



**BROWNFIELD  
SOLUTIONS LTD**

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

## THE DEAN TRUST

Dean Trust Academy, Ardwick, Manchester

Phase II Geo-Environmental Assessment Report

NS/M4246/10353

August 2021

| EXECUTIVE SUMMARY                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Location and Brief Site Description</b>                       | The site is located off Stockport Road, Ardwick, M13 0LF. It is situated approximately 2.7km south-east of Manchester City Centre, centred on National Grid Reference 386240, 396308.<br>The area of the proposed temporary classroom is currently noted to be an area of soft landscaping adjacent to the existing changing pavilion.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Ground Conditions</b>                                         | Generalised ground conditions from the ground investigation comprise (top down): <ul style="list-style-type: none"> <li>• Made ground generally comprising clayey gravelly sand or sandy gravelly clay from ground level to between 0.90m and 2.60m bgl.</li> <li>• Natural superficial deposits comprising sandy gravelly clay proven to depths of 18.00m bgl underlain by gravelly sand proven to 21.45m bgl.</li> <li>• Groundwater levels of 19.00m rising to 17.50m bgl was encountered in BH05 during site works.</li> <li>• Post site works monitoring levels ranging between 1.56m and 3.45m bgl in shallow installs, and 14.47m and 14.70m bgl in deep installs.</li> <li>• A relic basement is considered to exist in the north-east of the proposed temporary classroom footing, as detailed on TP02A and TP05.</li> </ul> |
| <b>Human Health - Soils Contamination</b>                        | <ul style="list-style-type: none"> <li>• Testing of the made ground at the site did not reveal any exceedances of heavy metals, PAHs, petroleum hydrocarbons, BTEX or MTBE compounds.</li> <li>• Asbestos was not recorded in any of the samples undertaken within the red line boundary. However, widespread asbestos contamination has been recorded at the Dean Trust Academy site historically, although levels of asbestos from samples obtained during site investigations within the red line boundary did not reveal any positive asbestos ID's asbestos is considered to be ubiquitous in the made ground at low levels.</li> </ul>                                                                                                                                                                                          |
| <b>Controlled Waters – Surface and Groundwater Contamination</b> | <ul style="list-style-type: none"> <li>• The overall risk to controlled waters is considered to be low and no further action is required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Ground Gas</b>                                                | Given the temporary nature of the development, and the typically construction with a modular cabin suspended on pads above ground level a significant void space will be present under the building which will prevent sufficient passive ventilation to negate the requirement for gas protection measures. Regardless of this, gas monitoring undertaken on two occasions over six weeks provided a good spread of data across the site, elevated concentrations of carbon dioxide and methane were not recorded and therefore the site falls within CS1 and gas protection measures are not required.                                                                                                                                                                                                                              |
| <b>Outline Remedial Strategy</b>                                 | Subject to regulatory approval, the following outline remedial strategy is recommended: <ul style="list-style-type: none"> <li>• Cover system to replace / reinstate that already present at the site with 'clean' validated topsoil/subsoil in soft landscaping areas.</li> <li>• Verification of the above with validation reports produced.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Foundations and Floor Slabs</b>                               | Pad foundations are considered suitable.<br>Safe bearing capacity of 200kN/m <sup>2</sup> should be available for a 800mm square pad at a minimum depth of 1.50m bgl. Where the relic basement is present in the north-east of the proposed building footprint, foundations should be deepened. At a founding depth of 3.00m, for a circular pad 0.80m diameter, an allowable bearing capacity not exceeding 300kN/m <sup>2</sup> may be assumed, keeping total and differential settlement within acceptable limits.<br>Suspended floor slabs may be adopted.                                                                                                                                                                                                                                                                        |
| <b>Concrete Classification</b>                                   | DS1 AC1s conditions prevail.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Highways Design</b>                                           | Made Ground CBR – 2%<br>Superficial Strata CBR – cohesive/fine soils– 2%<br>The above should be confirmed by in-situ testing at formation level by a specialist geotechnical engineer during construction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Sustainable Drainage Systems (SUDS)</b>                       | Drainage to soakaways is considered unsuitable for this site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Further Work</b>                                              | The following further works will be required to progress to the construction phase: <ul style="list-style-type: none"> <li>• Detailed foundation design by a structural engineer.</li> <li>• Design of Remedial Strategy and confirmation with the Local Authority /EA</li> <li>• Implementation of the Remedial Strategy and verification of the remedial works.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

This executive summary should be read in conjunction with the full report, reference NS/M4246/10353 and not as a standalone document.

## PROJECT QUALITY CONTROL DATA SHEET

|                       |                                              |            |        |
|-----------------------|----------------------------------------------|------------|--------|
| <b>Site Name:</b>     | Dean Trust Academy, Ardwick, Manchester      |            |        |
| <b>Document Name:</b> | Phase II Geo-Environmental Assessment Report |            |        |
| <b>Reference:</b>     | NS/M4246/10353                               |            |        |
| <b>Status:</b>        | -                                            | 16/08/2021 | Final. |
|                       |                                              |            |        |
|                       |                                              |            |        |

| <b>Issued By:</b>                                                                                                                                                    | <b>Client:</b>                                                | <b>Engineer:</b>                                                                                                               |
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## CONTENTS

|            |                                                                    |           |
|------------|--------------------------------------------------------------------|-----------|
| <b>1.0</b> | <b>INTRODUCTION .....</b>                                          | <b>1</b>  |
| 1.1        | CONTEXT .....                                                      | 1         |
| 1.2        | PROPOSED DEVELOPMENT .....                                         | 1         |
| 1.3        | PREVIOUS REPORTS .....                                             | 1         |
| 1.4        | OBJECTIVES AND SCOPE.....                                          | 2         |
| 1.5        | LIMITATIONS .....                                                  | 2         |
| <b>2.0</b> | <b>THE SITE.....</b>                                               | <b>4</b>  |
| 2.1        | LOCATION.....                                                      | 4         |
| 2.2        | SITE DESCRIPTION .....                                             | 4         |
| <b>3.0</b> | <b>SUMMARY OF PREVIOUS REPORTS .....</b>                           | <b>5</b>  |
| 3.1        | OVERVIEW .....                                                     | 5         |
| 3.2        | ATKINS PHASE 1: GEO-ENVIRONMENTAL ASSESSMENT (2015) .....          | 6         |
| 3.3        | ATKINS GROUND INVESTIGATION REPORT (2014).....                     | 6         |
| 3.4        | ATKINS CONTAMINATED LAND RISK ASSESSMENT (2015) .....              | 7         |
| 3.5        | SOLMEK PHASE 2 SITE INVESTIGATION REPORT (2016).....               | 8         |
| 3.6        | ATKINS REMEDIATION STRATEGY (2015) .....                           | 8         |
| 3.7        | ESG REMEDIATION VERIFICATION REPORT (2016).....                    | 9         |
| 3.8        | ESG MATERIALS MANAGEMENT PLAN (2016).....                          | 10        |
| 3.9        | ZETICA UXO DESK STUDY (2015).....                                  | 10        |
| 3.10       | PATRICK PARSONS (2018).....                                        | 10        |
| 3.11       | SL PHASE I DESK STUDY ASSESSMENT (2019).....                       | 11        |
| 3.12       | BSL GEO-ENVIRONMENTAL ASSESSMENT REPORT (2019) .....               | 12        |
| 3.13       | BSL REMEDIAL STRATEGY REPORT (2020) .....                          | 12        |
| 3.14       | BSL GEO-ENVIRONMENTAL ASSESSMENT REPORT (2021) .....               | 13        |
| <b>4.0</b> | <b>METHOD OF INVESTIGATION.....</b>                                | <b>15</b> |
| 4.1        | OBJECTIVES.....                                                    | 15        |
| 4.2        | SITE WORKS.....                                                    | 15        |
| 4.3        | SAMPLING .....                                                     | 16        |
| 4.4        | CHEMICAL LABORATORY TESTING .....                                  | 16        |
| 4.5        | GEOTECHNICAL LABORATORY TESTING .....                              | 17        |
| 4.6        | MONITORING .....                                                   | 17        |
| <b>5.0</b> | <b>GROUND CONDITIONS .....</b>                                     | <b>19</b> |
| 5.1        | MADE GROUND.....                                                   | 19        |
| 5.2        | NATURAL SUPERFICIAL STRATA .....                                   | 19        |
| 5.3        | SOLID GEOLOGY.....                                                 | 19        |
| 5.4        | GROUNDWATER.....                                                   | 20        |
| 5.5        | OBSERVATIONS.....                                                  | 20        |
| <b>6.0</b> | <b>GEOTECHNICAL ASSESSMENT.....</b>                                | <b>21</b> |
| 6.1        | GROUND MODEL SUMMARY .....                                         | 21        |
| 6.2        | GEOTECHNICAL LABORATORY TEST RESULTS .....                         | 21        |
| 6.3        | AGGRESSIVE GROUND CONDITIONS – GEOTECHNICAL CHEMICAL TESTING ..... | 21        |
| 6.4        | IN SITU GEOTECHNICAL TESTING .....                                 | 21        |
| 6.5        | DESIGN SOIL PARAMETERS.....                                        | 22        |
| 6.6        | FOUNDATIONS.....                                                   | 22        |
| 6.7        | BUILDING NEAR TREES .....                                          | 23        |
| 6.8        | FLOOR SLABS.....                                                   | 23        |
| 6.9        | SITE PREPARATION AND CONSTRUCTION.....                             | 24        |
| 6.10       | CONCRETE CLASSIFICATION .....                                      | 24        |
| 6.11       | HIGHWAYS.....                                                      | 25        |

## CONTENTS

|             |                                                                |           |
|-------------|----------------------------------------------------------------|-----------|
| 6.12        | SUSTAINABLE DRAINAGE SYSTEMS (SUDS) .....                      | 25        |
| <b>7.0</b>  | <b>GEO-ENVIRONMENTAL RISK ASSESSMENT.....</b>                  | <b>26</b> |
| 7.1         | INTRODUCTION .....                                             | 26        |
| 7.2         | SOILS TEST RESULTS AND RISK ASSESSMENT – HUMAN HEALTH .....    | 26        |
| 7.3         | WATERS AND LEACHATE TEST RESULTS – CONTROLLED WATERS.....      | 27        |
| 7.4         | CONTROLLED WATERS RISK ASSESSMENT .....                        | 28        |
| 7.5         | PERMANENT GROUND GAS AND VAPOURS RESULTS .....                 | 28        |
| 7.6         | GROUND GAS RISK ASSESSMENT.....                                | 28        |
| 7.7         | POTABLE WATER SUPPLY.....                                      | 29        |
| 7.8         | QUALITATIVE RISK ASSESSMENT.....                               | 29        |
| 7.9         | OUTLINE REMEDIAL MEASURES .....                                | 33        |
| 7.10        | HEALTH AND SAFETY ISSUES .....                                 | 33        |
| 7.11        | ASBESTOS .....                                                 | 34        |
| <b>8.0</b>  | <b>WASTE SOIL CLASSIFICATION &amp; ASSESSMENT.....</b>         | <b>36</b> |
| 8.1         | WASTE CLASSIFICATION PROCEDURE .....                           | 36        |
| 8.2         | WASTE CLASSIFICATION AND WASTE ACCEPTANCE CRITERIA (WAC) ..... | 36        |
| 8.3         | RE-USE OF SOILS .....                                          | 36        |
| <b>9.0</b>  | <b>CONCLUSIONS.....</b>                                        | <b>38</b> |
| 9.1         | GEO-ENVIRONMENTAL.....                                         | 38        |
| 9.2         | GEOTECHNICAL .....                                             | 38        |
| 9.3         | FURTHER WORK .....                                             | 39        |
| <b>10.0</b> | <b>ABBREVIATIONS AND DEFINITIONS .....</b>                     | <b>40</b> |
| <b>11.0</b> | <b>REFERENCES.....</b>                                         | <b>43</b> |

## DRAWINGS

| Drawing Number            | Rev | Title                                  |
|---------------------------|-----|----------------------------------------|
| 21/02(2-)AP003            | 3   | Proposed Floor Plan                    |
| 5120-HMA-00-ZZ-DR-A-00202 | P3  | Foundation Layout – Pad Footing Option |
| M4246/01                  | -   | Site Location Plan                     |
| M4246/09                  | -   | Exploratory Hole Location Plan         |

## APPENDICES

| Appendix   | Title                        |
|------------|------------------------------|
| Appendix A | BSL Methodology and Guidance |
| Appendix B | Exploratory Hole Logs        |
| Appendix C | Chemical Testing Results     |
| Appendix D | Geotechnical Testing Results |
| Appendix E | Monitoring Results           |
| Appendix F | Waste Assessment Report      |

## 1.0 INTRODUCTION

### 1.1 Context

This report describes a Phase II Geo-Environmental Assessment carried out by Brownfield Solutions Limited (BSL) for The Dean Trust on a site off Stockport Road, Longsight and has been completed in general accordance with the following guidance:

- Environment Agency guidance - Land Contamination: Risk Management (LCRM).
- CLR11 - Model Procedures for the Management of Land Contamination.
- BS 10175:2011+A2:2017 Investigation of Potentially Contaminated Sites.
- BS5930: 2015+A1:2020 Code of Practice for Ground Investigations.
- BS EN 1997-1:2004+A1:2013 Eurocode 7. Geotechnical design. General rules plus UK National Annex.
- BS EN 1997-2:2007 Eurocode 7 Geotechnical design. Ground investigation and testing plus UK National Annex.

Definitions of terms and acronyms used within this report is presented in Section 10.0.

### 1.2 Proposed Development

The proposed development is indicated to comprise a new single storey temporary classroom to the east of the existing changing pavilion at the Dean Trust Academy as shown on the Ground Floor Plan (ref. 21/02(2-)AP003 Rev 3) as provided to BSL by the client.

### 1.3 Previous Reports

This report should be read in conjunction with the following reports:

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Phase 1 Desk Study           | <ul style="list-style-type: none"> <li>• Atkins Dean Trust Ardwick High School (Revised Scheme) Phase 1: Geo-Environmental Assessment (5130327/DTAHS-RS/002) issued August 2015.</li> <li>• Brownfield Solutions Ltd Phase I Desk Study Assessment Report (ref. GP/M4246/8660) issued July 2019 – for proposed extensions.</li> <li>• Brownfield Solutions Ltd Phase I Desk Study Assessment Report (ref. GP/M4246/8660 Rev B, issued February 2021 – for a proposed MUGA.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Phase 2 / Site Investigation | <ul style="list-style-type: none"> <li>• Atkins Manchester Schools Basic Needs Programme: Daisy Mill Ground Investigation Report (GTG20140378/5130327/19/Rev 0) issued December 2014.</li> <li>• Geotechnics Limited Factual Report on Ground Investigation issued December 2014.</li> <li>• Atkins Dean Trust Ardwick High School (Revised Scheme) Ground Investigation Report – Contaminated Land Risk Assessment (5130327/09/CLRA/Rev 0) issued August 2015.</li> <li>• Atkins Manchester Schools Programme: Dean Trust Ardwick Remediation Strategy (5119532_1) issued June 2015.</li> <li>• ESG Factual Report (LO/R5141/001/NB) issued October 2015.</li> <li>• ESG Detailed Quantitative Risk Assessment Report (R5141b) issued October 2015.</li> <li>• Solmek Phase 2 Site Investigation Report (S160937/SI) issued November 2016.</li> <li>• Solmek Ground Gas Risk Assessment (S160937/GAS) issued 1st August 2017.</li> <li>• Patrick Parsons Phase 2 Geotechnical Intrusive Investigation (H18186/JR/2018.11.08) issued 8th November 2018.</li> <li>• Brownfield Solutions Ltd Geo-Environmental Assessment Report (NS/M4246/8662 Rev B) issued in October 2019).</li> <li>• Brownfield Solutions Ltd Geo-Environmental Assessment Report (NS/M4246/9960) issued in February 2021).</li> </ul> |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remediation / Validation | <ul style="list-style-type: none"> <li>• Atkins Manchester Schools Programme: Dean Trust Ardwick Remediation Strategy (5119532_1) issued June 2015.</li> <li>• ESG Remediation Strategy (R5141/2) issued October 2015.</li> <li>• ESG Remediation Verification Report (R5141/3) issued December 2016.</li> <li>• Brownfield Solutions Ltd Remedial Strategy (NS/M4246/8855 Rev A) issued November 2020.</li> <li>• Brownfield Solutions Ltd Clean Cover System Validation Letter (NS/M4246/9858) issued January 2021.</li> </ul> |
| Other                    | <ul style="list-style-type: none"> <li>• ESG Materials Management Plan Dean Trust Ardwick 2016 (R5141/MMP) issued December 2015.</li> <li>• Zeteca Site Safe UXO Desk Study (P5220-15-R1-A) issued April 2015.</li> </ul>                                                                                                                                                                                                                                                                                                        |

## 1.4 Objectives and Scope

The objectives of this report are to determine the geo-environmental setting and ground conditions of the site, highlighting potential risks and areas of concern that may govern the development under the current planning regime.

This report has been produced in general accordance with the recommendations for a Tier 2 Generic Quantitative Risk Assessment as described in LCRM guidance. This assessment is also intended to fulfil the requirements of a Ground Investigation Report (GIR) as detailed in BS EN 1997-2:2007.

An exploratory intrusive investigation was undertaken to confirm the findings of the preliminary CSM and risk assessment and meet any objectives that had not been satisfied. The exploratory investigation was undertaken using trial pitting, window sampling, cable percussive drilling, ground gas and groundwater monitoring, laboratory chemical and geotechnical testing, with reporting on the findings.

## 1.5 Limitations

This assessment has been prepared in accordance with the relevant current legislative framework, guidance and risk assessment methodology as outlined in Appendix A. BSL is not liable for any subsequent changes in the guidance and legislation.

The findings and opinions conveyed via this report are based on information obtained from a number of sources as detailed within this report, BSL have assumed this information is correct and reliable. Nevertheless, BSL cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

BSL have used reasonable skill, care and diligence for the investigation of the site and the production of this report. There may be other conditions prevailing on the site which are outside the scope of work and have not been highlighted by this assessment and therefore have not been considered by this report. Responsibility cannot be accepted for such site conditions not revealed by the assessment.

This report has been prepared for the sole use and reliance of the Client, The Dean Trust. No other third parties may rely upon or reproduce the contents of this report without the written permission of Brownfield Solutions Ltd (BSL). If any unauthorised third party comes into possession of this report, they rely on it at their own risk and BSL do not owe them any Duty of Care.

The investigation carried out on the site has been conducted to provide the best information on the ground conditions within site access and budgetary constraints. The inherent variation of ground conditions allows only for definition of the actual conditions at the locations and depths of exploratory locations at the time of the investigation. Different ground conditions may exist that have not been identified within this investigation.

The recommendations in this report assume that ground levels will remain as existing, unless stated otherwise within the report. If there is to be any re-profiling (e.g. to create development platforms or flood defences) then the recommendations may not apply.

The groundwater results described are only representative of the dates on which they were recorded, and levels may vary seasonally (e.g. due to changes in weather).

This assessment has been based on the proposed planning layouts provided. Any subsequent change to the planning layout may have an impact on the validity of recommendations made within this report. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

Although every effort has been made to position exploratory holes in the least sensitive areas of the site, exploratory hole positions were located approximately as part of this investigation and no guarantee can be given as to their accuracy. Consideration should be given to the possibility that exploratory holes excavated as part of this investigation and indeed any previous ground investigation work by others may be encountered beneath or within the influence of individual foundations. BSL cannot be held responsible for structural failures caused by the location of foundations of any form of structure within the influence of exploratory holes.

Where it has not been possible to reasonably use an EC7 compliant investigation technique, a practical alternative has been adopted to obtain indicative soil parameters and any interpretation is based upon engineering experience, local precedent where applicable and relevant published information.

The chemical testing carried out for this report was not scoped to comply with the requirements of the water supply company and further work may be required, unless otherwise stated.

Notwithstanding site observations concerning the presence or otherwise of archaeological issues, asbestos-containing materials (ACM) or invasive weeds (e.g. Japanese knotweed), this report does not constitute a formal survey of these potential issues.

The site plans enclosed in this report should not be scaled off. Any site boundary line depicted on plans does not imply legal ownership of land.

Any recommendations made in this report should be confirmed with the Regulatory Authorities prior to implementation to ensure compliance.

## 2.0 THE SITE

### 2.1 Location

The site is located off Stockport Road, Ardwick, M13 0LF. It is situated approximately 2.7 km south-east of Manchester City Centre, centred on National Grid Reference 386240, 396308 as shown on the Site Location Plan, Drawing No. M4246/01.

### 2.2 Site Description

A walkover survey was carried out on the site on the 28<sup>th</sup> June 2019 and 28<sup>th</sup> January 2021. The main site features and potential issues identified during this survey for the wider Dean Trust Academy site are detailed below. A selection of photographs from the site walkover is presented to the rear of this report.

| Feature                                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site Area                                | The wider Dean Trust Academy site covers approximately 3.68 hectares.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Site Access                              | Pedestrian access to the site is gained off Stockport Road to the west of the site. Vehicular access is gained off Langport Avenue to the north of the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Current Land Use and Site Features       | <p>The site comprises The Dean Trust Academy, a secondary school built and opened in 2015. The school building is an irregular shape two to three storey which is situated in the north-western corner of the site. The southern half of the site comprises a Multi-Use Games Area (MUGA), hard surfaced sports courts are present centrally in the east of the site and a grass sports field is present in the north-east of the site. A hard play area is located within a semi-enclosed courtyard between two wings of the school building and a large area of car parking is present centrally in the north half of the site.</p> <p>A large mound is present in the north-eastern of the site approximately 3m (H) x 45m (L) x 20m (W). A smaller mound is present to the south of the playground which was approximately 1.5m (H) x 25m (L) x 20m (W).</p> <p>Since the original site walkover, an extension has been made to the east and northern sides of the school, with an area of car parking now extending to the north of a proposed MUGA. The mound in this area has been reduced to make way for the car parking.</p> <p>The area of the proposed MUGA is a grass sports pitch, however an area of gravel surfacing is present towards the west of this. This area was previously used as a compound / parking for the contractors associated with the recent extension works. The area of the proposed temporary classroom is currently noted to be an area of soft landscaping adjacent to the existing changing pavilion.</p> |
| Potential Sources of Gross Contamination | No significant sources of contamination were noted during the site walkover. Car parking was present in the east of the site but given the age and quality of surfacing any spillages and leakages are considered unlikely. Contractor parking on gravel surfacing has taken place in recent months within the extents of the proposed MUGA, however given the duration of this, significant spillages and leakages are considered unlikely.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Vegetation                               | There are sporadic mature/semi-mature trees in the northeast of the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Topography                               | The site is generally flat, however, as noted above two mounds are present at the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Site Boundaries                          | The site is enclosed by palisade fencing to the north, east, south and west.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Surrounding Area                         | The site is set within residential area, bordered by Langport Avenue to the north with St Luke's C of E Primary School and a park beyond. The east of the site is bound by Cochrane Avenue and South Street with residential properties beyond. The south of the site is bound by a religious building and residential properties. The west of the site is bound by Stockport Road with residential properties beyond.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

### 3.0 SUMMARY OF PREVIOUS REPORTS

#### 3.1 Overview

A number of reports have been issued for the site as detailed in Section 1.4. A number of these reports have been made available to BSL for review as part of the Phase 1 Desk Study Assessment Report, details of the reports provided to BSL are recorded below:

|                              |                                                                                                                                                                      |                                |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Phase 1 Desk Study           | • Atkins Dean Trust Ardwick High School (Revised Scheme) Phase 1: Geo-Environmental Assessment (5130327/DTAHS-RS/002) issued August 2015.                            |                                |
|                              | • Brownfield Solutions Ltd Phase I Desk Study Assessment Report (ref. GP/M4246/8660) issued July 2019 – for proposed extensions.                                     | Available                      |
|                              | • Brownfield Solutions Ltd Phase I Desk Study Assessment Report (ref. GP/M4246/8660 Rev B, issued February 2021 – for a proposed MUGA.                               |                                |
| Phase 2 / Site Investigation | • Atkins Manchester Schools Basic Needs Programme: Daisy Mill Ground Investigation Report (GTG20140378/5130327/19/Rev 0) issued December 2014.                       | Available                      |
|                              | • Geotechnics Limited Factual Report on Ground Investigation issued December 2014.                                                                                   | Not Available                  |
|                              | • Atkins Dean Trust Ardwick High School (Revised Scheme) Ground Investigation Report – Contaminated Land Risk Assessment (5130327/09/CLRA/Rev 0) issued August 2015. | Available                      |
|                              | • Atkins Manchester Schools Programme: Dean Trust Ardwick Remediation Strategy (5119532_1) issued June 2015.                                                         | Available                      |
|                              | • ESG Factual Report (LO/R5141/001/NB) issued October 2015.                                                                                                          |                                |
|                              | • ESG Detailed Quantitative Risk Assessment Report (R5141b) issued October 2015.                                                                                     | Not Available<br>Not Available |
|                              | • Solmek Phase 2 Site Investigation Report (S160937/SI) issued November 2016.                                                                                        | Available                      |
|                              | • Solmek Ground Gas Risk Assessment (S160937/GAS) issued 1 <sup>st</sup> August 2017.                                                                                | Available                      |
|                              | • Patrick Parsons Phase 2 Geotechnical Intrusive Investigation (H18186/JR/2018.11.08) issued 8 <sup>th</sup> November 2018.                                          | Available                      |
|                              | • Brownfield Solutions Ltd Geo-Environmental Assessment Report (NS/M4246/8662 Rev B) issued in October 2019) – for proposed extensions.                              | Available                      |
|                              | • Brownfield Solutions Ltd Geo-Environmental Assessment Report (NS/M4246/9960) issued in February 2021) – for proposed MUGA.                                         | Available                      |
| Remediation / Validation     | • Atkins Manchester Schools Programme: Dean Trust Ardwick Remediation Strategy (5119532_1) issued June 2015.                                                         | Available                      |
|                              | • ESG Remediation Strategy (R5141/2) issued October 2015.                                                                                                            | Not Available                  |
|                              | • ESG Remediation Verification Report (R5141/3) issued December 2016.                                                                                                | Available                      |
|                              | • Brownfield Solutions Ltd Remedial Strategy (NS/M4246/8855 Rev A) issued November 2020.                                                                             | Available                      |
|                              | • Brownfield Solutions Ltd Clean Cover System Validation Letter (NS/M4246/9858) issued January 2021.                                                                 | Available                      |
| Other                        | • ESG Materials Management Plan Dean Trust Ardwick 2016 (R5141/MMP) issued December 2015.                                                                            | Available                      |
|                              | • Zetica Site Safe UXO Desk Study (P5220-15-R1-A) issued April 2015.                                                                                                 | Available                      |

### 3.2 Atkins Phase 1: Geo-Environmental Assessment (2015)

A summary of the relevant points from the Phase 1 Geo-Environmental Assessment Report (ref. 5130327/DTAHS-RS/002, dated August 2015) completed by Atkins is presented below:

- The site is currently of mixed use: the north-east of the site is currently in use as a primary school and the south of the site is occupied by the mill building and associated car parking (which is currently only partly in use as an IT data centre). The remainder of the site is open space, used as a public footway and dog walking/play area. The area of open space is across the footprint of a previous mill complex, similar to the existing buildings in the south of the site. No tanks or oil storage areas were seen on site. It is known that, historically, the mill used oil for heating, but no tanks were visible. A pipe, of suitable diameter and construction, for oil transmission was noted that entered the heating plant, but it is unknown whether this is connected to a tank or if it is used in any form currently.
- In 1848, the site comprised predominantly fields, with the southern portion occupied by buildings under the name of “Longsight Terrace” and “Longsight Hall”. By 1893, the site was occupied by numerous buildings and associated roads (most likely residential streets) and the centre of the site was occupied by a “Carriage and Tramway Company’s Depot” with a brewery present on the north-western boundary. The large “Daisy Works” building was present by 1934 and an electricity substation appeared by 1950. “Longsight School” (the present day “Richmond Park Primary School”) appeared in the north-eastern part of the site by 1976, and the site took on its current layout by 1991.
- The site is underlain by Devensian Till. The Chester Pebble Beds Formation is present across the majority of the site area with the Manchester Marls Formation limited to the northern extent of the site.
- A Coal Authority Mining Report states that the site is located in an area affected by coal mining and is in the likely zone of influence from workings in one seam of coal, at 370 m bgl.
- The closest significant surface water feature to the site is the River Medlock 780m to the west, flowing east to north-west.
- The bedrock beneath the majority of the site (Chester Pebble Beds Formation) is classified predominantly as a Principal aquifer, and the bedrock beneath the north-eastern corner of the site (Manchester Marls Formation) is classified as a Secondary ‘B’ aquifer. There is a point on the south-eastern boundary of the site that is also classified as a Secondary ‘B’ aquifer, and this relates to where the adjacent Manchester Marls Formation Bedrock meets the site boundary.
- The risks posed to receptors by the identified potential sources of historical contamination are considered to be moderate/low from on-site sources and moderate/low from off-site sources with respect to potential ground gas risks; and moderate from on-site sources and moderate from off-site sources for potential health risks to users of the redeveloped site via dermal, dust inhalation and ingestion pathways. Risks to surface water receptors were deemed low to very low, but risks to controlled waters receptors were considered moderate/low from on-site sources and moderate from off-site sources, in relation to the proposed development works.

### 3.3 Atkins Ground Investigation Report (2014)

A summary of the relevant points from the Ground Investigation Report (ref. GTG20140378/5130327/19/Rev 0, dated December 2014) completed by Atkins is presented below:

- 7No. cable percussive boreholes (BH1 to BH6) to a maximum depth of 21.45m bgl.
- 8No. window samples boreholes (WS01 to WS08) to depths of between 0.30m and 6.45m bgl.
- 4No. trial pits (TP01 to TP04) to depths of between 2.30m and 2.90m bgl.
- Ground conditions encountered included topsoil up 0.60m in thickness, granular made ground to depths of between 0.30m and 3.60m bgl, cohesive made ground to depths of between 1.00m and 4.80m bgl. Made ground was underlain by glacial till to between 17.60m and 20.32m bgl underlain by weathered sandstone/mudstone to a maximum proven depth of 21.45m bgl. Peat was recorded in BH03 at a depth of 2.50 to 2.90m bgl.
- Groundwater strikes were encountered in exploratory holes BH02A, BH03, BH05, WS01, WS02 and WS05 and WS02 at depths ranging between 0.90m and 19.70m bgl.

- 12No. undrained triaxial tests were undertaken in the Glacial Till and results ranging from 118kPa to 457kPa were recorded at depths of between 3.00m and 16.50m bgl.
- 12No. bulk density tests in the Glacial Till recorded results ranging between 2.06Mg/m<sup>3</sup> and 2.29Mg/m<sup>3</sup>.
- Undrained shear strength in the Glacial Till ranged between 25kPa and 457kPa with an average of 163kPa.
- The Design Sulphate Class for the site is DS-1 and the ACEC Class is AC-1.

### 3.4 Atkins Contaminated Land Risk Assessment (2015)

A summary of the relevant points from the Ground Investigation Report – Contaminated Land Risk Assessment report (ref. 5130327/09/CLRA/Rev 0.0, dated August 2015) completed by Atkins is presented below:

- 47No. soil samples analysed for a range of determinands including heavy metals, PAHs, TPH CWG, BTEX, PCBs, phenols, moisture content, sulphate, soil organic matter, cyanide and pH.
- 13No. soil samples analysed for asbestos ID.
- 16No. soil samples analysed for soil leachate analysis (2:1 dilution).
- 16No. groundwater samples analysed for metals, PAHs, TPH CWG, BTEX, sulphate cyanide and pH.
- 5No. soil samples analysed for WAC Analysis.
- Visual and olfactory evidence of contamination was identified within the made ground across much of the site noted to be ash and localised tarmacadam fragments. Hydrocarbon odours were noted in BH01 at 0.30-1.00m bgl, BH06 3.40-4.80m bgl.
- Soil Vapour Headspace Monitoring revealed elevated readings in BH01 at 0.50m bgl (37.0ppm), BH02A at 3.50m bgl (201.0m bgl) and 3.40m bgl (28.3ppm).
- The combined soil sample analysis results for the Sub-Surface and ASL site investigations were compared against relevant assessment criteria including CLEA derived GACs resulted in the following exceedances:

| Contaminant           | Max Concentration | Number of samples | Screening Value |
|-----------------------|-------------------|-------------------|-----------------|
| Lead                  | 508               | 42 (8)            | 310             |
| Benzo(a)anthracene    | 30.67             | 47 (9)            | 9.04            |
| Benzo(a)pyrene        | 33.43             | 47 (20)           | 1.04            |
| Indeno(123cd)pyrene   | 19.85             | 47 (5)            | 10.3            |
| Dibenzo(ah)anthracene | 4.35              | 47 (9)            | 1.03            |
| Benzo(b)fluoranthene  | 36                | 47 (9)            | 10.3            |
| TPH Aro. >C10-C12     | 1993.4            | 47 (1)            | 1080            |
| TPH Aro. >C12-C16     | 7030              | 47 (1)            | 2040            |
| TPH Aro. >C16-C21     | 17721             | 47 (1)            | 1330            |
| TPH Aro. >C21-C35     | 15179             | 47 (1)            | 1300            |

NB: Number in brackets represents the number of results above guideline values.

- In addition to the above the following samples recorded asbestos:

| Location | Depth (m) | Asbestos ID                                       | Asbestos Level | Asbestos Level (%) |
|----------|-----------|---------------------------------------------------|----------------|--------------------|
| TP01     | 1.00-1.20 | Chrysotile free fibres                            | Quantifiable   | <0.001             |
| TP01     | 1.90-2.00 | Chrysotile free fibres                            | Quantifiable   | <0.001             |
| TP02     | 0.50      | Chrysotile free fibres                            | Quantifiable   | 0.002              |
| WS03A    | 0.50      | Chrysotile free fibres                            | Trace          | -                  |
| WS05     | 0.25      | Chrysotile free fibres                            | Trace          | -                  |
| WS05     | 0.90      | Chrysotile free fibres                            | Quantifiable   | 0.031              |
| BH06     | 1.00      | Amosite free fibres                               | Quantifiable   | <0.001             |
| BH06     | 2.00      | Chrysotile free fibres                            | Quantifiable   | <0.001             |
| BH06     | 3.40      | Chrysotile free fibres                            | Trace          | -                  |
| BH06     | 4.00      | Chrysotile free fibres                            | Quantifiable   | 0.005              |
| BH01     | 0.50      | Chrysotile free fibres                            | Quantifiable   | <0.001             |
| BH02     | 1.20-1.65 | Chrysotile cement present and Free Fibres in soil | Quantifiable   | 0.573              |
| BH02A    | 0.70      | Chrysotile free fibres                            | Quantifiable   | 0.055              |

|       |      |                        |              |        |
|-------|------|------------------------|--------------|--------|
| BH02A | 2.90 | Chrysotile free fibres | Quantifiable | <0.001 |
| BH02A | 3.50 | Chrysotile free fibres | Trace        | -      |

- Elevated concentrations of antimony, chromium, copper, iron, manganese, zinc, naphthalene, anthracene, fluoranthene, benzo(a)pyrene,  $\Sigma$ (benzo(b)fluoranthene + benzo(k)fluoranthene),  $\Sigma$ (benzo(ghi)perylene + indeno(123cd)pyrene),  $\Sigma$ (benzo(b)fluoranthene + benzo(k)fluoranthene + benzo(ghi)perylene + indeno(123-cd)pyrene) were recorded in leachate samples taken from across the site.
- Elevated concentrations of cadmium, copper, selenium, zinc, fluoranthene, benzo(a)pyrene, TPH Ali. >C16-C21, TPH Ali. >C21-C35, Total TPH Ali. C12-C35, TPH Aro. >C21-35, Total TPH Aro. C12-C35, TPH and sulphate were recorded in a number of sample locations across the site in the first monitoring visit. The second visit recorded elevated heavy metals.
- Despite some of the exceedances for TPHs, PAHs and heavy metals it is considered that the distances from site to the surface water receptors in the vicinity of the site, is that there is not a sufficient pathway to exist and that the distance would allow attenuation to result in insignificant concentrations at the receptor. And therefore present a low potential risk.
- In terms of risks to the aquifer beneath the site, it is located below a clay stratum considered to be that of the unproductive Glacial Till. This identified water is considered to be perched and not reflective of the groundwater within the underlying Principal Aquifer within the underlying Principal Aquifer (Chester Pebble Beds) or Secondary B Aquifer (Manchester Marls) within the bedrock.
- Gas monitoring recorded elevated carbon dioxide concentrations in BH02A and BH03 in the northern half of the site. A peak flow of 10.5l/hr was recorded in BH03. Given this, this area of the site was classified as CS2 and gas protection measures were recommended.
- A moderate risk was considered to exist to human health from the made ground, however, the implementation of an environmental cover system was considered to reduce the risk to moderate/low.
- A moderate/low risk was considered to exist to human health and property as a results of ground gas, however, the implementation of gas protection measures was considered to reduce the risk to low.
- A very low risk was considered to exist to surface water receptors and a low risk was suggested for the risk of contaminated made ground to the Principal and Secondary 'B' Aquifers.

### 3.5 Solmek Phase 2 Site Investigation Report (2016)

A summary of the relevant points from the Phase 2 Site Investigation Report (ref. S160937/SI, dated November 2016) completed by Solmek Ltd is presented below:

- 4No. window sample boreholes (BH1 to BH4) drilled to a depth of 5.00m bgl.
- 3No. ground gas and water monitoring installations installed within BH2, BH3 and BH4.
- Made ground was generally encountered as dark brown clayey slightly gravelly sandy topsoil, proven to max 0.50mbgl (BH4) underlain by blackish brown slightly sandy to sandy slightly gravelly clay with brick fragments, proven to a max 1.80mbgl (BH2). Within BH1 to BH3 the above stratum was underlain by stiff consistency dark brown slightly sandy slightly gravelly clay with rare brick fragments proven to max 3.00mbgl (BH2).
- Natural deposits were generally proven as stiff consistency dark brown slightly sandy to sandy slightly gravelly high strength clay of intermediate to high plasticity to a depth of 5.00mbgl.
- Groundwater was not encountered within any of the exploratory borehole positions.
- 3No. samples of made ground were tested for metals, semi-metals, non-metals, inorganic determinants and Asbestos identification screening.
- 2No. samples were tested for PAHs and TPH CWG.
- All metals, inorganic and organic determinands were found to be below the relevant thresholds.
- Slightly alkaline pH conditions in made ground, with soluble sulphates below the BRE Special Digest One threshold value of 500mg/l.
- No positive identification of asbestos was made in the samples screened.

### 3.6 Atkins Remediation Strategy (2015)

A summary of the relevant points from the Remediation Strategy Report (ref. 5119532\_1, dated June 2015) completed by Atkins is presented below:

- Assessment of gas monitoring data, outlined above, suggest the concentrations of soils gases across the site to be representative of a Characteristic Situation 2 (CS2) in accordance with CIRIA C665 (Ref 18).
- Sites falling within CS2 are recommended to implement the following protection methods into buildings constructed in the area:
  - a. Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200g DPM.
  - b. Beam and block or precast concrete slab and minimum 2000 g DPM/reinforced gas membrane.
  - c. Possibly underfloor venting or pressurisation in combination with a) and b) depending on use.
  - All joints and penetrations are to be sealed.
- An environmental cover system is required to break the barrier between the contaminated site soils and the end-user. The cover system should comprise a minimum 150mm compacted clay or subsoil. Above the compacted layer will be a 450mm of a lower layer compacted alleviated subsoil and a minimum of 300mm of topsoil.
- Topsoil shall be imported from a topsoil supplier and tested at a rate of 1 sample per 500m<sup>3</sup> per source of material. All soils shall be free of asbestos and other deleterious and or contaminated materials.
- Where site won topsoil is proposed for reuse on site for landscaping purposes, it shall be tested to BS 3882 2007 to ensure it is suitable. Any materials failing to meet the specification shall be removed to a segregation area and isolated from other stockpiles. The material will then be disposed of off-site to the appropriate licensed facilities.

### 3.7 ESG Remediation Verification Report (2016)

A summary of the relevant points from the Remediation Verification Report (ref. R5141/3, dated December 2016) completed by ESG is presented below:

- The amosite asbestos contamination within the existing Made Ground soils could pose a potential risk to site users within areas of soft landscaping and grass pitches. The Remediation Strategy required that these areas should comprise the installation of a clean cover system, incorporating a minimum of 300mm imported and validated 'clean' soils as agreed between LO'R and Manchester City Council. The clean cover soils should be underlain by a geotextile marker layer to clearly delineate the underlying potentially contaminated soils with the clean imported soils.
- The clean cover system should incorporate a minimum of 150mm of topsoil at the upper limit of the system, conforming to the requirements of the acceptance criteria and the British Standard BS 3882:2015 Specification for Topsoil (multipurpose topsoil). This will ensure that conditions within the cover system are suitable for healthy plant growth.
- A slight design change to the above specification of clean cover in the grassed football pitch was proposed by LO'R during the works and this was agreed by MCC (see Appendix D). The amended clean cover system in the grassed pitch area comprised 100 mm of porous / permeable granular imported sub-base, with only a single (not two as originally specified) geotextile membrane placed between the topsoil and porous granular drainage layer, and 200 mm of topsoil. Multitrack 1000 geotextile membrane was used in the grassed pitch areas and Terram 1000 in the soft landscaping areas.
- Approximately 6850 tonnes (3500m<sup>3</sup>) of topsoil was imported to site in total (1020 tonnes from the Sandbach site, and 5830 tonnes from the Freeland/Astley/Leigh Lane site).
- Following review of the chemical results of the analysis of 35 samples (20 from Freeland Astley/Leigh Lane and 15 from Sandbach) of topsoil samples from the above sources (provided by the groundwork's contractor supplier), visual observations made during the validation visits carried out by ESG in July and August 2016 and subsequent independent chemical laboratory analysis undertaken by ESG on a total of four topsoil samples collected in July and August September 2016, it has been confirmed that the imported / placed topsoil conformed to the requirements of the acceptance criteria detailed in Table 4 below, and in general confirm to the British Standard 3882: 2015 Specification for Topsoil (multipurpose topsoil).
- 26No. hand dug depth validation pits were undertaken revealing topsoil depths of between 190mm and 500mm.

- Validation of the gas membrane installation was undertaken by MEC Environmental Ltd. 3 visits were undertaken and the gas membrane installation was reported to be good quality. A completion certificate was also provided by PAGED Contracting to certify that the works had been completed in accordance with their specification of works and method statement and that any variations have been agreed and recorded.

### 3.8 ESG Materials Management Plan (2016)

A summary of the relevant points from the Material Management Plan (ref. R5141/MMP, dated December 2015) completed by ESG is presented below:

- The MMP relates to a series of earthworks required to ready the site for development. These included stripping and stockpiling of topsoil material for disposal off-site as waste; a required “cut and fill” operation to lower site levels in the area of the building footprint and raise levels in the southern and north-eastern portions of the site; proof digging beneath the proposed building footprint to enable the processing of obstructions for reuse and the removal of unsuitable materials; replacement and recompaction of materials to create a suitable development platform; and demolition, breaking out and removal from site of buildings, foundations and hardstanding associated with the former Richmond Park Primary School and Daisy Mill Works.
- In summary the MMP scope included:
  - i) Excavation and stockpiling of topsoil materials from across the site for removal off-site under waste management legislation and protocols.
  - ii) Excavation of Made Ground under the building footprint to facilitate the removal and processing of concrete, brick, tile and other obstructions.
  - iii) Replacement and compaction of excavated and processed materials within areas of building footprint to achieve development platform.
  - iv) Stockpiling of excess materials in designated areas to be used as fill and achieve planning based final site levels.
  - v) Reuse of stockpiled materials as fill to achieve final site levels.
- Approximately 5,850m<sup>3</sup> of topsoil material and 20,050m<sup>3</sup> of Made Ground material were to be excavated to allow for the construction of the building foundations, drainage, services, etc.
- The made ground was to be processed by removing obstructions of concrete, brick and tile, which was crushed for use as granular fill. Additional materials such as wood, plastic, metal and other unsuitable materials (estimated at 850m<sup>3</sup>) was segregated and removed from the site as waste. The processed made ground and granular fill will then be re-compacted in 150 mm layers within the building footprint area to create a suitable development platform.
- Excess made ground materials will be located in two separate stockpiles comprising approximately 7,600m<sup>3</sup> (stockpile SP2) and 7,900m<sup>3</sup> (stockpile SP3). Following demolition, breaking out and removal of the existing Daisy Mill and Richmond Park buildings, foundations and hardstanding, the two stockpiles of Made Ground were to be used to fill these areas and achieve final site levels.

### 3.9 Zetica UXO Desk Study (2015)

A summary of the relevant points from the Sitesafe UXO Desk Study (ref. P5220-15-R1-A, dated April 2015) completed by Zetica is presented below:

- There is no evidence that the Site was bombed and no other significant sources of UXO have been identified on the Site. It is considered that the Site has a low UXO hazard level.

