



**BROWNFIELD
SOLUTIONS LTD**

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

DOMIS CONSTRUCTION LTD

BRWRY, Manchester

Asbestos Management Plan

PH/C5313/12260

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PROJECT QUALITY CONTROL DATA SHEET

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DRAWINGS		
Drawing Number	Rev	Title
A2943 200	R16	Dutton Street Floor Plan
BRW-REN-ZZ-00-DR-S-01-01100	P01	Site Wide Ground Floor Plan
C5313/01	-	Site Location Plan
C5313/03	-	Exploratory Hole Location Plan
C5313/04	A	Site Area Plan
C5313/05		Depth to Bedrock Plan (m AOD)
C5313/06		Made Ground Thickness Plan (m)
C5313/09		Indicative Asbestos Location Plan
C5313/10	B	Asbestos Work Area

APPENDICES	
Appendix	Title
Appendix A	Exploratory Hole Logs
Appendix B	Chemical Test Results
Appendix C	JIWG Decision Support Tool – Work Categories
Appendix D	JIWG Decision Support Tool – Receptor Ranking
Appendix E	BSL Guidance – Re-use and Disposal of Waste

1.0 INTRODUCTION

1.1 Context

This report describes an Asbestos Management Plan carried out by Brownfield Solutions Limited (BSL) for Domis Construction Ltd on a site off Dutton Street, Manchester, M3 1LD.

The objectives of this report are to provide a document summarising the asbestos present in soils at the site and to provide additional detail with regards to the required asbestos management procedures during the proposed site works.

The report is based on the findings of the ground investigations undertaken by GEA and BSL which revealed asbestos to be present within the made ground in 7 No. samples of the made ground across the site.

The report has been completed in general accordance with the following guidance:

-
- The Control of Asbestos Regulations (CAR) 2012.
 - CIRIA Report C765 – Asbestos in soil and made ground good practice site guide.
 - CAR-SOIL™ Industry Guidance by CL:AIRE/ Joint Industry Working Group.
-

1.2 Proposed Development

The proposed development is the erection of two buildings (a part 17, part 12 storey building and a part 26, part 23 storey building) to form 556 residential units (Use Class C3a) together with the creation of 3490 sqm of commercial floor space (Use Classes A1, A2, A3, B1 and D1) with associated landscaping, access and other associated works, as shown on drawing refs. A2943 200 and BRW-REN-ZZ-00-DR-S-01100-P01 provided to BSL by the client.

The proposed structures, hereon referred to as Blocks A-E are displayed on drawing ref. C5313/04.

1.3 Previous Reports

The following reports have been produced for the site and should be read in conjunction with this assessment:

-
- Wardell Armstrong - Phase 1 Contaminated Land Assessment (ref. LO10517 R006.01) issued in January 2018.
 - 1st Line Defence Limited Express Preliminary UXO Risk Assessment (ref. EP7634-00) issued in November 2018.
 - Geotechnical & Environmental Associates (GEA) – Desk Study and Ground Investigation Report (ref. J18242) issued in June 2019.
 - EOD Contracts Ltd Explosive Ordnance Desk Top Study (ref. EOD/23/23040/DTS) issued in February 2023.
 - Brownfield Solutions Ltd (BSL) Site Investigation Proposal (ref. NHA/C5313/11937) issued in March 2023.
 - Brownfield Solutions Ltd (BSL) Phase II Geo-Environmental Report (ref. JEM/C5313/12029 Rev B) issued July 2023.
 - Brownfield Solutions Ltd (BSL) Remedial Strategy (ref. JEM/C5313/12035 Rev B) issued July 2023.
-

1.4 Sources and Flow of Information

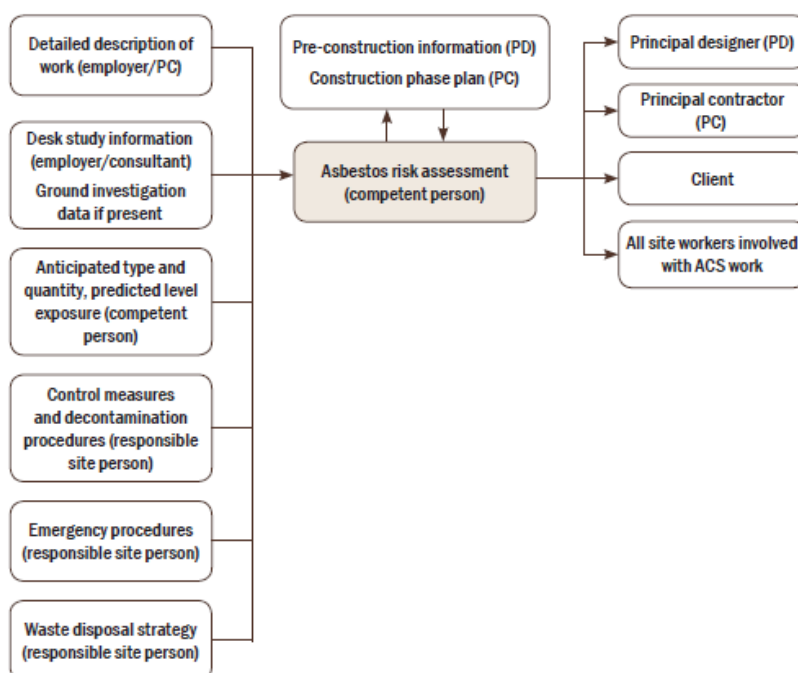
As the Client's consultant, BSL have been commissioned to produce an asbestos risk assessment and Asbestos Management Plan based on information provided by the Client, obtained through previous investigation and an additional investigation.

This document aims to provide an asbestos risk assessment based on the information available and inform the Principal Contractor of the appropriate methodologies and control measures to incorporate into their Construction Phase Plan and site-specific RAMS.

The key stakeholders involved in the project are given in the table below.

Client:	Principal Designer:	Principal Contractor:	Designer:
Domis Construction Ltd Unit 2 Block C 14 Hulme Street Salford M5 4ZG	Renaissance Associates Ltd Carvers Warehouse 77 Dale Street Manchester M1 2HG	Domis Construction Ltd Unit 2 Block C 14 Hulme Street Salford M5 4ZG	Renaissance Associates Ltd Carvers Warehouse 77 Dale Street Manchester M1 2HG

The general information sources for the asbestos risk assessment, the stakeholders and the flow of information between them are shown on the diagram below, which is taken from CIRIA Report C765, Asbestos in Soil and Made Ground; Good Practice Site Guide, 2017.



1.5 Limitations

BSL does not bear any responsibility for verifying compliance with this Management Plan. It is the Principal Contractor's responsibility to ensure that the plan and any control measures are understood, adopted, communicated and managed.

The findings and opinions conveyed via this Asbestos Management Plan 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.

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 taken into account 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, Domis Construction Ltd. 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.

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

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.

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.

2.0 AVAILABLE INFORMATION

2.1 Overview

A number of reports have been issued for the site as detailed in Section 1.3. A summary of the previously issued reports pertaining to asbestos contamination at the site has been completed in this section.

2.2 Wardell Armstrong – Phase 1 Contaminated Land Assessment (January 2018)

Wardell Armstrong were instructed by Prosperity Capital Partners Ltd to undertake a Phase I Contaminated Land Assessment, to support a full planning application for commercial and residential development for the area (reference LO10517 R006.01, dated 11 January 2018). A summary of the relevant points from the report is presented below:

- The site has a significant industrial past, including a brewery and print works, timber yard, iron works, hat works, box works, eight chimneys, a carriage works, waterproof clothing factory, engineering works, cotton works, garage, cabinet makers, motor repair works and car parking. A number of tanks have been recorded within the site boundary historically.
- The site is indicated to be underlain by Devensian till (Secondary Aquifer (Undifferentiated)). The deeper solid geology is indicated to be the Chester Pebble Beds Formation (Principal Aquifer) – now known as the Chester Formation.
- An active groundwater abstraction license was recorded onsite (SJ89NW3264) operated by Interbrew UK Ltd for drinking, cooking, sanitary and washing purposes as well as brewery processes.
- The site does not lie within a Source Protection Zone.
- The nearest watercourse is the River Irk circa 171m east of the site.
- The risk from mining is considered to be low.
- The site is located in a Zone 1 floodplain. A small area across the western portion of the site is within a Zone 2 floodplain.
- The development end use risk is low (commercial) to medium (high-rise residential).
- The overall risk to human health is considered to be low to moderate, with a moderate to high risk from asbestos.
- The risk to controlled waters is low to moderate.
- The risk from ground gas is moderate/low and no radon protection measures are required.
- Recommendations included:
 - Drilling and testing of soil, groundwater and ground gas to target potential sources of contamination outside of the current buildings [as of 2018].
 - A quantitative risk assessment to determine if significant contamination is present.
 - If significant contamination is identified, calculation of site specific remedial targets, liaison with the regulators and remediation.
 - Testing of potential fly tipped asbestos containing material.
 - Confirmation as to whether the abstraction boreholes onsite were effectively decommissioned.
- Assessment and recommendations based on the above, including requirements for further work, if necessary.

2.3 Geotechnical & Environmental Associates (GEA) – Desk Study and Ground Investigation Report (June 2019)

A summary of the relevant points from GEA Desk Study and Ground Investigation Report (ref. J18242, dated 11 June 2019) is presented below:

Desk Study

- Historical mapping from 1787 and 1794 suggests the potential presence of a spring in the middle of the site which flowed towards a brewery directly to the south of the site.

- A smithy was recorded onsite. Mapping from 1850 shows lakes and a canal to the north of the site have been infilled and built upon. Two large reservoirs are present in the middle of the site.
- The Ardwick Fault is shown to lie parallel to Dutton Street roughly along the western edge of the site with its downthrow being east of the fault.
- The main sources of contamination recorded are from infilling of the onsite reservoirs, warehousing and industrial usage including the carriage works, garage, engineering works, smithy and iron works. The number of chimneys indicate a high possibility of ash and clinker, along with oil and fuel contamination and asbestos. The brewery is unlikely to have been a source of significant contamination given the construction of the substantial floor slabs across its entirety. The infilled reservoirs present a possible risk from ground gas. The offsite infilled lake and canal which took place >150 years ago is likely to have a negligible ground gas generation potential.
- A moderate risk associated with contamination at the site is considered to exist.

Site Investigation

- The following site investigation was undertaken at the site:
 - 7 No. cable percussive boreholes advanced to a maximum depth of 23.7m bgl.
 - 1 No. rotary open borehole advanced to a maximum depth of 5.0m bgl.
 - 7 No. rotary core boreholes follow on to a maximum depth of 30.0m bgl.
 - 2 No. boreholes advanced using a combination of rotary open-holing and coring methods.
 - 6 No. combined gas and groundwater monitoring standpipes, to depths of between 4.00m and 24.00m bgl, and five subsequent monitoring visits over a four-month period.
 - 9 No. mechanically excavated trial pits advanced to a maximum depth of 2.80m bgl.
 - 2 No. manually excavated trial pits to a maximum depth of 1.00m bgl.
- Obstructions were encountered within BH2 and BH7 due to high density rebar. BH7 was attempted four times, but was hampered by the rebar, the fourth location identified what appeared to be an uncharted culvert discharging foul water. TP1, TP4, and TP8 in the area all revealed concrete boulders with high density reinforcement. TP8 was abandoned at 0.70m due to a concrete slab which could not be progressed through with a breaker.
- The site is split into three levels, Area A being the highest in the east, to Area C which is the lowest in the west. In Area A made ground was recorded to between 1.00m and 1.80m in thickness in the south, and 2.60m and 3.30m in thickness in the north. BH08 in the west of the area recorded made ground up to 8.00m bgl. Hydrocarbon staining was recorded in BH4 at 0.50m bgl within an ashy layer of made ground.
- Area B recorded made ground down to between 1.70m and 4.45m bgl based on borehole data and presented a clear ash and brick fill layer with hydrocarbon staining within TP6 between 0.40m and 0.50m which was similar to that encountered within BH4 at 0.50m bgl.
- Area C recorded made ground to a maximum depth of 1.70m, dense made ground / reinforced concrete obstructions limited much progress within the central portion of the area. A potential culvert is present in this area.
- Below the made ground, glacial deposits comprising interbedded sands/gravels and clay were encountered between 11.20m and 24.00m m bgl.
- Depth to bedrock was variable across the site. In Area A between 11.20m and 26.80m bgl, in Area B at 8.30m bgl and in Area C at 5.60m bgl. Sandstone was proven to a maximum depth of 30.00m bgl, with between 3.00m and 7.00m of core obtained from each hole – an average of ~4.50m per borehole.
- Groundwater monitoring suggests groundwater between 1.52m and 10.31m bgl. Groundwater flow generally towards the southwest from between 30.00m AOD and 32.00m AOD in Area A down to 25.24m AOD in Area C and towards the River Irwell.
- Soils recorded elevated concentrations of arsenic (<220mg/kg), lead (<1400mg/kg), TPH (<3500mg/kg), naphthalene (<6.5mg/kg), and benzo(a)pyrene (<3.3mg/kg). Asbestos was recorded in TP8 and TP10 at 1.00m bgl, and BH6 and BH7 at 0.50m and 0.80m, respectively. Concentrations varied between <0.001% and 0.021%.
- 5 No. gas monitoring rounds revealed methane between 3.8% and 4.1% in BH3. A maximum carbon dioxide concentration of 1.6% was recorded and a maximum positive flow rate of 0.5l/hr.

2.4 Brownfield Solutions Phase II Geo-Environmental Assessment Report (July 2023)

A summary of the relevant points from the Phase II Geo-Environmental Assessment Report completed by Brownfield Solutions Ltd (BSL) (reference JEM/C5313/12029 Rev A) is presented below:

Site Investigation

- The following site investigation was undertaken at the site:
 - 4 no. of trial pits advanced to maximum depth of 3.00m bgl.
 - 4 no. of trial trenches advanced to a maximum depth of 4.60m bgl.
 - 4 no. archaeological trenches advanced to 2.20m bgl.
 - 6 no. window sample boreholes advanced to a maximum depth of 5.45m bgl.
 - 7 no. dynamic cone penetration testing (DCPs) advanced to a maximum depth of 3.00m bgl.
 - 6 no. cable percussive boreholes advanced to a maximum depth of 10.80m bgl.
 - 2 no. rotary open boreholes advanced to a maximum depth of 11.50m bgl.
 - 8 no. of rotary cored boreholes advanced to a maximum depth of 37.40m bgl.

Ground Conditions

- The ground conditions for Area A can be summarised as below (top down):
 - Made ground generally representing demolition material comprising gravelly sand or sandy gravelly clay from ground level to between 0.45m bgl and 3.80m bgl, but was generally recorded to be in excess of 2.00m in thickness.
 - Natural superficial deposits comprising firm to very stiff clay with varying amounts of silt, sand and gravel as minor constituents interbedded with medium dense to very dense sands and gravels with varying amounts of clay silt as minor constituents proven to depths between 0.50m bgl and 22.00m bgl.
 - Solid geology comprising medium strong partially weathered sandstone proven to depths ranging between 23.00m bgl and 37.40m bgl.
- The ground conditions for Area B can be summarised as below (top down):
 - Made ground generally represented demolition material comprising gravelly sand or sandy gravelly clay from ground level to between 0.55m bgl and 1.50m bgl.
 - Natural superficial deposits comprising firm to stiff clay with varying amounts of sand and gravel as minor constituents proven to 4.40m bgl.
 - Solid geology of the Chester Formation was not encountered within Area B.
- The ground conditions for Area C can be summarised as below (top down):
 - Made ground generally represented demolition material comprising gravelly sand from ground level to between 2.10m bgl and 4.60m bgl.
 - Natural superficial deposits comprising sand with varying amounts of gravel and clay proven to depths between 3.00m bgl and 11.50m bgl.
 - Solid geology comprising medium strong partially weathered sandstone proven to depths ranging between 16.00m bgl and 22.00m bgl.
- The ground conditions for Area D can be summarised as below (top down):
 - Made ground of concrete over gravel from ground level to 0.50m bgl.
 - Natural superficial deposits comprising clay over sand with varying amounts of gravel and clay proven to a maximum depth of 15.65m bgl.
 - Solid geology comprising medium strong partially weathered sandstone proven to a maximum depth of 27.15m bgl.

