID**  
**Project Engineer**

#### STANDARD PENETRATION TEST RESULTS

| Location ID | Test Depth<br>(m bgl) | Test Type | SPT Hammer<br>Ref. | Energy<br>Ratio % | Seating Blows/Penetration |     |     |     | Main Test Blows/Penetration |     |     |     |     |     |     |     | N Value |
|-------------|-----------------------|-----------|--------------------|-------------------|---------------------------|-----|-----|-----|-----------------------------|-----|-----|-----|-----|-----|-----|-----|---------|
|             |                       |           |                    |                   | SB1                       | SP1 | SB2 | SP2 | MB1                         | MP1 | MB2 | MP2 | MB3 | MP3 | MB4 | MP4 |         |
| BH7         | 2.2                   | C         | SEDS 10            | 60                | 4                         | 75  | 4   | 75  | 3                           | 75  | 4   | 75  | 3   | 75  | 3   | 75  | 13      |
| BH7         | 3.2                   | C         | SEDS 10            | 60                | 4                         | 75  | 4   | 75  | 6                           | 75  | 6   | 75  | 6   | 75  | 6   | 75  | 24      |
| BH7         | 4.2                   | C         | SEDS 10            | 60                | 1                         | 75  | 3   | 75  | 3                           | 75  | 3   | 75  | 4   | 75  | 4   | 75  | 14      |
| BH7         | 5.2                   | C         | SEDS 10            | 60                | 1                         | 75  | 2   | 75  | 2                           | 75  | 4   | 75  | 4   | 75  | 5   | 75  | 15      |
| BH7         | 6.5                   | S         | SEDS 10            | 60                | 2                         | 75  | 3   | 75  | 3                           | 75  | 4   | 75  | 4   | 75  | 6   | 75  | 17      |
| BH7         | 9.5                   | S         | SEDS 10            | 60                | 3                         | 75  | 5   | 75  | 7                           | 75  | 7   | 75  | 6   | 75  | 7   | 75  | 27      |
| BH7         | 12.5                  | S         | SEDS 10            | 60                | 3                         | 75  | 4   | 75  | 5                           | 75  | 4   | 75  | 5   | 75  | 6   | 75  | 20      |
| BH7         | 14.5                  | S         | SEDS 10            | 60                | 6                         | 75  | 6   | 75  | 10                          | 75  | 10  | 75  | 10  | 75  | 11  | 75  | 41      |
| BH7         | 16.5                  | S         | SEDS 10            | 60                | 6                         | 75  | 6   | 75  | 6                           | 75  | 10  | 75  | 8   | 75  | 10  | 75  | 34      |
| BH7         | 18.5                  | S         | SEDS 10            | 60                | 6                         | 75  | 7   | 75  | 10                          | 75  | 9   | 75  | 8   | 75  | 8   | 75  | 35      |
| BH8         | 2.5                   | C         | SEDS 10            | 60                | 7                         | 75  | 7   | 75  | 9                           | 75  | 10  | 75  | 12  | 75  | 10  | 75  | 41      |
| BH8         | 3.5                   | C         | SEDS 10            | 60                | 2                         | 75  | 4   | 75  | 6                           | 75  | 6   | 75  | 7   | 75  | 7   | 75  | 26      |
| BH8         | 4.5                   | C         | SEDS 10            | 60                | 3                         | 75  | 4   | 75  | 3                           | 75  | 4   | 75  | 3   | 75  | 4   | 75  | 14      |
| BH8         | 5.5                   | C         | SEDS 10            | 60                | 1                         | 75  | 2   | 75  | 2                           | 75  | 3   | 75  | 5   | 75  | 3   | 75  | 13      |
| BH8         | 7.5                   | S         | SEDS 10            | 60                | 2                         | 75  | 4   | 75  | 7                           | 75  | 7   | 75  | 6   | 75  | 8   | 75  | 28      |
| BH8         | 9.5                   | S         | SEDS 10            | 60                | 3                         | 75  | 5   | 75  | 6                           | 75  | 7   | 75  | 6   | 75  | 6   | 75  | 25      |
| BH8         | 11.5                  | S         | SEDS 10            | 60                | 4                         | 75  | 7   | 75  | 10                          | 75  | 15  | 75  | 17  | 75  | 8   | 5   | 50      |
| BH8         | 13.5                  | S         | SEDS 10            | 60                | 5                         | 75  | 7   | 75  | 10                          | 75  | 18  | 75  | 22  | 40  |     |     | 50      |
| BH8         | 15.5                  | S         | SEDS 10            | 60                | 7                         | 75  | 12  | 75  | 12                          | 75  | 24  | 75  | 14  | 35  |     |     | 50      |
| BH8         | 17.5                  | S         | SEDS 10            | 60                | 5                         | 75  | 7   | 75  | 8                           | 75  | 9   | 75  | 9   | 75  | 9   | 75  | 35      |
| BH8         | 19.5                  | S         | SEDS 10            | 60                | 7                         | 75  | 7   | 75  | 8                           | 75  | 9   | 75  | 9   | 75  | 9   | 75  | 35      |



# APPENDIX C

## Photographs





|                                                                                  |                                                                                     |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|    |    |
| face (a)                                                                         | PT1 long face (b)                                                                   |
|  |  |
| face                                                                             | PT2 southern face                                                                   |

|                                                                                  |                                                                                     |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|    |    |
| face                                                                             | PT2 northern face                                                                   |
|  |  |
| n face                                                                           | PT3 northern face                                                                   |



|                                                                                  |                                                                                     |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|    |    |
| n face                                                                           | PT3 southern face                                                                   |
|  |  |
| face                                                                             | TP1 eastern face                                                                    |





h face



TP1 western face (runway edge)



h face



TP1A northern face



|                                                                                  |                                                                                     |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|   |   |
| n face                                                                           | TP1A southern face                                                                  |
|  |  |
| e and base                                                                       | TP1A spoil                                                                          |





runway edge)



TP2 eastern face and de-lethalisation concrete



n face



TP2A eastern face





n face



TP2A western face and spoil



n face



TP3 western face





n face



TP3 eastern face



il



TP4 northern face





face



TP4 southern face



and base



TP4 spoil





Topsoil and base



TP5 eastern face



TP5 western face



TP5 western face





il

TP6 northern face and spoil



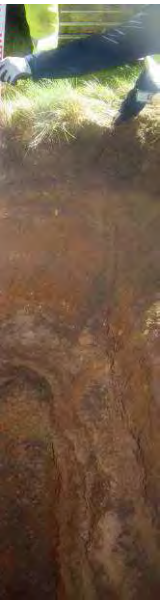
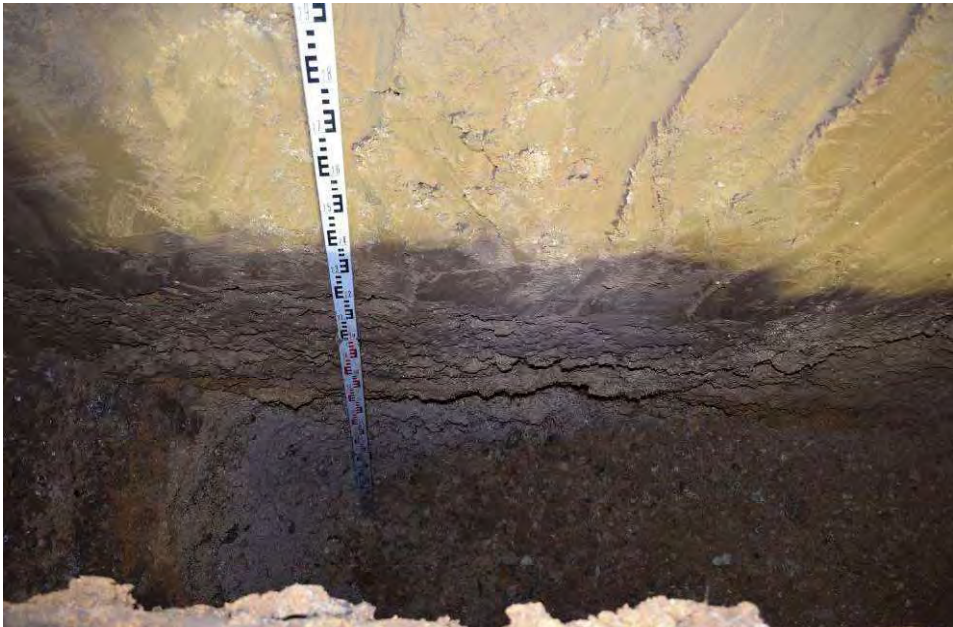
face



TP6 southern face

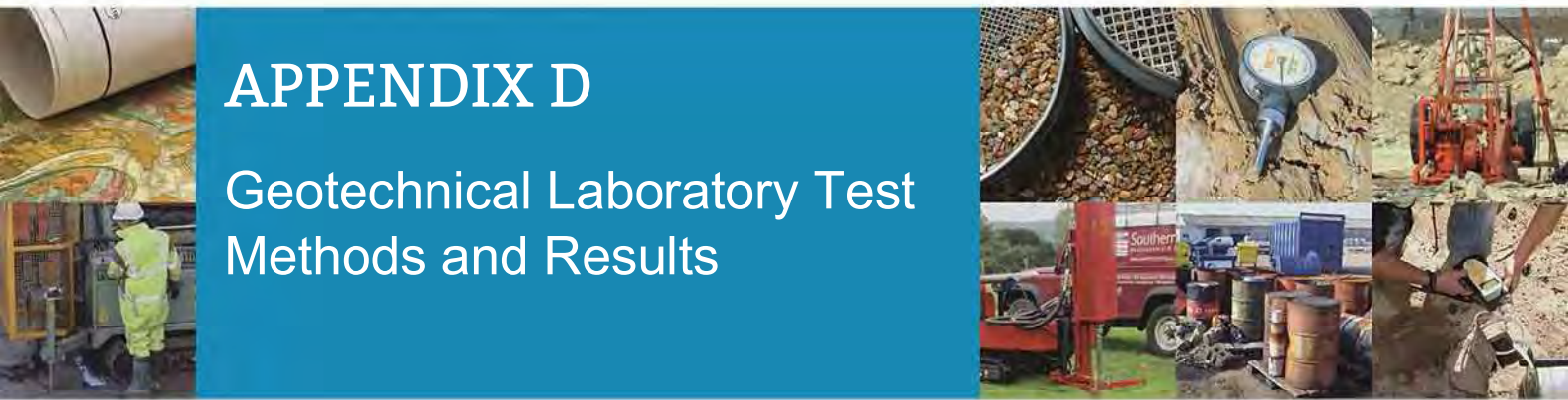
|                                                                                  |                                                                                     |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|    |    |
| h face                                                                           | TP6 base                                                                            |
|  |  |
| h face                                                                           | TP7 western face                                                                    |



|                                                                                  |                                                                                     |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|    |    |
| face                                                                             | TP7 northern face                                                                   |
|  |  |
| face (top)                                                                       | TP8 northern face (base)                                                            |



|                                                                                  |                                                                                     |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|    |    |
| face                                                                             | TP8 southern face                                                                   |
|  |  |
| n face                                                                           | TP8 spoil                                                                           |



## APPENDIX D

### Geotechnical Laboratory Test Methods and Results

D



# Concept Life Sciences

## Certificate of Analysis

**Report Number:** 825225-1

**Date of Report:** 06-Jun-2019

**Customer:** Southern Testing Laboratories  
Keeble House  
Stuart Way  
East Grinstead  
West Sussex  
RH19 4QA

**Customer Contact:** Mr Tom Lees

**Customer Job Reference:** J14044

**Customer Purchase Order:** J14044\_7 Tom

**Customer Site Reference:** Southampton Airport, Southampton

**Date Job Received at Concept:** 31-May-2019

**Date Analysis Started:** 31-May-2019

**Date Analysis Completed:** 06-Jun-2019

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Customers are responsible for information provided where, if incorrect, it could affect the validity of the results.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

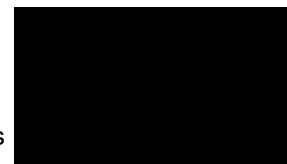
All results have been reviewed in accordance with QMSection 15 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked  
and authorised by :  
Mr Simon Wicks  
Technical Lead

Issued by :  
Aislinn Arthey  
Customer Service Advis



|                                                |        |             |      |       |                  |             |             |             |             |
|------------------------------------------------|--------|-------------|------|-------|------------------|-------------|-------------|-------------|-------------|
| Concept Reference: 825225                      |        |             |      |       |                  |             |             |             |             |
| Project Site: Southampton Airport, Southampton |        |             |      |       |                  |             |             |             |             |
| Customer Reference: J14044                     |        |             |      |       |                  |             |             |             |             |
| Soil                                           |        |             |      |       | Analysed as Soil |             |             |             |             |
| Suite D - Brownfield Site (pyrite present)     |        |             |      |       |                  |             |             |             |             |
| Concept Reference                              |        |             |      |       | 825225 001       | 825225 003  | 825225 005  | 825225 006  | 825225 007  |
| Customer Sample Reference                      |        |             |      |       | BH7 @ 3.20m      | BH7 @ 6.00m | BH8 @ 8.00m | TP7 @ 3.50m | TP8 @ 3.00m |
| Date Sampled                                   |        |             |      |       | 25-APR-2019      | 26-APR-2019 | 30-APR-2019 | 26-APR-2019 | 26-APR-2019 |
|                                                |        |             |      |       |                  |             |             |             |             |
| Determinand                                    | Method | Test Sample | LOD  | Units |                  |             |             |             |             |
| pH                                             | T7     | A40         |      |       | 8.7              | 7.9         | 8.0         | 8.4         | 8.8         |
| (Water Soluble) SO4 expressed as SO4           | T242   | A40         | 0.01 | g/l   | 0.07             | 0.47        | 0.60        | 0.02        | <0.01       |
| (Acid Soluble) SO4                             | T192   | A40         | 0.02 | %     | 0.05             | 0.14        | 0.22        | 0.03        | 0.04        |
| Sulphur (total)                                | T6     | A40         | 0.01 | %     | 0.01             | 0.34        | 0.43        | 0.01        | 0.01        |

|                                                                                                                                |               |                    |             |              |      |      |
|--------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|-------------|--------------|------|------|
| <b>Concept Reference:</b> 825225<br><b>Project Site:</b> Southampton Airport, Southampton<br><b>Customer Reference:</b> J14044 |               |                    |             |              |      |      |
| <b>Water</b><br><b>Suite D - Brownfield Site (pyrite present)</b>                                                              |               |                    |             |              |      |      |
| <b>Concept Reference</b>                                                                                                       |               | 825225 002         | 825225 004  |              |      |      |
| <b>Customer Sample Reference</b>                                                                                               |               | BH7 @ 5.70m        | BH8 @ 7.00m |              |      |      |
| <b>Date Sampled</b>                                                                                                            |               | 27-APR-2019        | 03-MAY-2019 |              |      |      |
| <b>Determinand</b>                                                                                                             | <b>Method</b> | <b>Test Sample</b> | <b>LOD</b>  | <b>Units</b> |      |      |
| pH                                                                                                                             | T7            | AR                 |             |              | 7.25 | 7.11 |
| Sulphate                                                                                                                       | T686          | F                  | 0.5         | mg/l         | 42   | 60   |

## Index to symbols used in 825225-1

| Value | Description                 |
|-------|-----------------------------|
| AR    | As Received                 |
| F     | Filtered                    |
| A40   | Assisted dried < 40C        |
| U     | Analysis is UKAS accredited |

## Method Index

| Value | Description                         |
|-------|-------------------------------------|
| T242  | 2:1 Extraction/ICP/OES (TRL 447 T1) |
| T6    | ICP/OES                             |
| T686  | Discrete Analyser                   |
| T192  | HCl Extraction/ICP/OES (TRL 447 T2) |
| T7    | Probe                               |

## Accreditation Summary

| Determinand                          | Method | Test Sample | LOD  | Units | Symbol | Concept References |
|--------------------------------------|--------|-------------|------|-------|--------|--------------------|
| pH                                   | T7     | AR          |      |       | U      | 002,004            |
| Sulphate                             | T686   | F           | 0.5  | mg/l  | U      | 002,004            |
| pH                                   | T7     | A40         |      |       | U      | 001,003,005-007    |
| (Water Soluble) SO4 expressed as SO4 | T242   | A40         | 0.01 | g/l   | U      | 001,003,005-007    |
| (Acid Soluble) SO4                   | T192   | A40         | 0.02 | %     | U      | 001,003,005-007    |
| Sulphur (total)                      | T6     | A40         | 0.01 | %     | U      | 001,003,005-007    |

SUMMARY OF GEOTECHNICAL TESTING

| Sample details          |              |            |      |                                                                     | Classification Tests |           |           |           |                   | Density Tests     |                  | Undrained Triaxial Compression |                             |                               |                            |
|-------------------------|--------------|------------|------|---------------------------------------------------------------------|----------------------|-----------|-----------|-----------|-------------------|-------------------|------------------|--------------------------------|-----------------------------|-------------------------------|----------------------------|
| Borehole /<br>Trial Pit | Depth<br>(m) | Sample Ref | Type | Description                                                         | WC<br>(%)            | LL<br>(%) | PL<br>(%) | PI<br>(%) | <425<br>µm<br>(%) | Bulk<br><br>Mg/m³ | Dry<br><br>Mg/m³ | Condition                      | Cell<br>Pressure<br><br>kPa | Deviator<br>Stress<br><br>kPa | Shear<br>Stress<br><br>kPa |
| BH7                     | 0.50         |            | B    | Brown slightly sandy clayey SILT with rare rootlets.                |                      |           |           |           |                   |                   |                  |                                |                             |                               |                            |
| BH7                     | 1.00         |            | B    | Brown silty CLAY with rare fine gravel and rootlets.                | 20.6                 | 42        | 18        | 24        | 99                |                   |                  |                                |                             |                               |                            |
| BH7                     | 2.20         |            | B    | Light brown very sandy GRAVEL with silty clay lumps.                |                      |           |           |           |                   |                   |                  |                                |                             |                               |                            |
| BH7                     | 8.00         |            | U    | Firm friable grey clayey fine to medium SAND.                       | 27.6                 | 73        | 29        | 44        | 98                | 1.88              | 1.48             | Undisturbed                    | 160                         | 197                           | 99                         |
| BH7                     | 10.50        |            | D    | Grey mottled brownish grey sandy clayey SILT.                       |                      |           |           |           |                   |                   |                  |                                |                             |                               |                            |
| BH7                     | 11.00        |            | U    | Firm fissured grey silty CLAY with pockets of fine grey sand.       | 30.4                 | 77        | 25        | 52        | 99                | 1.89              | 1.45             | Undisturbed                    | 220                         | 83                            | 42                         |
| BH7                     | 13.50        |            | U    | Very stiff fissured dark grey silty CLAY.                           | 33.7                 | 90        | 36        | 54        | 100               | 1.88              | 1.40             | Undisturbed                    | 270                         | 351                           | 176                        |
| BH7                     | 17.50        |            | B    | Grey SAND, SILT and CLAY.                                           |                      |           |           |           |                   |                   |                  |                                |                             |                               |                            |
| BH7                     | 19.50        |            | U    | Very stiff fissured dark grey silty CLAY with patches of soft clay. | 30.1                 | 70        | 26        | 44        | 100               | 1.91              | 1.47             | Undisturbed                    | 310                         | 57                            | 28                         |
| BH8                     | 1.50         |            | U    | Light brown sandy gravelly CLAY. Gravel is flint.                   | 4.0                  | 25        | 17        | 8.0       | 22                |                   |                  |                                |                             |                               |                            |

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

NP=Non Plastic

Checked and Approved by

S Burke - Senior Technician  
18/06/2019

Project Number:

GEO / 29339

Project Name:

SOUTHAMPTON AIRPORT, SOUTHAMPTON  
J14044

SUMMARY OF GEOTECHNICAL TESTING

| Sample details       |           |            |      |                                                                              | Classification Tests |        |        |        |             | Density Tests |           | Undrained Triaxial Compression |                   |                     |                  |
|----------------------|-----------|------------|------|------------------------------------------------------------------------------|----------------------|--------|--------|--------|-------------|---------------|-----------|--------------------------------|-------------------|---------------------|------------------|
| Borehole / Trial Pit | Depth (m) | Sample Ref | Type | Description                                                                  | WC (%)               | LL (%) | PL (%) | PI (%) | <425 µm (%) | Bulk Mg/m³    | Dry Mg/m³ | Condition                      | Cell Pressure kPa | Deviator Stress kPa | Shear Stress kPa |
| BH8                  | 5.00      |            | B    | Flint GRAVEL.                                                                |                      |        |        |        |             |               |           |                                |                   |                     |                  |
| BH8                  | 6.50      |            | U    | Very stiff friable dark grey silty CLAY with pockets of fine to medium sand. | 30.5                 | 63     | 25     | 38     | 100         | 1.90          | 1.46      | Undisturbed                    | 130               | 109                 | 54               |
| BH8                  | 7.50      |            | D    | Greyish brown silty CLAY with rare fine gravel.                              | 27.0                 | 78     | 30     | 48     | 99          |               |           |                                |                   |                     |                  |
| BH8                  | 8.50      |            | U    | Medium dense dark greenish grey SAND with stiff light grey clay laminations  |                      |        |        |        |             |               |           |                                |                   |                     |                  |
| BH8                  | 8.50      |            | U    | Medium dense greenish grey SAND with stiff grey clay laminations             |                      |        |        |        |             |               |           |                                |                   |                     |                  |
| BH8                  | 10.50     |            | U    | Very stiff fissured grey silty CLAY with rare soft patches.                  | 30.8                 | 49     | 19     | 30     | 100         | 1.84          | 1.41      | Undisturbed                    | 210               | 63                  | 32               |
| BH8                  | 12.50     |            | U    | Grey friable clayey fine to medium SAND.                                     | 24.9                 | 49     | 23     | 26     | 100         | 1.96          | 1.57      | Undisturbed                    | 250               | 52                  | 26               |
| BH8                  | 14.50     |            | B    | Grey silty clayey fine SAND.                                                 |                      |        |        |        |             |               |           |                                |                   |                     |                  |
| BH8                  | 16.50     |            | U    | Stiff friable bluish grey clayey fine to medium SAND. Clay is light brown.   | 20.8                 |        | NP     |        | 95          | 2.01          | 1.66      | Undisturbed                    | 330               | 289                 | 144              |
| BH8                  | 18.50     |            | U    | Stiff friable dark grey silty CLAY.                                          | 21.2                 | 46     | 25     | 21     | 99          | 2.02          | 1.67      | Undisturbed                    | 370               | 406                 | 203              |

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

NP=Non Plastic

|                                           |                 |                                  |
|-------------------------------------------|-----------------|----------------------------------|
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|                                           | Project Name:   | SOUTHAMPTON AIRPORT, SOUTHAMPTON |
| S Burke - Senior Technician<br>18/06/2019 |                 | J14044                           |

SUMMARY OF GEOTECHNICAL TESTING

| Sample details       |           |            |      |                                                                         | Classification Tests |        |        |        |             | Density Tests |           | Undrained Triaxial Compression |                   |                     |                  |
|----------------------|-----------|------------|------|-------------------------------------------------------------------------|----------------------|--------|--------|--------|-------------|---------------|-----------|--------------------------------|-------------------|---------------------|------------------|
| Borehole / Trial Pit | Depth (m) | Sample Ref | Type | Description                                                             | WC (%)               | LL (%) | PL (%) | PI (%) | <425 µm (%) | Bulk Mg/m³    | Dry Mg/m³ | Condition                      | Cell Pressure kPa | Deviator Stress kPa | Shear Stress kPa |
| BH8                  | 20.00     |            | D    | Brown and grey silty CLAY.                                              | 27.4                 | 68     | 25     | 43     | 100         |               |           |                                |                   |                     |                  |
| TP7                  | 2.50      |            | B    | Light brown clayey very sandy GRAVEL with rare cobbles.                 |                      |        |        |        |             |               |           |                                |                   |                     |                  |
| TP7                  | 3.50      |            | B    | Brown silty sandy GRAVEL with rare cobbles.                             |                      |        |        |        |             |               |           |                                |                   |                     |                  |
| TP8                  | 1.50      |            | B    | Brown clayey silty sandy flint GRAVEL.                                  |                      |        |        |        |             |               |           |                                |                   |                     |                  |
| TP8                  | 2.00      |            | B    | Brown clayey silty sandy GRAVEL with rare cobbles.                      |                      |        |        |        |             |               |           |                                |                   |                     |                  |
| TP8                  | 3.00      |            | B    | Light brown sandy GRAVEL with rare cobbles and rare clayey silty lumps. |                      |        |        |        |             |               |           |                                |                   |                     |                  |
|                      |           |            |      |                                                                         |                      |        |        |        |             |               |           |                                |                   |                     |                  |
|                      |           |            |      |                                                                         |                      |        |        |        |             |               |           |                                |                   |                     |                  |
|                      |           |            |      |                                                                         |                      |        |        |        |             |               |           |                                |                   |                     |                  |
|                      |           |            |      |                                                                         |                      |        |        |        |             |               |           |                                |                   |                     |                  |

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

NP=Non Plastic

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**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

BH7  
0.50  
B

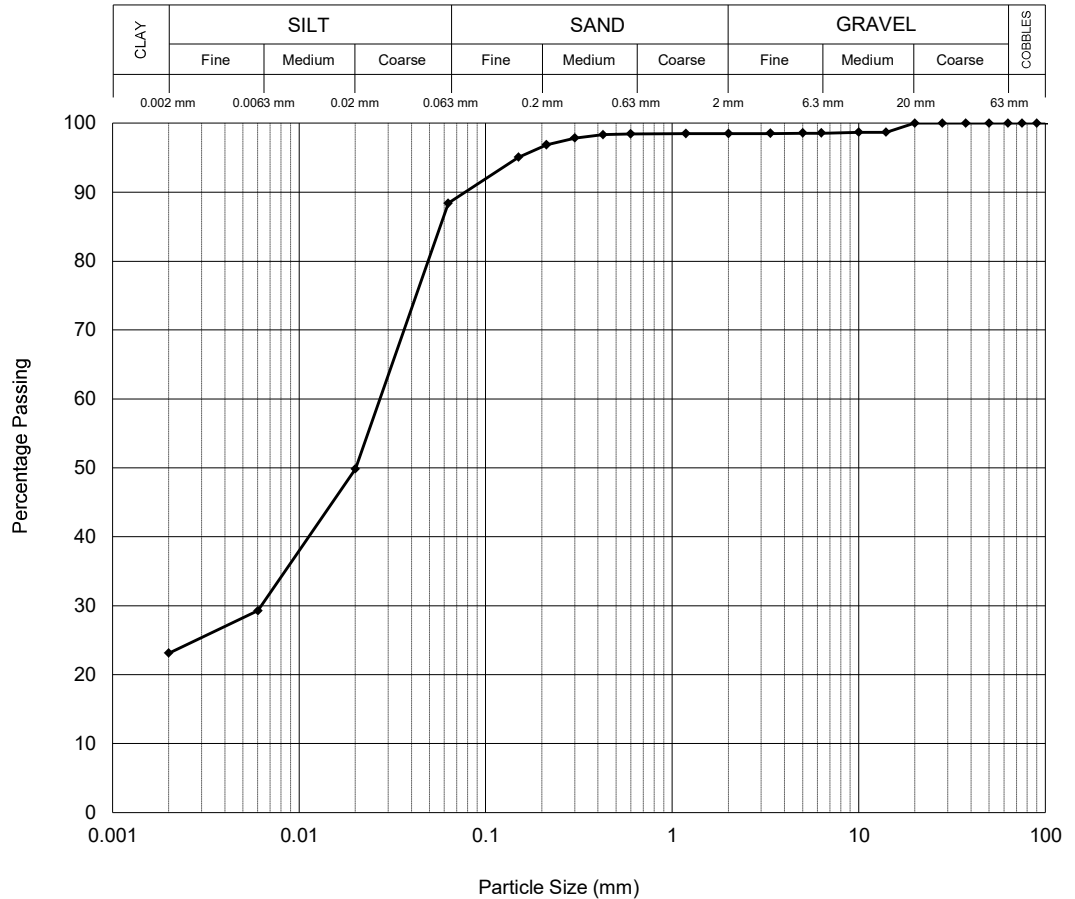
## Description

Brown slightly sandy clayey SILT with rare rootlets.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 100    |
| 50.0 mm  | 100    |
| 37.5 mm  | 100    |
| 28.0 mm  | 100    |
| 20.0 mm  | 100    |
| 14.0 mm  | 99     |
| 10.0 mm  | 99     |
| 6.30 mm  | 99     |
| 5.00 mm  | 99     |
| 3.35 mm  | 99     |
| 2.00 mm  | 99     |
| 1.18 mm  | 98     |
| 600 µm   | 98     |
| 425 µm   | 98     |
| 300 µm   | 98     |
| 212 µm   | 97     |
| 150 µm   | 95     |
| 63 µm    | 88     |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 24.4   |
| Size               | % Pass |
| 20 µm              | 50     |
| 6 µm               | 29     |
| 2 µm               | 23     |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 0  |
| Gravel               | 1  |
| Sand                 | 10 |
| Silt                 | 65 |
| Clay                 | 24 |

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**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