### 3.10 Patrick Parsons (2018)

A summary of the relevant points from the Phase 2 Geotechnical Intrusive Investigation (ref. H18186/JR/2018.11.08, dated November 2018) completed by Patrick Parsons Ltd is presented below:

- The investigation comprised the excavation of 8 no. mechanically excavated trial pits to a maximum of 3.3m depth with in situ testing and geotechnical logging. No soil samples were submitted for geotechnical laboratory analysis. The purpose of the investigation was to confirm the nature and strength of the underlying shallow soils and obtain quantitative geotechnical parameters to inform foundation design.
- The ground conditions within the proposed classroom footprint comprised reworked topsoil between 100 and 400mm in thickness underlain by made ground comprising sandy gravel with brick, sandstone and concrete proven to between 1.10m and 1.60m bgl. Underlying the made ground was a firm to stiff gravelly clay proven to be at least 0.50m to 1.00m in thickness.
- The ground conditions within the proposed courtyard comprised 400mm to 800mm of topsoil underlain by made ground of gravelly sand with brick, sandstone and concrete or reworked firm to stiff sandy gravelly clay with concrete cobbles to at least 1.50m bgl. Natural soils were not proven in this area.
- A summary of insitu testing revealed the following:
  - 0 to 1m bgl, firm to stiff, medium to high strength clay with an Undrained Shear Strength of 70 to 82kN/m<sup>2</sup>, an average of 76kN/m<sup>2</sup>.
  - 1 to 2m bgl, stiff to very stiff, high strength clay with an Undrained Shear Strength of 80 to >120kN/m<sup>2</sup>, an average of 91kN/m<sup>2</sup>.
  - 2 to 3m bgl, stiff to very stiff, high strength clay with an Undrained Shear Strength of 100 to >120kN/m<sup>2</sup>, an average of 111kN/m<sup>2</sup>.
  - 3 to 4m bgl, stiff to very stiff, high strength clay with an Undrained Shear Strength of >120kN/m<sup>2</sup>.
- No groundwater was encountered during the site investigation.
- No visual or olfactory evidence of contamination was noted during the trial pits. No asbestos containing materials (ACMs) were observed.
- The underlying variable made ground materials are not considered to be suitable bearing strata due to excessive total and differential settlements. The underlying natural firm and stiff clays are considered to be an appropriate bearing stratum and are assessed as being able to accommodate static loadings of at least 150kN/m<sup>2</sup> with any total or differential settlement kept within tolerable limits.
- For the majority of the structure, trench fill foundations bearing within the underlying natural firm and stiff clays at approximately 1.5m depth are considered as appropriate. However, within the northern corner and along the northeastern elevation of the classroom, the use of deeper pad foundations cast within sectional concrete manhole rings placed into the natural firm and stiff clays in excess of 3.0m are considered appropriate with beams spanning between. The use of manhole rings will form permanent shuttering to the surrounding deep made ground.
- Alternatively, consideration may be given to the use of a reinforced raft foundation, which would comprise excavation of the upper made ground materials to around a metre depth, removal of oversize content and recompaction prior to casting of the raft foundation. The use of mini piles is not considered to be feasible due to the presence of substructures and oversize materials within the made ground.

### 3.11 SL Phase I Desk Study Assessment (2019)

A summary of the relevant points from the Phase I Desk Study Assessment Report (ref. GP/M4246/8660, dated July 2019) completed by BSL is presented below. The BSL Desk Study was undertaken in relation to proposed extensions to the existing development.

- The site consisted of open fields with ponds in the north, and a small row of residential terraces in the south. By 1890 the ponds had likely been infilled and the whole site had been developed into residences and Daisy Mill. Industrial works replaced the depot by 1922, with various industries including Manchester Carriage & Tramway Company Depot, Brewery, Laundry and wash house occupying the site then until at least 2010. By 2014 the last of the works had been demolished and replaced with the education facility that continues to occupy the site today.
- From the information obtained during the desk study numerous potentially contaminative site uses have occupied the site including the Daisy Works/Mill, depots, brewery, electricity substation, laundry and washhouse. Offsite sources of contamination including a warehouse/garage, an electricity substation, mineral water works, shield works, garage, and joinery works.

- Geology comprises glacial till (Secondary Undifferentiated Aquifer) comprising clay underlain by the Chester Sandstone Formation (Principal Aquifer), and the Manchester Marl Formation (Secondary B Aquifer) across the north of the site. The site is not indicated to lie within a Source Protection Zone.
- The site is shown to lie atop the East Manchester Fault, a north-west to south-east trending fault that downthrows to the north-east. However, any movements associated with this fault should now have stopped.
- The site is in an area where the Law Society and Coal Authority recommends a mining search be undertaken as the site could be affected by past or current coal mining. The Coal Authority Report did not identify any coal mining related issues at the site,
- There are no watercourses within 1000m of the site or any surface water features within 250m of the site.
- The site is not located in a Zone 2 or Zone 3 floodplain.
- No radon protection measures are required.
- The risk to human health is considered to be moderate.
- The risk to controlled waters is low.
- The risk from gas is low to moderate.

### 3.12 BSL Geo-Environmental Assessment Report (2019)

A summary of the relevant points from the Geo-Environmental Assessment Report (ref. NS/M4246/8662 Rev B, dated October 2019) completed by BSL is presented below. The BSL Geo-Environmental Assessment Report was undertaken in relation to proposed extensions to the existing development.

- Made ground was encountered within all the exploratory holes across the site and was observed from ground level to depths between 1.00m and >3.90m bgl. Made ground within a large bund in the northeast of the site was noted to comprise brown slightly gravelly slightly sandy clay with brick, clinker, concrete, slate and glass to depths of greater than 3.90m. The natural strata underlying the site was encountered from depths of 1.00m to 3.40m bgl and was generally firm to very stiff clay with varying amounts of silt, sand and gravel as minor constituents proven to 8.45m bgl in BH01A in the north of the site.
- Widespread contamination within the made ground in the form of asbestos and benzo(a)pyrene attributed to ash/clinker within the strata. A localised exceedance of lead was noted within made ground in WS05 likely associated with ash and clinker encountered within the made ground at this location. Chrysotile asbestos fibres have been detected in five samples at trace levels (<0.001%). Chrysotile and amosite fibres were recorded in a sample taken from the bund in the north-east of the site at 0.002%.
- Whilst minor heavy metal and PAH contamination has been identified within the groundwater beneath the site from previous investigations, based on the assessments and updated CSM, BSL believe the overall risk to controlled waters is low and no further action is required.
- Deep made ground was recorded across the site during the works, however, evidence of degradable / putrescible material was localised to WS07 understood to be in proximity to a historic infilled pond. This location is located at greatest distance from the proposed ground floor extension in the north of the site. A round of gas monitoring to confirm the risk did not reveal elevated levels of carbon dioxide or methane. However, gas protection measures in line with CS2 were installed during the construction of the school, therefore in order to stay consistent gas protection measures in line with CS2 (BS8485:2015+A1:2019) will be required with the proposed building extensions.
- Should new areas of soft landscaping be introduced in the proposed works then remediation measures such as an environmental cover system will be required to mitigate the risk. Based on the above, as the gas monitoring programme was limited in duration, gas protection measures in line with CS2 will be required within the proposed building extensions to match the existing measures.

### 3.13 BSL Remedial Strategy Report (2020)

A summary of the relevant points from the Remedial Strategy Report (ref. NS/M4246/8855 Rev A, dated November 2020) completed by BSL is presented below. The BSL Remedial Strategy Report was undertaken in relation to proposed extensions to the existing development.

- Assessment of gas monitoring data, outlined above, suggest the concentrations of soils gases across the site to be representative of a Characteristic Situation 2 (CS2) in accordance with CIRIA C665 (Ref 18).
- Sites falling within CS2 are recommended to implement the following protection methods into buildings constructed in the area:
  - a. Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 1200g DPM.
  - b. Beam and block or precast concrete slab and minimum 2000 g DPM/reinforced gas membrane.
  - c. Possibly underfloor venting or pressurisation in combination with a) and b) depending on use.
  - All joints and penetrations are to be sealed.
  - The membrane should be resistant to carbon dioxide and VOC ingress.
- An environmental cover system is required to break the barrier between the contaminated site soils and the end-user. The cover system should comprise (top down):
  - 200mm "clean" validated topsoil; over
  - 100mm "clean" validated subsoil; over
  - Warning barrier membrane/geotextile.
- If this cannot be accommodated due to existing installation and finished levels then the cover system should be at least equivalent to the surrounding existing installation thickness.
- Topsoil shall be imported from a topsoil supplier and tested at a rate of 1 sample per 250m<sup>3</sup> per source of material. All soils shall be free of asbestos and other deleterious and or contaminated materials.

### 3.14 BSL Geo-Environmental Assessment Report (2021)

A summary of the relevant points from the Geo-Environmental Assessment Report (ref. NS/M4246/9960, dated February 2021) completed by BSL is presented below. The BSL Geo-Environmental Assessment Report was undertaken in relation to the proposed MUGA.

- Made ground topsoil was encountered across the entirety of the sports pitch from ground level to 0.30m bgl, generally comprising dark brown slightly gravelly sand with anthropogenic inclusions of gravel sized brick. Made ground was encountered within all the exploratory holes across the site and was observed from ground level to depths between 1.70m and 1.80m bgl.
- A dark grey gravel of mudstone, limestone and slag was encountered at the surface in PLT04 which is considered to represent gravel surfacing associated with temporary car parking.
- A layer of grey limestone gravel was present from underlying the topsoil to 0.40m bgl where a geotextile membrane is present. Underlying the geotextile membrane is a dark brown slightly gravelly slightly sandy clay with gravel and cobbles of brick, concrete, clinker and slag.
- The natural strata underlying the site was generally firm grey mottled brown slightly gravelly slightly sandy clay, this was encountered at the base of the made ground in WS102 and WS103 at 1.70m and 1.80m bgl. The natural strata was proven to 2.00m bgl (the base of the window sample holes).
- Based on the testing and assessment undertaken it would appear that there is localised contamination within the made ground in the form of PAHs attributed to clinker / slag within the made ground strata. Chrysotile and Crocidolite asbestos fibres have been detected in two samples at trace levels. Chrysotile and Amosite free fibres, sheeting / board debris was detected in PLT03 at 0.45m at 0.001% mass.
- Widespread contamination (heavy metal, PAH, TPH and asbestos) was recorded in the made ground during the site investigation undertaken by Atkins in 2014. Significant contamination was not recorded within the extents of the proposed MUGA, an elevated concentration of benzo(a)pyrene was recorded within one sample, and asbestos at 0.001% mass or trace (<0.001% mass) was encountered within three of six samples tested. Visual / olfactory evidence of petroleum hydrocarbon contamination was not witnessed during the site investigation. The proposed development includes for a Multi-Use Games Area (Area) which will be constructed of tarmac. The MUGA will cover the entire extent of the proposed development in the east of the site, this will therefore act as a suitable barrier between the site soils and the end-use. The risk is considered to be low.
- Asbestos contamination is widespread within the made ground below 0.40m bgl at the site, whilst a risk exists relating to this the proposed construction of the MUGA comprising clean materials and a

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tarmacadam surfacing will provide sufficient thickness / barrier to mitigate the risk. Given this, no specific remedial measures are required based on the proposed end-use for soils in respect to human health.

- Whilst minor heavy metal and PAH contamination has been identified within the groundwater beneath the site from previous investigations, based on the assessments and updated CSM, BSL believe the overall risk to controlled waters is low and no further action is required.
-

## 4.0 METHOD OF INVESTIGATION

### 4.1 Objectives

To confirm the risks to the identified receptors and confirm the ground conditions in respect to the identified geotechnical and geo-environmental risks, an appropriate intrusive investigation was undertaken as per the recommendations of the Phase I Desk Study Assessment.

The aim of the fieldwork was to:

- Investigate ground conditions on the site and the potential need for detailed investigation.
- Assess the potential contamination on the site and obtain samples for contamination screening.
- Assess the potential impact of any contamination on controlled waters.
- Obtain geotechnical information on the ground conditions at the site for preliminary foundation design and preliminary pavement design purposes.
- Give an assessment of the geo-environmental risks associated with redevelopment of the site.

### 4.2 Site Works

The following site works have been undertaken as part of the intrusive investigation between the dates of 28<sup>th</sup> October 2014 and 25<sup>th</sup> October 2018.

| Method                                   | No. | Range Depths (m bgl) | Dates                | Exploratory Hole Location ID                    | Purpose                                                                                                                                                                                                                                |
|------------------------------------------|-----|----------------------|----------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cable percussive boreholes               | 1   | 21.45                | 28/10/14 to 29/10/14 | Atkins BH05                                     | Assess deeper ground conditions, carry out SPTs and obtain samples for contamination and geotechnical and testing.<br>Installation of ground gas and water monitoring wells.                                                           |
| Window sample boreholes – Tracked WS rig | 4   | 5.00                 | 11/10/16             | Solmek BH1 to BH4                               | Establish general ground conditions on site.<br>Allow Standard Penetration Tests (SPTs) to be carried out and obtain samples for contamination and geotechnical and testing.<br>Installation of ground gas and water monitoring wells. |
| Trial pits – JCB 3CX                     | 7   | 1.00 – 3.30          | 25/10/18             | Patrick Parsons TP01, TP02, TP02A, TP03 to TP07 | Establish general ground conditions and gain good coverage.                                                                                                                                                                            |

The approximate locations of the exploratory holes are indicated on the Exploratory Hole Location Plan, Drawing No M4246/09. The exploratory hole logs are presented in Appendix B.

The exploratory holes were logged by an experienced geo-environmental engineer in general accordance with the following guidance:

- BS 5930:2015+A1:2020 Code of Practice for Site Investigations.
- BS EN 14688-1:2018 Geotechnical Investigation and Testing – Identification and classification of soil.

#### *Limitations to Investigation*

BSL made contact with Graeme Souter at Manchester City Council in August 2021 to discuss the re-use of existing data at the site due to the extensive site investigation that has taken place to date. Given the low sensitivity of the proposed development as a temporary classroom with soft landscaping externally which

is to be reinstated with the existing cover system if disturbed, the local authority were in agreement that the above approach was reasonable.

### 4.3 Sampling

During the drilling and excavation of the exploratory holes, representative samples were taken at regular intervals to assist in the identification of the soils and to allow subsequent laboratory testing. They were stored and transported in general accordance with BS 10175:2011+A2:2017.

The type of sample was dependent upon the stratum and the purpose of analysis in accordance with current environmental and geotechnical guidance. The distribution of samples taken across the site is recorded on the exploratory logs.

### 4.4 Chemical Laboratory Testing

As part of the initial assessment for potential contamination of the site, selected samples were taken for the purpose of chemical contamination testing.

The following suite of determinands were chosen to screen for potential site impacts at a UKAS approved laboratory:

| Determinand                                                                                                                                                                                                                                 | No of Samples | Samples                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------|
| BSL Default Soil Suite: Arsenic, Cadmium, Chromium (III), Chromium (VI), Copper, Nickel, Mercury, Lead, Zinc, Selenium, speciated polycyclic hydrocarbons (PAH 16), water soluble sulphate (2:1 Extract), soil organic matter (SOM) and pH. | 4             | BH05 (0.50m)<br>BH05 (1.00m)<br>BH1 (0.70-0.80m)<br>BH2 (0.70-0.80m)                     |
| Soil Suite A: Arsenic, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium, zinc and pH.                                                                                                                      | 1             | BH4 (0.70-0.80m)                                                                         |
| Petroleum Hydrocarbons (TPH CWG) inc BTEX and MTBE.                                                                                                                                                                                         | 3             | BH05 (0.50m)<br>BH05 (1.00m)<br>BH1 (0.70-0.80m)<br>BH2 (0.70-0.80m)                     |
| Asbestos Screen.                                                                                                                                                                                                                            | 4             | BH05 (0.50m)<br>BH1 (0.70-0.80m)<br>BH2 (0.70-0.80m)<br>BH4 (0.70-0.80m)                 |
| Total phenol                                                                                                                                                                                                                                | 5             | BH05 (0.50m)<br>BH05 (1.00m)<br>BH1 (0.70-0.80m)<br>BH2 (0.70-0.80m)<br>BH4 (0.70-0.80m) |
| Free cyanide                                                                                                                                                                                                                                | 2             | BH05 (0.50m)<br>BH05 (1.00m)                                                             |
| Total cyanide                                                                                                                                                                                                                               | 5             | BH05 (0.50m)<br>BH05 (1.00m)<br>BH1 (0.70-0.80m)<br>BH2 (0.70-0.80m)<br>BH4 (0.70-0.80m) |

The following tests were scheduled on groundwater samples at a UKAS approved laboratory:

| Determinand                                                                                                                                                                                                                                    | Samples |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| BSL Default Water Suite: Arsenic, Boron, Cadmium, Calcium, Chromium (III), Chromium (VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, total and free cyanide, speciated polycyclic hydrocarbons (PAH 16), sulphate as SO <sub>4</sub> , pH. | BH05    |
| Petroleum Hydrocarbons (TPH CWG) inc BTEX and MTBE.                                                                                                                                                                                            | BH05    |

The Chemical Laboratory Testing Results are presented in Appendix C.

#### *Photo-Ionisation Detection (PID) Testing – Soils*

PID head space monitoring was undertaken on all environmental soil samples taken during the ground investigation by Atkins in 2014, the results are recorded on the exploratory hole log for BH05 in Appendix B.

### 4.5 Geotechnical Laboratory Testing

Representative disturbed samples were obtained for all soil types encountered. Selected samples were scheduled for testing at an approved laboratory in accordance with BS 1377 'Method of Test for Soils for Civil Engineering Purposes' and BS EN ISO 17892- Parts 1-12:2018 'Geotechnical investigation and testing. Laboratory testing of soil'.

The following tests were scheduled for geotechnical purposes:

| Description                      | No of Samples | Locations                                                                                                                                                                               |
|----------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Natural Water Content.           | 11            | BH1 2.00-2.45<br>BH2 3.00-3.45<br>BH2 4.00-4.45<br>BH2 4.55-5.00<br>BH3 2.00-2.45<br>BH3 3.00-3.45<br>BH3 4.00-4.45<br>BH4 2.00-2.45<br>BH4 3.00-3.45<br>BH4 4.00-4.45<br>BH5 4.55-5.00 |
| Plasticity Index Analysis.       | 4             | BH1 2.00-2.45<br>BH2 3.00-3.45<br>BH3 2.00-2.45<br>BH4 2.00-2.45                                                                                                                        |
| pH Value.                        | 2             | BH2 3.00-3.45<br>BH4 2.00-2.45                                                                                                                                                          |
| Water Soluble Sulphate Contents. | 2             | BH2 3.00-3.45<br>BH4 2.00-2.45                                                                                                                                                          |
| Particle Size Distribution (PSD) | 4             | BH1 2.00-2.45<br>BH2 3.00-3.45<br>BH3 2.00-2.45<br>BH4 2.00-2.45                                                                                                                        |

The Geotechnical Laboratory Testing Results are presented in Appendix D.

### 4.6 Monitoring

Ground gas and ground water monitoring standpipes were installed in 4 boreholes and subsequently 6 monitoring visits were undertaken, in line with the recommendations of CIRIA C665. All gas monitoring was undertaken using GA 5000 or GFM436 infrared gas meter with integral electronic flow analyser.

Flow measurements on each standpipe (l/hr) were taken. Measurements of the percentage volume in air (%v/v) of oxygen (O<sub>2</sub>), carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) were recorded in addition to the percentage Lower Explosive Limit (%LEL) of methane (Note: 100% LEL equates to 5% by volume), the atmospheric pressure (mb) and average temperature during the visit (°C).

Standpipes were constructed in general accordance with the relevant guidance. A summary of the installation construction is presented in the table below:

| Location | Internal Diameter<br>Pipe | Response Zone<br>(m bgl) | Targeted Strata    | Purpose     |
|----------|---------------------------|--------------------------|--------------------|-------------|
| BH05     | 50mm HDPE                 | 18.00 – 21.00            | SAND               | Groundwater |
| BH2      | 35mm PVC                  | 0.50 – 3.50              | Made Ground / CLAY | Ground Gas  |
| BH3      | 35mm PVC                  | 1.00 – 4.00              | Made Ground        | Ground Gas  |
| BH4      | 35mm PVC                  | 0.50 – 3.50              | Made Ground / CLAY | Ground Gas  |

The gas monitoring visits recorded peak and steady state conditions. Peak results are those that occur on opening the valve on the borehole tap. Steady state conditions are those that occur a period of time afterwards when the initial (accumulated) gases have been purged from the borehole.

Full ground gas monitoring results are presented in Appendix E of this report.

## 5.0 GROUND CONDITIONS

### 5.1 Made Ground

#### *Made Ground – Topsoil*

Made Ground Topsoil was encountered across the site from ground level to between 0.30m and 0.50m bgl, generally comprising dark brown slightly clayey sand with occasional organic matter. A geotextile membrane was placed at the base of the topsoil reflecting the requirement for the cover system as outlined within the ESG Remediation Strategy (ref. R5141/2, October 2015) and as validated by ESH in their Remediation Verification Report (R5141/3, December 2016).

However, TP04 is noted to have a thin layer of topsoil, 100mm, underlain by a dark grey mottled brown slightly clayey sand with brick, concrete, sandstone and mudstone which is underlain by a geotextile membrane at 0.50m suggesting a small area where the existing cover system has been installed incorrectly.

#### *Made Ground – General*

Made ground was encountered in all exploratory holes across the site from underlying the topsoil and proven to depths of between 0.90m to 2.60m bgl. The made ground was noted to be granular in the majority across the east of the site, and as a sandy gravelly clay across the west of the site both with varying amounts of sand, gravel and cobbles. Anthropogenic inclusions include brick and concrete.

A stiff dark brown clay was encountered within BH1 to BH4 at depths from 1.00m and 1.80m bgl to depths up 3.00m bgl. The clay was noted to have rare brick and is therefore considered to be reworked natural deposits.

#### *Existing Structures*

Trial pits TP02A and TP05 revealed greater amounts of brick cobbles and encountered concrete obstructions at their base at 3.10m bgl and 1.50m bgl, respectively. TP02A identified brick walls between 1.50m and 3.10m bgl suggesting the concrete obstruction encountered in TP05 to represent a ground level floor slab and that encountered in TP02A at 3.10m bgl to represent a basement floor slab.

Historical mapping for this area of the site shows the presence of a police station from 1891 to 1922. The locations of TP02A and TP05 are comparable in layout to the extents of the police station prior to the footprint altering and the presence of a washhouse between 1933 and 1981 mapping. Given that the footprint remains the same on two sides when the washhouse was developed, it is likely that the original building was extended and the police station basement remained.

### 5.2 Natural Superficial Strata

The natural strata underlying the site was generally firm to stiff clay with varying amounts of silt, sand and gravel as minor constituents.

Shear vane readings in the cohesive soils indicate the clays are generally high and very strength.

Medium dense to dense reddish brown gravelly sand was encountered at 18.00m to the base of the borehole at 21.45m bgl in BH05 in the north-eastern corner of the site.

### 5.3 Solid Geology

The solid geology of the Chester Pebble Beds Formation was not encountered in this investigation.

## 5.4 Groundwater

The depths to groundwater and locations present are shown in the table below:

| Location | Depth During Site Works<br>(m)     | Depth During Monitoring Period<br>(range) (m) |
|----------|------------------------------------|-----------------------------------------------|
| BH05     | 19.00m rising to 17.00m in 20 mins | 14.47 – 14.70                                 |
| BH2      | NGW                                | 1.56 – 3.22                                   |
| BH3      | NGW                                | 1.88 – 3.45                                   |
| BH4      | NGW                                | 1.67 – 3.33                                   |

## 5.5 Observations

### *Contamination*

During the works undertaken, observations for both visual and olfactory evidence of contamination were undertaken. No evidence of contamination was observed at the site.

## 6.0 GEOTECHNICAL ASSESSMENT

### 6.1 Ground Model Summary

The site is currently occupied by a changing pavilion and associated soft landscaping. There is one basement in the north-east of the site, to the north of Spring Street, associated with the previous uses at the site.

The ground conditions can be summarised as below (top down):

- Made ground generally comprising clayey gravelly sand or sandy gravelly clay from ground level to between 0.90m and 2.60m bgl.
- Natural superficial deposits comprising sandy gravelly clay proven to depths of 18.00m bgl underlain by gravelly sand proven to 21.45m bgl.
- Groundwater levels of 19.00m rising to 17.50m bgl was encountered in BH05 during site works.
- Post site works monitoring levels ranging between 1.56m and 3.45m bgl in shallow installs, and 14.47m and 14.70m bgl in deep installs.

### 6.2 Geotechnical Laboratory Test Results

#### *Plasticity Index Analysis*

Plasticity index results ranged between 20% and 40% indicating the cohesive soils to be of low plasticity. Associated water contents ranged between 11% and 22%.

After modification of particle size in accordance with BRE 240 the modified plasticity indices are in the range 17% to 40% indicating the cohesive soils to be of low to high volume change potential.

### 6.3 Aggressive Ground Conditions – Geotechnical Chemical Testing

The test results for the assessment of aggressive ground conditions are presented in Appendix D. The results are summarised and assessed within Section 7.0 of this report.

### 6.4 In Situ Geotechnical Testing

#### *In Situ Hand Shear Vane Tests*

Hand shear vane tests were carried out on suitable cohesive soils recovered from the trial pits where possible. Each shear vane result recorded represents the mean value of three tests undertaken at the specified depth. The results and distribution of the hand shear vane tests are recorded in kPa on the Exploratory Hole Logs which are presented in Appendix B.

#### *In Situ Standard Penetration Tests*

Standard Penetration Tests (SPTs) were carried out within the window sample and cable percussive boreholes at regular 1.0m to 1.5m intervals. The results of the individual blows and the N-values are recorded on the Exploratory Hole Logs in Appendix B.

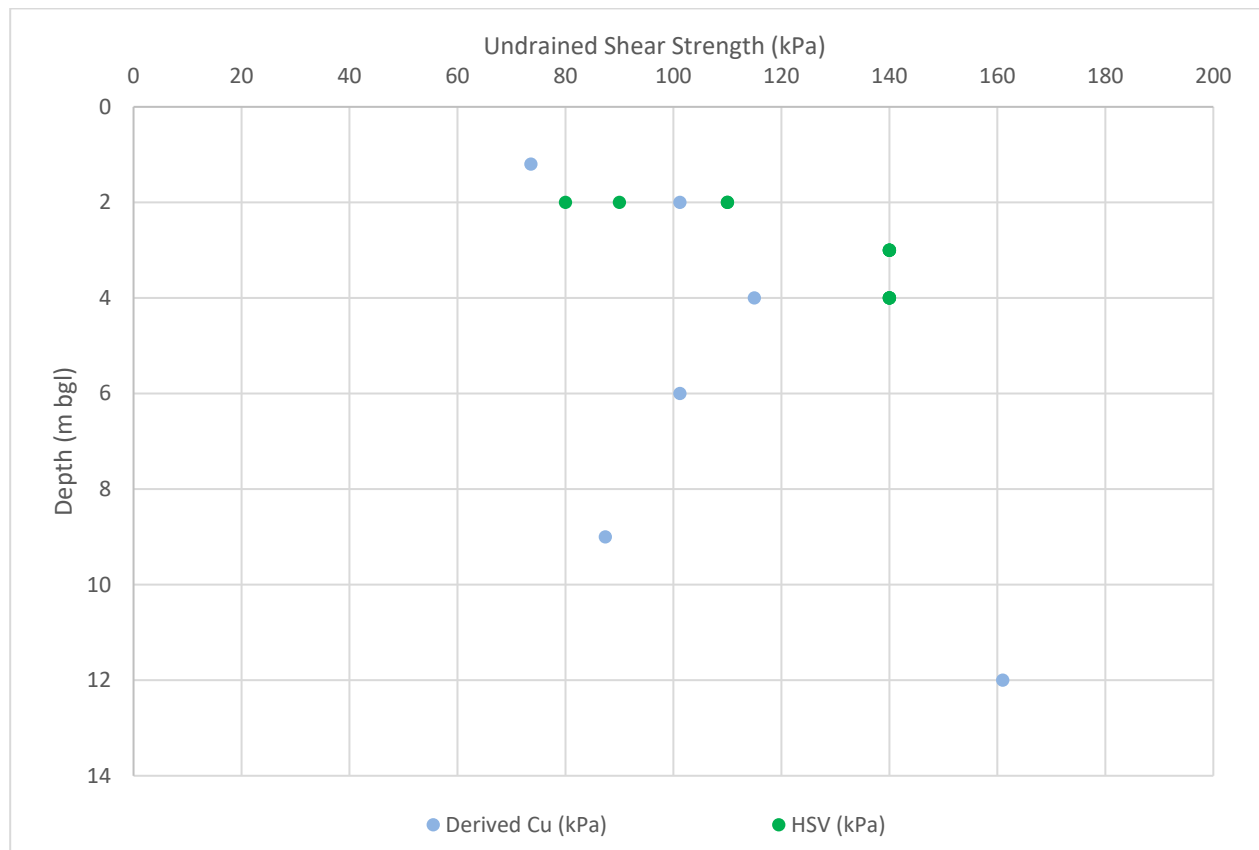
All SPT N values are uncorrected. Density and strength descriptors are reported in accordance with the guidelines stated in BS 5930:2015+A1:2020, incorporating requirements of BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003.

## 6.5 Design Soil Parameters

The relevant test results from the prior sections have been evaluated to derive geotechnical soil parameters for the site in the following section.

For cohesive (fine) soils, the equivalent approximate undrained shear strengths ( $C_u$ ) have been calculated from the recorded SPT N values, adopting an  $f_1$  value based on the correlation of Stroud (1975) and the 'average' plasticity.

A depth (m bgl) vs derived shear strength ( $C_u$ ) graph is provided below to provide a profile of the cohesive soils underlying the site.



The above graph shows a general increase in soils strengths as depth increases.

### *Characteristic Values*

Characterisation of the geotechnical parameters above has been undertaken to obtain characteristic values, which are a cautious estimate of the values affecting the occurrence of the limit state.

The characteristic value for undrained shear strength ( $C_u$ ) in cohesive deposits at 1.50m bgl is interpreted to be  $70\text{kN/m}^2$ , increasing to  $90\text{kN/m}^2$  at 2.00mbgl.

## 6.6 Foundations

The development will comprise a single storey modular classroom and is considered to be classed as Geotechnical Category 2 in accordance with Eurocode 7.

Preliminary design by calculation has been undertaken to determine the design resistance of the bearing strata in the following section. No proposed structural loads were available at the time of writing,

therefore the following recommendations are provisional and should be reviewed at the detailed design stage. However, for the purpose of this assessment a typical load of 50kN has been assumed per storey.

#### *Pads*

The most suitable foundation solution for the proposed development is considered to be pad foundations, taken to the underside of any made ground to found on undisturbed natural firm clay.

Pad foundations should be taken through the made ground into the natural clay strata founding at a minimum depth of 1.00mbgl bgl due to the low to high volume change potential clays, and deeper near trees and hedges in accordance with current guidance. At a founding depth of 1.50m, for a square pad 0.80m by 0.80m, an allowable bearing capacity not exceeding 200kN/m<sup>2</sup> may be assumed. Where the relic basement is present in the north-east of the proposed building footprint, foundations should be deepened. At a founding depth of 3.00m, for a circular pad 0.80m diameter, an allowable bearing capacity not exceeding 300kN/m<sup>2</sup> may be assumed. This adopts a factor of safety of 3 which should limit settlements to within acceptable limits.

#### *General Advice for Shallow Foundations*

The bearing stratum should be inspected for 'soft spots' within the natural clay strata, resulting for instance from localised groundwater perched within the overlying fill materials. If soft soils are encountered, then foundations will need to be deepened to found on suitable strata. The stratum should also be inspected for 'hard spots' which may require removal.

If the ground conditions encountered during the construction phase differ significantly to the conditions encountered during construction, work should cease and BSL contacted for further advice.

During the construction phase supervision should be on a continuous basis to check the design assumptions are correct and construction conforms to design. Supervision should include inspections, Control Ground Investigations and monitoring.

### **6.7 Building Near Trees**

The clay soils on site are of high volume change potential. Where foundation excavations (or piles if adopted) encounter cohesive strata in the vicinity of existing, proposed or recently removed trees, foundations should be adjusted in full accordance with BRE 298. All foundations should be deepened below roots of greater than 5mm diameter during excavations for footings.

A survey of all trees and hedges on the site and within influencing distance of the site boundary should be undertaken to identify tree species and heights by a qualified arboriculturist in accordance with BS 5837:2012. This information will be required in order to assess the effects of trees on the cohesive strata.

Where foundation depths due to trees already present or recently removed exceeds 1.50m, there is a possibility for heave to occur on removal of the tree and guidance states that compressible material or void former is required against the inside face of the foundation, unless it can be satisfied that the soil is not desiccated.

Due to the high volume change potential of the soils encountered on site, guidance states that compressible material or void former is required within cohesive strata against the inside face of external ground beams and underside of internal and external ground beams within the zone of influence of trees.

### **6.8 Floor Slabs**

Given the thickness of made ground present (generally >600mm), suspended floor slabs should be adopted at the site.

A minimum ventilation void of 150mm should be provided below the underside of the modular classroom.

Due to the presence of a void likely in excess of 150mm on the underside of the modular classroom, this is considered to provide sufficient ventilation as to negate the requirement for gas protection measures.

A suspended floor slab should be adopted at the site supported by pads. Given the presence of cohesive (shrinkable) strata, the required void size for beneath floor slabs on this site is 300mm high based on the high volume change potential clays.

## 6.9 Site Preparation and Construction

Topsoil and subsoil should be removed from beneath all buildings and hardstanding areas.

There are a number of services crossing the site. To allow construction, all services will need to be disconnected and any suspected dead services are confirmed as dead by testing.

Instability of excavations through natural soils is not anticipated provided they are not exposed to adverse weather conditions for any substantial period of time. Instability of the made ground should be allowed for. All excavations should be carried out in accordance with CIRIA Report 97 'Trenching Practice'.

Excavation depths should generally be readily achieved using conventional plant (JCB or similar) although high specification plant (tracked 360° or similar) is recommended to maintain the build programme. Breaking equipment may also be required locally to penetrate old foundations if encountered.

Based on the exploratory holes logs and monitoring, it is considered that methods such as sump pumping are likely to be sufficient to deal with anticipated flows/will not be sufficient to deal with anticipated flows and alternative methods of dewatering may be required such as dewatering wells. A specialist dewatering contractor should be consulted for advice in this instance. Further guidance is provided in CIRIA C750 "Groundwater Control: Design and Practice". It should be noted that groundwater levels will vary seasonally and the timing of construction may influence requirements.

## 6.10 Concrete Classification

The soluble sulphate and Ph test results have been assessed in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005. The Design Sulphate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification are presented in the table below.

For the purposes of this assessment, the groundwater has been classified as static given the site is underlain by low permeability deposits.

| Stratum                    | No. Samples | Characteristic SO <sub>4</sub> (g/l) | Characteristic pH | DS Class | ACEC Class |
|----------------------------|-------------|--------------------------------------|-------------------|----------|------------|
| Made Ground                | 5           | 0.185                                | 8.5               | DS1      | AC-1s      |
| Natural Superficial Strata | 2           | 0.03                                 | 8.2               | DS1      | AC-1s      |

Based on the above, the results of laboratory pH and sulphate content indicate that sulphate class DS-1 and ACEC Class AC-1s conditions prevail in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005.

The specific concrete mixes (the Design Concrete Class) to be used on site will be determined by the site-specific concrete requirements in terms of the durability and structural performance. These are assessed in terms of the Structural Performance Level (SPL) and any need for Additional Protective Measures (APM) detailed in Part D of BRE Special Digest 1 with further guidance in Pt E and F.

## **6.11 Highways**

Based on Table 5.1 from DMRB IAN 73/06 Rev 1 equilibrium CBR values of 2% for natural clays soils for pavement design purposes, unless proven otherwise by in-situ testing at formation level by a specialist geotechnical engineer. Equilibrium CBR values are likely to be 2% within the made ground.

Where the CBR is found to be less than 2%, the sub-grade is unlikely to be suitable for both the trafficking of site plant and as a permanent highway foundation without improvement of the soils.

Based on the fines content of the soils, they are considered to be frost susceptible, therefore highway construction should be a minimum thickness of 450mm to mitigate against the risk.

Care should be taken to ensure the stratum at formation level is protected against inclement weather, as this is likely to lead to surface deterioration and a decrease in soils strengths.

## **6.12 Sustainable Drainage Systems (SuDS)**

The use of sustainable drainage systems, such as traditional soakaways within the natural ground, is not likely to be feasible due to the presence of low permeability cohesive strata underlying the site.

## 7.0 GEO-ENVIRONMENTAL RISK ASSESSMENT

### 7.1 Introduction

The samples were tested for an assessment of the chemical contamination that may pose a risk to human health. The results were examined with reference to a selection of guidance documents as detailed in Appendix A. In this case the LQM/CIEH S4ULs and DEFRA C4SLs for a residential without homegrown produce have been adopted as Tier 1 generic screening values.

The apparent exceedance of the relevant screening value is taken as indicating further detailed assessment or remedial action is required.

A summary assessment sheet is presented in Appendix C alongside the chemical test results. Results are discussed in detail in the sections below.

### 7.2 Soils Test Results and Risk Assessment – Human Health

#### *Metals*

No elevated concentrations of heavy metals have been recorded above the relevant screening criteria.

#### *Asbestos*

No asbestos fibres have been detected in any of the 4 samples screened.

#### *Poly Aromatic Hydrocarbons (PAHs)*

BSL consider the main risk drivers for PAHs to be benzo(a)pyrene (B(a)P) and naphthalene. This is due to B(a)P being one of the most toxic of the PAHs, and naphthalene the most volatile and soluble. Category 4 Screening Levels (C4SLs) indicate B(a)P as a surrogate marker for carcinogenic PAHs, if it falls within appropriate limits, since the risk from other non-carcinogenic PAHs are considered negligible. Given the difference in chemical properties between the two, naphthalene will be treated separately using the LQM S4ULs.

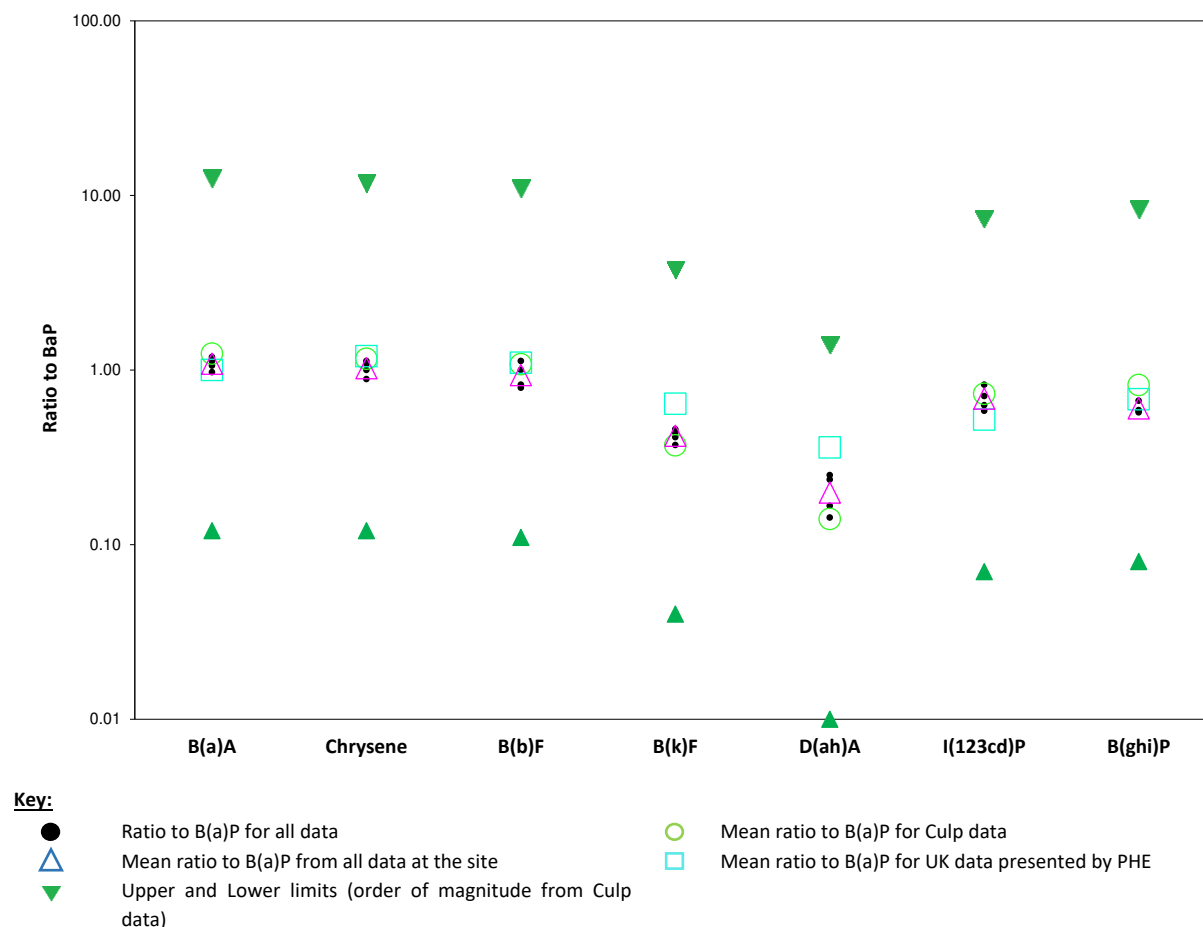
#### *PAHs and B(a)P as a Surrogate Marker*

In line with CL:AIRE and Public Health England (PHE) guidance, benzo(a)pyrene is considered to be one of the most potent PAHs, and it would be appropriate to assume the cancer risk in a mixture is proportional to the concentration of a surrogate marker PAH (benzo(a)pyrene) in the mixture. The ratio of PAHs within the mixture can be assessed to ensure that the profile is similar to that seen for the test material (coal tar mixtures) in the toxicological study by Culp et al. The International Programme on Chemical Safety (IPCS) considered that the PAH profile of the soil sample may deviate from the average profile by about an order of magnitude (up or down).

A more recent study by Bull et al (2013) which analysed PAH concentrations in soil samples from 274 sites, showed that the levels of PAH relative to B(a)P showed little variability and were similar to that recorded for the coal tar mix used in the Culp et al study. Given this, it was concluded that benzo(a)pyrene is a suitable surrogate marker to represent mixtures of PAH in soil.

In order to risk assess the PAH mixture in the site soil samples using human health guideline values, notably C4SLs, the PAH profile in the soil samples, the ratio of the seven genotoxic PAHs shown below, relative to B(a)P, should be calculated to ensure it is similar to the test material used in the Culp study (PHE 2010). To be considered sufficiently similar, the ratio relative to B(a)P should fit within the upper and lower limits (representing an order of magnitude above and below the mean ratio to B(a)P of test material used in the Culp et al study). In such cases B(a)P is considered an adequate surrogate marker and the Low Levels of Toxicological concern (LLTC) for B(a)P may be used in the risk assessment.

The graph below summarises the site data with respect to how the ratios of carcinogenic PAHs relate to B(a)P, within the confidence limits provided in the PHE documents.



All the data points that could be used to calculate ratios fall inside the upper or lower limits (order of magnitude above or below that of the study material). Based on this distribution of data it is considered that B(a)P can be used as a surrogate marker for carcinogenic PAHs and the C4SL criteria is suitable for this dataset.

Based on the above, there are no exceedances of PAHs above the relevant screening criteria.

#### *Total Petroleum Hydrocarbons (TPH CWG)*

No petroleum hydrocarbons have been identified above the adopted screening criteria.

#### *BTEX and MTBE*

No BTEX or MTBE compounds have been identified above the adopted screening criteria.

### 7.3 Waters and Leachate Test Results – Controlled Waters

One round of groundwater monitoring was undertaken at the site and a sample was recovered from BH05 installation.

In the first instance, results were compared to Environmental Quality Standard (EQS) values/UK drinking water standards (DWS) due to the Principal Aquifer underlying the site.

No determinands have been detected above EQS/DWS and no further assessment is required with respect to controlled waters.

## 7.4 Controlled Waters Risk Assessment

Based on the investigation works undertaken to date and subject to agreement with the Environment Agency, the site is not considered to pose a significant risk to controlled water for the following reasons:

- The EQS for lead, zinc and copper are also based on bioavailability and so this risk assessment is conservative as it assumes 100% bioavailability.
- There is no indication under present conditions of pollution of controlled waters and conditions following development of the site will not be any worse, indeed they may improve with increased hard cover and water retaining imported garden soils.
- No significant contamination has been identified on site in soils based on the results obtained as a potential indicator of groundwater contamination.
- The nearest watercourse is over 700m away, which provides considerable distance for attenuation and contaminant degradation.
- The site is underlain by low permeability clays which will inhibit lateral and vertical contaminant migration.
- The site does not lie within 500m of an SPZ.
- There are no potable (sensitive) water abstractions within 2000m.