Observations

- In WS105 a localised mild hydrocarbon odour and staining were noted in made ground soils between 0.30m and 0.60m bgl (area underlain by cohesive natural strata).
- In TT101 a mild hydrocarbon odour and staining was noted in made ground soils between 1.90m and 2.10m bgl. The associated PID reading for those soils was 0.0ppm, indicating a likely very low residual/nuisance odour as opposed to significant or gross contamination. No sheen was noted on groundwater. BSL note that that no visual/olfactory evidence of this was recorded in the several attempts to drill BH07 immediately to the north by GEA), suggesting that this is highly localised.
- The sides of the trial pits were generally stable. The borehole sidewalls were generally stable at shallower depths and window sampling progressed without the need to install casing. However,

casing was required to prevent collapse within the deeper granular materials in cable percussive boreholes.

- There are numerous obstructions throughout the made ground on site.

Contamination

- Soils recorded elevated concentrations of arsenic (<95mg/kg), lead (<2900mg/kg), mercury (2.4mg/kg) and PAHs. Asbestos in the form of loose fibrous debris was recorded in BH102 (0.097%), BH103 (0.001%) and WS104A (0.017%).
-

3.0 SUMMARY OF ASBESTOS OCCURRENCES

3.1 Asbestos Identified during Laboratory Analysis

Asbestos was encountered in localised areas across the wider site. The table below summarises the locations where asbestos has been identified by laboratory testing:

Position	Depth (mbgl)	Nature	Type	Quantity (total mass%)
TP08	1.00	Fibrous bundles	Chrysotile	0.007
TP10	1.00	Fibrous bundles	Chrysotile	<0.001
BH06	0.50	Fibrous bundles	Chrysotile & Amosite	0.022
BH07	0.80	Fibrous bundles	Chrysotile & Amosite	0.001
BH102	0.00 - 0.20	Loose fibrous debris	Chrysotile & Amosite	0.097
BH103	0.70 – 1.00	Loose fibrous debris	Chrysotile	<0.001
WS104A	0.30 – 0.40	Loose fibrous debris	Chrysotile	0.017

3.2 Visible ACMs

No visual evidence of asbestos was observed during the site investigations.

3.3 Notes on Analysis

It should be noted that it is possible for asbestos to be detected in samples in the laboratory visually (that is, under a microscope, using polarised light) as one or more fibres but when the same sample is subject to gravimetric analysis the result is below detection, that is, less than 0.001% w/w. Such results are reflective of the ubiquitous nature of asbestos in environments associated with previously used industrial land.

For the purposes of this report, the 0.001% w/w gravimetric detection limit is reasonably regarded as a threshold value below which the risk of fibre release to air at potentially harmful concentrations is typically low, for conventional construction techniques in freshly excavated ground, with standard dust mitigation measures in place, and subsequent development of the site to hardstanding, landscape etc.

Full laboratory testing results are presented in Appendix B.

4.0 PROPOSED SITE ACTIVITIES

The redevelopment of the site will involve the following activities associated with the asbestos impacted made ground:

- Excavation of asbestos impacted soils from the site-wide proof dig down to natural strata and subsequent stockpiling of material.
- Material will be sorted and re-engineered to 6F5 to be utilised as general fill and a piling mat across the majority of the development, in accordance with a declared MMP.
- Materials from BH102 where asbestos was encountered at 0.097% will be treated as anomalous from the general made ground and re-used as general fill below 1.00m bgl as one of the initial stages of works, development, in accordance with a declared MMP.
- Other asbestos impacted soils will be delineated and where possible, placed as general fill below 1.00m bgl, development, in accordance with a declared MMP.
- Following placement of material within a piling mat, CFA piling will be undertaken through the piling mat, engineered fill below, through natural strata and socketed into bedrock.

5.0 RISK ASSESSMENT

5.1 General

The intrusive investigation undertaken by BSL and the previous investigation by GEA has identified asbestos within seven exploratory hole locations, quantification has revealed these ranged from trace levels (<0.001%) to 0.097%. The laboratory analysis identified the asbestos as loose fibrous debris and fibrous bundles. However, no evidence of visible asbestos has been recorded during any of the site investigations carried out to date.

Given the 'loose fibrous debris' was only identified during laboratory analysis, it is considered this asbestos containing material (ACM) is not 'clearly identifiable'..

In its present state the potential to liberate asbestos fibres low, as the asbestos is suppressed within the damp made ground. Additionally, no visual asbestos was observed onsite, as such the risk of exposing and releasing new fibres is low as the fibres are not held in a matrix.

It is therefore considered that the site does not pose a risk to the wider general public in its present condition and with the control measures detailed below, will continue not to present a risk for the duration of the works.

On the commencement of site works the site will be trafficked, hard surfacing will be removed and excavation works will commence. However, these works will be carried out in the open air and made ground will remain damp. Furthermore, as the asbestos has only been encountered locally, and was not wholly widespread across the site. Ergo it is unlikely that the Control Limit of 0.1f/ml over a continuous 4 hour period will be exceeded as set out in the Control of Asbestos Regulations 2012. The risk is considered to be low.

The legal Control Limit is not a 'safe' level and exposure from work activities involving asbestos must be reduced to as far below the Control Limit as reasonably practicable.

Specific control measures for mitigating the release of asbestos fibres are detailed in Section 6.0.

5.2 Asbestos Work Category and Risk Ranking Assessments

The Joint Industry Working Group (JIWG) Decision Support Tool for the Categorisation of Work Activities in Soil and Construction and Demolition Materials was used to assist the determination of the work category for the construction ground works.

The JIWG Decision Support Tool for the Qualitative Risk Ranking of Work Activities and Receptors Involved in or Exposed to Asbestos in Soil and Construction and Demolition Materials was used to assist the risk assessment for groundwork activities based on the information available from the previous investigations.

The JIWG assessment sheets are presented in Appendix C and D.

Work Category Assessment

The work category hazard ranking has been determined as medium, with the exposure ranking also as low. Therefore, the combined hazard and exposure work category ranking is classified as medium, for the fibrous debris materials based on the worst-case contamination identified from the areas impacted by the asbestos as shown on the Indicative Asbestos Location Plan (C5313/09).

The risk assessment has categorised the licencing status of the works in general as Non-Licensed Work.

Significant degradation of ACMs is unlikely due to the isolated extent of ACMs identified during the site investigation. The identified ACM was fibrous debris, and the respirable fibre index is medium. The material is assumed to be already deteriorated based on the nature of the asbestos with low quantities (>0.01 to <0.05 %wt/wt) in the majority of occurrences. The level of disturbance is likely to be significant and deterioration is likely to be moderate.

With respect to previous testing at BH102, where the concentration of asbestos fibrous debris was 0.097%wt/wt, this falls under the definition of moderate quantities ($>0.05\%$ to $<0.1\%$ wt/wt) and therefore earthworks involving the handling of soils originating from the vicinity of BH102 would be classified as **Notifiable Non-Licensed Work**.

Given the asbestos is present in the form of fibrous debris, the material is assumed to already be disaggregated and further deterioration of any remaining matrix will be minimal. However, as ACMs are not firmly linked within a matrix, they are more likely to spread than ACMs bonded within a matrix, such as cement products. However, this is a worst-case conclusion and the presence of fibrous debris at the levels detected, is generally not considered to pose a significant risk of exceeding the legal control limit, provided the control measures detailed in section 6.0 are implemented.

Therefore, based on the information available and BSL's experience of working on sites with similar levels of contamination, it is our consideration that the Control Limit will not be exceeded by the proposed works. This is supported by the results of air monitoring commissioned by BSL on sites in the past with a similar nature of contaminants, and the nature of the proposed works which are not anticipated to involve very high risk activities such as hand picking of visible ACMs.

Receptor Risk Ranking

The JIWG risk ranking assessment was carried out based on the following receptor and pathway assumptions, which are considered to be conservative:

-
- Construction work.
 - Young adult (16-24 years old).
 - Full time occupational exposure – $>1\text{hr}$ - <10 hours per day.
 - Work area in or within 10m of the area of disturbance.
 - Material buried at shallow depth with potential to be disturbed by piling.
-

The overall risk assessment based on the hazard/material, exposure and receptor assessments is **MEDIUM**.

5.3 Dynamic Risk Assessment

If circumstances change, for example site conditions are different from those anticipated, or unexpected ACMs of a type, condition or extent are identified, then a dynamic risk assessment will need to be undertaken by the responsible person on site, who shall be appropriately trained and competent to undertake the risk assessment.

The control measures and methodologies will need to be reviewed as part of this process and either confirmed as appropriate or revised if required. This will be documented by the PC and recorded in the CPP.

There is more information on dealing with accidents/incidents and emergencies in Section 9.0.

6.0 WORKING METHODOLOGY

6.1 General

The following is an outline of the general methodology for working on the entire site:

-
- Maintain watching brief during groundworks to identify any potential asbestos contamination.
-

The following is an outline of the general methodology for working in the asbestos affected areas, as detailed in section 6.2:

-
- Segregation of work areas from general site environment including all other site staff not involved in the asbestos work area, with associated proximity asbestos air monitoring to ensure levels of airborne fibres are below the control limit for both construction workers and around the perimeter of the asbestos work area (before/during and after).
 - Undertake dust suppression during excavation and any crushing of material.
 - Segregate made ground materials and prepare/set out area where impacted soils will be re-used prior to commencing the excavations.
 - Set up designated wash down area for plant and machinery.
 - Provide disposable coveralls and masks, to be worn by groundworkers and any other workers on site during high risk activities.
 - Provide asbestos waste bin(s) for disposal of spent PPE and any hand-picked ACMs.
 - Placement of the Alert PRO Real-Time Warning Device for Airborne Asbestos Fibres within the asbestos work area to actively assess and manage risk to workers both within and outside the asbestos work areas.
 - Asbestos air monitoring to occur prior to high risk activities, during and after including wearing personal alarms and boundary monitoring.
-

Although the JIWG work category has been classified as medium, given the workers carrying out these works will be contained in excavators and other plant, it would not be reasonably practicable for operatives to wear RPE over the duration of the earthworks. In order to further reduce the risk to workers, windows on excavators should be kept shut and air-conditioning turned off. Tracking of machinery should be limited during the works, and where feasible, washing down of plant should also be carried out when leaving the asbestos work areas.

Further details on higher risk activities and control measures are given below.

6.2 Asbestos Affected Areas

Non-Licensed Works (NLW)

A large number of samples have been taken from the site, and areas of asbestos impaction can be determined from this. A number of the samples were recorded as trace asbestos and therefore CAR-SOIL does not apply.

The work in general is Non-Licensed and therefore the working areas does not need to be physically defined with controlled access and egress. However, control measures and decontamination requirements refer to a 'work area' [which may be affected by asbestos]. For the purposes of this management plan and based on the testing undertaken to date the 'asbestos work areas' have been defined as demonstrated on Asbestos Work Area drawing ref. C5313/10 Rev B.

Further works / testing may be undertaken to reduce these areas in future. Additionally, movement of this material to controlled areas and placed at depth may be undertaken to appropriately mitigate the risk for

day to day activities onsite. Any additional testing / changes to the asbestos work areas will be reflected through subsequent revisions to this document.

Notifiable Non-Licensed Works (NNLW)

The exception to this is the material around BH102; due to the concentration of asbestos recorded, earthworks in the vicinity of BH102 will be classified as notifiable non-licensed works and the HSE will need to be notified accordingly. Given only one sample has been taken from this area and in order to be conservative, all the material up to the next sample location which did not identify asbestos will be removed from Block A to create the piling mat which is approximately 4-5m below existing ground level. The arisings from this exercise will be treated as a separate material to other made ground at the site. The material from this area will be placed within Area B where the existing land/levels for Area A (Block B-E) are required to be extended by ~10m to the west. This means the material from BH102 will be placed at depths between ~5m and 1m bgl. These areas are demonstrated on the Asbestos Work Area (BH102) Plan (ref. C5313/10).

All areas where there is NNLW taking place must be designated and marked with a suitable warning notice. These areas must be restricted to those carrying out the work who must be competent and trained in NNLW.

6.3 Induction

All workers involved in the movement / drilling of materials from the asbestos work area associated with Block A and where this material is to be placed at depth within the centre of the site (pink area on plan) should have current Non-Licensed Work with asbestos training. All other workers should also have Asbestos Awareness training.

Prior to commencing on site all workers will attend a site-specific induction that will include the potential risk on site from encountering ACMs, liberating asbestos fibres, the work area, control measures and PPE requirements.

6.4 Identification of Higher Risk Activities

Possible activities on site that carry a higher risk of liberating asbestos fibres are:

- Excavation, stockpiling and sorting of asbestos impacted soils.
- Loading asbestos impacted made ground soils for disposal off site, if required.
- CFA piling through asbestos impacted soils.
- Hand-picking of visible ACMs (if required).

6.5 Control Measures

The following control measures must be adhered to during the entire programme of work:

Hazard	Control Measures
Excavation – disturbing ACMs and/or exposing soils which can dry and allow liberation of dusts and fibres, includes hand-picking of ACMs	All excavations will be kept damp, with manual or mechanical damping/misting as necessary. High power jets are not to be used directly on soils for this purpose. Watching brief to be maintained for potential ACMs and works to cease if unforeseen contamination is identified pending a review of risk assessment and control measures. On completion, material will be stockpiled and kept damp. Asbestos air monitoring to be required at intervals during the enabling works and during higher risk activities through the use of Alert PRO real time asbestos detector, as detailed further in Section 8.2 below. Where the Alert PRO alarm sounds and identifies the presence of asbestos in the

Hazard	Control Measures
	air the work area should be assessed and additional dust suppression may be required. In this instance, workers from close proximity <10m of the asbestos work area, should be evacuated until the risk from the asbestos work area is adequately controlled and no further alarms are sounded.
Stockpiling of soils – allowing soils to dry and potential liberation of dusts and fibres or from disturbed ACMs	Stockpiles of made ground soils will be kept damp with misting or covered with plastic sheeting as necessary. Watching brief to be maintained. Asbestos air monitoring to be required at intervals during the enabling works, as detailed further in Section 8.2 below.
Breathing in of asbestos fibres	All personnel (except plant operatives) within the defined asbestos work areas should be fitted with FFP3 disposable respirator. If plant operatives are required to leave their sealed cabs within the asbestos work area, utilisation of FFP3 disposable respirator during high risk activities (note workers must be face fitted and clean shaven).
Contamination of clothing with fibres	All personnel (except plant operatives) within the defined asbestos work areas should wear category 3 type 5/6 disposable suits. If plant operatives are required to leave their sealed cabs within the asbestos work area, utilisation of category 3 type 5/6 disposable suits during high risk activities.
Cross-contamination of clean materials with asbestos fibres or ACMs or migration off-site	Keep stockpiles damp or covered. Avoid double handling of materials if they can be excavated and placed directly. Set up decontamination area for personnel before leaving work area. Set-up a wash down area for plant and equipment before leaving site. Wear disposable gloves during any hand-picking exercise.