BH7  
2.20  
B

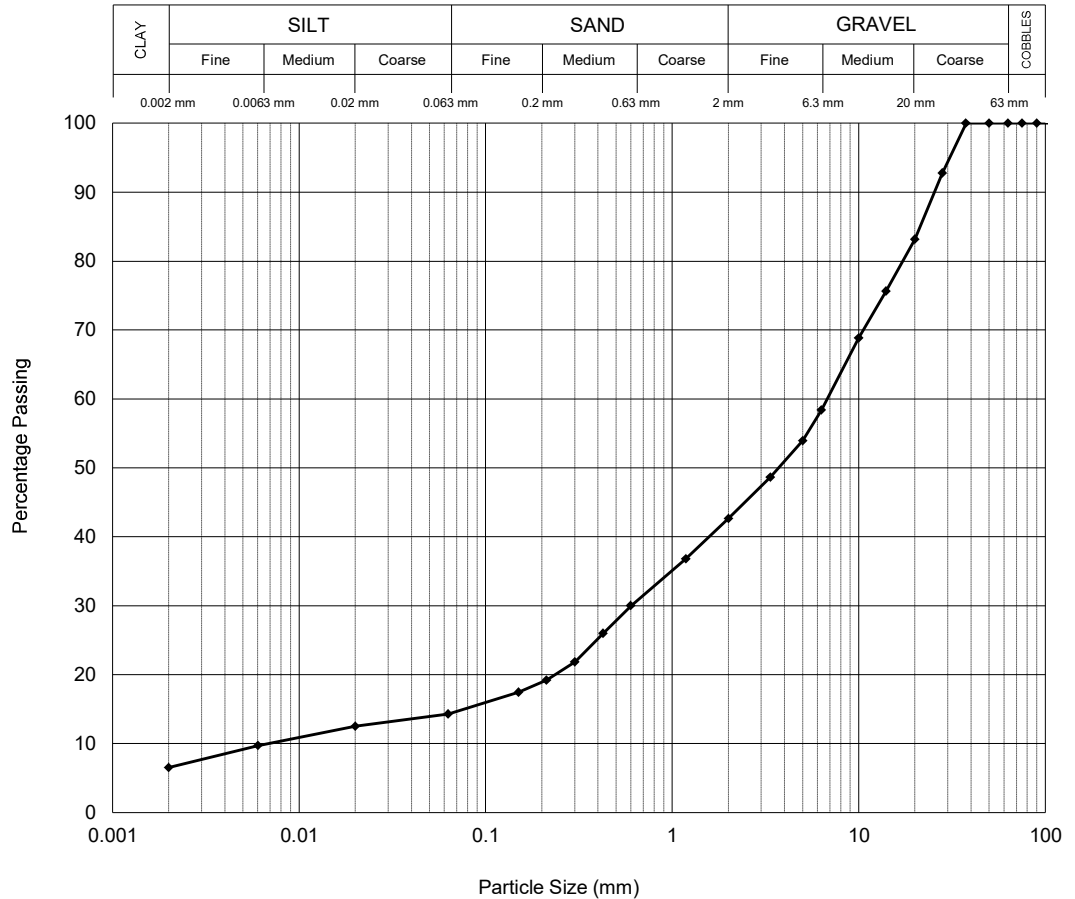
## Description

Light brown very sandy GRAVEL with silty clay lumps.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 100    |
| 50.0 mm  | 100    |
| 37.5 mm  | 100    |
| 28.0 mm  | 93     |
| 20.0 mm  | 83     |
| 14.0 mm  | 76     |
| 10.0 mm  | 69     |
| 6.30 mm  | 58     |
| 5.00 mm  | 54     |
| 3.35 mm  | 49     |
| 2.00 mm  | 43     |
| 1.18 mm  | 37     |
| 600 µm   | 30     |
| 425 µm   | 26     |
| 300 µm   | 22     |
| 212 µm   | 19     |
| 150 µm   | 17     |
| 63 µm    | 14     |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 25.4   |
| Size               | % Pass |
| 20 µm              | 13     |
| 6 µm               | 10     |
| 2 µm               | 7      |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 0  |
| Gravel               | 57 |
| Sand                 | 28 |
| Silt                 | 8  |
| Clay                 | 7  |

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**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

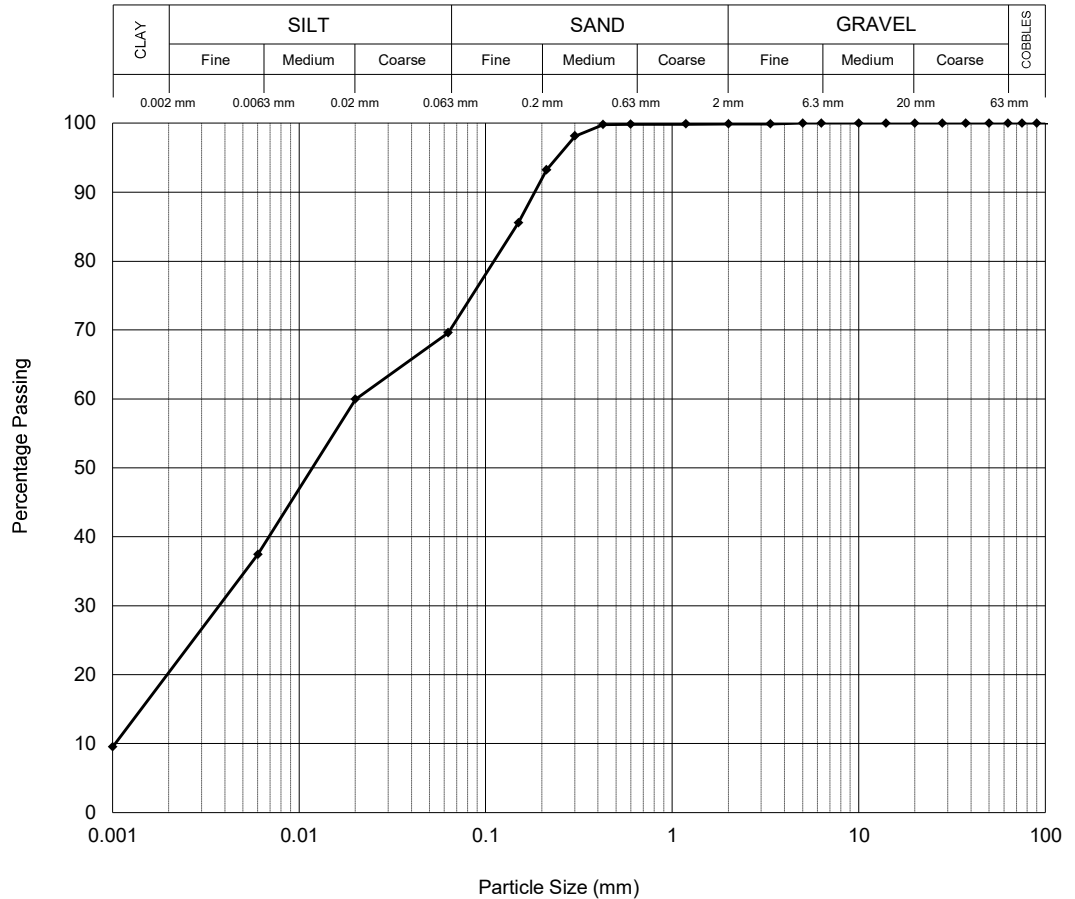
BH7  
10.50  
D

## Description

Grey mottled brownish grey sandy clayey SILT.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve  
BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 100    |
| 50.0 mm  | 100    |
| 37.5 mm  | 100    |
| 28.0 mm  | 100    |
| 20.0 mm  | 100    |
| 14.0 mm  | 100    |
| 10.0 mm  | 100    |
| 6.30 mm  | 100    |
| 5.00 mm  | 100    |
| 3.35 mm  | 100    |
| 2.00 mm  | 100    |
| 1.18 mm  | 100    |
| 600 µm   | 100    |
| 425 µm   | 100    |
| 300 µm   | 98     |
| 212 µm   | 93     |
| 150 µm   | 86     |
| 63 µm    | 70     |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 25.2   |
| Size               | % Pass |
| 20 µm              | 60     |
| 6 µm               | 37     |
| 1 µm               | 10     |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 0  |
| Gravel               | 0  |
| Sand                 | 30 |
| Silt                 | 55 |
| Clay                 | 15 |

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**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

BH7  
17.50  
B

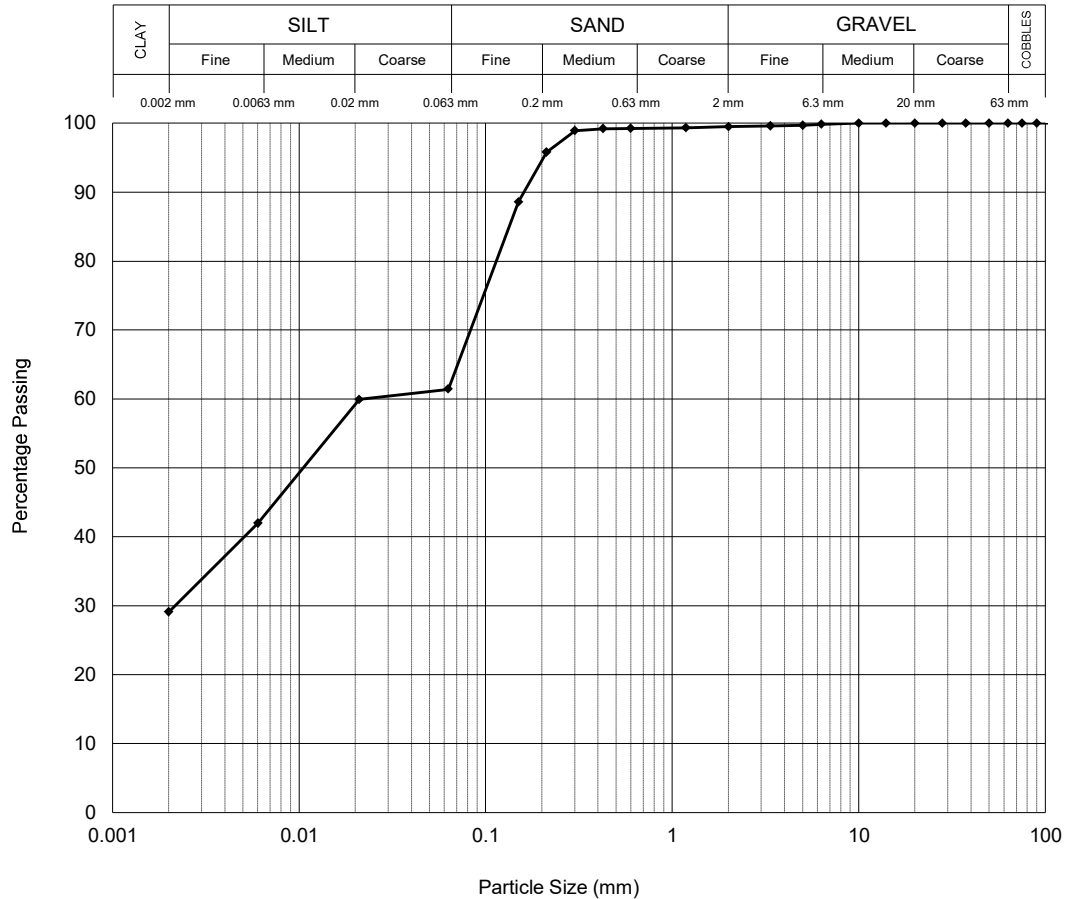
## Description

Grey SAND, SILT and CLAY.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 100    |
| 50.0 mm  | 100    |
| 37.5 mm  | 100    |
| 28.0 mm  | 100    |
| 20.0 mm  | 100    |
| 14.0 mm  | 100    |
| 10.0 mm  | 100    |
| 6.30 mm  | 100    |
| 5.00 mm  | 100    |
| 3.35 mm  | 100    |
| 2.00 mm  | 100    |
| 1.18 mm  | 99     |
| 600 µm   | 99     |
| 425 µm   | 99     |
| 300 µm   | 99     |
| 212 µm   | 96     |
| 150 µm   | 89     |
| 63 µm    | 61     |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 21.4   |
| Size               | % Pass |
| 21 µm              | 60     |
| 6 µm               | 42     |
| 2 µm               | 29     |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 0  |
| Gravel               | 0  |
| Sand                 | 38 |
| Silt                 | 32 |
| Clay                 | 30 |

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**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

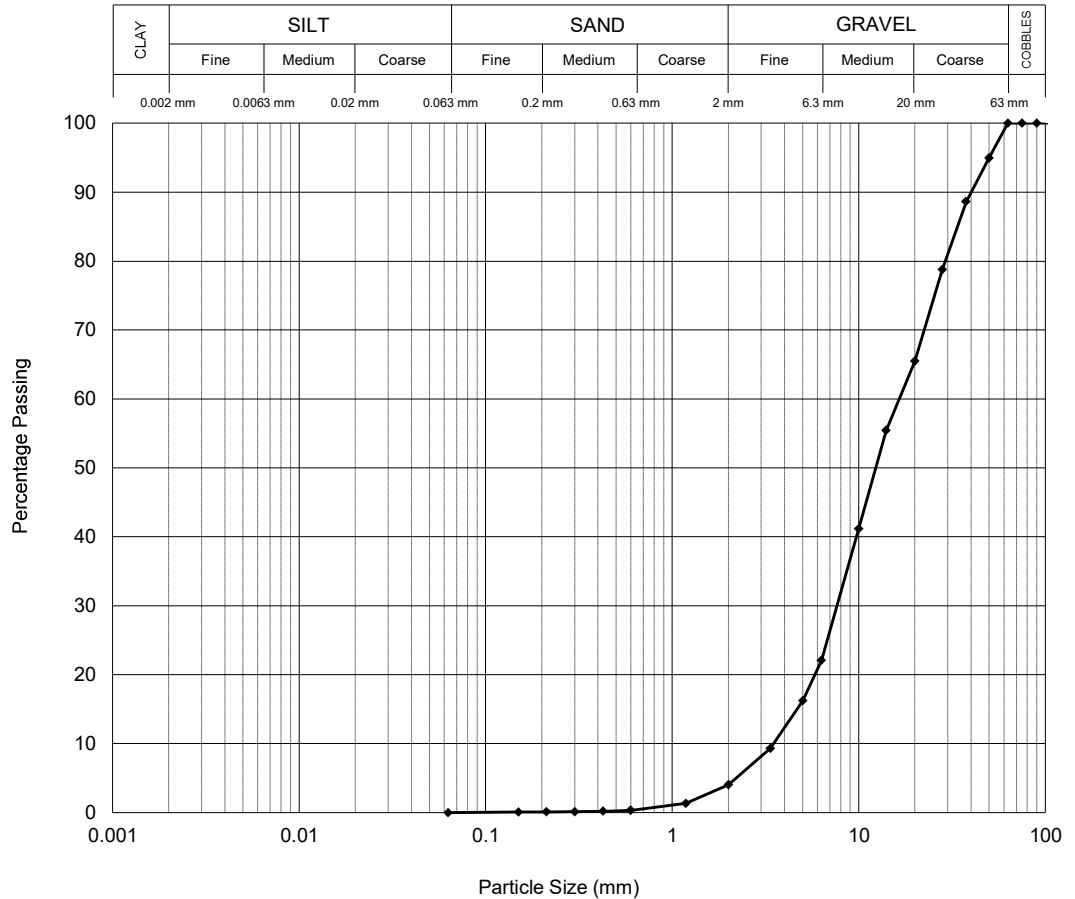
BH8  
5.00  
B

## Description

Flint GRAVEL.

## BS EN ISO 17892-4 : 2016 : Clause 5.2 - Dry Sieve

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 100    |
| 50.0 mm  | 95     |
| 37.5 mm  | 89     |
| 28.0 mm  | 79     |
| 20.0 mm  | 65     |
| 14.0 mm  | 55     |
| 10.0 mm  | 41     |
| 6.30 mm  | 22     |
| 5.00 mm  | 16     |
| 3.35 mm  | 9      |
| 2.00 mm  | 4      |
| 1.18 mm  | 1      |
| 600 µm   | 0      |
| 425 µm   | 0      |
| 300 µm   | 0      |
| 212 µm   | 0      |
| 150 µm   | 0      |
| 63 µm    | 0      |



| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 0  |
| Gravel               | 96 |
| Sand                 | 4  |
| Silt & Clay          | 0  |

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**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

BH8  
14.50  
B

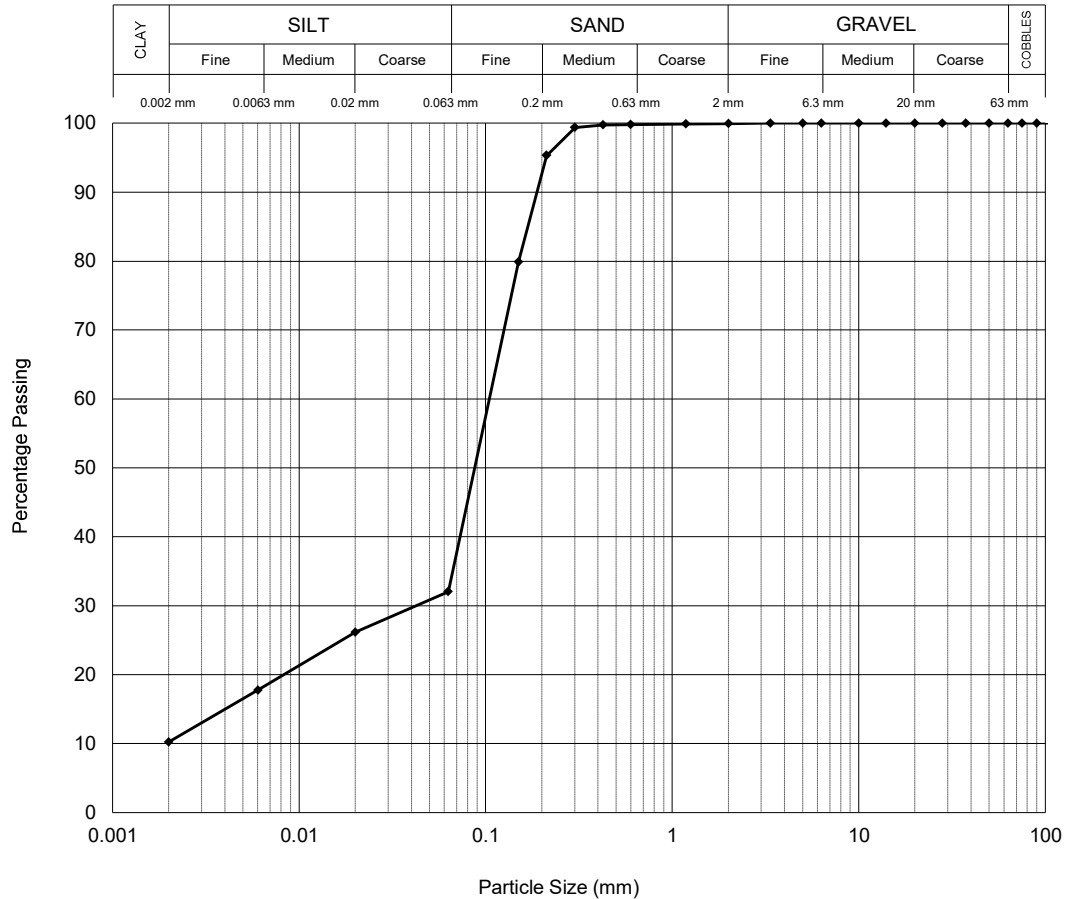
## Description

Grey silty clayey fine SAND.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 100    |
| 50.0 mm  | 100    |
| 37.5 mm  | 100    |
| 28.0 mm  | 100    |
| 20.0 mm  | 100    |
| 14.0 mm  | 100    |
| 10.0 mm  | 100    |
| 6.30 mm  | 100    |
| 5.00 mm  | 100    |
| 3.35 mm  | 100    |
| 2.00 mm  | 100    |
| 1.18 mm  | 100    |
| 600 µm   | 100    |
| 425 µm   | 100    |
| 300 µm   | 99     |
| 212 µm   | 95     |
| 150 µm   | 80     |
| 63 µm    | 32     |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 24.4   |
| Size               | % Pass |
| 20 µm              | 26     |
| 6 µm               | 18     |
| 2 µm               | 10     |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 0  |
| Gravel               | 0  |
| Sand                 | 68 |
| Silt                 | 22 |
| Clay                 | 10 |

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**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

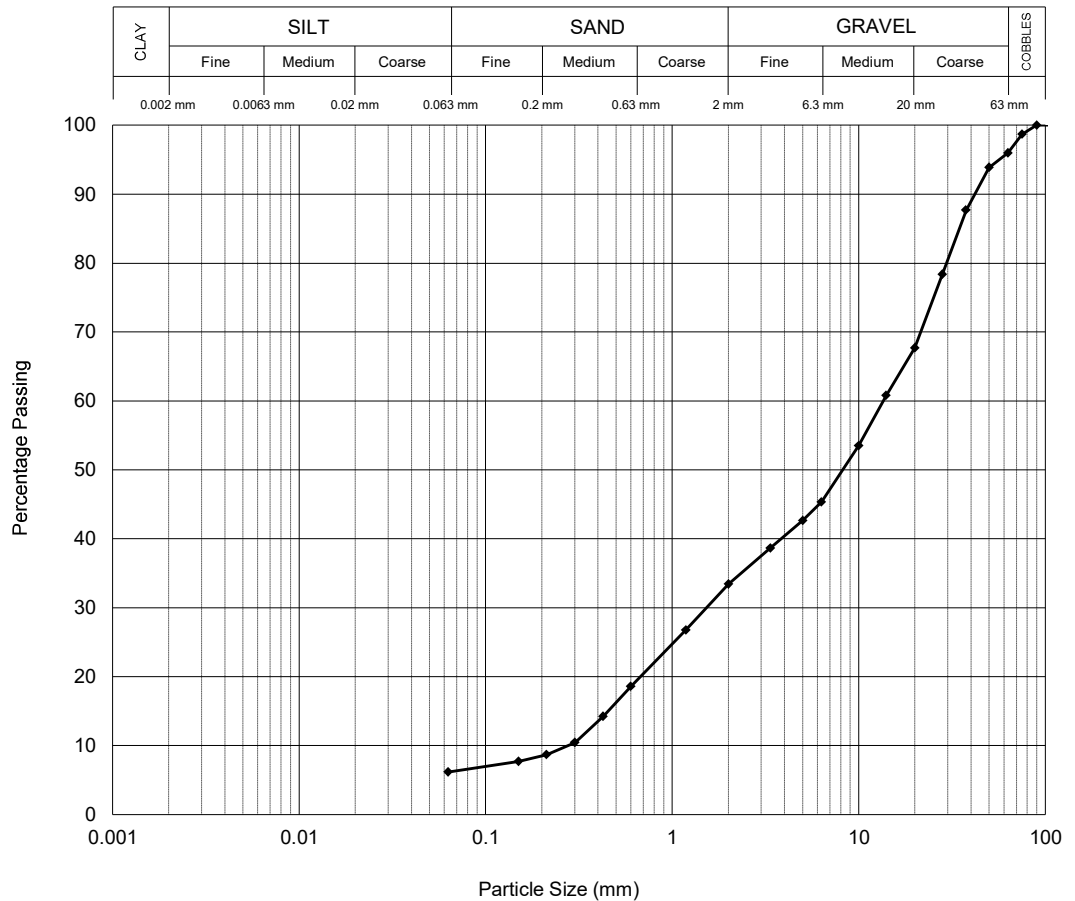
TP7  
2.50  
B

## Description

Light brown clayey very sandy GRAVEL with rare cobbles.

## BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 99     |
| 63.0 mm  | 96     |
| 50.0 mm  | 94     |
| 37.5 mm  | 88     |
| 28.0 mm  | 78     |
| 20.0 mm  | 68     |
| 14.0 mm  | 61     |
| 10.0 mm  | 54     |
| 6.30 mm  | 45     |
| 5.00 mm  | 43     |
| 3.35 mm  | 39     |
| 2.00 mm  | 33     |
| 1.18 mm  | 27     |
| 600 µm   | 19     |
| 425 µm   | 14     |
| 300 µm   | 10     |
| 212 µm   | 9      |
| 150 µm   | 8      |
| 63 µm    | 6      |



| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 4  |
| Gravel               | 63 |
| Sand                 | 27 |
| Silt & Clay          | 6  |

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**GEOLABS**

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18/06/2019



**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

TP7  
3.50  
B

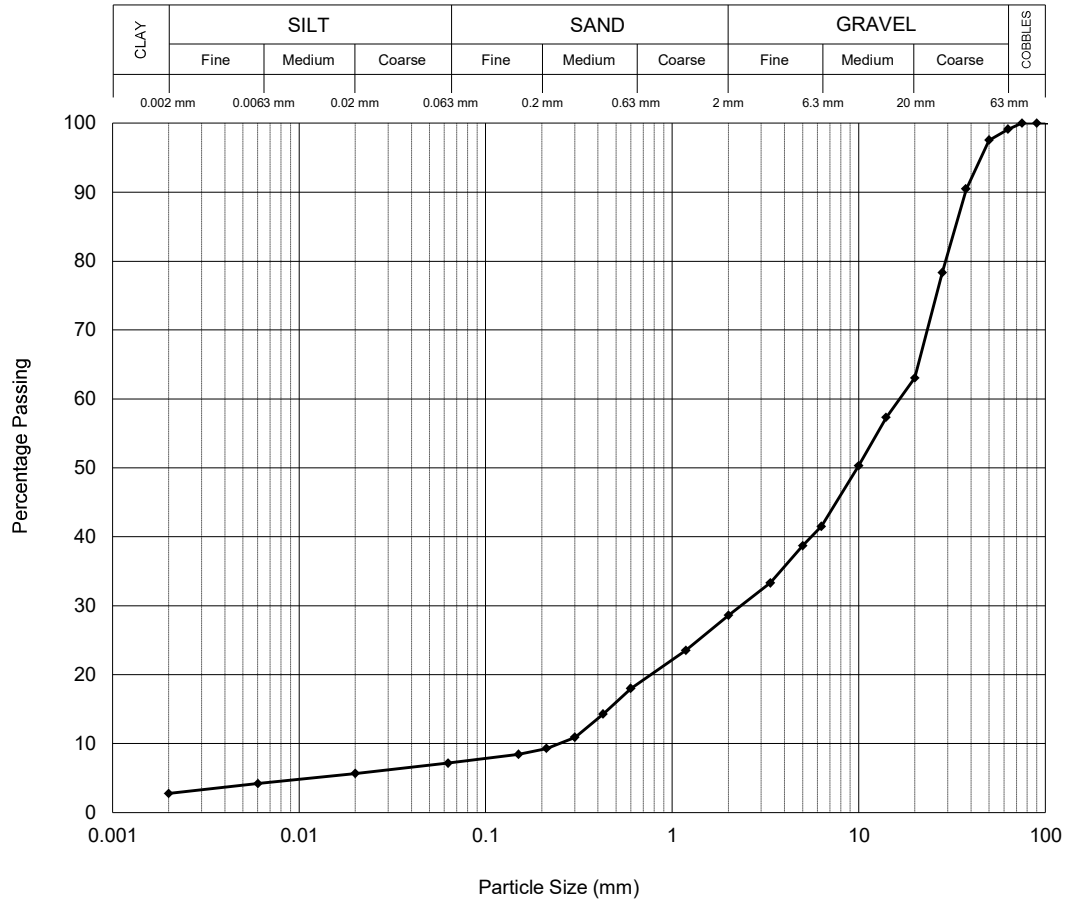
## Description

Brown silty sandy GRAVEL with rare cobbles.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 99     |
| 50.0 mm  | 98     |
| 37.5 mm  | 90     |
| 28.0 mm  | 78     |
| 20.0 mm  | 63     |
| 14.0 mm  | 57     |
| 10.0 mm  | 50     |
| 6.30 mm  | 42     |
| 5.00 mm  | 39     |
| 3.35 mm  | 33     |
| 2.00 mm  | 29     |
| 1.18 mm  | 24     |
| 600 µm   | 18     |
| 425 µm   | 14     |
| 300 µm   | 11     |
| 212 µm   | 9      |
| 150 µm   | 8      |
| 63 µm    | 7      |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 25.4   |
| Size               | % Pass |
| 20 µm              | 6      |
| 6 µm               | 4      |
| 2 µm               | 3      |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 1  |
| Gravel               | 71 |
| Sand                 | 21 |
| Silt                 | 4  |
| Clay                 | 3  |

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(Ref 1560866735)

**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

TP8  
1.50  
B

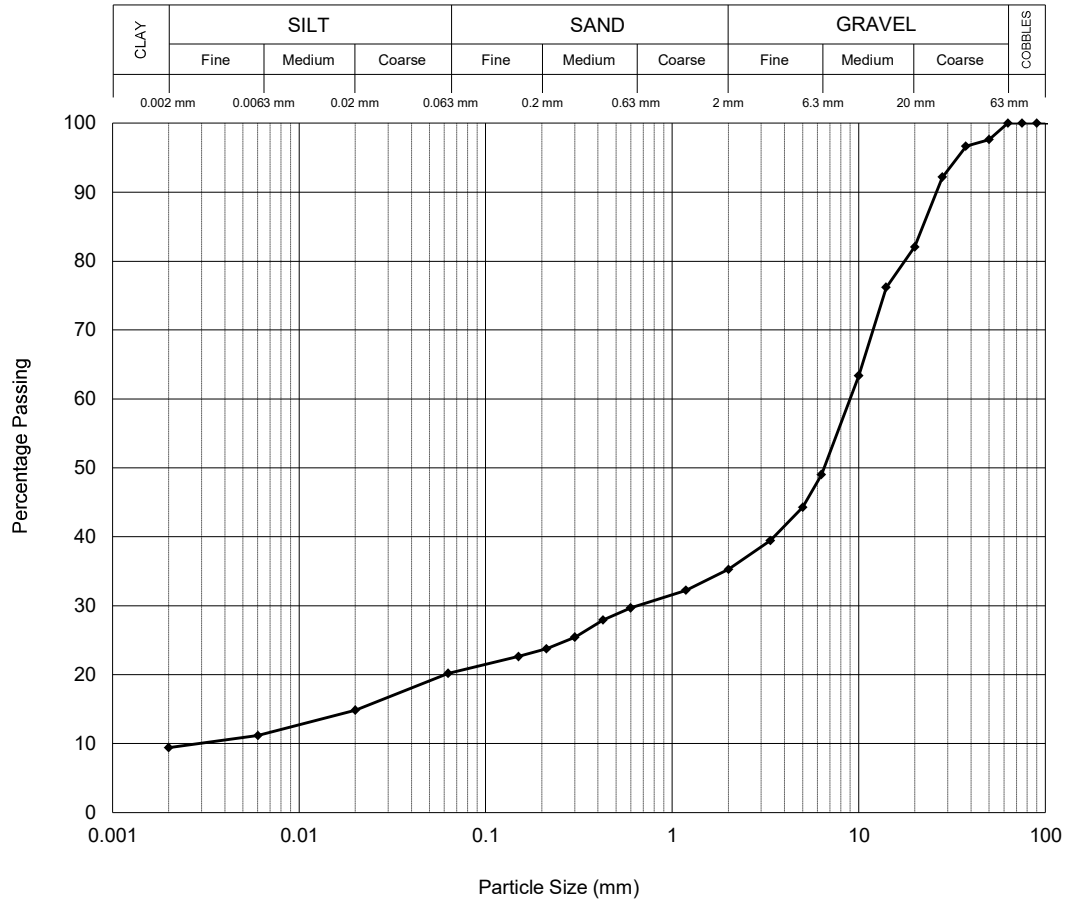
## Description

Brown clayey silty sandy flint GRAVEL.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 100    |
| 50.0 mm  | 98     |
| 37.5 mm  | 97     |
| 28.0 mm  | 92     |
| 20.0 mm  | 82     |
| 14.0 mm  | 76     |
| 10.0 mm  | 63     |
| 6.30 mm  | 49     |
| 5.00 mm  | 44     |
| 3.35 mm  | 39     |
| 2.00 mm  | 35     |
| 1.18 mm  | 32     |
| 600 µm   | 30     |
| 425 µm   | 28     |
| 300 µm   | 25     |
| 212 µm   | 24     |
| 150 µm   | 23     |
| 63 µm    | 20     |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 25.2   |
| Size               | % Pass |
| 20 µm              | 15     |
| 6 µm               | 11     |
| 2 µm               | 9      |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 0  |
| Gravel               | 65 |
| Sand                 | 15 |
| Silt                 | 11 |
| Clay                 | 9  |