## 7.5 Permanent Ground Gas and Vapours Results

Six ground gas monitoring visits have been carried out between the dates of 17<sup>th</sup> November 2014 and 11<sup>th</sup> February 2015 for BH05, and between the dates of 7<sup>th</sup> December 2016 and 16<sup>th</sup> May 2017. Results are summarised in the table below:

|        | CH <sub>4</sub> (%) |     | CO <sub>2</sub> (%) |     | O <sub>2</sub> (%) |      | CO (ppm) |     | H <sub>2</sub> S (ppm) |     | Flow |     |
|--------|---------------------|-----|---------------------|-----|--------------------|------|----------|-----|------------------------|-----|------|-----|
|        | Min                 | Max | Min                 | Max | Min                | Max  | Min      | Max | Min                    | Max | Min  | Max |
| Peak   | 0.0                 | 0.0 | 0.0                 | 1.5 | 15.0               | 21.2 | 0.0      | 1.5 | 0.0                    | 0.0 | -0.3 | 1.8 |
| Steady | 0.0                 | 0.0 | 0.0                 | 0.0 |                    |      |          |     |                        |     | -1.6 | 0.8 |

Notes: CH<sub>4</sub> = Methane; CO<sub>2</sub> = Carbon dioxide; O<sub>2</sub> = Oxygen; CO = Carbon Monoxide; H<sub>2</sub>S = Hydrogen Sulphide; TVOC (PID) = Total Volatile Organic Compounds (as measured with Photo Ionisation Detector); ppm = Parts Per Million.

Methane was not recorded above the limit of detection on all monitoring visits, whilst the highest carbon dioxide concentrations were recorded in BH05 (1.5% v/v). The maximum positive steady stage flow of 0.8 l/hr was recorded in BH05 during a period of low pressure.

The atmospheric pressure ranged between 982mb and 1029mb over the monitoring period, of which visits were conducted over a range of falling, steady and rising pressure trends.

## 7.6 Ground Gas Risk Assessment

In order to assess the ground gas situation and the requirement for ground gas precautionary measures at the site, guidance was taken from CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings' and BS8485:2015+A1:2019 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'.

As the proposed end-use is a commercial development, guidance dictates that the gas monitoring results should be assessed in accordance with the Wilson and Card methodology.

The Wilson and Card methodology uses the concept of a Gas Screening Value (GSV) which is derived using the following equation: (max gas concentration / 100) x maximum flow.

A maximum positive flow of 0.1l/hr has been used to derive the GSVs. The GSV's for the site are presented below.

| Gas            | GSV<br>(l/h) | Classification Based on<br>GSV | Typical Threshold<br>Concentration Exceeded |
|----------------|--------------|--------------------------------|---------------------------------------------|
| Methane        | 0.0008       | CS-1                           | No                                          |
| Carbon Dioxide | 0.012        | CS-1                           | No                                          |

The GSV for carbon dioxide place the site the site into Characteristic Situation 1 (CS1).

## 7.7 Potable Water Supply

The level of protection for the clean potable water supply pipes should be determined using the local water company risk assessment criteria in accordance with UKWIR.

## 7.8 Qualitative Risk Assessment

The CSM has been revised based on the findings of the site investigation and laboratory testing results and these are presented overleaf. Unless stated otherwise, in respect to off-site sources, only risks that are assessed as moderate and above within the preliminary CSM have been carried forward to this section, or where a previously unidentified potential source, pathway and / or receptor has been identified from the recent site works.

| Human Health                                                                                              |                                                                                       |                                         |                   |          |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------|-------------------|----------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Source                                                                                          | Potential Pathway                                                                     | Potential Receptor                      | Likelihood        | Severity | Level of Risk     | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>On site<br/>Made Ground /<br/>Former<br/>Brewery /<br/>Works / Depots</b><br>Metals, PAHs,<br>asbestos | Root uptake,<br>ingestion, direct<br>contact,<br>inhalation of<br>dusts               | End-users                               | Unlikely          | Moderate | Low               | Elevated concentrations of determinands were not encountered within the site investigations undertaken within the red line boundary. However, extensive site investigation undertaken across the wider Dean Trust Academy site has revealed low level heavy metal, PAH and asbestos contamination and therefore the presence of these within the site boundary cannot be discounted. The proposed development is of low sensitivity given the temporary nature of the classroom, the soft landscaping across the remainder of the site, has in the majority been demonstrated to have been suitable installed with a cover system. Should the cover system remain in place in areas of soft landscaping, and be rectified / reinstated in areas where this is to be disturbed the risk is considered to be low. |
| <b>On site<br/>Made Ground</b><br>Metals and<br>organic<br>contamination                                  | Migration<br>into/chemical<br>attack of water<br>supply pipelines                     | Water<br>Pipelines /<br>End users       | Unlikely          | Minor    | Moderate          | Although elevated concentrations of determinands were not encountered within the site investigations undertaken within the red line boundary, heavy metal, PAH, VOC and TPH contamination was recorded during the previous site investigation by Atkins in 2014 across the wider site and during the recent site works by BSL. Contaminants within the soil/groundwater could potentially attack the clean potable water supply pipe, contaminants should be assessed in accordance with the relevant guidance to determine the correct pipe material and level of precautions required.                                                                                                                                                                                                                        |
| <b>On site<br/>Electricity<br/>Substation</b><br>PCBs                                                     | Root uptake,<br>ingestion, direct<br>contact,<br>inhalation of<br>dusts               | End-users                               | Low<br>Likelihood | Moderate | Low               | The mobility of this contaminant is low and any volumes present are likely to be small. The substation present onsite was upgraded during the recent redevelopment of the site, therefore unlikely to contain any PCBs. In addition, the proposed development will be covered in hardstanding which will break the pathway to site end users. The risk is considered to be low.                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Made Ground /<br/>Infilled Ponds</b><br>Ground Gas<br>(carbon dioxide<br>and methane)                  | Migration into<br>confined<br>spaces,<br>inhalation and<br>asphyxiation/<br>explosion | End-users /<br>property /<br>structures | Unlikely          | Severe   | Moderate /<br>Low | Made ground encountered was widely sandy clayey gravels / sandy gravelly clay with limited evidence of degradable/putrescible material which is considered to be of low gas generation potential. Given the temporary nature of the development, and the typically construction with a modular cabin suspended on pads above ground level a significant void space will be present under the building which will prevent sufficient passive ventilation to negate the requirement for gas protection measures. Regardless of this, gas monitoring undertaken on two occasions over six weeks provided a good spread of data across the site, elevated concentrations of carbon dioxide and methane were not recorded and therefore the site falls within CS1 and gas protection measures are not required.      |

| Human Health                                                                                                                                                     |                                                |                    |            |          |               |                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------|------------|----------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Source                                                                                                                                                 | Potential Pathway                              | Potential Receptor | Likelihood | Severity | Level of Risk | Justification                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Off site</b><br><b>Warehouse /</b><br><b>Garage / Works</b><br><b>/ Mills /</b><br><b>Electricity</b><br><b>Substation</b><br>PCBs, Metals,<br>PAHs, TPH etc. | Ingestion, direct contact, inhalation of dusts | End-users          | Unlikely   | Moderate | Low           | Offsite sources of contamination are not considered to be greater in significance than those recorded historically at the site. In addition to this, the underlying ground conditions are anticipated to be low permeability glacial till. Given this, lateral migration of contamination onto the site is considered unlikely and therefore the risk is considered to be low. |

| Controlled Waters                                                             |                                                                      |                                                    |            |          |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------|------------|----------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Source                                                              | Potential Pathway                                                    | Potential Receptor                                 | Likelihood | Severity | Level of Risk | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Made Ground /<br/>Brewery /<br/>Works / Depots</b><br>PAHs, Metals,<br>TPH | Leaching through unsaturated zone / Migration through saturated zone | Secondary (Undifferentiated) Aquifer (Groundwater) | Unlikely   | Medium   | Low           | Glacial Till is recorded beneath the made ground across the entirety of the site which will break the pathway from the site soils to the Secondary Undifferentiated Aquifer. Evidence of significant mobile contamination was not recorded during the site investigations across the site and the wider Dean Trust Academy site.. Elevated levels of determinands were not recorded in the site soils on the site. In line with the above, the risk to the Secondary Undifferentiated Aquifer is considered to be low.                                                                                                                                                                                                                                                 |
|                                                                               | Migration through saturated zone                                     | Principal Aquifer (Groundwater)                    | Unlikely   | Medium   | Low           | There are no potable water groundwater abstraction licences or Source Protection Zones near the site. Glacial Till is recorded beneath the made ground across the entirety of the site which will break the pathway from the potentially contaminated site soils to the Secondary Undifferentiated Aquifer. Evidence of significant mobile contamination was not recorded during the site investigations. Elevated levels of determinands were not recorded in the site soils on the site. Elevated concentrations of determinands was not recorded within the sample obtained from groundwater associated with the Principal Aquifer during the Atkins site investigation in 2014. In line with the above, the risk to the Principal Aquifer is considered to be low. |

## 7.9 Outline Remedial Measures

The level of protection for the clean potable water supply pipes should be determined using the local water company risk assessment criteria in accordance with UKWIR.

Widespread asbestos contamination has been recorded at the Dean Trust Academy site historically, although levels of asbestos from samples obtained during site investigations within the red line boundary did not reveal any positive asbestos ID's asbestos is considered to be ubiquitous in the made ground at low levels and therefore the existing cover system should be maintained and reinstated where disturbed. Consideration should be given to not cross-contaminate the existing cover system when earthworks are being conducted within the made ground below.

Prior to import or re-use of clean cover soils, they should be tested to confirm chemical suitability. After installation of the clean cover, soil depths should be verified by a suitably qualified independent geo-environmental engineer, such as BSL.

### *Ground Gas Protection Systems*

Based on the ground gas monitoring results, no mitigation measures are required.

### *General*

It is recommended that the approval of the Regulators (Local Authority / Environment Agency) is obtained in regard to the above prior to any irrevocable action is taken at the site.

Once the above bodies have approved the above outline remedial proposals, a Remedial Strategy will need to be produced to meet planning requirements and submitted to the regulatory authorities for approval. This will also give guidance to enable a suitably qualified contractor to carry out the works.

A watching brief is recommended during groundworks for any unidentified sources of contamination. If any gross contaminated material is encountered works should cease in that area and BSL consulted.

Once remediation is complete, verification reports will need to be produced by a suitably qualified independent geo-environmental engineer, such as BSL, in order to achieve regulatory sign off.

## 7.10 Health and Safety Issues

During the reclamation and construction phases of the site development it will be necessary to protect the health and safety of site personnel. The risk to construction and ground workers is assessed in the table below:

| Potential Source                                         | Potential Pathway                               | Potential Receptor   | Likelihood | Severity | Level of Risk  |
|----------------------------------------------------------|-------------------------------------------------|----------------------|------------|----------|----------------|
| Made Ground (heavy metals, PAHs, petroleum hydrocarbons) | Ingestion, direct contact, inhalation of dusts. | Construction Workers | Unlikely   | Mild     | Very low       |
| Asbestos                                                 | Ingestion, direct contact, inhalation of dusts. | Construction Workers | Likely     | Medium   | Moderate       |
| Ground gas                                               | Inhalation in confined spaces/trenches          | Construction Workers | Unlikely   | Severe   | Moderate / Low |

Asbestos has been recorded in numerous samples obtained from the made ground underlying the Dean Trust Academy site at concentrations at trace levels and above. The risk from asbestos should be highlighted

in the method statements and site induction. If further evidence of asbestos is encountered in the soils, work should cease until asbestos control measures have been agreed and put in place.

The risk from made ground will be mitigated by standard PPE including gloves. Welfare facilities should be made available to wash before hand to mouth activities.

General guidance on these matters is given in the Health and Safety Executive (HSE) document “Protection of Workers and the General Public during the Redevelopment of Contaminated Land”. In summary, the following measures are suggested to provide a minimum level of protection:

- All ground workers should be issued with the relevant protective clothing, footwear and gloves. These protective items should not be removed from the site and personnel should be instructed as to why and how they are to be used.
- Hand-washing and boot-washing facilities should be provided.
- Care should be taken to minimise the potential for off-site migration of contamination by the provision of dust suppression control and wheel cleaning equipment during the construction works.
- Good practices relating to personal hygiene should be adopted on the site.
- The contractor shall satisfy the Health and Safety Executive with regard to any other matters concerning the health, safety and welfare of persons on the site.

### 7.11 Asbestos

The investigation of asbestos issues within structures was beyond the scope of this report. However, guidance from UK Government indicates that asbestos should be assumed to be present in buildings unless proven otherwise.

Any asbestos within structures will require removal prior to re-development. This will need to be done by a suitably qualified experienced and licensed contractor, who ensures that adequate PPE is provided to operatives, and that all the relevant legislation is adhered to.

In addition, the presence of asbestos within the ground will require, a safe system of work to be set up on site to deal with the asbestos risk from the made ground. This may include but be not limited to:

- The use of qualified personnel where required.
- Careful segregation of stockpiles on site.
- Defining transport routes.
- Cleaning down of machinery in designated areas.
- Decontamination unit for ground workers.
- Damping down of soils to prevent dust migration.

Asbestos has been recorded in numerous samples obtained from the made ground underlying the Dean Trust Academy site at concentrations at trace levels and above. The level of precautions required are at the discretion of the principal contractor on site however good site practices including minimising the generation of dusts should be adhered to and sufficient to mitigate against the risk from asbestos. In addition site personnel should have the risk communicated at the induction stage. It is recommended that the asbestos in construction materials assessment tool is used at the site to inform asbestos licensing and control measures.

Excavations in soils containing asbestos should comply with the CL:AIRE publication ‘Interpretation for Managing and working with Asbestos in Soil and Construction and Demolition Materials’ (CARSOIL) and CAR 2012. All such works will need to be agreed with the regulatory bodies (HSE and/or LA).

Additional guidance is provided within the BSL methodology Guidance Note in Appendix A.

## 8.0 WASTE SOIL CLASSIFICATION & ASSESSMENT

### 8.1 Waste Classification Procedure

As described in the 'Waste Duty of Care Code of Practice (2016)' any substance or object that the holder discards, intends to discard or is required to discard is a waste. It is the responsibility of the waste producer to classify this waste. The classification process is described in the 'Guidance on the classification and assessment of waste' WM3 and aims to determine whether the waste is Hazardous or Non-Hazardous to human health and the environment.

Wastes first need to be classified based on their total concentrations. WAC testing is only required if the end disposal route is a landfill and WAC analysis must not be used for waste classification.

Wastes can only be accepted at a landfill if they meet the relevant Waste Acceptance Criteria (WAC) for that type of landfill. A waste must comply with the WAC limits for the relevant landfill, otherwise the soil will need to be pre-treated. There are three different WAC criteria, these are:

- Inert waste.
- Stable Non-Reactive Hazardous Waste (SNRHW).
- Hazardous waste.

Details of how material should be classified for waste disposal are presented in the BSL Methodology and Guidance in Appendix A and are summarised in the table below:

| Classification based on Total Concentrations <sup>1</sup> | PRIOR TO LEAVING SITE                                        |                                     |                                               |                            |
|-----------------------------------------------------------|--------------------------------------------------------------|-------------------------------------|-----------------------------------------------|----------------------------|
|                                                           | Non-Hazardous Waste                                          |                                     | Hazardous Waste                               |                            |
|                                                           | IF SOILS CANNOT BE RE-USED ELSEWHERE AND MUST GO TO LANDFILL |                                     |                                               |                            |
| WAC testing                                               | Below inert WAC limit values                                 | Above inert WAC limit values        | Below hazardous WAC limit values <sup>4</sup> | > WAC limit values         |
| Landfill requirements                                     | INERT landfill                                               | NON-HAZARDOUS landfill <sup>2</sup> | HAZARDOUS landfill                            | PRE-TREATMENT <sup>3</sup> |

1 Total concentrations are defined as tests results on solids as opposed to leachate (i.e. a liquid).

2 Individual sites may have certain limit values pre-determined in their licence.

3 After pre-treatment the material characteristics may have changed to an extent that allow the soil to be re-classified.

4 Possibility that wastes could be classified as stable Nonreactive HAZARDOUS waste in non-hazardous Landfill (e.g. soils containing low concentrations of asbestos, gypsum or sulphate bearing soils).

### 8.2 Waste Classification and Waste Acceptance Criteria (WAC)

Testing results have been assessed through a waste classification database (HazWasteOnline) which allows users to code and classify waste as defined in the EWC (European Waste Catalogue) based on EC Regulation 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures (CLP) and latest Environment Agency guidance (WM3 "Guidance on the classification and assessment of waste - Technical Guidance").

The Waste Classification Report results are presented in Appendix F.

### 8.3 Re-use of Soils

By definition in law, any material excavated from the ground becomes waste at the moment of excavation. If that soil (now a "waste") is then placed on another part of the development site (or used on another

development site) without an appropriate materials management plan, permit or exemption being in place, by law this material is defined as “illegally deposited waste”.

Landfill tax rules allow HM Revenue & Customs (HMRC) to recover landfill tax on illegally deposited waste on construction sites. This could lead to excessive costs without the correct documentation in place. In addition, a person who makes, knowingly causes or knowingly facilitates a disposal to be made at an unauthorised site is also liable to pay Landfill Tax.

In order to comply with UK legislation and avoid excessive costs, if the re-use of soils is proposed on site, this should be done in accordance with the relevant exemptions or permits in place.

One of the main industry mechanisms for allowing the re-use of soils in construction is the CL:AIRE “Development Industry Code of Practice for the Definition of Waste” (CL:AIRE DoWCoP) also known as a Materials Management Plan (MMP). Further guidance is provided in the BSL Methodology and Guidance in Appendix A.

If the DoWCoP is the chosen route, the MMP should be in place and declared by a Qualified Persons (QP) before works commence, otherwise excavated soils could constitute an illegal deposit of waste and enforcement action could be taken by the EA and HMRC.

Alternatives, such as a U1 exemption, may also be utilised.

## 9.0 CONCLUSIONS

### 9.1 Geo-Environmental

#### *Geo-Environmental – Human Health*

Testing of the made ground at the site did not reveal any exceedances of heavy metals, PAHs, petroleum hydrocarbons, BTEX or MTBE compounds.

Asbestos was not recorded in any of the samples undertaken within the red line boundary. However, widespread asbestos contamination has been recorded at the Dean Trust Academy site historically, although levels of asbestos from samples obtained during site investigations within the red line boundary did not reveal any positive asbestos ID's asbestos is considered to be ubiquitous in the made ground at low levels and therefore the existing cover system should be maintained and reinstated where disturbed. Consideration should be given to not cross-contaminate the existing cover system when earthworks are being conducted within the made ground below.

the temporary nature of the development, and the typically construction with a modular cabin suspended on pads above ground level a significant void space will be present under the building which will prevent sufficient passive ventilation to negate the requirement for gas protection measures. Regardless of this, gas monitoring undertaken on two occasions over six weeks provided a good spread of data across the site, elevated concentrations of carbon dioxide and methane were not recorded and therefore the site falls within CS1 and gas protection measures are not required.

#### *Geo-Environmental – Controlled Waters*

The overall risk to controlled waters is considered to be low and no further action is required.

### 9.2 Geotechnical

#### *Foundations*

The most suitable foundation solution for the proposed development is considered to be pad foundations, taken to the underside of any made ground to found on undisturbed natural firm clay.

Pad foundations should be taken through the made ground into the natural clay strata founding at a minimum depth of 1.00mbgl bgl due to the low to high volume change potential clays, and deeper near trees and hedges in accordance with current guidance. At a founding depth of 1.50m, for a square pad 0.80m by 0.80m, an allowable bearing capacity not exceeding 200kN/m<sup>2</sup> may be assumed. Where the relic basement is present in the north-east of the proposed building footprint, foundations should be deepened. At a founding depth of 3.00m, for a circular pad 0.80m diameter, an allowable bearing capacity not exceeding 300kN/m<sup>2</sup> may be assumed. This adopts a factor of safety of 3 which should limit settlements to within acceptable limits.

#### *Floor slabs*

Suspended floor slabs may be adopted.

#### *Concrete classification*

The results of laboratory pH and sulphate content indicate that sulphate class DS-1 and ACEC Class AC-1s conditions prevail in accordance with BRE Special Digest 1 "Concrete in aggressive ground" 2005.

#### *Highways*

Based on Table 5.1 from DMRB IAN 73/06 Rev 1 equilibrium CBR values of 2% for natural clays soils for pavement design purposes, unless proven otherwise by in-situ testing at formation level by a specialist geotechnical engineer. Equilibrium CBR values are likely to be 2% within the made ground.

Where the CBR is found to be less than 2%, the sub-grade is unlikely to be suitable for both the trafficking of site plant and as a permanent highway foundation without improvement of the soils.

*Drainage (SuDS)*

The use of sustainable drainage systems, such as traditional soakaways within the natural ground, is not likely to be feasible due to the presence of low permeability cohesive strata underlying the site.

### **9.3 Further Work**

The following further work is considered necessary to progress the site to construction phase:

- 
- Detailed foundation design by a structural engineer.
  - Design of Remedial Strategy and confirmation with the Local Authority /EA
  - Implementation of the Remedial Strategy and verification of the remedial works.
-

## 10.0 ABBREVIATIONS AND DEFINITIONS

| GLOSSARY            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Term / Abbreviation | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| AST                 | Above Ground Storage Tank.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| B(a)P               | Benzo (a) Pyrene.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| BGS                 | British Geological Survey.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| BRE                 | Building Research Establishment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| BS                  | British Standard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| BSL                 | Brownfield Solutions Ltd.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| BTEX                | Benzene, Toluene, Ethylbenzene, Xylenes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| CBR                 | California Bearing Ratio (used in pavement/highways design).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CAR 2012            | Control of Asbestos Regulations (2012).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| CBCB                | Cheshire Brine Compensation Board.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CBCD                | Cheshire Brine Compensation District.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| CBR                 | California Bearing Ratio.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| CIEH                | Chartered Institute of Environmental Health.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CIRIA               | Construction Industry Research Association.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CL:AIRE             | Contaminated Land: Applications in Real Environments.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| CLEA                | Contaminated Land Exposure Assessment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| CLO                 | Contaminated Land Officer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| COMAH               | Control of Major Accident Hazards.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Contamination       | <p>Presence of a substance which is in, on or under land, and which has the potential to cause significant harm or to cause significant pollution of controlled water. There is no assumption in this definition that harm results from the presence of the contamination.</p> <p>Naturally enhanced concentrations of harmful substances can fall within this definition of contamination.</p> <p>Contamination may relate to soils, surface water, groundwater or ground gas.</p>                                                                                                                                                                                                                                                                                                                                                                                                 |
| Controlled Waters   | Inland freshwater (any lake, pond or watercourse above the freshwater limit), water contained in underground strata and any coastal water between the limit of highest tide or the freshwater line to the three-mile limit of territorial waters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| CPT                 | Cone Penetration Test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| CSM                 | Conceptual Site Model. A schematic hypothesis of the nature and sources of contamination, potential migration pathways (including description of the ground and groundwater) and potential receptors, developed on the basis of the information from the preliminary investigation and refined during subsequent phases of investigation and which is an essential part of the risk assessment process. The conceptual site model is initially derived from the information obtained by the preliminary investigation (i.e. the Phase I Desk Study). This conceptual model is used to focus subsequent investigations, where these are considered to be necessary, in order to meet the objectives of the investigations and the risk assessment. The results of intrusive investigations can provide additional data that can be used to further refine the conceptual site model. |
| DCP                 | Dynamic Cone Penetrometer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| DNAPL               | Dense Non-Aqueous Phase Liquid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| DoWCoP              | Definition of Waste Code of Practice.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| DWS                 | Drinking Water Standard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| EA                  | Environment Agency.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| EHO                 | Environmental health Officer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| EQS                 | Environmental Quality Standard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| GAC                 | Generic Assessment Criteria.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| GLOSSARY               |                                                                                                                                                                                                                              |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Term / Abbreviation    | Definition                                                                                                                                                                                                                   |
| <b>GDR</b>             | Geotechnical Design Report.                                                                                                                                                                                                  |
| <b>GFR</b>             | Geotechnical Feedback Report.                                                                                                                                                                                                |
| <b>GIR</b>             | Ground Investigation Report.                                                                                                                                                                                                 |
| <b>GSV</b>             | Gas Screening Value.                                                                                                                                                                                                         |
| <b>Harm</b>            | Adverse effect on the health of living organisms, or other interference with ecological systems of which they form part, and, in the case of human health, including property/structures and water supply pipelines.         |
| <b>Hazard</b>          | Inherently dangerous quality of a substance, procedure or event.                                                                                                                                                             |
| <b>HDPE</b>            | High Density Polyethylene.                                                                                                                                                                                                   |
| <b>HSV</b>             | Hand Shear Vane.                                                                                                                                                                                                             |
| <b>K</b>               | Modulus of Subgrade Reaction.                                                                                                                                                                                                |
| <b>LCRM</b>            | Land Contamination: Risk Management (EA guidance).                                                                                                                                                                           |
| <b>LNAPL</b>           | Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene).                                                                                                                                                                   |
| <b>LOD</b>             | Limit of Detection (for particular method adopted).                                                                                                                                                                          |
| <b>MMP</b>             | Materials Management Plan.                                                                                                                                                                                                   |
| <b>Mv</b>              | Modulus of Volume of Compressibility.                                                                                                                                                                                        |
| <b>ND</b>              | Not Detected.                                                                                                                                                                                                                |
| <b>NHBC</b>            | National House Building Council.                                                                                                                                                                                             |
| <b>NR</b>              | Not Recorded.                                                                                                                                                                                                                |
| <b>OS</b>              | Ordnance Survey.                                                                                                                                                                                                             |
| <b>PAH</b>             | Polycyclic Aromatic Hydrocarbon.                                                                                                                                                                                             |
| <b>Pathway</b>         | Mechanism or route by which a contaminant comes into contact with, or otherwise affects, a receptor.                                                                                                                         |
| <b>PCB</b>             | Poly-Chlorinated Biphenyl.                                                                                                                                                                                                   |
| <b>PCSM</b>            | Preliminary Conceptual Site Model.                                                                                                                                                                                           |
| <b>pH</b>              | Scale used to specify how acidic or basic a water-based solution is.                                                                                                                                                         |
| <b>PHC</b>             | Petroleum Hydrocarbons.                                                                                                                                                                                                      |
| <b>PID</b>             | Photo Ionisation Detector.                                                                                                                                                                                                   |
| <b>PNEC</b>            | Predicted No-Effect Concentration.                                                                                                                                                                                           |
| <b>Precision</b>       | Level of agreement within a series of measurements of a parameter.                                                                                                                                                           |
| <b>PSD</b>             | Particle Size Distribution.                                                                                                                                                                                                  |
| <b>PVC</b>             | Polyvinyl Chloride.                                                                                                                                                                                                          |
| <b>Receptor</b>        | Human health, living organisms, ecological systems, controlled waters (surface waters and groundwater within aquifers), atmosphere, structures and utilities that could potentially be adversely affected by contaminant(s). |
| <b>Risk</b>            | Probability of the occurrence, magnitude and consequences of an unwanted adverse effect on a receptor.                                                                                                                       |
| <b>Risk Assessment</b> | Process of establishing, to the extent possible, the existence, nature and significance of risk.                                                                                                                             |
| <b>Sampling</b>        | Methods and techniques used to obtain a representative sample of the material under investigation.                                                                                                                           |
| <b>SOM</b>             | Soil Organic Matter.                                                                                                                                                                                                         |
| <b>Source</b>          | Location from which contamination is, or was, derived. This could possibly be the location of the highest soil, groundwater or gas concentration of the contaminant(s).                                                      |
| <b>SPT</b>             | Standard Penetration Test.                                                                                                                                                                                                   |
| <b>SVOCs</b>           | Semi Volatile Organic Compounds.                                                                                                                                                                                             |
| <b>TOC</b>             | Total Organic Carbon.                                                                                                                                                                                                        |
| <b>TPH CWG</b>         | Total Petroleum Hydrocarbon (Criteria Working Group).                                                                                                                                                                        |

| GLOSSARY                      |                                                                                                                                                                |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Term / Abbreviation           | Definition                                                                                                                                                     |
| <b>TVOCs</b>                  | Total volatile organic compounds.                                                                                                                              |
| <b>UCS</b>                    | Unconfined Compressive Strength.                                                                                                                               |
| <b>Uncertainty</b>            | Parameter, associated with the result of a measurement that characterises the dispersion of the values that could reasonably be attributed to the measurement. |
| <b>UST</b>                    | Underground Storage Tank.                                                                                                                                      |
| <b>UXO</b>                    | Unexploded Ordnance.                                                                                                                                           |
| <b>VCCs</b>                   | Vibro Concrete Columns.                                                                                                                                        |
| <b>VSCs</b>                   | Vibro Stone Columns                                                                                                                                            |
| <b>VOCs</b>                   | Volatile Organic Compounds.                                                                                                                                    |
| <b>WAC</b>                    | Waste Assessment Criteria.                                                                                                                                     |
| <b>WFD (in waste context)</b> | Waste Framework Directive.                                                                                                                                     |
| <b>WFD (in water context)</b> | Water Framework Directive.                                                                                                                                     |
| Units                         | Definition                                                                                                                                                     |
| °                             | Degrees                                                                                                                                                        |
| Φ                             | Phi angle (in degrees)                                                                                                                                         |
| g/l                           | Grams per Litre                                                                                                                                                |
| Km                            | Kilometres                                                                                                                                                     |
| kPa                           | Kilo Pascal (Equivalent to kN/m <sup>2</sup> )                                                                                                                 |
| KN/m <sup>2</sup> /mm         | Kilo Newton per metered squared per millimeter                                                                                                                 |
| kN/m <sup>2</sup>             | Kilo Newtons per metre squared                                                                                                                                 |
| kPa                           | Kilo Pascal (Equivalent to kN/m <sup>2</sup> )                                                                                                                 |
| l/hr                          | Litres per hour                                                                                                                                                |
| MJ/kg                         | Mega joule per kilogram                                                                                                                                        |
| MN                            | Mega Newton                                                                                                                                                    |
| M <sup>2</sup> /MN            | Mega Newton per metre squared                                                                                                                                  |
| M                             | Metres                                                                                                                                                         |
| m bgl                         | Metres Below Ground Level                                                                                                                                      |
| m OD                          | Metres Ordnance Datum (sea level)                                                                                                                              |
| µg/l                          | Micrograms per Litre (parts per billion)                                                                                                                       |
| µm                            | Micrometre                                                                                                                                                     |
| mb                            | Millibars (atmospheric pressure)                                                                                                                               |
| mg/kg                         | Milligrams per kilogram (parts per million)                                                                                                                    |
| mg/m <sup>3</sup>             | Milligram per metre cubed                                                                                                                                      |
| mm                            | Millimetre                                                                                                                                                     |
| ppb                           | Parts Per Billion                                                                                                                                              |
| Ppm                           | Parts Per Million                                                                                                                                              |

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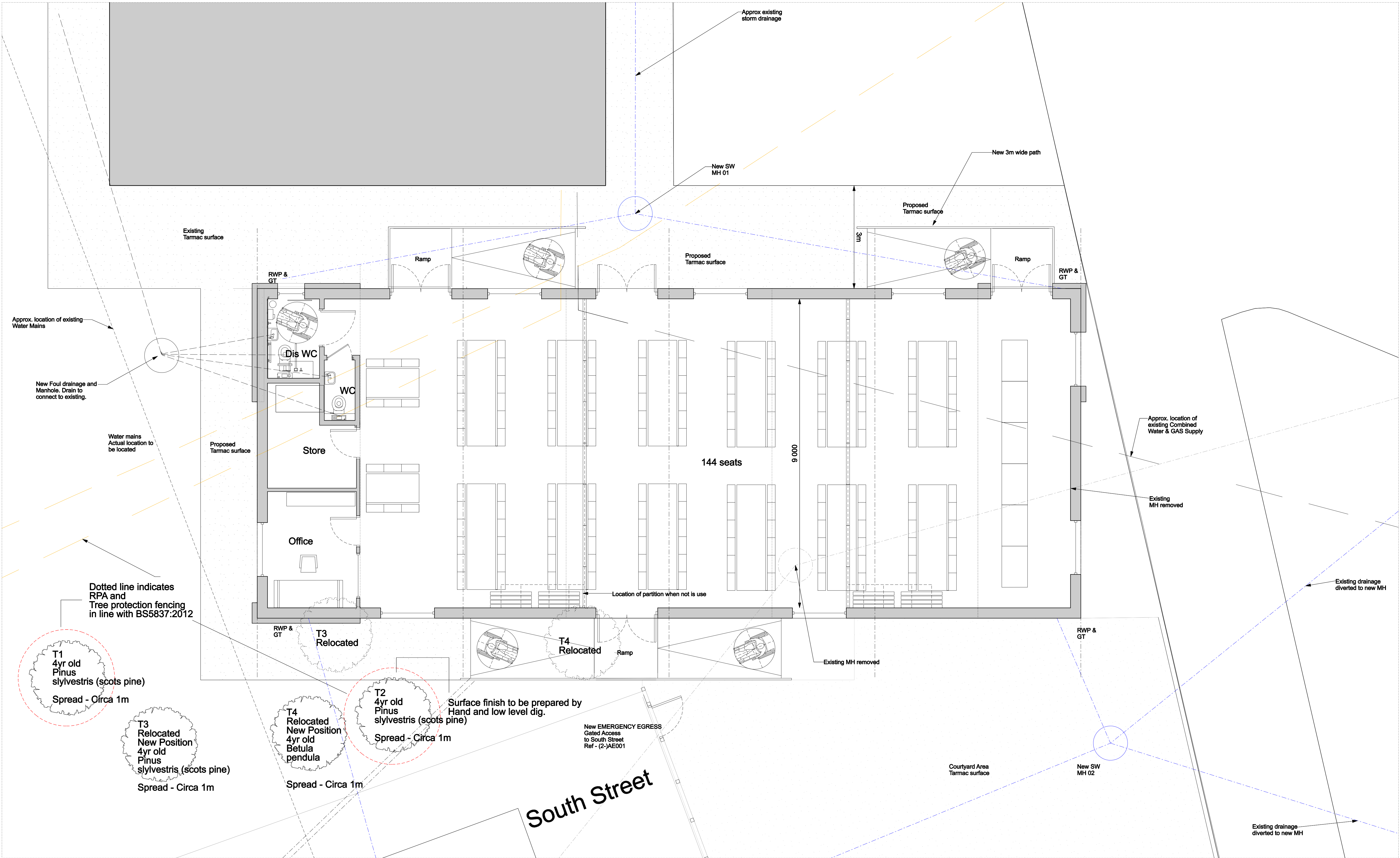
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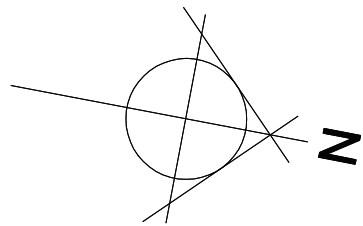
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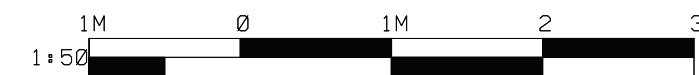
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| 1   | 22/02/21 | Amended as per Client comments |
| 2   | 24/02/21 | Client Issue                   |
| 3   | 26/02/21 | PLANNING Issue                 |
| 4   | 08/03/21 | PLANNING Issue                 |
| 5   | 29/03/21 | PLANNING Issue                 |
| 6   | 07/04/21 | PLANNING Update Issue          |
| 7   | 11/05/21 | PLANNING Update Issue          |

Read drawing in conjunction with relevant specification, Structural Engineers' and Services Engineers' drawings.

Confirm all dimensions before commencement of any work on site or fabrication.



Dotted line indicates RPA and Tree protection fencing in line with BS5837:2012



|             |            |
|-------------|------------|
| Status      | PLANNING   |
| Scale       | 1:50 @A1   |
| Drawn by    | PG         |
| Date        | FEB 21     |
| Job number  | 2102       |
| Drg. number | (2-JAP001) |
| Revision    | 7          |

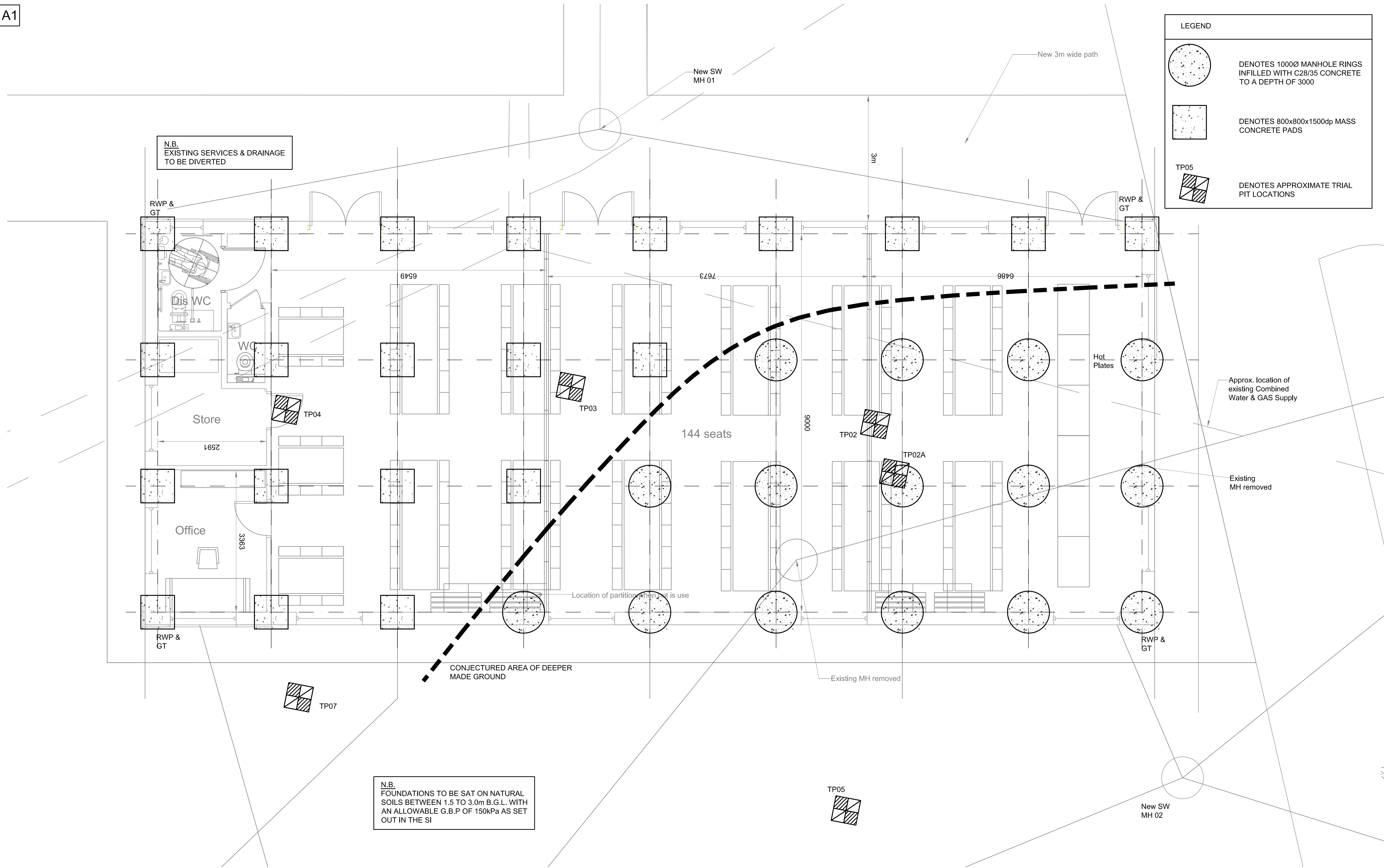
Notes

Project  
New Portable Classroom at  
Deans Trust, Arwick, Plymouth Grove West  
Victoria Park, Manchester  
M13 0AG

Proposed Floor Plan

cheesie  
3 castle park house  
31a high street  
tridham  
webb 741  
t: 01928 723062  
f: 0113 2749911  
e: mail@daccus.co.uk  
Architects and Construction Managers Ltd.

daccus



LEGEND

DENOTES 1000Ø MANHOLE RINGS INFILLED WITH C28/35 CONCRETE TO A DEPTH OF 3000

DENOTES 800x800x1500dp MASS CONCRETE PADS

TP05  
DENOTES APPROXIMATE TRIAL PIT LOCATIONS

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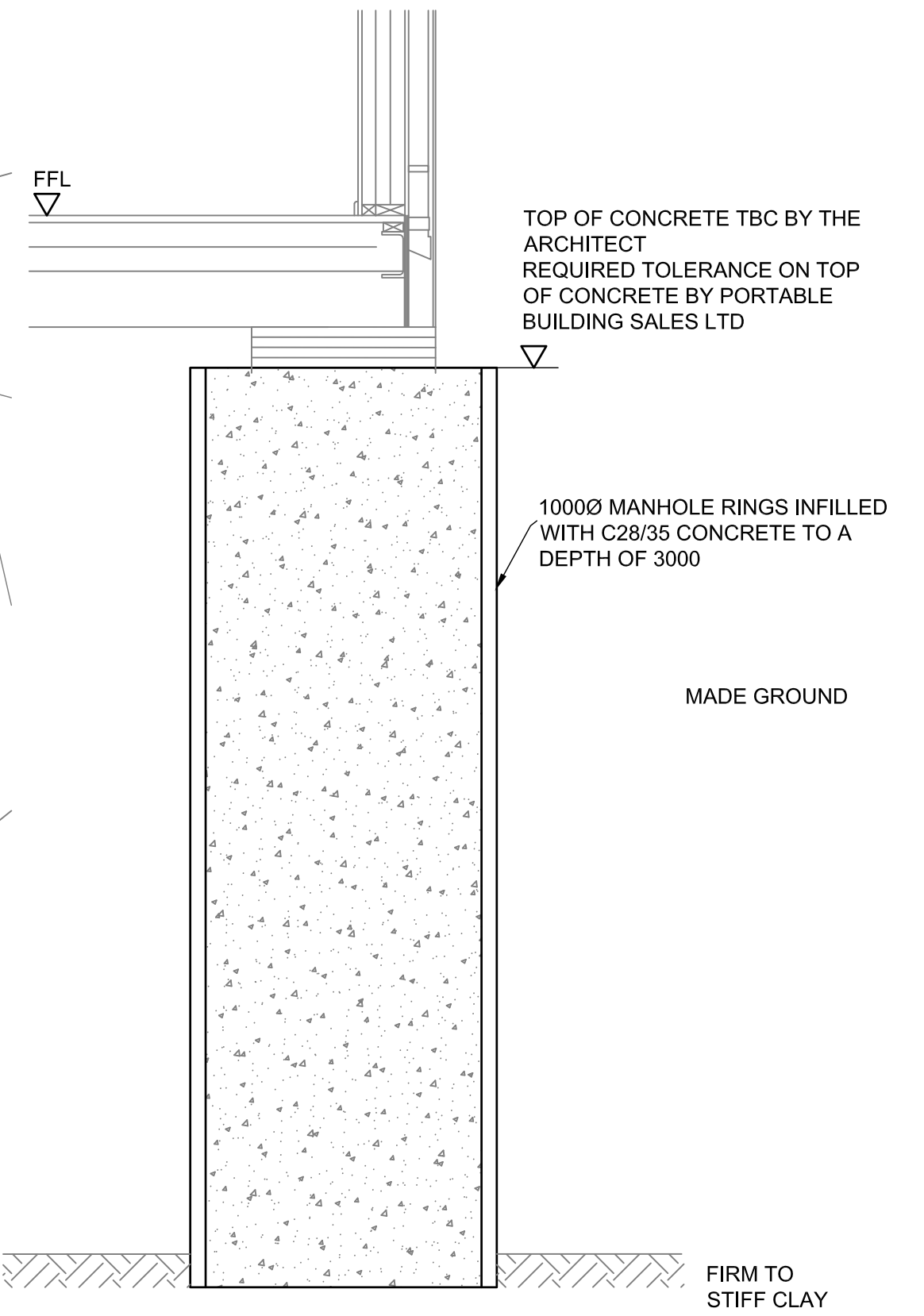
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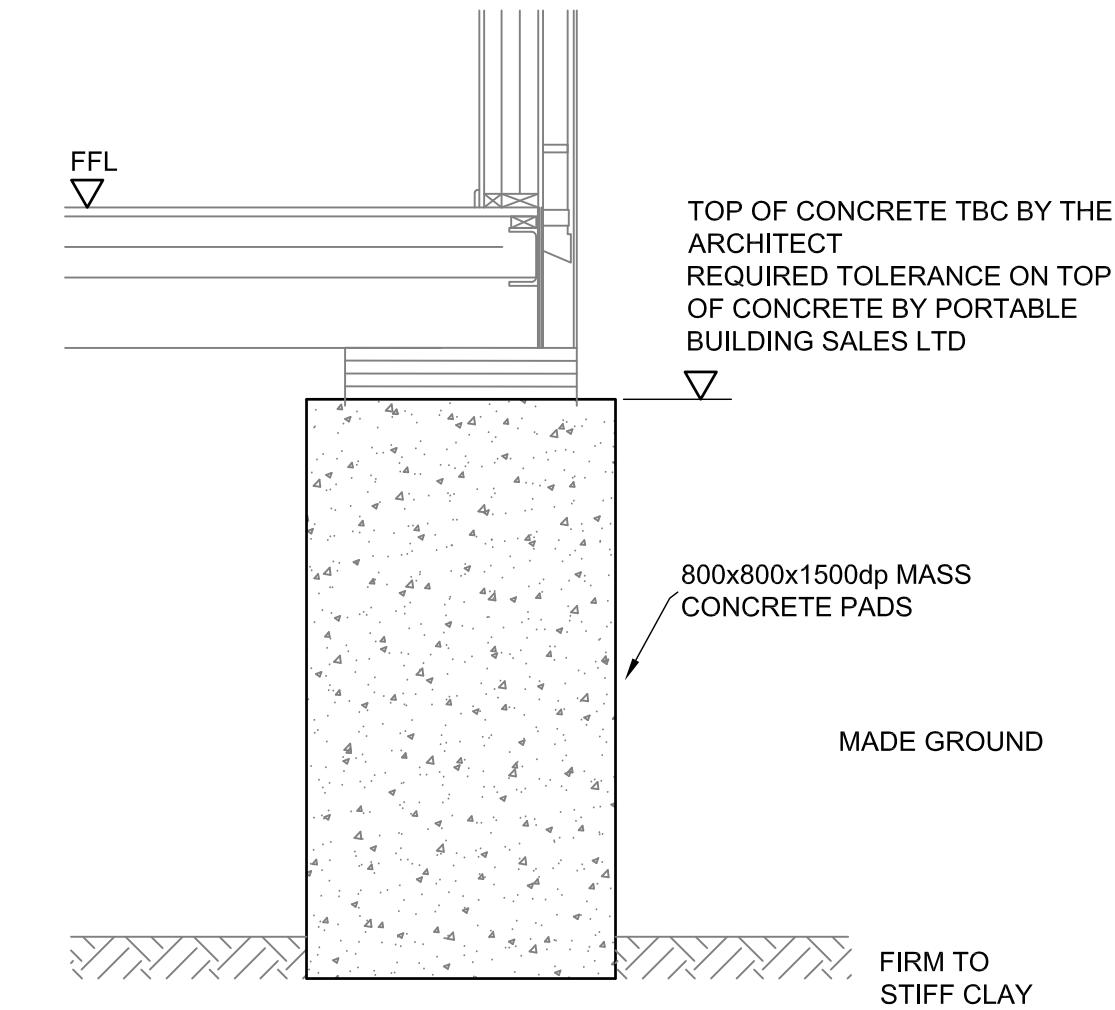
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TYPICAL SECTION THROUGH 1000 Ø MANHOLE RINGS (SCALE 1:20)



TYPICAL SECTION THROUGH 800 Sq. PAD (SCALE 1:20)

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| HEALTH AND SAFETY INFORMATION                                                                                            |  |  |  |  |
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| IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING. NOTE THE FOLLOWING |  |  |  |  |
| <u>CONSTRUCTION</u>                                                                                                      |  |  |  |  |
| Live services                                                                                                            |  |  |  |  |
| POTENTIAL FOR ASBESTOS CONTAINING MATERIALS IN MADE GROUND REFER TO SI DOCUMENTS                                         |  |  |  |  |
| <u>MAINTENANCE / CLEANING / OPERATION</u>                                                                                |  |  |  |  |
| No residual risks.                                                                                                       |  |  |  |  |
| <u>DECOMMISSION / DEMOLITION</u>                                                                                         |  |  |  |  |
| No residual risks anticipated that this stage.                                                                           |  |  |  |  |

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Client

DEAN TRUST ACADEMY

Project

TEMPORARY CLASSROOM

Drawing

FOUNDATION LAYOUT  
PAD FOOTING OPTION

Purpose of Issue

PRELIMINARY

Status

S1

Project No.