Welfare/Personal Decontamination

Personal and reassurance air monitoring results will need to be regularly reviewed and where concentrations of asbestos in air monitoring records exceeds <0.01 f/ml for general works then additional control measures such as RPE and disposable coveralls would be required. In this case a demarcated area for basic decontamination should be set up externally and outside the work area with a supply of water and rags for boot washing and patting down coveralls and masks prior to removal and disposal. This should be separate to the welfare facility and decontamination should be carried out as soon as possible upon leaving the work area and before leaving site or entering site cabins, welfare facilities or vehicles.

On-site welfare facilities are required including hand washing facilities.

Extreme Conditions

Where weather conditions onsite are considered to be extreme, either through the presence of heavy rainfall or hot temperatures, a dynamic risk assessment should be conducted onsite by the Principal Contractor to determine whether the risk of thermal stress in these instances, outweigh the risk from asbestos. Should the Principal Contractor deem this to be the case then extra vigilance during periods of hot weather should be conducted to ensure wetting down / dust suppression is adequate and the use of the Alert PRO should be undertaken to demonstrate that the risk is being appropriately managed / mitigated.

Waste PPE

Used suits should be double bagged (red bag should be placed in clear second bag) and sealed before placing in a lockable asbestos bin/skip. The asbestos waste bags/bin should be sited next to the personal decontamination area.

Decontamination of Plant and Equipment

A wash down area with a jet wash should be sited on a suitably hard surfaced and drained area for cleaning of plant and machinery before leaving the asbestos work area.

Watching Brief

A trained and competent person should inspect soils for potential ACMs during the excavation process and stockpiling.

Hand-Picking of Visible ACM

The ground investigations to date have not identified any visible ACMs. However, if suspected materials are identified, ACMs which can be reasonably and practicably hand-picked without causing deterioration should be placed in UN-Approved asbestos waste bags and double bagged (red bag should be placed in clear second bag) and sealed before placing in a lockable asbestos bin/skip. This should be done by a competent operative with Non-Licensed Work training.

If identified, exposed pieces of potentially friable asbestos containing material (ACM) should be covered with plastic sheeting and fenced off and the risk assessment and control measures should be reviewed by a competent person prior to hand-picking or any further action being taken.

6.6 Supervision

Supervision of the works, induction of personnel, record keeping and ensuring compliance with the Asbestos Management Plan (and the Principal Contractors Construction Phase Plan/RAMS) is the responsibility of the site manager for the Principal Contractor.

7.0 WASTE

7.1 Management of Asbestos Contaminated Soils

At present, no asbestos impacted material is anticipated to be taken offsite. Although no soils have been classified as hazardous in regard to the asbestos content, there are instances where the soils have been classified as hazardous due to other contaminants.

Where stockpiling is present, a permanent storage area should be set up to avoid double handling. Made ground soils shall be placed on plastic sheeting separately from any stockpiles of natural or imported soils and kept damp or covered with plastic sheeting.

A watching brief should be maintained throughout the groundworks phase.

7.2 Waste PPE

Used masks and suits should be double bagged (red bag should be placed in clear second bag) and sealed before placing in a lockable asbestos bin/skip. The asbestos waste bags/bin should be sited next to the personal decontamination area.

7.3 Packaging of Asbestos Waste

When packing asbestos waste which comprises ACMs, for example hand-picked asbestos cement fragments:

-
- It should be securely sealed in suitable, labelled bags, wrapping or packaging as it is produced;
 - Any bags, wrapping or packaging used must be designed, constructed and maintained to make sure that no asbestos fibres can be released during handling or transport;
 - For most waste, double plastic sacks are suitable, provided they will not split during normal use;
 - Stronger packages must be used if the waste contains sharp metal fragments or other materials that could puncture plastic sacks;
 - Any waste where the escape of hazardous quantities of respirable asbestos fibres can occur during carriage should be placed in UN-approved packaging. This is available in up to 2 tonnes capacity.
-

7.4 Transporting Asbestos Waste

Bags, wrapping or packaging containing asbestos waste should be appropriately labelled and transported to a licensed disposal site.

Asbestos waste classed as Hazardous or Special must be transported in accordance with the specific requirements of the Hazardous Waste (England and Wales) Regulations 2005.

8.0 VERIFICATION

8.1 General

It would be best practice to undertake static and occupational air monitoring to confirm that the airborne fibre levels are being kept as low as reasonably practicable, that the Control Limit (0.1f/ml over 4-hours) is not being exceeded and that the control measures are suitable and sufficient.

Any air monitoring shall be carried out by an experienced and accredited asbestos consultancy.

8.2 Background and Reassurance Air Monitoring

Static pumps should be placed in the immediate work area (safe distance) and around the perimeter to monitor the airborne fibre concentration before (if possible, for background readings), once during the works (for reassurance), and after to confirm levels have returned to pre-construction levels.

A guideline for specific works during which asbestos air monitoring is specifically recommended are detailed below, and other sporadic monitoring should be completed throughout the course of the earthworks/enabling works programme for additional reassurance:

-
- Excavation of made ground from a defined "Asbestos Work Area" (see drawing. C5313/10 Rev B).
 - Movement of made ground from a defined "Asbestos Work Area" to the area it is to be placed (see drawing. C5313/10 Rev B).
 - Piling through the asbestos impacted made ground placed at depth within Area B (see drawing C5313/0 Rev B).
-

It is anticipated the above air monitoring will be undertaken day to day by the Alert PRO real time asbestos detector that will sound an alarm if detectable asbestos is encountered in the air. The use of this apparatus continuously assesses the airborne environment providing a real-time alarm if asbestos containing materials are disturbed and their toxic fibres released into the air. It will act as an early warning to enable an immediate and proactive safety response helping to prevent the risk of prolonged exposure whilst working in soils that contain asbestos.

8.3 Background Concentrations

If necessary, literature values for background levels can be used for comparison although these may be several orders lower than the detection limit of most static air test procedures.

8.4 Task Monitoring

At the same time as the static air monitoring, occupational monitoring should be carried out on one or more workers operating within the work area whilst undertaking their daily activities.

An occupational pump should be worn by at least one worker to monitor the airborne fibre concentration in their breathing zone as they go about their work.

This will confirm that the level of PPE/RPE adopted are suitable and sufficient.

8.5 Assessment of Results

If fibres are detected above the Control Limit of 0.1f/ml over 4 hours all work will cease immediately. The potential causes will be investigated, and the methodology refined to incorporate the findings of the investigation.

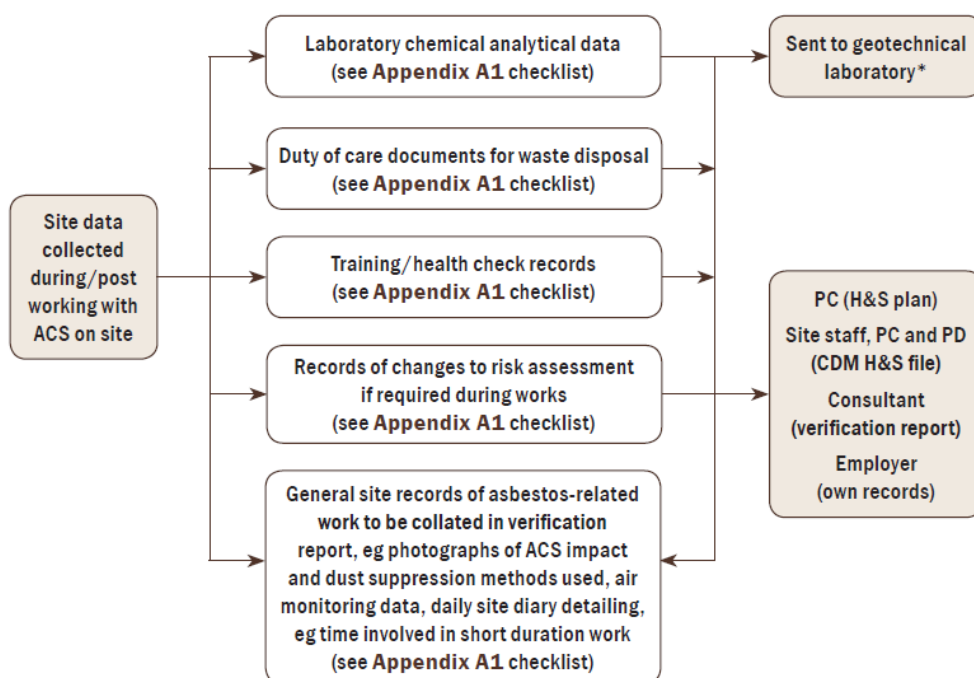
No work will resume until the investigation is complete and revised control measures are in place if required. Additional monitoring shall be instigated at the start of works to confirm the effectiveness of the revised methodology.

8.6 Site Records

It is the site managers responsibility to record and collate relevant information for verification purposes as the works progress, including but not necessarily limited to;

- Training and induction records.
- Air monitoring results if conducted.
- Photographs of control measures in action.
- Daily site records.
- Dynamic risk assessment and amendments to control measures if required.

The general flow of asbestos-related information and records is shown on the diagram below, which is taken from CIRIA Report C765, Asbestos in Soil and Made Ground; Good Practice Site Guide, 2017.



Note

- * To help staff at geotechnical laboratory and other departments/organisations, eg those at disposal facilities to carry out their work safely.

9.0 ACCIDENTS/INCIDENTS/EMERGENCIES

The risk assessment considered the overall risk to be low based on the information revealed by the intrusive investigation and conservative assumptions with regards to the material extent, degree of weathering, fibre release potential and degree of disturbance.

An accident/incident or emergency may occur in the unlikely event that unidentified asbestos contamination of a type and/or extent is disturbed and liberated which is not adequately mitigated by the control measures in place.

CAR-SOIL states that employers must deal with all uncontrolled releases of asbestos in the workplace, quickly and appropriately. This applies to circumstances where asbestos is accidentally disturbed as a result of work on soil and/or C&D materials or where asbestos is unintentionally released as a result of a failure of control measures during such work. The steps required to clean up such releases should be appropriate for the scale of the release and the potential for further release and spread of fibres.

The clean-up of any release that leads to potential exposures at or above the control limit or that are not sporadic and low intensity, e.g. releases of asbestos lagging, loose fill, asbestos coatings or large-scale releases of AIB must be done by a licensed contractor. Releases of asbestos cement, bitumen products, papers, textiles or relatively discrete and undamaged pieces will probably not require a licensed contractor.

What to do if there is a release:

In all cases, where there has been an uncontrolled release of asbestos materials into the workplace the Principal Contractor should take steps to:

-
- Stop all works immediately;
 - Warn people who may be affected;
 - Exclude people from the area, who are not needed to deal with the release;
 - Identify the cause of the uncontrolled release;
 - Regain adequate control as soon as possible.
-

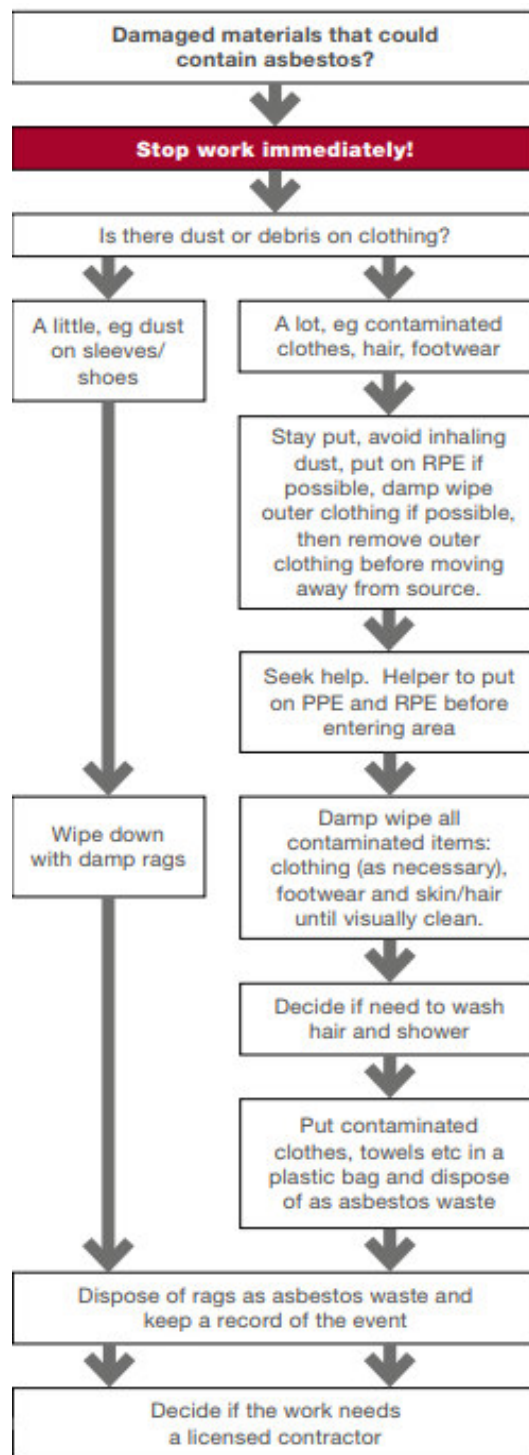
In particular, the Principal Contractor must make sure that:

-
- Anyone in the work area affected who is not wearing PPE including RPE leaves that area immediately;
 - Arrangements are made to decontaminate anyone who is contaminated;
 - Any clothing or PPE is decontaminated or disposed of as contaminated waste;
 - Measures are taken to contain and reduce fibre release.
-

For any employee who was not wearing adequate RPE or has been potentially exposed to asbestos fibres in an incident, a note that the exposure has occurred must be made on that employee's health record. If the employee does not have a health record, the note must be made on that employee's personal record.

There needs to be sufficient resources and equipment on or near the site to enable swift, safe and effective clean-up of unintended asbestos releases. If a shower is required for decontamination then one should either be brought onto site, or a local shower identified.

The following flow chart summarises what steps must be taken in the event of an unplanned exposure to asbestos:



10.0 REFERENCES

1. Control of Asbestos Regulations (CAR), 2012.
2. CIRIA Report C765, 2017. Asbestos in Soil and Made Ground; Good Practice Site Guide.
3. CL:AIRE, 2016. Control of Asbestos Regulations 2012 - Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials: Industry guidance.
4. Brownfield Solutions Ltd Phase I Desk Study Assessment Report (JMC/C3788/7347), issued January 2018.
5. Brownfield Solutions Ltd, Coal Mining Risk Assessment, reference JMC/C3788/7390, issued January 2018.
6. Brownfield Solutions Ltd Phase II Geo-Environmental Assessment Report (JM/C3788/7517 Rev B), dated January 2023.
7. Brownfield Solutions Ltd Remedial Strategy (HW/C3788/11737), dated January 2023.