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18/06/2019

**GEOLABS**

**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

TP8  
2.00  
B

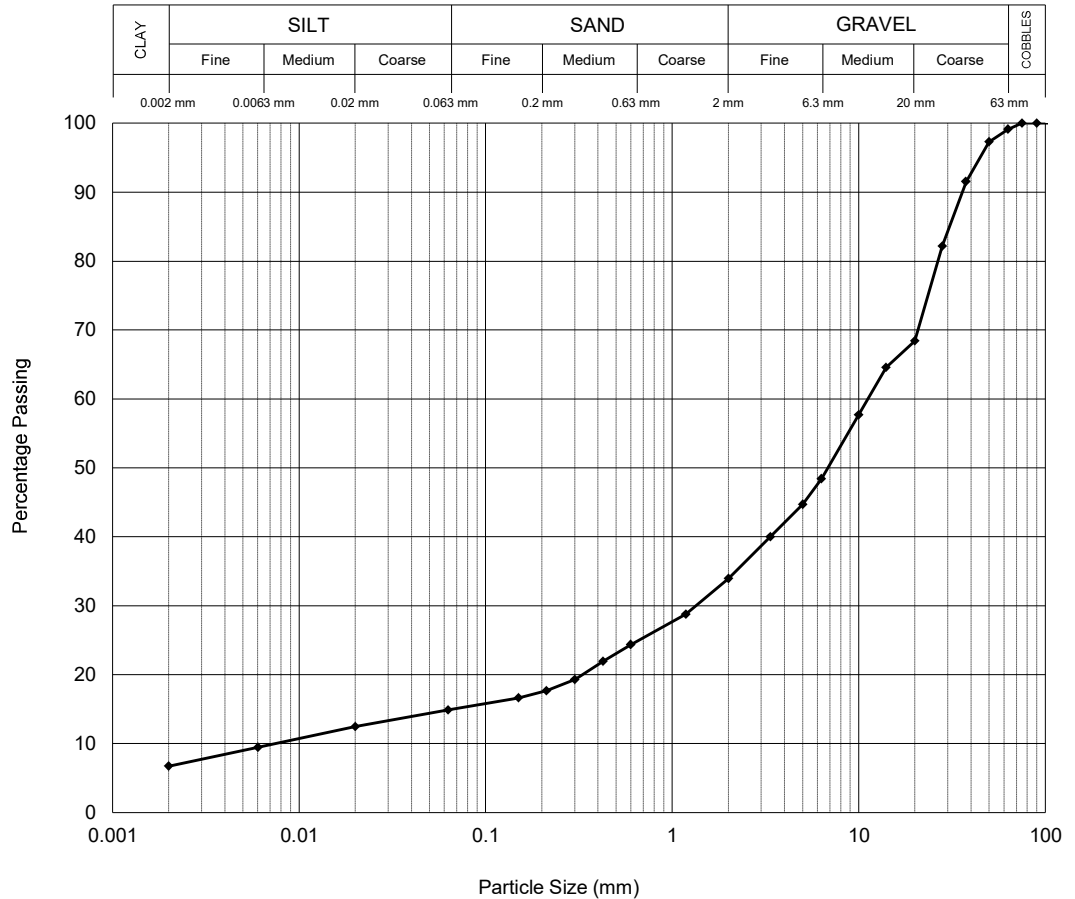
## Description

Brown clayey silty sandy GRAVEL with rare cobbles.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 99     |
| 50.0 mm  | 97     |
| 37.5 mm  | 92     |
| 28.0 mm  | 82     |
| 20.0 mm  | 68     |
| 14.0 mm  | 65     |
| 10.0 mm  | 58     |
| 6.30 mm  | 48     |
| 5.00 mm  | 45     |
| 3.35 mm  | 40     |
| 2.00 mm  | 34     |
| 1.18 mm  | 29     |
| 600 µm   | 24     |
| 425 µm   | 22     |
| 300 µm   | 19     |
| 212 µm   | 18     |
| 150 µm   | 17     |
| 63 µm    | 15     |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 24.4   |
| Size               | % Pass |
| 20 µm              | 12     |
| 6 µm               | 9      |
| 2 µm               | 7      |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 1  |
| Gravel               | 65 |
| Sand                 | 19 |
| Silt                 | 8  |
| Clay                 | 7  |

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**PARTICLE SIZE DISTRIBUTION**

BH / TP No.  
Depth (m)  
Sample Type

TP8  
3.00  
B

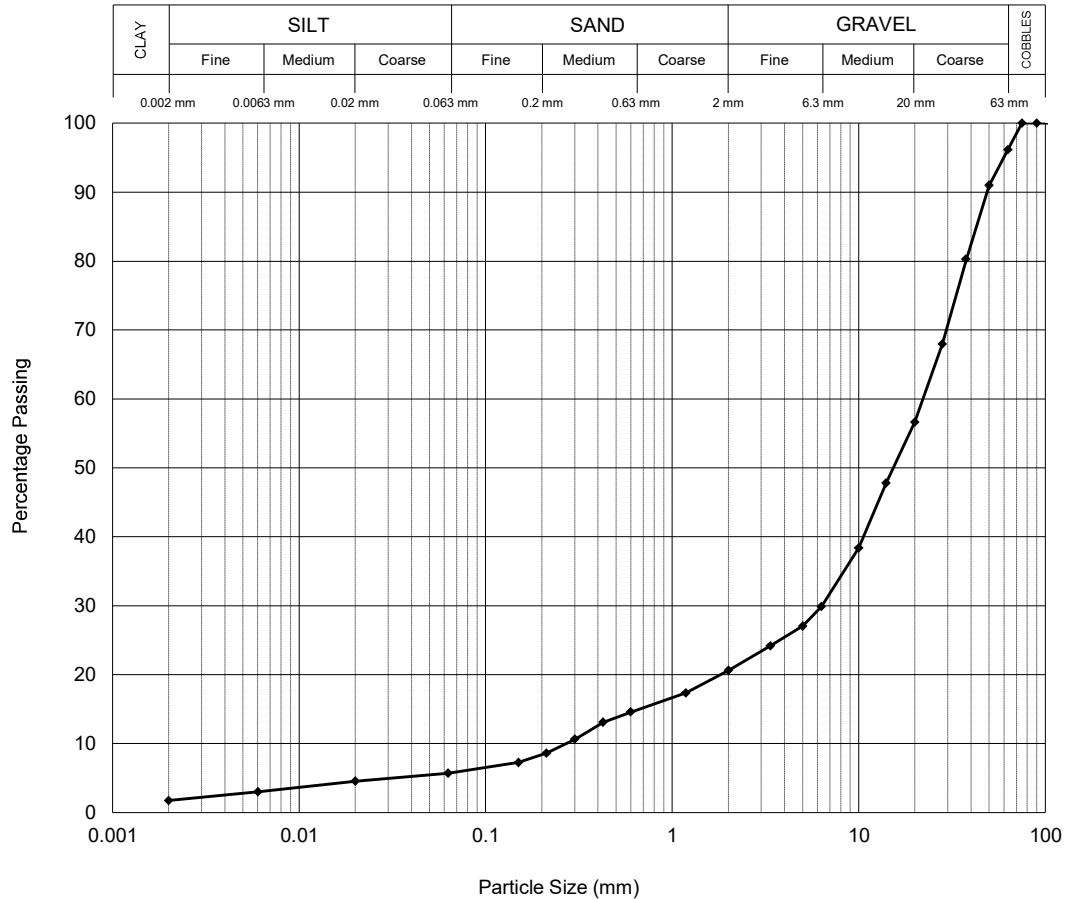
## Description

Light brown sandy GRAVEL with rare cobbles and rare clayey silty lumps.

BS EN ISO 17892-4 : 2016 : Clause 5.2 - Wet Sieve

BS EN ISO 17892-4 : 2016 : Clause 5.4 - Sedimentation by Pipette

| Sieve    |        |
|----------|--------|
| Size     | % Pass |
| 200.0 mm | 100    |
| 125.0 mm | 100    |
| 90.0 mm  | 100    |
| 75.0 mm  | 100    |
| 63.0 mm  | 96     |
| 50.0 mm  | 91     |
| 37.5 mm  | 80     |
| 28.0 mm  | 68     |
| 20.0 mm  | 57     |
| 14.0 mm  | 48     |
| 10.0 mm  | 38     |
| 6.30 mm  | 30     |
| 5.00 mm  | 27     |
| 3.35 mm  | 24     |
| 2.00 mm  | 21     |
| 1.18 mm  | 17     |
| 600 µm   | 15     |
| 425 µm   | 13     |
| 300 µm   | 11     |
| 212 µm   | 9      |
| 150 µm   | 7      |
| 63 µm    | 6      |



| Sedimentation      |        |
|--------------------|--------|
| Pre-treatment used |        |
| Temp (°C)          | 25.2   |
| Size               | % Pass |
| 20 µm              | 5      |
| 6 µm               | 3      |
| 2 µm               | 2      |

Particle Density 2.70(A) Mg/m<sup>3</sup>

| Particle Proportions |    |
|----------------------|----|
| Cobbles              | 4  |
| Gravel               | 76 |
| Sand                 | 15 |
| Silt                 | 4  |
| Clay                 | 1  |

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Page 1 of 1

(Ref 1560866745)

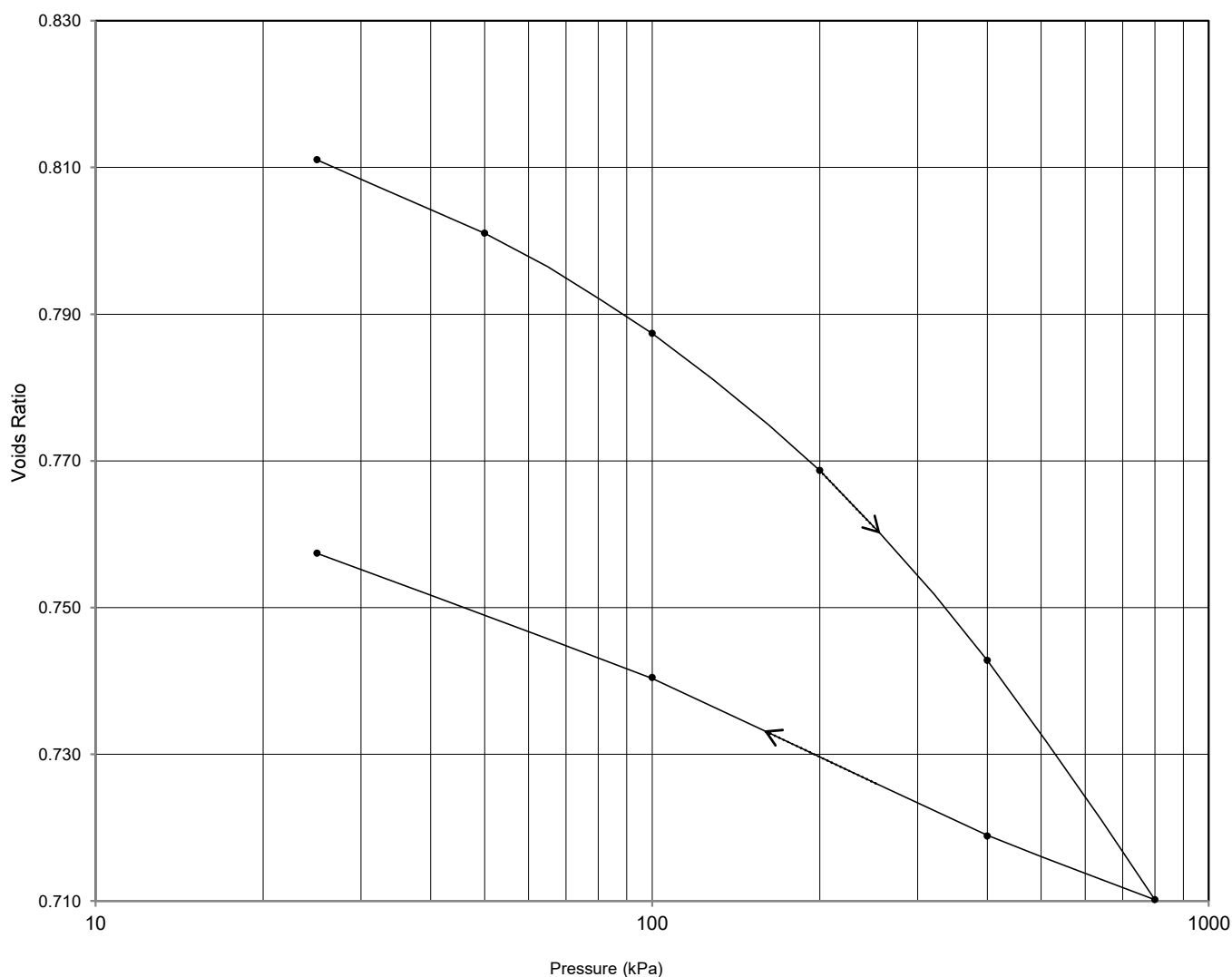
S Burke - Senior Technician  
18/06/2019

**INCREMENTAL LOADING OEDOMETER TEST**

|                             |             |
|-----------------------------|-------------|
| BH / TP                     | BH8         |
| Depth (m)                   | 8.50        |
| Sample Type                 | U           |
| Specimen Ref                | 1           |
| Depth within original (mm)  | 10          |
| Orientation within original | Vertical    |
| Specimen preparation        | Undisturbed |

## Description:

Medium dense dark greenish grey SAND with stiff light grey clay laminations



## Initial Conditions:

|                        |                    |       |                      |                      |                |                  |
|------------------------|--------------------|-------|----------------------|----------------------|----------------|------------------|
| Height                 | (mm)               | 18.97 | Water Content        | (%)                  | 31.9           | (from trimmings) |
| Diameter               | (mm)               | 74.89 | Voids Ratio          |                      | 0.826          |                  |
| Area                   | (mm <sup>2</sup> ) | 4405  | Bulk Density         | (Mg/m <sup>3</sup> ) | 1.91           |                  |
| Volume                 | (cm <sup>3</sup> ) | 83.56 | Dry Density          | (Mg/m <sup>3</sup> ) | 1.45           |                  |
| Laboratory Temperature | (°C)               | 20.0  | Particle density     | (Mg/m <sup>3</sup> ) | 2.65 (Assumed) |                  |
|                        |                    |       | Degree of Saturation | (%)                  | 100.0          |                  |

Results have been corrected for equipment deformation

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**INCREMENTAL LOADING OEDOMETER TEST**

BH / TP BH8  
 Depth (m) 8.50  
 Sample Type U  
 Specimen Ref 1  
 Depth within original (mm) 10  
 Orientation within original Vertical  
 Specimen preparation Undisturbed

## Description:

Medium dense dark greenish grey SAND with stiff light grey clay laminations

| Pressure Range<br>(kPa) | $m_v$<br>(m <sup>2</sup> /MN) | $c_v$<br>(m <sup>2</sup> /year) | Time Fitting |         | Voids Ratio |
|-------------------------|-------------------------------|---------------------------------|--------------|---------|-------------|
|                         |                               |                                 | Method       | minutes |             |
| 0 - 25                  | 0.33                          | 31                              | t90          | 1.28    | 0.811       |
| 25 - 50                 | 0.22                          | 20                              | t90          | 1.99    | 0.801       |
| 50 - 100                | 0.15                          | 17                              | t90          | 2.33    | 0.787       |
| 100 - 200               | 0.10                          | 22                              | t90          | 1.75    | 0.769       |
| 200 - 400               | 0.073                         | 18                              | t90          | 2.07    | 0.743       |
| 400 - 800               | 0.047                         | 18                              | t90          | 1.97    | 0.710       |
| 800 - 400               | 0.013                         | 19 (Sv)                         | t90          | 1.86    | 0.719       |
| 400 - 100               | 0.042                         | 15 (Sv)                         | t90          | 2.35    | 0.740       |
| 100 - 25                | 0.13                          | 12 (Sv)                         | t90          | 2.95    | 0.757       |

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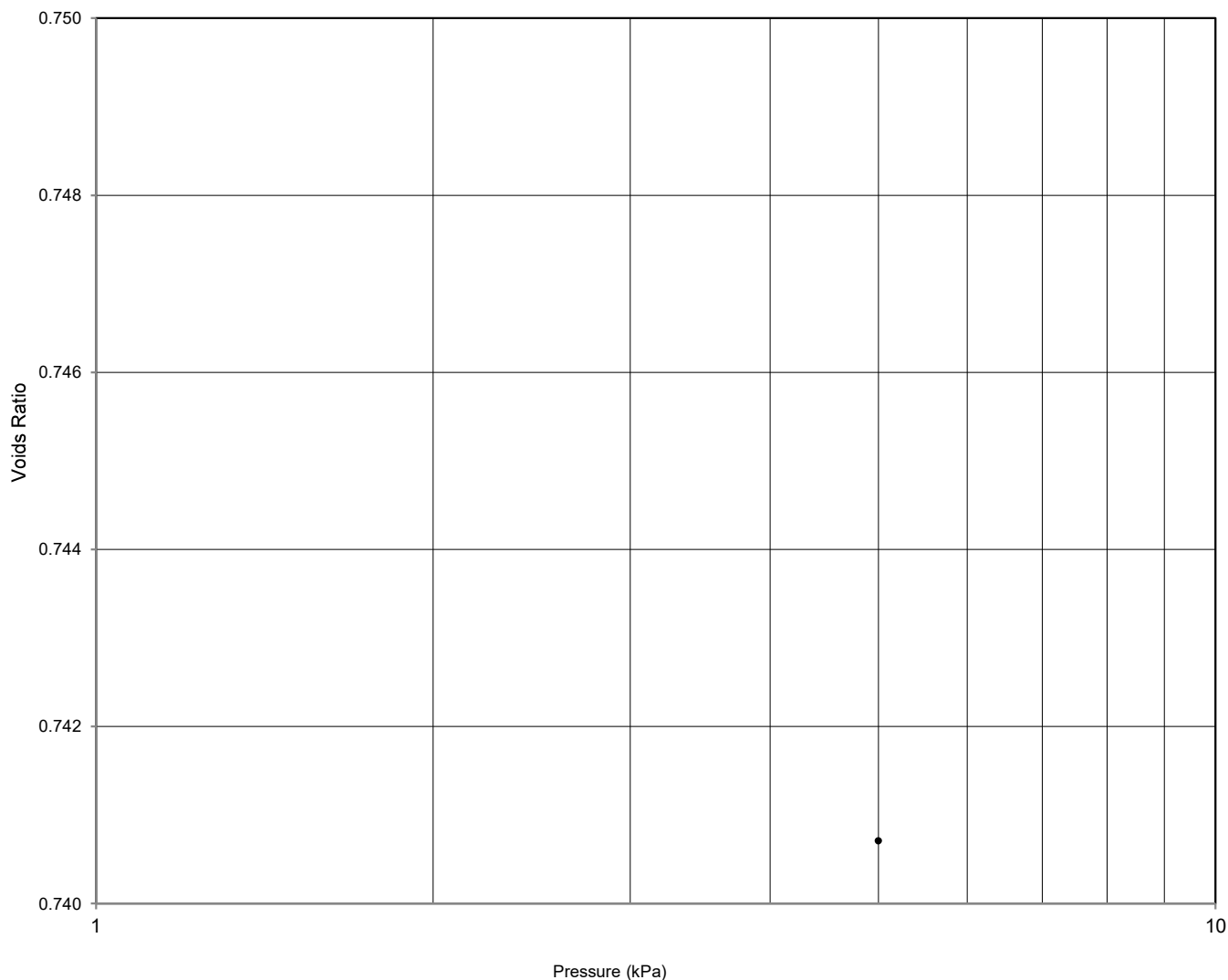
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 18/06/2019

**INCREMENTAL LOADING OEDOMETER TEST**

|                             |             |                                                                  |
|-----------------------------|-------------|------------------------------------------------------------------|
| BH / TP                     | BH8         | Description:                                                     |
| Depth (m)                   | 8.50        |                                                                  |
| Sample Type                 | U           |                                                                  |
| Specimen Ref                | 2           | Medium dense greenish grey SAND with stiff grey clay laminations |
| Depth within original (mm)  | 60          |                                                                  |
| Orientation within original | Vertical    |                                                                  |
| Specimen preparation        | Undisturbed | Note: Consolidated a lowest possible test pressure               |



## Initial Conditions:

|                        |                    |       |                      |                      |                |                  |
|------------------------|--------------------|-------|----------------------|----------------------|----------------|------------------|
| Height                 | (mm)               | 18.96 | Water Content        | (%)                  | 31.9           | (from trimmings) |
| Diameter               | (mm)               | 74.90 | Voids Ratio          |                      | 0.743          |                  |
| Area                   | (mm <sup>2</sup> ) | 4406  | Bulk Density         | (Mg/m <sup>3</sup> ) | 2.00           |                  |
| Volume                 | (cm <sup>3</sup> ) | 83.54 | Dry Density          | (Mg/m <sup>3</sup> ) | 1.52           |                  |
| Laboratory Temperature | (°C)               | 20.0  | Particle density     | (Mg/m <sup>3</sup> ) | 2.65 (Assumed) |                  |
|                        |                    |       | Degree of Saturation | (%)                  | 100.0          |                  |

Swelling Pressure (kPa) &lt;5

Results have been corrected for equipment deformation

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**INCREMENTAL LOADING OEDOMETER TEST**

|                             |             |                                                                                                                                                |
|-----------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| BH / TP                     | BH8         | Description:<br><br>Medium dense greenish grey SAND with stiff grey clay laminations<br><br>Note: Consolidated a lowest possible test pressure |
| Depth (m)                   | 8.50        |                                                                                                                                                |
| Sample Type                 | U           |                                                                                                                                                |
| Specimen Ref                | 2           |                                                                                                                                                |
| Depth within original (mm)  | 60          |                                                                                                                                                |
| Orientation within original | Vertical    |                                                                                                                                                |
| Specimen preparation        | Undisturbed |                                                                                                                                                |

| Pressure Range<br>(kPa) | $m_v$<br>(m <sup>2</sup> /MN) | $c_v$<br>(m <sup>2</sup> /year) | Time Fitting |         | Voids Ratio |
|-------------------------|-------------------------------|---------------------------------|--------------|---------|-------------|
|                         |                               |                                 | Method       | minutes |             |
| 0 - 5                   | 0.30                          | 2.8                             | t90          | 14.0    | 0.741       |

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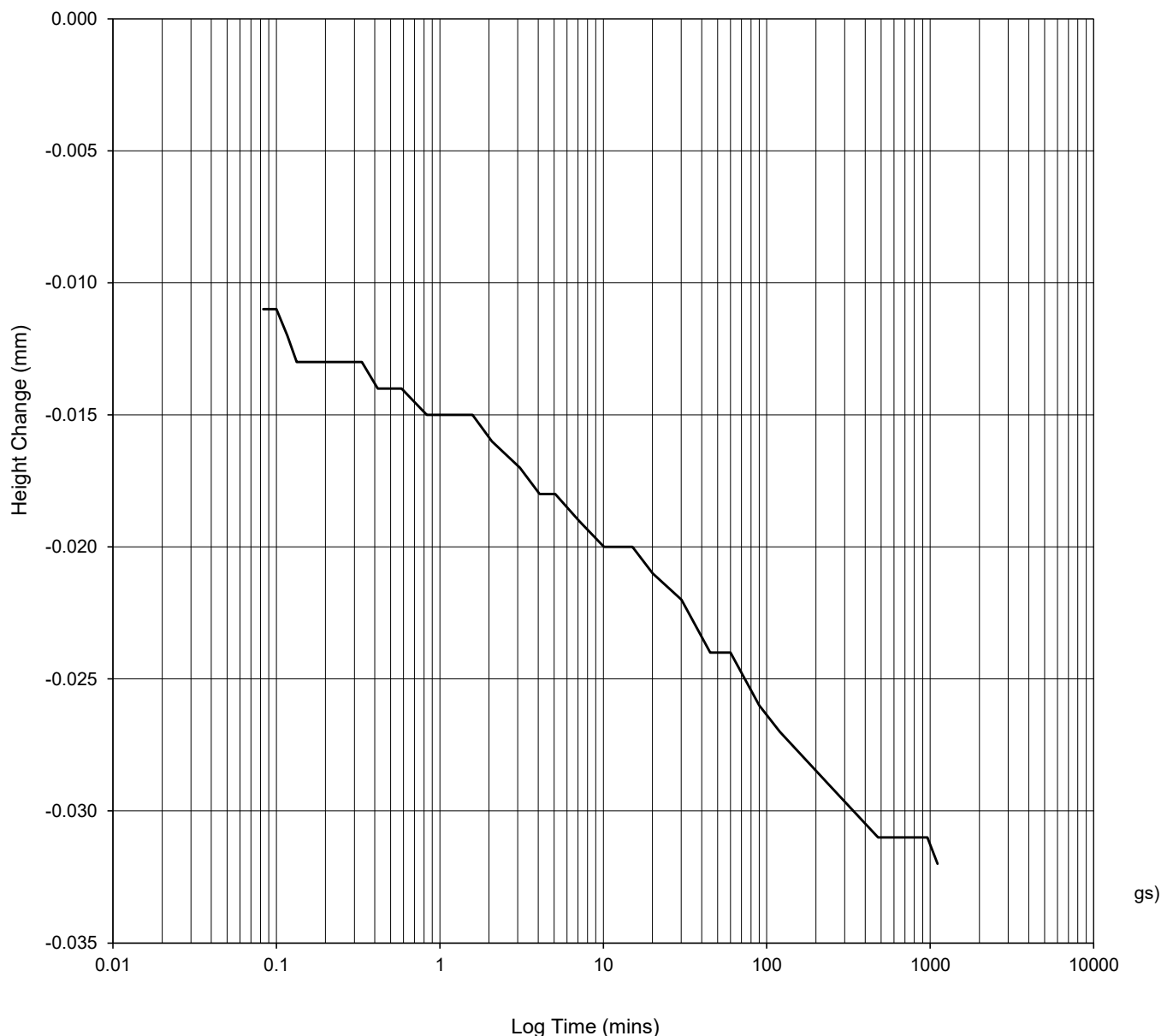
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 18/06/2019

**INCREMENTAL LOADING OEDOMETER TEST**

|                             |             |                                                                                                                                                |
|-----------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| BH / TP                     | BH8         | Description:<br><br>Medium dense greenish grey SAND with stiff grey clay laminations<br><br>Note: Consolidated a lowest possible test pressure |
| Depth (m)                   | 8.50        |                                                                                                                                                |
| Sample Type                 | U           |                                                                                                                                                |
| Specimen Ref                | 2           |                                                                                                                                                |
| Depth within original (mm)  | 60          |                                                                                                                                                |
| Orientation within original | Vertical    |                                                                                                                                                |
| Specimen preparation        | Undisturbed |                                                                                                                                                |

**Stage No.: 1****Pressure: 5 kPa****Height Change vs Log Time**

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**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION**

BH/TP No                      BH7  
 Depth (m)                    8.00  
 Sample Type                 U

## Description:

Firm friable grey clayey fine to medium SAND.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 201.5       |
| Diameter (mm)                          | 101.4       |
| Moisture content (%)                   | 27.6        |
| Bulk density (Mg/m <sup>3</sup> )      | 1.88        |
| Dry density (Mg/m <sup>3</sup> )       | 1.48        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 201.5       |
| Membrane correction (kPa)              | 1.1         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 160         |
| Strain at failure (%)                  | 19.9        |
| Maximum deviator stress (kPa)          | 197         |
| Shear Stress Cu (kPa)                  | 99          |

**Mode of failure**

|                              |          |
|------------------------------|----------|
| Orientation of the sample    | Vertical |
| Distance from top of tube mm | 55       |

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**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION**

BH/TP No                      BH7  
 Depth (m)                    11.00  
 Sample Type                 U

**Description:**

Firm fissured grey silty CLAY with pockets of fine grey sand.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 202.0       |
| Diameter (mm)                          | 103.2       |
| Moisture content (%)                   | 30.4        |
| Bulk density (Mg/m <sup>3</sup> )      | 1.89        |
| Dry density (Mg/m <sup>3</sup> )       | 1.45        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 202.0       |
| Membrane correction (kPa)              | 1.1         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 220         |
| Strain at failure (%)                  | 19.8        |
| Maximum deviator stress (kPa)          | 83          |
| Shear Stress Cu (kPa)                  | 42          |

**Mode of failure**

|                              |          |
|------------------------------|----------|
| Orientation of the sample    | Vertical |
| Distance from top of tube mm | 170      |

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**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION**

BH/TP No                      BH7  
 Depth (m)                    13.50  
 Sample Type                 U

**Description:**

Very stiff fissured dark grey silty CLAY.