12492

Scale @ A1

1:50;1:20

Date

25.02.21

Drawn

CDB

Checked

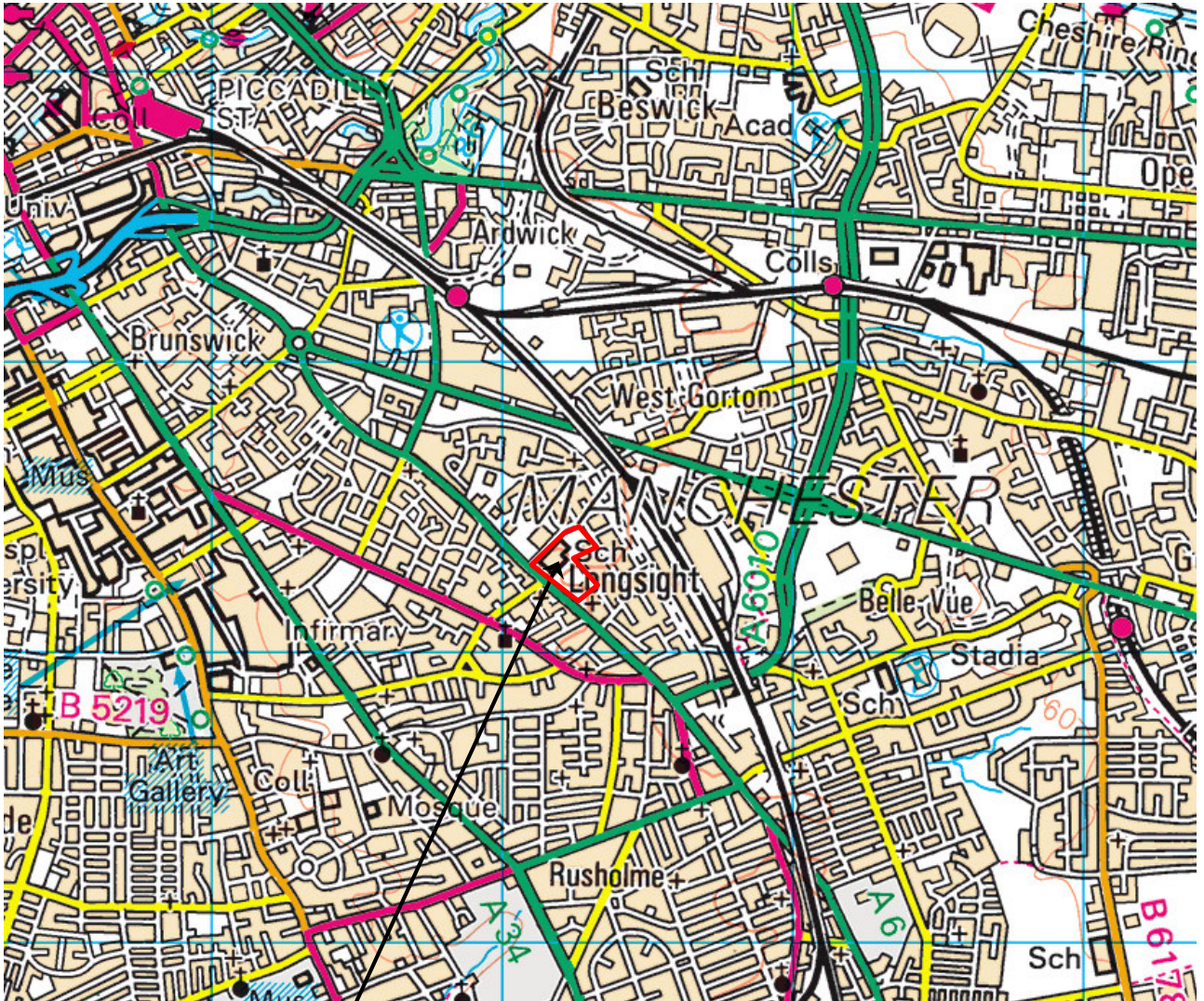
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Drawing Identifier

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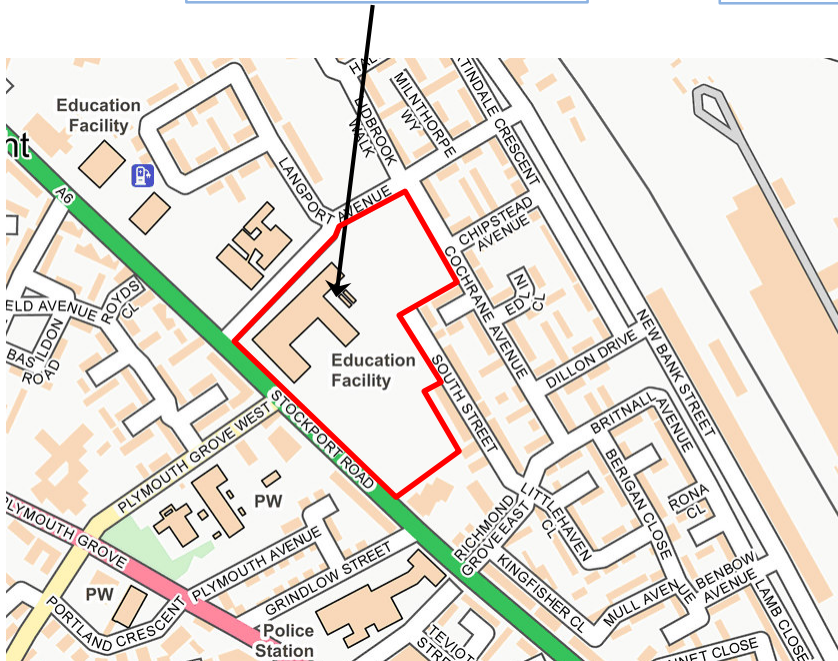
Revision

P1

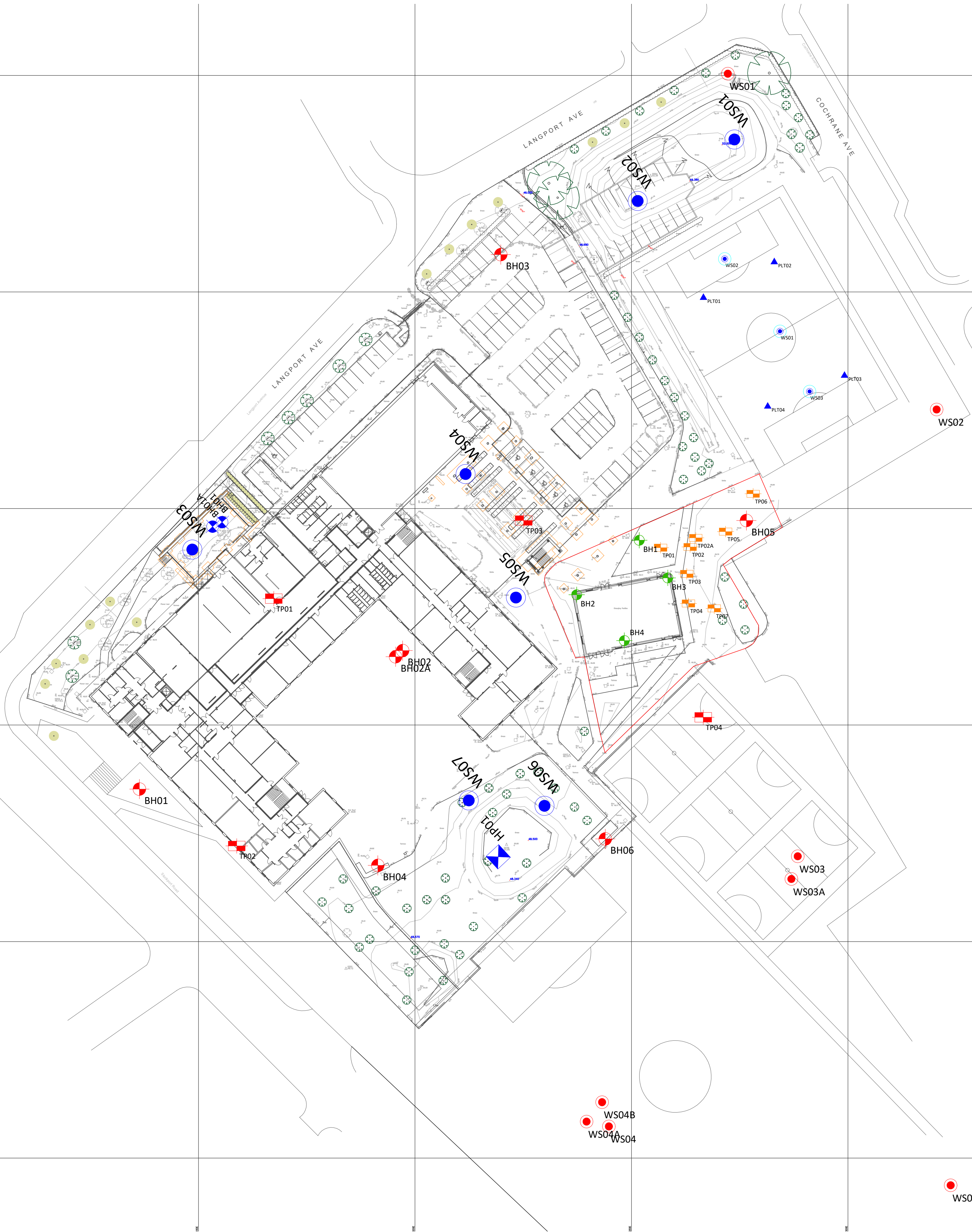


SITE LOCATION

NEAREST POSTCODE: M13 0LF



| REV                                                                                                                                                                                                       | DATE          | DESCRIPTION       | BY               | CKD |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------|------------------|-----|
|                                                                                                                                                                                                           |               |                   |                  |     |
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| THE DEAN TRUST                                                                                                                                                                                            |               |                   |                  |     |
| PROJECT TITLE                                                                                                                                                                                             |               |                   |                  |     |
| DEAN TRUST ACADEMY,<br>ARDWICK, MANCHESTER                                                                                                                                                                |               |                   |                  |     |
| DRAWING TITLE                                                                                                                                                                                             |               |                   |                  |     |
| SITE LOCATION PLAN                                                                                                                                                                                        |               |                   |                  |     |
| DRAWING No.<br>M4246/01                                                                                                                                                                                   | REVISION<br>- | SCALE<br>NTS      | DATE<br>03/07/19 |     |
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KEY

ATKINS (2014)

WS01 WINDOW SAMPLE BOREHOLE

TP01 TRIAL PIT

BH01 CABLE PERCUSSIVE BOREHOLE

SOLMEK (2016)

BH1 WINDOW SAMPLE BOREHOLE

PATRICK PARSONS (2018)

TP05 TRIAL PIT

BSL(2019 / 2021)

PLXX PLATE LOAD TESTING

WSXX WINDOW SAMPLE BOREHOLE

SOAKAWAY INFILTRATION TEST (CIRCLE LOCATION)

BH01 CABLE PERCUSSIVE BOREHOLE

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS REPORTS. THIS DRAWING IS COPYRIGHT OF BSL.
3. DRAWING NOT FOR CONSTRUCTION PURPOSES.

| REV | DATE | DESCRIPTION | BY | CKD |
|-----|------|-------------|----|-----|
|     |      |             |    |     |
|     |      |             |    |     |
|     |      |             |    |     |
|     |      |             |    |     |



CLIENT  
**THE DEAN TRUST**

PROJECT TITLE  
**DEAN TRUST ACADEMY,  
ARDWICK, MANCHESTER**

DRAWING TITLE  
**EXPLORATORY HOLE LOCATION  
PLAN**

| DRAWING No.    | REVISION | SCALE             | DATE     |
|----------------|----------|-------------------|----------|
| M4246/09       | -        | NTS               | 11/08/21 |
| DRAWN BY<br>NS |          | CHECKED BY<br>DMG |          |

## **APPENDIX A**

### **BSL Methodology and Guidance**

**Brownfield Solutions Limited****Terms and Conditions****The Contract**

These conditions apply to all contracts entered into by Brownfield Solutions Limited for the supply by of services by Brownfield Solutions Limited. The services provided to you and the contract under which those services are provided is with Brownfield Solutions Limited and not with any individual director, employee or agent of Brownfield Solutions Limited. Acceptance or our commencement of the provision of services to you shall be deemed to be acceptance of these Terms and Conditions.

**Definition**

In these Terms

“you”, “your” and “Client” means the person or company who has commissioned the work, “we”, “us”, “our” and “Company” means Brownfield Solutions Limited. “Conditions” and “Terms” means these Terms and Conditions.

**1 General**

- 1.1 All quotations are given and all orders are accepted on these terms, which shall prevail over any other terms and conditions of the Customer and any other representations made by any party prior to the contract, but which are deemed to incorporate the Special Conditions attached applicable to the contract.
- 1.2 No modifications of these terms shall be effective unless made by an express written agreement referring to this clause between Brownfield Solutions Limited (acting through a duly authorised manager) and the Client.
- 1.3 Our quotation is open for acceptance for a period of two months from the date of the quote.
- 1.4 The Inland Revenue have ruled that Ground Investigation work does not fall within the scope of the Construction Industry Tax Deduction Scheme, therefore a Tax Exemption Certificate is not required by Brownfield Solutions Limited and no deductions should be made from our accounts.
- 1.5 Notice to be served hereunder shall be served on the relevant party at its address shown on the order form or such other address as may be notified in accordance with this clause by pre-paid first class post (if in the United Kingdom) or pre-paid airmail (if outside the United Kingdom), and such notices shall be deemed to have been duly served 2 days (7 days in the case of airmail post) after the same has been put in the post properly addressed.
- 1.6 If for any reason any part of these conditions is rendered or held to be void or unenforceable then such part shall be severable from the remaining part of these conditions, which shall continue to have full force and effect.
- 1.7 No delay or failure on the part of Brownfield Solutions Limited in enforcing these conditions to their full extent shall prejudice its strict rights hereunder or be construed as a waiver thereof.
- 1.8 Nobody other than the parties to this agreement can enforce any part of the contract under the Contracts (Rights of Third Parties) Act 1999.
- 1.9 We normally retain project documentation for at least 6 years after the file has been closed. We currently store project documentation in safe custody free of charge. If you ask us to provide a service that exceeds the normal storage and retrieval period, we reserve the right to charge an administration fee.
- 1.10 All contracts shall be construed in accordance with English law and are subject to the jurisdiction of the English Courts.
- 1.11 Repairs to punctures to vehicle tyres occurring on the clients site will be charged on to the client at cost.

**2 Instructions**

- 2.1 The work we have been requested to carry out for you, and the areas you wish our services to address, are set out in the covering confirmation of brief letter. If you do not inform us to the contrary immediately on receipt of that letter we shall assume that that Statement is accurate and complete, and that you agree these Terms.
- 2.2 Where you instruct us by post, fax, email or by other electronic means, these regulations give you the right to terminate your instructions to us within 7 days of our being appointed, unless, within that period, we have already started providing you with our services.
- 2.3 We expect to continue to act for you until we have finished the work concerned. Either party may bring these instructions to an end at any time by notifying the other in writing giving 14 days notice. We reserve the right to cease work and terminate our agreement should you fail to provide us with adequate instructions or to pay any amount due to us.
- 2.4 The Company shall be entitled to terminate the contract immediately by notice in writing if:
  - 2.4.1 The Client commits an irredeemable breach of these conditions, persistently repeats a redeemable breach or commits a redeemable breach and fails to remedy it within 7 days of receipt of notice requiring remedy of the same or fails to pay an invoice issued by the Company when due; or
  - 2.4.2 The Client (being a company) becomes insolvent or is unable to pay its debts or convenes a meeting of its creditors or if a proposal shall be made for a voluntary arrangement for any other composition, scheme or arrangement with (or assignment for the benefit of) its creditors or a receiver, administrative receiver, administrator or similar officer is appointed over all or a substantial part of its undertaking or assets or if steps are taken for the winding up of the Client or for the making of an administration order; or
  - 2.4.3 The Client (being an individual) is unable to pay his debts or a petition is presented for his bankruptcy or the Client makes an arrangement or compromise for the benefit of his creditors; or
  - 2.4.4 The Client (being a partnership) is unable to pay its debts or a petition is presented for its winding up or if the Client enters into any composition, scheme or arrangement including the business and assets of the Client or the share of any of its partners or in the event of any action for a partnership account and/or winding up of or a dissolution of the client or if any of the states of affairs or events described in the clause above exists or occur in relation to any of the partners or if the Client is dissolved; or
  - 2.4.5 The Client is resident in a jurisdiction other than England and Wales, if an event similar to any of those described in Clauses 2.4.1 to 2.4.4 inclusive is about to occur in relation to the Client.
- 2.5 Notwithstanding the termination of the contract the Client shall be liable to the Company for all fees and disbursements incurred before termination, together with any further fees and disbursements.

**3 Exclusion and Limit of Liability**

- 3.1 Brownfield Solutions Limited shall not be liable for any failure to fulfil its obligations hereunder if such failure is caused by any occurrence of an act of God, force majeure or circumstances beyond its reasonable control.
- 3.2 Brownfield Solutions Ltd hold liability insurance of £5million pounds, however unless agreed otherwise the following liability will apply. Our total liability of whatever nature, whether in, tort (including, without limitation, negligence), under statute or otherwise to you and to all other persons who we have both agreed may have the benefit of and rely on our work on the terms hereof (you and they each a “beneficiary”), for any and all losses arising from or in any way in connection with this contract shall not exceed the amount specified in the engagement letter or, if no amount is specified there, 20 (twenty) times our fee or £500,000 (five hundred thousand pounds sterling). Whichever is the lesser.
- 3.3 The extent to which any loss or damage will be recoverable by you from us will also be limited so as to be in proportion to our contribution to the overall fault for such loss or damage taking into account any contributory negligence by you, your other advisers and/or any other third party responsible to you and/or liable in respect of such loss.
- 3.4 Our liability under these terms whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for any claim shall not exceed the amount, if any, recoverable by us by way of indemnity against the claim in question under professional indemnity insurance taken out by us and in force at the time of the claim or (if earlier) circumstances that may give rise to the claim is or are reported to the insurers in question. This Limitation shall not apply if no such amount is recoverable due to Brownfield Solutions Limited having been in breach of our obligations to maintain professional indemnity insurance under this agreement or the terms of any insurance maintained in accordance therewith or having failed to report any such claims or circumstances to the insurers in question in a timely manner.
- 3.5 You agree not to bring any claim in respect of loss or damage suffered by you arising out of or in connection with our engagement against any of our directors, employees or agents even where our directors, employees or agents have been negligent. This restriction will not operate to exclude any liability that cannot be excluded at law or to exclude the liability of Brownfield Solutions Limited for the acts or omissions of any of our directors, employees or agents. It is agreed that each of our directors, employees and agents will have the right to enforce this paragraph pursuant to the Contracts (Rights of Third Parties) Act 1999. We reserve any right we may have to rescind or vary these Conditions without our having to seek the consent of our directors, employees and agents.
- 3.6 Nothing in these Conditions shall affect any liability which we may have to you in respect of any personal injury or death resulting from our negligence, any loss caused by our fraudulent misrepresentation or reckless disregard of our professional obligations or any other situation where the law prohibits us from excluding or limiting our liability to you. The provisions of this paragraph shall continue to apply notwithstanding the termination of our engagement for any reason.
- 3.7 The Client may not assign the benefit under this Contract to any third party without the consent of Brownfield Solutions Limited.

3.8 Unless agreed prior to commencement of the appointment, warranties will normally only be provided to an interested third party named by the Client and on payment of an additional fee to reflect the additional costs and liabilities.

#### **4 Contamination Liability**

4.1 Our liability under these terms whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for any claim loss or damage wholly, partly or indirectly arising out of, resulting from or associated in any way with asbestos or any product, soil or waste that contains asbestos, (including without limitation the costs of testing for, monitoring abatement, mitigation, removal, remediation or disposal of any asbestos or any product, soil or waste that contains asbestos) shall not exceed the amount, if any, recoverable by us by way of indemnity against the claim in question under professional indemnity insurance taken out by us and in force at the time of the claim or (if earlier) circumstances that may give rise to the claim is or are reported to the insurers in question. This limitation shall not apply if no such amount is recoverable due to Brownfield Solutions Limited having been in breach of our obligations to maintain professional indemnity insurance under this agreement or the terms of any insurance maintained in accordance therewith or having failed to report any such claims or circumstances to the insurers in question in a timely manner.

4.2 The Client indemnifies us against all liability for any claim for injury, death, loss or damage wholly, partly, directly or indirectly arising out of or resulting from or associated in any way with asbestos or any product, soil or waste that contains asbestos (including without limitation the costs of testing for, monitoring abatement, mitigation, removal, remediation or disposal of any asbestos or any product, soil or waste that contains asbestos) in excess of the amount, if any, recoverable by us by way of indemnity against the claim in question under professional indemnity insurance taken out by us and in force at the time of the claim or (if earlier) circumstances that may give rise to the claim is or are reported to the insurers in question or, in the event that no such amount is recoverable due to Brownfield Solutions Limited having been in breach of his obligations to maintain professional indemnity insurance under these terms or of the terms of any insurance maintained in accordance therewith or having failed to report the claim or such circumstances to the insurers in question in a timely manner, the Client will indemnify us against any such liability in excess of the amount which would have been recoverable but for such breach or failure.

4.3 We will use all reasonable care and diligence during the intrusive investigation of the site in question, however we cannot be held responsible for 'causing', 'knowingly permitting' or 'unknowingly permitting' contamination to occur at the site due to incorrect construction at any exploratory hole.

#### **5 Ground Investigation**

5.1 We have assumed, unless stated otherwise, that at the exploration positions there would be no surfaces requiring the use of a breaker to remove, or requiring any special reinstatement. Should this not be the case, any additional work requested would be the subject of an extra charge.

5.2 We have assumed that suitable trafficable access is available to the position of exploration by appropriate machines and that adequate and sufficiently level working space is available. Should any of these conditions not be fulfilled, any additional costs incurred to facilitate access shall be reimbursed by the Client.

5.3 All necessary permissions for access to the site for the purpose of the investigation shall be obtained by others at no cost to Brownfield Solutions Limited.

5.4 Our rates assume that the fieldwork for the investigation can be carried out continuously and without interruption.

5.5 Unless agreed otherwise it is the responsibility of the Client to provide service information. We will use all reasonable care to avoid damage to services during the advancing of exploratory holes, however we cannot be held responsible for damage to services not brought to our attention. Where service information is not provided 3 working days prior to site works we reserve the right to postpone works until such information is available.

5.6 Unless otherwise specified Brownfield Solutions Limited have allowed for backfilling the exploratory holes with the recovered soil but have not allowed for removing any surplus material from the site or otherwise restoring the site on completion.

#### **6 Payment and Expenses**

6.1 If we carry out work in excess of that which we have specified, estimated, our fees for that additional work will be charged at what are our standard hourly rates at that time. We reserve the right to charge additional fees on the same basis for any additional work of substance which arises from circumstances known to you when you accepted our quotation, or on which we based our estimate, but which you did not disclose to us.

6.2 Unless you have instructed otherwise, we shall assume that we have your authority to incur the usual disbursements and expenses encountered in the ordinary course of the work we are instructed to carry out. We shall ask for your authority before incurring any disbursements or expenses that we consider to be substantial in the context of the work or from what we know of your individual circumstances. Disbursements and expenses are charged to you in addition to our fees. VAT is payable as appropriate on our fees, disbursements and expenses.

6.3 The company shall render invoices to the client at monthly intervals, calculated either on an hourly rate basis or on the percentage completion of the contract. Time for payment is of the essence in these terms and conditions.

6.4 We reserve the right to undertake credit reference checks on all our clients, and/or to ask clients to produce bank and other business references in appropriate circumstances. If we are not satisfied with the references, we may ask for full or partial payment prior to undertaking the works. We reserve the right not to complete the transaction until we receive payment of the invoice and any other fees and expenses for which we are responsible to third parties.

6.5 All our invoices are due 30 days after the date of invoice. Failure by the client to settle invoices within that period shall entitle the Company to charge interest and debt recovery costs in accordance with the Late Payment of Commercial Debts (Interest) Act 1998 at the rate of 1.5% per month.

6.6 Unless we specifically agree with you otherwise, you will be responsible for paying our fees and expenses even if the transaction or other work is for any reason not concluded. In these circumstances, our charges will be calculated to reflect a fair and proper rate for the work we have carried out, whether or not a fixed rate was agreed for the successful completion of the whole work.

6.7 Any complaint or dispute about any invoice should be notified to the person responsible for the relevant work within 14 days of the invoice date. After this period, we shall assume that our invoice is acceptable for the works carried out.

6.8 Where we are acting on behalf of a company, invoices will be addressed to the company. However, in your capacity as a director or shareholder, you agree to guarantee personally the payment by the company of all our costs and disbursements. In the event that your company defaults on payment, you agree that Brownfield Solutions Limited are entitled to pursue you for all or part of the sums outstanding.

6.9 We may accept part –payments marked as "payment in full" or with similar wording without losing our right to claim full payment.

6.10 The Client shall not be entitled to withhold payment of any amount payable hereunder or set-off any amount payable to Brownfield Solutions Limited against any amount due or claimed to be due from Brownfield Solutions Limited to the Client.

#### **7 Confidentiality and Copyright**

7.1 We shall keep confidential all information that concerns you and your business and is of a confidential nature, and shall not disclose it unless you authorise us to do so or we are required to do so by law.

7.2 The copyright in any drawings, reports, specifications, bills of quantities, calculations and other similar documents provided by us, in connection with the project shall remain vested in us, but you and your appointee shall have an irrevocable royalty free and non-exclusive licence to copy and use any such documents for any purpose related to the project including without limitation the construction, completion, maintenance, letting, promotion, advertisement, reinstatement, extension and repair of the project. We shall not be liable for any such use by the end user or its appointee of any documents for any purpose other than that for which the same were prepared and provided by us.

#### **8 Communications & Data Protection**

8.1 We shall communicate with you by post, telephone, facsimile and email. The use of email may not be as secure as other forms of communication; however, unless you instruct us to the contrary, we shall be entitled to assume that you have no objection to our communicating with you, and sending attachments to you, by email whether in general or for the communication of specific information.

8.2 In instructing us to proceed you are providing us with consent under GDPR to hold personal data for the purposes of carrying out the works and maintaining client liaison. This consent can be withdrawn at any time by notifying us.

8.3 We shall take all reasonable steps to ensure that email will be free of viruses. However, we do not, to the extent permitted by law, accept any liability (whether in contract, negligence or otherwise) for viruses, and it is your responsibility to scan the attachments (if any).

## **APPENDIX B**

### **Exploratory Hole Logs**

**BOREHOLE RECORD – Cable Percussion**

|                |                                                       |
|----------------|-------------------------------------------------------|
| <b>Project</b> | MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME - DAISY MILL |
|----------------|-------------------------------------------------------|

Engineer **ATKINS**

|                   |                 |
|-------------------|-----------------|
| <b>Borehole</b>   | <b>BH05</b>     |
| <b>Project No</b> | <b>PN143260</b> |

**Client** MANCHESTER CITY COUNCIL

|               |          |   |
|---------------|----------|---|
| National Grid | 386271.2 | E |
| Coordinates   | 396348.0 | N |

**Ground Level**    48.81    m OD

| Sampling   |             |                          | Properties   |     |       | Strata                                                                                                                                                                            | Scale 1:50 |        |            |
|------------|-------------|--------------------------|--------------|-----|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|------------|
| Depth      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description                                                                                                                                                                       | Depth      | Legend | Level m OD |
| 0.20       | ES          |                          |              |     |       | Grass over TOPSOIL: Brown slightly sandy silt with some rootlets.                                                                                                                 | G.L.       |        | 48.81      |
| 0.20       |             |                          | PID=0.0      |     |       |                                                                                                                                                                                   |            |        |            |
| 0.50       | D           |                          |              |     |       | Grey CONCRETE.                                                                                                                                                                    | 0.30       |        | 48.51      |
| 0.50       | ES          |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 0.50       |             |                          | PID=0.0      |     |       |                                                                                                                                                                                   | 0.70       |        | 48.11      |
| 1.00       | B           |                          |              |     |       | MADE GROUND: Dark brown and black clayey gravelly fine to coarse sand with a medium cobble content of bricks. Gravel is fine to coarse angular including ash and brick fragments. |            |        |            |
| 1.00       | ES          |                          | PID=0.0      |     |       |                                                                                                                                                                                   |            |        |            |
| 1.00       |             |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 1.20- 1.65 | #           | (DRY)                    |              |     | S16   |                                                                                                                                                                                   | 1.30       |        | 47.51      |
| 1.20- 1.65 | D           |                          |              |     |       | Stiff to very stiff fissured brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of carbonaceous mudstone, siltstone and sandstone.    |            |        |            |
| 1.50       | D           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 2.00- 2.45 | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 2.00- 2.45 | D           | 2.00 (DRY)               |              |     | S22   |                                                                                                                                                                                   |            |        |            |
| 2.00       | ES          |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 2.00       |             |                          | PID=0.0      |     |       |                                                                                                                                                                                   |            |        |            |
| 2.50       | D           |                          |              | 12  |       |                                                                                                                                                                                   |            |        |            |
| 3.00       | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 3.00- 3.45 | UT46        | 3.00 (DRY)               | 388          | 13  |       | At 3.00m, extremely high strength                                                                                                                                                 |            |        |            |
| 3.50       | D           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 4.00- 4.45 | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 4.00- 4.45 | D           | 4.00 (DRY)               |              |     | S25   |                                                                                                                                                                                   |            |        |            |
| 4.50       | D           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 5.00       | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 5.00- 5.45 | UT35        | 5.00 (DRY)               |              |     |       |                                                                                                                                                                                   |            |        |            |
| 5.50       | D           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 6.00- 6.45 | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 6.00- 6.45 | D           | 6.00 (DRY)               |              |     | S22   |                                                                                                                                                                                   |            |        |            |
| 6.50       | D           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 7.00       | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 7.50- 7.95 | UT36        | 7.50 (DRY)               |              |     |       |                                                                                                                                                                                   |            |        |            |
| 8.00       | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 8.00       | D           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 8.50       | D           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 9.00- 9.45 | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 9.00- 9.45 | D           | 9.00 (DRY)               |              |     | S19   |                                                                                                                                                                                   |            |        |            |
| 9.50       | D           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |
| 10.00      | B           |                          |              |     |       |                                                                                                                                                                                   |            |        |            |

| Boring |          |                                    |                | Progress      |             |                |          |       | Groundwater  |             |         |         |              |                        |
|--------|----------|------------------------------------|----------------|---------------|-------------|----------------|----------|-------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique                          | Crew           | Depth of Hole | Depth Cased | Depth to Water | Date     | Time  | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
| 1.20   | 0.40     | Inspection Pit<br>Cable Percussion | CC/AC<br>CC/AC | G.L.          |             |                | 28/10/14 | 08:00 | 19.00        | 19.00       | 17.00   | 20      |              | Fast inflow.           |
| 21.00  | 0.15     |                                    |                | 12.50         | 12.00       | DRY            | 28/10/14 | 18:00 |              |             |         |         |              |                        |
|        |          |                                    |                | 12.50         | 12.00       | DRY            | 29/10/14 | 08:00 |              |             |         |         |              |                        |
|        |          |                                    |                | 21.45         | 21.45       | 17.00          | 29/10/14 | 18:00 |              |             |         |         |              |                        |

|                                                                                             |                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Remarks</b><br><br>Symbols and abbreviations are explained on the accompanying key sheet | Inspection pit hand excavated to 1.20m depth.<br>ES Sample = 1 x 1kg plastic tub, 1 x 258ml amber glass jar and 1 x 60ml VOC vial.<br>PID = Photo-ionisation detector reading measuring Total Volatile Organic Compounds concentration in ppm.                            |
|                                                                                             | A 50mm gas monitoring pipe was installed to 21.00m with a geowrapped slotted section from 18.00m to 21.00m with flush lockable protective cover. Backfill details from base of hole: gravel filter up to 18.00m, bentonite seal up to 0.20m, concrete up to ground level. |

Logged by LP  
 Checked by JK  
 Figure 1 of 3  
 11/12/2014



All dimensions are in metres.

# BOREHOLE RECORD - Cable Percussion

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME - DAISY MILL  
**Engineer** ATKINS  
**Borehole Project No** BH05 PN143260  
**Client** MANCHESTER CITY COUNCIL  
**National Grid Coordinates** 386271.2 E 396348.0 N  
**Ground Level** 48.81 m OD

| Sampling    |             |                          | Properties   |     |         | Strata                                                                                                                                       |       | Scale 1:50 |            |  |
|-------------|-------------|--------------------------|--------------|-----|---------|----------------------------------------------------------------------------------------------------------------------------------------------|-------|------------|------------|--|
| Depth       | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N   | Description                                                                                                                                  | Depth | Legend     | Level m OD |  |
| 10.50-10.95 | UT46        | 10.50 (DRY)              |              |     |         |                                                                                                                                              |       |            |            |  |
| 11.00       | D           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 11.50       | D           |                          |              |     |         | Between 11.50m and 18.30m; Fissures absent. Medium to widely spaced lenses of brown fine to coarse sand.                                     |       |            |            |  |
| 12.00-12.45 | B           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 12.00-12.45 | D           | 12.00 (DRY)              |              |     | S35     |                                                                                                                                              |       |            |            |  |
| 12.50       | D           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 13.00       | B           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 13.50-13.95 | UT62        | 13.50 (DRY)              |              |     |         |                                                                                                                                              |       |            |            |  |
| 14.00       | D           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 14.50       | D           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 15.00-15.45 | B           |                          |              |     |         | Below 15.00m, Very stiff.                                                                                                                    |       |            |            |  |
| 15.00-15.45 | D           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 15.15-15.53 |             | 15.15 (DRY)              |              |     | S52/225 |                                                                                                                                              |       |            |            |  |
| 15.50       | D           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 16.00       | B           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 16.50-16.95 | UT70        | 16.50 (DRY)              |              |     |         |                                                                                                                                              |       |            |            |  |
| 17.00       | B           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 17.00       | D           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 18.00-18.45 | B           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 18.00-18.15 | D           | 18.00 (DRY)              |              |     | S50/75  |                                                                                                                                              |       |            |            |  |
| 18.50       | D           |                          |              |     |         | Medium dense to dense reddish brown gravelly fine to coarse SAND. Gravel is fine to coarse subangular to rounded of sandstone and quartzite. | 18.30 |            | 30.51      |  |
| 19.50-19.95 | B           |                          |              |     |         |                                                                                                                                              |       |            |            |  |
| 19.50-19.95 |             | 19.50 (17.00)            |              |     | C33     |                                                                                                                                              |       |            |            |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

**Remarks** 

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:1999 + A2:2010

Logged by LP  
 Checked by JK  
 Figure 2 of 3  
 11/12/2014



# BOREHOLE RECORD - Cable Percussion

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME - DAISY MILL  
**Engineer** ATKINS  
**Borehole Project No** BH05 PN143260  
**Client** MANCHESTER CITY COUNCIL  
**National Grid Coordinates** 386271.2 E 396348.0 N  
**Ground Level** 48.81 m OD

| Sampling                   |             |                          | Properties   |     |       | Strata          |       |        | Scale 1:50 |  |  |
|----------------------------|-------------|--------------------------|--------------|-----|-------|-----------------|-------|--------|------------|--|--|
| Depth                      | Sample Type | Depth Cased & (to Water) | Strength kPa | w % | SPT N | Description     | Depth | Legend | Level m OD |  |  |
| 21.00-21.45<br>21.00-21.45 | B           | 21.00<br>(17.00)         |              |     | C26   |                 |       |        |            |  |  |
|                            |             |                          |              |     |       | End of Borehole | 21.45 |        | 27.36      |  |  |

| Boring |          |           |      | Progress      |             |                |      |      | Groundwater  |             |         |         |              |                        |
|--------|----------|-----------|------|---------------|-------------|----------------|------|------|--------------|-------------|---------|---------|--------------|------------------------|
| Depth  | Hole Dia | Technique | Crew | Depth of Hole | Depth Cased | Depth to Water | Date | Time | Depth Struck | Depth Cased | Rose to | in Mins | Depth Sealed | Remarks on Groundwater |
|        |          |           |      |               |             |                |      |      |              |             |         |         |              |                        |

**Remarks** 

Symbols and abbreviations are explained on the accompanying key sheet.  
 All dimensions are in metres.