DRAWINGS





NOTES:

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THIS DRAWING WAS PLOTTED ON:
30/06/2023

REVISION HISTORY

DATE	REV	ZONE	DESCRIPTION	CHK
16/06/2023	P01		Draft Issue	OK
23/06/2023	P02		Preliminary Issue	OK
30/06/2023	P03		Stage 03 Revised Issue	OK

KEY

GENERAL INFORMATION

- APPLICATION SITE BOUNDARY

HARDWORKS

- PAVING TYPE A – KILSARAN INISH BLOCK**
TO MAIN SURFACE RUST RED COLOUR TBC
- PAVING TYPE B – KELLEN**
TO MATCH EXISTING/ COLLEGE ENTRANCE
- PAVING TYPE C – KILSARAN INISH BLOCK 2**
AS SHOWN RUST RED COLOUR TBC
- PAVING TYPE D – GREENGAP PAVING**
TO PRIMARY ROUTES (AS SHOWN)
- PAVING TYPE E – PORCELAIN TILE**
TO PODIUM AS SHOWN
- PAVING TYPE F – PORCELAIN TILE 2**
TO DEFENSIBLE SPACES ON PODIUM
- PAVING TYPE G – PORCELAIN TILE 3**
TO PRIVATE ACCESS ON PODIUM
- HAZARD WARNING PAVING**
TO TOP AND BOTTOM OF STEPS
- MACADAM**
TO VEHICULAR AREAS
TO ENGINEER'S DETAIL & SPECIFICATION
- MACADAM**
TO PEDESTRIAN AREAS
TO ENGINEER'S DETAIL & SPECIFICATION
- PAVING TYPE F – NATURAL STONE SETT**
AS SHOWN
- PAVING TYPE I – NATURAL STONE UNIT**
TO SPILL OUT SPACE AS SHOWN
- STONE STEPS**
SOLID STONE STEP UNIT WITH CONTRASTING INLAY STRIP
- CORTEN ETCHED INLAY STRIP**
SITE TIMELINE DETAIL RIBBON AS SHOWN

SOFTWORKS

- CLEAR-STEM TREE PLANTING**
- MULTI-STEM TREE PLANTING**
- POTTED MULTI-STEM TREE**
REFER TO DRAWING SERIES 2000 FOR POT DETAILS
- ORNAMENTAL SHRUBS AND GRASSES MIX 1**
SUBJECT TO PLANTING SCHEDULE
- THYME/SEDUM MATTING**
SUBJECT TO FUTURE DETAIL

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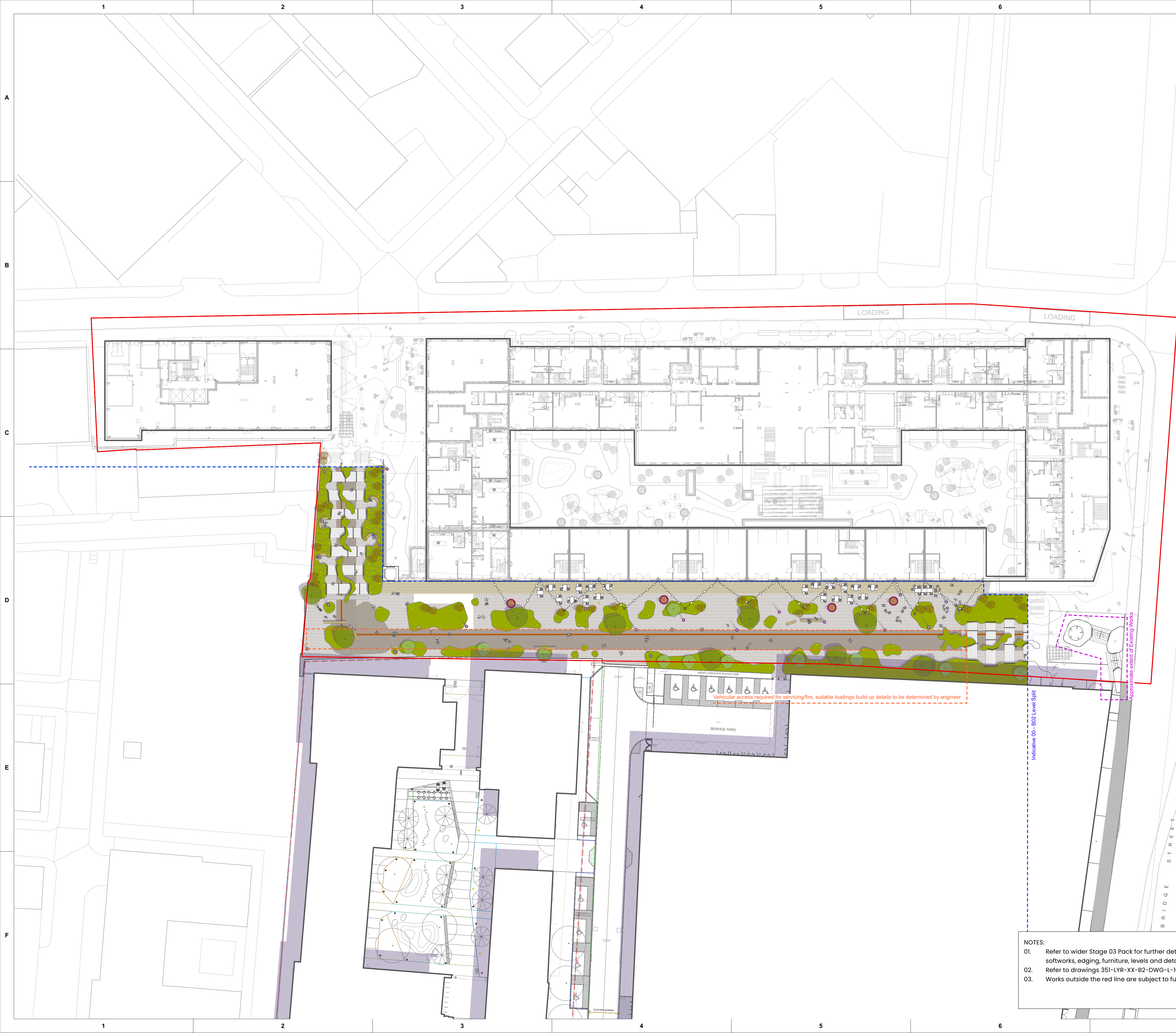
Client
Artal. Ltd

Project
**Waterhouse Gardens
Manchester**

Drawing Title
General Arrangement

Created By MI	Checked By ST	Scale 1:350 @ A1	Sheet Size A1
Project Number 351	Originator LYR	Volume Level File Type Discipline Number XX-00-DWG-L-1000	
Work Stage Stage 03	Status S3 Review & Comment	Revision P03	

- NOTES:
- Refer to wider Stage 03 Pack for further details regarding hardworks, softworks, edging, furniture, levels and details.
 - Refer to drawings 351-LYR-XX-B2-DWG-L-1000 for level B2.
 - Works outside the red line are subject to future agreement.



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30/06/2023

REVISION HISTORY				
DATE	REV	ZONE	DESCRIPTION	CHK
23/06/2023	P01		Preliminary Issue	OK
30/06/2023	P02		Stage 03 Revised Issue	OK

KEY

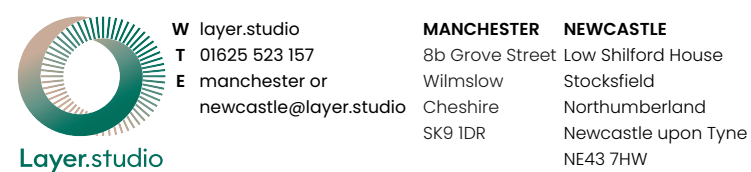
GENERAL INFORMATION

-  APPLICATION SITE BOUNDARY

HARDWORKS

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|  | THYME/SEDUM MATTING
SUBJECT TO FUTURE DETAIL |

ORIGINATOR



Client

Artal. Ltd

Project

Waterhouse Gardens

Waterhouse G
Manchester

Manchester

Drawing Title

General Arrangement

Created By	Checked By	Scale	Sheet Size
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Project Number	Originator	Volume	Level	File Type	Discipline	Number
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351	LYR	XX-B2-DWG-L-1000
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Work Stage	Status	Decision
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work stage	status	revision
Stage 03	S3 Review & Comment	P02

stage 03	03 Review & Commitment	1.02
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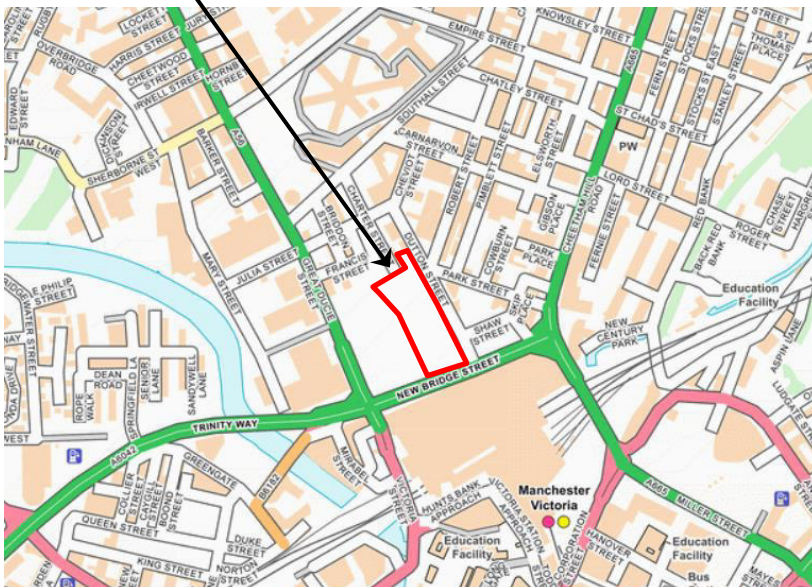
NOTES:

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02. Refer to drawings 351-LYR-XX-B2-DWG-L-1000 for level B2.
03. Works outside the red line are subject to future agreement.



NEAREST POSTCODE: M3 1LD

SITE ENTRANCE WHAT3WORDS:
///TITLE.MILE.SPAN



REV	DATE	DESCRIPTION	BY	CHKD



**BROWNFIELD
SOLUTIONS LTD**
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT				
DOMIS CONSTRUCTION LTD				
PROJECT TITLE				
BRWRY SITE, NEW BRIDGE STREET, MANCHESTER				
DRAWING TITLE				
SITE LOCATION PLAN				
DRAWING No. C5313/01	REVISION -	SCALE NTS	DATE 22/03/23	
DRAWN BY SD		CHECKED BY NS		



KEY

	APPROXIMATE SITE BOUNDARY
	AREA A
	AREA B
	AREA C
	TRIAL PIT
	TRIAL TRENCH
	WINDOW SAMPLE BOREHOLE
	CABLE PERCUSSIVE / ROTARY BOREHOLE
	DYNAMIC PROBE
	GEA CABLE PERCUSSIVE / ROTARY BOREHOLE (2018)
	GEA TRIAL PITS (2018)
	BOREHOLE INSTALLATION

NOTES

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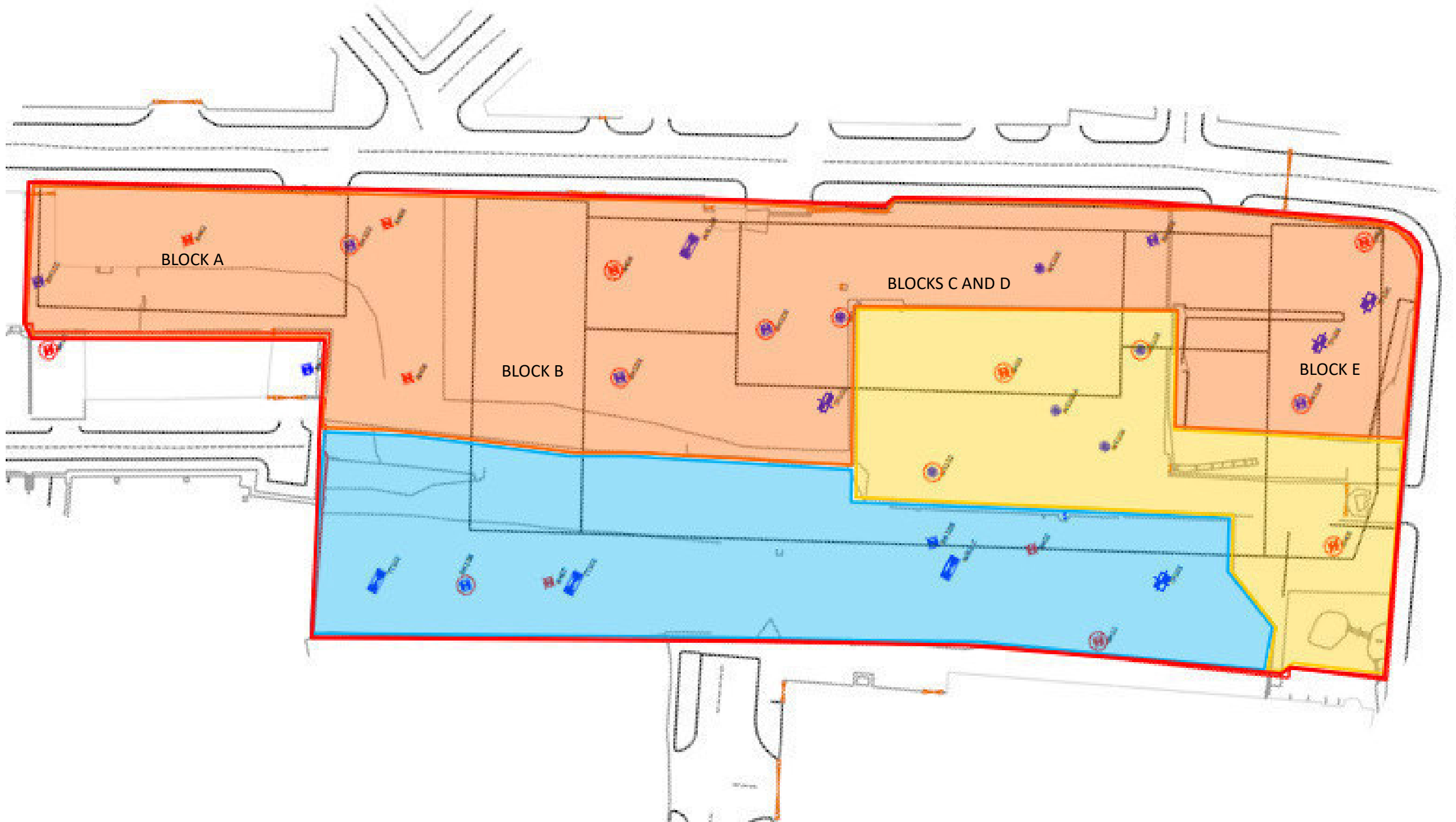


CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
BRWRY, MANCHESTER

DRAWING TITLE
EXPLORATORY HOLE LOCATION PLAN

DRAWING No. C5313/03	REVISION -	SCALE NTS	DATE 27.04.2023
DRAWN BY MB		CHECKED BY NS	



KEY

- APPROXIMATE SITE BOUNDARY
- AREA A
- AREA B
- AREA C

- NOTES
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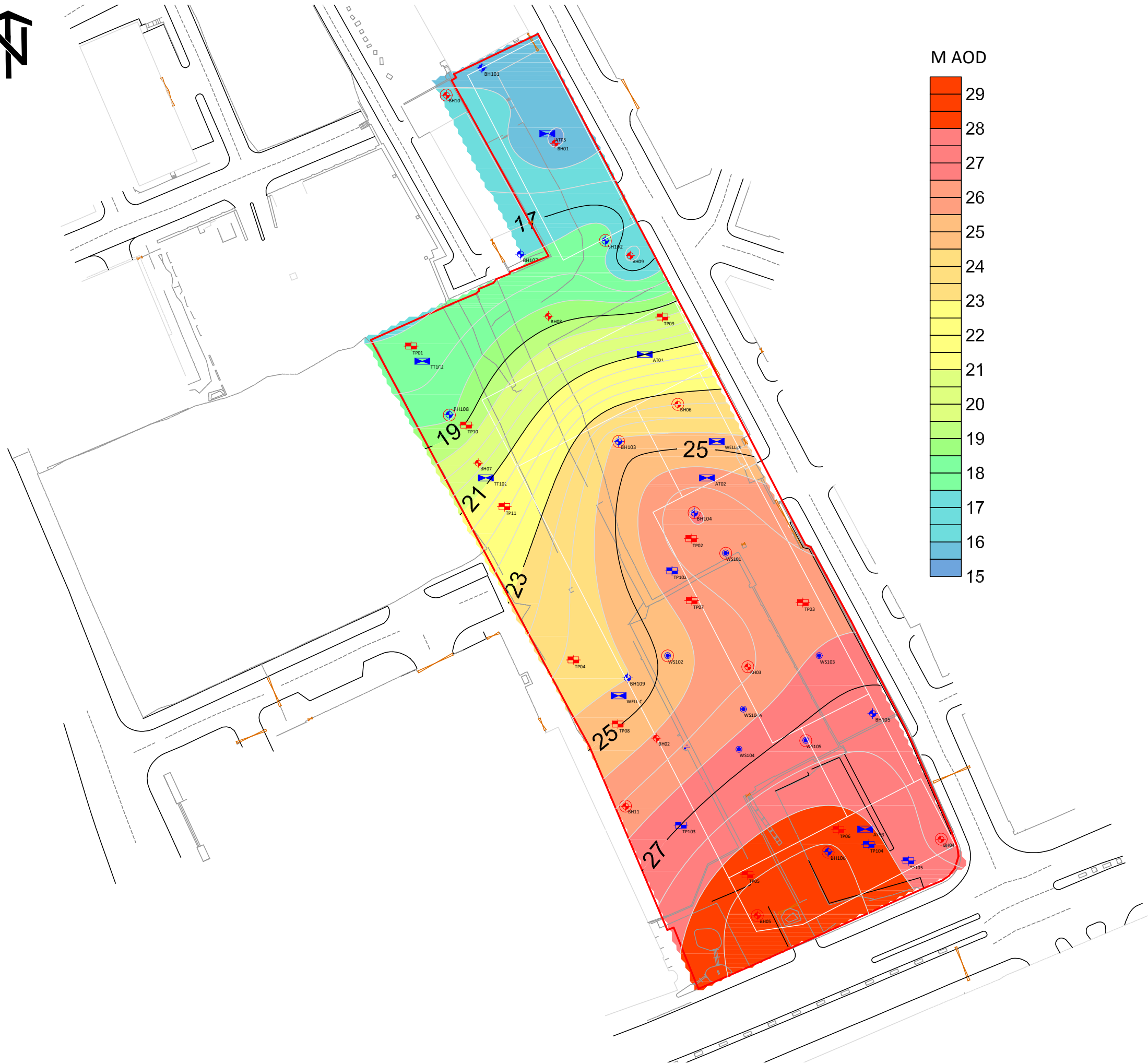


CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
BRWRY, MANCHESTER

DRAWING TITLE
SITE AREA PLAN

DRAWING No.	REVISION	SCALE	DATE
C5313/04	-	NTS	25/04/23
DRAWN BY		CHECKED BY	
SD		NS	



KEY	
—	APPROXIMATE SITE BOUNDARY
—	AREA A
—	AREA B
—	AREA C
■ TPXXX	TRIAL PIT
■ TTXXX	TRIAL TRENCH
● WSXXX	WINDOW SAMPLE BOREHOLE
● BHXXX	CABLE PERCUSSIVE / ROTARY BOREHOLE
▼ DPXX	DYNAMIC PROBE
■ BHXX	GEA CABLE PERCUSSIVE / ROTARY BOREHOLE (2018)
■ TPXX	GEA TRIAL PITS (2018)
○	BOREHOLE INSTALLATION

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REV	DATE	DESCRIPTION	BY	CKD

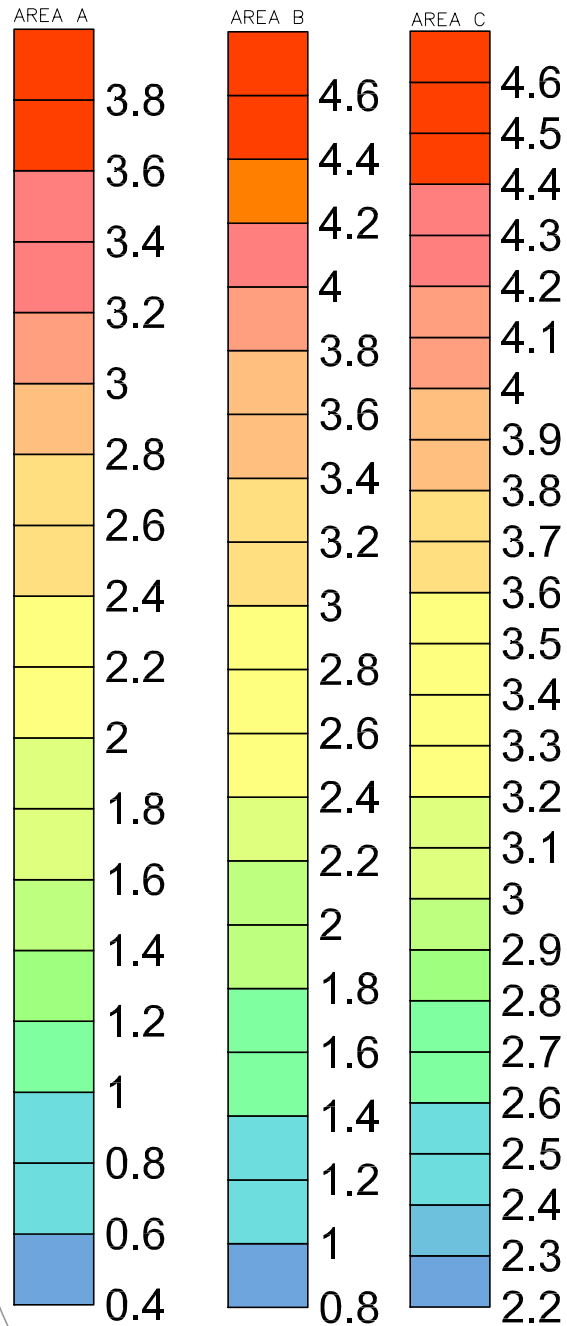
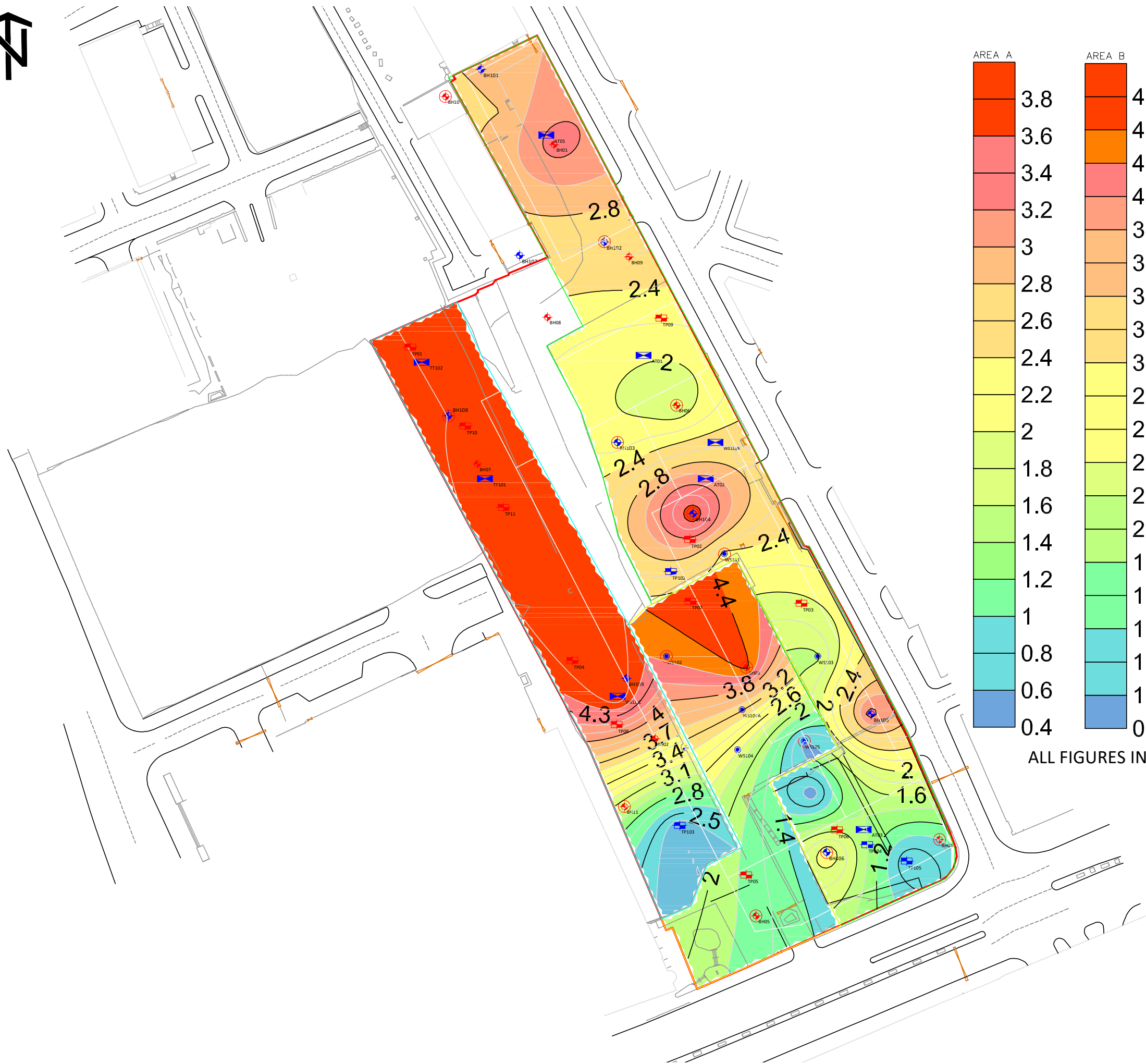


CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
BRWRY, MANCHESTER

DRAWING TITLE
DEPTH TO BEDROCK (MAOD)

DRAWING No.	REVISION	SCALE	DATE
C5313/05	-	NTS	25.04.2023
DRAWN BY JM		CHECKED BY NS	



ALL FIGURES IN METRES

KEY	
	APPROXIMATE SITE BOUNDARY
	AREA A
	AREA B
	AREA C
	TRIAL PIT
	TRIAL TRENCH
	WINDOW SAMPLE BOREHOLE
	CABLE PERCUSSIVE / ROTARY BOREHOLE
	DYNAMIC PROBE
	GEA CABLE PERCUSSIVE / ROTARY BOREHOLE (2018)
	GEA TRIAL PITS (2018)
	BOREHOLE INSTALLATION

- 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
DOMIS CONSTRUCTION LTD

PROJECT TITLE
BRWRY, MANCHESTER

DRAWING TITLE
MADE GROUND THICKNESS
PLAN (M)

DRAWING No.	REVISION	SCALE	DATE
C5313/06	-	NTS	27.04.2023
DRAWN BY JM		CHECKED BY NS	



Location	Sample Depth (m bgl) (Strata)	Asbestos Concentration (%)
TP08	1.00	0.007
TP10	1.00	<0.001
BH06	0.50 (0.00-1.80)	0.022
BH07	0.80 (0.20-1.20)	0.001
BH102	0.00-0.20 (0.00-0.20)	0.097
BH103	0.70-1.00 (0.60-2.10)	<0.001
WS104A	0.30-0.40 (0.25->1.20)	0.017

KEY	
	APPROXIMATE SITE BOUNDARY
	TRIAL PIT
	TRIAL TRENCH
	WINDOW SAMPLE BOREHOLE
	CABLE PERCUSSIVE / ROTARY BOREHOLE
	GEA CP/ ROTARY BOREHOLE (2018)
	GEA TRIAL PITS (2018)
	ASBESTOS ABOVE TRACE (>= 0.001%)
	NO ASBESTOS DETECTED IN STRATA SAMPLED
	TRACE LEVEL ASBESTOS (<0.001%)

- NOTES
- 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.
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 - DRAWING NOT FOR CONSTRUCTION PURPOSES.

REV	DATE	DESCRIPTION	BY	CKD

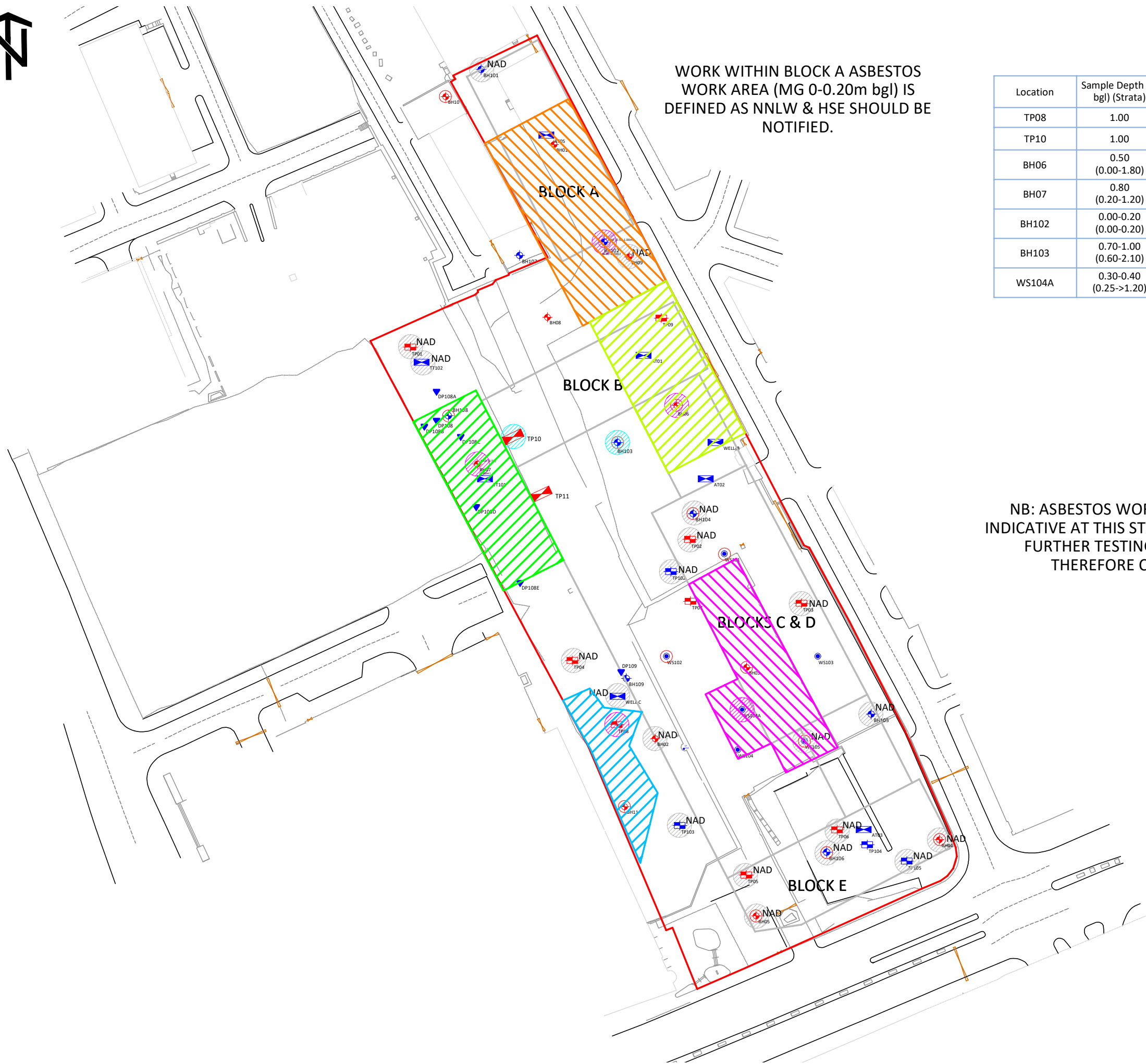


CLIENT
DOMIS CONSTRUCTION LTD

PROJECT TITLE
BRWRY, MANCHESTER

DRAWING TITLE
INDICATIVE ASBESTOS LOCATION PLAN

DRAWING No.	REVISION	SCALE	DATE
C5313/09	-	NTS	29/06/23
DRAWN BY PH		CHECKED BY NS	



WORK WITHIN BLOCK A ASBESTOS
WORK AREA (MG 0-0.20m bgl) IS
DEFINED AS>NNLW & HSE SHOULD BE
NOTIFIED.