Remarks : Sample had a pre existing horizontal crack.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 203.1       |
| Diameter (mm)                          | 99.1        |
| Moisture content (%)                   | 33.7        |
| Bulk density (Mg/m <sup>3</sup> )      | 1.88        |
| Dry density (Mg/m <sup>3</sup> )       | 1.40        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 203.1       |
| Membrane correction (kPa)              | 0.6         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 270         |
| Strain at failure (%)                  | 8.9         |
| Maximum deviator stress (kPa)          | 351         |
| Shear Stress Cu (kPa)                  | 176         |

**Mode of failure**

|                              |          |
|------------------------------|----------|
| Orientation of the sample    | Vertical |
| Distance from top of tube mm | 160      |

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**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION**

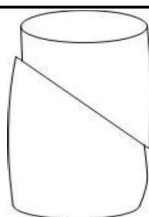
BH/TP No                      BH7  
 Depth (m)                    19.50  
 Sample Type                 U

## Description:

V Stiff fissured dark grey silty CLAY with patches of soft clay.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 202.6       |
| Diameter (mm)                          | 103.7       |
| Moisture content (%)                   | 30.1        |
| Bulk density (Mg/m <sup>3</sup> )      | 1.91        |
| Dry density (Mg/m <sup>3</sup> )       | 1.47        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 202.6       |
| Membrane correction (kPa)              | 0.7         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 310         |
| Strain at failure (%)                  | 11.8        |
| Maximum deviator stress (kPa)          | 57          |
| Shear Stress Cu (kPa)                  | 28          |

**Mode of failure**

|                              |          |
|------------------------------|----------|
| Orientation of the sample    | Vertical |
| Distance from top of tube mm | 125      |

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**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION**

BH/TP No                      BH8  
 Depth (m)                    6.50  
 Sample Type                 U

**Description:**

Very stiff friable dark grey silty CLAY with pockets of fine to medium sand.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 192.5       |
| Diameter (mm)                          | 103.4       |
| Moisture content (%)                   | 30.5        |
| Bulk density (Mg/m <sup>3</sup> )      | 1.90        |
| Dry density (Mg/m <sup>3</sup> )       | 1.46        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 192.5       |
| Membrane correction (kPa)              | 0.2         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 130         |
| Strain at failure (%)                  | 2.6         |
| Maximum deviator stress (kPa)          | 109         |
| Shear Stress Cu (kPa)                  | 54          |

**Mode of failure**

|                              |          |
|------------------------------|----------|
| Orientation of the sample    | Vertical |
| Distance from top of tube mm | 100      |

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**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION**

BH/TP No                      BH8  
 Depth (m)                    10.50  
 Sample Type                 U

**Description:**

Very stiff fissured grey silty CLAY with rare soft patches.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 192.1       |
| Diameter (mm)                          | 104.1       |
| Moisture content (%)                   | 30.8        |
| Bulk density (Mg/m <sup>3</sup> )      | 1.84        |
| Dry density (Mg/m <sup>3</sup> )       | 1.41        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 192.1       |
| Membrane correction (kPa)              | 1.1         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 210         |
| Strain at failure (%)                  | 19.3        |
| Maximum deviator stress (kPa)          | 63          |
| Shear Stress Cu (kPa)                  | 32          |

**Mode of failure**

|                              |          |
|------------------------------|----------|
| Orientation of the sample    | Vertical |
| Distance from top of tube mm | 105      |

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**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION**

BH/TP No                      BH8  
 Depth (m)                    12.50  
 Sample Type                 U

## Description:

Grey friable clayey fine to medium SAND.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 200.5       |
| Diameter (mm)                          | 102.8       |
| Moisture content (%)                   | 24.9        |
| Bulk density (Mg/m <sup>3</sup> )      | 1.96        |
| Dry density (Mg/m <sup>3</sup> )       | 1.57        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 200.5       |
| Membrane correction (kPa)              | 0.6         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 250         |
| Strain at failure (%)                  | 8.0         |
| Maximum deviator stress (kPa)          | 52          |
| Shear Stress Cu (kPa)                  | 26          |

**Mode of failure**

Orientation of the sample

Vertical

Distance from top of tube mm

75

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BH/TP No                      BH8  
 Depth (m)                    16.50  
 Sample Type                 U

**Description:**

Stiff friable bluish grey clayey fine to medium SAND. Clay is light brown.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 201.7       |
| Diameter (mm)                          | 104.3       |
| Moisture content (%)                   | 20.8        |
| Bulk density (Mg/m <sup>3</sup> )      | 2.01        |
| Dry density (Mg/m <sup>3</sup> )       | 1.66        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 201.7       |
| Membrane correction (kPa)              | 1.1         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 330         |
| Strain at failure (%)                  | 19.8        |
| Maximum deviator stress (kPa)          | 289         |
| Shear Stress Cu (kPa)                  | 144         |

**Mode of failure**

|                              |          |
|------------------------------|----------|
| Orientation of the sample    | Vertical |
| Distance from top of tube mm | 80       |

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**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION**

BH/TP No                      BH8  
 Depth (m)                    18.50  
 Sample Type                 U

## Description:

Stiff friable dark grey silty CLAY.

**Specimen Details**

| Specimen conditions                    | Undisturbed |
|----------------------------------------|-------------|
| Length (mm)                            | 202.3       |
| Diameter (mm)                          | 103.1       |
| Moisture content (%)                   | 21.2        |
| Bulk density (Mg/m <sup>3</sup> )      | 2.02        |
| Dry density (Mg/m <sup>3</sup> )       | 1.67        |
| <b>Test Details</b>                    |             |
| Latex membrane thickness (mm)          | 0.3         |
| Specimen height prior to shearing (mm) | 202.3       |
| Membrane correction (kPa)              | 1.0         |
| Mean rate of shear (%/min)             | 1.0         |
| Cell pressure (kPa)                    | 370         |
| Strain at failure (%)                  | 17.3        |
| Maximum deviator stress (kPa)          | 406         |
| Shear Stress Cu (kPa)                  | 203         |

**Mode of failure**

Orientation of the sample

Vertical

Distance from top of tube mm

60

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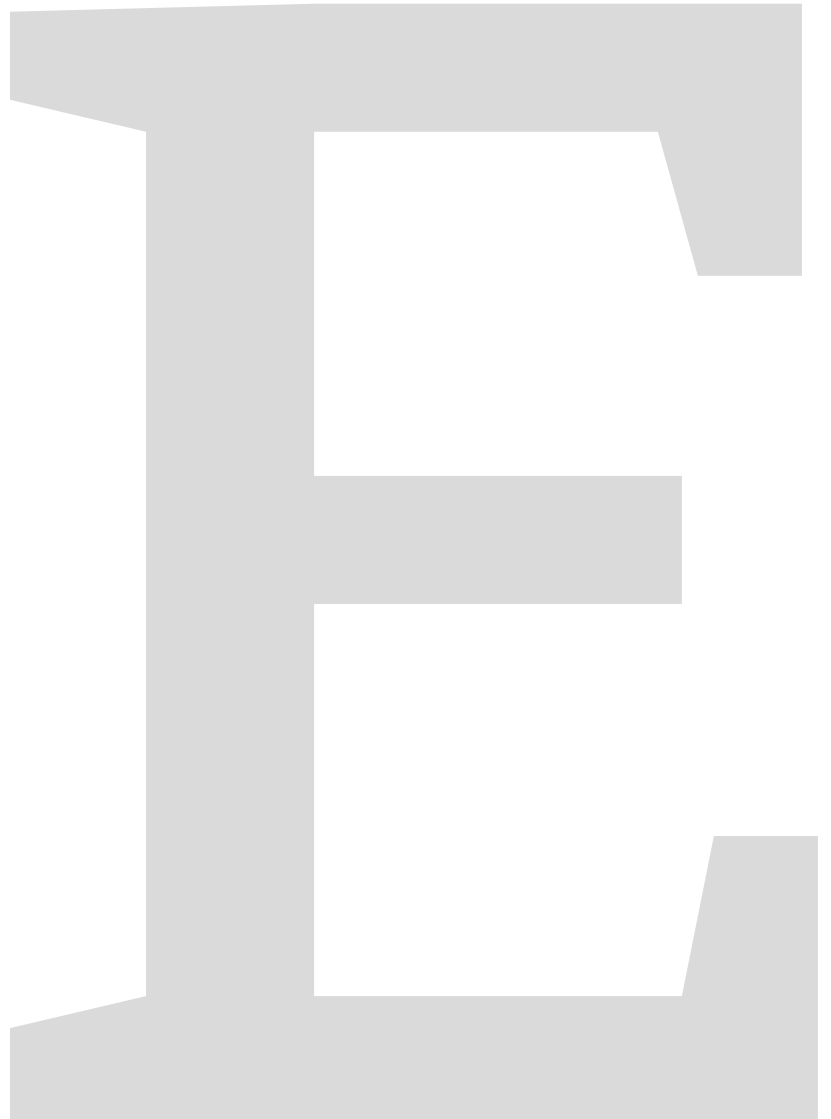


**Southern Testing**  
Environmental & Geotechnical

**ST Consult**  
Environmental & Geotechnical

## APPENDIX E

### Geo-Environmental Laboratory Test Results



**Tom Lees**

Southern Testing Laboratories Ltd  
Keeble House  
Stuart Way  
East Grinstead  
West Sussex  
RH19 4QA

**t:** 01342 333100  
**f:** 01342 410321  
**e:** contamresults@southerntesting.co.uk

i2 Analytical Ltd.  
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Croxley Green  
Business Park,  
Watford,  
Herts,  
WD18 8YS

**t:** 01923 225404  
**f:** 01923 237404  
**e:** reception@i2analytical.com

## **Analytical Report Number : 19-39117**

|                             |                                     |                               |            |
|-----------------------------|-------------------------------------|-------------------------------|------------|
| <b>Project / Site name:</b> | Southampton Airport, Southampton    | <b>Samples received on:</b>   | 30/04/2019 |
| <b>Your job number:</b>     | J14044                              | <b>Samples instructed on:</b> | 30/04/2019 |
| <b>Your order number:</b>   | J14044-1                            | <b>Analysis completed by:</b> | 09/05/2019 |
| <b>Report Issue Number:</b> | 1                                   | <b>Report issued on:</b>      | 09/05/2019 |
| <b>Samples Analysed:</b>    | 2 leachate samples - 6 soil samples |                               |            |

**Signed**

Zina Abdul Razzak  
Assistant Quality/Reporting Manager  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

|           |                           |
|-----------|---------------------------|
| soils     | - 4 weeks from reporting  |
| leachates | - 2 weeks from reporting  |
| waters    | - 2 weeks from reporting  |
| asbestos  | - 6 months from reporting |

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 19-39117-1 Southampton Airport, Southampton J14044

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 19-39117

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-1

| Lab Sample Number                       |       |                       |                         | 1210671       | 1210672       | 1210673       | 1210674       | 1210675       |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                       |                         | PT3           | TP1A          | TP2A          | TP3           | TP4           |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                       |                         | 1.50          | 0.50          | 1.00          | 0.30          | 0.10          |
| Date Sampled                            |       |                       |                         | 24/04/2019    | 16/04/2019    | 16/04/2019    | 17/04/2019    | 23/04/2019    |
| Time Taken                              |       |                       |                         | 0100          | 0000          | 2330          | 2330          | 2330          |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |               |
| Stone Content                           | %     | 0.1                   | NONE                    | < 0.1         | < 0.1         | < 0.1         | < 0.1         | < 0.1         |
| Moisture Content                        | %     | N/A                   | NONE                    | 8.0           | 15            | 15            | 17            | 16            |
| Total mass of sample received           | kg    | 0.001                 | NONE                    | 2.0           | 2.0           | 1.1           | 1.1           | 2.0           |

|                  |      |     |           |              |              |              |              |              |
|------------------|------|-----|-----------|--------------|--------------|--------------|--------------|--------------|
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected | Not-detected | Not-detected | Not-detected | Not-detected |
|------------------|------|-----|-----------|--------------|--------------|--------------|--------------|--------------|

#### General Inorganics

|                                                                         |          |         |        |        |        |        |       |       |
|-------------------------------------------------------------------------|----------|---------|--------|--------|--------|--------|-------|-------|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 8.1    | 7.3    | 7.5    | 6.6   | 5.6   |
| Free Cyanide                                                            | mg/kg    | 1       | MCERTS | < 1    | < 1    | < 1    | < 1   | < 1   |
| Water Soluble Sulphate as SO <sub>4</sub> 16hr extraction (2:1)         | mg/kg    | 2.5     | MCERTS | 43     | 28     | 24     | 24    | 32    |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.022  | 0.014  | 0.012  | 0.012 | 0.016 |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | mg/l     | 1.25    | MCERTS | 21.5   | 14.2   | 12.0   | 12.0  | 15.9  |
| Total Sulphur                                                           | %        | 0.005   | MCERTS | 0.016  | 0.015  | 0.008  | 0.021 | 0.027 |
| Fraction Organic Carbon (FOC)                                           | N/A      | 0.001   | MCERTS | 0.0032 | 0.0070 | 0.0019 | 0.012 | 0.018 |

#### Phenols by HPLC

|                                             |       |     |           |        |        |        |        |        |
|---------------------------------------------|-------|-----|-----------|--------|--------|--------|--------|--------|
| Catechol                                    | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Resorcinol                                  | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Cresols (o-, m-, p-)                        | mg/kg | 0.3 | ISO 17025 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 |
| Total Naphthols (sum of 1- and 2- Naphthol) | mg/kg | 0.2 | ISO 17025 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| 2-Isopropylphenol                           | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Phenol                                      | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Trimethylphenol (2,3,5-)                    | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Total Xylenols and Ethylphenols             | mg/kg | 0.3 | ISO 17025 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 |

#### Total Phenols

|                      |       |     |           |       |       |       |       |       |
|----------------------|-------|-----|-----------|-------|-------|-------|-------|-------|
| Total Phenols (HPLC) | mg/kg | 1.3 | ISO 17025 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 |
|----------------------|-------|-----|-----------|-------|-------|-------|-------|-------|

#### Speciated PAHs

|                        |       |      |        |        |        |        |        |        |
|------------------------|-------|------|--------|--------|--------|--------|--------|--------|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluorene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Anthracene             | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Pyrene                 | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Chrysene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |

#### Total PAH

|                             |       |     |        |        |        |        |        |        |
|-----------------------------|-------|-----|--------|--------|--------|--------|--------|--------|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | < 0.80 | < 0.80 | < 0.80 | < 0.80 | < 0.80 |
|-----------------------------|-------|-----|--------|--------|--------|--------|--------|--------|

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Analytical Report Number: 19-39117

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-1

| Lab Sample Number                       |       |                       |                         | 1210671       | 1210672       | 1210673       | 1210674       | 1210675       |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                       |                         | PT3           | TP1A          | TP2A          | TP3           | TP4           |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                       |                         | 1.50          | 0.50          | 1.00          | 0.30          | 0.10          |
| Date Sampled                            |       |                       |                         | 24/04/2019    | 16/04/2019    | 16/04/2019    | 17/04/2019    | 23/04/2019    |
| Time Taken                              |       |                       |                         | 0100          | 0000          | 2330          | 2330          | 2330          |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |               |

#### Heavy Metals / Metalloids

|                                     |       |      |           |       |        |        |        |        |
|-------------------------------------|-------|------|-----------|-------|--------|--------|--------|--------|
| Antimony (aqua regia extractable)   | mg/kg | 1    | ISO 17025 | < 1.0 | < 1.0  | < 1.0  | 1.3    | 1.3    |
| Arsenic (aqua regia extractable)    | mg/kg | 1    | MCERTS    | 7.0   | 9.3    | 6.2    | 11     | 7.4    |
| Barium (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 41    | 64     | 59     | 42     | 50     |
| Beryllium (aqua regia extractable)  | mg/kg | 0.06 | MCERTS    | 0.47  | 0.67   | 0.79   | 0.53   | 0.42   |
| Boron (water soluble)               | mg/kg | 0.2  | MCERTS    | 0.6   | 0.7    | 0.6    | 0.8    | 0.7    |
| Cadmium (aqua regia extractable)    | mg/kg | 0.2  | MCERTS    | 0.3   | < 0.2  | < 0.2  | 0.2    | 0.3    |
| Chromium (hexavalent)               | mg/kg | 4    | MCERTS    | < 4.0 | < 4.0  | < 4.0  | < 4.0  | < 4.0  |
| Chromium (III)                      | mg/kg | 1    | NONE      | 23    | 27     | 27     | 21     | 19     |
| Chromium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | 24    | 28     | 28     | 24     | 19     |
| Copper (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 13    | 13     | 11     | 13     | 16     |
| Iron (aqua regia extractable)       | mg/kg | 40   | MCERTS    | 17000 | 24000  | 21000  | 19000  | 13000  |
| Lead (aqua regia extractable)       | mg/kg | 1    | MCERTS    | 12    | 13     | 11     | 19     | 32     |
| Manganese (aqua regia extractable)  | mg/kg | 1    | MCERTS    | 260   | 150    | 64     | 140    | 120    |
| Mercury (aqua regia extractable)    | mg/kg | 0.3  | MCERTS    | < 0.3 | < 0.3  | < 0.3  | < 0.3  | < 0.3  |
| Molybdenum (aqua regia extractable) | mg/kg | 0.25 | MCERTS    | 0.38  | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Nickel (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 21    | 17     | 17     | 15     | 13     |
| Selenium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | < 1.0 | < 1.0  | < 1.0  | < 1.0  | < 1.0  |
| Vanadium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | 29    | 38     | 33     | 29     | 29     |
| Zinc (aqua regia extractable)       | mg/kg | 1    | MCERTS    | 42    | 48     | 33     | 35     | 43     |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |       |       |       |       |       |
|------------------------------------|-------|---|--------|-------|-------|-------|-------|-------|
| Benzene                            | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene                            | ug/kg | 1 | MCERTS | 5.1   | 3.1   | < 1.0 | < 1.0 | 11    |
| Ethylbenzene                       | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| p & m-xylene                       | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 9.7   |
| o-xylene                           | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

#### Petroleum Hydrocarbons

|                                  |       |       |        |         |         |         |         |         |
|----------------------------------|-------|-------|--------|---------|---------|---------|---------|---------|
| TPH-CWG - Aliphatic >EC5 - EC6   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aliphatic >EC6 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aliphatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   | < 1.0   | < 1.0   | < 1.0   | < 1.0   |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   | < 2.0   | < 2.0   | < 2.0   | < 2.0   |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8     | MCERTS | < 8.0   | < 8.0   | < 8.0   | < 8.0   | < 8.0   |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8     | MCERTS | < 8.0   | < 8.0   | < 8.0   | < 8.0   | < 8.0   |
| TPH-CWG - Aliphatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    | < 10    |

|                                 |       |       |        |         |         |         |         |         |
|---------------------------------|-------|-------|--------|---------|---------|---------|---------|---------|
| TPH-CWG - Aromatic >EC5 - EC7   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aromatic >EC7 - EC8   | mg/kg | 0.001 | MCERTS | 0.005   | 0.003   | < 0.001 | < 0.001 | 0.011   |
| TPH-CWG - Aromatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | 0.010   |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   | < 1.0   | < 1.0   | < 1.0   | < 1.0   |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   | < 2.0   | < 2.0   | < 2.0   | < 2.0   |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    | < 10    |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    | < 10    |
| TPH-CWG - Aromatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    | < 10    |

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Analytical Report Number: 19-39117

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-1

| Lab Sample Number                       |       |                       |                         | 1210671       | 1210672       | 1210673       | 1210674       | 1210675       |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                       |                         | PT3           | TP1A          | TP2A          | TP3           | TP4           |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                       |                         | 1.50          | 0.50          | 1.00          | 0.30          | 0.10          |
| Date Sampled                            |       |                       |                         | 24/04/2019    | 16/04/2019    | 16/04/2019    | 17/04/2019    | 23/04/2019    |
| Time Taken                              |       |                       |                         | 0100          | 0000          | 2330          | 2330          | 2330          |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |               |
| <b>VOCs</b>                             |       |                       |                         |               |               |               |               |               |
| Chloromethane                           | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Chloroethane                            | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Bromomethane                            | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Vinyl Chloride                          | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trichlorofluoromethane                  | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1-Dichloroethene                      | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,2-Trichloro 1,2,2-Trifluoroethane   | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Cis-1,2-dichloroethene                  | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| MTBE (Methyl Tertiary Butyl Ether)      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 2,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trichloromethane                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,1-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1-Dichloropropene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trans-1,2-dichloroethene                | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Benzene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Tetrachloromethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trichloroethene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Dibromomethane                          | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Bromodichloromethane                    | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Cis-1,3-dichloropropene                 | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trans-1,3-dichloropropene               | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Toluene                                 | µg/kg | 1                     | MCERTS                  | 5.1           | 3.1           | < 1.0         | < 1.0         | 11            |
| 1,1,2-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,3-Dichloropropane                     | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Dibromochloromethane                    | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Tetrachloroethene                       | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dibromoethane                       | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Chlorobenzene                           | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,1,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Ethylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| p & m-Xylene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | 9.7           |
| Styrene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Tribromomethane                         | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| o-Xylene                                | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,2,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Isopropylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Bromobenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| n-Propylbenzene                         | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 2-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 4-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,3,5-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| tert-Butylbenzene                       | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2,4-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| sec-Butylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,3-Dichlorobenzene                     | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| p-Isopropyltoluene                      | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,4-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Butylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dibromo-3-chloropropane             | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2,4-Trichlorobenzene                  | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Hexachlorobutadiene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2,3-Trichlorobenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |

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Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-1

|                                         |       |                       |                         |               |               |               |               |               |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Lab Sample Number                       |       |                       |                         | 1210671       | 1210672       | 1210673       | 1210674       | 1210675       |
| Sample Reference                        |       |                       |                         | PT3           | TP1A          | TP2A          | TP3           | TP4           |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                       |                         | 1.50          | 0.50          | 1.00          | 0.30          | 0.10          |
| Date Sampled                            |       |                       |                         | 24/04/2019    | 16/04/2019    | 16/04/2019    | 17/04/2019    | 23/04/2019    |
| Time Taken                              |       |                       |                         | 0100          | 0000          | 2330          | 2330          | 2330          |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |               |
|                                         |       |                       |                         |               |               |               |               |               |

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| Lab Sample Number                       |       |                       |                         | 1210676       |  |  |  |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Sample Reference                        |       |                       |                         | TP6           |  |  |  |  |
| Sample Number                           |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                               |       |                       |                         | 0.10          |  |  |  |  |
| Date Sampled                            |       |                       |                         | 14/04/2019    |  |  |  |  |
| Time Taken                              |       |                       |                         | 2330          |  |  |  |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |
| Stone Content                           | %     | 0.1                   | NONE                    | < 0.1         |  |  |  |  |
| Moisture Content                        | %     | N/A                   | NONE                    | 19            |  |  |  |  |
| Total mass of sample received           | kg    | 0.001                 | NONE                    | 2.0           |  |  |  |  |

|                  |      |     |           |              |  |  |  |  |
|------------------|------|-----|-----------|--------------|--|--|--|--|
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected |  |  |  |  |
|------------------|------|-----|-----------|--------------|--|--|--|--|

#### General Inorganics

|                                                                         |          |         |        |       |  |  |  |  |
|-------------------------------------------------------------------------|----------|---------|--------|-------|--|--|--|--|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 5.9   |  |  |  |  |
| Free Cyanide                                                            | mg/kg    | 1       | MCERTS | < 1   |  |  |  |  |
| Water Soluble Sulphate as SO <sub>4</sub> 16hr extraction (2:1)         | mg/kg    | 2.5     | MCERTS | 83    |  |  |  |  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.042 |  |  |  |  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | mg/l     | 1.25    | MCERTS | 41.6  |  |  |  |  |
| Total Sulphur                                                           | %        | 0.005   | MCERTS | 0.034 |  |  |  |  |
| Fraction Organic Carbon (FOC)                                           | N/A      | 0.001   | MCERTS | 0.021 |  |  |  |  |

#### Phenols by HPLC

|                                             |       |     |           |        |  |  |  |  |
|---------------------------------------------|-------|-----|-----------|--------|--|--|--|--|
| Catechol                                    | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Resorcinol                                  | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Cresols (o-, m-, p-)                        | mg/kg | 0.3 | ISO 17025 | < 0.30 |  |  |  |  |
| Total Naphthols (sum of 1- and 2- Naphthol) | mg/kg | 0.2 | ISO 17025 | < 0.20 |  |  |  |  |
| 2-Isopropylphenol                           | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Phenol                                      | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Trimethylphenol (2,3,5-)                    | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Total Xylenols and Ethylphenols             | mg/kg | 0.3 | ISO 17025 | < 0.30 |  |  |  |  |

#### Total Phenols

|                      |       |     |           |       |  |  |  |  |
|----------------------|-------|-----|-----------|-------|--|--|--|--|
| Total Phenols (HPLC) | mg/kg | 1.3 | ISO 17025 | < 1.3 |  |  |  |  |
|----------------------|-------|-----|-----------|-------|--|--|--|--|

#### Speciated PAHs

|                        |       |      |        |        |  |  |  |  |
|------------------------|-------|------|--------|--------|--|--|--|--|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Fluorene               | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | 0.21   |  |  |  |  |
| Anthracene             | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | 0.38   |  |  |  |  |
| Pyrene                 | mg/kg | 0.05 | MCERTS | 0.32   |  |  |  |  |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Chrysene               | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |

#### Total PAH

|                             |       |     |        |      |  |  |  |  |
|-----------------------------|-------|-----|--------|------|--|--|--|--|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | 0.91 |  |  |  |  |
|-----------------------------|-------|-----|--------|------|--|--|--|--|

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| Lab Sample Number                       |       |                       |                         | 1210676       |  |  |  |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Sample Reference                        |       |                       |                         | TP6           |  |  |  |  |
| Sample Number                           |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                               |       |                       |                         | 0.10          |  |  |  |  |
| Date Sampled                            |       |                       |                         | 14/04/2019    |  |  |  |  |
| Time Taken                              |       |                       |                         | 2330          |  |  |  |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |
| <b>Heavy Metals / Metalloids</b>        |       |                       |                         |               |  |  |  |  |
| Antimony (aqua regia extractable)       | mg/kg | 1                     | ISO 17025               | 1.4           |  |  |  |  |
| Arsenic (aqua regia extractable)        | mg/kg | 1                     | MCERTS                  | 7.5           |  |  |  |  |
| Barium (aqua regia extractable)         | mg/kg | 1                     | MCERTS                  | 52            |  |  |  |  |
| Beryllium (aqua regia extractable)      | mg/kg | 0.06                  | MCERTS                  | 0.50          |  |  |  |  |
| Boron (water soluble)                   | mg/kg | 0.2                   | MCERTS                  | 0.5           |  |  |  |  |
| Cadmium (aqua regia extractable)        | mg/kg | 0.2                   | MCERTS                  | 0.3           |  |  |  |  |
| Chromium (hexavalent)                   | mg/kg | 4                     | MCERTS                  | < 4.0         |  |  |  |  |
| Chromium (III)                          | mg/kg | 1                     | NONE                    | 18            |  |  |  |  |
| Chromium (aqua regia extractable)       | mg/kg | 1                     | MCERTS                  | 18            |  |  |  |  |
| Copper (aqua regia extractable)         | mg/kg | 1                     | MCERTS                  | 25            |  |  |  |  |
| Iron (aqua regia extractable)           | mg/kg | 40                    | MCERTS                  | 15000         |  |  |  |  |
| Lead (aqua regia extractable)           | mg/kg | 1                     | MCERTS                  | 57            |  |  |  |  |
| Manganese (aqua regia extractable)      | mg/kg | 1                     | MCERTS                  | 130           |  |  |  |  |
| Mercury (aqua regia extractable)        | mg/kg | 0.3                   | MCERTS                  | < 0.3         |  |  |  |  |
| Molybdenum (aqua regia extractable)     | mg/kg | 0.25                  | MCERTS                  | < 0.25        |  |  |  |  |
| Nickel (aqua regia extractable)         | mg/kg | 1                     | MCERTS                  | 13            |  |  |  |  |
| Selenium (aqua regia extractable)       | mg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Vanadium (aqua regia extractable)       | mg/kg | 1                     | MCERTS                  | 28            |  |  |  |  |
| Zinc (aqua regia extractable)           | mg/kg | 1                     | MCERTS                  | 75            |  |  |  |  |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |       |  |  |  |  |
|------------------------------------|-------|---|--------|-------|--|--|--|--|
| Benzene                            | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| Toluene                            | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| Ethylbenzene                       | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| p & m-xylene                       | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| o-xylene                           | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| MTBE (Methyl Tertiary Butyl Ether) | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |

#### Petroleum Hydrocarbons

|                                  |       |       |        |         |  |  |  |  |
|----------------------------------|-------|-------|--------|---------|--|--|--|--|
| TPH-CWG - Aliphatic >EC5 - EC6   | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aliphatic >EC6 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aliphatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   |  |  |  |  |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   |  |  |  |  |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8     | MCERTS | < 8.0   |  |  |  |  |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8     | MCERTS | < 8.0   |  |  |  |  |
| TPH-CWG - Aliphatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    |  |  |  |  |

|                                 |       |       |        |         |  |  |  |  |
|---------------------------------|-------|-------|--------|---------|--|--|--|--|
| TPH-CWG - Aromatic >EC5 - EC7   | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aromatic >EC7 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aromatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   |  |  |  |  |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   |  |  |  |  |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10    | MCERTS | < 10    |  |  |  |  |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10    | MCERTS | < 10    |  |  |  |  |
| TPH-CWG - Aromatic (EC5 - EC35) | mg/kg | 10    | MCERTS | 11      |  |  |  |  |

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| Lab Sample Number                       |       |                       |                         | 1210676       |  |  |  |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Sample Reference                        |       |                       |                         | TP6           |  |  |  |  |
| Sample Number                           |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                               |       |                       |                         | 0.10          |  |  |  |  |
| Date Sampled                            |       |                       |                         | 14/04/2019    |  |  |  |  |
| Time Taken                              |       |                       |                         | 2330          |  |  |  |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |
| <b>VOCs</b>                             |       |                       |                         |               |  |  |  |  |
| Chloromethane                           | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Chloroethane                            | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| Bromomethane                            | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Vinyl Chloride                          | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| Trichlorofluoromethane                  | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| 1,1-Dichloroethene                      | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| 1,1,2-Trichloro 1,2,2-Trifluoroethane   | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Cis-1,2-dichloroethene                  | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| MTBE (Methyl Tertiary Butyl Ether)      | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 2,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Trichloromethane                        | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1,1-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1-Dichloropropene                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Trans-1,2-dichloroethene                | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| Benzene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Tetrachloromethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Trichloroethene                         | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Dibromomethane                          | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Bromodichloromethane                    | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Cis-1,3-dichloropropene                 | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Trans-1,3-dichloropropene               | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Toluene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1,2-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,3-Dichloropropane                     | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Dibromochloromethane                    | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Tetrachloroethene                       | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| 1,2-Dibromoethane                       | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Chlorobenzene                           | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1,1,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Ethylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| p & m-Xylene                            | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Styrene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Tribromomethane                         | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| o-Xylene                                | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1,2,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Isopropylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Bromobenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| n-Propylbenzene                         | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| 2-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 4-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,3,5-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| tert-Butylbenzene                       | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2,4-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| sec-Butylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,3-Dichlorobenzene                     | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| p-Isopropyltoluene                      | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| 1,2-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,4-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Butylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2-Dibromo-3-chloropropane             | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| 1,2,4-Trichlorobenzene                  | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Hexachlorobutadiene                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2,3-Trichlorobenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |

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Your Order No: J14044-1

|                                         |       |                       |                         |               |  |  |  |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Lab Sample Number                       |       |                       |                         | 1210676       |  |  |  |  |
| Sample Reference                        |       |                       |                         | TP6           |  |  |  |  |
| Sample Number                           |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                               |       |                       |                         | 0.10          |  |  |  |  |
| Date Sampled                            |       |                       |                         | 14/04/2019    |  |  |  |  |
| Time Taken                              |       |                       |                         | 2330          |  |  |  |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |
|                                         |       |                       |                         |               |  |  |  |  |

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Analytical Report Number: 19-39117

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-1

|                                             |  |  |  |               |                       |                         |  |  |
|---------------------------------------------|--|--|--|---------------|-----------------------|-------------------------|--|--|
| Lab Sample Number                           |  |  |  | 1210677       | 1210678               |                         |  |  |
| Sample Reference                            |  |  |  | TP1A          | TP4                   |                         |  |  |
| Sample Number                               |  |  |  | None Supplied | None Supplied         |                         |  |  |
| Depth (m)                                   |  |  |  | 0.50          | 0.30                  |                         |  |  |
| Date Sampled                                |  |  |  | 16/04/2019    | 23/04/2019            |                         |  |  |
| Time Taken                                  |  |  |  | 0000          | 2330                  |                         |  |  |
| Analytical Parameter<br>(Leachate Analysis) |  |  |  | Units         | Limit of<br>detection | Accreditation<br>Status |  |  |