Logged in accordance with BS5930:1999 + A2:2010

Logged by LP  
 Checked by JK  
 Figure 3 of 3  
 11/12/2014





## Borehole Log

|       |      |              |
|-------|------|--------------|
| Scale | 1:50 | Sheet 1 of 1 |
|-------|------|--------------|

# BH1

**Contract no:** S160937

**Site:** Dean Trust Ardwick Academy

|                 |                         |
|-----------------|-------------------------|
| <b>Driller:</b> | Bainbridge Brothers Ltd |
|-----------------|-------------------------|

Plant used: Mini Rig

**Started:** 11/10/2016

**Ended:** 11/10/2016

**Backfilled:** 11/10/2016

|           |  |
|-----------|--|
| GL (AOD): |  |
|-----------|--|

Easting:

**Northing:**

Logged: IN

**Status:** FINAL

|                |                    |
|----------------|--------------------|
| <b>Client:</b> | Dean Trust Ardwick |
|----------------|--------------------|

|                |                  |
|----------------|------------------|
| <b>Method:</b> | Small percussive |
|----------------|------------------|

[illegible]



## Borehole Log

|       |      |              |
|-------|------|--------------|
| Scale | 1:50 | Sheet 1 of 1 |
|-------|------|--------------|

## BH2

Contract no: S160937

**Site:** Dean Trust Ardwick Academy

|                 |                         |
|-----------------|-------------------------|
| <b>Driller:</b> | Bainbridge Brothers Ltd |
|-----------------|-------------------------|

Plant used: Mini Rig

**Started:** 11/10/2016

|        |            |
|--------|------------|
| Ended: | 11/10/2016 |
|--------|------------|

|                    |            |
|--------------------|------------|
| <b>Backfilled:</b> | 11/10/2016 |
|--------------------|------------|

|           |  |
|-----------|--|
| GL (AOD): |  |
|-----------|--|

Easting:

**Northing:**

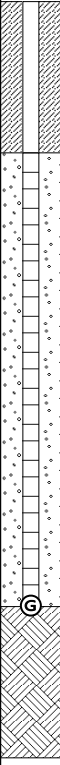
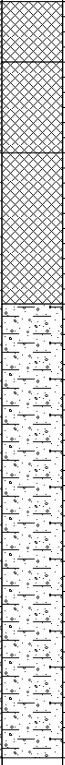
Logged: IN

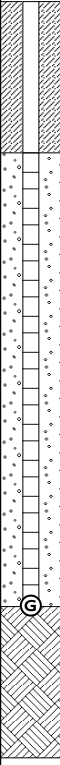
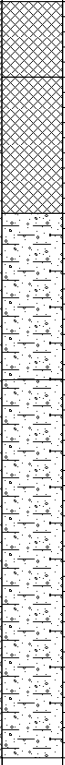
**Status:** FINAL

|                |                    |
|----------------|--------------------|
| <b>Client:</b> | Dean Trust Ardwick |
|----------------|--------------------|

|                |                  |
|----------------|------------------|
| <b>Method:</b> | Small percussive |
|----------------|------------------|

[illegible]

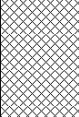
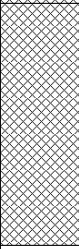
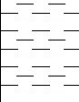
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                                                         |                            |               |           |                         |                  |                  |                    |                 |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------|-----------|-------------------------|------------------|------------------|--------------------|-----------------|
|  SOLMEK |                                                                                    | Borehole Log                     |               |                                                                                                                                                                                                                                         |                            |               |           | Scale 1:50 Sheet 1 of 1 |                  |                  |                    |                 |
| Contract no: S160937                                                                   |                                                                                    | Site: Dean Trust Ardwick Academy |               | Driller: Bainbridge Brothers Ltd                                                                                                                                                                                                        |                            | GL (AOD):     |           |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               | Plant used: Mini Rig                                                                                                                                                                                                                    |                            | Easting:      |           |                         |                  |                  |                    |                 |
| Client: Dean Trust Ardwick                                                             |                                                                                    |                                  |               | Started: 11/10/2016                                                                                                                                                                                                                     |                            | Northing:     |           |                         |                  |                  |                    |                 |
| Method: Small percussive                                                               |                                                                                    |                                  |               | Ended: 11/10/2016                                                                                                                                                                                                                       |                            | Logged: IN    |           |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               | Backfilled: 11/10/2016                                                                                                                                                                                                                  |                            | Status: FINAL |           |                         |                  |                  |                    |                 |
| Backfill / Installation                                                                | Legend                                                                             | Depth (m)                        | Level (m AOD) | Stratum Description                                                                                                                                                                                                                     | Samples and Insitu Testing |               |           |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                                                         | Depth (m)                  | Type          | Results   |                         |                  |                  |                    |                 |
|       |  | 0.40                             |               | MADE GROUND: Dark brown clayey slightly gravelly sandy topsoil.                                                                                                                                                                         | 0.20 - 0.30                | B             |           |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               | MADE GROUND: Blackish brown slightly sandy to sandy slightly gravelly clay. Gravel is angular to sub-angular, fine to coarse of brick, sandstone and mudstone.                                                                          | 0.70 - 0.80                | B             |           |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    | 1.00                             |               | MADE GROUND: Stiff consistency dark brown slightly sandy slightly gravelly medium strength clay. Gravel is sub-angular to sub-rounded, fine to coarse of mudstone, sandstone and rare brick.                                            | 1.20<br>1.20 - 1.65        | HV<br>B       | 70kPa     |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    | 2.00                             |               | Stiff consistency dark brown slightly sandy slightly gravelly high strength CLAY of intermediate plasticity. Gravel is sub-angular to sub-rounded, fine to coarse of mudstone and sandstone. Pocket of yellowish red coarse sand noted. | 2.00<br>2.00 - 2.45        | HV<br>B       | 110kPa    |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                                                         | 3.00<br>3.00 - 3.45        | HV<br>B       | 140kPa    |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                                                         | 4.00<br>4.00 - 4.45        | HV<br>B       | 140kPa    |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                                                         | 4.55 - 5.00                | B             |           |                         |                  |                  |                    |                 |
| 5.00                                                                                   |                                                                                    | End of Borehole at 5.000m        |               |                                                                                                                                                                                                                                         |                            |               |           |                         |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                                                         |                            |               |           |                         |                  |                  |                    |                 |
| Hole Diameter                                                                          |                                                                                    | Casing Depths                    |               | General Remarks                                                                                                                                                                                                                         | Chiselling                 |               |           | Ground Water            |                  |                  |                    |                 |
| Depth Base (m)                                                                         | Diameter (mm)                                                                      | Depth Base (m)                   | Diameter (mm) |                                                                                                                                                                                                                                         | From (m)                   | To (m)        | Time (hr) | Depth Strike (m)        | Depth Casing (m) | Depth Sealed (m) | Time Elapsed (min) | Water Level (m) |
|                                                                                        |                                                                                    |                                  |               | 1. Inspection pit to 1.20mbgl.                                                                                                                                                                                                          |                            |               |           |                         |                  |                  |                    |                 |

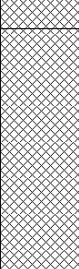
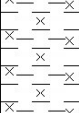
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                             |                            |               |                    |                         |           |                  |                  |                  |                    |                 |
|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------|--------------------|-------------------------|-----------|------------------|------------------|------------------|--------------------|-----------------|
|  SOLMEK |                                                                                    | Borehole Log                     |               |                                                                                                                                                                                                             |                            |               |                    | Scale 1:50 Sheet 1 of 1 |           |                  |                  |                  |                    |                 |
| Contract no: S160937                                                                   |                                                                                    | Site: Dean Trust Ardwick Academy |               | Driller: Bainbridge Brothers Ltd                                                                                                                                                                            |                            | GL (AOD):     |                    |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               | Plant used: Mini Rig                                                                                                                                                                                        |                            | Easting:      |                    |                         |           |                  |                  |                  |                    |                 |
| Client: Dean Trust Ardwick                                                             |                                                                                    |                                  |               | Started: 11/10/2016                                                                                                                                                                                         |                            | Northing:     |                    |                         |           |                  |                  |                  |                    |                 |
| Method: Small percussive                                                               |                                                                                    |                                  |               | Ended: 11/10/2016                                                                                                                                                                                           |                            | Logged: IN    |                    |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               | Backfilled: 11/10/2016                                                                                                                                                                                      |                            | Status: FINAL |                    |                         |           |                  |                  |                  |                    |                 |
| Backfill / Installation                                                                | Legend                                                                             | Depth (m)                        | Level (m AOD) | Stratum Description                                                                                                                                                                                         | Samples and Insitu Testing |               |                    |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                             | Depth (m)                  | Type          | Results            |                         |           |                  |                  |                  |                    |                 |
|       |  | 0.50                             |               | MADE GROUND: Dark brown clayey slightly gravelly sandy topsoil.                                                                                                                                             | 0.20 - 0.30                | B             |                    |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               | MADE GROUND: Blackish brown slightly sandy to sandy slightly gravelly clay. Gravel is angular to sub-angular, fine to coarse of brick, sandstone and mudstone.                                              | 0.70 - 0.80                | B             |                    |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    | 1.40                             |               | POTENTIAL MADE GROUND: Stiff consistency dark brown slightly sandy slightly gravelly high strength CLAY of high plasticity. Gravel is sub-angular to sub-rounded, fine to coarse of mudstone and sandstone. | 1.20 - 1.65<br>1.20 - 1.65 | SPT (S)<br>B  | N=14 (3,2/4,2,4,4) |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    | 2.50                             |               | Stiff consistency dark brown slightly sandy slightly gravelly high strengtCLAY. Gravel is sub-angular to sub-rounded, fine to coarse of mudstone and sandstone.                                             | 2.00<br>2.00 - 2.45        | HV<br>B       | 90kPa              |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                             | 3.00<br>3.00 - 3.45        | HV<br>B       | 140kPa             |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                             | 4.00<br>4.00 - 4.45        | HV<br>B       | 140kPa             |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                             | 4.55 - 5.00                | B             |                    |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    | 5.00                             |               | End of Borehole at 5.000m                                                                                                                                                                                   |                            |               |                    |                         |           |                  |                  |                  |                    |                 |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                             |                            |               |                    |                         |           |                  |                  |                  |                    |                 |
| Hole Diameter                                                                          |                                                                                    | Casing Depths                    |               | General Remarks                                                                                                                                                                                             |                            |               | Chiselling         |                         |           | Ground Water     |                  |                  |                    |                 |
| Depth Base (m)                                                                         | Diameter (mm)                                                                      | Depth Base (m)                   | Diameter (mm) | 1. Inspection pit to 1.20mbgl.                                                                                                                                                                              |                            |               | From (m)           | To (m)                  | Time (hr) | Depth Strike (m) | Depth Casing (m) | Depth Sealed (m) | Time Elapsed (min) | Water Level (m) |
|                                                                                        |                                                                                    |                                  |               |                                                                                                                                                                                                             |                            |               |                    |                         |           |                  |                  |                  |                    |                 |







|                                                                                                          |                           |      |         |                        |                  |                                                                                   |                                                                                                                                                                                                     |                    |                                              |                                                                                       |  |
|----------------------------------------------------------------------------------------------------------|---------------------------|------|---------|------------------------|------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------|---------------------------------------------------------------------------------------|--|
|                         |                           |      |         | <h1>Trial Pit Log</h1> |                  |                                                                                   | FINAL                                                                                                                                                                                               |                    | Trial Pit No.<br><b>TP03</b><br>Sheet 1 of 1 |                                                                                       |  |
| Project Name: Ardwick Academy, Proposed Temporary Classroom                                              |                           |      |         | Project No.<br>H18186  |                  | Co-ords:                                                                          |                                                                                                                                                                                                     | Date<br>25/10/2018 |                                              |                                                                                       |  |
|                                                                                                          |                           |      |         |                        |                  | Level (m AOD):                                                                    |                                                                                                                                                                                                     |                    |                                              |                                                                                       |  |
| Location: Longsight, Manchester                                                                          |                           |      |         |                        |                  | Final Depth (m):                                                                  | Pit Length (m):                                                                                                                                                                                     | 2.60               | Scale<br>1:25                                |                                                                                       |  |
| Client: The Dean Trust                                                                                   |                           |      |         |                        |                  | 1.70                                                                              | Pit Width (m):                                                                                                                                                                                      | 0.70               | Logged By<br>ACV                             |                                                                                       |  |
| Water<br>Strike                                                                                          | Samples & In Situ Testing |      |         | Depth<br>(m bgl)       | Level<br>(m AOD) | Legend                                                                            | Stratum Description                                                                                                                                                                                 |                    |                                              |                                                                                       |  |
|                                                                                                          | Depth (m bgl)             | Type | Results |                        |                  |                                                                                   |                                                                                                                                                                                                     |                    |                                              |                                                                                       |  |
|                                                                                                          |                           |      |         | 0.40                   |                  |  | TOPSOIL: Dark brown organic slightly clayey sand with rootlets. (Geotextile encountered at base)                                                                                                    |                    |                                              |                                                                                       |  |
|                                                                                                          |                           |      |         |                        |                  |  | MADE GROUND: Compact light grey slightly clayey sandy gravel. Sand is fine to coarse. Gravel angular fine to coarse of brick, concrete, sanstone and mudstone. Contains firm to stiff clay pockets. |                    |                                              |                                                                                       |  |
|                                                                                                          | 1.20                      | HSV  | 80kPa   | 1.20                   |                  |  | <i>Pocket of reworked firm slightly organic clay.</i>                                                                                                                                               |                    |                                              |                                                                                       |  |
|                                                                                                          | 1.30                      | HSV  | 84kPa   |                        |                  |  | Firm to stiff orangy brown mottled grey CLAY.                                                                                                                                                       |                    |                                              |                                                                                       |  |
|                                                                                                          | 1.50                      | HSV  | 90kPa   |                        |                  |  |                                                                                                                                                                                                     |                    |                                              |                                                                                       |  |
|                                                                                                          |                           |      |         | 1.70                   |                  |  | End of Pit at 1.70m                                                                                                                                                                                 |                    |                                              |                                                                                       |  |
| Remarks: No groundwater encountered. Trial Pit backfilled with arisings to ground level upon completion. |                           |      |         |                        |                  |                                                                                   |                                                                                                                                                                                                     |                    |                                              |  |  |
| Pit Stability: Stable                                                                                    |                           |      |         |                        |                  |                                                                                   |                                                                                                                                                                                                     |                    |                                              |                                                                                       |  |

|                                                                                                          |                           |       |         |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 |                    |                                                                                       |  |
|----------------------------------------------------------------------------------------------------------|---------------------------|-------|---------|------------------------|---------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|--|
|                         |                           |       |         | <h1>Trial Pit Log</h1> |                     |                                                                                   | FINAL                                                                                                                                                                                                                                           |                    | Trial Pit No.<br><b>TP04</b><br>Sheet 1 of 1                                          |  |
| Project Name: Ardwick Academy, Proposed Temporary Classroom                                              |                           |       |         | Project No.<br>H18186  |                     | Co-ords:                                                                          |                                                                                                                                                                                                                                                 | Date<br>25/10/2018 |                                                                                       |  |
|                                                                                                          |                           |       |         |                        |                     | Level (m AOD):                                                                    |                                                                                                                                                                                                                                                 |                    |                                                                                       |  |
| Location: Longsight, Manchester                                                                          |                           |       |         |                        |                     | Final Depth (m):                                                                  | Pit Length (m): 2.60                                                                                                                                                                                                                            | Scale<br>1:25      |                                                                                       |  |
| Client: The Dean Trust                                                                                   |                           |       |         |                        |                     | 1.50                                                                              | Pit Width (m): 0.70                                                                                                                                                                                                                             | Logged By<br>ACV   |                                                                                       |  |
| Water<br>Strike                                                                                          | Samples & In Situ Testing |       |         | Depth<br>(m bgl)       | Level<br>(m AOD)    | Legend                                                                            | Stratum Description                                                                                                                                                                                                                             |                    |                                                                                       |  |
|                                                                                                          | Depth (m bgl)             | Type  | Results |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 |                    |                                                                                       |  |
|                                                                                                          |                           |       |         | 0.10                   |                     |  | TOPSOIL: Dark brown organic slightly clayey sand with rootlets.                                                                                                                                                                                 |                    |                                                                                       |  |
|                                                                                                          |                           |       |         | 0.90                   |                     |                                                                                   | MADE GROUND: Compact dark grey mottled brown slightly clayey sand. Sand is fine to coarse. Gravel angular fine to coarse of brick, concrete, sandstone and mudstone. Contains firm to stiff clay pockets. (Geotextile encountered at 0.5m begl) |                    |                                                                                       |  |
|                                                                                                          |                           |       |         | 1.10                   |                     |                                                                                   | MADE GROUND: Stiff dark grey organic slightly gravelly clay. Gravel is angular to subrounded of brick, concrete, sandstone and mudstone.                                                                                                        |                    |                                                                                       |  |
|                                                                                                          | 1.20                      | HSV   | 82kPa   |                        |                     |  | Firm to stiff grey mottled orange silty CLAY.                                                                                                                                                                                                   |                    |                                                                                       |  |
|                                                                                                          | 1.40                      | HSV   | 85kPa   |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 |                    |                                                                                       |  |
| 1.50                                                                                                     | HSV                       | 80kPa | 1.50    |                        | End of Pit at 1.50m |                                                                                   |                                                                                                                                                                                                                                                 |                    |                                                                                       |  |
|                                                                                                          |                           |       |         |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 | 1                  |                                                                                       |  |
|                                                                                                          |                           |       |         |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 | 2                  |                                                                                       |  |
|                                                                                                          |                           |       |         |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 | 3                  |                                                                                       |  |
|                                                                                                          |                           |       |         |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 | 4                  |                                                                                       |  |
|                                                                                                          |                           |       |         |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 | 5                  |                                                                                       |  |
| Remarks: No groundwater encountered. Trial Pit backfilled with arisings to ground level upon completion. |                           |       |         |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 |                    |  |  |
| Pit Stability: Stable                                                                                    |                           |       |         |                        |                     |                                                                                   |                                                                                                                                                                                                                                                 |                    |                                                                                       |  |

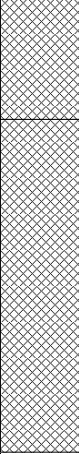
25/10/2018

Scale  
1:25

Logged By  
ACV

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m bgl) | Level<br>(m AOD) | Legend | Stratum Description                                                                                                                                                                                                                                                                      |
|-----------------|---------------------------|------|---------|------------------|------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | Depth (m bgl)             | Type | Results |                  |                  |        |                                                                                                                                                                                                                                                                                          |
|                 |                           |      |         | 0.80             |                  |        | TOPSOIL: Dark brown organic slightly clayey sand with rootlets. (Geotextile encountered at base)                                                                                                                                                                                         |
|                 |                           |      |         |                  |                  |        | MADE GROUND: Compact brown mottled light grey clayey slightly gravelly slightly cobbly sand. Sand is fine to coarse. Gravel is angular fine to coarse of brick, concrete, sandstone and mudstone. Contains firm to stiff slightly organic, silty clay pockets. Rare boulder of concrete. |
|                 |                           |      |         | 1.50             |                  |        | End of Pit at 1.50m                                                                                                                                                                                                                                                                      |
|                 |                           |      |         |                  |                  |        |                                                                                                                                                                                                                                                                                          |
|                 |                           |      |         |                  |                  |        |                                                                                                                                                                                                                                                                                          |
|                 |                           |      |         |                  |                  |        |                                                                                                                                                                                                                                                                                          |

|                |        |
|----------------|--------|
| Pit Stability: | Stable |
|----------------|--------|

|                         |                           |      |         | <h1 style="text-align: center;">Trial Pit Log</h1> |                  |                                                                                   | <b>FINAL</b>                                                                                                                                                                                                                                                               |                                             | TrialPit No.<br><b>TP06</b><br>Sheet 1 of 1 |                                                                                       |
|----------------------------------------------------------------------------------------------------------|---------------------------|------|---------|----------------------------------------------------|------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------|
| Project Name: Ardwick Academy, Proposed Temporary Classroom                                              |                           |      |         | Project No.<br>H18186                              |                  | Co-ords:<br>Level (m AOD):                                                        |                                                                                                                                                                                                                                                                            | Date<br>25/10/2018                          |                                             |                                                                                       |
| Location: Longsight, Manchester                                                                          |                           |      |         |                                                    |                  | Final Depth (m):<br>1.50                                                          |                                                                                                                                                                                                                                                                            | Pit Length (m): 2.20<br>Pit Width (m): 0.70 |                                             | Scale<br>1:25<br>Logged By<br>ACV                                                     |
| Client: The Dean Trust                                                                                   |                           |      |         |                                                    |                  |                                                                                   |                                                                                                                                                                                                                                                                            |                                             |                                             |                                                                                       |
| Water<br>Strike                                                                                          | Samples & In Situ Testing |      |         | Depth<br>(m bgl)                                   | Level<br>(m AOD) | Legend                                                                            | Stratum Description                                                                                                                                                                                                                                                        |                                             |                                             |                                                                                       |
|                                                                                                          | Depth (m bgl)             | Type | Results |                                                    |                  |                                                                                   |                                                                                                                                                                                                                                                                            |                                             |                                             |                                                                                       |
|                                                                                                          |                           |      |         | 0.40                                               |                  |  | TOPSOIL: Dark brown organic slightly clayey sand with rootlets. (Geotextile encountered at base)                                                                                                                                                                           |                                             |                                             |                                                                                       |
|                                                                                                          |                           |      |         | 1.50                                               |                  |                                                                                   | MADE GROUND: Firm to stiff dark grey mottled brown slightly sandy gravelly clay. Sand is fine to coarse. Gravel angular fine to coarse of brick, concrete, sanstone and mudstone. Contains wood, plastic and metal fragments and occasional cobbles of brick and concrete. |                                             |                                             |                                                                                       |
|                                                                                                          |                           |      |         |                                                    |                  |                                                                                   | End of Pit at 1.50m                                                                                                                                                                                                                                                        |                                             |                                             |                                                                                       |
| Remarks: No groundwater encountered. Trial Pit backfilled with arisings to ground level upon completion. |                           |      |         |                                                    |                  |                                                                                   |                                                                                                                                                                                                                                                                            |                                             |                                             |                                                                                       |
| Pit Stability: Stable                                                                                    |                           |      |         |                                                    |                  |                                                                                   |                                                                                                                                                                                                                                                                            |                                             |                                             |  |

|                                                                                                                                                                |                           |      |         |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------|---------|------------------------|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------|--|
|                                                                               |                           |      |         | <h1>Trial Pit Log</h1> |                  |                                                                                     | FINAL                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                       | Trial Pit No.<br><b>TP07</b><br>Sheet 1 of 1 |  |
| Project Name: Ardwick Academy, Proposed Temporary Classroom                                                                                                    |                           |      |         | Project No.<br>H18186  |                  | Co-ords:                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                     | Date<br>25/10/2018                                                                    |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  | Level (m AOD):                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
| Location: Longsight, Manchester                                                                                                                                |                           |      |         |                        |                  | Final Depth (m):                                                                    | Pit Length (m): 2.60                                                                                                                                                                                                                                                                                                                                                                                                                | Scale<br>1:25                                                                         |                                              |  |
| Client: The Dean Trust                                                                                                                                         |                           |      |         |                        |                  | 1.40                                                                                | Pit Width (m): 0.70                                                                                                                                                                                                                                                                                                                                                                                                                 | Logged By<br>ACV                                                                      |                                              |  |
| Water<br>Strike                                                                                                                                                | Samples & In Situ Testing |      |         | Depth<br>(m bgl)       | Level<br>(m AOD) | Legend                                                                              | Stratum Description                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                       |                                              |  |
|                                                                                                                                                                | Depth (m bgl)             | Type | Results |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         | 0.30                   |                  |    | <p>TOPSOIL: Dark brown organic slightly clayey sand with rootlets. (Geotextile encountered at base)</p> <p>MADE GROUND: Well compacted light grey and brown mottled slightly clayey sandy slightly cobbly gravel. Gravel is angular to subrounded of brick, concrete, sandstone and mudstone. Cobbles angular of concrete. Contains rare boulders of concrete and firm clay pockets.</p> <p>Stiff grey and orange mottled CLAY.</p> |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         | 0.55                   |                  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                | 0.70                      | HSV  | 70kPa   |                        |                  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                | 0.90                      | HSV  | 82kPa   |                        |                  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                | 1.10                      | HSV  | 89kPa   |                        |                  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                | 1.30                      | HSV  | 95kPa   |                        |                  |   | <p>End of Pit at 1.40m</p>                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      | 1.40    |                        |                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
|                                                                                                                                                                |                           |      |         |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |
| Remarks: No groundwater encountered. Made Ground extended to 1.4m bgl on west side of pit. Trial Pit backfilled with arisings to ground level upon completion. |                           |      |         |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                              |  |
| Pit Stability: Stable                                                                                                                                          |                           |      |         |                        |                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |                                              |  |

## **APPENDIX C**

### **Chemical Testing Results**



# Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point  
Zone 3  
Deeside Industrial Park  
Deeside  
CH5 2UA

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

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



**Attention :** Chris Jones  
**Date :** 14th November, 2014  
**Your reference :** PN143260  
**Our reference :** Test Report 14/12974 Batch 2  
**Location :** Daisy Mill  
**Date samples received :** 29th October, 2014  
**Status :** Final report  
**Issue :** 1

Nineteen samples were received for analysis on 29th October, 2014 of which fifteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. □  
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

## Compiled By:

**Simon Gomery BSc**  
**Project Manager**

**Bob Millward BSc FRSC**  
**Principal Chemist**

Please see attached notes for all abbreviations and acronyms

**Client Name:** Geotechnics  
**Reference:** PN143260  
**Location:** Daisy Mill  
**Contact:** Chris Jones  
**JE Job No.:** 14/12974

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                     | 19-21      | 22-24      | 28-30              | 31-33              | 34-36              | 40-42      | 43-45      | 46-48      | 49-51      | 52-54      | Please see attached notes for all abbreviations and acronyms |       |            |
|------------------------------------|------------|------------|--------------------|--------------------|--------------------|------------|------------|------------|------------|------------|--------------------------------------------------------------|-------|------------|
| Sample ID                          | BH5        | BH5        | TP01               | TP01               | TP01               | TP02       | TP02       | TP02       | TP03       | TP03       |                                                              |       |            |
| Depth                              | 0.50       | 1.00       | 0.30-0.50          | 1.00-1.20          | 1.90-2.00          | 0.50       | 1.00       | 1.70-2.00  | 0.20-0.55  | 0.60-0.90  |                                                              |       |            |
| COC No / misc                      |            |            |                    |                    |                    |            |            |            |            |            |                                                              |       |            |
| Containers                         | V J T      | V J T      | V J T              | V J T              | V J T              | V J T      | V J T      | V J T      | V J T      | V J T      |                                                              |       |            |
| Sample Date                        | 28/10/2014 | 28/10/2014 | <>                 | <>                 | <>                 | <>         | <>         | <>         | <>         | <>         |                                                              |       |            |
| Sample Type                        | Soil       | Soil       | Soil               | Soil               | Soil               | Soil       | Soil       | Soil       | Soil       | Soil       |                                                              |       |            |
| Batch Number                       | 2          | 2          | 2                  | 2                  | 2                  | 2          | 2          | 2          | 2          | 2          |                                                              |       |            |
| Date of Receipt                    | 29/10/2014 | 29/10/2014 | 29/10/2014         | 29/10/2014         | 29/10/2014         | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | LOD/LOR                                                      | Units | Method No. |
| PAH MS                             |            |            |                    |                    |                    |            |            |            |            |            |                                                              |       |            |
| Naphthalene <sup>#M</sup>          | 0.07       | <0.04      | <0.80 <sub>E</sub> | 2.77 <sub>E</sub>  | <0.80 <sub>E</sub> | 0.95       | 0.51       | <0.04      | 0.07       | 0.08       | <0.04                                                        | mg/kg | TM4/PM8    |
| Acenaphthylene                     | 0.05       | <0.03      | <0.60 <sub>E</sub> | 2.01 <sub>E</sub>  | <0.60 <sub>E</sub> | 0.31       | 0.33       | 0.04       | 0.11       | 0.06       | <0.03                                                        | mg/kg | TM4/PM8    |
| Acenaphthene <sup>#M</sup>         | 0.13       | 0.06       | <1.00 <sub>E</sub> | 3.34 <sub>E</sub>  | 5.89 <sub>E</sub>  | 0.94       | 0.51       | <0.05      | <0.05      | <0.05      | <0.05                                                        | mg/kg | TM4/PM8    |
| Fluorene <sup>#M</sup>             | 0.06       | <0.04      | <0.80 <sub>E</sub> | 3.44 <sub>E</sub>  | 5.40 <sub>E</sub>  | 0.71       | 0.32       | <0.04      | <0.04      | <0.04      | <0.04                                                        | mg/kg | TM4/PM8    |
| Phenanthrene <sup>#M</sup>         | 0.58       | 0.46       | 6.75 <sub>E</sub>  | 29.57 <sub>E</sub> | 47.21 <sub>E</sub> | 6.26       | 3.08       | 0.06       | 0.44       | 0.27       | <0.03                                                        | mg/kg | TM4/PM8    |
| Anthracene <sup>#</sup>            | 0.17       | 0.09       | 1.79 <sub>E</sub>  | 7.82 <sub>E</sub>  | 13.51 <sub>E</sub> | 1.40       | 0.90       | <0.04      | 0.23       | 0.12       | <0.04                                                        | mg/kg | TM4/PM8    |
| Fluoranthene <sup>#M</sup>         | 0.93       | 0.70       | 11.00 <sub>E</sub> | 33.31 <sub>E</sub> | 54.50 <sub>E</sub> | 8.13       | 5.68       | 0.06       | 1.06       | 0.56       | <0.03                                                        | mg/kg | TM4/PM8    |
| Pyrene <sup>#</sup>                | 0.85       | 0.61       | 10.51 <sub>E</sub> | 30.29 <sub>E</sub> | 43.32 <sub>E</sub> | 7.39       | 5.22       | 0.06       | 1.01       | 0.55       | <0.03                                                        | mg/kg | TM4/PM8    |
| Benzo(a)anthracene <sup>#</sup>    | 0.57       | 0.34       | 4.52 <sub>E</sub>  | 16.08 <sub>E</sub> | 20.13 <sub>E</sub> | 4.47       | 2.85       | 0.08       | 0.53       | 0.42       | <0.06                                                        | mg/kg | TM4/PM8    |
| Chrysene <sup>#M</sup>             | 0.52       | 0.31       | 5.93 <sub>E</sub>  | 15.43 <sub>E</sub> | 20.97 <sub>E</sub> | 4.39       | 3.06       | 0.06       | 0.70       | 0.40       | <0.02                                                        | mg/kg | TM4/PM8    |
| Benzo(b)fluoranthene <sup>#M</sup> | 0.75       | 0.48       | 8.42 <sub>E</sub>  | 21.55 <sub>E</sub> | 29.54 <sub>E</sub> | 6.85       | 5.53       | 0.10       | 1.18       | 0.61       | <0.07                                                        | mg/kg | TM4/PM8    |
| Benzo(a)pyrene <sup>#</sup>        | 0.48       | 0.35       | 5.66 <sub>E</sub>  | 15.19 <sub>E</sub> | 19.36 <sub>E</sub> | 4.39       | 3.59       | 0.05       | 0.69       | 0.40       | <0.04                                                        | mg/kg | TM4/PM8    |
| Indeno(123cd)pyrene <sup>#M</sup>  | 0.28       | 0.22       | 3.34 <sub>E</sub>  | 9.54 <sub>E</sub>  | 11.57 <sub>E</sub> | 2.74       | 2.26       | <0.04      | 0.46       | 0.24       | <0.04                                                        | mg/kg | TM4/PM8    |
| Dibenzo(ah)anthracene <sup>#</sup> | 0.12       | 0.05       | <0.80 <sub>E</sub> | 2.20 <sub>E</sub>  | 2.51 <sub>E</sub>  | 0.69       | 0.50       | <0.04      | 0.11       | 0.08       | <0.04                                                        | mg/kg | TM4/PM8    |
| Benzo(ghi)perylene <sup>#</sup>    | 0.28       | 0.20       | 3.18 <sub>E</sub>  | 9.17 <sub>E</sub>  | 10.54 <sub>E</sub> | 2.58       | 2.12       | <0.04      | 0.48       | 0.20       | <0.04                                                        | mg/kg | TM4/PM8    |
| Coronene                           | -          | -          | <0.80 <sub>E</sub> | -                  | -                  | -          | -          | -          | -          | -          | <0.04                                                        | mg/kg | TM4/PM8    |
| PAH 16 Total                       | 5.8        | 3.9        | -                  | 201.7 <sub>E</sub> | 284.5 <sub>E</sub> | 52.2       | 36.5       | <0.6       | 7.1        | 4.0        | <0.6                                                         | mg/kg | TM4/PM8    |
| PAH 17 Total                       | -          | -          | 61.10 <sub>E</sub> | -                  | -                  | -          | -          | -          | -          | -          | <0.64                                                        | mg/kg | TM4/PM8    |
| Benzo(b)fluoranthene               | 0.54       | 0.35       | 6.06 <sub>E</sub>  | 15.52 <sub>E</sub> | 21.27 <sub>E</sub> | 4.93       | 3.98       | 0.07       | 0.85       | 0.44       | <0.05                                                        | mg/kg | TM4/PM8    |
| Benzo(k)fluoranthene               | 0.21       | 0.13       | 2.36 <sub>E</sub>  | 6.03 <sub>E</sub>  | 8.27 <sub>E</sub>  | 1.92       | 1.55       | 0.03       | 0.33       | 0.17       | <0.02                                                        | mg/kg | TM4/PM8    |
| PAH Surrogate % Recovery           | 94         | 88         | 92 <sub>E</sub>    | 94 <sub>E</sub>    | 106 <sub>E</sub>   | 105        | 102        | 95         | 94         | 101        | <0                                                           | %     | TM4/PM8    |
| Mineral Oil (C10-C40)              | -          | -          | 32                 | -                  | -                  | -          | -          | -          | -          | -          | <30                                                          | mg/kg | TM5/PM16   |
| TPH CWG                            |            |            |                    |                    |                    |            |            |            |            |            |                                                              |       |            |
| Aliphatics                         |            |            |                    |                    |                    |            |            |            |            |            |                                                              |       |            |
| >C5-C6 <sup>#M</sup>               | <0.1       | <0.1       | -                  | <0.1               | <0.1               | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1                                                         | mg/kg | TM36/PM12  |
| >C6-C8 <sup>#M</sup>               | <0.1       | <0.1       | -                  | <0.1               | <0.1               | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1                                                         | mg/kg | TM36/PM12  |
| >C8-C10                            | <0.1       | <0.1       | -                  | <0.1               | <0.1               | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1                                                         | mg/kg | TM36/PM12  |
| >C10-C12 <sup>#M</sup>             | <0.2       | <0.2       | -                  | <0.2               | <0.2               | <0.2       | <0.2       | <0.2       | <0.2       | <0.2       | <0.2                                                         | mg/kg | TM5/PM16   |
| >C12-C16 <sup>#M</sup>             | <4         | <4         | -                  | <4                 | <4                 | <4         | <4         | <4         | <4         | <4         | <4                                                           | mg/kg | TM5/PM16   |
| >C16-C21 <sup>#M</sup>             | <7         | <7         | -                  | 9                  | 9                  | <7         | 11         | <7         | <7         | <7         | <7                                                           | mg/kg | TM5/PM16   |
| >C21-C35 <sup>#M</sup>             | 68         | 12         | -                  | 84                 | 31                 | <7         | 67         | <7         | 33         | 13         | <7                                                           | mg/kg | TM5/PM16   |
| Total aliphatics C5-35             | 68         | <19        | -                  | 93                 | 40                 | <19        | 78         | <19        | 33         | <19        | <19                                                          | mg/kg | TM5/PM16   |

**Client Name:** Geotechnics  
**Reference:** PN143260  
**Location:** Daisy Mill  
**Contact:** Chris Jones  
**JE Job No.:** 14/12974

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                          | 19-21      | 22-24      | 28-30      | 31-33      | 34-36      | 40-42      | 43-45      | 46-48      | 49-51      | 52-54      | Please see attached notes for all abbreviations and acronyms |       |                    |
|-----------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------------------------------------------------------|-------|--------------------|
| Sample ID                               | BH5        | BH5        | TP01       | TP01       | TP01       | TP02       | TP02       | TP02       | TP03       | TP03       |                                                              |       |                    |
| Depth                                   | 0.50       | 1.00       | 0.30-0.50  | 1.00-1.20  | 1.90-2.00  | 0.50       | 1.00       | 1.70-2.00  | 0.20-0.55  | 0.60-0.90  |                                                              |       |                    |
| COC No / misc                           |            |            |            |            |            |            |            |            |            |            |                                                              |       |                    |
| Containers                              | V J T      | V J T      | V J T      | V J T      | V J T      | V J T      | V J T      | V J T      | V J T      | V J T      |                                                              |       |                    |
| Sample Date                             | 28/10/2014 | 28/10/2014 | <>         | <>         | <>         | <>         | <>         | <>         | <>         | <>         |                                                              |       |                    |
| Sample Type                             | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       | Soil       |                                                              |       |                    |
| Batch Number                            | 2          | 2          | 2          | 2          | 2          | 2          | 2          | 2          | 2          | 2          |                                                              |       |                    |
| Date of Receipt                         | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | LOD/LOR                                                      | Units | Method No.         |
| TPH CWG                                 |            |            |            |            |            |            |            |            |            |            |                                                              |       |                    |
| <b>Aromatics</b>                        |            |            |            |            |            |            |            |            |            |            |                                                              |       |                    |
| >C5-EC7                                 | <0.1       | <0.1       | -          | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1                                                         | mg/kg | TM36/PM12          |
| >EC7-EC8                                | <0.1       | <0.1       | -          | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1                                                         | mg/kg | TM36/PM12          |
| >EC8-EC10 <sup>#M</sup>                 | <0.1       | <0.1       | -          | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       | <0.1                                                         | mg/kg | TM36/PM12          |
| >EC10-EC12                              | <0.2       | <0.2       | -          | 1.2        | 2.2        | <0.2       | 0.8        | <0.2       | <0.2       | <0.2       | <0.2                                                         | mg/kg | TM5/PM16           |
| >EC12-EC16                              | <4         | <4         | -          | 8          | 39         | <4         | 15         | <4         | <4         | <4         | <4                                                           | mg/kg | TM5/PM16           |
| >EC16-EC21                              | <7         | <7         | -          | 67         | 226        | <7         | 165        | <7         | 14         | <7         | <7                                                           | mg/kg | TM5/PM16           |
| >EC21-EC35                              | 80         | 18         | -          | 318        | 475        | 35         | 355        | <7         | 112        | 64         | <7                                                           | mg/kg | TM5/PM16           |
| Total aromatics C5-35                   | 80         | <19        | -          | 394        | 742        | 35         | 536        | <19        | 126        | 64         | <19                                                          | mg/kg | TM5/PM16/PM12/PM10 |
| Total aliphatics and aromatics(C5-35)   | 148        | <38        | -          | 487        | 782        | <38        | 614        | <38        | 159        | 64         | <38                                                          | mg/kg | TM5/PM16/PM12/PM10 |
| MTBE <sup>#</sup>                       | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5                                                           | ug/kg | TM31/PM12          |
| Benzene <sup>#</sup>                    | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5                                                           | ug/kg | TM31/PM12          |
| Toluene <sup>#</sup>                    | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5                                                           | ug/kg | TM31/PM12          |
| Ethylbenzene <sup>#</sup>               | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5                                                           | ug/kg | TM31/PM12          |
| m/p-Xylene <sup>#</sup>                 | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5                                                           | ug/kg | TM31/PM12          |
| o-Xylene <sup>#</sup>                   | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5         | <5                                                           | ug/kg | TM31/PM12          |
| PCB 28 <sup>#</sup>                     | -          | -          | <5         | -          | -          | -          | -          | -          | -          | -          | <5                                                           | ug/kg | TM17/PM8           |
| PCB 52 <sup>#</sup>                     | -          | -          | <5         | -          | -          | -          | -          | -          | -          | -          | <5                                                           | ug/kg | TM17/PM8           |
| PCB 101 <sup>#</sup>                    | -          | -          | <5         | -          | -          | -          | -          | -          | -          | -          | <5                                                           | ug/kg | TM17/PM8           |
| PCB 118 <sup>#</sup>                    | -          | -          | <5         | -          | -          | -          | -          | -          | -          | -          | <5                                                           | ug/kg | TM17/PM8           |
| PCB 138 <sup>#</sup>                    | -          | -          | <5         | -          | -          | -          | -          | -          | -          | -          | <5                                                           | ug/kg | TM17/PM8           |
| PCB 153 <sup>#</sup>                    | -          | -          | <5         | -          | -          | -          | -          | -          | -          | -          | <5                                                           | ug/kg | TM17/PM8           |
| PCB 180 <sup>#</sup>                    | -          | -          | <5         | -          | -          | -          | -          | -          | -          | -          | <5                                                           | ug/kg | TM17/PM8           |
| Total 7 PCBs <sup>#</sup>               | -          | -          | <35        | -          | -          | -          | -          | -          | -          | -          | <35                                                          | ug/kg | TM17/PM8           |
| Total Phenols HPLC                      | <0.15      | -          | -          | <0.15      | <0.15      | <0.15      | <0.15      | -          | <0.15      | <0.15      | <0.15                                                        | mg/kg | TM26/PM21          |
| Natural Moisture Content                | 6.2        | 18.2       | 11.8       | NDP        | NDP        | NDP        | 11.6       | 20.2       | 15.7       | 16.5       | <0.1                                                         | %     | PM4/PM0            |
| Hexavalent Chromium <sup>#</sup>        | <0.3       | <0.3       | -          | <0.3       | <0.3       | <0.3       | <0.3       | <0.3       | <0.3       | <0.3       | <0.3                                                         | mg/kg | TM38/PM20          |
| Sulphate as SO4 (2:1 Ext) <sup>#M</sup> | 0.0052     | 0.1305     | -          | NDP        | NDP        | NDP        | 0.6371     | 0.0701     | 0.0396     | 0.0239     | <0.0015                                                      | g/l   | TM38/PM20          |
| Sulphate as SO4 (2:1 Ext) <sup>#M</sup> | -          | -          | -          | 0.0214     | 0.2541     | 0.0162     | -          | -          | -          | -          | <0.0015                                                      | g/l   | TM38/PM60          |
| Chromium III                            | 49.8       | 33.6       | -          | NDP        | NDP        | NDP        | 37.0       | 34.5       | 46.4       | 59.6       | <0.5                                                         | mg/kg | NONE/NONE          |
| Chromium III                            | -          | -          | -          | 17.0       | 32.9       | 26.8       | -          | -          | -          | -          | <0.5                                                         | mg/kg | NONE/NONE          |
| Free Cyanide                            | <0.5       | -          | -          | <0.5       | <0.5       | <0.5       | <0.5       | -          | <0.5       | <0.5       | <0.5                                                         | mg/kg | TM89/PM45          |
| Total Cyanide <sup>#M</sup>             | <0.5       | -          | -          | 1.3        | <0.5       | <0.5       | <0.5       | -          | 0.7        | <0.5       | <0.5                                                         | mg/kg | TM89/PM45          |
| Total Organic Carbon <sup>#</sup>       | -          | -          | 7.05       | -          | -          | -          | -          | -          | -          | -          | <0.02                                                        | %     | TM21/PM24          |
| Organic Matter                          | 1.5        | 8.2        | -          | NDP        | NDP        | NDP        | 7.7        | 5.1        | 8.1        | 22.6       | <0.2                                                         | %     | TM21/PM24          |



**Client Name:** Geotechnics  
**Reference:** PN143260  
**Location:** Daisy Mill  
**Contact:** Chris Jones  
**JE Job No.:** 14/12974

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.           | 55-57      | 61-63      | 64-66      | 67-69      | 70-72              |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |            |
|--------------------------|------------|------------|------------|------------|--------------------|--|--|--|--|--|--------------------------------------------------------------|-------|------------|
| Sample ID                | TP03       | TP04       | TP04       | TP04       | TP04               |  |  |  |  |  |                                                              |       |            |
| Depth                    | 0.90-1.10  | 0.40-0.70  | 0.80-1.20  | 1.50-1.80  | 1.80-2.00          |  |  |  |  |  |                                                              |       |            |
| COC No / misc            |            |            |            |            |                    |  |  |  |  |  |                                                              |       |            |
| Containers               | V J T      | V J T      | V J T      | V J T      | V J T              |  |  |  |  |  |                                                              |       |            |
| Sample Date              | <>         | <>         | <>         | <>         | <>                 |  |  |  |  |  |                                                              |       |            |
| Sample Type              | Soil       | Soil       | Soil       | Soil       | Soil               |  |  |  |  |  |                                                              |       |            |
| Batch Number             | 2          | 2          | 2          | 2          | 2                  |  |  |  |  |  |                                                              |       |            |
| Date of Receipt          | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014         |  |  |  |  |  | LOD/LOR                                                      | Units | Method No. |
| Antimony                 | 2          | 4          | 8          | -          | 3                  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15  |
| Antimony                 | -          | -          | -          | -          | -                  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM62  |
| Arsenic <sup>#M</sup>    | 9.5        | 12.7       | 15.0       | -          | 10.8               |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15  |
| Arsenic                  | -          | -          | -          | -          | -                  |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM62  |
| Barium <sup>#M</sup>     | 99         | 224        | 416        | -          | 159                |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15  |
| Barium                   | -          | -          | -          | -          | -                  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM62  |
| Beryllium                | 1.4        | 0.8        | 1.2        | -          | 2.5                |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15  |
| Beryllium                | -          | -          | -          | -          | -                  |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM62  |
| Cadmium <sup>#M</sup>    | <0.1       | 0.8        | 1.0        | -          | <0.1               |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15  |
| Cadmium                  | -          | -          | -          | -          | -                  |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM62  |
| Chromium <sup>#M</sup>   | 43.8       | 37.1       | 49.4       | -          | 46.2               |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM15  |
| Chromium                 | -          | -          | -          | -          | -                  |  |  |  |  |  | <0.5                                                         | mg/kg | TM30/PM62  |
| Copper <sup>#M</sup>     | 18         | 48         | 66         | -          | 26                 |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15  |
| Copper                   | -          | -          | -          | -          | -                  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM62  |
| Iron                     | 33890      | 30190      | 29290      | -          | 50250 <sub>D</sub> |  |  |  |  |  | <20                                                          | mg/kg | TM30/PM15  |
| Iron                     | -          | -          | -          | -          | -                  |  |  |  |  |  | <20                                                          | mg/kg | TM30/PM62  |
| Lead <sup>#M</sup>       | 17         | 231        | 317        | -          | 22                 |  |  |  |  |  | <5                                                           | mg/kg | TM30/PM15  |
| Lead                     | -          | -          | -          | -          | -                  |  |  |  |  |  | <5                                                           | mg/kg | TM30/PM62  |
| Manganese <sup>#M</sup>  | 594        | 299        | 391        | -          | 355                |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15  |
| Manganese                | -          | -          | -          | -          | -                  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM62  |
| Mercury <sup>#M</sup>    | <0.1       | 0.5        | 0.2        | -          | <0.1               |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15  |
| Mercury                  | -          | -          | -          | -          | -                  |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM62  |
| Molybdenum <sup>#M</sup> | 2.1        | 2.9        | 4.2        | -          | 1.9                |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM15  |
| Molybdenum               | -          | -          | -          | -          | -                  |  |  |  |  |  | <0.1                                                         | mg/kg | TM30/PM62  |
| Nickel <sup>#M</sup>     | 28.0       | 18.8       | 23.9       | -          | 44.8               |  |  |  |  |  | <0.7                                                         | mg/kg | TM30/PM15  |
| Nickel                   | -          | -          | -          | -          | -                  |  |  |  |  |  | <0.7                                                         | mg/kg | TM30/PM62  |
| Selenium <sup>#M</sup>   | <1         | <1         | <1         | -          | <1                 |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15  |
| Selenium                 | -          | -          | -          | -          | -                  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM62  |
| Vanadium                 | 34         | 25         | 34         | -          | 48                 |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM15  |
| Vanadium                 | -          | -          | -          | -          | -                  |  |  |  |  |  | <1                                                           | mg/kg | TM30/PM62  |
| Zinc <sup>#M</sup>       | 54         | 147        | 386        | -          | 90                 |  |  |  |  |  | <5                                                           | mg/kg | TM30/PM15  |
| Zinc                     | -          | -          | -          | -          | -                  |  |  |  |  |  | <5                                                           | mg/kg | TM30/PM62  |

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**Reference:** PN143260  
**Location:** Daisy Mill  
**Contact:** Chris Jones  
**JE Job No.:** 14/12974