Location	Sample Depth (m bgl) (Strata)	Asbestos Concentration (%)
TP08	1.00	0.007
TP10	1.00	<0.001
BH06	0.50 (0.00-1.80)	0.022
BH07	0.80 (0.20-1.20)	0.001
BH102	0.00-0.20 (0.00-0.20)	0.097
BH103	0.70-1.00 (0.60-2.10)	<0.001
WS104A	0.30-0.40 (0.25->1.20)	0.017

NB: ASBESTOS WORK AREAS ARE
INDICATIVE AT THIS STAGE, SUBJECT TO
FURTHER TESTING AND MAY
THEREFORE CHANGE.

KEY	
	APPROXIMATE SITE BOUNDARY
	TRIAL PIT
	TRIAL TRENCH
	WINDOW SAMPLE BOREHOLE
	CABLE PERCUSSIVE / ROTARY BOREHOLE
	GEA CP/ ROTARY BOREHOLE (2018)
	GEA TRIAL PITS (2018)
	ASBESTOS ABOVE TRACE (>= 0.001%)
	NO ASBESTOS DETECTED IN STRATA SAMPLED
	TRACE LEVEL ASBESTOS (<0.001%)
	ASBESTOS WORK AREA (TO BE EXCAVATED)
	ASBESTOS WORK AREA SOILS PLACEMENT >1.00M BGL

- NOTES
- 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.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS REPORTS. THIS DRAWING IS COPYRIGHT OF BSL.
 - DRAWING NOT FOR CONSTRUCTION PURPOSES.

REV	DATE	DESCRIPTION	BY	CKD



CLIENT
DOMIS CONSTRUCTION LTD

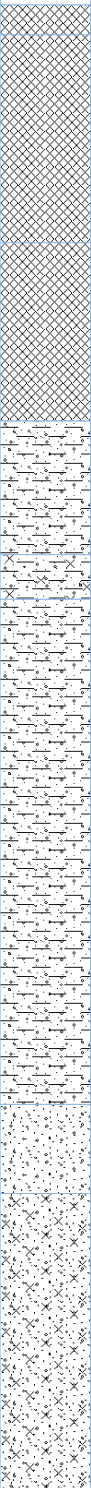
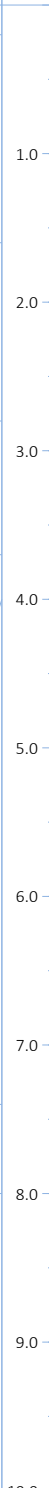
PROJECT TITLE
BRWRY, MANCHESTER

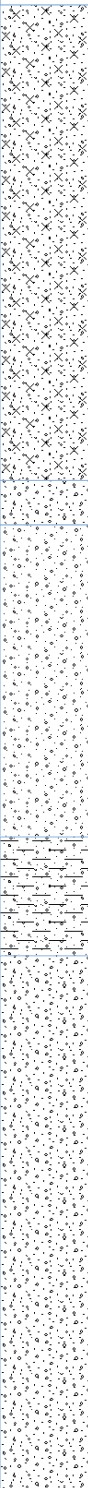
DRAWING TITLE
ASBESTOS WORK AREAS

DRAWING No.	REVISION	SCALE	DATE
C5313/10	B	NTS	29/06/23
DRAWN BY NS		CHECKED BY AJS	

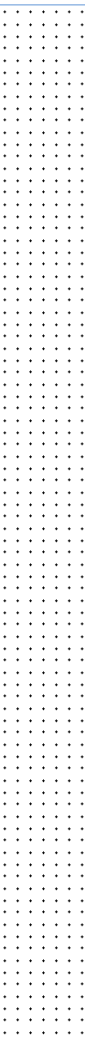
APPENDIX A

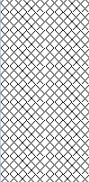
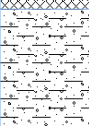
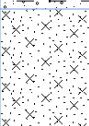
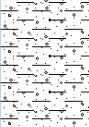
Exploratory Hole Logs

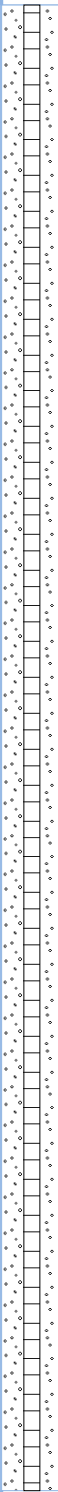
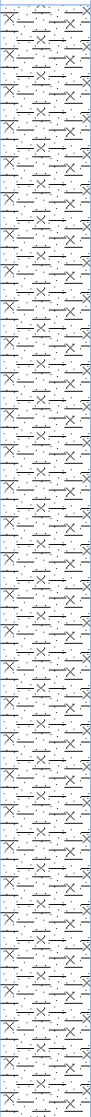
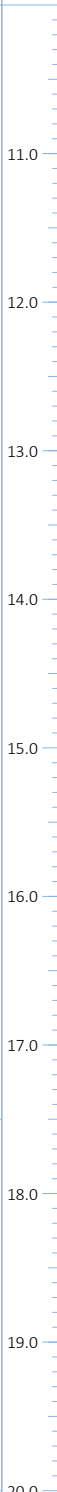
 BROWNFIELD SOLUTIONS LTD							Borehole Log		Cable Percussion with Rotary Core No.	
							BH101		Sheet 1 of 4	
PROJECT NO: C5313							CO-ORDS: 383829E, 399361N		Hole Type	
									CP+RC	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 38.11m OD		Scale	
									1:51	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 30/03/23 - 06/04/23		Logged	Checked
									JEM + MB	NS
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20-1.20 0.30-0.70 0.30	B ES PID	1.1PPM	0.20	37.91		MADE GROUND: Asphalt.		
								MADE GROUND: Brown slightly gravelly clayey fine to coarse sand with low cobble content. Gravel is subangular to subrounded fine to coarse of slag, clinker, brick and concrete. Cobbles are subangular to subrounded of brick up to 140mm in diameter.		
		1.20-1.65 1.20	D SPT	N=12 (2,3/3,3,3,3)	1.60	36.51		MADE GROUND: Brown slightly sandy gravelly clay. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, concrete, sandstone and mudstone.		
		1.60	D							
		2.00-2.45 2.00	D SPT	N=11 (2,2/2,3,3,3)						
		2.80	D		2.80	35.31		Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone.		
		3.00-3.45 3.00	D SPT	N=16 (3,3/3,4,4,5)						
		3.70	D		3.70	34.41		Firm brown slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone.		
		4.00-4.45 4.00	D SPT	N=17 (2,3/4,4,4,5)	4.00	34.11		Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone.		
		4.50	D							
		5.00-5.45	U							
		5.45-5.50	D							
		6.00-6.45 6.00	D SPT	N=18 (3,4/4,4,5,5)				Becoming stiff from 6.00m bgl.		
		7.00	D							
		7.50-7.95 7.50	D SPT	N≥50 (7,7/50 for 265mm)	7.40	30.71		Dense brown slightly gravelly fine to coarse SAND. Gravel is rounded fine to coarse of quartz, mudstone and sandstone.		
					8.00	30.11		Dense brown slightly gravelly silty fine to coarse SAND. Gravel is rounded fine to coarse of quartz, mudstone and sandstone.		
		8.50	D							
		9.00-9.45 9.00	D SPT	N≥50 (6,7/10,12,12,16)						
9.50		D								
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 37.00m bgl. 4. No installation. 5. Borehole backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

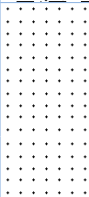
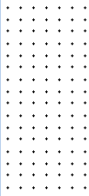
 BROWNFIELD SOLUTIONS LTD						Borehole Log		Cable Percussion with Rotary Core No.				
								BH101				
								Sheet 2 of 4				
PROJECT NO: C5313						CO-ORDS: 383829E, 399361N		Hole Type				
								CP+RC				
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 38.11m OD		Scale				
								1:51				
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 30/03/23 - 06/04/23		Logged	Checked			
								JEM + MB	NS			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		10.50-10.95 10.50	D SPT	N≥50 (6,6/50 for 245mm)					11.0			
		11.50	D									
		12.00-12.45 12.00	D SPT	N≥50 (7,8/50 for 275mm)					12.0			
		13.00	D						13.0			
		13.50-13.95 13.50	D SPT	N=30 (3,6/7,7,7,9)	13.20 13.50	24.91 24.61						
		15.00-15.45 15.00	D SPT	N=38 (4,5/9,9,10,10)					14.0			
		15.60	D		15.60	22.51			15.0			
		16.50-16.95 16.50	D SPT	N=30 (3,4/6,7,7,10)	16.40	21.71			16.0			
		17.50	D						17.0			
		18.00-18.45 18.00	D SPT	N≥50 (25 for 30mm/50 for 5mm)					18.0			
Becoming very dense from 18.00m bgl.									19.0			
									20.0			
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 37.00m bgl. 4. No installation. 5. Borehole backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane				

 BROWNFIELD SOLUTIONS LTD							Borehole Log			Cable Percussion with Rotary Core No.							
PROJECT NO: C5313							CO-ORDS: 383829E, 399361N			BH101							
										Sheet 3 of 4							
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 38.11m OD			Hole Type							
										CP+RC							
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 30/03/23 - 06/04/23			Scale							
										1:51							
										Logged	Checked						
										JEM + MB		NS					
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description									
Depth (m)	Type	Results															
		20.50 - 22.00	NI	100	0	0	22.00	16.11		Medium strong partially weathered red SANDSTONE. 22.00-22.20m bgl: No recovery. 22.20-22.33m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 22.33-23.50m bgl: Discontinuities are medium spaced, smooth and horizontal.	21.0						
		22.00 - 23.50	NR	87	78	43					7	23.0					
			NI														
			23.50 - 25.00	NR	95	91							88	5	24.0		
		NI															
		25.00 - 26.50		24	100	97					32	26.0					
				26.50 - 28.00									NR			93	90
			0														
		1															
		28.00 - 29.50	4		100	97					58	4	28.0				
			4	100										93	73	29.0	
																	TCR
		Remarks															
		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 37.00m bgl. 4. No installation. 5. Borehole backfilled with arisings upon completion.															
		ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane															

 BROWNFIELD SOLUTIONS LTD								Borehole Log		Cable Percussion with Rotary Core No.																				
								BH101																						
								Sheet 4 of 4																						
PROJECT NO: C5313								CO-ORDS: 383829E, 399361N		Hole Type																				
										CP+RC																				
PROJECT NAME: BRWRY, MANCHESTER								LEVEL: 38.11m OD		Scale																				
										1:51																				
CLIENT: DOMIS CONSTRUCTION LTD								DATES: 30/03/2023 - 06/04/2023		Logged	Checked																			
										JEM + MB	NS																			
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description																				
				TCR (%)	SCR (%)	RQD (%)																								
		29.50 - 31.00	6	100	100	90	37.00	1.11		30.59-30.65m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 30.76-30.81m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 31.00-32.50m bgl: Discontinuities are medium spaced, smooth and horizontal.	31.0																			
			NI																											
			0																											
			0																											
		31.00 - 32.50	9	100	90	68				32.50-32.85m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 32.85-34.38m bgl: Discontinuities are medium spaced, smooth and horizontal. Closely spaced at 33.20-33.38m bgl.	32.0																			
			NI																											
			12								33.0																			
		32.50 - 34.00	12	100	93	77				34.38-34.48m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 34.48-35.85m bgl: Discontinuities are medium spaced, smooth and horizontal.	34.0																			
			3																											
			NI																											
		34.00 - 35.50	6	100	87	72				35.85-36.00m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 36.00-36.35m bgl: Discontinuities are medium spaced, smooth and horizontal. 36.35-36.40m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 36.40-37.00m bgl: Discontinuities are medium spaced, smooth and horizontal.	35.0																			
			2																											
			3																											
			NI																											
		35.50 - 37.00	8							End of Borehole at 37.00m									37.0											
			2																											
			3																											
			NI																											
											38.0																			
											39.0																			
											40.0																			
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 37.00m bgl. 4. No installation. 5. Borehole backfilled with arisings upon completion.								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane																				