#### General Inorganics

|                             |          |      |           |       |       |  |  |  |
|-----------------------------|----------|------|-----------|-------|-------|--|--|--|
| pH                          | pH Units | N/A  | ISO 17025 | 7.3   | 7.1   |  |  |  |
| Total Cyanide               | µg/l     | 10   | ISO 17025 | < 10  | < 10  |  |  |  |
| Complex Cyanide             | µg/l     | 10   | ISO 17025 | < 10  | < 10  |  |  |  |
| Free Cyanide                | µg/l     | 10   | ISO 17025 | < 10  | < 10  |  |  |  |
| Sulphate as SO <sub>4</sub> | mg/l     | 0.1  | ISO 17025 | 0.9   | 0.9   |  |  |  |
| Sulphide                    | µg/l     | 5    | NONE      | < 5.0 | < 5.0 |  |  |  |
| Chloride                    | mg/l     | 0.15 | ISO 17025 | 0.47  | 0.57  |  |  |  |
| Fluoride                    | µg/l     | 50   | ISO 17025 | 570   | 570   |  |  |  |
| Ammoniacal Nitrogen as N    | µg/l     | 15   | NONE      | < 15  | 30    |  |  |  |

#### Phenols by HPLC

|                              |      |        |      |          |          |  |  |  |
|------------------------------|------|--------|------|----------|----------|--|--|--|
| Catechol                     | µg/l | 0.5    | NONE | < 0.5    | < 0.5    |  |  |  |
| Resorcinol                   | µg/l | 0.5    | NONE | < 0.5    | < 0.5    |  |  |  |
| Ethylphenol & Dimethylphenol | µg/l | 0.5    | NONE | < 0.5    | < 0.5    |  |  |  |
| Ethylphenol & Dimethylphenol | mg/l | 0.0005 | NONE | < 0.0005 | < 0.0005 |  |  |  |
| Cresols                      | µg/l | 0.5    | NONE | < 0.5    | < 0.5    |  |  |  |
| Naphthols                    | µg/l | 0.5    | NONE | < 0.5    | < 0.5    |  |  |  |
| Isopropylphenol              | µg/l | 0.5    | NONE | < 0.5    | < 0.5    |  |  |  |
| Phenol                       | µg/l | 0.5    | NONE | < 0.5    | < 0.5    |  |  |  |
| Trimethylphenol              | µg/l | 0.5    | NONE | < 0.5    | < 0.5    |  |  |  |

#### Total Phenols

|                      |      |     |      |       |       |  |  |  |
|----------------------|------|-----|------|-------|-------|--|--|--|
| Total Phenols (HPLC) | µg/l | 3.5 | NONE | < 3.5 | < 3.5 |  |  |  |
|----------------------|------|-----|------|-------|-------|--|--|--|

#### Heavy Metals / Metalloids

|                        |      |       |           |        |        |  |  |  |
|------------------------|------|-------|-----------|--------|--------|--|--|--|
| Antimony (dissolved)   | µg/l | 1.7   | ISO 17025 | < 1.7  | < 1.7  |  |  |  |
| Arsenic (dissolved)    | µg/l | 1.1   | ISO 17025 | 3.6    | < 1.1  |  |  |  |
| Barium (dissolved)     | µg/l | 0.05  | ISO 17025 | 2.3    | 0.26   |  |  |  |
| Beryllium (dissolved)  | µg/l | 0.2   | ISO 17025 | < 0.2  | < 0.2  |  |  |  |
| Boron (dissolved)      | µg/l | 10    | ISO 17025 | < 10   | < 10   |  |  |  |
| Cadmium (dissolved)    | µg/l | 0.08  | ISO 17025 | < 0.08 | < 0.08 |  |  |  |
| Chromium (hexavalent)  | µg/l | 5     | ISO 17025 | < 5.0  | < 5.0  |  |  |  |
| Chromium (III)         | µg/l | 1     | NONE      | < 1.0  | < 1.0  |  |  |  |
| Chromium (dissolved)   | µg/l | 0.4   | ISO 17025 | 0.4    | 0.5    |  |  |  |
| Copper (dissolved)     | µg/l | 0.7   | ISO 17025 | 3.0    | 2.6    |  |  |  |
| Iron (dissolved)       | mg/l | 0.004 | ISO 17025 | 0.28   | 0.023  |  |  |  |
| Lead (dissolved)       | µg/l | 1     | ISO 17025 | 1.1    | < 1.0  |  |  |  |
| Manganese (dissolved)  | µg/l | 0.06  | ISO 17025 | 1.4    | 4.1    |  |  |  |
| Mercury (dissolved)    | µg/l | 0.5   | ISO 17025 | < 0.5  | < 0.5  |  |  |  |
| Molybdenum (dissolved) | µg/l | 0.4   | ISO 17025 | < 0.4  | < 0.4  |  |  |  |
| Nickel (dissolved)     | µg/l | 0.3   | ISO 17025 | 0.4    | 1.3    |  |  |  |
| Selenium (dissolved)   | µg/l | 4     | ISO 17025 | < 4.0  | < 4.0  |  |  |  |
| Vanadium (dissolved)   | µg/l | 1.7   | ISO 17025 | < 1.7  | < 1.7  |  |  |  |
| Zinc (dissolved)       | µg/l | 0.4   | ISO 17025 | 4.2    | 2.1    |  |  |  |
| Calcium (dissolved)    | mg/l | 0.012 | ISO 17025 | 2.7    | 1.2    |  |  |  |
| Magnesium (dissolved)  | mg/l | 0.005 | ISO 17025 | 0.35   | 0.21   |  |  |  |

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**Analytical Report Number : 19-39117**

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\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types, Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description *                            |
|-------------------|------------------|---------------|-----------|-------------------------------------------------|
| 1210671           | PT3              | None Supplied | 1.50      | Brown clay and sand with gravel.                |
| 1210672           | TP1A             | None Supplied | 0.50      | Brown loam and clay with gravel and vegetation. |
| 1210673           | TP2A             | None Supplied | 1.00      | Brown loam and clay with gravel and vegetation. |
| 1210674           | TP3              | None Supplied | 0.30      | Brown loam and clay with gravel and vegetation. |
| 1210675           | TP4              | None Supplied | 0.10      | Brown loam and clay with gravel and vegetation. |
| 1210676           | TP6              | None Supplied | 0.10      | Brown loam and clay with gravel and vegetation. |

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**Analytical Report Number : 19-39117**

**Project / Site name: Southampton Airport, Southampton**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                  | Analytical Method Description                                                                                                                         | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Ammoniacal Nitrogen as N in leachate  | Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.                        | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L082-PL       | W                  | NONE                 |
| Asbestos identification in soil       | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.                                 | In house method based on HSG 248                                                                                | A001-PL       | D                  | ISO 17025            |
| Boron in leachate                     | Determination of boron in leachate. Sample acidified and followed by ICP-OES.                                                                         | In-house method based on MEWAM                                                                                  | L039-PL       | W                  | ISO 17025            |
| Boron, water soluble, in soil         | Determination of water soluble boron in soil by hot water extract followed by ICP-OES.                                                                | In-house method based on Second Site Properties version 3                                                       | L038-PL       | D                  | MCERTS               |
| BTEX and MTBE in soil (Monoaromatics) | Determination of BTEX in soil by headspace GC-MS.                                                                                                     | In-house method based on USEPA8260                                                                              | L073B-PL      | W                  | MCERTS               |
| Cations in soil by ICP-OES            | Determination of cations in soil by aqua-regia digestion followed by ICP-OES.                                                                         | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L038-PL       | D                  | MCERTS               |
| Chloride in leachate                  | Determination of Chloride colorimetrically by discrete analyser.                                                                                      | In house based on MEWAM Method ISBN 0117516260.                                                                 | L082-PL       | W                  | ISO 17025            |
| Complex cyanide in leachate           | Determination of complex cyanide by distillation followed by colorimetry.                                                                             | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L040-PL       | W                  | ISO 17025            |
| Cr (III) in soil                      | In-house method by calculation from total Cr and Cr VI.                                                                                               | In-house method by calculation                                                                                  | L080-PL       | W                  | NONE                 |
| Fluoride in leachate                  | Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.                                         | In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"             | L033B-PL      | W                  | ISO 17025            |
| Fraction of Organic Carbon in soil    | Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.             | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                | L009-PL       | D                  | MCERTS               |
| Free cyanide in leachate              | Determination of free cyanide by distillation followed by colorimetry.                                                                                | In-house method                                                                                                 | L080-PL       | W                  | ISO 17025            |
| Free cyanide in soil                  | Determination of free cyanide by distillation followed by colorimetry.                                                                                | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | MCERTS               |
| Hexavalent chromium in leachate       | Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.                         | In-house method                                                                                                 | L080-PL       | W                  | ISO 17025            |
| Hexavalent chromium in soil           | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry. | In-house method                                                                                                 | L080-PL       | W                  | MCERTS               |
| Metals by ICP-OES in leachate         | Determination of metals in leachate by acidification followed by ICP-OES.                                                                             | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L039-PL       | W                  | ISO 17025            |
| Metals in soil by ICP-OES             | Determination of metals in soil by aqua-regia digestion followed by ICP-OES.                                                                          | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L038-PL       | D                  | MCERTS               |

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**Analytical Report Number : 19-39117**

**Project / Site name: Southampton Airport, Southampton**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                               | Analytical Method Description                                                                                                                             | Analytical Method Reference                                                                                                       | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Moisture Content                                   | Moisture content, determined gravimetrically.                                                                                                             | In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests                                                  | L019-UK/PL    | W                  | NONE                 |
| NRA Leachate Prep                                  | 10:1 extract with de-ionised water shaken for 24 hours then filtered.                                                                                     | In-house method based on National Rivers Authority                                                                                | L020-PL       | W                  | NONE                 |
| pH at 20oC in leachate                             | Determination of pH in leachate by electrometric measurement.                                                                                             | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                                  | L005-PL       | W                  | ISO 17025            |
| pH in soil (automated)                             | Determination of pH in soil by addition of water followed by automated electrometric measurement.                                                         | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                                  | L099-PL       | D                  | MCERTS               |
| Phenols, speciated, in leachate, by HPLC           | Determination of speciated phenols by HPLC.                                                                                                               | In house method based on Blue Book Method.                                                                                        | L030-PL       | W                  | NONE                 |
| Speciated EPA-16 PAHs in soil                      | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.    | In-house method based on USEPA 8270                                                                                               | L064-PL       | D                  | MCERTS               |
| Stones content of soil                             | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.                               | In-house method based on British Standard Methods and MCERTS requirements.                                                        | L019-UK/PL    | D                  | NONE                 |
| Sulphate in leachates                              | Determination of sulphate in leachate by acidification followed by ICP-OES.                                                                               | In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"                                              | L039-PL       | W                  | ISO 17025            |
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES. | L038-PL       | D                  | MCERTS               |
| Sulphide in leachate                               | Determination of sulphide in leachate by ion selective electrode.                                                                                         | In-house method                                                                                                                   | L010-PL       | W                  | NONE                 |
| Total cyanide in leachate                          | Determination of total cyanide by distillation followed by colorimetry.                                                                                   | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)                   | L080-PL       | W                  | ISO 17025            |
| Total Sulphur in soil as %                         | Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.                                      | In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil                      | L038          | D                  | MCERTS               |
| TPHCWG (Soil)                                      | Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.                                                                                 | In-house method with silica gel split/clean up.                                                                                   | L088/76-PL    | W                  | MCERTS               |
| Volatile organic compounds in soil                 | Determination of volatile organic compounds in soil by headspace GC-MS.                                                                                   | In-house method based on USEPA8260                                                                                                | L073B-PL      | W                  | MCERTS               |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

| b       | Sample Number | Sample Deviation Code | test_name                             | test_ref | Test Deviation code |
|---------|---------------|-----------------------|---------------------------------------|----------|---------------------|
| 9-39117 | 1210672       | c                     | Free cyanide in soil                  | L080-PL  | c                   |
| 9-39117 | 1210673       | c                     | Free cyanide in soil                  | L080-PL  | c                   |
| 9-39117 | 1210674       | c                     | Free cyanide in soil                  | L080-PL  | c                   |
| 9-39117 | 1210676       | c                     | Free cyanide in soil                  | L080-PL  | c                   |
| 9-39117 | 1210676       | c                     | BTEX and MTBE in soil (Monoaromatics) | L073B-PL | c                   |
| 9-39117 | 1210676       | c                     | Volatile organic compounds in soil    | L073B-PL | c                   |

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## **Analytical Report Number : 19-39600**

|                             |                                     |                               |            |
|-----------------------------|-------------------------------------|-------------------------------|------------|
| <b>Project / Site name:</b> | Southampton Airport, Southampton    | <b>Samples received on:</b>   | 01/05/2019 |
| <b>Your job number:</b>     | J14044                              | <b>Samples instructed on:</b> | 01/05/2019 |
| <b>Your order number:</b>   | J14044-2                            | <b>Analysis completed by:</b> | 13/05/2019 |
| <b>Report Issue Number:</b> | 1                                   | <b>Report issued on:</b>      | 13/05/2019 |
| <b>Samples Analysed:</b>    | 3 leachate samples - 6 soil samples |                               |            |

**Signed:**

Rexona Rahman  
Head of Customer Services  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

|           |                           |
|-----------|---------------------------|
| soils     | - 4 weeks from reporting  |
| leachates | - 2 weeks from reporting  |
| waters    | - 2 weeks from reporting  |
| asbestos  | - 6 months from reporting |

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 19-39600

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-2

| Lab Sample Number                    |  |  |  | 1213042       | 1213043            | 1213044              | 1213045       | 1213046       |
|--------------------------------------|--|--|--|---------------|--------------------|----------------------|---------------|---------------|
| Sample Reference                     |  |  |  | BH7           | BH7                | PT1                  | PT2           | TP5           |
| Sample Number                        |  |  |  | None Supplied | None Supplied      | None Supplied        | None Supplied | None Supplied |
| Depth (m)                            |  |  |  | 0.10          | 0.50               | 0.10                 | 2.10          | 0.30          |
| Date Sampled                         |  |  |  | 25/04/2019    | 25/04/2019         | 25/04/2019           | 25/04/2019    | 25/04/2019    |
| Time Taken                           |  |  |  | None Supplied | None Supplied      | None Supplied        | None Supplied | None Supplied |
| Analytical Parameter (Soil Analysis) |  |  |  | Units         | Limit of detection | Accreditation Status |               |               |
| Stone Content                        |  |  |  | %             | 0.1                | NONE                 | < 0.1         | < 0.1         |
| Moisture Content                     |  |  |  | %             | N/A                | NONE                 | 14            | 14            |
| Total mass of sample received        |  |  |  | kg            | 0.001              | NONE                 | 2.0           | 2.0           |

|                  |      |     |           |              |              |              |              |              |
|------------------|------|-----|-----------|--------------|--------------|--------------|--------------|--------------|
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected | Not-detected | Not-detected | Not-detected | Not-detected |
|------------------|------|-----|-----------|--------------|--------------|--------------|--------------|--------------|

#### General Inorganics

|                                                                         |          |         |        |        |        |       |          |        |
|-------------------------------------------------------------------------|----------|---------|--------|--------|--------|-------|----------|--------|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 7.4    | 7.6    | 7.6   | 8.4      | 7.0    |
| Free Cyanide                                                            | mg/kg    | 1       | MCERTS | < 1    | < 1    | < 1   | < 1      | < 1    |
| Water Soluble Sulphate as SO <sub>4</sub> 16hr extraction (2:1)         | mg/kg    | 2.5     | MCERTS | 64     | 31     | 53    | 87       | 37     |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.032  | 0.015  | 0.026 | 0.044    | 0.019  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | mg/l     | 1.25    | MCERTS | 32.2   | 15.3   | 26.3  | 43.7     | 18.7   |
| Total Sulphur                                                           | %        | 0.005   | MCERTS | 0.015  | 0.010  | 0.024 | 0.019    | 0.014  |
| Fraction Organic Carbon (FOC)                                           | N/A      | 0.001   | MCERTS | 0.0049 | 0.0033 | 0.015 | < 0.0010 | 0.0067 |

#### Phenols by HPLC

|                                             |       |     |           |        |        |        |        |        |
|---------------------------------------------|-------|-----|-----------|--------|--------|--------|--------|--------|
| Catechol                                    | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Resorcinol                                  | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Cresols (o-, m-, p-)                        | mg/kg | 0.3 | ISO 17025 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 |
| Total Naphthols (sum of 1- and 2- Naphthol) | mg/kg | 0.2 | ISO 17025 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| 2-Isopropylphenol                           | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Phenol                                      | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Trimethylphenol (2,3,5-)                    | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Total Xylenols and Ethylphenols             | mg/kg | 0.3 | ISO 17025 | < 0.30 | < 0.30 | < 0.30 | < 0.30 | < 0.30 |

#### Total Phenols

|                      |       |     |           |       |       |       |       |       |
|----------------------|-------|-----|-----------|-------|-------|-------|-------|-------|
| Total Phenols (HPLC) | mg/kg | 1.3 | ISO 17025 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 |
|----------------------|-------|-----|-----------|-------|-------|-------|-------|-------|

#### Speciated PAHs

|                        |       |      |        |        |        |        |        |        |
|------------------------|-------|------|--------|--------|--------|--------|--------|--------|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluorene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Anthracene             | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Pyrene                 | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Chrysene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |

#### Total PAH

|                             |       |     |        |        |        |        |        |        |
|-----------------------------|-------|-----|--------|--------|--------|--------|--------|--------|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | < 0.80 | < 0.80 | < 0.80 | < 0.80 | < 0.80 |
|-----------------------------|-------|-----|--------|--------|--------|--------|--------|--------|

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The results included within the report are representative of the samples submitted for analysis.

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Analytical Report Number: 19-39600

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-2

| Lab Sample Number                       |       |                       |                         | 1213042       | 1213043       | 1213044       | 1213045       | 1213046       |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                       |                         | BH7           | BH7           | PT1           | PT2           | TP5           |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                       |                         | 0.10          | 0.50          | 0.10          | 2.10          | 0.30          |
| Date Sampled                            |       |                       |                         | 25/04/2019    | 25/04/2019    | 25/04/2019    | 25/04/2019    | 25/04/2019    |
| Time Taken                              |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |               |

#### Heavy Metals / Metalloids

|                                     |       |      |           |        |        |        |        |        |
|-------------------------------------|-------|------|-----------|--------|--------|--------|--------|--------|
| Antimony (aqua regia extractable)   | mg/kg | 1    | ISO 17025 | 1.3    | < 1.0  | < 1.0  | < 1.0  | < 1.0  |
| Arsenic (aqua regia extractable)    | mg/kg | 1    | MCERTS    | 8.8    | 8.8    | 11     | 5.9    | 6.5    |
| Barium (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 61     | 72     | 53     | 24     | 48     |
| Beryllium (aqua regia extractable)  | mg/kg | 0.06 | MCERTS    | 0.68   | 0.97   | 0.44   | 0.30   | 0.55   |
| Boron (water soluble)               | mg/kg | 0.2  | MCERTS    | 0.6    | 0.5    | 0.5    | 0.3    | 0.4    |
| Cadmium (aqua regia extractable)    | mg/kg | 0.2  | MCERTS    | < 0.2  | < 0.2  | < 0.2  | 0.4    | 0.2    |
| Chromium (hexavalent)               | mg/kg | 4    | MCERTS    | < 4.0  | < 4.0  | < 4.0  | < 4.0  | < 4.0  |
| Chromium (III)                      | mg/kg | 1    | NONE      | 23     | 34     | 15     | 12     | 19     |
| Chromium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | 23     | 34     | 16     | 12     | 20     |
| Copper (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 15     | 18     | 16     | 11     | 16     |
| Iron (aqua regia extractable)       | mg/kg | 40   | MCERTS    | 22000  | 32000  | 22000  | 8400   | 17000  |
| Lead (aqua regia extractable)       | mg/kg | 1    | MCERTS    | 13     | 13     | 24     | 5.2    | 16     |
| Manganese (aqua regia extractable)  | mg/kg | 1    | MCERTS    | 200    | 170    | 140    | 550    | 170    |
| Mercury (aqua regia extractable)    | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3  | < 0.3  | < 0.3  | < 0.3  |
| Molybdenum (aqua regia extractable) | mg/kg | 0.25 | MCERTS    | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Nickel (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 15     | 22     | 11     | 10     | 13     |
| Selenium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | < 1.0  | < 1.0  | < 1.0  | < 1.0  | < 1.0  |
| Vanadium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | 26     | 42     | 26     | 15     | 25     |
| Zinc (aqua regia extractable)       | mg/kg | 1    | MCERTS    | 35     | 35     | 36     | 17     | 34     |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |       |       |       |       |       |
|------------------------------------|-------|---|--------|-------|-------|-------|-------|-------|
| Benzene                            | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Toluene                            | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Ethylbenzene                       | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| p & m-xylene                       | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| o-xylene                           | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| MTBE (Methyl Tertiary Butyl Ether) | ug/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

#### Petroleum Hydrocarbons

|                                  |       |       |        |         |         |         |         |         |
|----------------------------------|-------|-------|--------|---------|---------|---------|---------|---------|
| TPH-CWG - Aliphatic >EC5 - EC6   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aliphatic >EC6 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aliphatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   | < 1.0   | < 1.0   | < 1.0   | < 1.0   |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   | < 2.0   | < 2.0   | < 2.0   | < 2.0   |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8     | MCERTS | < 8.0   | < 8.0   | < 8.0   | < 8.0   | < 8.0   |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8     | MCERTS | < 8.0   | < 8.0   | < 8.0   | < 8.0   | < 8.0   |
| TPH-CWG - Aliphatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    | < 10    |

|                                 |       |       |        |         |         |         |         |         |
|---------------------------------|-------|-------|--------|---------|---------|---------|---------|---------|
| TPH-CWG - Aromatic >EC5 - EC7   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aromatic >EC7 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aromatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   | < 1.0   | < 1.0   | < 1.0   | < 1.0   |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   | < 2.0   | < 2.0   | < 2.0   | < 2.0   |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    | < 10    |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    | < 10    |
| TPH-CWG - Aromatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    | < 10    |

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Analytical Report Number: 19-39600

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-2

| Lab Sample Number                       |       |                       |                         | 1213042       | 1213043       | 1213044       | 1213045       | 1213046       |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference                        |       |                       |                         | BH7           | BH7           | PT1           | PT2           | TP5           |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m)                               |       |                       |                         | 0.10          | 0.50          | 0.10          | 2.10          | 0.30          |
| Date Sampled                            |       |                       |                         | 25/04/2019    | 25/04/2019    | 25/04/2019    | 25/04/2019    | 25/04/2019    |
| Time Taken                              |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |               |
| <b>VOCs</b>                             |       |                       |                         |               |               |               |               |               |
| Chloromethane                           | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Chloroethane                            | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Bromomethane                            | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Vinyl Chloride                          | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trichlorofluoromethane                  | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1-Dichloroethene                      | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,2-Trichloro 1,2,2-Trifluoroethane   | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Cis-1,2-dichloroethene                  | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| MTBE (Methyl Tertiary Butyl Ether)      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 2,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trichloromethane                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,1-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1-Dichloropropene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trans-1,2-dichloroethene                | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Benzene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Tetrachloromethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trichloroethene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Dibromomethane                          | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Bromodichloromethane                    | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Cis-1,3-dichloropropene                 | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Trans-1,3-dichloropropene               | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Toluene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,2-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,3-Dichloropropane                     | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Dibromochloromethane                    | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Tetrachloroethene                       | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dibromoethane                       | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Chlorobenzene                           | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,1,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Ethylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| p & m-Xylene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Styrene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Tribromomethane                         | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| o-Xylene                                | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,1,2,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Isopropylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Bromobenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| n-Propylbenzene                         | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 2-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 4-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,3,5-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| tert-Butylbenzene                       | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2,4-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| sec-Butylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,3-Dichlorobenzene                     | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| p-Isopropyltoluene                      | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,4-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Butylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2-Dibromo-3-chloropropane             | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2,4-Trichlorobenzene                  | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| Hexachlorobutadiene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |
| 1,2,3-Trichlorobenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         | < 1.0         |

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Analytical Report Number: 19-39600

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-2

| Lab Sample Number                       |       |                       |                         | 1213047       |  |  |  |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Sample Reference                        |       |                       |                         | TP7           |  |  |  |  |
| Sample Number                           |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                               |       |                       |                         | 3.50          |  |  |  |  |
| Date Sampled                            |       |                       |                         | 25/04/2019    |  |  |  |  |
| Time Taken                              |       |                       |                         | None Supplied |  |  |  |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |
| Stone Content                           | %     | 0.1                   | NONE                    | 31            |  |  |  |  |
| Moisture Content                        | %     | N/A                   | NONE                    | 6.7           |  |  |  |  |
| Total mass of sample received           | kg    | 0.001                 | NONE                    | 2.0           |  |  |  |  |

|                  |      |     |           |              |  |  |  |  |
|------------------|------|-----|-----------|--------------|--|--|--|--|
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected |  |  |  |  |
|------------------|------|-----|-----------|--------------|--|--|--|--|

#### General Inorganics

|                                                                         |          |         |        |        |  |  |  |  |
|-------------------------------------------------------------------------|----------|---------|--------|--------|--|--|--|--|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 8.3    |  |  |  |  |
| Free Cyanide                                                            | mg/kg    | 1       | MCERTS | < 1    |  |  |  |  |
| Water Soluble Sulphate as SO <sub>4</sub> 16hr extraction (2:1)         | mg/kg    | 2.5     | MCERTS | 240    |  |  |  |  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.12   |  |  |  |  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | mg/l     | 1.25    | MCERTS | 121    |  |  |  |  |
| Total Sulphur                                                           | %        | 0.005   | MCERTS | 0.029  |  |  |  |  |
| Fraction Organic Carbon (FOC)                                           | N/A      | 0.001   | MCERTS | 0.0020 |  |  |  |  |

#### Phenols by HPLC

|                                             |       |     |           |        |  |  |  |  |
|---------------------------------------------|-------|-----|-----------|--------|--|--|--|--|
| Catechol                                    | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Resorcinol                                  | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Cresols (o-, m-, p-)                        | mg/kg | 0.3 | ISO 17025 | < 0.30 |  |  |  |  |
| Total Naphthols (sum of 1- and 2- Naphthol) | mg/kg | 0.2 | ISO 17025 | < 0.20 |  |  |  |  |
| 2-Isopropylphenol                           | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Phenol                                      | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Trimethylphenol (2,3,5-)                    | mg/kg | 0.1 | ISO 17025 | < 0.10 |  |  |  |  |
| Total Xylenols and Ethylphenols             | mg/kg | 0.3 | ISO 17025 | < 0.30 |  |  |  |  |

#### Total Phenols

|                      |       |     |           |       |  |  |  |  |
|----------------------|-------|-----|-----------|-------|--|--|--|--|
| Total Phenols (HPLC) | mg/kg | 1.3 | ISO 17025 | < 1.3 |  |  |  |  |
|----------------------|-------|-----|-----------|-------|--|--|--|--|

#### Speciated PAHs

|                        |       |      |        |        |  |  |  |  |
|------------------------|-------|------|--------|--------|--|--|--|--|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Fluorene               | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Anthracene             | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Pyrene                 | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Chrysene               | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | < 0.05 |  |  |  |  |

#### Total PAH

|                             |       |     |        |        |  |  |  |  |
|-----------------------------|-------|-----|--------|--------|--|--|--|--|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | < 0.80 |  |  |  |  |
|-----------------------------|-------|-----|--------|--------|--|--|--|--|

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| Lab Sample Number                       |       |                       |                         | 1213047       |  |  |  |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Sample Reference                        |       |                       |                         | TP7           |  |  |  |  |
| Sample Number                           |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                               |       |                       |                         | 3.50          |  |  |  |  |
| Date Sampled                            |       |                       |                         | 25/04/2019    |  |  |  |  |
| Time Taken                              |       |                       |                         | None Supplied |  |  |  |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |
| <b>Heavy Metals / Metalloids</b>        |       |                       |                         |               |  |  |  |  |
| Antimony (aqua regia extractable)       | mg/kg | 1                     | ISO 17025               | 1.3           |  |  |  |  |
| Arsenic (aqua regia extractable)        | mg/kg | 1                     | MCERTS                  | 6.1           |  |  |  |  |
| Barium (aqua regia extractable)         | mg/kg | 1                     | MCERTS                  | 29            |  |  |  |  |
| Beryllium (aqua regia extractable)      | mg/kg | 0.06                  | MCERTS                  | 0.43          |  |  |  |  |
| Boron (water soluble)                   | mg/kg | 0.2                   | MCERTS                  | 0.5           |  |  |  |  |
| Cadmium (aqua regia extractable)        | mg/kg | 0.2                   | MCERTS                  | 0.4           |  |  |  |  |
| Chromium (hexavalent)                   | mg/kg | 4                     | MCERTS                  | < 4.0         |  |  |  |  |
| Chromium (III)                          | mg/kg | 1                     | NONE                    | 17            |  |  |  |  |
| Chromium (aqua regia extractable)       | mg/kg | 1                     | MCERTS                  | 17            |  |  |  |  |
| Copper (aqua regia extractable)         | mg/kg | 1                     | MCERTS                  | 14            |  |  |  |  |
| Iron (aqua regia extractable)           | mg/kg | 40                    | MCERTS                  | 18000         |  |  |  |  |
| Lead (aqua regia extractable)           | mg/kg | 1                     | MCERTS                  | 11            |  |  |  |  |
| Manganese (aqua regia extractable)      | mg/kg | 1                     | MCERTS                  | 440           |  |  |  |  |
| Mercury (aqua regia extractable)        | mg/kg | 0.3                   | MCERTS                  | < 0.3         |  |  |  |  |
| Molybdenum (aqua regia extractable)     | mg/kg | 0.25                  | MCERTS                  | 0.40          |  |  |  |  |
| Nickel (aqua regia extractable)         | mg/kg | 1                     | MCERTS                  | 16            |  |  |  |  |
| Selenium (aqua regia extractable)       | mg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Vanadium (aqua regia extractable)       | mg/kg | 1                     | MCERTS                  | 22            |  |  |  |  |
| Zinc (aqua regia extractable)           | mg/kg | 1                     | MCERTS                  | 22            |  |  |  |  |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |       |  |  |  |  |
|------------------------------------|-------|---|--------|-------|--|--|--|--|
| Benzene                            | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| Toluene                            | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| Ethylbenzene                       | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| p & m-xylene                       | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| o-xylene                           | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |
| MTBE (Methyl Tertiary Butyl Ether) | ug/kg | 1 | MCERTS | < 1.0 |  |  |  |  |