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                     | 55-57      | 61-63      | 64-66      | 67-69      | 70-72      |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |                    |
|------------------------------------|------------|------------|------------|------------|------------|--|--|--|--|--|--------------------------------------------------------------|-------|--------------------|
| Sample ID                          | TP03       | TP04       | TP04       | TP04       | TP04       |  |  |  |  |  |                                                              |       |                    |
| Depth                              | 0.90-1.10  | 0.40-0.70  | 0.80-1.20  | 1.50-1.80  | 1.80-2.00  |  |  |  |  |  |                                                              |       |                    |
| COC No / misc                      |            |            |            |            |            |  |  |  |  |  |                                                              |       |                    |
| Containers                         | V J T      | V J T      | V J T      | V J T      | V J T      |  |  |  |  |  |                                                              |       |                    |
| Sample Date                        | <>         | <>         | <>         | <>         | <>         |  |  |  |  |  |                                                              |       |                    |
| Sample Type                        | Soil       | Soil       | Soil       | Soil       | Soil       |  |  |  |  |  |                                                              |       |                    |
| Batch Number                       | 2          | 2          | 2          | 2          | 2          |  |  |  |  |  |                                                              |       |                    |
| Date of Receipt                    | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 |  |  |  |  |  | LOD/LOR                                                      | Units | Method No.         |
| PAH MS                             |            |            |            |            |            |  |  |  |  |  |                                                              |       |                    |
| Naphthalene <sup>#M</sup>          | <0.04      | 1.25       | 0.84       | 0.21       | <0.04      |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8            |
| Acenaphthylene                     | <0.03      | 0.51       | 0.60       | 0.15       | <0.03      |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8            |
| Acenaphthene <sup>#M</sup>         | <0.05      | 3.42       | 3.85       | 0.45       | <0.05      |  |  |  |  |  | <0.05                                                        | mg/kg | TM4/PM8            |
| Fluorene <sup>#M</sup>             | <0.04      | 2.45       | 2.88       | 0.31       | <0.04      |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8            |
| Phenanthrene <sup>#M</sup>         | <0.03      | 24.31      | 25.05      | 3.27       | 0.05       |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8            |
| Anthracene <sup>#</sup>            | <0.04      | 6.17       | 6.49       | 1.00       | <0.04      |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8            |
| Fluoranthene <sup>#M</sup>         | <0.03      | 40.15      | 36.57      | 5.88       | 0.10       |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8            |
| Pyrene <sup>#</sup>                | <0.03      | 35.29      | 32.56      | 5.13       | 0.10       |  |  |  |  |  | <0.03                                                        | mg/kg | TM4/PM8            |
| Benzo(a)anthracene <sup>#</sup>    | <0.06      | 22.36      | 12.60      | 3.15       | 0.07       |  |  |  |  |  | <0.06                                                        | mg/kg | TM4/PM8            |
| Chrysene <sup>#M</sup>             | <0.02      | 18.18      | 16.83      | 2.97       | 0.06       |  |  |  |  |  | <0.02                                                        | mg/kg | TM4/PM8            |
| Benzo(b)fluoranthene <sup>#M</sup> | <0.07      | 32.66      | 26.89      | 5.46       | 0.10       |  |  |  |  |  | <0.07                                                        | mg/kg | TM4/PM8            |
| Benzo(a)pyrene <sup>#</sup>        | <0.04      | 22.41      | 17.15      | 3.35       | 0.06       |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8            |
| Indeno(123cd)pyrene <sup>#M</sup>  | <0.04      | 14.35      | 10.56      | 2.20       | <0.04      |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8            |
| Dibenzo(ah)anthracene <sup>#</sup> | <0.04      | 3.11       | 2.56       | 0.50       | <0.04      |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8            |
| Benzo(ghi)perylene <sup>#</sup>    | <0.04      | 12.50      | 9.80       | 2.10       | <0.04      |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8            |
| Coronene                           | -          | -          | -          | 0.30       | -          |  |  |  |  |  | <0.04                                                        | mg/kg | TM4/PM8            |
| PAH 16 Total                       | <0.6       | 239.1      | 205.2      | -          | <0.6       |  |  |  |  |  | <0.6                                                         | mg/kg | TM4/PM8            |
| PAH 17 Total                       | -          | -          | -          | 36.43      | -          |  |  |  |  |  | <0.64                                                        | mg/kg | TM4/PM8            |
| Benzo(b)fluoranthene               | <0.05      | 23.52      | 19.36      | 3.93       | 0.07       |  |  |  |  |  | <0.05                                                        | mg/kg | TM4/PM8            |
| Benzo(k)fluoranthene               | <0.02      | 9.14       | 7.53       | 1.53       | 0.03       |  |  |  |  |  | <0.02                                                        | mg/kg | TM4/PM8            |
| PAH Surrogate % Recovery           | 82         | 98         | 96         | 88         | 107        |  |  |  |  |  | <0                                                           | %     | TM4/PM8            |
| Mineral Oil (C10-C40)              | -          | -          | -          | 198        | -          |  |  |  |  |  | <30                                                          | mg/kg | TM5/PM16           |
| TPH CWG                            |            |            |            |            |            |  |  |  |  |  |                                                              |       |                    |
| Aliphatics                         |            |            |            |            |            |  |  |  |  |  |                                                              |       |                    |
| >C5-C6 <sup>#M</sup>               | <0.1       | <0.1       | <0.1       | -          | <0.1       |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12          |
| >C6-C8 <sup>#M</sup>               | <0.1       | <0.1       | <0.1       | -          | <0.1       |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12          |
| >C8-C10                            | <0.1       | <0.1       | <0.1       | -          | <0.1       |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12          |
| >C10-C12 <sup>#M</sup>             | <0.2       | <0.2       | <0.2       | -          | <0.2       |  |  |  |  |  | <0.2                                                         | mg/kg | TM5/PM16           |
| >C12-C16 <sup>#M</sup>             | <4         | 12         | 24         | -          | <4         |  |  |  |  |  | <4                                                           | mg/kg | TM5/PM16           |
| >C16-C21 <sup>#M</sup>             | <7         | 36         | 79         | -          | <7         |  |  |  |  |  | <7                                                           | mg/kg | TM5/PM16           |
| >C21-C35 <sup>#M</sup>             | <7         | 104        | 138        | -          | <7         |  |  |  |  |  | <7                                                           | mg/kg | TM5/PM16           |
| Total aliphatics C5-35             | <19        | 152        | 241        | -          | <19        |  |  |  |  |  | <19                                                          | mg/kg | TM5/PM16/PM12/PM16 |

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**Report : Solid**

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| J E Sample No.                          | 55-57      | 61-63      | 64-66      | 67-69            | 70-72      |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |       |                    |
|-----------------------------------------|------------|------------|------------|------------------|------------|--|--|--|--|--|--------------------------------------------------------------|-------|--------------------|
| Sample ID                               | TP03       | TP04       | TP04       | TP04             | TP04       |  |  |  |  |  |                                                              |       |                    |
| Depth                                   | 0.90-1.10  | 0.40-0.70  | 0.80-1.20  | 1.50-1.80        | 1.80-2.00  |  |  |  |  |  |                                                              |       |                    |
| COC No / misc                           |            |            |            |                  |            |  |  |  |  |  |                                                              |       |                    |
| Containers                              | V J T      | V J T      | V J T      | V J T            | V J T      |  |  |  |  |  |                                                              |       |                    |
| Sample Date                             | <>         | <>         | <>         | <>               | <>         |  |  |  |  |  |                                                              |       |                    |
| Sample Type                             | Soil       | Soil       | Soil       | Soil             | Soil       |  |  |  |  |  |                                                              |       |                    |
| Batch Number                            | 2          | 2          | 2          | 2                | 2          |  |  |  |  |  |                                                              |       |                    |
| Date of Receipt                         | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014       | 29/10/2014 |  |  |  |  |  | LOD/LOR                                                      | Units | Method No.         |
| TPH CWG                                 |            |            |            |                  |            |  |  |  |  |  |                                                              |       |                    |
| <b>Aromatics</b>                        |            |            |            |                  |            |  |  |  |  |  |                                                              |       |                    |
| >C5-EC7                                 | <0.1       | <0.1       | <0.1       | -                | <0.1       |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12          |
| >EC7-EC8                                | <0.1       | <0.1       | <0.1       | -                | <0.1       |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12          |
| >EC8-EC10 <sup>#M</sup>                 | <0.1       | <0.1       | <0.1       | -                | <0.1       |  |  |  |  |  | <0.1                                                         | mg/kg | TM36/PM12          |
| >EC10-EC12                              | <0.2       | 1.7        | 1.7        | -                | <0.2       |  |  |  |  |  | <0.2                                                         | mg/kg | TM5/PM16           |
| >EC12-EC16                              | <4         | 51         | 61         | -                | <4         |  |  |  |  |  | <4                                                           | mg/kg | TM5/PM16           |
| >EC16-EC21                              | <7         | 453        | 490        | -                | <7         |  |  |  |  |  | <7                                                           | mg/kg | TM5/PM16           |
| >EC21-EC35                              | <7         | 1108       | 1302       | -                | <7         |  |  |  |  |  | <7                                                           | mg/kg | TM5/PM16           |
| Total aromatics C5-35                   | <19        | 1614       | 1855       | -                | <19        |  |  |  |  |  | <19                                                          | mg/kg | TM5/PM16/PM12/PM10 |
| Total aliphatics and aromatics(C5-35)   | <38        | 1766       | 2096       | -                | <38        |  |  |  |  |  | <38                                                          | mg/kg | TM5/PM16/PM12/PM10 |
| MTBE <sup>#</sup>                       | <5         | <5         | <5         | <10 <sub>A</sub> | <5         |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12          |
| Benzene <sup>#</sup>                    | <5         | <5         | <5         | <10 <sub>A</sub> | <5         |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12          |
| Toluene <sup>#</sup>                    | <5         | <5         | <5         | <10 <sub>A</sub> | <5         |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12          |
| Ethylbenzene <sup>#</sup>               | <5         | <5         | <5         | <10 <sub>A</sub> | <5         |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12          |
| m/p-Xylene <sup>#</sup>                 | <5         | <5         | <5         | <10 <sub>A</sub> | <5         |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12          |
| o-Xylene <sup>#</sup>                   | <5         | <5         | <5         | <10 <sub>A</sub> | <5         |  |  |  |  |  | <5                                                           | ug/kg | TM31/PM12          |
| PCB 28 <sup>#</sup>                     | -          | -          | -          | <5               | -          |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8           |
| PCB 52 <sup>#</sup>                     | -          | -          | -          | <5               | -          |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8           |
| PCB 101 <sup>#</sup>                    | -          | -          | -          | <5               | -          |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8           |
| PCB 118 <sup>#</sup>                    | -          | -          | -          | <5               | -          |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8           |
| PCB 138 <sup>#</sup>                    | -          | -          | -          | <5               | -          |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8           |
| PCB 153 <sup>#</sup>                    | -          | -          | -          | <5               | -          |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8           |
| PCB 180 <sup>#</sup>                    | -          | -          | -          | <5               | -          |  |  |  |  |  | <5                                                           | ug/kg | TM17/PM8           |
| Total 7 PCBs <sup>#</sup>               | -          | -          | -          | <35              | -          |  |  |  |  |  | <35                                                          | ug/kg | TM17/PM8           |
| Total Phenols HPLC                      | -          | <0.15      | <0.15      | -                | -          |  |  |  |  |  | <0.15                                                        | mg/kg | TM26/PM21          |
| Natural Moisture Content                | 27.7       | 8.1        | 13.8       | 24.9             | 24.1       |  |  |  |  |  | <0.1                                                         | %     | PM4/PM0            |
| Hexavalent Chromium <sup>#</sup>        | <0.3       | <0.3       | <0.3       | -                | <0.3       |  |  |  |  |  | <0.3                                                         | mg/kg | TM38/PM20          |
| Sulphate as SO4 (2:1 Ext) <sup>#M</sup> | 0.0120     | 0.0279     | 0.3012     | -                | 0.0347     |  |  |  |  |  | <0.0015                                                      | g/l   | TM38/PM20          |
| Sulphate as SO4 (2:1 Ext) <sup>#M</sup> | -          | -          | -          | -                | -          |  |  |  |  |  | <0.0015                                                      | g/l   | TM38/PM60          |
| Chromium III                            | 43.8       | 37.1       | 49.4       | -                | 46.2       |  |  |  |  |  | <0.5                                                         | mg/kg | NONE/NONE          |
| Chromium III                            | -          | -          | -          | -                | -          |  |  |  |  |  | <0.5                                                         | mg/kg | NONE/NONE          |
| Free Cyanide                            | -          | <0.5       | <0.5       | -                | -          |  |  |  |  |  | <0.5                                                         | mg/kg | TM89/PM45          |
| Total Cyanide <sup>#M</sup>             | -          | <0.5       | 0.7        | -                | -          |  |  |  |  |  | <0.5                                                         | mg/kg | TM89/PM45          |
| Total Organic Carbon <sup>#</sup>       | -          | -          | -          | 8.35             | -          |  |  |  |  |  | <0.02                                                        | %     | TM21/PM24          |
| Organic Matter                          | 1.5        | 5.4        | 7.0        | -                | 1.2        |  |  |  |  |  | <0.2                                                         | %     | TM21/PM24          |



Please see attached notes for all abbreviations and acronyms

**Client Name:** Geotechnics  
**Reference:** PN143260  
**Location:** Daisy Mill  
**Contact:** Chris Jones  
**JE Job No.:** 14/12974

**Report :** CEN 10:1 1 Batch

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

| J E Sample No.                        | 31-33      | 43-45      | 52-54      | 64-66      |  |  |  |  |  |  | Please see attached notes for all abbreviations and acronyms |          |               |
|---------------------------------------|------------|------------|------------|------------|--|--|--|--|--|--|--------------------------------------------------------------|----------|---------------|
| Sample ID                             | TP01       | TP02       | TP03       | TP04       |  |  |  |  |  |  |                                                              |          |               |
| Depth                                 | 1.00-1.20  | 1.00       | 0.60-0.90  | 0.80-1.20  |  |  |  |  |  |  |                                                              |          |               |
| COC No / misc                         |            |            |            |            |  |  |  |  |  |  |                                                              |          |               |
| Containers                            | V J T      | V J T      | V J T      | V J T      |  |  |  |  |  |  |                                                              |          |               |
| Sample Date                           | <>         | <>         | <>         | <>         |  |  |  |  |  |  |                                                              |          |               |
| Sample Type                           | Soil       | Soil       | Soil       | Soil       |  |  |  |  |  |  |                                                              |          |               |
| Batch Number                          | 2          | 2          | 2          | 2          |  |  |  |  |  |  |                                                              |          |               |
| Date of Receipt                       | 29/10/2014 | 29/10/2014 | 29/10/2014 | 29/10/2014 |  |  |  |  |  |  | LOD/LOR                                                      | Units    | Method No.    |
| TPH CWG                               |            |            |            |            |  |  |  |  |  |  |                                                              |          |               |
| <b>Aliphatics</b>                     |            |            |            |            |  |  |  |  |  |  |                                                              |          |               |
| >C5-C6                                | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| >C6-C8                                | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| >C8-C10                               | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| >C10-C12                              | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM5/PM30      |
| >C12-C16                              | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30      |
| >C16-C21                              | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30      |
| >C21-C35                              | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30      |
| Total aliphatics C5-35                | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30/PM89 |
| <b>Aromatics</b>                      |            |            |            |            |  |  |  |  |  |  |                                                              |          |               |
| >C5-EC7                               | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| >EC7-EC8                              | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| >EC8-EC10                             | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| >EC10-EC12                            | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM5/PM30      |
| >EC12-EC16                            | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30      |
| >EC16-EC21                            | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30      |
| >EC21-EC35                            | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30      |
| Total aromatics C5-35                 | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30/PM89 |
| Total aliphatics and aromatics(C5-35) | <10        | <10        | <10        | <10        |  |  |  |  |  |  | <10                                                          | ug/l     | TM5/PM30/PM89 |
| <b>MTBE</b>                           | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| <b>Benzene</b>                        | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| <b>Toluene</b>                        | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| <b>Ethylbenzene</b>                   | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| <b>m/p-Xylene</b>                     | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| <b>o-Xylene</b>                       | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM36/PM69     |
| <b>Total Phenols HPLC</b>             | <5         | <5         | <5         | <5         |  |  |  |  |  |  | <5                                                           | ug/l     | TM26/PM0      |
| <b>Sulphate #</b>                     | 8.06       | 55.64      | 8.02       | 39.28      |  |  |  |  |  |  | <0.05                                                        | mg/l     | TM38/PM0      |
| <b>Free Cyanide #</b>                 | <0.01      | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01                                                        | mg/l     | TM89/PM0      |
| <b>Total Cyanide #</b>                | 0.01       | <0.01      | <0.01      | <0.01      |  |  |  |  |  |  | <0.01                                                        | mg/l     | TM89/PM0      |
| <b>Dissolved Chromium III</b>         | <2         | <2         | <2         | <2         |  |  |  |  |  |  | <2                                                           | ug/l     | NONE/NONE     |
| <b>Hexavalent Chromium</b>            | <2         | 10         | <2         | <2         |  |  |  |  |  |  | <2                                                           | ug/l     | TM38/PM0      |
| <b>pH</b>                             | 8.29       | 8.32       | 8.26       | 8.05       |  |  |  |  |  |  | <0.01                                                        | pH units | TM73/PM0      |

|                             |       |                                |      |
|-----------------------------|-------|--------------------------------|------|
| Mass of sample taken (kg) = | 0.199 | Moisture Content Ratio (%) =   | 13.6 |
| Mass of dry sample (kg) =   | 0.175 | Dry Matter Content Ratio (%) = | 88.0 |
| Particle Size <4mm =        | >95%  |                                |      |

|                         |                  |                                                  |  |  |
|-------------------------|------------------|--------------------------------------------------|--|--|
| <b>JEFL Job No</b>      | <b>14/12974</b>  | <b>Landfill Waste Acceptance Criteria Limits</b> |  |  |
| <b>Sample No</b>        | <b>30</b>        |                                                  |  |  |
| <b>Client Sample No</b> | <b>TP01</b>      |                                                  |  |  |
| <b>Depth/Other</b>      | <b>0.30-0.50</b> |                                                  |  |  |
| <b>Sample Date</b>      | <b>&lt;&gt;</b>  |                                                  |  |  |
| <b>Batch No</b>         | <b>2</b>         |                                                  |  |  |

|                             |        |                                                                                                                                                |  |  |
|-----------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>Solid Waste Analysis</b> |        | <b>Inert Waste Landfill</b><br><br><b>Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill</b><br><br><b>Hazardous Waste Landfill</b> |  |  |
| Total Organic Carbon (%)    | 7.05   |                                                                                                                                                |  |  |
| Loss on Ignition (%)        | -      |                                                                                                                                                |  |  |
| Sum of BTEX (mg/kg)         | <0.025 |                                                                                                                                                |  |  |
| Sum of 7 PCBs (mg/kg)       | <0.035 |                                                                                                                                                |  |  |
| Mineral Oil (mg/kg)         | 32     |                                                                                                                                                |  |  |
| PAH Sum of 17(mg/kg)        | 61.10  |                                                                                                                                                |  |  |
| pH (pH Units)               | -      |                                                                                                                                                |  |  |
| ANC to pH 7 (mol/kg)        | -      |                                                                                                                                                |  |  |
| ANC to pH 4 (mol/kg)        | -      |                                                                                                                                                |  |  |

| Eluate Analysis             | Conc <sup>n</sup> in 2:1 eluate | Conc <sup>n</sup> in 8:1 eluate | 2:1 conc <sup>n</sup> leached | Cumulative 10:1 conc <sup>n</sup> leached | Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg |       |        |
|-----------------------------|---------------------------------|---------------------------------|-------------------------------|-------------------------------------------|------------------------------------------------------------------------------|-------|--------|
|                             | C <sub>2</sub>                  | C <sub>8</sub>                  | A <sub>2</sub>                | A <sub>2-10</sub>                         |                                                                              |       |        |
|                             | mg/l                            |                                 | mg/kg                         |                                           | mg/kg                                                                        |       |        |
| Arsenic                     | 0.0031                          | <0.0025                         | 0.006                         | <0.025                                    | 0.5                                                                          | 2     | 25     |
| Barium                      | 0.030                           | 0.026                           | 0.060                         | 0.27                                      | 20                                                                           | 100   | 300    |
| Cadmium                     | <0.0005                         | <0.0005                         | <0.001                        | <0.005                                    | 0.04                                                                         | 1     | 5      |
| Chromium                    | 0.0024                          | 0.0018                          | 0.005                         | 0.019                                     | 0.5                                                                          | 10    | 70     |
| Copper                      | 0.008                           | <0.007                          | 0.016                         | <0.07                                     | 2                                                                            | 50    | 100    |
| Mercury                     | 0.0007                          | <0.0006                         | 0.0014                        | <0.006                                    | 0.01                                                                         | 0.2   | 2      |
| Molybdenum                  | 0.013                           | 0.006                           | 0.026                         | 0.07                                      | 0.5                                                                          | 10    | 30     |
| Nickel                      | <0.002                          | <0.002                          | <0.004                        | <0.02                                     | 0.4                                                                          | 10    | 40     |
| Lead                        | <0.005                          | <0.005                          | <0.01                         | <0.05                                     | 0.5                                                                          | 10    | 50     |
| Antimony                    | <0.002                          | 0.003                           | <0.004                        | 0.02                                      | 0.06                                                                         | 0.7   | 5      |
| Selenium                    | <0.003                          | <0.003                          | <0.006                        | <0.03                                     | 0.1                                                                          | 0.5   | 7      |
| Zinc                        | 0.006                           | <0.003                          | 0.012                         | <0.03                                     | 4                                                                            | 50    | 200    |
| Chloride                    | 2.3                             | 0.6                             | 4.6                           | 9                                         | 800                                                                          | 15000 | 25000  |
| Fluoride                    | 6.5                             | 3.6                             | 13.0                          | 42                                        | 10                                                                           | 150   | 500    |
| Sulphate as SO <sub>4</sub> | 34.59                           | 6.09                            | 69.1                          | 117.9                                     | 1000                                                                         | 20000 | 50000  |
| Total Dissolved Solids      | 70                              | 82                              | 140                           | 796                                       | 4000                                                                         | 60000 | 100000 |
| Phenol                      | <0.01                           | <0.01                           | <0.02                         | <0.1                                      | 1                                                                            | -     | -      |
| Dissolved Organic Carbon    | 7                               | 4                               | 14                            | 46                                        | 500                                                                          | 800   | 1000   |

|                               |            |            |
|-------------------------------|------------|------------|
| <b>Leachate Information</b>   |            |            |
| Date Prepared                 | 05/11/2014 | 06/11/2014 |
| pH (pH Units)                 | 7.85       | 8.20       |
| Conductivity (µS/cm)          | 517        | 122        |
| Temperature (°C)              | 19.8       | 21.8       |
| Volume Leachant (Litres)      | 0.326      | 1.4        |
| Volume of Eluate VE1 (Litres) | 0.350      |            |

|                             |       |                                |      |
|-----------------------------|-------|--------------------------------|------|
| Mass of sample taken (kg) = | 0.222 | Moisture Content Ratio (%) =   | 26.5 |
| Mass of dry sample (kg) =   | 0.175 | Dry Matter Content Ratio (%) = | 79.1 |
| Particle Size <4mm =        | >95%  |                                |      |

|                         |                  |                                                  |                                                                                           |                                         |
|-------------------------|------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------|
| <b>JEFL Job No</b>      | <b>14/12974</b>  | <b>Landfill Waste Acceptance Criteria Limits</b> |                                                                                           |                                         |
| <b>Sample No</b>        | <b>69</b>        | <b>Inert Waste<br/>Landfill</b>                  | <b>Stable<br/>Non-reactive<br/>Hazardous<br/>Waste in Non-<br/>Hazardous<br/>Landfill</b> | <b>Hazardous<br/>Waste<br/>Landfill</b> |
| <b>Client Sample No</b> | <b>TP04</b>      |                                                  |                                                                                           |                                         |
| <b>Depth/Other</b>      | <b>1.50-1.80</b> |                                                  |                                                                                           |                                         |
| <b>Sample Date</b>      | <b>&lt;&gt;</b>  |                                                  |                                                                                           |                                         |
| <b>Batch No</b>         | <b>2</b>         |                                                  |                                                                                           |                                         |

|                             |        |  |  |  |  |  |  |
|-----------------------------|--------|--|--|--|--|--|--|
| <b>Solid Waste Analysis</b> |        |  |  |  |  |  |  |
| Total Organic Carbon (%)    | 8.35   |  |  |  |  |  |  |
| Loss on Ignition (%)        | -      |  |  |  |  |  |  |
| Sum of BTEX (mg/kg)         | <0.050 |  |  |  |  |  |  |
| Sum of 7 PCBs (mg/kg)       | <0.035 |  |  |  |  |  |  |
| Mineral Oil (mg/kg)         | 198    |  |  |  |  |  |  |
| PAH Sum of 17(mg/kg)        | 36.43  |  |  |  |  |  |  |
| pH (pH Units)               | -      |  |  |  |  |  |  |
| ANC to pH 7 (mol/kg)        | -      |  |  |  |  |  |  |
| ANC to pH 4 (mol/kg)        | -      |  |  |  |  |  |  |

| Eluate Analysis             | Conc <sup>n</sup> in 2:1 eluate | Conc <sup>n</sup> in 8:1 eluate | 2:1 conc <sup>n</sup> leached | Cumulative 10:1 conc <sup>n</sup> leached | Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg |       |        |
|-----------------------------|---------------------------------|---------------------------------|-------------------------------|-------------------------------------------|------------------------------------------------------------------------------|-------|--------|
|                             | C <sub>2</sub>                  | C <sub>8</sub>                  | A <sub>2</sub>                | A <sub>2-10</sub>                         |                                                                              |       |        |
|                             | mg/l                            |                                 | mg/kg                         |                                           | mg/kg                                                                        |       |        |
| Arsenic                     | 0.0088                          | 0.0046                          | 0.018                         | 0.054                                     | 0.5                                                                          | 2     | 25     |
| Barium                      | 0.177                           | 0.130                           | 0.354                         | 1.39                                      | 20                                                                           | 100   | 300    |
| Cadmium                     | <0.0005                         | <0.0005                         | <0.001                        | <0.005                                    | 0.04                                                                         | 1     | 5      |
| Chromium                    | <0.0015                         | <0.0015                         | <0.003                        | <0.015                                    | 0.5                                                                          | 10    | 70     |
| Copper                      | 0.007                           | <0.007                          | 0.014                         | <0.07                                     | 2                                                                            | 50    | 100    |
| Mercury                     | <0.0006                         | <0.0006                         | <0.0012                       | <0.006                                    | 0.01                                                                         | 0.2   | 2      |
| Molybdenum                  | 0.030                           | 0.015                           | 0.060                         | 0.18                                      | 0.5                                                                          | 10    | 30     |
| Nickel                      | 0.003                           | <0.002                          | 0.006                         | <0.02                                     | 0.4                                                                          | 10    | 40     |
| Lead                        | 0.011                           | 0.005                           | 0.02                          | 0.06                                      | 0.5                                                                          | 10    | 50     |
| Antimony                    | 0.033                           | 0.027                           | 0.066                         | 0.28                                      | 0.06                                                                         | 0.7   | 5      |
| Selenium                    | <0.003                          | <0.003                          | <0.006                        | <0.03                                     | 0.1                                                                          | 0.5   | 7      |
| Zinc                        | 0.056                           | 0.017                           | 0.112                         | 0.24                                      | 4                                                                            | 50    | 200    |
| Chloride                    | 4.1                             | 2.3                             | 8.2                           | 26                                        | 800                                                                          | 15000 | 25000  |
| Fluoride                    | 0.6                             | 0.8                             | 1.2                           | 8                                         | 10                                                                           | 150   | 500    |
| Sulphate as SO <sub>4</sub> | 203.88                          | 31.69                           | 408.2                         | 631.8                                     | 1000                                                                         | 20000 | 50000  |
| Total Dissolved Solids      | 230                             | 150                             | 460                           | 1647                                      | 4000                                                                         | 60000 | 100000 |
| Phenol                      | <0.01                           | <0.01                           | <0.02                         | <0.1                                      | 1                                                                            | -     | -      |
| Dissolved Organic Carbon    | 19                              | 7                               | 38                            | 92                                        | 500                                                                          | 800   | 1000   |

|                               |            |            |
|-------------------------------|------------|------------|
| <b>Leachate Information</b>   |            |            |
| Date Prepared                 | 05/11/2014 | 06/11/2014 |
| pH (pH Units)                 | 7.86       | 8.05       |
| Conductivity (µS/cm)          | 651        | 231        |
| Temperature (°C)              | 19.4       | 20.9       |
| Volume Leachant (Litres)      | 0.304      | 1.4        |
| Volume of Eluate VE1 (Litres) | 0.320      |            |

**Client Name:** Geotechnics  
**Reference:** PN143260  
**Location:** Daisy Mill  
**Contact:** Chris Jones

**Note:**

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions lie outside the scope of our UKAS accreditation.

*Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.*

*If asbestos fibres are reported at trace levels there will not be enough fibres to quantify and will be less than 0.001%.*

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth  
Asbestos Team Leader

[illegible]

**Matrix : Solid**

15 of 22

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/12974

### SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

### WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory. It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

### DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

### DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**ABBREVIATIONS and ACRONYMS USED**

|         |                                                                                                            |
|---------|------------------------------------------------------------------------------------------------------------|
| #       | UKAS accredited.                                                                                           |
| B       | Indicates analyte found in associated method blank.                                                        |
| DR      | Dilution required.                                                                                         |
| M       | MCERTS accredited.                                                                                         |
| NA      | Not applicable                                                                                             |
| NAD     | No Asbestos Detected.                                                                                      |
| ND      | None Detected (usually refers to VOC and/SVOC TICs).                                                       |
| NDP     | No Determination Possible                                                                                  |
| SS      | Calibrated against a single substance                                                                      |
| SV      | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                       |
| W       | Results expressed on as received basis.                                                                    |
| +       | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++      | Result outside calibration range, results should be considered as indicative only and are not accredited.  |
| *       | Analysis subcontracted to a Jones Environmental approved laboratory.                                       |
| AD      | Samples are dried at 35°C ±5°C                                                                             |
| CO      | Suspected carry over                                                                                       |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS                                  |
| ME      | Matrix Effect                                                                                              |
| NFD     | No Fibres Detected                                                                                         |
| OC      | Outside Calibration Range                                                                                  |
| A       | x2 Dilution                                                                                                |
| D       | x5 Dilution                                                                                                |
| E       | x20 Dilution                                                                                               |

JE Job No: 14/12974

| Test Method No. | Description                                                                                                                                               | Prep Method No. (if appropriate) | Description                                                                                                           | UKAS | MCERTS (soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------|------|---------------------|-------------------------------------------------|------------------------------|
| PM4             | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.            | PM0                              | No preparation is required.                                                                                           |      |                     |                                                 |                              |
| PM4             | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.            | PM0                              | No preparation is required.                                                                                           |      |                     | AR                                              | Yes                          |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                              | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                 |      |                     | AR                                              | Yes                          |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                              | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                 |      |                     | AR                                              |                              |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                              | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. |      |                     | AR                                              | Yes                          |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                              | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes  |                     | AR                                              | Yes                          |
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                              | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required. | Yes  | Yes                 | AR                                              | Yes                          |
| TM5             | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16                             | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.                                          |      |                     | AR                                              | Yes                          |
| TM5             | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM16                             | Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.                                          | Yes  | Yes                 | AR                                              | Yes                          |
| TM5             | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID. | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                 |      |                     | AR                                              | Yes                          |

JE Job No: 14/12974

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                                         | Prep Method No. (if appropriate) | Description                                                                                                                                                                                                                                                    | UKAS | MCERTS (soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------|-------------------------------------------------|------------------------------|
| TM5/TM36        | TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID.<br>TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. | PM12/PM16                        | CWG GC-FID                                                                                                                                                                                                                                                     |      |                     | AR                                              | Yes                          |
| TM5/TM36        | TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID.<br>TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. | PM30/PM69                        | PM030: Eluate samples are extracted with solvent using a magnetic stirrer to create a vortex. PM069: One part soil is mixed with 10 parts water in a vial leaving no headspace. The mixture is shaken and then left to leach for 24 hours before VOC analysis. |      |                     | AR                                              | Yes                          |
| PM13            | A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.                                                                                                                                                                                       | PM0                              | No preparation is required.                                                                                                                                                                                                                                    |      |                     | AR                                              |                              |
| TM17            | Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.                                                                                                                                                                                                                                                 | PM8                              | End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.                                                                                                                                          | Yes  |                     | AR                                              | Yes                          |
| TM20            | Modified USEPA 8163. Gravimetric determination of Total Dissolved Solids/Total Solids                                                                                                                                                                                                                                                               | PM0                              | No preparation is required.                                                                                                                                                                                                                                    |      |                     | AR                                              | Yes                          |
| TM21            | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO <sub>2</sub> generated is quantified using infra-red detection.                                                                                                                        | PM24                             | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.                                                                                                           |      |                     | AD                                              | Yes                          |
| TM21            | Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO <sub>2</sub> generated is quantified using infra-red detection.                                                                                                                        | PM24                             | Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.                                                                                                           | Yes  |                     | AD                                              | Yes                          |
| TM26            | Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.                                                                                                                                                                                                                                  | PM0                              | No preparation is required.                                                                                                                                                                                                                                    |      |                     | AR                                              | Yes                          |
| TM26            | Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.                                                                                                                                                                                                                                  | PM21                             | As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.                                                                                                                                          |      |                     | AR                                              | Yes                          |
| TM27            | Modified US EPA method 9056. Determination of water soluble anions using Dionex (Ion-Chromatography).                                                                                                                                                                                                                                               | PM0                              | No preparation is required.                                                                                                                                                                                                                                    |      |                     | AR                                              | Yes                          |

JE Job No: 14/12974

| Test Method No. | Description                                                                                                                                 | Prep Method No. (if appropriate) | Description                                                                                                                                                                            | UKAS | MCERTS (soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------|-------------------------------------------------|------------------------------|
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 | PM14                             | Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.                                                           |      |                     | AR                                              | Yes                          |
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 | PM14                             | Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.                                                           | Yes  |                     | AR                                              | Yes                          |
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 | PM15                             | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.                                          |      |                     | AD                                              | Yes                          |
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 | PM15                             | Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.                                          | Yes  | Yes                 | AD                                              | Yes                          |
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 | PM62                             | Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.                                                                                                     |      |                     | AR                                              | Yes                          |
| TM31            | Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.                 | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                        |      |                     | AR                                              | Yes                          |
| TM31            | Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.                 | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                        | Yes  |                     | AR                                              | Yes                          |
| TM36            | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.        | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                        |      |                     | AR                                              | Yes                          |
| TM36            | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.        | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                                                                                        | Yes  | Yes                 | AR                                              | Yes                          |
| TM36            | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.        | PM69                             | Modified BS EN 12457 method. One part soil is mixed with 10 parts water in a vial leaving no headspace. The mixture is shaken and then left to leach for 24 hours before VOC analysis. |      |                     | AR                                              | Yes                          |

JE Job No: 14/12974

| Test Method No. | Description                                                                                                                                                                                                                                           | Prep Method No. (if appropriate) | Description                                                                                                                                                                                                                                                        | UKAS | MCERTS (soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------|-------------------------------------------------|------------------------------|
| TM38            | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1                                                                                                               | PM0                              | No preparation is required.                                                                                                                                                                                                                                        |      |                     | AR                                              | Yes                          |
| TM38            | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1                                                                                                               | PM0                              | No preparation is required.                                                                                                                                                                                                                                        | Yes  |                     | AR                                              | Yes                          |
| TM38            | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1                                                                                                               | PM20                             | Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker. | Yes  | Yes                 | AD                                              | Yes                          |
| TM38            | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1                                                                                                               | PM20                             | Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker. | Yes  |                     | AR                                              | Yes                          |
| TM38            | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1                                                                                                               | PM60                             | As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.                                                                                                                                                                     | Yes  | Yes                 | AR                                              | Yes                          |
| TM60            | Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO <sub>2</sub> and then passed through a non-dispersive infrared gas analyser (NDIR). | PM0                              | No preparation is required.                                                                                                                                                                                                                                        |      |                     | AR                                              | Yes                          |
| TM65            | Asbestos Bulk Identification method based on HSG 248.                                                                                                                                                                                                 | PM42                             | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.                                                                                                                                               |      |                     | AR                                              |                              |
| TM65            | Asbestos Bulk Identification method based on HSG 248.                                                                                                                                                                                                 | PM42                             | Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.                                                                                                                                               | Yes  |                     | AR                                              |                              |
| TM73            | Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.                                                                                                                                                     | PM0                              | No preparation is required.                                                                                                                                                                                                                                        |      |                     | AR                                              | Yes                          |
| TM73            | Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.                                                                                                                                                     | PM11                             | Extraction of as received solid samples using one part solid to 2.5 parts deionised water.                                                                                                                                                                         | Yes  | Yes                 | AR                                              | No                           |

JE Job No: 14/12974

| Test Method No. | Description                                                                          | Prep Method No. (if appropriate) | Description                                                                                                                                                                                                                                                                                                                      | UKAS | MCERTS (soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|--------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------|-------------------------------------------------|------------------------------|
| TM89            | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. | PM0                              | No preparation is required.                                                                                                                                                                                                                                                                                                      | Yes  |                     | AR                                              | Yes                          |
| TM89            | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. | PM45                             | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.                                                                                                                                                                                                                     |      |                     | AR                                              | Yes                          |
| TM89            | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. | PM45                             | As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.                                                                                                                                                                                                                     | Yes  | Yes                 | AR                                              | Yes                          |
| NONE            | No Method Code                                                                       | NONE                             | No Method Code                                                                                                                                                                                                                                                                                                                   |      |                     | AR                                              | Yes                          |
| NONE            | No Method Code                                                                       | PM18                             | Modified method EN 12457-3. As received solid samples are leached with water in a 2:1 water to solid ratio for 6 hours, the same aliquot of solid is then re-leached with water in an 8:1 water to solid ratio for 18 hours, the moisture content of the sample is included in the ratio. This preparation produces two eluates. |      |                     | AR                                              | Yes                          |
| NONE            | No Method Code                                                                       | PM4                              | Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.                                                                                                                                                                                   |      |                     | AR                                              |                              |
|                 |                                                                                      |                                  |                                                                                                                                                                                                                                                                                                                                  |      |                     |                                                 |                              |
|                 |                                                                                      |                                  |                                                                                                                                                                                                                                                                                                                                  |      |                     |                                                 |                              |
|                 |                                                                                      |                                  |                                                                                                                                                                                                                                                                                                                                  |      |                     |                                                 |                              |
|                 |                                                                                      |                                  |                                                                                                                                                                                                                                                                                                                                  |      |                     |                                                 |                              |



## Certificate of Analysis

Certificate Number 16-81374

25-Oct-16

*Client* SOLMEK  
12 Yarm Road  
Stockton On Tees  
Cleveland  
TS18 3NA

*Our Reference* 16-81374

*Client Reference* S160937

*Order No* SOL-701

*Contract Title* Dean Trust, Manchester

*Description* 3 Soil samples.

*Date Received* 18-Oct-16

*Date Started* 18-Oct-16

*Date Completed* 25-Oct-16

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

*Notes* Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

*Approved By*

Rob Brown  
Business Manager



# Summary of Chemical Analysis

## Soil Samples

Our Ref 16-81374

Client Ref S160937

Contract Title Dean Trust, Manchester

|               |           |           |           |
|---------------|-----------|-----------|-----------|
| Lab No        | 1069025   | 1069026   | 1069027   |
| Sample ID     | BH1       | BH2       | BH4       |
| Depth         | 0.70-0.80 | 0.70-0.80 | 0.70-0.80 |
| Other ID      |           |           |           |
| Sample Type   | SOIL      | SOIL      | SOIL      |
| Sampling Date | 11/10/16  | 11/10/16  | 11/10/16  |
| Sampling Time | n/s       | n/s       | n/s       |

| Test                            | Method      | LOD  | Units |        |        |       |
|---------------------------------|-------------|------|-------|--------|--------|-------|
| <b>Metals</b>                   |             |      |       |        |        |       |
| Antimony                        | DETSC 2301* | 1    | mg/kg | 2.7    | 15     | 3.0   |
| Arsenic                         | DETSC 2301# | 0.2  | mg/kg | 20     | 13     | 17    |
| Boron, Water Soluble            | DETSC 2123# | 0.2  | mg/kg | 1.0    | 1.6    | 0.7   |
| Cadmium                         | DETSC 2301# | 0.1  | mg/kg | 0.6    | 0.3    | 0.9   |
| Chromium                        | DETSC 2301# | 0.15 | mg/kg | 41     | 21     | 37    |
| Copper                          | DETSC 2301# | 0.2  | mg/kg | 83     | 38     | 100   |
| Lead                            | DETSC 2301# | 0.3  | mg/kg | 190    | 210    | 250   |
| Mercury                         | DETSC 2325# | 0.05 | mg/kg | 0.46   | 0.20   | 0.41  |
| Molybdenum                      | DETSC 2301# | 0.4  | mg/kg | 2.8    | 1.7    | 2.8   |
| Nickel                          | DETSC 2301# | 1    | mg/kg | 27     | 17     | 25    |
| Selenium                        | DETSC 2301# | 0.5  | mg/kg | < 0.5  | < 0.5  | < 0.5 |
| Zinc                            | DETSC 2301# | 1    | mg/kg | 150    | 92     | 270   |
| <b>Inorganics</b>               |             |      |       |        |        |       |
| pH                              | DETSC 2008# |      |       | 8.7    | 8.3    | 8.8   |
| Cyanide, Total                  | DETSC 2130# | 0.1  | mg/kg | 0.2    | 0.3    | 0.4   |
| Organic matter                  | DETSC 2002# | 0.1  | %     | 2.6    | 2.1    |       |
| Sulphate Aqueous Extract as SO4 | DETSC 2076# | 10   | mg/l  | 14     | 86     | 240   |
| <b>Petroleum Hydrocarbons</b>   |             |      |       |        |        |       |
| Aliphatic C5-C6                 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | 0.05   |       |
| Aliphatic C6-C8                 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | < 0.01 |       |
| Aliphatic C8-C10                | DETSC 3321* | 0.01 | mg/kg | < 0.01 | 0.03   |       |
| Aliphatic C10-C12               | DETSC 3072# | 1.5  | mg/kg | < 1.5  | < 1.5  |       |
| Aliphatic C12-C16               | DETSC 3072# | 1.2  | mg/kg | < 1.2  | < 1.2  |       |
| Aliphatic C16-C21               | DETSC 3072# | 1.5  | mg/kg | < 1.5  | < 1.5  |       |
| Aliphatic C21-C35               | DETSC 3072# | 3.4  | mg/kg | < 3.4  | < 3.4  |       |
| Aliphatic C5-C35                | DETSC 3072* | 10   | mg/kg | < 10   | < 10   |       |
| Aromatic C5-C7                  | DETSC 3321* | 0.01 | mg/kg | < 0.01 | 0.02   |       |
| Aromatic C7-C8                  | DETSC 3321* | 0.01 | mg/kg | < 0.01 | < 0.01 |       |
| Aromatic C8-C10                 | DETSC 3321* | 0.01 | mg/kg | < 0.01 | 0.01   |       |
| Aromatic C10-C12                | DETSC 3072# | 0.9  | mg/kg | < 0.9  | < 0.9  |       |
| Aromatic C12-C16                | DETSC 3072# | 0.5  | mg/kg | < 0.5  | < 0.5  |       |
| Aromatic C16-C21                | DETSC 3072# | 0.6  | mg/kg | 7.1    | 2.5    |       |
| Aromatic C21-C35                | DETSC 3072# | 1.4  | mg/kg | 12     | 9.3    |       |
| Aromatic C5-C35                 | DETSC 3072* | 10   | mg/kg | 19     | 12     |       |
| TPH Ali/Aro Total               | DETSC 3072* | 10   | mg/kg | 19     | 12     |       |
| <b>PAHs</b>                     |             |      |       |        |        |       |
| Naphthalene                     | DETSC 3301  | 0.1  | mg/kg | 0.4    | 0.2    |       |
| Acenaphthylene                  | DETSC 3301  | 0.1  | mg/kg | 0.2    | < 0.1  |       |
| Acenaphthene                    | DETSC 3301  | 0.1  | mg/kg | 0.9    | 0.7    |       |
| Fluorene                        | DETSC 3301  | 0.1  | mg/kg | 0.9    | 0.1    |       |
| Phenanthrene                    | DETSC 3301  | 0.1  | mg/kg | 5.4    | 3.2    |       |

## Summary of Chemical Analysis Soil Samples

Our Ref 16-81374

Client Ref S160937

Contract Title Dean Trust, Manchester

|               |           |           |           |
|---------------|-----------|-----------|-----------|
| Lab No        | 1069025   | 1069026   | 1069027   |
| Sample ID     | BH1       | BH2       | BH4       |
| Depth         | 0.70-0.80 | 0.70-0.80 | 0.70-0.80 |
| Other ID      |           |           |           |
| Sample Type   | SOIL      | SOIL      | SOIL      |
| Sampling Date | 11/10/16  | 11/10/16  | 11/10/16  |
| Sampling Time | n/s       | n/s       | n/s       |

| Test                    | Method      | LOD | Units |       |       |       |
|-------------------------|-------------|-----|-------|-------|-------|-------|
| Anthracene              | DETSC 3301  | 0.1 | mg/kg | 1.5   | 0.8   |       |
| Fluoranthene            | DETSC 3301  | 0.1 | mg/kg | 6.4   | 4.2   |       |
| Pyrene                  | DETSC 3301  | 0.1 | mg/kg | 5.7   | 4.0   |       |
| Benzo(a)anthracene      | DETSC 3301  | 0.1 | mg/kg | 2.7   | 1.8   |       |
| Chrysene                | DETSC 3301  | 0.1 | mg/kg | 2.7   | 1.7   |       |
| Benzo(b)fluoranthene    | DETSC 3301  | 0.1 | mg/kg | 1.9   | 1.4   |       |
| Benzo(k)fluoranthene    | DETSC 3301  | 0.1 | mg/kg | 1.1   | 0.7   |       |
| Benzo(a)pyrene          | DETSC 3301  | 0.1 | mg/kg | 2.4   | 1.7   |       |
| Indeno(1,2,3-c,d)pyrene | DETSC 3301  | 0.1 | mg/kg | 1.7   | 1.4   |       |
| Dibenzo(a,h)anthracene  | DETSC 3301  | 0.1 | mg/kg | 0.4   | 0.4   |       |
| Benzo(g,h,i)perylene    | DETSC 3301  | 0.1 | mg/kg | 1.6   | 1.0   |       |
| PAH Total               | DETSC 3301  | 1.6 | mg/kg | 36    | 23    |       |
| <b>Phenols</b>          |             |     |       |       |       |       |
| Phenol - Monohydric     | DETSC 2130# | 0.3 | mg/kg | < 0.3 | < 0.3 | < 0.3 |