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Cable Percussion with Rotary Core No.	
							BH102		Sheet 1 of 4	
PROJECT NO: C5313							CO-ORDS: 383857E, 399322N		Hole Type	
									CP+RC	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 39.69m OD		Scale	
									1:51	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 28/03/23 - 03/04/23		Logged	Checked
									JEM	NS
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.00-0.20	ES		0.20	39.49		MADE GROUND: Brown slightly gravelly slightly sandy clay with frequent rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of glass, brick, plastic, concrete and sandstone.		
		0.00-1.20	B							
		0.00	PID	0.4PPM						
		0.20	PID	0.1PPM						
		0.50-1.00	ES							
		0.50	PID	0.6PPM						
		1.00	PID	0.1PPM				MADE GROUND: Brown slightly gravelly slightly sandy clay with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of concrete, brick, sandstone and mudstone. Cobbles are subrounded of brick and concrete up to 180mm in diameter.	1.0	
		1.20-1.65	D							
		1.20	SPT	N=29 (3,4/6,6,8,9)						
		2.00-2.45	D							
		2.00	SPT	N=42 (5,8/10,10,11,11)						
		2.60-3.00	B		2.60	37.09		Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subrounded of fire to medium mudstone and sandstone.	3.0	
		3.50-3.60	D							
		4.00-4.45	U							
		4.45-4.50	D							
		5.00	SPT	N=15 (2,3/3,4,4,4)						
		5.50	D		5.50	34.19		Medium dense brown silty fine to coarse SAND.	6.0	
		6.00-6.45	D							
		6.00	SPT	N=19 (2,4/4,5,5,5)						
		6.50	D							
		7.50-7.95	D		6.50	33.19		Firm to stiff brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and mudstone.	7.0	
		7.50	SPT	N=23 (2,3/4,6,6,7)						
		8.00	D							
		9.00-9.45	D							
		9.00	SPT	N=23 (3,4/4,5,7,7)						
		9.50	D		9.60	30.09		Firm to stiff brown slighly sandy silty CLAY. Sand is fine to coarse.	10.0	
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 20.00m bgl. 3. Borehole completed at 37.40m bgl. 4. Borehole installation: 10.00m plain, slotted to 20.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD						Borehole Log		Cable Percussion with Rotary Core No.	
PROJECT NO: C5313						CO-ORDS: 383857E, 399322N		BH102	
								Sheet 2 of 4	
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 39.69m OD		Hole Type	
								CP+RC	
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 28/03/23 - 03/04/23		Scale	
								1:51	
						Logged		Checked	
								JEM	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50-10.95	U						
		11.50	D						
		12.00-12.45 12.00	D SPT	N=29 (3,4/7,7,7,8)					
		12.50	D						
		13.50-13.95 13.50	D SPT	N=29 (3,3/6,7,8,8)					
		14.00	D						
		15.00-15.45 15.00	D SPT	N=26 (3,4/5,7,7,7)					
		15.50	D						
		16.50-16.95 16.50	D SPT	N=24 (4,4/5,6,6,7)					
		17.10	D						
		18.00-18.45 18.00	D SPT	N=47 (6,7/9,10,13,15)	17.50	22.19			
		19.50-19.95 19.50	D SPT	N=41 (3,7/10,10,10,11)					
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 20.00m bgl. 3. Borehole completed at 37.40m bgl. 4. Borehole installation: 10.00m plain, slotted to 20.00m bgl.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Cable Percussion with Rotary Core No.			
							BH102			
							Sheet 3 of 4			
PROJECT NO: C5313							CO-ORDS: 383857E, 399322N			
PROJECT NAME: BRWRY, MANCHESTER							Hole Type CP+RC			
CLIENT: DOMIS CONSTRUCTION LTD							LEVEL: 39.69m OD			
							Scale 1:51			
DATES: 28/03/23 - 03/04/23							Logged JEM	Checked NS		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		20.50	D					Stiff reddish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse of sandstone.	21.0	
		21.00-21.45 21.00	D SPT	N=30 (6,6/7,7,7,9)	21.30	18.39				
		21.80-22.00 22.00-22.25 22.00	D D SPT	N≥50 (25 for 75mm/50 for 75mm)	21.70	17.99				
			NR	93	87	39		Medium strong partially weathered red SANDSTONE.	22.0	
		22.60 - 24.10	13							
			NI NR	90	83	78				
		24.10 - 25.60	4					24.00-24.10m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 24.10-24.25m bgl: No recovery. 24.25-25.50m bgl: Discontinuities are medium spaced, smooth and horizontal.	25.0	
			NI	100	98	77				
		25.60 - 27.10	8							
			1 NI	100	90	55		25.50-25.60m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 25.60-26.83m bgl: Discontinuities are medium spaced, smooth and horizontal.	26.0	
		27.10 - 28.60	11							
				100	100	87				
				28.60 - 30.10	8					29.0
						TCR	SCR	RQD		30.0
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 20.00m bgl. 3. Borehole completed at 37.40m bgl. 4. Borehole installation: 10.00m plain, slotted to 20.00m bgl.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		



Cable Percussion with Rotary Core No.

Sheet 4 of 4

Hole Type

CP+RC

Scale

1:51

d	cl
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Logged

Checked

JEM

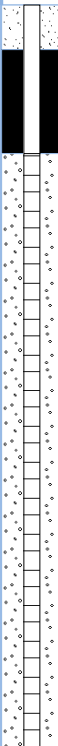
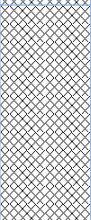
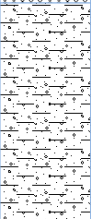
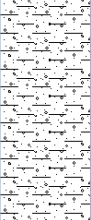
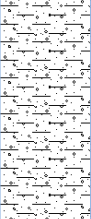
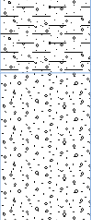
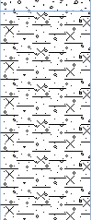
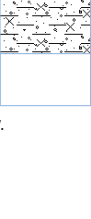
NS

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Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. Groundwater encountered at 20.00m bgl.
3. Borehole completed at 37.40m bgl.
4. Borehole installation: 10.00m plain, slotted to 20.00m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Cable Percussion with Rotary Core No.	
							BH103		Sheet 1 of 3	
PROJECT NO: C5313							CO-ORDS: 383860E, 399277N		Hole Type	
									CP+RC	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 39.94m OD		Scale	
									1:51	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 31/03/23 - 04/04/23		Logged	Checked
									JEM + MB	NS
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.30	39.64		MADE GROUND: Dark greyish brown gravelly fine to coarse sand of ash. Gravel is subangular to rounded fine to medium of brick, concrete, asphalt and glass.	1.0	
					0.60	39.34		MADE GROUND: Concrete.		
		0.70-1.00	B ES PID	1.1PPM				MADE GROUND: Brown slightly gravelly slightly sandy clay. Sand is fine to coarse of ash. Gravel is subangular to subrounded fine to coarse of brick, concrete, sandstone, mudstone and occasional slag and clinker.		
		0.70							2.0	
		1.20-1.65	D SPT	N=3 (1,0/1,0,1,1)						
		1.20								
		1.50-1.80	B ES PID	0.7PPM					3.0	
		1.50								
		2.20-2.65	D SPT	N=35 (3,4/5,7,10,13)	2.10	37.84				
		2.20							4.0	
		2.70-3.00	B							
		3.10-3.55	U							
		3.60	D						5.0	
		4.30-4.75	D SPT	N=43 (5,6/9,10,12,12)						
		4.30						Becoming very stiff from 4.30m bgl.		
		5.40-5.85	D SPT	N=39 (6,7/8,10,10,11)					6.0	
		5.40								
		6.00	D							
		7.10-7.55	D SPT	N=31 (5,6/7,7,8,9)	7.10	32.84			7.0	
		7.10								
		7.30	D					Dense brown fine to coarse SAND and GRAVEL. Gravel is subrounded to rounded fine to coarse of sandstone, mudstone and quartz.		
		8.40-8.85	U		8.20	31.74			8.0	
		8.90	D							
		9.10-9.80	D SPT	N≥50 (12,13/50 for 125mm)						
		9.10							9.0	
		10.00-10.20	D		10.00	29.94				
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 26.50m bgl. 4. Borehole installation: 1.00m plain, slotted to 5.00m bgl.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		



Cable Percussion with Rotary Core No.

Sheet 2 of 3

Hole Type	Location	Depth (mm)	Material	Notes
1	Top Left	10	Aluminum	Standard
2	Top Right	10	Aluminum	Standard
3	Bottom Left	10	Aluminum	Standard
4	Bottom Right	10	Aluminum	Standard
5	Center	10	Aluminum	Standard

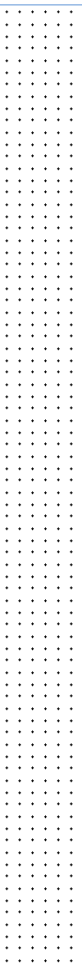
CP+RC

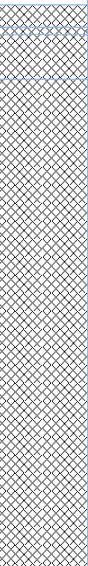
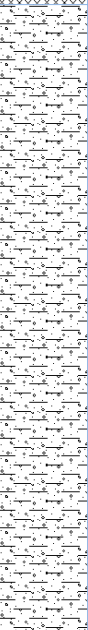
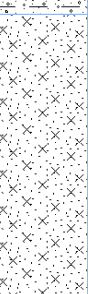
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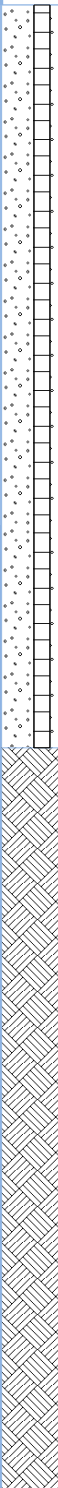
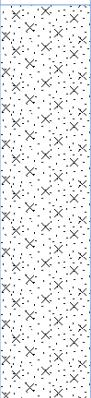
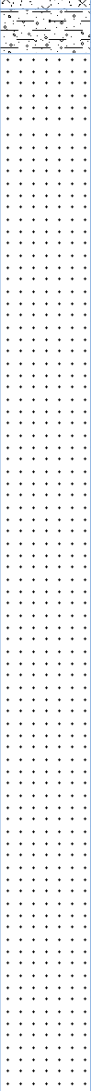
JEM + MB

NS

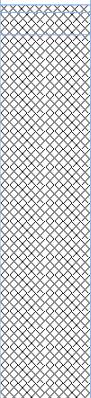
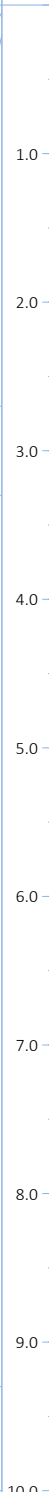
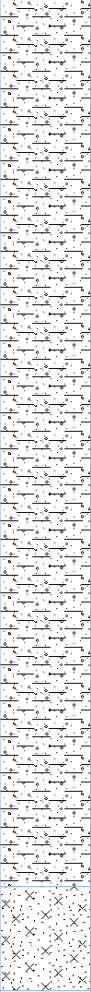
Remarks	1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 26.50m bgl. 4. Borehole installation: 1.00m plain, slotted to 5.00m bgl.	ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane
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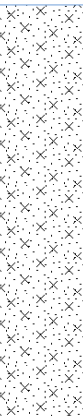
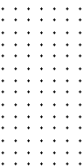
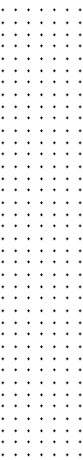
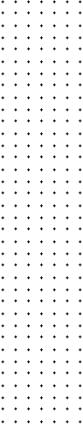
 BROWNFIELD SOLUTIONS LTD								Borehole Log			Cable Percussion with Rotary Core No.						
PROJECT NO: C5313								CO-ORDS: 383860E, 399277N			BH103						
											Sheet 3 of 3						
											Hole Type						
PROJECT NAME: BRWRY, MANCHESTER								LEVEL: 39.94m OD			CP+RC						
											Scale						
											1:51						
CLIENT: DOMIS CONSTRUCTION LTD								DATES: 31/03/2023 - 04/04/2023			Logged	Checked					
											JEM + MB	NS					
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description							
		19.50 - 21.00	NI	93	93	64	26.50	13.44		20.19-20.29m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 20.29-21.00m bgl: Discontinuities are medium spaced, smooth and horizontal.	21.0						
			10														
		21.00 - 22.50	NR							100	95	72				21.00-21.10m bgl: No recovery. 21.10-22.50m bgl: Discontinuities are medium spaced, smooth, horizontal and 5-10 degrees sub-vertical.	22.0
			12														
		22.50 - 24.00	10	100	100	60				22.50-23.65m bgl: Discontinuities are medium spaced, smooth and horizontal.	23.0						
			NI														
		24.00 - 25.50	1	100	97	44				23.65-23.72m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 23.72-24.00m bgl: Discontinuities are medium spaced, smooth and horizontal. 24.00-25.50m bgl: Discontinuities are medium spaced, smooth, horizontal and 5-10 degrees sub-vertical.	24.0						
			14														
		25.50 - 26.50	4	100	97	44				25.50-25.80m bgl: Discontinuities are medium spaced, smooth and horizontal. 25.80-25.83m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 25.83-26.50m bgl: Discontinuities are closely spaced, smooth and horizontal.	26.0						
			12														
														End of Borehole at 26.50m	27.0		
															28.0		
															29.0		
															30.0		
Remarks										1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 26.50m bgl. 4. Borehole installation: 1.00m plain, slotted to 5.00m bgl.							
										ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane							

Borehole Log							Cable Percussion with Rotary Core No.		
PROJECT NO: C5313 PROJECT NAME: BRWRY, MANCHESTER CLIENT: DOMIS CONSTRUCTION LTD							BH104		
							Sheet 1 of 3		
							Hole Type		
							CP+RC		
CO-ORDS: 383877E, 399261N LEVEL: 39.59m OD DATES: 27/03/23 - 29/03/23							Scale		
							1:51		
LOGGED: JEM CHECKED: NS							Logged		
							Checked		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15-0.20	ES		0.15	39.44		MADE GROUND: Reinforced concrete.	1.0
		0.15	PID	2.7PPM	0.20	39.39		MADE GROUND: Brown sand and gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of concrete and brick.	
		0.20	PID	0.0PPM	0.50	39.09		MADE GROUND: Reinforced concrete.	
		0.50-0.80	B					MADE GROUND: Firm to stiff brown slightly gravelly slightly sandy clay. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone, coal and brick.	
		0.80-1.20	ES						
		0.80	PID	1.1PPM					
		1.20-1.40	D						
		1.20	SPT	N≥50 (8,10/50 for 95mm)					
			PID	0.0PPM					
		2.10-2.40	D						
		2.20-2.65	D						
		2.20	SPT	N=7 (1,1/1,2,2,2)					
		2.50	D						
		3.30-3.75	D						
		3.30	SPT	N=4 (1,1/1,1,1,1)					
		3.50	D						
		3.90-4.20	B			3.80	35.79		4.0
		4.20-4.65	D						
		4.70	D						
		5.10-5.55	D						
		5.10	SPT	N=40 (3,6/7,8,10,15)					
		6.00	D						
		6.50-6.90	D						
		6.50	SPT	N≥50 (6,10/50 for 275mm)					
	7.90-8.15	D							
	7.90	SPT	N≥50 (7,11/50 for 115mm)		8.10	31.49		8.0	
	8.20	D							
	9.70-9.90	D							
	9.70	SPT	N≥50 (25 for 105mm/50 for 105mm)					10.0	
	10.00	D							
Remarks									
1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 24.00m bgl. 4. Dual borehole installation: 1.00m plain, slotted to 3.00m bgl and 8.00m plain, slotted to 15.00m bgl.								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

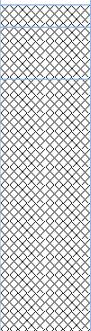
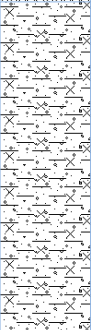
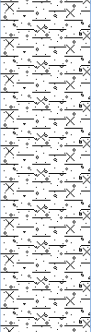
 BROWNFIELD SOLUTIONS LTD							Borehole Log		Cable Percussion with Rotary Core No.	
PROJECT NO: C5313							CO-ORDS: 383877E, 399261N		BH104	
									Sheet 2 of 3	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 39.59m OD		Hole Type	
									CP+RC	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 27/03/23 - 29/03/23		Scale	
									1:51	
							Logged	Checked		
							JEM	NS		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		11.00-11.25 11.00	D SPT	N≥50 (25 for 125mm/50 for 115mm)		12.70	26.89			11.0
		12.70-13.10 12.70	D SPT	N≥50 (18,7/50 for 255mm)						12.0
		13.50-13.60 13.50-13.60 13.50	D SPT	13	13 N≥50 (25 for 70mm/50 for 30mm)	8		Very stiff brown slightly gravelly slightly silty CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. Medium strong partially weathered red SANDSTONE. 13.50-14.80m bgl: No recovery.	13.0	
		13.50 - 15.00	NR						14.0	
			3	100	97	77			15.0	
			6							
		15.00 - 16.50							16.0	
			5							
			1	100	93	63			17.0	
		16.50 - 18.00								
			9						18.0	
			1	100	93	73			19.0	
		18.00 - 19.50								
			9						19.0	
				100	100	77			20.0	