#### Petroleum Hydrocarbons

|                                  |       |       |        |         |  |  |  |  |
|----------------------------------|-------|-------|--------|---------|--|--|--|--|
| TPH-CWG - Aliphatic >EC5 - EC6   | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aliphatic >EC6 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aliphatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   |  |  |  |  |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   |  |  |  |  |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8     | MCERTS | < 8.0   |  |  |  |  |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8     | MCERTS | < 8.0   |  |  |  |  |
| TPH-CWG - Aliphatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    |  |  |  |  |

|                                 |       |       |        |         |  |  |  |  |
|---------------------------------|-------|-------|--------|---------|--|--|--|--|
| TPH-CWG - Aromatic >EC5 - EC7   | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aromatic >EC7 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aromatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 |  |  |  |  |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   |  |  |  |  |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   |  |  |  |  |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10    | MCERTS | < 10    |  |  |  |  |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10    | MCERTS | < 10    |  |  |  |  |
| TPH-CWG - Aromatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    |  |  |  |  |

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| Lab Sample Number                       |       |                       |                         | 1213047       |  |  |  |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Sample Reference                        |       |                       |                         | TP7           |  |  |  |  |
| Sample Number                           |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                               |       |                       |                         | 3.50          |  |  |  |  |
| Date Sampled                            |       |                       |                         | 25/04/2019    |  |  |  |  |
| Time Taken                              |       |                       |                         | None Supplied |  |  |  |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |
| <b>VOCs</b>                             |       |                       |                         |               |  |  |  |  |
| Chloromethane                           | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Chloroethane                            | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| Bromomethane                            | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Vinyl Chloride                          | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| Trichlorofluoromethane                  | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| 1,1-Dichloroethene                      | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| 1,1,2-Trichloro 1,2,2-Trifluoroethane   | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Cis-1,2-dichloroethene                  | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| MTBE (Methyl Tertiary Butyl Ether)      | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 2,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Trichloromethane                        | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1,1-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1-Dichloropropene                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Trans-1,2-dichloroethene                | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| Benzene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Tetrachloromethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Trichloroethene                         | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Dibromomethane                          | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Bromodichloromethane                    | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Cis-1,3-dichloropropene                 | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Trans-1,3-dichloropropene               | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Toluene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1,2-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,3-Dichloropropane                     | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Dibromochloromethane                    | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Tetrachloroethene                       | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| 1,2-Dibromoethane                       | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| Chlorobenzene                           | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1,1,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Ethylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| p & m-Xylene                            | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Styrene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Tribromomethane                         | µg/kg | 1                     | NONE                    | < 1.0         |  |  |  |  |
| o-Xylene                                | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,1,2,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Isopropylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Bromobenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| n-Propylbenzene                         | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| 2-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 4-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,3,5-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| tert-Butylbenzene                       | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2,4-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| sec-Butylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,3-Dichlorobenzene                     | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| p-Isopropyltoluene                      | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| 1,2-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,4-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Butylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2-Dibromo-3-chloropropane             | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |
| 1,2,4-Trichlorobenzene                  | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| Hexachlorobutadiene                     | µg/kg | 1                     | MCERTS                  | < 1.0         |  |  |  |  |
| 1,2,3-Trichlorobenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         |  |  |  |  |

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|                                             |       |                       |                         |               |               |               |  |  |
|---------------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|--|--|
| Lab Sample Number                           |       |                       |                         | 1213048       | 1213049       | 1213050       |  |  |
| Sample Reference                            |       |                       |                         | BH7           | PT1           | TP5           |  |  |
| Sample Number                               |       |                       |                         | None Supplied | None Supplied | None Supplied |  |  |
| Depth (m)                                   |       |                       |                         | 0.10          | 0.10          | 0.30          |  |  |
| Date Sampled                                |       |                       |                         | 25/04/2019    | 25/04/2019    | 25/04/2019    |  |  |
| Time Taken                                  |       |                       |                         | None Supplied | None Supplied | None Supplied |  |  |
| Analytical Parameter<br>(Leachate Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |  |  |

#### General Inorganics

|                             |          |      |           |       |       |       |  |  |
|-----------------------------|----------|------|-----------|-------|-------|-------|--|--|
| pH                          | pH Units | N/A  | ISO 17025 | 6.8   | 6.6   | 6.6   |  |  |
| Total Cyanide               | µg/l     | 10   | ISO 17025 | < 10  | < 10  | < 10  |  |  |
| Complex Cyanide             | µg/l     | 10   | ISO 17025 | < 10  | < 10  | < 10  |  |  |
| Free Cyanide                | µg/l     | 10   | ISO 17025 | < 10  | < 10  | < 10  |  |  |
| Sulphate as SO <sub>4</sub> | mg/l     | 0.1  | ISO 17025 | 1.3   | 1.2   | 1.2   |  |  |
| Sulphide                    | µg/l     | 5    | NONE      | < 5.0 | < 5.0 | < 5.0 |  |  |
| Chloride                    | mg/l     | 0.15 | ISO 17025 | 0.47  | 0.76  | 0.77  |  |  |
| Fluoride                    | µg/l     | 50   | ISO 17025 | 670   | 370   | 820   |  |  |
| Ammoniacal Nitrogen as N    | µg/l     | 15   | NONE      | < 15  | < 15  | < 15  |  |  |

#### Phenols by HPLC

|                              |      |     |      |       |       |       |  |  |
|------------------------------|------|-----|------|-------|-------|-------|--|--|
| Catechol                     | µg/l | 0.5 | NONE | < 0.5 | < 0.5 | < 0.5 |  |  |
| Resorcinol                   | µg/l | 0.5 | NONE | < 0.5 | < 0.5 | < 0.5 |  |  |
| Ethylphenol & Dimethylphenol | µg/l | 0.5 | NONE | < 0.5 | < 0.5 | < 0.5 |  |  |
| Cresols                      | µg/l | 0.5 | NONE | < 0.5 | < 0.5 | < 0.5 |  |  |
| Naphthols                    | µg/l | 0.5 | NONE | < 0.5 | < 0.5 | < 0.5 |  |  |
| Isopropylphenol              | µg/l | 0.5 | NONE | < 0.5 | < 0.5 | < 0.5 |  |  |
| Phenol                       | µg/l | 0.5 | NONE | < 0.5 | < 0.5 | < 0.5 |  |  |
| Trimethylphenol              | µg/l | 0.5 | NONE | < 0.5 | < 0.5 | < 0.5 |  |  |

#### Total Phenols

|                      |      |     |      |       |       |       |  |  |
|----------------------|------|-----|------|-------|-------|-------|--|--|
| Total Phenols (HPLC) | µg/l | 3.5 | NONE | < 3.5 | < 3.5 | < 3.5 |  |  |
|----------------------|------|-----|------|-------|-------|-------|--|--|

#### Heavy Metals / Metalloids

|                        |      |       |           |        |        |        |  |  |
|------------------------|------|-------|-----------|--------|--------|--------|--|--|
| Antimony (dissolved)   | µg/l | 1.7   | ISO 17025 | < 1.7  | < 1.7  | < 1.7  |  |  |
| Arsenic (dissolved)    | µg/l | 1.1   | ISO 17025 | 2.7    | 5.3    | 3.0    |  |  |
| Barium (dissolved)     | µg/l | 0.05  | ISO 17025 | 1.8    | 5.3    | 2.7    |  |  |
| Beryllium (dissolved)  | µg/l | 0.2   | ISO 17025 | < 0.2  | < 0.2  | < 0.2  |  |  |
| Boron (dissolved)      | µg/l | 10    | ISO 17025 | < 10   | < 10   | < 10   |  |  |
| Cadmium (dissolved)    | µg/l | 0.08  | ISO 17025 | < 0.08 | < 0.08 | < 0.08 |  |  |
| Chromium (hexavalent)  | µg/l | 5     | ISO 17025 | < 5.0  | < 5.0  | < 5.0  |  |  |
| Chromium (III)         | µg/l | 1     | NONE      | < 1.0  | 1.0    | < 1.0  |  |  |
| Chromium (dissolved)   | µg/l | 0.4   | ISO 17025 | < 0.4  | 1.0    | < 0.4  |  |  |
| Copper (dissolved)     | µg/l | 0.7   | ISO 17025 | 4.6    | 17     | 7.3    |  |  |
| Iron (dissolved)       | mg/l | 0.004 | ISO 17025 | 0.036  | 0.60   | 0.057  |  |  |
| Lead (dissolved)       | µg/l | 1     | ISO 17025 | < 1.0  | < 1.0  | 1.1    |  |  |
| Manganese (dissolved)  | µg/l | 0.06  | ISO 17025 | 1.5    | 8.2    | 1.9    |  |  |
| Mercury (dissolved)    | µg/l | 0.5   | ISO 17025 | < 0.5  | < 0.5  | < 0.5  |  |  |
| Molybdenum (dissolved) | µg/l | 0.4   | ISO 17025 | < 0.4  | < 0.4  | < 0.4  |  |  |
| Nickel (dissolved)     | µg/l | 0.3   | ISO 17025 | 1.1    | 2.9    | 1.6    |  |  |
| Selenium (dissolved)   | µg/l | 4     | ISO 17025 | < 4.0  | < 4.0  | < 4.0  |  |  |
| Vanadium (dissolved)   | µg/l | 1.7   | ISO 17025 | < 1.7  | < 1.7  | 3.8    |  |  |
| Zinc (dissolved)       | µg/l | 0.4   | ISO 17025 | 6.2    | 8.3    | 4.7    |  |  |
| Calcium (dissolved)    | mg/l | 0.012 | ISO 17025 | 1.3    | 2.3    | 1.9    |  |  |
| Magnesium (dissolved)  | mg/l | 0.005 | ISO 17025 | 0.22   | 0.43   | 0.24   |  |  |

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\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types, Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description *                            |
|-------------------|------------------|---------------|-----------|-------------------------------------------------|
| 1213042           | BH7              | None Supplied | 0.10      | Brown clay and sand with gravel and vegetation. |
| 1213043           | BH7              | None Supplied | 0.50      | Brown clay with vegetation.                     |
| 1213044           | PT1              | None Supplied | 0.10      | Brown clay and loam with vegetation.            |
| 1213045           | PT2              | None Supplied | 2.10      | Light brown sand with gravel and stones.        |
| 1213046           | TP5              | None Supplied | 0.30      | Brown clay and sand with vegetation.            |
| 1213047           | TP7              | None Supplied | 3.50      | Light brown sand with gravel and stones.        |

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**Analytical Report Number : 19-39600**

**Project / Site name: Southampton Airport, Southampton**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                  | Analytical Method Description                                                                                                                         | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Ammoniacal Nitrogen as N in leachate  | Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.                        | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L082-PL       | W                  | NONE                 |
| Asbestos identification in soil       | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.                                 | In house method based on HSG 248                                                                                | A001-PL       | D                  | ISO 17025            |
| Boron in leachate                     | Determination of boron in leachate. Sample acidified and followed by ICP-OES.                                                                         | In-house method based on MEWAM                                                                                  | L039-PL       | W                  | ISO 17025            |
| Boron, water soluble, in soil         | Determination of water soluble boron in soil by hot water extract followed by ICP-OES.                                                                | In-house method based on Second Site Properties version 3                                                       | L038-PL       | D                  | MCERTS               |
| BTEX and MTBE in soil (Monoaromatics) | Determination of BTEX in soil by headspace GC-MS.                                                                                                     | In-house method based on USEPA8260                                                                              | L073B-PL      | W                  | MCERTS               |
| Cations in soil by ICP-OES            | Determination of cations in soil by aqua-regia digestion followed by ICP-OES.                                                                         | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L038-PL       | D                  | MCERTS               |
| Chloride in leachate                  | Determination of Chloride colorimetrically by discrete analyser.                                                                                      | In house based on MEWAM Method ISBN 0117516260.                                                                 | L082-PL       | W                  | ISO 17025            |
| Complex cyanide in leachate           | Determination of complex cyanide by distillation followed by colorimetry.                                                                             | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L040-PL       | W                  | ISO 17025            |
| Cr (III) in soil                      | In-house method by calculation from total Cr and Cr VI.                                                                                               | In-house method by calculation                                                                                  | L080-PL       | W                  | NONE                 |
| Fluoride in leachate                  | Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.                                         | In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"             | L033B-PL      | W                  | ISO 17025            |
| Fraction of Organic Carbon in soil    | Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.             | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                | L009-PL       | D                  | MCERTS               |
| Free cyanide in leachate              | Determination of free cyanide by distillation followed by colorimetry.                                                                                | In-house method                                                                                                 | L080-PL       | W                  | ISO 17025            |
| Free cyanide in soil                  | Determination of free cyanide by distillation followed by colorimetry.                                                                                | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | MCERTS               |
| Hexavalent chromium in leachate       | Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.                         | In-house method                                                                                                 | L080-PL       | W                  | ISO 17025            |
| Hexavalent chromium in soil           | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry. | In-house method                                                                                                 | L080-PL       | W                  | MCERTS               |
| Metals by ICP-OES in leachate         | Determination of metals in leachate by acidification followed by ICP-OES.                                                                             | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L039-PL       | W                  | ISO 17025            |
| Metals in soil by ICP-OES             | Determination of metals in soil by aqua-regia digestion followed by ICP-OES.                                                                          | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L038-PL       | D                  | MCERTS               |

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**Analytical Report Number : 19-39600**

**Project / Site name: Southampton Airport, Southampton**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                               | Analytical Method Description                                                                                                                             | Analytical Method Reference                                                                                                       | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Moisture Content                                   | Moisture content, determined gravimetrically.                                                                                                             | In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests                                                  | L019-UK/PL    | W                  | NONE                 |
| NRA Leachate Prep                                  | 10:1 extract with de-ionised water shaken for 24 hours then filtered.                                                                                     | In-house method based on National Rivers Authority                                                                                | L020-PL       | W                  | NONE                 |
| pH at 20oC in leachate                             | Determination of pH in leachate by electrometric measurement.                                                                                             | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                                  | L005-PL       | W                  | ISO 17025            |
| pH in soil (automated)                             | Determination of pH in soil by addition of water followed by automated electrometric measurement.                                                         | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                                  | L099-PL       | D                  | MCERTS               |
| Phenols, speciated, in leachate, by HPLC           | Determination of speciated phenols by HPLC.                                                                                                               | In house method based on Blue Book Method.                                                                                        | L030-PL       | W                  | NONE                 |
| Speciated EPA-16 PAHs in soil                      | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.    | In-house method based on USEPA 8270                                                                                               | L064-PL       | D                  | MCERTS               |
| Stones content of soil                             | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.                               | In-house method based on British Standard Methods and MCERTS requirements.                                                        | L019-UK/PL    | D                  | NONE                 |
| Sulphate in leachates                              | Determination of sulphate in leachate by acidification followed by ICP-OES.                                                                               | In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"                                              | L039-PL       | W                  | ISO 17025            |
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES. | L038-PL       | D                  | MCERTS               |
| Sulphide in leachate                               | Determination of sulphide in leachate by ion selective electrode.                                                                                         | In-house method                                                                                                                   | L010-PL       | W                  | NONE                 |
| Total cyanide in leachate                          | Determination of total cyanide by distillation followed by colorimetry.                                                                                   | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)                   | L080-PL       | W                  | ISO 17025            |
| Total Sulphur in soil as %                         | Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.                                      | In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil                      | L038          | D                  | MCERTS               |
| TPHCWG (Soil)                                      | Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.                                                                                 | In-house method with silica gel split/clean up.                                                                                   | L088/76-PL    | W                  | MCERTS               |
| Volatile organic compounds in soil                 | Determination of volatile organic compounds in soil by headspace GC-MS.                                                                                   | In-house method based on USEPA8260                                                                                                | L073B-PL      | W                  | MCERTS               |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

**Tom Lees**

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## **Analytical Report Number : 19-42012**

|                             |                                     |                               |            |
|-----------------------------|-------------------------------------|-------------------------------|------------|
| <b>Project / Site name:</b> | Southampton Airport, Southampton    | <b>Samples received on:</b>   | 20/05/1917 |
| <b>Your job number:</b>     | J14044                              | <b>Samples instructed on:</b> | 20/05/2019 |
| <b>Your order number:</b>   | J14044-4A                           | <b>Analysis completed by:</b> | 30/05/2019 |
| <b>Report Issue Number:</b> | 1                                   | <b>Report issued on:</b>      | 30/05/2019 |
| <b>Samples Analysed:</b>    | 2 leachate samples - 4 soil samples |                               |            |

**Signed:**

Rexona Rahman  
Head of Customer Services  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

|           |                           |
|-----------|---------------------------|
| soils     | - 4 weeks from reporting  |
| leachates | - 2 weeks from reporting  |
| waters    | - 2 weeks from reporting  |
| asbestos  | - 6 months from reporting |

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 19-42012

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-4A

|                                         |       |                       |                         |               |               |               |               |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|--|
| Lab Sample Number                       |       |                       |                         | 1225828       | 1225829       | 1225830       | 1225831       |  |
| Sample Reference                        |       |                       |                         | BH8           | BH8           | TP8           | TP8           |  |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied |  |
| Depth (m)                               |       |                       |                         | 1.00          | 5.00          | 0.30          | 1.50          |  |
| Date Sampled                            |       |                       |                         | 27/05/2019    | 27/05/2019    | 27/05/2019    | 27/05/2019    |  |
| Time Taken                              |       |                       |                         | 0100          | 1200          | 1200          | 1200          |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |  |
|                                         |       |                       |                         |               |               |               |               |  |
|                                         |       |                       |                         |               |               |               |               |  |
|                                         |       |                       |                         |               |               |               |               |  |
| Stone Content                           | %     | 0.1                   | NONE                    | < 0.1         | < 0.1         | < 0.1         | < 0.1         |  |
| Moisture Content                        | %     | N/A                   | NONE                    | 15            | 2.6           | 15            | 15            |  |
| Total mass of sample received           | kg    | 0.001                 | NONE                    | 2.0           | 2.0           | 2.0           | 2.0           |  |

|                  |      |     |           |              |              |              |              |  |
|------------------|------|-----|-----------|--------------|--------------|--------------|--------------|--|
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected | Not-detected | Not-detected | Not-detected |  |
|------------------|------|-----|-----------|--------------|--------------|--------------|--------------|--|

#### General Inorganics

|                                                                         |          |         |        |          |        |        |        |  |
|-------------------------------------------------------------------------|----------|---------|--------|----------|--------|--------|--------|--|
| pH - Automated                                                          | pH Units | N/A     | MCERTS | 7.6      | 8.4    | 7.1    | 7.8    |  |
| Free Cyanide                                                            | mg/kg    | 1       | MCERTS | < 1      | < 1    | < 1    | < 1    |  |
| Water Soluble Sulphate as SO <sub>4</sub> 16hr extraction (2:1)         | mg/kg    | 2.5     | MCERTS | 13       | 32     | 14     | 25     |  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.0064   | 0.016  | 0.0070 | 0.012  |  |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | mg/l     | 1.25    | MCERTS | 6.4      | 16.1   | 7.0    | 12.3   |  |
| Total Sulphur                                                           | %        | 0.005   | MCERTS | 0.006    | 0.008  | 0.012  | 0.018  |  |
| Fraction Organic Carbon (FOC)                                           | N/A      | 0.001   | MCERTS | < 0.0010 | 0.0017 | 0.0044 | 0.0034 |  |

#### Phenols by HPLC

|                                             |       |     |           |        |        |        |        |  |
|---------------------------------------------|-------|-----|-----------|--------|--------|--------|--------|--|
| Catechol                                    | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |  |
| Resorcinol                                  | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |  |
| Cresols (o-, m-, p-)                        | mg/kg | 0.3 | ISO 17025 | < 0.30 | < 0.30 | < 0.30 | < 0.30 |  |
| Total Naphthols (sum of 1- and 2- Naphthol) | mg/kg | 0.2 | ISO 17025 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |  |
| 2-Isopropylphenol                           | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |  |
| Phenol                                      | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |  |
| Trimethylphenol (2,3,5-)                    | mg/kg | 0.1 | ISO 17025 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |  |
| Total Xylenols and Ethylphenols             | mg/kg | 0.3 | ISO 17025 | < 0.30 | < 0.30 | < 0.30 | < 0.30 |  |

#### Total Phenols

|                      |       |     |           |       |       |       |       |  |
|----------------------|-------|-----|-----------|-------|-------|-------|-------|--|
| Total Phenols (HPLC) | mg/kg | 1.3 | ISO 17025 | < 1.3 | < 1.3 | < 1.3 | < 1.3 |  |
|----------------------|-------|-----|-----------|-------|-------|-------|-------|--|

#### Speciated PAHs

|                        |       |      |        |        |        |        |        |  |
|------------------------|-------|------|--------|--------|--------|--------|--------|--|
| Naphthalene            | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Acenaphthylene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Acenaphthene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Fluorene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Phenanthrene           | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Anthracene             | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Fluoranthene           | mg/kg | 0.05 | MCERTS | < 0.05 | 0.33   | < 0.05 | < 0.05 |  |
| Pyrene                 | mg/kg | 0.05 | MCERTS | < 0.05 | 0.79   | < 0.05 | < 0.05 |  |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Chrysene               | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Dibenzo(a,h)anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 |  |

#### Total PAH

|                             |       |     |        |        |      |        |        |  |
|-----------------------------|-------|-----|--------|--------|------|--------|--------|--|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | < 0.80 | 1.12 | < 0.80 | < 0.80 |  |
|-----------------------------|-------|-----|--------|--------|------|--------|--------|--|

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Analytical Report Number: 19-42012

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-4A

|                                         |               |                       |                         |               |  |
|-----------------------------------------|---------------|-----------------------|-------------------------|---------------|--|
| Lab Sample Number                       | 1225828       | 1225829               | 1225830                 | 1225831       |  |
| Sample Reference                        | BH8           | BH8                   | TP8                     | TP8           |  |
| Sample Number                           | None Supplied | None Supplied         | None Supplied           | None Supplied |  |
| Depth (m)                               | 1.00          | 5.00                  | 0.30                    | 1.50          |  |
| Date Sampled                            | 27/05/2019    | 27/05/2019            | 27/05/2019              | 27/05/2019    |  |
| Time Taken                              | 0100          | 1200                  | 1200                    | 1200          |  |
| Analytical Parameter<br>(Soil Analysis) | Units         | Limit of<br>detection | Accreditation<br>Status |               |  |

#### Heavy Metals / Metalloids

|                                     |       |      |           |        |       |        |       |  |
|-------------------------------------|-------|------|-----------|--------|-------|--------|-------|--|
| Antimony (aqua regia extractable)   | mg/kg | 1    | ISO 17025 | < 1.0  | < 1.0 | < 1.0  | < 1.0 |  |
| Arsenic (aqua regia extractable)    | mg/kg | 1    | MCERTS    | 5.1    | 2.9   | 6.5    | 13    |  |
| Barium (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 66     | 10    | 69     | 98    |  |
| Beryllium (aqua regia extractable)  | mg/kg | 0.06 | MCERTS    | 1.1    | 0.16  | 0.79   | 1.3   |  |
| Boron (water soluble)               | mg/kg | 0.2  | MCERTS    | 0.4    | 0.3   | 0.6    | 0.6   |  |
| Cadmium (aqua regia extractable)    | mg/kg | 0.2  | MCERTS    | < 0.2  | < 0.2 | < 0.2  | 0.4   |  |
| Chromium (hexavalent)               | mg/kg | 4    | MCERTS    | < 4.0  | < 4.0 | < 4.0  | < 4.0 |  |
| Chromium (III)                      | mg/kg | 1    | NONE      | 35     | 23    | 30     | 45    |  |
| Chromium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | 36     | 23    | 30     | 45    |  |
| Copper (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 14     | 12    | 13     | 25    |  |
| Iron (aqua regia extractable)       | mg/kg | 40   | MCERTS    | 28000  | 8100  | 28000  | 38000 |  |
| Lead (aqua regia extractable)       | mg/kg | 1    | MCERTS    | 11     | 2.9   | 11     | 17    |  |
| Manganese (aqua regia extractable)  | mg/kg | 1    | MCERTS    | 120    | 380   | 140    | 390   |  |
| Mercury (aqua regia extractable)    | mg/kg | 0.3  | MCERTS    | < 0.3  | < 0.3 | < 0.3  | < 0.3 |  |
| Molybdenum (aqua regia extractable) | mg/kg | 0.25 | MCERTS    | < 0.25 | 3.9   | < 0.25 | 0.54  |  |
| Nickel (aqua regia extractable)     | mg/kg | 1    | MCERTS    | 25     | 35    | 16     | 35    |  |
| Selenium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | < 1.0  | < 1.0 | < 1.0  | < 1.0 |  |
| Vanadium (aqua regia extractable)   | mg/kg | 1    | MCERTS    | 48     | 11    | 39     | 48    |  |
| Zinc (aqua regia extractable)       | mg/kg | 1    | MCERTS    | 43     | 15    | 45     | 74    |  |

#### Monoaromatics & Oxygenates

|                                    |       |   |        |       |       |       |       |  |
|------------------------------------|-------|---|--------|-------|-------|-------|-------|--|
| Benzene                            | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |  |
| Toluene                            | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |  |
| Ethylbenzene                       | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |  |
| p & m-xylene                       | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |  |
| o-xylene                           | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |  |
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 |  |

#### Petroleum Hydrocarbons

|                                  |       |       |        |         |         |         |         |  |
|----------------------------------|-------|-------|--------|---------|---------|---------|---------|--|
| TPH-CWG - Aliphatic >EC5 - EC6   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 |  |
| TPH-CWG - Aliphatic >EC6 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 |  |
| TPH-CWG - Aliphatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 |  |
| TPH-CWG - Aliphatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   | < 1.0   | < 1.0   | < 1.0   |  |
| TPH-CWG - Aliphatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   | < 2.0   | < 2.0   | < 2.0   |  |
| TPH-CWG - Aliphatic >EC16 - EC21 | mg/kg | 8     | MCERTS | < 8.0   | < 8.0   | < 8.0   | < 8.0   |  |
| TPH-CWG - Aliphatic >EC21 - EC35 | mg/kg | 8     | MCERTS | < 8.0   | < 8.0   | < 8.0   | < 8.0   |  |
| TPH-CWG - Aliphatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    |  |

|                                 |       |       |        |         |         |         |         |  |
|---------------------------------|-------|-------|--------|---------|---------|---------|---------|--|
| TPH-CWG - Aromatic >EC5 - EC7   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 |  |
| TPH-CWG - Aromatic >EC7 - EC8   | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 |  |
| TPH-CWG - Aromatic >EC8 - EC10  | mg/kg | 0.001 | MCERTS | < 0.001 | < 0.001 | < 0.001 | < 0.001 |  |
| TPH-CWG - Aromatic >EC10 - EC12 | mg/kg | 1     | MCERTS | < 1.0   | < 1.0   | < 1.0   | < 1.0   |  |
| TPH-CWG - Aromatic >EC12 - EC16 | mg/kg | 2     | MCERTS | < 2.0   | < 2.0   | < 2.0   | < 2.0   |  |
| TPH-CWG - Aromatic >EC16 - EC21 | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    |  |
| TPH-CWG - Aromatic >EC21 - EC35 | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    |  |
| TPH-CWG - Aromatic (EC5 - EC35) | mg/kg | 10    | MCERTS | < 10    | < 10    | < 10    | < 10    |  |

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| Lab Sample Number                       |       |                       |                         | 1225828       | 1225829       | 1225830       | 1225831       |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|--|
| Sample Reference                        |       |                       |                         | BH8           | BH8           | TP8           | TP8           |  |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied |  |
| Depth (m)                               |       |                       |                         | 1.00          | 5.00          | 0.30          | 1.50          |  |
| Date Sampled                            |       |                       |                         | 27/05/2019    | 27/05/2019    | 27/05/2019    | 27/05/2019    |  |
| Time Taken                              |       |                       |                         | 0100          | 1200          | 1200          | 1200          |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |  |
| <b>VOCs</b>                             |       |                       |                         |               |               |               |               |  |
| Chloromethane                           | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Chloroethane                            | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Bromomethane                            | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Vinyl Chloride                          | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Trichlorofluoromethane                  | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,1-Dichloroethene                      | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,1,2-Trichloro 1,2,2-Trifluoroethane   | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Cis-1,2-dichloroethene                  | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| MTBE (Methyl Tertiary Butyl Ether)      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,1-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 2,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Trichloromethane                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,1,1-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,2-Dichloroethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,1-Dichloropropene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Trans-1,2-dichloroethene                | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Benzene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Tetrachloromethane                      | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,2-Dichloropropane                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Trichloroethene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Dibromomethane                          | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Bromodichloromethane                    | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Cis-1,3-dichloropropene                 | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Trans-1,3-dichloropropene               | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Toluene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,1,2-Trichloroethane                   | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,3-Dichloropropane                     | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Dibromochloromethane                    | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Tetrachloroethene                       | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,2-Dibromoethane                       | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Chlorobenzene                           | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,1,1,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Ethylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| p & m-Xylene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Styrene                                 | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Tribromomethane                         | µg/kg | 1                     | NONE                    | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| o-Xylene                                | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,1,2,2-Tetrachloroethane               | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Isopropylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Bromobenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| n-Propylbenzene                         | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 2-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 4-Chlorotoluene                         | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,3,5-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| tert-Butylbenzene                       | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,2,4-Trimethylbenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| sec-Butylbenzene                        | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,3-Dichlorobenzene                     | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| p-Isopropyltoluene                      | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,2-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,4-Dichlorobenzene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Butylbenzene                            | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,2-Dibromo-3-chloropropane             | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,2,4-Trichlorobenzene                  | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| Hexachlorobutadiene                     | µg/kg | 1                     | MCERTS                  | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |
| 1,2,3-Trichlorobenzene                  | µg/kg | 1                     | ISO 17025               | < 1.0         | < 1.0         | < 1.0         | < 1.0         |  |

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|                                         |       |                       |                         |               |               |               |               |  |
|-----------------------------------------|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|--|
| Lab Sample Number                       |       |                       |                         | 1225828       | 1225829       | 1225830       | 1225831       |  |
| Sample Reference                        |       |                       |                         | BH8           | BH8           | TP8           | TP8           |  |
| Sample Number                           |       |                       |                         | None Supplied | None Supplied | None Supplied | None Supplied |  |
| Depth (m)                               |       |                       |                         | 1.00          | 5.00          | 0.30          | 1.50          |  |
| Date Sampled                            |       |                       |                         | 27/05/2019    | 27/05/2019    | 27/05/2019    | 27/05/2019    |  |
| Time Taken                              |       |                       |                         | 0100          | 1200          | 1200          | 1200          |  |
| Analytical Parameter<br>(Soil Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |               |               |               |  |
|                                         |       |                       |                         |               |               |               |               |  |