## Summary of Asbestos Analysis

### Soil Samples

Our Ref 16-81374

Client Ref S160937

Contract Title Dean Trust, Manchester

| Lab No  | Sample ID     | Material Type | Result | Comment* | Analyst        |
|---------|---------------|---------------|--------|----------|----------------|
| 1069025 | BH1 0.70-0.80 | SOIL          | NAD    | none     | Steven Lambert |
| 1069026 | BH2 0.70-0.80 | SOIL          | NAD    | none     | Steven Lambert |
| 1069027 | BH4 0.70-0.80 | SOIL          | NAD    | none     | Steven Lambert |

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

## **APPENDIX D**

### **Geotechnical Testing Results**



# Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point  
Zone 3  
Deeside Industrial Park  
Deeside  
CH5 2UA

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

Tel: +44 (0) 1244 833780  
Fax: +44 (0) 1244 833781



**Attention :** John Knowles  
**Date :** 28th November, 2014  
**Your reference :** PN143260  
**Our reference :** Test Report 14/12974 Batch 8  
**Location :** Daisy Mill  
**Date samples received :** 18th November, 2014  
**Status :** Final report  
**Issue :** 1

Eight samples were received for analysis on 18th November, 2014 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied. ☐  
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

## Compiled By:

**Simon Gomery BSc**  
**Project Manager**

**Bob Millward BSc FRSC**  
**Principal Chemist**



Please see attached notes for all abbreviations and acronyms

[illegible]

4 of 8

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/12974

### SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

### WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

### DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

### DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

**ABBREVIATIONS and ACRONYMS USED**

|         |                                                                                                            |
|---------|------------------------------------------------------------------------------------------------------------|
| #       | UKAS accredited.                                                                                           |
| B       | Indicates analyte found in associated method blank.                                                        |
| DR      | Dilution required.                                                                                         |
| M       | MCERTS accredited.                                                                                         |
| NA      | Not applicable                                                                                             |
| NAD     | No Asbestos Detected.                                                                                      |
| ND      | None Detected (usually refers to VOC and/SVOC TICs).                                                       |
| NDP     | No Determination Possible                                                                                  |
| SS      | Calibrated against a single substance                                                                      |
| SV      | Surrogate recovery outside performance criteria. This may be due to a matrix effect.                       |
| W       | Results expressed on as received basis.                                                                    |
| +       | AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page. |
| ++      | Result outside calibration range, results should be considered as indicative only and are not accredited.  |
| *       | Analysis subcontracted to a Jones Environmental approved laboratory.                                       |
| AD      | Samples are dried at 35°C ±5°C                                                                             |
| CO      | Suspected carry over                                                                                       |
| LOD/LOR | Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS                                  |
| ME      | Matrix Effect                                                                                              |
| NFD     | No Fibres Detected                                                                                         |
| OC      | Outside Calibration Range                                                                                  |

JE Job No: 14/12974

| Test Method No. | Description                                                                                                                                                                                                                                                                                                                                         | Prep Method No. (if appropriate) | Description                                                                                                                  | UKAS | MCERTS (soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|------|---------------------|-------------------------------------------------|------------------------------|
| TM4             | Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.                                                                                                                                                                                                                                                        | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                        |      |                     |                                                 |                              |
| TM5             | Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.                                                                                                                                                                                           | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                        | Yes  |                     |                                                 |                              |
| TM5/TM36        | TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID.<br>TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. | PM30                             | Water samples are extracted with solvent using a magnetic stirrer to create a vortex.                                        | Yes  |                     |                                                 |                              |
| TM15            | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                                            | PM10                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                              |      |                     |                                                 |                              |
| TM15            | Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.                                                                                                                                                                                                                                            | PM10                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                              | Yes  |                     |                                                 |                              |
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7                                                                                                                                                                                                         | PM14                             | Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required. |      |                     |                                                 |                              |
| TM30            | Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7                                                                                                                                                                                                         | PM14                             | Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required. | Yes  |                     |                                                 |                              |
| TM36            | Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.                                                                                                                                                                                                                | PM12                             | Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.                              | Yes  |                     |                                                 |                              |
| TM38            | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1                                                                                                                                                                                                             | PM0                              | No preparation is required.                                                                                                  |      |                     |                                                 |                              |
| TM38            | Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1                                                                                                                                                                                                             | PM0                              | No preparation is required.                                                                                                  | Yes  |                     |                                                 |                              |

JE Job No: 14/12974

| Test Method No. | Description                                                                                       | Prep Method No. (if appropriate) | Description                 | UKAS | MCERTS (soils only) | Analysis done on As Received (AR) or Dried (AD) | Reported on dry weight basis |
|-----------------|---------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------|------|---------------------|-------------------------------------------------|------------------------------|
| TM73            | Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser. | PM0                              | No preparation is required. | Yes  |                     |                                                 |                              |
| TM89            | Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser.              | PM0                              | No preparation is required. | Yes  |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |
|                 |                                                                                                   |                                  |                             |      |                     |                                                 |                              |

## **APPENDIX E**

### **Monitoring Results**

# FIELDWORK – Water Level Monitoring

Project MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME - DAISY MILL

Project No PN143260

Client MANCHESTER CITY COUNCIL

Sheet No 1

| Borehole             |      | BH01       |       | BH02A      |       | BH03        |       | BH04       |       | BH05        |       | BH06       |       |
|----------------------|------|------------|-------|------------|-------|-------------|-------|------------|-------|-------------|-------|------------|-------|
| Instrument (dia. mm) |      | G (50mm)   |       | G (50mm)   |       | G (50mm)    |       | G (50mm)   |       | G (50mm)    |       | G (50mm)   |       |
| Depth to Base (m)    |      | 10.00      |       | 4.00       |       | 19.50       |       | 4.00       |       | 21.00       |       | 5.00       |       |
| Filter Zone (m)      |      | 2.00-10.00 |       | 1.00-4.00  |       | 17.50-19.50 |       | 1.00-4.00  |       | 18.00-21.45 |       | 1.00-5.00  |       |
| Level                |      | 48.40 m OD |       | 50.40 m OD |       | 48.07 m OD  |       | 50.14 m OD |       | 48.81 m OD  |       | 51.91 m OD |       |
| Date                 | Time | Depth (m)  | Level | Depth (m)  | Level | Depth (m)   | Level | Depth (m)  | Level | Depth (m)   | Level | Depth (m)  | Level |
| 17 Nov 2014          |      | 4.08       | 44.32 | 2.92       | 47.48 | 14.06       | 34.01 | 3.97       | 46.17 | 14.53       | 34.28 | 4.22       | 47.69 |
| 1 Dec 2014           |      | 3.46       | 44.94 | 2.85       | 47.55 | 14.15       | 33.92 | 3.20       | 46.94 | 14.62       | 34.19 | 4.22       | 47.69 |
| 18 Dec 2014          |      | 2.77       | 45.63 | 2.43       | 47.97 | 14.03       | 34.04 | 3.00       | 47.14 | 14.51       | 34.30 | 4.18       | 47.73 |
| 14 Jan 2015          |      | 2.28       | 46.12 | 2.43       | 47.97 | 14.03       | 34.04 | 3.07       | 47.07 | 14.47       | 34.34 | 4.23       | 47.68 |
| 4 Feb 2015           |      | 2.10       | 46.30 | 2.45       | 47.95 | 14.20       | 33.87 | 3.08       | 47.06 | 14.70       | 34.11 | 4.23       | 47.68 |
| 11 Feb 2015          |      | 2.09       | 46.31 | 2.57       | 47.83 | 14.20       | 33.87 | 3.08       | 47.06 | 14.68       | 34.13 | 4.22       | 47.69 |

## Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.



# FIELDWORK – Water Level Monitoring

Project MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME - DAISY MILL

Project No PN143260

Client MANCHESTER CITY COUNCIL

Sheet No 2

| Borehole             |      | WS01       |       | WS02       |       | WS04B      |       | WS05       |       |           |       |           |       |
|----------------------|------|------------|-------|------------|-------|------------|-------|------------|-------|-----------|-------|-----------|-------|
| Instrument (dia. mm) |      | G (50mm)   |       | G (50mm)   |       | G (50mm)   |       | G (50mm)   |       |           |       |           |       |
| Depth to Base (m)    |      | 3.50       |       | 5.00       |       | 1.20       |       | 1.50       |       |           |       |           |       |
| Filter Zone (m)      |      | 0.50-3.60  |       | 2.00-5.00  |       | 0.50-1.20  |       | 0.50-1.50  |       |           |       |           |       |
| Level                |      | 47.84 m OD |       | 48.65 m OD |       | 49.08 m OD |       | 49.85 m OD |       |           |       |           |       |
| Date                 | Time | Depth (m)  | Level | Depth (m)  | Level | Depth (m)  | Level | Depth (m)  | Level | Depth (m) | Level | Depth (m) | Level |
| 17 Nov 2014          |      | 0.75       | 47.09 | 1.47       | 47.18 | 0.98       | 48.10 | 0.87       | 48.98 |           |       |           |       |
| 1 Dec 2014           |      | 0.92       | 46.92 | 1.33       | 47.32 | 0.96       | 48.12 | 0.90       | 48.95 |           |       |           |       |
| 18 Dec 2014          |      | 0.18       | 47.66 | 1.13       | 47.52 | 0.99       | 48.09 | 0.82       | 49.03 |           |       |           |       |
| 14 Jan 2015          |      | 0.74       | 47.10 | 1.38       | 47.27 | 0.90       | 48.18 | 0.86       | 48.99 |           |       |           |       |
| 4 Feb 2015           |      | 0.84       | 47.00 | 1.31       | 47.34 | 0.90       | 48.18 | 0.90       | 48.95 |           |       |           |       |
| 11 Feb 2015          |      | 0.90       | 46.94 | 1.33       | 47.32 | 0.92       | 48.16 | 0.90       | 48.95 |           |       |           |       |

## Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.



# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 17/11/2014  
**Sheet No.** 1 (1 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☐

Light ☐

Moderate ☒

Strong ☐

**Cloud Cover**

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

**Precipitation**

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Free Product Thickness<br>(mm) | Water Sample Taken<br>(Yes/No) | Methane<br>CH4<br>(% VOL) | Methane<br>CH4<br>(% LEL) | Carbon Dioxide<br>CO2<br>(% VOL) | Remarks                       |
|----------|----------------------|---------------------------|-------------------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|----------------------------------|-------------------------------|
| BH01     | 10.00                | 4.08                      | 10.20                         |                                | Yes                            | 0.0                       | 0.0                       | 1.5                              |                               |
| BH02A    | 4.00                 | 2.92                      | 4.00                          |                                | Yes                            | 0.0                       | 0.0                       | 4.5                              |                               |
| BH03     | 19.50                | 14.06                     | 18.80                         |                                | Yes                            | 0.0                       | 0.0                       | 5.2                              |                               |
| BH04     | 4.00                 | 3.97                      | 4.08                          |                                | No                             | 0.0                       | 0.0                       | 4.4                              | Insufficient water to sample. |
| BH05     | 21.00                | 14.53                     | 19.66                         |                                | Yes                            | 0.0                       | 0.0                       | 1.5                              |                               |
| BH06     | 5.00                 | 4.22                      | 5.05                          |                                | Yes                            | 0.0                       | 0.0                       | 0.9                              |                               |
| WS01     | 3.50                 | 0.75                      | 3.58                          |                                | Yes                            | 0.0                       | 0.0                       | 0.1                              |                               |
| WS02     | 5.00                 | 1.47                      | 4.91                          |                                | Yes                            | 0.0                       | 0.0                       | 0.6                              |                               |
| WS04B    | 1.20                 | 0.98                      | 1.11                          |                                | No                             | 0.0                       | 0.0                       | 0.2                              | Insufficient water to sample. |
| WS05     | 1.50                 | 0.87                      | 1.58                          |                                | Yes                            | 0.0                       | 0.0                       | 0.3                              |                               |

**Remarks**

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 17/11/2014  
**Sheet No.** 1 (2 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other Gas Data LMSxi gas analyser;

## Weather / Site Conditions

Wind

Still ☐

Light ☐

Moderate ☒

Strong ☐

Cloud Cover

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

Precipitation

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Oxygen<br>O2<br>(% VOL) | Nitrogen<br>N2<br>(% VOL) | Hydrogen Sulphide<br>H2S<br>(ppm) | Carbon Monoxide<br>CO<br>(ppm) | Barometric Pressure<br>(mBars) | Flow Rate<br>(Peak)<br>(l/hr) | Flow Rate<br>(Steady)<br>(l/hr) | Remarks                       |
|----------|----------------------|-------------------------|---------------------------|-----------------------------------|--------------------------------|--------------------------------|-------------------------------|---------------------------------|-------------------------------|
| BH01     | 10.00                | 18.8                    | 79.6                      | 0                                 | 0                              | 982                            | 0.1                           | 0.0                             |                               |
| BH02A    | 4.00                 | 14.7                    | 80.7                      | 0                                 | 0                              | 982                            | 0.0                           | 0.0                             |                               |
| BH03     | 19.50                | 1.1                     | 93.6                      | 0                                 | 1.2                            | 982                            | 7.0                           | 1.5                             |                               |
| BH04     | 4.00                 | 14.7                    | 80.8                      | 0                                 | 0                              | 982                            | -0.2                          | 0.0                             | Insufficient water to sample. |
| BH05     | 21.00                | 15.0                    | 83.4                      | 0                                 | 2.1                            | 982                            | -0.3                          | 0.0                             |                               |
| BH06     | 5.00                 | 17.1                    | 82.0                      | 0                                 | 0                              | 982                            | 0.0                           | 0.0                             |                               |
| WS01     | 3.50                 | 21.4                    | 78.4                      | 0                                 | 0                              | 982                            | 0.0                           | 0.0                             |                               |
| WS02     | 5.00                 | 20.3                    | 79.0                      | 0                                 | 0                              | 982                            | 0.0                           | 0.0                             |                               |
| WS04B    | 1.20                 | 20.9                    | 78.8                      | 0                                 | 0                              | 982                            | 0.0                           | 0.0                             | Insufficient water to sample. |
| WS05     | 1.50                 | 20.9                    | 78.7                      | 0                                 | 0                              | 982                            | 0.0                           | 0.0                             |                               |

Remarks

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 17/11/2014  
**Sheet No.** 1 (3 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☐

Light ☐

Moderate ☒

Strong ☐

**Cloud Cover**

None ☐

Slight ☒

Cloudy ☐

Overcast ☐

**Precipitation**

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Wind<br>( ) | Cloud<br>( ) | Rain<br>( ) | Equipment Used<br>( ) | Monitored by<br>( ) | Remarks                       |
|----------|----------------------|-------------|--------------|-------------|-----------------------|---------------------|-------------------------------|
| BH01     | 10.00                | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  |                               |
| BH02A    | 4.00                 | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  |                               |
| BH03     | 19.50                | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  |                               |
| BH04     | 4.00                 | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  | Insufficient water to sample. |
| BH05     | 21.00                | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  |                               |
| BH06     | 5.00                 | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  |                               |
| WS01     | 3.50                 | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  |                               |
| WS02     | 5.00                 | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  |                               |
| WS04B    | 1.20                 | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  | Insufficient water to sample. |
| WS05     | 1.50                 | Moderate    | Slight       | Dry         | Gas Data LMS          | PB                  |                               |

**Remarks**

**geotechnics**



# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 01/12/2014  
**Sheet No.** 1 (2 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

Other Gas Data LMSxi gas analyser;

## Weather / Site Conditions

Wind

Still ☒

Light ☐

Moderate ☐

Strong ☐

Cloud Cover

None ☐

Slight ☐

Cloudy ☐

Overcast ☒

Precipitation

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Oxygen<br>O2<br>(% VOL) | Nitrogen<br>N2<br>(% VOL) | Hydrogen Sulphide<br>H2S<br>(ppm) | Carbon Monoxide<br>CO<br>(ppm) | Barometric Pressure<br>(mBars) | Flow Rate<br>(Peak)<br>(l/hr) | Flow Rate<br>(Steady)<br>(l/hr) | Remarks |
|----------|----------------------|-------------------------|---------------------------|-----------------------------------|--------------------------------|--------------------------------|-------------------------------|---------------------------------|---------|
| BH01     | 10.00                | 20.1                    | 79.5                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |
| BH02A    | 4.00                 | 12.5                    | 83.6                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |
| BH03     | 19.50                | 6.3                     | 89.6                      | 0                                 | 0                              | 1010                           | 17.3                          | 3.5                             |         |
| BH04     | 4.00                 | 17.7                    | 79.9                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |
| BH05     | 21.00                | 20.8                    | 79.1                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |
| BH06     | 5.00                 | 19.5                    | 80.0                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |
| WS01     | 3.50                 | 19.9                    | 79.6                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |
| WS02     | 5.00                 | 20.4                    | 79.4                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |
| WS04B    | 1.20                 | 20.8                    | 79.1                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |
| WS05     | 1.50                 | 20.5                    | 79.2                      | 0                                 | 0                              | 1010                           | 0.0                           | 0.0                             |         |

Remarks



# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 01/12/2014  
**Sheet No.** 1 (3 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☒

Light ☐

Moderate ☐

Strong ☐

**Cloud Cover**

None ☐

Slight ☐

Cloudy ☐

Overcast ☒

**Precipitation**

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Wind<br>( ) | Cloud<br>( ) | Rain<br>( ) | Equipment Used<br>( ) | Monitored by<br>( ) | Remarks |
|----------|----------------------|-------------|--------------|-------------|-----------------------|---------------------|---------|
| BH01     | 10.00                | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH02A    | 4.00                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH03     | 19.50                | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH04     | 4.00                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH05     | 21.00                | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH06     | 5.00                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| WS01     | 3.50                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| WS02     | 5.00                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| WS04B    | 1.20                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| WS05     | 1.50                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |

**Remarks**

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 18/12/2014  
**Sheet No.** 1 (1 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☐

Light ☐

Moderate ☒

Strong ☐

**Cloud Cover**

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

**Precipitation**

Dry ☐

Slight ☐

Moderate ☒

Heavy ☐

| Borehole | Depth to Base<br>(m) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Free Product Thickness<br>(mm) | Water Sample Taken<br>(Yes/No) | Methane<br>CH4<br>(% VOL) | Methane<br>CH4<br>(% LEL) | Carbon Dioxide<br>CO2<br>(% VOL) | Remarks                       |
|----------|----------------------|---------------------------|-------------------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|----------------------------------|-------------------------------|
| BH01     | 10.00                | 2.77                      | 9.60                          | None                           | Yes                            | 0.0                       | 0.0                       | 1.9                              |                               |
| BH02A    | 4.00                 | 2.43                      | 4.00                          | None                           | Yes                            | 0.0                       | 0.0                       | 9.2                              |                               |
| BH03     | 19.50                | 14.03                     | 18.45                         | None                           | Yes                            | 0.0                       | 0.0                       | 4.5                              |                               |
| BH04     | 4.00                 | 3.00                      | 4.08                          | None                           | Yes                            | 0.0                       | 0.0                       | 3.8                              |                               |
| BH05     | 21.00                | 14.51                     | 19.57                         | None                           | Yes                            | 0.0                       | 0.0                       | 0.0                              |                               |
| BH06     | 5.00                 | 4.18                      | 5.05                          | None                           | Yes                            | 0.0                       | 0.0                       | 0.0                              |                               |
| WS01     | 3.50                 | 0.18                      | 3.58                          | None                           | Yes                            |                           |                           |                                  | No air gap.                   |
| WS02     | 5.00                 | 1.13                      | 4.91                          | None                           | Yes                            | 0.0                       | 0.0                       | 0.1                              |                               |
| WS04B    | 1.20                 | 0.99                      | 1.12                          | None                           | No                             | 0.0                       | 0.0                       | 0.7                              | Insufficient water to sample. |
| WS05     | 1.50                 | 0.82                      | 1.58                          | Film                           | Yes                            | 0.0                       | 0.0                       | 0.0                              |                               |

**Remarks**

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 18/12/2014  
**Sheet No.** 1 (2 of 3)

**Client** MANCHESTER CITY COUNCIL

| Equipment Used                     |                      |                                |                           |                                   |                                |                                              |                               |                                   |                                                  |
|------------------------------------|----------------------|--------------------------------|---------------------------|-----------------------------------|--------------------------------|----------------------------------------------|-------------------------------|-----------------------------------|--------------------------------------------------|
| GI Infra Red Gas Analyser          |                      | MK1 <input type="checkbox"/>   |                           | MK2 <input type="checkbox"/>      |                                | GA2000 <input type="checkbox"/>              |                               |                                   |                                                  |
| Other Gas Data LMSxi gas analyser; |                      |                                |                           |                                   |                                |                                              |                               |                                   |                                                  |
| Weather / Site Conditions          |                      |                                |                           |                                   |                                |                                              |                               |                                   |                                                  |
| Wind                               |                      | Still <input type="checkbox"/> |                           | Light <input type="checkbox"/>    |                                | Moderate <input checked="" type="checkbox"/> |                               | Strong <input type="checkbox"/>   |                                                  |
| Cloud Cover                        |                      | None <input type="checkbox"/>  |                           | Slight <input type="checkbox"/>   |                                | Cloudy <input checked="" type="checkbox"/>   |                               | Overcast <input type="checkbox"/> |                                                  |
| Precipitation                      |                      | Dry <input type="checkbox"/>   |                           | Slight <input type="checkbox"/>   |                                | Moderate <input checked="" type="checkbox"/> |                               | Heavy <input type="checkbox"/>    |                                                  |
| Borehole                           | Depth to Base<br>(m) | Oxygen<br>O2<br>(% VOL)        | Nitrogen<br>N2<br>(% VOL) | Hydrogen Sulphide<br>H2S<br>(ppm) | Carbon Monoxide<br>CO<br>(ppm) | Barometric Pressure<br>(mBars)               | Flow Rate<br>(Peak)<br>(l/hr) | Flow Rate<br>(Steady)<br>(l/hr)   | Remarks                                          |
| BH01                               | 10.00                | 19.0                           | 79.0                      | 0                                 | 0                              | 999                                          | 0.0                           | 0.0                               | No air gap.<br><br>Insufficient water to sample. |
| BH02A                              | 4.00                 | 1.3                            | 89.4                      | 0                                 | 0                              | 999                                          | -0.1                          | 0.0                               |                                                  |
| BH03                               | 19.50                | 4.9                            | 90.5                      | 0                                 | 0                              | 999                                          | 25.6                          | 10.5                              |                                                  |
| BH04                               | 4.00                 | 14.7                           | 81.4                      | 0                                 | 0                              | 999                                          | 0.0                           | 0.0                               |                                                  |
| BH05                               | 21.00                | 21.1                           | 78.8                      | 0                                 | 0                              | 999                                          | 0.4                           | 0.2                               |                                                  |
| BH06                               | 5.00                 | 20.7                           | 79.2                      | 0                                 | 0                              | 999                                          | -2.7                          | 0.6                               |                                                  |
| WS01                               | 3.50                 |                                |                           |                                   |                                | 999                                          |                               |                                   |                                                  |
| WS02                               | 5.00                 | 20.2                           | 79.6                      | 0                                 | 0                              | 999                                          | 0.0                           | 0.0                               |                                                  |
| WS04B                              | 1.20                 | 20.9                           | 78.3                      | 0                                 | 0                              | 999                                          | -0.5                          | -0.2                              |                                                  |
| WS05                               | 1.50                 | 21.4                           | 78.5                      | 0                                 | 0                              | 999                                          | 0.0                           | 0.0                               |                                                  |
| Remarks                            |                      |                                |                           |                                   |                                |                                              |                               |                                   |                                                  |

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 18/12/2014  
**Sheet No.** 1 (3 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☐

Light ☐

Moderate ☒

Strong ☐

**Cloud Cover**

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

**Precipitation**

Dry ☐

Slight ☐

Moderate ☒

Heavy ☐

| Borehole | Depth to Base<br>(m) | Wind<br>( ) | Cloud<br>( ) | Rain<br>( ) | Equipment Used<br>( ) | Monitored by<br>( ) | Remarks                                          |
|----------|----------------------|-------------|--------------|-------------|-----------------------|---------------------|--------------------------------------------------|
| BH01     | 10.00                | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  | No air gap.<br><br>Insufficient water to sample. |
| BH02A    | 4.00                 | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |
| BH03     | 19.50                | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |
| BH04     | 4.00                 | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |
| BH05     | 21.00                | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |
| BH06     | 5.00                 | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |
| WS01     | 3.50                 | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |
| WS02     | 5.00                 | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |
| WS04B    | 1.20                 | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |
| WS05     | 1.50                 | Moderate    | Cloudy       | Moderate    | Gas Data LMS          | PB                  |                                                  |

**Remarks**



# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 14/01/2015  
**Sheet No.** 1 (1 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other Gas Data LMSxi gas analyser;

## Weather / Site Conditions

Wind Still ☐ Light ☒ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☒ Overcast ☐

Precipitation Dry ☒ Slight ☐ Moderate ☐ Heavy ☐

| Borehole | Depth to Base<br>(m) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Free Product Thickness<br>(mm) | Water Sample Taken<br>(Yes/No) | Methane<br>CH4<br>(% VOL) | Methane<br>CH4<br>(% LEL) | Carbon Dioxide<br>CO2<br>(% VOL) | Remarks |
|----------|----------------------|---------------------------|-------------------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|----------------------------------|---------|
| BH01     | 10.00                | 2.28                      | 10.16                         |                                | No                             | 0.0                       | 0.0                       | 0.2                              |         |
| BH02A    | 4.00                 | 2.43                      | 4.00                          |                                | No                             | 0.0                       | 0.0                       | 1.5                              |         |
| BH03     | 19.50                | 14.03                     | 18.25                         |                                | No                             | 0.0                       | 0.0                       | 3.0                              |         |
| BH04     | 4.00                 | 3.07                      | 4.09                          |                                | No                             | 0.0                       | 0.0                       | 3.4                              |         |
| BH05     | 21.00                | 14.47                     | 19.56                         |                                | No                             | 0.0                       | 0.0                       | 0.3                              |         |
| BH06     | 5.00                 | 4.23                      | 5.05                          |                                | No                             | 0.0                       | 0.0                       | 1.1                              |         |
| WS01     | 3.50                 | 0.74                      | 3.58                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| WS02     | 5.00                 | 1.38                      | 4.39                          |                                | No                             | 0.0                       | 0.0                       | 0.1                              |         |
| WS04B    | 1.20                 | 0.90                      | 1.12                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| WS05     | 1.50                 | 0.86                      | 1.58                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |

Remarks





# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 14/01/2015  
**Sheet No.** 1 (3 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☐

Light ☒

Moderate ☐

Strong ☐

**Cloud Cover**

None ☐

Slight ☐

Cloudy ☒

Overcast ☐

**Precipitation**

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Wind<br>( ) | Cloud<br>( ) | Rain<br>( ) | Equipment Used<br>( ) | Monitored by<br>( ) | Remarks |
|----------|----------------------|-------------|--------------|-------------|-----------------------|---------------------|---------|
| BH01     | 10.00                | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| BH02A    | 4.00                 | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| BH03     | 19.50                | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| BH04     | 4.00                 | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| BH05     | 21.00                | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| BH06     | 5.00                 | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| WS01     | 3.50                 | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| WS02     | 5.00                 | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| WS04B    | 1.20                 | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |
| WS05     | 1.50                 | Light       | Cloudy       | Dry         | Gas Data LMS          | PB                  |         |

**Remarks**

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 04/02/2015  
**Sheet No.** 1 (1 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☒

Light ☐

Moderate ☐

Strong ☐

**Cloud Cover**

None ☒

Slight ☐

Cloudy ☐

Overcast ☐

**Precipitation**

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Free Product Thickness<br>(mm) | Water Sample Taken<br>(Yes/No) | Methane<br>CH4<br>(% VOL) | Methane<br>CH4<br>(% LEL) | Carbon Dioxide<br>CO2<br>(% VOL) | Remarks |
|----------|----------------------|---------------------------|-------------------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|----------------------------------|---------|
| BH01     | 10.00                | 2.10                      | 10.16                         |                                | No                             | 0.0                       | 0.0                       | 0.1                              |         |
| BH02A    | 4.00                 | 2.45                      | 4.00                          |                                | No                             | 0.0                       | 0.0                       | 2.3                              |         |
| BH03     | 19.50                | 14.20                     | 18.25                         |                                | No                             | 0.0                       | 0.0                       | 2.5                              |         |
| BH04     | 4.00                 | 3.08                      | 4.09                          |                                | No                             | 0.0                       | 0.0                       | 3.7                              |         |
| BH05     | 21.00                | 14.70                     | 19.56                         |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| BH06     | 5.00                 | 4.23                      | 5.05                          |                                | No                             | 0.0                       | 0.0                       | 2.9                              |         |
| WS01     | 3.50                 | 0.84                      | 3.58                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| WS02     | 5.00                 | 1.31                      | 4.39                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| WS04B    | 1.20                 | 0.90                      | 1.12                          |                                | No                             | 0.0                       | 0.0                       | 0.2                              |         |
| WS05     | 1.50                 | 0.90                      | 1.58                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |

**Remarks**

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 04/02/2015  
**Sheet No.** 1 (2 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☒

Light ☐

Moderate ☐

Strong ☐

**Cloud Cover**

None ☒

Slight ☐

Cloudy ☐

Overcast ☐

**Precipitation**

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Oxygen<br>O2<br>(% VOL) | Nitrogen<br>N2<br>(% VOL) | Hydrogen Sulphide<br>H2S<br>(ppm) | Carbon Monoxide<br>CO<br>(ppm) | Barometric Pressure<br>(mBars) | Flow Rate<br>(Peak)<br>(l/hr) | Flow Rate<br>(Steady)<br>(l/hr) | Remarks |
|----------|----------------------|-------------------------|---------------------------|-----------------------------------|--------------------------------|--------------------------------|-------------------------------|---------------------------------|---------|
| BH01     | 10.00                | 20.8                    | 79.0                      | 0                                 | 0                              | 1020                           | 0.0                           | 0.0                             |         |
| BH02A    | 4.00                 | 17.3                    | 80.3                      | 0                                 | 0                              | 1020                           | 0.7                           | 0.6                             |         |
| BH03     | 19.50                | 14.2                    | 83.2                      | 0                                 | 0                              | 1020                           | 0.0                           | 0.0                             |         |
| BH04     | 4.00                 | 14.5                    | 81.7                      | 0                                 | 0                              | 1020                           | 0.4                           | 0.3                             |         |
| BH05     | 21.00                | 21.1                    | 78.8                      | 0                                 | 0                              | 1020                           | 0.3                           | 0.0                             |         |
| BH06     | 5.00                 | 17.6                    | 79.4                      | 0                                 | 0                              | 1020                           | 0.0                           | 0.0                             |         |
| WS01     | 3.50                 | 21.3                    | 78.6                      | 0                                 | 0                              | 1020                           | 0.1                           | 0.0                             |         |
| WS02     | 5.00                 | 21.0                    | 78.9                      | 0                                 | 0                              | 1020                           | 0.0                           | 0.0                             |         |
| WS04B    | 1.20                 | 19.9                    | 79.8                      | 0                                 | 0                              | 1020                           | 0.0                           | 0.0                             |         |
| WS05     | 1.50                 | 21.0                    | 78.9                      | 0                                 | 0                              | 1020                           | 0.0                           | 0.0                             |         |

**Remarks**



# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 04/02/2015  
**Sheet No.** 1 (3 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☒

Light ☐

Moderate ☐

Strong ☐

**Cloud Cover**

None ☒

Slight ☐

Cloudy ☐

Overcast ☐

**Precipitation**

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Wind<br>( ) | Cloud<br>( ) | Rain<br>( ) | Equipment Used<br>( ) | Monitored by<br>( ) | Remarks |
|----------|----------------------|-------------|--------------|-------------|-----------------------|---------------------|---------|
| BH01     | 10.00                | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |
| BH02A    | 4.00                 | Still       | Slight       | Dry         | Gas Data LMS          | PB                  |         |
| BH03     | 19.50                | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |
| BH04     | 4.00                 | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |
| BH05     | 21.00                | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |
| BH06     | 5.00                 | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |
| WS01     | 3.50                 | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |
| WS02     | 5.00                 | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |
| WS04B    | 1.20                 | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |
| WS05     | 1.50                 | Still       | None         | Dry         | Gas Data LMS          | PB                  |         |

**Remarks**

**geotechnics**

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 11/02/2015  
**Sheet No.** 1 (1 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser MK1 ☐ MK2 ☐ GA2000 ☐

Other Gas Data LMSxi gas analyser;

## Weather / Site Conditions

Wind Still ☒ Light ☐ Moderate ☐ Strong ☐

Cloud Cover None ☐ Slight ☐ Cloudy ☐ Overcast ☒

Precipitation Dry ☒ Slight ☐ Moderate ☐ Heavy ☐

| Borehole | Depth to Base<br>(m) | Depth to Water<br>(m bgl) | Current Hole Depth<br>(m bgl) | Free Product Thickness<br>(mm) | Water Sample Taken<br>(Yes/No) | Methane<br>CH4<br>(% VOL) | Methane<br>CH4<br>(% LEL) | Carbon Dioxide<br>CO2<br>(% VOL) | Remarks |
|----------|----------------------|---------------------------|-------------------------------|--------------------------------|--------------------------------|---------------------------|---------------------------|----------------------------------|---------|
| BH01     | 10.00                | 2.09                      | 10.16                         |                                | No                             | 0.0                       | 0.0                       | 0.3                              |         |
| BH02A    | 4.00                 | 2.57                      | 4.00                          |                                | No                             | 0.0                       | 0.0                       | 2.8                              |         |
| BH03     | 19.50                | 14.20                     | 18.25                         |                                | No                             | 0.0                       | 0.0                       | 2.2                              |         |
| BH04     | 4.00                 | 3.08                      | 4.09                          |                                | No                             | 0.0                       | 0.0                       | 3.1                              |         |
| BH05     | 21.00                | 14.68                     | 19.56                         |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| BH06     | 5.00                 | 4.22                      | 5.05                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| WS01     | 3.50                 | 0.90                      | 3.58                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| WS02     | 5.00                 | 1.33                      | 4.39                          |                                | No                             | 0.0                       | 0.0                       | 0.2                              |         |
| WS04B    | 1.20                 | 0.92                      | 1.12                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |
| WS05     | 1.50                 | 0.90                      | 1.58                          |                                | No                             | 0.0                       | 0.0                       | 0.0                              |         |

Remarks



**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 11/02/2015  
**Sheet No.** 1 (2 of 3)

### Equipment Used

## GI Infra Red Gas Analyser

MK1 ☐MK2 ☐GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Wind

Still ☒

**Light** ☐

Moderate ☐

**Strong** ☐

### Cloud Cover

None ☐

**Slight** 

Cloudy

Overcast 

|   |
|---|
| x |
|---|

## Precipitation

**Dry** ☒

**Slight** ☐

Moderate ☐

**Heavy** ☐

### Remarks

# FIELDWORK - Insitu Gas Monitoring - Daily Record

**Project** MANCHESTER SCHOOLS BASIC NEEDS PROGRAMME -  
DAISY MILL

**Project No** PN143260  
**Date** 11/02/2015  
**Sheet No.** 1 (3 of 3)

**Client** MANCHESTER CITY COUNCIL

## Equipment Used

GI Infra Red Gas Analyser

MK1 ☐

MK2 ☐

GA2000 ☐

**Other** Gas Data LMSxi gas analyser;

## Weather / Site Conditions

**Wind**

Still ☒

Light ☐

Moderate ☐

Strong ☐

**Cloud Cover**

None ☐

Slight ☐

Cloudy ☐

Overcast ☒

**Precipitation**

Dry ☒

Slight ☐

Moderate ☐

Heavy ☐

| Borehole | Depth to Base<br>(m) | Wind<br>( ) | Cloud<br>( ) | Rain<br>( ) | Equipment Used<br>( ) | Monitored by<br>( ) | Remarks |
|----------|----------------------|-------------|--------------|-------------|-----------------------|---------------------|---------|
| BH01     | 10.00                | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH02A    | 4.00                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH03     | 19.50                | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH04     | 4.00                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH05     | 21.00                | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| BH06     | 5.00                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| WS01     | 3.50                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| WS02     | 5.00                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| WS04B    | 1.20                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |
| WS05     | 1.50                 | Still       | Overcast     | Dry         | Gas Data LMS          | PB                  |         |

**Remarks**

**geotechnics**



## GAS MONITORING RESULTS

|                |                            |
|----------------|----------------------------|
| Project number | S160937                    |
| Project name   | Dean Trust Ardwick Academy |
| Client         | Dean Trust Ardwick         |
| Visit no       | 1                          |
| Date           | 07/12/2016                 |
| Equipment      | GFM 435 Gas Analyser       |
| Operator       | SW                         |

|                              |          |
|------------------------------|----------|
| Weather Conditions           | Overcast |
| Ground Conditions            | Damp     |
| Ambient Atmospheric Pressure | 1020     |
| Regional Pressure Trend      | Falling  |

| Position | Flow | Pressure | CH <sub>4</sub> |            | CO <sub>2</sub> |            | O <sub>2</sub> (% v/v) | CO (ppm) | H <sub>2</sub> S (ppm) | Groundwater Level (mbgl) | Depth to Base (mbgl) | Notes |
|----------|------|----------|-----------------|------------|-----------------|------------|------------------------|----------|------------------------|--------------------------|----------------------|-------|
|          |      |          | (% v/v)         | GSV (l/hr) | (% v/v)         | GSV (l/hr) |                        |          |                        |                          |                      |       |
| BH2      | -0.5 | 1020     | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.3                   | *        | *                      | 3.22                     | 4.00                 |       |
| BH3      | 0.0  | 1020     | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.3                   | *        | *                      | 3.45                     | 4.00                 |       |
| BH4      | -0.2 | 1020     | 0.0             | 0.0000     | 0.4             | -0.0008    | 19.7                   | *        | *                      | 3.33                     | 4.00                 |       |

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

|                |                            |
|----------------|----------------------------|
| Project number | S160937                    |
| Project name   | Dean Trust Ardwick Academy |
| Client         | Dean Trust Ardwick         |
| Visit no       | 2                          |
| Date           | 05/01/2017                 |
| Equipment      | GFM 435 Gas Analyser       |
| Operator       | SW                         |

|                              |         |
|------------------------------|---------|
| Weather Conditions           | Bright  |
| Ground Conditions            | Damp    |
| Ambient Atmospheric Pressure | 1029    |
| Regional Pressure Trend      | Falling |

| Position | Flow | Pressure | CH <sub>4</sub> |            | CO <sub>2</sub> |            | O <sub>2</sub> (% v/v) | CO (ppm) | H <sub>2</sub> S (ppm) | Groundwater Level (mbgl) | Depth to Base (mbgl) | Notes |
|----------|------|----------|-----------------|------------|-----------------|------------|------------------------|----------|------------------------|--------------------------|----------------------|-------|
|          |      |          | (% v/v)         | GSV (l/hr) | (% v/v)         | GSV (l/hr) |                        |          |                        |                          |                      |       |
| BH2      | -1.6 | 1029     | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.3                   | *        | *                      | 1.92                     | 4.00                 |       |
| BH3      | -0.9 | 1029     | 0.0             | 0.0000     | 0.3             | -0.0027    | 19.7                   | *        | *                      | 2.22                     | 4.00                 |       |
| BH4      | -1.5 | 1029     | 0.0             | 0.0000     | 0.9             | -0.0135    | 18.8                   | *        | *                      | 1.85                     | 4.00                 |       |

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

|                |                            |
|----------------|----------------------------|
| Project number | S160937                    |
| Project name   | Dean Trust Ardwick Academy |
| Client         | Dean Trust Ardwick         |
| Visit no       | 3                          |
| Date           | 06/02/2017                 |
| Equipment      | GFM 435 Gas Analyser       |
| Operator       | SW                         |

|                              |          |
|------------------------------|----------|
| Weather Conditions           | Overcast |
| Ground Conditions            | Damp     |
| Ambient Atmospheric Pressure | 1013     |
| Regional Pressure Trend      | Rising   |

| Position | Flow | Pressure | CH <sub>4</sub> |            | CO <sub>2</sub> |            | O <sub>2</sub> (% v/v) | CO (ppm) | H <sub>2</sub> S (ppm) | Groundwater Level (mbgl) | Depth to Base (mbgl) | Notes |
|----------|------|----------|-----------------|------------|-----------------|------------|------------------------|----------|------------------------|--------------------------|----------------------|-------|
|          |      |          | (% v/v)         | GSV (l/hr) | (% v/v)         | GSV (l/hr) |                        |          |                        |                          |                      |       |
| BH2      | -0.2 | 1013     | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.3                   | *        | *                      | 1.67                     | 4.00                 |       |
| BH3      | -0.1 | 1013     | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.3                   | *        | *                      | 2.09                     | 4.00                 |       |
| BH4      | -0.1 | 1013     | 0.0             | 0.0000     | 0.3             | -0.0003    | 19.6                   | *        | *                      | 1.75                     | 4.00                 |       |

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

|                |                            |
|----------------|----------------------------|
| Project number | S160937                    |
| Project name   | Dean Trust Ardwick Academy |
| Client         | Dean Trust Ardwick         |
| Visit no       | 4                          |
| Date           | 01/03/2017                 |
| Equipment      | GFM 435 Gas Analyser       |
| Operator       | SW                         |

|                              |        |
|------------------------------|--------|
| Weather Conditions           | Wet    |
| Ground Conditions            | Wet    |
| Ambient Atmospheric Pressure | 995    |
| Regional Pressure Trend      | Steady |

| Position | Flow | Pressure | CH <sub>4</sub> |            | CO <sub>2</sub> |            | O <sub>2</sub> (% v/v) | CO (ppm) | H <sub>2</sub> S (ppm) | Groundwater Level (mbgl) | Depth to Base (mbgl) | Notes |
|----------|------|----------|-----------------|------------|-----------------|------------|------------------------|----------|------------------------|--------------------------|----------------------|-------|
|          |      |          | (% v/v)         | GSV (l/hr) | (% v/v)         | GSV (l/hr) |                        |          |                        |                          |                      |       |
| BH2      | 0.0  | 995      | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.3                   | *        | *                      | 1.56                     | 4.00                 |       |
| BH3      | 0.0  | 995      | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.3                   | *        | *                      | 1.88                     | 4.00                 |       |
| BH4      | 0.0  | 995      | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.1                   | *        | *                      | 1.67                     | 4.00                 |       |

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

|                |                            |
|----------------|----------------------------|
| Project number | S160937                    |
| Project name   | Dean Trust Ardwick Academy |
| Client         | Dean Trust Ardwick         |
| Visit no       | 5                          |
| Date           | 24/03/2017                 |
| Equipment      | GFM 435 Gas Analyser       |
| Operator       | SW                         |

|                              |          |
|------------------------------|----------|
| Weather Conditions           | Overcast |
| Ground Conditions            | Damp     |
| Ambient Atmospheric Pressure | 1025     |
| Regional Pressure Trend      | Falling  |

| Position | Flow | Pressure | CH <sub>4</sub> |            | CO <sub>2</sub> |            | O <sub>2</sub> (% v/v) | CO (ppm) | H <sub>2</sub> S (ppm) | Groundwater Level (mbgl) | Depth to Base (mbgl) | Notes |
|----------|------|----------|-----------------|------------|-----------------|------------|------------------------|----------|------------------------|--------------------------|----------------------|-------|
|          |      |          | (% v/v)         | GSV (l/hr) | (% v/v)         | GSV (l/hr) |                        |          |                        |                          |                      |       |
| BH2      | -0.7 | 1025     | 0.0             | 0.0000     | 0.0             | 0.0000     | 20.3                   | *        | *                      | 1.77                     | 4.00                 |       |
| BH3      | -0.4 | 1025     | 0.0             | 0.0000     | 0.5             | -0.0020    | 19.3                   | *        | *                      | 2.34                     | 4.00                 |       |
| BH4      | -0.9 | 1025     | 0.0             | 0.0000     | 1.0             | -0.0090    | 18.9                   | *        | *                      | 1.90                     | 4.00                 |       |

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.



## GAS MONITORING RESULTS

|                |                            |
|----------------|----------------------------|
| Project number | S160937                    |
| Project name   | Dean Trust Ardwick Academy |
| Client         | Dean Trust Ardwick         |
| Visit no       | 6                          |
| Date           | 16/05/2017                 |
| Equipment      | GFM 435 Gas Analyser       |
| Operator       | SW                         |

|                              |          |
|------------------------------|----------|
| Weather Conditions           | Overcast |
| Ground Conditions            | Damp     |
| Ambient Atmospheric Pressure | 1018     |
| Regional Pressure Trend      | Steady   |

| Position | Flow | Pressure | CH <sub>4</sub> |            | CO <sub>2</sub> |            | O <sub>2</sub> (% v/v) | CO (ppm) | H <sub>2</sub> S (ppm) | Groundwater Level (mbgl) | Depth to Base (mbgl) | Notes |
|----------|------|----------|-----------------|------------|-----------------|------------|------------------------|----------|------------------------|--------------------------|----------------------|-------|
|          |      |          | (% v/v)         | GSV (l/hr) | (% v/v)         | GSV (l/hr) |                        |          |                        |                          |                      |       |
| BH2      | -0.2 | 1018     | 0.0             | 0.0000     | 0.2             | -0.0004    | 20.0                   | *        | *                      | 2.15                     | 4.00                 |       |
| BH3      | -0.3 | 1018     | 0.0             | 0.0000     | 0.6             | -0.0018    | 19.5                   | *        | *                      | 2.66                     | 4.00                 |       |
| BH4      | -0.1 | 1018     | 0.0             | 0.0000     | 0.6             | -0.0006    | 19.7                   | *        | *                      | 2.00                     | 4.00                 |       |

### KEY

**CH<sub>4</sub>** = Methane, **CO<sub>2</sub>** = Carbon Dioxide, **O<sub>2</sub>** = Oxygen, **CO** = Carbon Monoxide, **H<sub>2</sub>S** = Hydrogen Sulphide, **GSV** = Gas Screening Value (If no flow is recorded a value of 0.1 is assumed), ND = Not Detected, \* = not measured, N/A = Not applicable, % = % by volume, mbgl = m below ground level, ppm = parts per million.