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|                                             |  |  |  |               |                       |                         |  |  |
|---------------------------------------------|--|--|--|---------------|-----------------------|-------------------------|--|--|
| Lab Sample Number                           |  |  |  | 1225832       | 1225833               |                         |  |  |
| Sample Reference                            |  |  |  | BH8           | TP8                   |                         |  |  |
| Sample Number                               |  |  |  | None Supplied | None Supplied         |                         |  |  |
| Depth (m)                                   |  |  |  | 1.00          | 0.30                  |                         |  |  |
| Date Sampled                                |  |  |  | 27/05/2019    | 27/05/2019            |                         |  |  |
| Time Taken                                  |  |  |  | 0100          | 1200                  |                         |  |  |
| Analytical Parameter<br>(Leachate Analysis) |  |  |  | Units         | Limit of<br>detection | Accreditation<br>Status |  |  |

#### General Inorganics

|                             |          |      |           |       |       |  |  |  |
|-----------------------------|----------|------|-----------|-------|-------|--|--|--|
| pH                          | pH Units | N/A  | ISO 17025 | 7.1   | 6.8   |  |  |  |
| Total Cyanide               | µg/l     | 10   | ISO 17025 | < 10  | < 10  |  |  |  |
| Complex Cyanide             | µg/l     | 10   | ISO 17025 | < 10  | < 10  |  |  |  |
| Free Cyanide                | µg/l     | 10   | ISO 17025 | < 10  | < 10  |  |  |  |
| Sulphate as SO <sub>4</sub> | mg/l     | 0.1  | ISO 17025 | 0.6   | 0.5   |  |  |  |
| Sulphide                    | µg/l     | 5    | NONE      | < 5.0 | < 5.0 |  |  |  |
| Chloride                    | mg/l     | 0.15 | ISO 17025 | 0.29  | 0.49  |  |  |  |
| Fluoride                    | µg/l     | 50   | ISO 17025 | 330   | 710   |  |  |  |
| Ammoniacal Nitrogen as N    | µg/l     | 15   | NONE      | < 15  | < 15  |  |  |  |

#### Phenols by HPLC

|                              |      |     |      |       |       |  |  |  |
|------------------------------|------|-----|------|-------|-------|--|--|--|
| Catechol                     | µg/l | 0.5 | NONE | < 0.5 | < 0.5 |  |  |  |
| Resorcinol                   | µg/l | 0.5 | NONE | < 0.5 | < 0.5 |  |  |  |
| Ethylphenol & Dimethylphenol | µg/l | 0.5 | NONE | < 0.5 | < 0.5 |  |  |  |
| Cresols                      | µg/l | 0.5 | NONE | < 0.5 | < 0.5 |  |  |  |
| Naphthols                    | µg/l | 0.5 | NONE | < 0.5 | < 0.5 |  |  |  |
| Isopropylphenol              | µg/l | 0.5 | NONE | < 0.5 | < 0.5 |  |  |  |
| Phenol                       | µg/l | 0.5 | NONE | < 0.5 | < 0.5 |  |  |  |
| Trimethylphenol              | µg/l | 0.5 | NONE | < 0.5 | < 0.5 |  |  |  |

#### Total Phenols

|                      |      |     |      |       |       |  |  |  |
|----------------------|------|-----|------|-------|-------|--|--|--|
| Total Phenols (HPLC) | µg/l | 3.5 | NONE | < 3.5 | < 3.5 |  |  |  |
|----------------------|------|-----|------|-------|-------|--|--|--|

#### Heavy Metals / Metalloids

|                        |      |       |           |        |        |  |  |  |
|------------------------|------|-------|-----------|--------|--------|--|--|--|
| Antimony (dissolved)   | µg/l | 1.7   | ISO 17025 | < 1.7  | < 1.7  |  |  |  |
| Arsenic (dissolved)    | µg/l | 1.1   | ISO 17025 | < 1.1  | < 1.1  |  |  |  |
| Barium (dissolved)     | µg/l | 0.05  | ISO 17025 | 1.7    | 0.10   |  |  |  |
| Beryllium (dissolved)  | µg/l | 0.2   | ISO 17025 | < 0.2  | < 0.2  |  |  |  |
| Boron (dissolved)      | µg/l | 10    | ISO 17025 | < 10   | < 10   |  |  |  |
| Cadmium (dissolved)    | µg/l | 0.08  | ISO 17025 | < 0.08 | < 0.08 |  |  |  |
| Chromium (hexavalent)  | µg/l | 5     | ISO 17025 | < 5.0  | < 5.0  |  |  |  |
| Chromium (III)         | µg/l | 1     | NONE      | < 1.0  | < 1.0  |  |  |  |
| Chromium (dissolved)   | µg/l | 0.4   | ISO 17025 | < 0.4  | < 0.4  |  |  |  |
| Copper (dissolved)     | µg/l | 0.7   | ISO 17025 | 2.5    | 3.1    |  |  |  |
| Iron (dissolved)       | mg/l | 0.004 | ISO 17025 | 0.11   | 0.085  |  |  |  |
| Lead (dissolved)       | µg/l | 1     | ISO 17025 | < 1.0  | < 1.0  |  |  |  |
| Manganese (dissolved)  | µg/l | 0.06  | ISO 17025 | 1.6    | 1.4    |  |  |  |
| Mercury (dissolved)    | µg/l | 0.5   | ISO 17025 | < 0.5  | < 0.5  |  |  |  |
| Molybdenum (dissolved) | µg/l | 0.4   | ISO 17025 | < 0.4  | < 0.4  |  |  |  |
| Nickel (dissolved)     | µg/l | 0.3   | ISO 17025 | 0.5    | 0.7    |  |  |  |
| Selenium (dissolved)   | µg/l | 4     | ISO 17025 | < 4.0  | < 4.0  |  |  |  |
| Vanadium (dissolved)   | µg/l | 1.7   | ISO 17025 | < 1.7  | < 1.7  |  |  |  |
| Zinc (dissolved)       | µg/l | 0.4   | ISO 17025 | 1.9    | 3.1    |  |  |  |
| Calcium (dissolved)    | mg/l | 0.012 | ISO 17025 | 1.2    | 1.0    |  |  |  |
| Magnesium (dissolved)  | mg/l | 0.005 | ISO 17025 | 0.20   | 0.008  |  |  |  |

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\* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description *   |
|-------------------|------------------|---------------|-----------|------------------------|
| 1225828           | BH8              | None Supplied | 1.00      | Brown clay.            |
| 1225829           | BH8              | None Supplied | 5.00      | Brown gravel. **       |
| 1225830           | TP8              | None Supplied | 0.30      | Brown clay.            |
| 1225831           | TP8              | None Supplied | 1.50      | Grey clay with gravel. |

\*\* Non MCerts Matrix

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**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                  | Analytical Method Description                                                                                                                         | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Ammoniacal Nitrogen as N in leachate  | Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method.                        | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L082-PL       | W                  | NONE                 |
| Asbestos identification in soil       | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.                                 | In house method based on HSG 248                                                                                | A001-PL       | D                  | ISO 17025            |
| Boron in leachate                     | Determination of boron in leachate. Sample acidified and followed by ICP-OES.                                                                         | In-house method based on MEWAM                                                                                  | L039-PL       | W                  | ISO 17025            |
| Boron, water soluble, in soil         | Determination of water soluble boron in soil by hot water extract followed by ICP-OES.                                                                | In-house method based on Second Site Properties version 3                                                       | L038-PL       | D                  | MCERTS               |
| BTEX and MTBE in soil (Monoaromatics) | Determination of BTEX in soil by headspace GC-MS.                                                                                                     | In-house method based on USEPA8260                                                                              | L073B-PL      | W                  | MCERTS               |
| Cations in soil by ICP-OES            | Determination of cations in soil by aqua-regia digestion followed by ICP-OES.                                                                         | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L038-PL       | D                  | MCERTS               |
| Chloride in leachate                  | Determination of Chloride colorimetrically by discrete analyser.                                                                                      | In house based on MEWAM Method ISBN 0117516260.                                                                 | L082-PL       | W                  | ISO 17025            |
| Complex cyanide in leachate           | Determination of complex cyanide by distillation followed by colorimetry.                                                                             | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L040-PL       | W                  | ISO 17025            |
| Cr (III) in soil                      | In-house method by calculation from total Cr and Cr VI.                                                                                               | In-house method by calculation                                                                                  | L080-PL       | W                  | NONE                 |
| Fluoride in leachate                  | Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.                                         | In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"             | L033B-PL      | W                  | ISO 17025            |
| Fraction of Organic Carbon in soil    | Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.             | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                | L009-PL       | D                  | MCERTS               |
| Free cyanide in leachate              | Determination of free cyanide by distillation followed by colorimetry.                                                                                | In-house method                                                                                                 | L080-PL       | W                  | ISO 17025            |
| Free cyanide in soil                  | Determination of free cyanide by distillation followed by colorimetry.                                                                                | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | MCERTS               |
| Hexavalent chromium in leachate       | Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.                         | In-house method                                                                                                 | L080-PL       | W                  | ISO 17025            |
| Hexavalent chromium in soil           | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry. | In-house method                                                                                                 | L080-PL       | W                  | MCERTS               |
| Metals by ICP-OES in leachate         | Determination of metals in leachate by acidification followed by ICP-OES.                                                                             | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L039-PL       | W                  | ISO 17025            |
| Metals in soil by ICP-OES             | Determination of metals in soil by aqua-regia digestion followed by ICP-OES.                                                                          | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L038-PL       | D                  | MCERTS               |

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**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                               | Analytical Method Description                                                                                                                             | Analytical Method Reference                                                                                                       | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Moisture Content                                   | Moisture content, determined gravimetrically.                                                                                                             | In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests                                                  | L019-UK/PL    | W                  | NONE                 |
| NRA Leachate Prep                                  | 10:1 extract with de-ionised water shaken for 24 hours then filtered.                                                                                     | In-house method based on National Rivers Authority                                                                                | L020-PL       | W                  | NONE                 |
| pH at 20oC in leachate                             | Determination of pH in leachate by electrometric measurement.                                                                                             | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                                  | L005-PL       | W                  | ISO 17025            |
| pH in soil (automated)                             | Determination of pH in soil by addition of water followed by automated electrometric measurement.                                                         | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                                  | L099-PL       | D                  | MCERTS               |
| Phenols, speciated, in leachate, by HPLC           | Determination of speciated phenols by HPLC.                                                                                                               | In house method based on Blue Book Method.                                                                                        | L030-PL       | W                  | NONE                 |
| Speciated EPA-16 PAHs in soil                      | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.    | In-house method based on USEPA 8270                                                                                               | L064-PL       | D                  | MCERTS               |
| Stones content of soil                             | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.                               | In-house method based on British Standard Methods and MCERTS requirements.                                                        | L019-UK/PL    | D                  | NONE                 |
| Sulphate in leachates                              | Determination of sulphate in leachate by acidification followed by ICP-OES.                                                                               | In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil"                                              | L039-PL       | W                  | ISO 17025            |
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES. | L038-PL       | D                  | MCERTS               |
| Sulphide in leachate                               | Determination of sulphide in leachate by ion selective electrode.                                                                                         | In-house method                                                                                                                   | L010-PL       | W                  | NONE                 |
| Total cyanide in leachate                          | Determination of total cyanide by distillation followed by colorimetry.                                                                                   | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)                   | L080-PL       | W                  | ISO 17025            |
| Total Sulphur in soil as %                         | Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.                                      | In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil                      | L038-PL       | D                  | MCERTS               |
| TPHCWG (Soil)                                      | Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.                                                                                 | In-house method with silica gel split/clean up.                                                                                   | L088/76-PL    | W                  | MCERTS               |
| Volatile organic compounds in soil                 | Determination of volatile organic compounds in soil by headspace GC-MS.                                                                                   | In-house method based on USEPA8260                                                                                                | L073B-PL      | W                  | MCERTS               |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

Iss No 19-42012-1 Southampton Airport, Southampton J14044

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The results included within the report are representative of the samples submitted for analysis.

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**Tom Lees**

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## **Analytical Report Number : 19-45632**

Replaces Analytical Report Number : 19-45632, issue no. 1

|                             |                                  |                               |            |
|-----------------------------|----------------------------------|-------------------------------|------------|
| <b>Project / Site name:</b> | Southampton Airport, Southampton | <b>Samples received on:</b>   | 14/06/2019 |
| <b>Your job number:</b>     | J14044                           | <b>Samples instructed on:</b> | 14/06/2019 |
| <b>Your order number:</b>   | J14044-9                         | <b>Analysis completed by:</b> | 26/06/2019 |
| <b>Report Issue Number:</b> | 2                                | <b>Report issued on:</b>      | 26/06/2019 |
| <b>Samples Analysed:</b>    | 1 water sample                   |                               |            |

**Signed**

Katarzyna Lewicka  
#REF!

**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

|           |                           |
|-----------|---------------------------|
| soils     | - 4 weeks from reporting  |
| leachates | - 2 weeks from reporting  |
| waters    | - 2 weeks from reporting  |
| asbestos  | - 6 months from reporting |

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 19-45632-2 Southampton Airport, Southampton J14044

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The results included within the report are representative of the samples submitted for analysis.

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Analytical Report Number: 19-45632

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-9

|                                          |       |                       |                         |               |  |  |  |  |
|------------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Lab Sample Number                        |       |                       |                         | 1245423       |  |  |  |  |
| Sample Reference                         |       |                       |                         | BH8           |  |  |  |  |
| Sample Number                            |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                                |       |                       |                         | 4.25          |  |  |  |  |
| Date Sampled                             |       |                       |                         | 13/06/2019    |  |  |  |  |
| Time Taken                               |       |                       |                         | None Supplied |  |  |  |  |
| Analytical Parameter<br>(Water Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |

#### General Inorganics

|                                      |                        |       |           |      |  |  |  |  |
|--------------------------------------|------------------------|-------|-----------|------|--|--|--|--|
| pH                                   | pH Units               | N/A   | ISO 17025 | 7.1  |  |  |  |  |
| Total Cyanide                        | µg/l                   | 10    | ISO 17025 | < 10 |  |  |  |  |
| Free Cyanide                         | µg/l                   | 10    | ISO 17025 | < 10 |  |  |  |  |
| Sulphate as SO <sub>4</sub>          | mg/l                   | 0.045 | ISO 17025 | 21.9 |  |  |  |  |
| Total Sulphur                        | µg/l                   | 15    | NONE      | 7300 |  |  |  |  |
| Chloride                             | mg/l                   | 0.15  | ISO 17025 | 37   |  |  |  |  |
| Fluoride                             | µg/l                   | 50    | ISO 17025 | 240  |  |  |  |  |
| Ammoniacal Nitrogen as N             | µg/l                   | 15    | ISO 17025 | < 15 |  |  |  |  |
| Nitrate as N                         | mg/l                   | 0.01  | ISO 17025 | 2.68 |  |  |  |  |
| Nitrate as NO <sub>3</sub>           | mg/l                   | 0.05  | ISO 17025 | 11.9 |  |  |  |  |
| Alkalinity                           | mgCaCO <sub>3</sub> /l | 3     | NONE      | 740  |  |  |  |  |
| Alkalinity                           | mgCaCO <sub>3</sub> /l | 3     | ISO 17025 | 1000 |  |  |  |  |
| Total Dissolved Solids (Gravimetric) | mg/l                   | 4     | ISO 17025 | 370  |  |  |  |  |
| Hardness - Total                     | mgCaCO <sub>3</sub> /l | 1     | ISO 17025 | 305  |  |  |  |  |
| Bicarbonate                          | mgHCO <sub>3</sub> /l  | 10    | NONE      | < 10 |  |  |  |  |

#### Phenols by HPLC

|                              |      |     |      |       |  |  |  |  |
|------------------------------|------|-----|------|-------|--|--|--|--|
| Catechol                     | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Resorcinol                   | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Ethylphenol & Dimethylphenol | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Cresols                      | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Naphthols                    | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Isopropylphenol              | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Phenol                       | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Trimethylphenol              | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |

#### Total Phenols

|                      |      |     |      |       |  |  |  |  |
|----------------------|------|-----|------|-------|--|--|--|--|
| Total Phenols (HPLC) | µg/l | 3.5 | NONE | < 3.5 |  |  |  |  |
|----------------------|------|-----|------|-------|--|--|--|--|



Analytical Report Number: 19-45632

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-9

|                                          |       |                       |                         |               |  |  |  |  |
|------------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Lab Sample Number                        |       |                       |                         | 1245423       |  |  |  |  |
| Sample Reference                         |       |                       |                         | BH8           |  |  |  |  |
| Sample Number                            |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                                |       |                       |                         | 4.25          |  |  |  |  |
| Date Sampled                             |       |                       |                         | 13/06/2019    |  |  |  |  |
| Time Taken                               |       |                       |                         | None Supplied |  |  |  |  |
| Analytical Parameter<br>(Water Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |

#### Speciated PAHs

|                        |      |      |           |        |  |  |  |  |
|------------------------|------|------|-----------|--------|--|--|--|--|
| Naphthalene            | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Acenaphthylene         | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Acenaphthene           | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Fluorene               | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Phenanthrene           | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Anthracene             | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Fluoranthene           | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Pyrene                 | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Benzo(a)anthracene     | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Chrysene               | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Benzo(b)fluoranthene   | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Benzo(k)fluoranthene   | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Benzo(a)pyrene         | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Indeno(1,2,3-cd)pyrene | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Dibenz(a,h)anthracene  | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |
| Benzo(ghi)perylene     | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |  |

#### Total PAH

|                   |      |      |           |        |  |  |  |  |
|-------------------|------|------|-----------|--------|--|--|--|--|
| Total EPA-16 PAHs | µg/l | 0.16 | ISO 17025 | < 0.16 |  |  |  |  |
|-------------------|------|------|-----------|--------|--|--|--|--|

#### Heavy Metals / Metalloids

|                        |      |       |           |        |  |  |  |  |
|------------------------|------|-------|-----------|--------|--|--|--|--|
| Antimony (dissolved)   | µg/l | 0.4   | ISO 17025 | < 0.4  |  |  |  |  |
| Arsenic (dissolved)    | µg/l | 0.15  | ISO 17025 | 0.42   |  |  |  |  |
| Barium (dissolved)     | µg/l | 0.06  | ISO 17025 | 26     |  |  |  |  |
| Beryllium (dissolved)  | µg/l | 0.1   | ISO 17025 | < 0.1  |  |  |  |  |
| Boron (dissolved)      | µg/l | 10    | ISO 17025 | 62     |  |  |  |  |
| Cadmium (dissolved)    | µg/l | 0.02  | ISO 17025 | 0.03   |  |  |  |  |
| Calcium (dissolved)    | mg/l | 0.012 | ISO 17025 | 120    |  |  |  |  |
| Chromium (hexavalent)  | µg/l | 5     | ISO 17025 | < 5.0  |  |  |  |  |
| Chromium (III)         | µg/l | 1     | NONE      | 1.7    |  |  |  |  |
| Chromium (dissolved)   | µg/l | 0.2   | ISO 17025 | 1.7    |  |  |  |  |
| Copper (dissolved)     | µg/l | 0.5   | ISO 17025 | 4.2    |  |  |  |  |
| Iron (dissolved)       | mg/l | 0.004 | ISO 17025 | 0.049  |  |  |  |  |
| Lead (dissolved)       | µg/l | 0.2   | ISO 17025 | 0.2    |  |  |  |  |
| Magnesium (dissolved)  | mg/l | 0.005 | ISO 17025 | 3.9    |  |  |  |  |
| Manganese (dissolved)  | µg/l | 0.05  | ISO 17025 | 5.8    |  |  |  |  |
| Mercury (dissolved)    | µg/l | 0.05  | ISO 17025 | < 0.05 |  |  |  |  |
| Molybdenum (dissolved) | µg/l | 0.05  | ISO 17025 | 0.35   |  |  |  |  |
| Nickel (dissolved)     | µg/l | 0.5   | ISO 17025 | 2.0    |  |  |  |  |
| Selenium (dissolved)   | µg/l | 0.6   | ISO 17025 | 3.4    |  |  |  |  |
| Sodium (dissolved)     | mg/l | 0.01  | ISO 17025 | 15     |  |  |  |  |
| Vanadium (dissolved)   | µg/l | 0.2   | ISO 17025 | 0.9    |  |  |  |  |
| Zinc (dissolved)       | µg/l | 0.5   | ISO 17025 | 1.7    |  |  |  |  |





Analytical Report Number: 19-45632

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-9

|                                          |       |                       |                         |               |  |  |  |  |
|------------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Lab Sample Number                        |       |                       |                         | 1245423       |  |  |  |  |
| Sample Reference                         |       |                       |                         | BH8           |  |  |  |  |
| Sample Number                            |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                                |       |                       |                         | 4.25          |  |  |  |  |
| Date Sampled                             |       |                       |                         | 13/06/2019    |  |  |  |  |
| Time Taken                               |       |                       |                         | None Supplied |  |  |  |  |
| Analytical Parameter<br>(Water Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |

#### Monoaromatics & Oxygenates

|                                    |      |   |           |       |  |  |  |  |
|------------------------------------|------|---|-----------|-------|--|--|--|--|
| Benzene                            | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Toluene                            | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Ethylbenzene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| p & m-xylene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| o-xylene                           | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| MTBE (Methyl Tertiary Butyl Ether) | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |

#### Petroleum Hydrocarbons

|                                       |      |    |           |       |  |  |  |  |
|---------------------------------------|------|----|-----------|-------|--|--|--|--|
| TPH-CWG - Aliphatic >C5 - C6          | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |  |
| TPH-CWG - Aliphatic >C6 - C8          | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |  |
| TPH-CWG - Aliphatic >C8 - C10         | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |  |
| TPH-CWG - Aliphatic >C10 - C12        | µg/l | 10 | NONE      | < 10  |  |  |  |  |
| TPH-CWG - Aliphatic >C12 - C16        | µg/l | 10 | NONE      | < 10  |  |  |  |  |
| TPH-CWG - Aliphatic >C16 - C21        | µg/l | 10 | NONE      | < 10  |  |  |  |  |
| TPH-CWG - Aliphatic >C21 - C35        | µg/l | 10 | NONE      | < 10  |  |  |  |  |
| <b>TPH-CWG - Aliphatic (C5 - C35)</b> | µg/l | 10 | NONE      | < 10  |  |  |  |  |

|                                      |      |    |           |       |  |  |  |  |
|--------------------------------------|------|----|-----------|-------|--|--|--|--|
| TPH-CWG - Aromatic >C5 - C7          | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |  |
| TPH-CWG - Aromatic >C7 - C8          | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |  |
| TPH-CWG - Aromatic >C8 - C10         | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |  |
| TPH-CWG - Aromatic >C10 - C12        | µg/l | 10 | NONE      | < 10  |  |  |  |  |
| TPH-CWG - Aromatic >C12 - C16        | µg/l | 10 | NONE      | < 10  |  |  |  |  |
| TPH-CWG - Aromatic >C16 - C21        | µg/l | 10 | NONE      | < 10  |  |  |  |  |
| TPH-CWG - Aromatic >C21 - C35        | µg/l | 10 | NONE      | < 10  |  |  |  |  |
| <b>TPH-CWG - Aromatic (C5 - C35)</b> | µg/l | 10 | NONE      | < 10  |  |  |  |  |



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Project / Site name: Southampton Airport, Southampton

Your Order No: J14044-9

|                                          |       |                       |                         |               |  |  |  |  |
|------------------------------------------|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Lab Sample Number                        |       |                       |                         | 1245423       |  |  |  |  |
| Sample Reference                         |       |                       |                         | BH8           |  |  |  |  |
| Sample Number                            |       |                       |                         | None Supplied |  |  |  |  |
| Depth (m)                                |       |                       |                         | 4.25          |  |  |  |  |
| Date Sampled                             |       |                       |                         | 13/06/2019    |  |  |  |  |
| Time Taken                               |       |                       |                         | None Supplied |  |  |  |  |
| Analytical Parameter<br>(Water Analysis) | Units | Limit of<br>detection | Accreditation<br>Status |               |  |  |  |  |

|                                       |      |   |           |       |  |  |  |  |
|---------------------------------------|------|---|-----------|-------|--|--|--|--|
| <b>VOCs</b>                           |      |   |           |       |  |  |  |  |
| Chloromethane                         | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Chloroethane                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Bromomethane                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Vinyl Chloride                        | µg/l | 1 | NONE      | < 1.0 |  |  |  |  |
| Trichlorofluoromethane                | µg/l | 1 | NONE      | < 1.0 |  |  |  |  |
| 1,1-Dichloroethene                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Cis-1,2-dichloroethene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| MTBE (Methyl Tertiary Butyl Ether)    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1-Dichloroethane                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 2,2-Dichloropropane                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Trichloromethane                      | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,1-Trichloroethane                 | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dichloroethane                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1-Dichloropropene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Trans-1,2-dichloroethene              | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Benzene                               | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Tetrachloromethane                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dichloropropane                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Trichloroethene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Dibromomethane                        | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Bromodichloromethane                  | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Cis-1,3-dichloropropene               | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Trans-1,3-dichloropropene             | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Toluene                               | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,2-Trichloroethane                 | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,3-Dichloropropane                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Dibromochloromethane                  | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Tetrachloroethene                     | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dibromoethane                     | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Chlorobenzene                         | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,1,2-Tetrachloroethane             | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Ethylbenzene                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| p & m-Xylene                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Styrene                               | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Tribromomethane                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| o-Xylene                              | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,2,2-Tetrachloroethane             | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Isopropylbenzene                      | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Bromobenzene                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| n-Propylbenzene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 2-Chlorotoluene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 4-Chlorotoluene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,3,5-Trimethylbenzene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| tert-Butylbenzene                     | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2,4-Trimethylbenzene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| sec-Butylbenzene                      | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,3-Dichlorobenzene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| p-Isopropyltoluene                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dichlorobenzene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,4-Dichlorobenzene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Butylbenzene                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dibromo-3-chloropropane           | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2,4-Trichlorobenzene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Hexachlorobutadiene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2,3-Trichlorobenzene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |

U/S = Unsuitable Sample I/S = Insufficient Sample

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**Analytical Report Number : 19-45632**

**Project / Site name: Southampton Airport, Southampton**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                       | Analytical Method Description                                                                                                                                              | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Alkalinity in Water (by discrete analyser) | Determination of Alkalinity by discrete analyser (colorimetry). Accredited matrices: SW, PW, GW.                                                                           | In house method based on MEWAM & USEPA Method 310.2.                                                            | L082-PL       | W                  | ISO 17025            |
| Alkalinity in Water (by titration)         | Determination of Alkalinity by titration (colorimetry). Accredited matrices: SW, PW, GW.                                                                                   | In house method based on MEWAM & USEPA Method 310.2.                                                            | L025-PL       | W                  | NONE                 |
| Ammoniacal Nitrogen as N in water          | Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.            | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L082-PL       | W                  | ISO 17025            |
| Boron in water                             | Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW                                                                        | In-house method based on MEWAM                                                                                  | L039-PL       | W                  | ISO 17025            |
| BTEX and MTBE in water (Monoaromatics)     | Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW                                                                                  | In-house method based on USEPA8260                                                                              | L073B-PL      | W                  | ISO 17025            |
| Chloride in water                          | Determination of Chloride colorimetrically by discrete analyser.                                                                                                           | In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.                                | L082-PL       | W                  | ISO 17025            |
| Cr (III) in water                          | In-house method by calculation from total Cr and Cr VI.                                                                                                                    | In-house method by calculation                                                                                  | L080-PL       | W                  | NONE                 |
| Fluoride in water                          | Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.                               | In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"             | L033B-PL      | W                  | ISO 17025            |
| Free cyanide in water                      | Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.                                                                     | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | ISO 17025            |
| Hexavalent chromium in water               | Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.                                                 | In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.                                    | L080-PL       | W                  | ISO 17025            |
| Metals in water by ICP-MS (dissolved)      | Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.                                  | In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS. | L012-PL       | W                  | ISO 17025            |
| Metals in water by ICP-OES (dissolved)     | Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).                                                 | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L039-PL       | W                  | ISO 17025            |
| Nitrate as N in water                      | Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.                                                               | In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,         | L078-PL       | W                  | ISO 17025            |
| Nitrate in water                           | Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW                                                                | In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,         | L078-PL       | W                  | ISO 17025            |
| pH at 20oC in water (automated)            | Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW                                                                                   | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                | L099-PL       | W                  | ISO 17025            |
| Phenols, speciated, in water, by HPLC      | Determination of speciated phenols by HPLC.                                                                                                                                | In house method based on Blue Book Method.                                                                      | L030-PL       | W                  | NONE                 |
| Speciated EPA-16 PAHs in water             | Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW | In-house method based on USEPA 8270                                                                             | L102B-PL      | W                  | ISO 17025            |

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**Analytical Report Number : 19-45632**

**Project / Site name: Southampton Airport, Southampton**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                          | Analytical Method Description                                                                                  | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Sulphate in water                             | Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.   | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L039-PL       | W                  | ISO 17025            |
| Total cyanide in water                        | Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW          | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | ISO 17025            |
| Total dissolved solids in water (Gravimetric) | Determination of total dissolved solids in water by gravimetry.                                                | In house method based on BSEN 15216:2007                                                                        | L004-PL       | W                  | ISO 17025            |
| Total Hardness of water                       | Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L045-PL       | W                  | ISO 17025            |
| Total Sulphur in water                        | Determination of total sulphur in water by acidification followed by ICP-OES.                                  | In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""                           | L039-PL       | W                  | NONE                 |
| TPHCWG (Waters)                               | Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.     | In-house method                                                                                                 | L070-PL       | W                  | NONE                 |
| Volatile organic compounds in water           | Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW         | In-house method based on USEPA8260                                                                              | L073B-PL      | W                  | ISO 17025            |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**



|     | Sample Number | Sample Deviation Code | test_name                         | test_ref | Test Deviation code |
|-----|---------------|-----------------------|-----------------------------------|----------|---------------------|
| 632 | 1245423       | c                     | Ammoniacal Nitrogen as N in water | L082-PL  | c                   |
| 632 | 1245423       | c                     | pH at 20oC in water (automated)   | L099-PL  | c                   |

Key: a - No sampling date b - Incorrect container  
c - Holding time d - Headspace e - Temperature

**Tom Lees**

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## **Analytical Report Number : 19-48702**

|                             |                                  |                               |            |
|-----------------------------|----------------------------------|-------------------------------|------------|
| <b>Project / Site name:</b> | Southampton Airport, Southampton | <b>Samples received on:</b>   | 05/07/2019 |
| <b>Your job number:</b>     | J14044                           | <b>Samples instructed on:</b> | 05/07/2019 |
| <b>Your order number:</b>   | J14044_10                        | <b>Analysis completed by:</b> | 16/07/2019 |
| <b>Report Issue Number:</b> | 1                                | <b>Report issued on:</b>      | 16/07/2019 |
| <b>Samples Analysed:</b>    | 1 water sample                   |                               |            |

**Signed:**

Katarzyna Lewicka  
Head of Reporting Section  
**For & on behalf of i2 Analytical Ltd.**