## **APPENDIX F**

### **Waste Assessment Report**

## Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



BK8SL-JIC41-G7QQK

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in **pale yellow**.

### Job name

Temporary Classroom, Dean Trust Academy, Ardwick

### Description/Comments

### Project

M4246

### Site

Temporary Classroom, Dean Trust Academy, Ardwick,  
Manchester

### Classified by

Name:  
**Nicola Swallow**

Date:  
**13 Aug 2021 10:59 GMT**  
Telephone:  
**01606 334 844**

Company:  
**Brownfield Solutions Limited**  
**William Smith House**  
**173-183 Witton Street**  
**Northwich**  
**CW9 5LP**

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

### HazWasteOnline™ Certification:

**Course**  
Hazardous Waste Classification  
3 year Refresher overdue

**Date**  
05 Jun 2014

### Job summary

| # | Sample name | Depth [m] | Classification Result | Hazard properties | Page |
|---|-------------|-----------|-----------------------|-------------------|------|
| 1 | BH05        | 0.5       | Hazardous             | HP 8              | 2    |
| 2 | BH05[2]     | 1         | Non Hazardous         |                   | 5    |
| 3 | BH1         | 0.7-0.8   | Non Hazardous         |                   | 7    |
| 4 | BH2         | 0.7-0.8   | Non Hazardous         |                   | 9    |
| 5 | BH4         | 0.7-0.8   | Non Hazardous         |                   | 11   |

### Related documents

| # | Name      | Description                                   |
|---|-----------|-----------------------------------------------|
| 1 | BSL Suite | waste stream template used to create this Job |

### Report

Created by: Nicola Swallow

Created date: 13 Aug 2021 10:59 GMT

| Appendices                                              | Page |
|---------------------------------------------------------|------|
| Appendix A: Classifier defined and non CLP determinands | 12   |
| Appendix B: Rationale for selection of metal species    | 13   |
| Appendix C: Version                                     | 14   |



## Classification of sample: BH05

**Hazardous Waste**  
Classified as **17 05 03 \***  
in the List of Waste

## Sample details

|               |                                                                                                    |
|---------------|----------------------------------------------------------------------------------------------------|
| Sample name:  | LoW Code:                                                                                          |
| <b>BH05</b>   | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth: | Entry: 17 05 03 * (Soil and stones containing hazardous substances)                                |
| <b>0.5 m</b>  |                                                                                                    |

## Hazard properties

**HP 8: Corrosive** "waste which on application can cause skin corrosion"

**pH; pH** "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH: (conc.: 12 pH)

## Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

| #  | Determinand                                                                                                              |                                |                                  | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                                                                         | EC Number                      | CAS Number                       |          |                   |       |              |                |       |                      |            |                |
| 1  | pH                                                                                                                       |                                |                                  |          | 12                | pH    |              | 12             | pH    | 12pH                 |            |                |
| 2  | arsenic { arsenic trioxide }                                                                                             |                                |                                  |          | 4.8               | mg/kg | 1.32         | 6.338          | mg/kg | 0.000634 %           | ✓          |                |
|    | 033-003-00-0                                                                                                             | 215-481-4                      | 1327-53-3                        |          |                   |       |              |                |       |                      |            |                |
| 3  | cadmium { cadmium sulfide }                                                                                              |                                |                                  | 1        | 0.2               | mg/kg | 1.285        | 0.257          | mg/kg | 0.00002 %            | ✓          |                |
|    | 048-010-00-4                                                                                                             | 215-147-8                      | 1306-23-6                        |          |                   |       |              |                |       |                      |            |                |
| 4  | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                |                                |                                  |          | <0.3              | mg/kg | 1.923        | <0.577         | mg/kg | <0.0000577 %         |            | <LOD           |
|    | 024-001-00-0                                                                                                             | 215-607-8                      | 1333-82-0                        |          |                   |       |              |                |       |                      |            |                |
| 5  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                 |                                |                                  |          | 49.8              | mg/kg | 1.462        | 72.785         | mg/kg | 0.00728 %            | ✓          |                |
|    |                                                                                                                          | 215-160-9                      | 1308-38-9                        |          |                   |       |              |                |       |                      |            |                |
| 6  | copper { dicopper oxide; copper (I) oxide }                                                                              |                                |                                  |          | 29                | mg/kg | 1.126        | 32.651         | mg/kg | 0.00327 %            | ✓          |                |
|    | 029-002-00-X                                                                                                             | 215-270-7                      | 1317-39-1                        |          |                   |       |              |                |       |                      |            |                |
| 7  | lead { lead chromate }                                                                                                   |                                |                                  | 1        | 60                | mg/kg | 1.56         | 93.589         | mg/kg | 0.006 %              | ✓          |                |
|    | 082-004-00-2                                                                                                             | 231-846-0                      | 7758-97-6                        |          |                   |       |              |                |       |                      |            |                |
| 8  | mercury { mercury dichloride }                                                                                           |                                |                                  |          | <0.1              | mg/kg | 1.353        | <0.135         | mg/kg | <0.0000135 %         |            | <LOD           |
|    | 080-010-00-X                                                                                                             | 231-299-8                      | 7487-94-7                        |          |                   |       |              |                |       |                      |            |                |
| 9  | nickel { nickel dihydroxide }                                                                                            |                                |                                  |          | 33.1              | mg/kg | 1.579        | 52.281         | mg/kg | 0.00523 %            | ✓          |                |
|    | 028-008-00-X                                                                                                             | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |       |              |                |       |                      |            |                |
| 10 | selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } |                                |                                  |          | <1                | mg/kg | 1.405        | <1.405         | mg/kg | <0.000141 %          |            | <LOD           |
|    | 034-002-00-8                                                                                                             |                                |                                  |          |                   |       |              |                |       |                      |            |                |
| 11 | zinc { zinc chromate }                                                                                                   |                                |                                  |          | 86                | mg/kg | 2.774        | 238.577        | mg/kg | 0.0239 %             | ✓          |                |
|    | 024-007-00-3                                                                                                             | 236-878-9                      | 13530-65-9                       |          |                   |       |              |                |       |                      |            |                |
| 12 | naphthalene                                                                                                              |                                |                                  |          | 0.07              | mg/kg |              | 0.07           | mg/kg | 0.000007 %           | ✓          |                |
|    | 601-052-00-2                                                                                                             | 202-049-5                      | 91-20-3                          |          |                   |       |              |                |       |                      |            |                |
| 13 | acenaphthylene                                                                                                           |                                |                                  |          | 0.05              | mg/kg |              | 0.05           | mg/kg | 0.000005 %           | ✓          |                |
|    |                                                                                                                          | 205-917-1                      | 208-96-8                         |          |                   |       |              |                |       |                      |            |                |
| 14 | acenaphthene                                                                                                             |                                |                                  |          | 0.13              | mg/kg |              | 0.13           | mg/kg | 0.000013 %           | ✓          |                |
|    |                                                                                                                          | 201-469-6                      | 83-32-9                          |          |                   |       |              |                |       |                      |            |                |



| #      | Determinand                                                                                                                                                                            |              |            | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                                                                                                                                                                       | EC Number    | CAS Number |          |                   |              |                |                      |            |                |
| 15     | fluorene                                                                                                                                                                               | 201-695-5    | 86-73-7    |          | 0.06 mg/kg        |              | 0.06 mg/kg     | 0.000006 %           | ✓          |                |
| 16     | phenanthrene                                                                                                                                                                           | 201-581-5    | 85-01-8    |          | 0.58 mg/kg        |              | 0.58 mg/kg     | 0.000058 %           | ✓          |                |
| 17     | anthracene                                                                                                                                                                             | 204-371-1    | 120-12-7   |          | 0.17 mg/kg        |              | 0.17 mg/kg     | 0.000017 %           | ✓          |                |
| 18     | fluoranthene                                                                                                                                                                           | 205-912-4    | 206-44-0   |          | 0.93 mg/kg        |              | 0.93 mg/kg     | 0.000093 %           | ✓          |                |
| 19     | pyrene                                                                                                                                                                                 | 204-927-3    | 129-00-0   |          | 0.85 mg/kg        |              | 0.85 mg/kg     | 0.000085 %           | ✓          |                |
| 20     | benzo[a]anthracene                                                                                                                                                                     | 601-033-00-9 | 200-280-6  |          | 0.57 mg/kg        |              | 0.57 mg/kg     | 0.000057 %           | ✓          |                |
| 21     | chrysene                                                                                                                                                                               | 601-048-00-0 | 205-923-4  |          | 0.52 mg/kg        |              | 0.52 mg/kg     | 0.000052 %           | ✓          |                |
| 22     | benzo[b]fluoranthene                                                                                                                                                                   | 601-034-00-4 | 205-911-9  |          | 0.54 mg/kg        |              | 0.54 mg/kg     | 0.000054 %           | ✓          |                |
| 23     | benzo[k]fluoranthene                                                                                                                                                                   | 601-036-00-5 | 205-916-6  |          | 0.21 mg/kg        |              | 0.21 mg/kg     | 0.000021 %           | ✓          |                |
| 24     | benzo[a]pyrene; benzo[def]chrysene                                                                                                                                                     | 601-032-00-3 | 200-028-5  |          | 0.48 mg/kg        |              | 0.48 mg/kg     | 0.000048 %           | ✓          |                |
| 25     | indeno[123-cd]pyrene                                                                                                                                                                   | 205-893-2    | 193-39-5   |          | 0.28 mg/kg        |              | 0.28 mg/kg     | 0.000028 %           | ✓          |                |
| 26     | dibenz[a,h]anthracene                                                                                                                                                                  | 601-041-00-2 | 200-181-8  |          | 0.12 mg/kg        |              | 0.12 mg/kg     | 0.000012 %           | ✓          |                |
| 27     | benzo[ghi]perylene                                                                                                                                                                     | 205-883-8    | 191-24-2   |          | 0.28 mg/kg        |              | 0.28 mg/kg     | 0.000028 %           | ✓          |                |
| 28     | TPH (C6 to C40) petroleum group                                                                                                                                                        |              | TPH        |          | 155 mg/kg         |              | 155 mg/kg      | 0.0155 %             | ✓          |                |
| 29     | benzene                                                                                                                                                                                | 601-020-00-8 | 200-753-7  |          | <5 mg/kg          |              | <5 mg/kg       | <0.0005 %            |            | <LOD           |
| 30     | toluene                                                                                                                                                                                | 601-021-00-3 | 203-625-9  |          | <5 mg/kg          |              | <5 mg/kg       | <0.0005 %            |            | <LOD           |
| 31     | ethylbenzene                                                                                                                                                                           | 601-023-00-4 | 202-849-4  |          | <5 mg/kg          |              | <5 mg/kg       | <0.0005 %            |            | <LOD           |
| 32     | phenol                                                                                                                                                                                 | 604-001-00-2 | 203-632-7  |          | <0.15 mg/kg       |              | <0.15 mg/kg    | <0.000015 %          |            | <LOD           |
| 33     | cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } | 006-007-00-5 |            |          | <0.5 mg/kg        | 1.884        | <0.942 mg/kg   | <0.0000942 %         |            | <LOD           |
| Total: |                                                                                                                                                                                        |              |            |          |                   |              |                | 0.0642 %             |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Hazardous result                                                                                                                |
| •           | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

#### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

**Force this Hazardous property to non hazardous because** The absence of a free draining liquid and the relatively low concentrations of short-chain hydrocarbons reported indicates that this hazard property is not applicable to this waste.



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Hazard Statements hit:

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**Flam. Liq. 3; H226** "Flammable liquid and vapour."

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Because of determinand:

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TPH (C6 to C40) petroleum group: (conc.: 0.0155%)



Classification of sample: BH05[2]

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

**Sample details**

|                |                                                                                           |
|----------------|-------------------------------------------------------------------------------------------|
| Sample name:   | LoW Code:                                                                                 |
| <b>BH05[2]</b> | Chapter:                                                                                  |
| Sample Depth:  | 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| <b>1 m</b>     | Entry:                                                                                    |
|                | 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                         |

**Hazard properties**

None identified

**Determinands**

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

| #  | Determinand                                                                                                              |              |                                | CLP Note                         | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------|----------------------------------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                                                                         | EC Number    | CAS Number                     |                                  |                   |       |              |                |       |                      |            |                |
| 1  | pH                                                                                                                       |              | PH                             |                                  | 11.44             | pH    |              | 11.44          | pH    | 11.44 pH             |            |                |
| 2  | arsenic { arsenic trioxide }                                                                                             | 033-003-00-0 | 215-481-4                      | 1327-53-3                        | 8.2               | mg/kg | 1.32         | 10.827         | mg/kg | 0.00108 %            | ✓          |                |
| 3  | cadmium { cadmium sulfide }                                                                                              | 048-010-00-4 | 215-147-8                      | 1306-23-6                        | <0.1              | mg/kg | 1.285        | <0.129         | mg/kg | <0.00001 %           |            | <LOD           |
| 4  | chromium in chromium(VI) compounds { chromium(VI) oxide }                                                                | 024-001-00-0 | 215-607-8                      | 1333-82-0                        | <0.3              | mg/kg | 1.923        | <0.577         | mg/kg | <0.0000577 %         |            | <LOD           |
| 5  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                 |              | 215-160-9                      | 1308-38-9                        | 33.6              | mg/kg | 1.462        | 49.108         | mg/kg | 0.00491 %            | ✓          |                |
| 6  | copper { dicopper oxide; copper (I) oxide }                                                                              | 029-002-00-X | 215-270-7                      | 1317-39-1                        | 44                | mg/kg | 1.126        | 49.539         | mg/kg | 0.00495 %            | ✓          |                |
| 7  | lead { lead chromate }                                                                                                   | 082-004-00-2 | 231-846-0                      | 7758-97-6                        | 43                | mg/kg | 1.56         | 67.072         | mg/kg | 0.0043 %             | ✓          |                |
| 8  | mercury { mercury dichloride }                                                                                           | 080-010-00-X | 231-299-8                      | 7487-94-7                        | <0.1              | mg/kg | 1.353        | <0.135         | mg/kg | <0.0000135 %         |            | <LOD           |
| 9  | nickel { nickel dihydroxide }                                                                                            | 028-008-00-X | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] | 27.5              | mg/kg | 1.579        | 43.436         | mg/kg | 0.00434 %            | ✓          |                |
| 10 | selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } | 034-002-00-8 |                                |                                  | <1                | mg/kg | 1.405        | <1.405         | mg/kg | <0.000141 %          |            | <LOD           |
| 11 | zinc { zinc chromate }                                                                                                   | 024-007-00-3 | 236-878-9                      | 13530-65-9                       | 57                | mg/kg | 2.774        | 158.126        | mg/kg | 0.0158 %             | ✓          |                |
| 12 | naphthalene                                                                                                              | 601-052-00-2 | 202-049-5                      | 91-20-3                          | <0.04             | mg/kg |              | <0.04          | mg/kg | <0.000004 %          |            | <LOD           |
| 13 | acenaphthylene                                                                                                           |              | 205-917-1                      | 208-96-8                         | <0.03             | mg/kg |              | <0.03          | mg/kg | <0.000003 %          |            | <LOD           |
| 14 | acenaphthene                                                                                                             |              | 201-469-6                      | 83-32-9                          | 0.06              | mg/kg |              | 0.06           | mg/kg | 0.000006 %           | ✓          |                |
| 15 | fluorene                                                                                                                 |              | 201-695-5                      | 86-73-7                          | <0.04             | mg/kg |              | <0.04          | mg/kg | <0.000004 %          |            | <LOD           |
| 16 | phenanthrene                                                                                                             |              | 201-581-5                      | 85-01-8                          | 0.46              | mg/kg |              | 0.46           | mg/kg | 0.000046 %           | ✓          |                |



| #      | Determinand                        |              |            | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|------------------------------------|--------------|------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                   | EC Number    | CAS Number |          |                   |              |                |                      |            |                |
| 17     | anthracene                         | 204-371-1    | 120-12-7   |          | 0.09 mg/kg        |              | 0.09 mg/kg     | 0.000009 %           | ✓          |                |
| 18     | fluoranthene                       | 205-912-4    | 206-44-0   |          | 0.7 mg/kg         |              | 0.7 mg/kg      | 0.00007 %            | ✓          |                |
| 19     | pyrene                             | 204-927-3    | 129-00-0   |          | 0.61 mg/kg        |              | 0.61 mg/kg     | 0.000061 %           | ✓          |                |
| 20     | benzo[a]anthracene                 | 601-033-00-9 | 200-280-6  | 56-55-3  | 0.34 mg/kg        |              | 0.34 mg/kg     | 0.000034 %           | ✓          |                |
| 21     | chrysene                           | 601-048-00-0 | 205-923-4  | 218-01-9 | 0.31 mg/kg        |              | 0.31 mg/kg     | 0.000031 %           | ✓          |                |
| 22     | benzo[b]fluoranthene               | 601-034-00-4 | 205-911-9  | 205-99-2 | 0.35 mg/kg        |              | 0.35 mg/kg     | 0.000035 %           | ✓          |                |
| 23     | benzo[k]fluoranthene               | 601-036-00-5 | 205-916-6  | 207-08-9 | 0.13 mg/kg        |              | 0.13 mg/kg     | 0.000013 %           | ✓          |                |
| 24     | benzo[a]pyrene; benzo[def]chrysene | 601-032-00-3 | 200-028-5  | 50-32-8  | 0.35 mg/kg        |              | 0.35 mg/kg     | 0.000035 %           | ✓          |                |
| 25     | indeno[123-cd]pyrene               | 205-893-2    | 193-39-5   |          | 0.22 mg/kg        |              | 0.22 mg/kg     | 0.000022 %           | ✓          |                |
| 26     | dibenz[a,h]anthracene              | 601-041-00-2 | 200-181-8  | 53-70-3  | 0.05 mg/kg        |              | 0.05 mg/kg     | 0.000005 %           | ✓          |                |
| 27     | benzo[ghi]perylene                 | 205-883-8    | 191-24-2   |          | 0.2 mg/kg         |              | 0.2 mg/kg      | 0.00002 %            | ✓          |                |
| 28     | TPH (C6 to C40) petroleum group    |              | TPH        |          | 37 mg/kg          |              | 37 mg/kg       | 0.0037 %             | ✓          |                |
| 29     | benzene                            | 601-020-00-8 | 200-753-7  | 71-43-2  | <5 mg/kg          |              | <5 mg/kg       | <0.0005 %            |            | <LOD           |
| 30     | toluene                            | 601-021-00-3 | 203-625-9  | 108-88-3 | <5 mg/kg          |              | <5 mg/kg       | <0.0005 %            |            | <LOD           |
| 31     | ethylbenzene                       | 601-023-00-4 | 202-849-4  | 100-41-4 | <5 mg/kg          |              | <5 mg/kg       | <0.0005 %            |            | <LOD           |
| Total: |                                    |              |            |          |                   |              |                | 0.0412 %             |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
| •           | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

#### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

**Force this Hazardous property to non hazardous because** The absence of a free draining liquid and the relatively low concentrations of short-chain hydrocarbons reported indicates that this hazard property is not applicable to this waste.

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0037%)



**Classification of sample: BH1**

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

**Sample details**

|                  |                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------|
| Sample name:     | LoW Code:                                                                                          |
| <b>BH1</b>       | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth:    | Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                           |
| <b>0.7-0.8 m</b> |                                                                                                    |

**Hazard properties**

None identified

**Determinands**

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

| #  | Determinand                                                                                                              |                                |                                  | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                                                                         | EC Number                      | CAS Number                       |          |                   |       |              |                |       |                      |            |                |
| 1  | pH                                                                                                                       |                                |                                  |          | 8.7               | pH    |              | 8.7            | pH    | 8.7 pH               |            |                |
| 2  | arsenic { arsenic trioxide }                                                                                             |                                |                                  |          | 20                | mg/kg | 1.32         | 26.407         | mg/kg | 0.00264 %            | ✓          |                |
|    | 033-003-00-0                                                                                                             | 215-481-4                      | 1327-53-3                        |          |                   |       |              |                |       |                      |            |                |
| 3  | cadmium { cadmium sulfide }                                                                                              |                                |                                  | 1        | 0.6               | mg/kg | 1.285        | 0.771          | mg/kg | 0.00006 %            | ✓          |                |
|    | 048-010-00-4                                                                                                             | 215-147-8                      | 1306-23-6                        |          |                   |       |              |                |       |                      |            |                |
| 4  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                 |                                |                                  |          | 41                | mg/kg | 1.462        | 59.924         | mg/kg | 0.00599 %            | ✓          |                |
|    |                                                                                                                          | 215-160-9                      | 1308-38-9                        |          |                   |       |              |                |       |                      |            |                |
| 5  | copper { dicopper oxide; copper (I) oxide }                                                                              |                                |                                  |          | 83                | mg/kg | 1.126        | 93.449         | mg/kg | 0.00934 %            | ✓          |                |
|    | 029-002-00-X                                                                                                             | 215-270-7                      | 1317-39-1                        |          |                   |       |              |                |       |                      |            |                |
| 6  | lead { lead chromate }                                                                                                   |                                |                                  | 1        | 190               | mg/kg | 1.56         | 296.365        | mg/kg | 0.019 %              | ✓          |                |
|    | 082-004-00-2                                                                                                             | 231-846-0                      | 7758-97-6                        |          |                   |       |              |                |       |                      |            |                |
| 7  | mercury { mercury dichloride }                                                                                           |                                |                                  |          | 0.46              | mg/kg | 1.353        | 0.623          | mg/kg | 0.0000623 %          | ✓          |                |
|    | 080-010-00-X                                                                                                             | 231-299-8                      | 7487-94-7                        |          |                   |       |              |                |       |                      |            |                |
| 8  | nickel { nickel dihydroxide }                                                                                            |                                |                                  |          | 27                | mg/kg | 1.579        | 42.646         | mg/kg | 0.00426 %            | ✓          |                |
|    | 028-008-00-X                                                                                                             | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |       |              |                |       |                      |            |                |
| 9  | selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } |                                |                                  |          | <0.5              | mg/kg | 1.405        | <0.703         | mg/kg | <0.0000703 %         |            | <LOD           |
|    | 034-002-00-8                                                                                                             |                                |                                  |          |                   |       |              |                |       |                      |            |                |
| 10 | zinc { zinc chromate }                                                                                                   |                                |                                  |          | 150               | mg/kg | 2.774        | 416.122        | mg/kg | 0.0416 %             | ✓          |                |
|    | 024-007-00-3                                                                                                             | 236-878-9                      | 13530-65-9                       |          |                   |       |              |                |       |                      |            |                |
| 11 | naphthalene                                                                                                              |                                |                                  |          | 0.4               | mg/kg |              | 0.4            | mg/kg | 0.00004 %            | ✓          |                |
|    | 601-052-00-2                                                                                                             | 202-049-5                      | 91-20-3                          |          |                   |       |              |                |       |                      |            |                |
| 12 | acenaphthylene                                                                                                           |                                |                                  |          | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            | ✓          |                |
|    |                                                                                                                          | 205-917-1                      | 208-96-8                         |          |                   |       |              |                |       |                      |            |                |
| 13 | acenaphthene                                                                                                             |                                |                                  |          | 0.9               | mg/kg |              | 0.9            | mg/kg | 0.00009 %            | ✓          |                |
|    |                                                                                                                          | 201-469-6                      | 83-32-9                          |          |                   |       |              |                |       |                      |            |                |
| 14 | fluorene                                                                                                                 |                                |                                  |          | 0.9               | mg/kg |              | 0.9            | mg/kg | 0.00009 %            | ✓          |                |
|    |                                                                                                                          | 201-695-5                      | 86-73-7                          |          |                   |       |              |                |       |                      |            |                |
| 15 | phenanthrene                                                                                                             |                                |                                  |          | 5.4               | mg/kg |              | 5.4            | mg/kg | 0.00054 %            | ✓          |                |
|    |                                                                                                                          | 201-581-5                      | 85-01-8                          |          |                   |       |              |                |       |                      |            |                |
| 16 | anthracene                                                                                                               |                                |                                  |          | 1.5               | mg/kg |              | 1.5            | mg/kg | 0.00015 %            | ✓          |                |
|    |                                                                                                                          | 204-371-1                      | 120-12-7                         |          |                   |       |              |                |       |                      |            |                |
| 17 | fluoranthene                                                                                                             |                                |                                  |          | 6.4               | mg/kg |              | 6.4            | mg/kg | 0.00064 %            | ✓          |                |
|    |                                                                                                                          | 205-912-4                      | 206-44-0                         |          |                   |       |              |                |       |                      |            |                |



| #      | Determinand                        |              |            | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|------------------------------------|--------------|------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                   | EC Number    | CAS Number |          |                   |              |                |                      |            |                |
| 18     | pyrene                             | 204-927-3    | 129-00-0   |          | 5.7 mg/kg         |              | 5.7 mg/kg      | 0.00057 %            | ✓          |                |
| 19     | benzo[a]anthracene                 | 601-033-00-9 | 200-280-6  | 56-55-3  | 2.7 mg/kg         |              | 2.7 mg/kg      | 0.00027 %            | ✓          |                |
| 20     | chrysene                           | 601-048-00-0 | 205-923-4  | 218-01-9 | 2.7 mg/kg         |              | 2.7 mg/kg      | 0.00027 %            | ✓          |                |
| 21     | benzo[b]fluoranthene               | 601-034-00-4 | 205-911-9  | 205-99-2 | 1.9 mg/kg         |              | 1.9 mg/kg      | 0.00019 %            | ✓          |                |
| 22     | benzo[k]fluoranthene               | 601-036-00-5 | 205-916-6  | 207-08-9 | 1.1 mg/kg         |              | 1.1 mg/kg      | 0.00011 %            | ✓          |                |
| 23     | benzo[a]pyrene; benzo[def]chrysene | 601-032-00-3 | 200-028-5  | 50-32-8  | 2.4 mg/kg         |              | 2.4 mg/kg      | 0.00024 %            | ✓          |                |
| 24     | indeno[123-cd]pyrene               | 205-893-2    | 193-39-5   |          | 1.7 mg/kg         |              | 1.7 mg/kg      | 0.00017 %            | ✓          |                |
| 25     | dibenz[a,h]anthracene              | 601-041-00-2 | 200-181-8  | 53-70-3  | 0.4 mg/kg         |              | 0.4 mg/kg      | 0.00004 %            | ✓          |                |
| 26     | benzo[ghi]perylene                 | 205-883-8    | 191-24-2   |          | 1.6 mg/kg         |              | 1.6 mg/kg      | 0.00016 %            | ✓          |                |
| 27     | TPH (C6 to C40) petroleum group    |              | TPH        |          | 19.1 mg/kg        |              | 19.1 mg/kg     | 0.00191 %            | ✓          |                |
| Total: |                                    |              |            |          |                   |              |                | 0.0885 %             |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
| ■           | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
| ●           | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

#### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

**Force this Hazardous property to non hazardous because** The absence of a free draining liquid and the relatively low concentrations of short-chain hydrocarbons reported indicates that this hazard property is not applicable to this waste.

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00191%)



## Classification of sample: BH2

✔ **Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

## Sample details

|                  |                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------|
| Sample name:     | LoW Code:                                                                                          |
| <b>BH2</b>       | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth:    | Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                           |
| <b>0.7-0.8 m</b> |                                                                                                    |

## Hazard properties

None identified

## Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

| #  | Determinand                                                                                                              |                                |                                  | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|----|--------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|    | CLP index number                                                                                                         | EC Number                      | CAS Number                       |          |                   |       |              |                |       |                      |            |                |
| 1  | pH                                                                                                                       |                                |                                  |          | 8.3               | pH    |              | 8.3            | pH    | 8.3 pH               |            |                |
| 2  | arsenic { arsenic trioxide }                                                                                             |                                |                                  |          | 13                | mg/kg | 1.32         | 17.164         | mg/kg | 0.00172 %            | ✓          |                |
|    | 033-003-00-0                                                                                                             | 215-481-4                      | 1327-53-3                        |          |                   |       |              |                |       |                      |            |                |
| 3  | cadmium { cadmium sulfide }                                                                                              |                                |                                  | 1        | 0.3               | mg/kg | 1.285        | 0.386          | mg/kg | 0.00003 %            | ✓          |                |
|    | 048-010-00-4                                                                                                             | 215-147-8                      | 1306-23-6                        |          |                   |       |              |                |       |                      |            |                |
| 4  | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                 |                                |                                  |          | 21                | mg/kg | 1.462        | 30.693         | mg/kg | 0.00307 %            | ✓          |                |
|    |                                                                                                                          | 215-160-9                      | 1308-38-9                        |          |                   |       |              |                |       |                      |            |                |
| 5  | copper { dicopper oxide; copper (I) oxide }                                                                              |                                |                                  |          | 38                | mg/kg | 1.126        | 42.784         | mg/kg | 0.00428 %            | ✓          |                |
|    | 029-002-00-X                                                                                                             | 215-270-7                      | 1317-39-1                        |          |                   |       |              |                |       |                      |            |                |
| 6  | lead { lead chromate }                                                                                                   |                                |                                  | 1        | 210               | mg/kg | 1.56         | 327.561        | mg/kg | 0.021 %              | ✓          |                |
|    | 082-004-00-2                                                                                                             | 231-846-0                      | 7758-97-6                        |          |                   |       |              |                |       |                      |            |                |
| 7  | mercury { mercury dichloride }                                                                                           |                                |                                  |          | 0.2               | mg/kg | 1.353        | 0.271          | mg/kg | 0.0000271 %          | ✓          |                |
|    | 080-010-00-X                                                                                                             | 231-299-8                      | 7487-94-7                        |          |                   |       |              |                |       |                      |            |                |
| 8  | nickel { nickel dihydroxide }                                                                                            |                                |                                  |          | 17                | mg/kg | 1.579        | 26.851         | mg/kg | 0.00269 %            | ✓          |                |
|    | 028-008-00-X                                                                                                             | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |       |              |                |       |                      |            |                |
| 9  | selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } |                                |                                  |          | <0.5              | mg/kg | 1.405        | <0.703         | mg/kg | <0.0000703 %         |            | <LOD           |
|    | 034-002-00-8                                                                                                             |                                |                                  |          |                   |       |              |                |       |                      |            |                |
| 10 | zinc { zinc chromate }                                                                                                   |                                |                                  |          | 92                | mg/kg | 2.774        | 255.221        | mg/kg | 0.0255 %             | ✓          |                |
|    | 024-007-00-3                                                                                                             | 236-878-9                      | 13530-65-9                       |          |                   |       |              |                |       |                      |            |                |
| 11 | naphthalene                                                                                                              |                                |                                  |          | 0.2               | mg/kg |              | 0.2            | mg/kg | 0.00002 %            | ✓          |                |
|    | 601-052-00-2                                                                                                             | 202-049-5                      | 91-20-3                          |          |                   |       |              |                |       |                      |            |                |
| 12 | acenaphthylene                                                                                                           |                                |                                  |          | <0.1              | mg/kg |              | <0.1           | mg/kg | <0.00001 %           |            | <LOD           |
|    |                                                                                                                          | 205-917-1                      | 208-96-8                         |          |                   |       |              |                |       |                      |            |                |
| 13 | acenaphthene                                                                                                             |                                |                                  |          | 0.7               | mg/kg |              | 0.7            | mg/kg | 0.00007 %            | ✓          |                |
|    |                                                                                                                          | 201-469-6                      | 83-32-9                          |          |                   |       |              |                |       |                      |            |                |
| 14 | fluorene                                                                                                                 |                                |                                  |          | 0.1               | mg/kg |              | 0.1            | mg/kg | 0.00001 %            | ✓          |                |
|    |                                                                                                                          | 201-695-5                      | 86-73-7                          |          |                   |       |              |                |       |                      |            |                |
| 15 | phenanthrene                                                                                                             |                                |                                  |          | 3.2               | mg/kg |              | 3.2            | mg/kg | 0.00032 %            | ✓          |                |
|    |                                                                                                                          | 201-581-5                      | 85-01-8                          |          |                   |       |              |                |       |                      |            |                |
| 16 | anthracene                                                                                                               |                                |                                  |          | 0.8               | mg/kg |              | 0.8            | mg/kg | 0.00008 %            | ✓          |                |
|    |                                                                                                                          | 204-371-1                      | 120-12-7                         |          |                   |       |              |                |       |                      |            |                |
| 17 | fluoranthene                                                                                                             |                                |                                  |          | 4.2               | mg/kg |              | 4.2            | mg/kg | 0.00042 %            | ✓          |                |
|    |                                                                                                                          | 205-912-4                      | 206-44-0                         |          |                   |       |              |                |       |                      |            |                |



| #      | Determinand                        |              |            | CLP Note | User entered data | Conv. Factor | Compound conc. | Classification value | MC Applied | Conc. Not Used |
|--------|------------------------------------|--------------|------------|----------|-------------------|--------------|----------------|----------------------|------------|----------------|
|        | CLP index number                   | EC Number    | CAS Number |          |                   |              |                |                      |            |                |
| 18     | pyrene                             | 204-927-3    | 129-00-0   |          | 4 mg/kg           |              | 4 mg/kg        | 0.0004 %             | ✓          |                |
| 19     | benzo[a]anthracene                 | 601-033-00-9 | 200-280-6  | 56-55-3  | 1.8 mg/kg         |              | 1.8 mg/kg      | 0.00018 %            | ✓          |                |
| 20     | chrysene                           | 601-048-00-0 | 205-923-4  | 218-01-9 | 1.7 mg/kg         |              | 1.7 mg/kg      | 0.00017 %            | ✓          |                |
| 21     | benzo[b]fluoranthene               | 601-034-00-4 | 205-911-9  | 205-99-2 | 1.4 mg/kg         |              | 1.4 mg/kg      | 0.00014 %            | ✓          |                |
| 22     | benzo[k]fluoranthene               | 601-036-00-5 | 205-916-6  | 207-08-9 | 0.7 mg/kg         |              | 0.7 mg/kg      | 0.00007 %            | ✓          |                |
| 23     | benzo[a]pyrene; benzo[def]chrysene | 601-032-00-3 | 200-028-5  | 50-32-8  | 1.7 mg/kg         |              | 1.7 mg/kg      | 0.00017 %            | ✓          |                |
| 24     | indeno[123-cd]pyrene               | 205-893-2    | 193-39-5   |          | 1.4 mg/kg         |              | 1.4 mg/kg      | 0.00014 %            | ✓          |                |
| 25     | dibenz[a,h]anthracene              | 601-041-00-2 | 200-181-8  | 53-70-3  | 0.4 mg/kg         |              | 0.4 mg/kg      | 0.00004 %            | ✓          |                |
| 26     | benzo[ghi]perylene                 | 205-883-8    | 191-24-2   |          | 1 mg/kg           |              | 1 mg/kg        | 0.0001 %             | ✓          |                |
| 27     | TPH (C6 to C40) petroleum group    |              | TPH        |          | 11.9 mg/kg        |              | 11.9 mg/kg     | 0.00119 %            | ✓          |                |
| Total: |                                    |              |            |          |                   |              |                | 0.0619 %             |            |                |

#### Key

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
|             | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

#### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

**Force this Hazardous property to non hazardous because** The absence of a free draining liquid and the relatively low concentrations of short-chain hydrocarbons reported indicates that this hazard property is not applicable to this waste.

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00119%)



**Classification of sample: BH4**

**Non Hazardous Waste**  
Classified as **17 05 04**  
in the List of Waste

**Sample details**

|                  |                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------|
| Sample name:     | LoW Code:                                                                                          |
| <b>BH4</b>       | Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites) |
| Sample Depth:    | Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)                           |
| <b>0.7-0.8 m</b> |                                                                                                    |

**Hazard properties**

None identified

**Determinands**

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

| #      | Determinand                                                                                                              |                                |                                  | CLP Note | User entered data |       | Conv. Factor | Compound conc. |       | Classification value | MC Applied | Conc. Not Used |
|--------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------|-------------------|-------|--------------|----------------|-------|----------------------|------------|----------------|
|        | CLP index number                                                                                                         | EC Number                      | CAS Number                       |          |                   |       |              |                |       |                      |            |                |
| 1      | pH                                                                                                                       |                                |                                  |          | 8.8               | pH    |              | 8.8            | pH    | 8.8 pH               |            |                |
| 2      | arsenic { arsenic trioxide }                                                                                             |                                |                                  |          | 17                | mg/kg | 1.32         | 22.446         | mg/kg | 0.00224 %            | ✓          |                |
|        | 033-003-00-0                                                                                                             | 215-481-4                      | 1327-53-3                        |          |                   |       |              |                |       |                      |            |                |
| 3      | cadmium { cadmium sulfide }                                                                                              |                                |                                  | 1        | 0.9               | mg/kg | 1.285        | 1.157          | mg/kg | 0.00009 %            | ✓          |                |
|        | 048-010-00-4                                                                                                             | 215-147-8                      | 1306-23-6                        |          |                   |       |              |                |       |                      |            |                |
| 4      | chromium in chromium(III) compounds { chromium(III) oxide (worst case) }                                                 |                                |                                  |          | 37                | mg/kg | 1.462        | 54.078         | mg/kg | 0.00541 %            | ✓          |                |
|        |                                                                                                                          | 215-160-9                      | 1308-38-9                        |          |                   |       |              |                |       |                      |            |                |
| 5      | copper { dicopper oxide; copper (I) oxide }                                                                              |                                |                                  |          | 100               | mg/kg | 1.126        | 112.589        | mg/kg | 0.0113 %             | ✓          |                |
|        | 029-002-00-X                                                                                                             | 215-270-7                      | 1317-39-1                        |          |                   |       |              |                |       |                      |            |                |
| 6      | lead { lead chromate }                                                                                                   |                                |                                  | 1        | 250               | mg/kg | 1.56         | 389.954        | mg/kg | 0.025 %              | ✓          |                |
|        | 082-004-00-2                                                                                                             | 231-846-0                      | 7758-97-6                        |          |                   |       |              |                |       |                      |            |                |
| 7      | mercury { mercury dichloride }                                                                                           |                                |                                  |          | 0.41              | mg/kg | 1.353        | 0.555          | mg/kg | 0.0000555 %          | ✓          |                |
|        | 080-010-00-X                                                                                                             | 231-299-8                      | 7487-94-7                        |          |                   |       |              |                |       |                      |            |                |
| 8      | nickel { nickel dihydroxide }                                                                                            |                                |                                  |          | 25                | mg/kg | 1.579        | 39.487         | mg/kg | 0.00395 %            | ✓          |                |
|        | 028-008-00-X                                                                                                             | 235-008-5 [1]<br>234-348-1 [2] | 12054-48-7 [1]<br>11113-74-9 [2] |          |                   |       |              |                |       |                      |            |                |
| 9      | selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex } |                                |                                  |          | <0.5              | mg/kg | 1.405        | <0.703         | mg/kg | <0.0000703 %         |            | <LOD           |
|        | 034-002-00-8                                                                                                             |                                |                                  |          |                   |       |              |                |       |                      |            |                |
| 10     | zinc { zinc chromate }                                                                                                   |                                |                                  |          | 270               | mg/kg | 2.774        | 749.02         | mg/kg | 0.0749 %             | ✓          |                |
|        | 024-007-00-3                                                                                                             | 236-878-9                      | 13530-65-9                       |          |                   |       |              |                |       |                      |            |                |
| Total: |                                                                                                                          |                                |                                  |          |                   |       |              |                |       | 0.123 %              |            |                |

**Key**

|             |                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
|             | User supplied data                                                                                                              |
|             | Determinand values ignored for classification, see column 'Conc. Not Used' for reason                                           |
| •           | Determinand defined or amended by HazWasteOnline (see Appendix A)                                                               |
|             | Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration |
| <LOD        | Below limit of detection                                                                                                        |
| ND          | Not detected                                                                                                                    |
| CLP: Note 1 | Only the metal concentration has been used for classification                                                                   |

## Appendix A: Classifier defined and non CLP determinands

### • pH (CAS Number: PH)

Description/Comments: Appendix C4  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: None.

### • chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database  
Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>  
Data source date: 17 Jul 2015  
Hazard Statements: Acute Tox. 4 H332 , Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Resp. Sens. 1 H334 , Skin Sens. 1 H317 , Repr. 1B H360FD , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### • acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 17 Jul 2015  
Hazard Statements: Acute Tox. 4 H302 , Acute Tox. 1 H330 , Acute Tox. 1 H310 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315

### • acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 17 Jul 2015  
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Aquatic Chronic 2 H411

### • fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### • phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Acute Tox. 4 H302 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Carc. 2 H351 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410 , Skin Irrit. 2 H315

### • anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 17 Jul 2015  
Hazard Statements: Eye Irrit. 2 H319 , STOT SE 3 H335 , Skin Irrit. 2 H315 , Skin Sens. 1 H317 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### • fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 21 Aug 2015  
Hazard Statements: Acute Tox. 4 H302 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### • pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 21 Aug 2015  
Hazard Statements: Skin Irrit. 2 H315 , Eye Irrit. 2 H319 , STOT SE 3 H335 , Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

### • indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Carc. 2 H351



▪ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 23 Jul 2015  
Hazard Statements: Aquatic Acute 1 H400 , Aquatic Chronic 1 H410

▪ **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013  
Data source: WM3 1st Edition 2015  
Data source date: 25 May 2015  
Hazard Statements: Flam. Liq. 3 H226 , Asp. Tox. 1 H304 , STOT RE 2 H373 , Muta. 1B H340 , Carc. 1B H350 , Repr. 2 H361d , Aquatic Chronic 2 H411

▪ **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4  
Description/Comments:  
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)  
Additional Hazard Statement(s): Carc. 2 H351  
Reason for additional Hazards Statement(s):  
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

▪ **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

CLP index number: 006-007-00-5  
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide  
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)  
Additional Hazard Statement(s): EUH032 >= 0.2 %  
Reason for additional Hazards Statement(s):  
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

## Appendix B: Rationale for selection of metal species

### arsenic {arsenic trioxide}

Worst case species based on hazard statements

### cadmium {cadmium sulfide}

Worst case species based on hazard statements

### chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case species based on hazard statements

### chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case species based on hazard statements

### copper {dicopper oxide; copper (I) oxide}

Most likely common species

### lead {lead chromate}

Worst case species based on hazard statements

### mercury {mercury dichloride}

Worst case species based on hazard statements

### nickel {nickel dihydroxide}

Worst case species based on hazard statements

### selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on hazard statements

### zinc {zinc chromate}

Worst case species based on hazard statements

### cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species



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## Appendix C: Version

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HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2021.222.4848.9214 (10 Aug 2021)

HazWasteOnline Database: 2021.222.4848.9214 (10 Aug 2021)

This classification utilises the following guidance and legislation:

**WM3 v1.1 - Waste Classification** - 1st Edition v1.1 - May 2018

**CLP Regulation** - Regulation 1272/2008/EC of 16 December 2008

**1st ATP** - Regulation 790/2009/EC of 10 August 2009

**2nd ATP** - Regulation 286/2011/EC of 10 March 2011

**3rd ATP** - Regulation 618/2012/EU of 10 July 2012

**4th ATP** - Regulation 487/2013/EU of 8 May 2013

**Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013

**5th ATP** - Regulation 944/2013/EU of 2 October 2013

**6th ATP** - Regulation 605/2014/EU of 5 June 2014

**WFD Annex III replacement** - Regulation 1357/2014/EU of 18 December 2014

**Revised List of Waste 2014** - Decision 2014/955/EU of 18 December 2014

**7th ATP** - Regulation 2015/1221/EU of 24 July 2015

**8th ATP** - Regulation (EU) 2016/918 of 19 May 2016

**9th ATP** - Regulation (EU) 2016/1179 of 19 July 2016

**10th ATP** - Regulation (EU) 2017/776 of 4 May 2017

**HP14 amendment** - Regulation (EU) 2017/997 of 8 June 2017

**13th ATP** - Regulation (EU) 2018/1480 of 4 October 2018

**14th ATP** - Regulation (EU) 2020/217 of 4 October 2019

**15th ATP** - Regulation (EU) 2020/1182 of 19 May 2020

**The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)**

**Regulations 2019** - UK: 2019 No. 720 of 27th March 2019

**The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)**

**Regulations 2020** - UK: 2020 No. 1567 of 16th December 2020

**The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020** - UK:

2020 No. 1540 of 16th December 2020

**POPs Regulation 2019** - Regulation (EU) 2019/1021 of 20 June 2019

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