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

|           |                           |
|-----------|---------------------------|
| soils     | - 4 weeks from reporting  |
| leachates | - 2 weeks from reporting  |
| waters    | - 2 weeks from reporting  |
| asbestos  | - 6 months from reporting |

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 19-48702

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044\_10

|                                          |            |                       |                         |  |  |  |  |  |
|------------------------------------------|------------|-----------------------|-------------------------|--|--|--|--|--|
| Lab Sample Number                        | 1260693    |                       |                         |  |  |  |  |  |
| Sample Reference                         | BH8        |                       |                         |  |  |  |  |  |
| Sample Number                            | W          |                       |                         |  |  |  |  |  |
| Depth (m)                                | 4.20       |                       |                         |  |  |  |  |  |
| Date Sampled                             | 05/07/2019 |                       |                         |  |  |  |  |  |
| Time Taken                               | 0005       |                       |                         |  |  |  |  |  |
| Analytical Parameter<br>(Water Analysis) | Units      | Limit of<br>detection | Accreditation<br>Status |  |  |  |  |  |

#### General Inorganics

|                                      |                        |       |           |      |  |  |  |  |
|--------------------------------------|------------------------|-------|-----------|------|--|--|--|--|
| pH                                   | pH Units               | N/A   | ISO 17025 | 7.1  |  |  |  |  |
| Total Cyanide                        | µg/l                   | 10    | ISO 17025 | < 10 |  |  |  |  |
| Free Cyanide                         | µg/l                   | 10    | ISO 17025 | < 10 |  |  |  |  |
| Sulphate as SO <sub>4</sub>          | mg/l                   | 0.045 | ISO 17025 | 21.4 |  |  |  |  |
| Total Sulphur                        | µg/l                   | 15    | NONE      | 7100 |  |  |  |  |
| Chloride                             | mg/l                   | 0.15  | ISO 17025 | 31   |  |  |  |  |
| Fluoride                             | µg/l                   | 50    | ISO 17025 | 170  |  |  |  |  |
| Ammoniacal Nitrogen as N             | µg/l                   | 15    | ISO 17025 | < 15 |  |  |  |  |
| Nitrate as N                         | mg/l                   | 0.01  | ISO 17025 | 2.28 |  |  |  |  |
| Nitrate as NO <sub>3</sub>           | mg/l                   | 0.05  | ISO 17025 | 10.1 |  |  |  |  |
| Alkalinity                           | NONE                   | 3     | ISO 17025 | 290  |  |  |  |  |
| Alkalinity                           | mgCaCO <sub>3</sub> /l | 3     | ISO 17025 | 270  |  |  |  |  |
| Total Dissolved Solids (Gravimetric) | mg/l                   | 4     | ISO 17025 | 400  |  |  |  |  |
| Hardness - Total                     | mgCaCO <sub>3</sub> /l | 1     | ISO 17025 | 404  |  |  |  |  |
| Bicarbonate                          | mgHCO <sub>3</sub> /l  | 10    | NONE      | < 10 |  |  |  |  |

#### Phenols by HPLC

|                              |      |     |      |       |  |  |  |  |
|------------------------------|------|-----|------|-------|--|--|--|--|
| Catechol                     | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Resorcinol                   | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Ethylphenol & Dimethylphenol | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Cresols                      | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Naphthols                    | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Isopropylphenol              | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Phenol                       | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |
| Trimethylphenol              | µg/l | 0.5 | NONE | < 0.5 |  |  |  |  |

#### Total Phenols

|                      |      |     |      |       |  |  |  |  |
|----------------------|------|-----|------|-------|--|--|--|--|
| Total Phenols (HPLC) | µg/l | 3.5 | NONE | < 3.5 |  |  |  |  |
|----------------------|------|-----|------|-------|--|--|--|--|

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Analytical Report Number: 19-48702

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044\_10

|                                          |            |                       |                         |  |  |  |  |
|------------------------------------------|------------|-----------------------|-------------------------|--|--|--|--|
| Lab Sample Number                        | 1260693    |                       |                         |  |  |  |  |
| Sample Reference                         | BH8        |                       |                         |  |  |  |  |
| Sample Number                            | W          |                       |                         |  |  |  |  |
| Depth (m)                                | 4.20       |                       |                         |  |  |  |  |
| Date Sampled                             | 05/07/2019 |                       |                         |  |  |  |  |
| Time Taken                               | 0005       |                       |                         |  |  |  |  |
| Analytical Parameter<br>(Water Analysis) | Units      | Limit of<br>detection | Accreditation<br>Status |  |  |  |  |

#### Speciated PAHs

|                        |      |      |           |        |  |  |  |
|------------------------|------|------|-----------|--------|--|--|--|
| Naphthalene            | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Acenaphthylene         | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Acenaphthene           | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Fluorene               | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Phenanthrene           | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Anthracene             | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Fluoranthene           | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Pyrene                 | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Benzo(a)anthracene     | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Chrysene               | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Benzo(b)fluoranthene   | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Benzo(k)fluoranthene   | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Benzo(a)pyrene         | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Indeno(1,2,3-cd)pyrene | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Dibenz(a,h)anthracene  | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |
| Benzo(ghi)perylene     | µg/l | 0.01 | ISO 17025 | < 0.01 |  |  |  |

#### Total PAH

|                   |      |      |           |        |  |  |  |
|-------------------|------|------|-----------|--------|--|--|--|
| Total EPA-16 PAHs | µg/l | 0.16 | ISO 17025 | < 0.16 |  |  |  |
|-------------------|------|------|-----------|--------|--|--|--|

#### Heavy Metals / Metalloids

|                        |      |       |           |        |  |  |  |
|------------------------|------|-------|-----------|--------|--|--|--|
| Antimony (dissolved)   | µg/l | 0.4   | ISO 17025 | < 0.4  |  |  |  |
| Arsenic (dissolved)    | µg/l | 0.15  | ISO 17025 | < 0.15 |  |  |  |
| Barium (dissolved)     | µg/l | 0.06  | ISO 17025 | 23     |  |  |  |
| Beryllium (dissolved)  | µg/l | 0.1   | ISO 17025 | < 0.1  |  |  |  |
| Boron (dissolved)      | µg/l | 10    | ISO 17025 | 67     |  |  |  |
| Cadmium (dissolved)    | µg/l | 0.02  | ISO 17025 | < 0.02 |  |  |  |
| Calcium (dissolved)    | mg/l | 0.012 | ISO 17025 | 150    |  |  |  |
| Chromium (hexavalent)  | µg/l | 5     | ISO 17025 | < 5.0  |  |  |  |
| Chromium (III)         | µg/l | 1     | NONE      | < 1.0  |  |  |  |
| Chromium (dissolved)   | µg/l | 0.2   | ISO 17025 | 0.3    |  |  |  |
| Copper (dissolved)     | µg/l | 0.5   | ISO 17025 | 1.0    |  |  |  |
| Iron (dissolved)       | mg/l | 0.004 | ISO 17025 | 0.022  |  |  |  |
| Lead (dissolved)       | µg/l | 0.2   | ISO 17025 | < 0.2  |  |  |  |
| Magnesium (dissolved)  | mg/l | 0.005 | ISO 17025 | 4.2    |  |  |  |
| Manganese (dissolved)  | µg/l | 0.05  | ISO 17025 | 1.7    |  |  |  |
| Mercury (dissolved)    | µg/l | 0.05  | ISO 17025 | < 0.05 |  |  |  |
| Molybdenum (dissolved) | µg/l | 0.05  | ISO 17025 | 0.48   |  |  |  |
| Nickel (dissolved)     | µg/l | 0.5   | ISO 17025 | 1.1    |  |  |  |
| Selenium (dissolved)   | µg/l | 0.6   | ISO 17025 | 2.8    |  |  |  |
| Sodium (dissolved)     | mg/l | 0.01  | ISO 17025 | 15     |  |  |  |
| Vanadium (dissolved)   | µg/l | 0.2   | ISO 17025 | 0.6    |  |  |  |
| Zinc (dissolved)       | µg/l | 0.5   | ISO 17025 | 1.7    |  |  |  |

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Analytical Report Number: 19-48702

Project / Site name: Southampton Airport, Southampton

Your Order No: J14044\_10

|                                          |            |                       |                         |  |  |  |  |
|------------------------------------------|------------|-----------------------|-------------------------|--|--|--|--|
| Lab Sample Number                        | 1260693    |                       |                         |  |  |  |  |
| Sample Reference                         | BH8        |                       |                         |  |  |  |  |
| Sample Number                            | W          |                       |                         |  |  |  |  |
| Depth (m)                                | 4.20       |                       |                         |  |  |  |  |
| Date Sampled                             | 05/07/2019 |                       |                         |  |  |  |  |
| Time Taken                               | 0005       |                       |                         |  |  |  |  |
| Analytical Parameter<br>(Water Analysis) | Units      | Limit of<br>detection | Accreditation<br>Status |  |  |  |  |

#### Monoaromatics & Oxygenates

|                                    |      |   |           |       |  |  |  |
|------------------------------------|------|---|-----------|-------|--|--|--|
| Benzene                            | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |
| Toluene                            | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |
| Ethylbenzene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |
| p & m-xylene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |
| o-xylene                           | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |
| MTBE (Methyl Tertiary Butyl Ether) | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |

#### Petroleum Hydrocarbons

|                                       |      |    |           |       |  |  |  |
|---------------------------------------|------|----|-----------|-------|--|--|--|
| TPH-CWG - Aliphatic >C5 - C6          | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |
| TPH-CWG - Aliphatic >C6 - C8          | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |
| TPH-CWG - Aliphatic >C8 - C10         | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |
| TPH-CWG - Aliphatic >C10 - C12        | µg/l | 10 | NONE      | < 10  |  |  |  |
| TPH-CWG - Aliphatic >C12 - C16        | µg/l | 10 | NONE      | < 10  |  |  |  |
| TPH-CWG - Aliphatic >C16 - C21        | µg/l | 10 | NONE      | < 10  |  |  |  |
| TPH-CWG - Aliphatic >C21 - C35        | µg/l | 10 | NONE      | < 10  |  |  |  |
| <b>TPH-CWG - Aliphatic (C5 - C35)</b> | µg/l | 10 | NONE      | < 10  |  |  |  |

|                                      |      |    |           |       |  |  |  |
|--------------------------------------|------|----|-----------|-------|--|--|--|
| TPH-CWG - Aromatic >C5 - C7          | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |
| TPH-CWG - Aromatic >C7 - C8          | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |
| TPH-CWG - Aromatic >C8 - C10         | µg/l | 1  | ISO 17025 | < 1.0 |  |  |  |
| TPH-CWG - Aromatic >C10 - C12        | µg/l | 10 | NONE      | < 10  |  |  |  |
| TPH-CWG - Aromatic >C12 - C16        | µg/l | 10 | NONE      | < 10  |  |  |  |
| TPH-CWG - Aromatic >C16 - C21        | µg/l | 10 | NONE      | < 10  |  |  |  |
| TPH-CWG - Aromatic >C21 - C35        | µg/l | 10 | NONE      | < 10  |  |  |  |
| <b>TPH-CWG - Aromatic (C5 - C35)</b> | µg/l | 10 | NONE      | < 10  |  |  |  |

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Project / Site name: Southampton Airport, Southampton

Your Order No: J14044\_10

|                                          |            |                       |                         |  |  |  |
|------------------------------------------|------------|-----------------------|-------------------------|--|--|--|
| Lab Sample Number                        | 1260693    |                       |                         |  |  |  |
| Sample Reference                         | BH8        |                       |                         |  |  |  |
| Sample Number                            | W          |                       |                         |  |  |  |
| Depth (m)                                | 4.20       |                       |                         |  |  |  |
| Date Sampled                             | 05/07/2019 |                       |                         |  |  |  |
| Time Taken                               | 0005       |                       |                         |  |  |  |
| Analytical Parameter<br>(Water Analysis) | Units      | Limit of<br>detection | Accreditation<br>Status |  |  |  |

#### VOCs

|                                       |      |   |           |       |  |  |  |  |
|---------------------------------------|------|---|-----------|-------|--|--|--|--|
| Chloromethane                         | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Chloroethane                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Bromomethane                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Vinyl Chloride                        | µg/l | 1 | NONE      | < 1.0 |  |  |  |  |
| Trichlorofluoromethane                | µg/l | 1 | NONE      | < 1.0 |  |  |  |  |
| 1,1-Dichloroethene                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Cis-1,2-dichloroethene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| MTBE (Methyl Tertiary Butyl Ether)    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1-Dichloroethane                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 2,2-Dichloropropane                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Trichloromethane                      | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,1-Trichloroethane                 | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dichloroethane                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1-Dichloropropene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Trans-1,2-dichloroethene              | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Benzene                               | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Tetrachloromethane                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dichloropropane                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Trichloroethene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Dibromomethane                        | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Bromodichloromethane                  | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Cis-1,3-dichloropropene               | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Trans-1,3-dichloropropene             | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Toluene                               | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,2-Trichloroethane                 | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,3-Dichloropropane                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Dibromochloromethane                  | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Tetrachloroethene                     | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dibromoethane                     | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Chlorobenzene                         | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,1,2-Tetrachloroethane             | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Ethylbenzene                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| p & m-Xylene                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Styrene                               | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Tribromomethane                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| o-Xylene                              | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,1,2,2-Tetrachloroethane             | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Isopropylbenzene                      | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Bromobenzene                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| n-Propylbenzene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 2-Chlorotoluene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 4-Chlorotoluene                       | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,3,5-Trimethylbenzene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| tert-Butylbenzene                     | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2,4-Trimethylbenzene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| sec-Butylbenzene                      | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,3-Dichlorobenzene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| p-Isopropyltoluene                    | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dichlorobenzene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,4-Dichlorobenzene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Butylbenzene                          | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2-Dibromo-3-chloropropane           | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2,4-Trichlorobenzene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| Hexachlorobutadiene                   | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |
| 1,2,3-Trichlorobenzene                | µg/l | 1 | ISO 17025 | < 1.0 |  |  |  |  |

U/S = Unsuitable Sample I/S = Insufficient Sample

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**Analytical Report Number : 19-48702**

**Project / Site name: Southampton Airport, Southampton**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                       | Analytical Method Description                                                                                                                                              | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Alkalinity in Water (by discrete analyser) | Determination of Alkalinity by discrete analyser (colorimetry). Accredited matrices: SW, PW, GW.                                                                           | In house method based on MEWAM & USEPA Method 310.2.                                                            | L082-PL       | W                  | ISO 17025            |
| Alkalinity in Water (by titration)         | Determination of Alkalinity by titration (colorimetry). Accredited matrices: SW, PW, GW.                                                                                   | In house method based on MEWAM & USEPA Method 310.2.                                                            | L025-PL       | W                  | NONE                 |
| Ammoniacal Nitrogen as N in water          | Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.            | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L082-PL       | W                  | ISO 17025            |
| Boron in water                             | Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW                                                                        | In-house method based on MEWAM                                                                                  | L039-PL       | W                  | ISO 17025            |
| BTEX and MTBE in water (Monoaromatics)     | Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW                                                                                  | In-house method based on USEPA8260                                                                              | L073B-PL      | W                  | ISO 17025            |
| Chloride in water                          | Determination of Chloride colorimetrically by discrete analyser.                                                                                                           | In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.                                | L082-PL       | W                  | ISO 17025            |
| Cr (III) in water                          | In-house method by calculation from total Cr and Cr VI.                                                                                                                    | In-house method by calculation                                                                                  | L080-PL       | W                  | NONE                 |
| Fluoride in water                          | Determination of fluoride in water by 1:1 ratio with a buffer solution followed by Ion Selective Electrode. Accredited matrices: SW, PW, GW.                               | In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"             | L033B-PL      | W                  | ISO 17025            |
| Free cyanide in water                      | Determination of free cyanide by distillation followed by colorimetry. Accredited matrices SW, GW, PW.                                                                     | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | ISO 17025            |
| Hexavalent chromium in water               | Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.                                                 | In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.                                    | L080-PL       | W                  | ISO 17025            |
| Metals in water by ICP-MS (dissolved)      | Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.                                  | In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS. | L012-PL       | W                  | ISO 17025            |
| Metals in water by ICP-OES (dissolved)     | Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).                                                 | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L039-PL       | W                  | ISO 17025            |
| Nitrate as N in water                      | Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.                                                               | In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,         | L078-PL       | W                  | ISO 17025            |
| Nitrate in water                           | Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW                                                                | In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08,         | L078-PL       | W                  | ISO 17025            |
| pH at 20oC in water (automated)            | Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW                                                                                   | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests                                | L099-PL       | W                  | ISO 17025            |
| Phenols, speciated, in water, by HPLC      | Determination of speciated phenols by HPLC.                                                                                                                                | In house method based on Blue Book Method.                                                                      | L030-PL       | W                  | NONE                 |
| Speciated EPA-16 PAHs in water             | Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW | In-house method based on USEPA 8270                                                                             | L102B-PL      | W                  | ISO 17025            |

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**Analytical Report Number : 19-48702**

**Project / Site name: Southampton Airport, Southampton**

**Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)**

| Analytical Test Name                          | Analytical Method Description                                                                                  | Analytical Method Reference                                                                                     | Method number | Wet / Dry Analysis | Accreditation Status |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| Sulphate in water                             | Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.   | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.                            | L039-PL       | W                  | ISO 17025            |
| Total cyanide in water                        | Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW          | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL       | W                  | ISO 17025            |
| Total dissolved solids in water (Gravimetric) | Determination of total dissolved solids in water by gravimetry.                                                | In house method based on BSEN 15216:2007                                                                        | L004-PL       | W                  | ISO 17025            |
| Total Hardness of water                       | Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton          | L045-PL       | W                  | ISO 17025            |
| Total Sulphur in water                        | Determination of total sulphur in water by acidification followed by ICP-OES.                                  | In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""                           | L039-PL       | W                  | NONE                 |
| TPHCWG (Waters)                               | Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.     | In-house method                                                                                                 | L070-PL       | W                  | NONE                 |
| Volatile organic compounds in water           | Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW         | In-house method based on USEPA8260                                                                              | L073B-PL      | W                  | ISO 17025            |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

**For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.**

**Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

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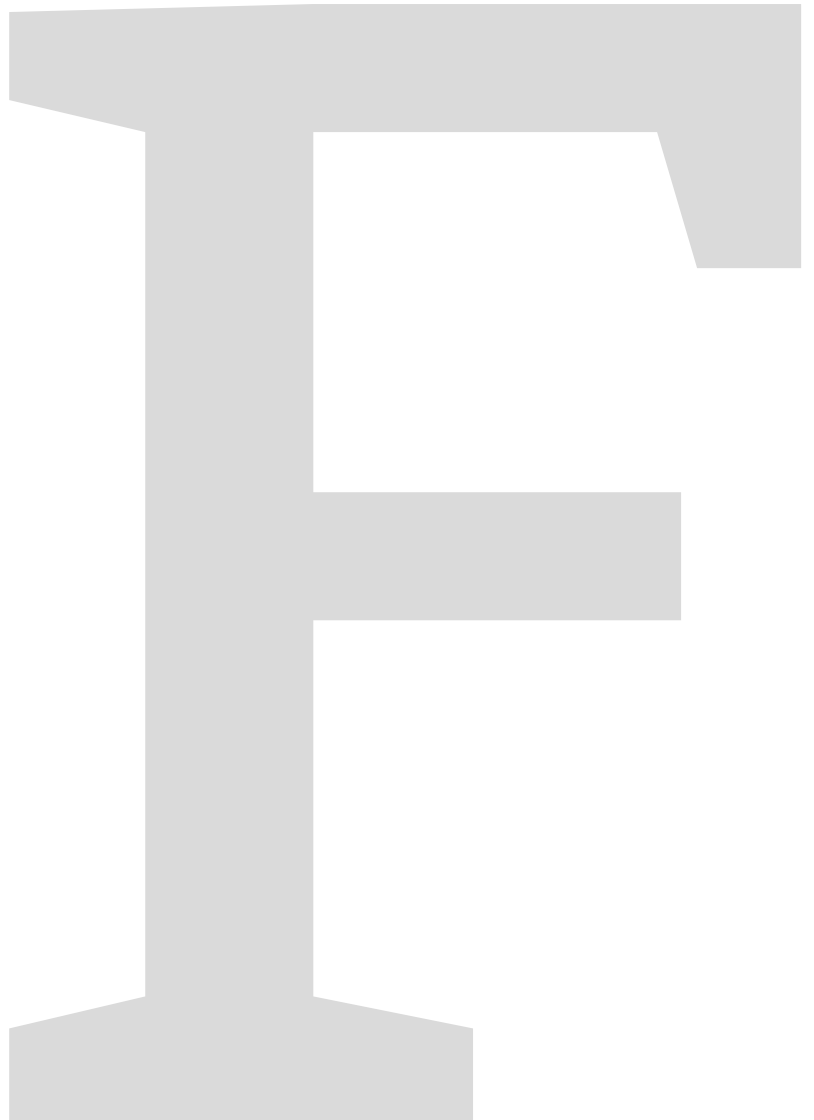
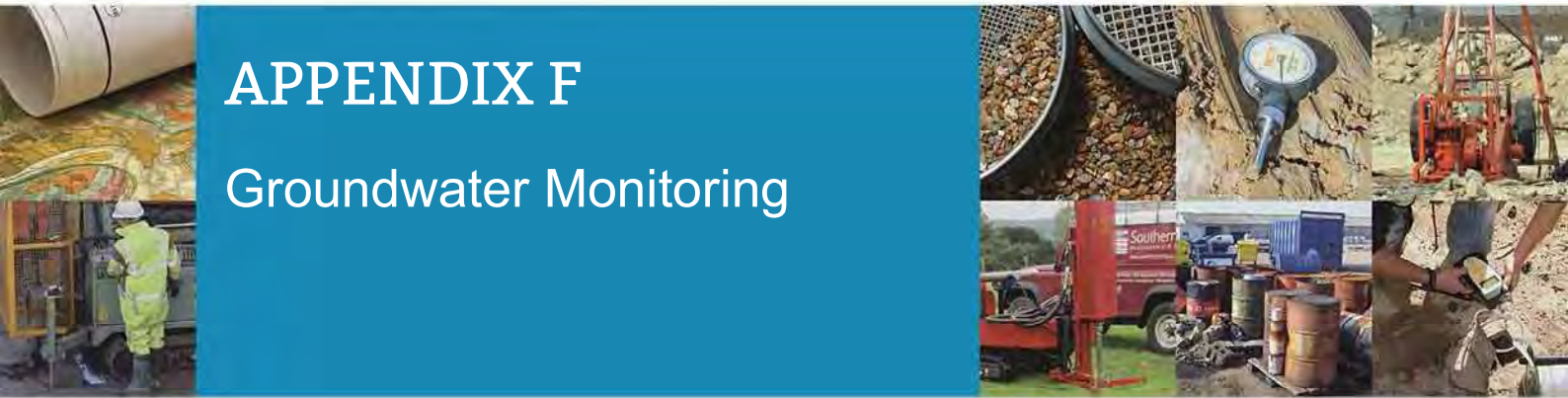
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## APPENDIX F

### Groundwater Monitoring





## STANDARD VW PIEZOMETER LAE CALIBRATION

|          |          |          |            |               |            |
|----------|----------|----------|------------|---------------|------------|
| Model    | VWP-3000 | Cal date | 22/03/2019 | SN.           | 8233       |
| Serial   | 349824   | Baro     | 1016.0     | Readout No.   | 2108       |
| Works ID | G32 9 46 | Temp °C  | 20         | R/O Cal. date | 09/05/2018 |

| Applied pressure |         | Readings [digit] |           |             | Calculated Pressure |             | Error % fso |            |
|------------------|---------|------------------|-----------|-------------|---------------------|-------------|-------------|------------|
| psi              | kPa     | 1st Cycle        | 2nd Cycle | avg.[digit] | lin.[kPa]           | polyn.[kPa] | linear      | polynomial |
| 0.000            | 0.000   | 9696.2           | 9695.8    | 9696.0      | 0.37                | -0.12       | 0.11%       | -0.03%     |
| 10.007           | 69.000  | 9090.6           | 9090.3    | 9090.5      | 69.11               | 69.21       | 0.03%       | 0.06%      |
| 20.015           | 138.000 | 8487.3           | 8486.8    | 8487.1      | 137.62              | 138.00      | -0.11%      | 0.00%      |
| 30.022           | 207.000 | 7880.3           | 7880.3    | 7880.3      | 206.50              | 206.89      | -0.15%      | -0.03%     |
| 40.029           | 276.000 | 7269.6           | 7269.2    | 7269.4      | 275.85              | 275.96      | -0.04%      | -0.01%     |
| 50.036           | 345.000 | 6655.5           | 6655.6    | 6655.6      | 345.54              | 345.06      | 0.16%       | 0.02%      |

Calibration of Fluke Pressure Controller PPC4EX S/N: 8233 valid from 23rd March 2018. Certificate of Calibration No 47934, Chamois Metrology UKAS No 0822

### CALIBRATION FACTORS

#### Linear factor (k)

| kPa per digit |
|---------------|
| -0.113527226  |

| psi per digit |
|---------------|
| -0.016465     |

| mH <sub>2</sub> O per digit |
|-----------------------------|
| -0.011577                   |

#### Polynomial factors

|   | kPa          |
|---|--------------|
| A | -3.92518E-07 |
| B | -0.107108985 |
| C |              |

|  | psi          |
|--|--------------|
|  | -5.69279E-08 |
|  | -0.015534    |
|  |              |

|  | mH <sub>2</sub> O |
|--|-------------------|
|  | -4.0026E-08       |
|  | -0.010922         |
|  |                   |

#### Thermal factor (T)

| kPa per °C |
|------------|
| 0.24787771 |

| psi per °C  |
|-------------|
| 0.035950357 |

| mH <sub>2</sub> O per °C |
|--------------------------|
| 0.025276                 |

Note: Digits are Hz<sup>2</sup> x 10<sup>-3</sup> units.

(please consult the User Manuals for conversion of alternative reading units)

Polynomial calculation [kPa] = A \* (Reading)<sup>2</sup> + B \* (Reading) + C + T \* (Current Temp - Site Zero Temp)

C = -A\*(Site Zero Reading)<sup>2</sup> - B\*(Site Zero Reading)

Linear calc = k (kPa) \* (Current Reading - Site Zero Reading) + T \* (Current Temp - Site Zero Temp)

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## STANDARD VW PIEZOMETER LAE CALIBRATION

|          |          |          |            |               |            |
|----------|----------|----------|------------|---------------|------------|
| Model    | VWP-3000 | Cal date | 22/03/2019 | SN.           | 8233       |
| Serial   | 349825   | Baro     | 1016.0     | Readout No.   | 2108       |
| Works ID | G32 9 47 | Temp °C  | 20         | R/O Cal. date | 09/05/2018 |

| Applied pressure |         | Readings [digit] |           |             | Calculated Pressure |             | Error % fso |            |
|------------------|---------|------------------|-----------|-------------|---------------------|-------------|-------------|------------|
| psi              | kPa     | 1st Cycle        | 2nd Cycle | avg.[digit] | lin.[kPa]           | polyn.[kPa] | linear      | polynomial |
| 0.000            | 0.000   | 9681.6           | 9681.0    | 9681.3      | 0.32                | -0.09       | 0.09%       | -0.03%     |
| 10.007           | 69.000  | 9096.8           | 9096.4    | 9096.6      | 69.04               | 69.12       | 0.01%       | 0.03%      |
| 20.015           | 138.000 | 8511.9           | 8511.6    | 8511.8      | 137.78              | 138.10      | -0.07%      | 0.03%      |
| 30.022           | 207.000 | 7926.7           | 7926.5    | 7926.6      | 206.56              | 206.89      | -0.13%      | -0.03%     |
| 40.029           | 276.000 | 7337.4           | 7337.3    | 7337.4      | 275.81              | 275.90      | -0.05%      | -0.03%     |
| 50.036           | 345.000 | 6744.5           | 6744.4    | 6744.5      | 345.49              | 345.09      | 0.14%       | 0.02%      |

Calibration of Fluke Pressure Controller PPC4EX S/N: 8233 valid from 23rd March 2018. Certificate of Calibration No 47934, Chamois Metrology UKAS No 0822

### CALIBRATION FACTORS

#### Linear factor (k)

|               |
|---------------|
| kPa per digit |
| -0.117535091  |

|               |
|---------------|
| psi per digit |
| -0.017046     |

|                             |
|-----------------------------|
| mH <sub>2</sub> O per digit |
| -0.011985                   |

#### Polynomial factors

|   |              |
|---|--------------|
|   | kPa          |
| A | -3.57102E-07 |
| B | -0.111669347 |
| C |              |

|  |              |
|--|--------------|
|  | psi          |
|  | -5.17914E-08 |
|  | -0.016196    |
|  |              |

|  |                   |
|--|-------------------|
|  | mH <sub>2</sub> O |
|  | -3.6414E-08       |
|  | -0.011387         |
|  |                   |

#### Thermal factor (T)

|             |
|-------------|
| kPa per °C  |
| 0.282113439 |

|             |
|-------------|
| psi per °C  |
| 0.040915655 |

|                          |
|--------------------------|
| mH <sub>2</sub> O per °C |
| 0.028768                 |

Note: Digits are Hz<sup>2</sup> x 10<sup>-3</sup> units.

(please consult the User Manuals for conversion of alternative reading units)

Polynomial calculation [kPa] = A \* (Reading)<sup>2</sup> + B \* (Reading) + C + T \* (Current Temp - Site Zero Temp)

C = -A\*(Site Zero Reading<sup>2</sup>) - B\*(Site Zero Reading)

Linear calc = k (kPa) \* (Current Reading - Site Zero Reading) + T \* (Current Temp - Site Zero Temp)

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SIG. GC

## VWR1 Readout Certificate of Calibration

|             |            |
|-------------|------------|
| Model       | VWR1       |
| Serial No.  | VWR0081    |
| Check. Date | 27/03/2019 |

**Vibrating Wire** Absolute maximum deviation detected: **0.01%**

| Reference Frequency | Readout Reading | Error  |
|---------------------|-----------------|--------|
| Hz                  | Hz              | %      |
| 500.0               | 500.0           | 0.00%  |
| 1000.0              | 999.8           | -0.01% |
| 2000.0              | 1999.7          | -0.01% |
| 3000.0              | 2999.8          | 0.00%  |
| 4000.0              | 3999.9          | 0.00%  |

**Thermistor** Absolute maximum deviation detected: **0.18%**

| Reference Resistor | Readout Reading | Error  |
|--------------------|-----------------|--------|
| $\Omega$           | $\Omega$        | %      |
| 1000.0             | 999.0           | -0.01% |
| 5000.0             | 5010.0          | 0.05%  |
| 10000.0            | 10035.0         | 0.18%  |
| 15000.0            | 15029.0         | 0.15%  |
| 20000.0            | 19997.0         | -0.02% |

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