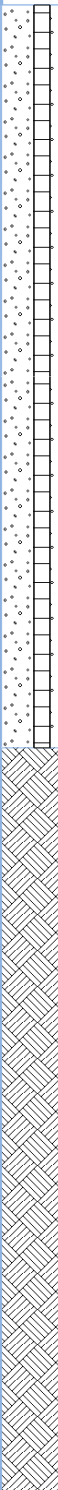
 BROWNFIELD SOLUTIONS LTD								Borehole Log		Cable Percussion with Rotary Core No.			
								BH104					
								Sheet 3 of 3					
PROJECT NO: C5313								CO-ORDS: 383877E, 399261N		Hole Type			
										CP+RC			
PROJECT NAME: BRWRY, MANCHESTER								LEVEL: 39.59m OD		Scale			
										1:51			
CLIENT: DOMIS CONSTRUCTION LTD								DATES: 27/03/2023 - 29/03/2023		Logged	Checked		
										JEM	NS		
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description			
				TCR (%)	SCR (%)	RQD (%)							
		19.50 - 21.00	7										
				100	100	95						21.0	
		21.00 - 22.50	6									22.0	
				100	100	53						23.0	
		22.50 - 24.00	6									23.50-24.00m bgl: Discontinuities are closely spaced, smooth and horizontal.	
			9				24.00	15.59				24.0	
		End of Borehole at 24.00m									24.0		
											25.0		
											26.0		
											27.0		
											28.0		
											29.0		
											30.0		
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 24.00m bgl. 4. Dual borehole installation: 1.00m plain, slotted to 3.00m bgl and 8.00m plain, slotted to 15.00m bgl.								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane			

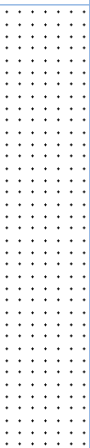
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							BH105			
							Sheet 1 of 3			
PROJECT NO: C5313							CO-ORDS: 383917E, 399216N		Hole Type	
									CP+RC	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 40.11m OD		Scale	
									1:51	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 30/03/23 - 14/04/23		Logged	Checked
									JEM + MB	NS
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.20-0.50 0.20 0.30	ES PID D	1.4PPM	0.05 0.20	40.06 39.91		MADE GROUND: Asphalt.		
		0.80-1.20	B					MADE GROUND: Dark grey gravel. Gravel is subangular fine to coarse of limestone, brick and concrete.		
		1.20-1.65 1.20	D SPT	N=4 (1,1/1,1,1,1)				MADE GROUND: Dark brown slightly clayey gravelly fine to coarse sand of ash. Gravel is subangular to subrounded fine to coarse of brick and concrete.		
		2.20-2.65 2.20	D SPT	N=6 (1,2/2,2,1,1)						
		2.70-3.00 2.70	B ES PID	1.4PPM	2.70	37.41		MADE GROUND: Brown slightly gravelly slightly sandy clay. Sand is fine to coarse. Gravel is subangular fine to coarse of brick, concrete, mudstone and sandstone.		
		3.20-3.65 3.20	D SPT	N=16 (1,2/3,4,4,5)	3.30	36.81				
		3.70-4.00	B					Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse of sandstone and mudstone.		
		4.30-4.75	U							
		4.80	D							
		5.40-5.85 5.40	D SPT	N=19 (2,3/4,5,5,5)				Becoming stiff at 5.40m bgl.		
		7.00-7.45	U							
		7.50	D							
		8.50-8.90 8.50	D SPT	N≥50 (5,5/50 for 275mm)				Becoming very stiff at 8.70m bgl.		
		9.40-9.60 9.40	D SPT	N≥50 (25 for 135mm/50 for 115mm)	9.30	30.81		Very dense reddish brown silty fine to coarse SAND.		
Remarks								1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 24.50m bgl. 4. No installation. 5. Borehole backfilled with arisings upon completion.		
								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

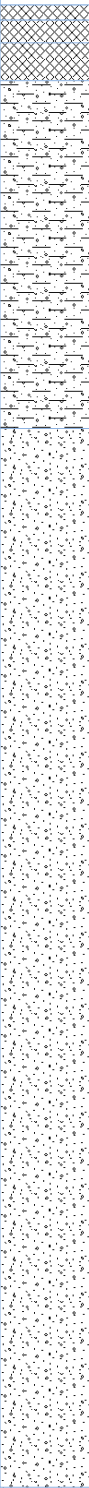
BROWNFIELD SOLUTIONS LTD						Borehole Log			Cable Percussion with Rotary Core No.				
PROJECT NO: C5313						CO-ORDS: 383917E, 399216N			BH105				
									Sheet 2 of 3				
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 40.11m OD			Hole Type				
									CP+RC				
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 30/03/23 - 14/04/23			Scale				
									1:51				
									Logged	Checked			
									JEM + MB		NS		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description					
		Depth (m)	Type	Results									
		10.60-10.80 10.60	D SPT	N≥50 (25 for 115mm/50 for 70mm)		12.80	27.31			11.0			
		11.50	D										
		11.80-11.90 11.80	D SPT	N≥50 (25 for 70mm/50 for 40mm)						12.0			
		12.90-13.00 12.90	D SPT	N≥50 (25 for 70mm/50 for 70mm)									
		13.40-13.50 13.40	D SPT	N≥50 (25 for 50mm/50 for 50mm)		12.80	27.31		Medium strong partially weathered red SANDSTONE.	13.0			
		14.00 - 15.50	15	100	100					29	14.0		
		15.50 - 17.00	NI	100	80			57				15.50-15.60m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 15.60-16.06m bgl: Discontinuities are medium spaced, smooth and horizontal.	16.0
			6										
			1										
			3										
		17.00 - 18.50	NI	100	100			82				16.06-16.09m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 16.09-16.25m bgl: Discontinuities are medium spaced, smooth and horizontal. 16.25-16.30m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 16.30-16.90m bgl: Discontinuities are medium spaced, smooth and horizontal. 16.90-17:00m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 17:00-20.07m bgl: Discontinuities are medium spaced, smooth, horizontal and 5-10 degrees sub-vertical.	17.0
			11										
				100	100			71					18.0
			18.50 - 20.00	10									
					100	96	71				20.0		
					TCR	SCR	RQD						
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 24.50m bgl. 4. No installation. 5. Borehole backfilled with arisings upon completion.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane				

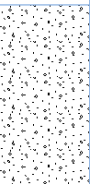
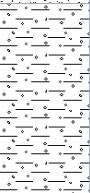
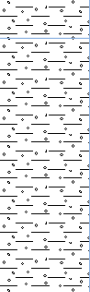
 BROWNFIELD SOLUTIONS LTD								Borehole Log				Cable Percussion with Rotary Core No.			
PROJECT NO: C5313								CO-ORDS: 383917E, 399216N				BH105			
												Sheet 3 of 3			
												Hole Type			
PROJECT NAME: BRWRY, MANCHESTER								LEVEL: 40.11m OD				CP+RC			
												Scale			
												1:51			
CLIENT: DOMIS CONSTRUCTION LTD								DATES: 30/03/2023 - 14/04/2023				Logged	Checked		
												JEM + MB	NS		
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description					
		20.00 - 21.50	0	100	97	50	24.50	15.61		20.07-20.13m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 20.13-22.33m bgl: Discontinuities are medium spaced, smooth and horizontal. Closely spaced at 20.60-20.67m bgl.					
			16												
		21.50 - 23.00	8	100	70	0				22.33-22.38m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 22.38-23.00m bgl: Discontinuities are medium spaced, smooth and horizontal.					
			5												
		23.00 - 24.50	NI	100	70	0				23.00-23.15m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 23.15-23.70m bgl: Discontinuities are closely spaced, smooth and horizontal.					
			15												
			14												
			NI												
											End of Borehole at 24.50m				

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Cable Percussion with Rotary Core No.	
PROJECT NO: C5313							CO-ORDS: 383907E, 399185N		BH106	
									Sheet 1 of 3	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 40.22m OD		Hole Type	
									CP+RC	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 28/03/23 - 30/03/23		Scale	
									1:51	
							Logged		Checked	
							JEM		NS	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.15-0.50 0.15	ES PID	3.1PPM	0.15	40.07		MADE GROUND: Asphalt.	1.0	
		0.50-1.00	B ES PID	2.0PPM	0.50	39.72		MADE GROUND: Dark grey gravel. Gravel is subangular fine to coarse of limestone and concrete.		
		0.50						MADE GROUND: Soft dark brown slightly sandy gravelly clay. Sand is fine to coarse. Gravel is subangular fine to coarse of brick, concrete and mudstone.		
		1.20-1.65 1.20	D SPT	N=4 (1,1/1,1,1,1)	2.20	38.02		Firm to stiff brown slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse of mudstone and sandstone.	2.0	
		1.90	D							
		2.10-2.55 2.10	D SPT	N=17 (1,2/3,4,5,5)						
		2.30-2.60	B							
		3.30-3.75	U							
		3.80	D		3.0					
		4.10-4.55 4.10	D SPT	N=20 (3,4/5,5,5,5)						
		5.00	D							
		5.00-5.45 5.00	D SPT	N=21 (3,4/4,5,6,6)						
		6.50-6.95	U							
		7.00	D		4.0					
		8.30-8.70	D							
		8.70	SPT	N≥50 (5,6/50 for 295mm)						
		9.00	D							
9.40-9.75 9.40	D SPT	N≥50 (5,7/50 for 190mm)								
10.00-10.25 10.00	D SPT	N≥50 (10,12/50 for 95mm)	8.30	31.92		Very stiff brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone. <i>Becoming very stiff from 8.30m bgl.</i>	5.0			
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 23.00m bgl. 4. Dual borehole installation: 1m plain, slotted to 2.00m bgl and 5.00m plain, slotted to 15.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Cable Percussion with Rotary Core No.				
									BH106				
									Sheet 2 of 3				
PROJECT NO: C5313							CO-ORDS: 383907E, 399185N		Hole Type				
									CP+RC				
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 40.22m OD		Scale				
									1:51				
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 28/03/23 - 30/03/23		Logged	Checked			
									JEM	NS			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description					
		Depth (m)	Type	Results									
		11.70-11.90 11.70	D SPT	N≥50 (25 for 125mm/50 for 95mm)	11.60	28.62		Medium strong unweathered red SANDSTONE.		11.0			
		12.40-12.50 12.40	D SPT NI	67 (25 for 60mm/50 for 50mm)				12.50-12.70m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 12.70-14.00m bgl: Discontinuities are closely spaced, smooth and horizontal.		12.0			
		12.50 - 14.00	12							13.0			
				100	95	27		14.00-15.50m bgl: Discontinuities are medium to closely spaced, smooth and horizontal.		14.0			
		14.00 - 15.50	14							15.0			
				100	97	77		15.50-17.50m bgl: Discontinuities are medium spaced, smooth and horizontal.		16.0			
		15.50 - 17.00	8							17.0			
				100	87	60							
		17.00 - 18.50	5 NI 5					17.50-17.90m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 17.90-19.70m bgl: Discontinuities are medium spaced, smooth and horizontal.		18.0			
				100	87	83				19.0			
		18.50 - 20.00	6 NI 1					19.70-19.90m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone.		20.0			
						TCR		SCR	RQD				
		Remarks								1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered. 3. Borehole completed at 23.00m bgl. 4. Dual borehole installation: 1m plain, slotted to 2.00m bgl and 5.00m plain, slotted to 15.00m bgl.		ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

BROWNFIELD SOLUTIONS LTD							Borehole Log		Cable Percussion with Rotary Core No.																																																																																																																					
PROJECT NO: C5313							CO-ORDS: 383907E, 399185N		BH106																																																																																																																					
									Sheet 3 of 3																																																																																																																					
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 40.22m OD		Hole Type																																																																																																																					
									CP+RC																																																																																																																					
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 28/03/2023 - 30/03/2023		Scale																																																																																																																					
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									JEM	NS																																																																																																																				
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description																																																																																																																				
				TCR (%)	SCR (%)	RQD (%)																																																																																																																								
		20.00 - 21.50	NI	100	97	50	23.00	17.22		19.90-20.00m bgl: Discontinuities are medium spaced, smooth and horizontal. 20.00-20.05m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 20.05-21.65m bgl: Discontinuities are medium spaced, smooth, horizontal and 45 degrees sub-horizontal.	21.0																																																																																																																			
			7																																																																																																																											
		21.50 - 23.00	1																																																																																																																											
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End of Borehole at 23.00m										23.0																																																																																																																				
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 BROWNFIELD SOLUTIONS LTD							Borehole Log		Cable Percussion with Rotary Core No.	
PROJECT NO: C5313							CO-ORDS: 383839E, 399319N		BH107	
									Sheet 1 of 3	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 33.91m OD		Hole Type	
									CP+RC	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 29/04/23 - 30/04/23		Scale	
									1:50	
							Logged	Checked		
							JM	JEM		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.10			0.10	33.81		MADE GROUND: Reinforced concrete.		
		0.25			0.25	33.66		MADE GROUND: Grey sandy gravel. Gravel is angular to subangular fine to coarse limestone and sandstone. Sand is fine to coarse.		
		0.50			0.50	33.41		MADE GROUND: Brown slightly gravelly slightly sandy clay. Sand is fine to coarse. Gravel is subangular fine to coarse of brick, concrete, sandstone and mudstone.		
		1.00	D					Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of sandstone and mudstone.		
		1.20	SPT	N=13 (1,2/3,3,3,4)						
		2.00	B							
		2.20	D SPT	N=23 (8,12/9,4,5,5)						
		2.80			2.80	31.11				
		3.00	D SPT	N≥50 (9,12/50 for 125mm)				Very dense brown slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse quartz, mudstone and sandstone.		
		4.20	D SPT	N≥50 (12,13/50 for 115mm)						
		5.00	B							
		5.40	D SPT	N≥50 (7,12/50 for 135mm)						
		7.00	D SPT	N≥50 (25 for 125mm/50 for 105mm)						
		8.50	D SPT	N≥50 (7,12/50 for 180mm)						
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 10.50m bgl. 3. Borehole completed at 27.15m bgl. 4. Borehole backfilled with arisings upon completion and reinstated with concrete.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

 BROWNFIELD SOLUTIONS LTD							Borehole Log			Cable Percussion with Rotary Core No.	
							BH107				
							Sheet 2 of 3				
PROJECT NO: C5313							CO-ORDS: 383839E, 399319N			Hole Type	
										CP+RC	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 33.91m OD			Scale	
										1:50	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 29/04/23 - 30/04/23			Logged	Checked
										JM	JEM
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		10.10	D SPT	N≥50 (7,7/50 for 60mm)	11.00	22.91		Very stiff brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone.	10.0		
		11.30-11.75	U						11.0		
		11.80	D						12.0		
		12.50	D SPT	N≥50 (9,13/50 for 200mm)	12.50	21.41		Very stiff brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse of quartz, mudstone and sandstone.	13.0		
		14.00	SPT	N≥50 (8,9/50 for 60mm)	14.20	19.71			14.0		
		14.30	D SPT	N≥50 (25 for 40mm/50 for 50mm)					15.0		
		15.65 - 16.65	NR	80	30	0	15.65	18.26		Medium strong unweathered red SANDSTONE. <i>15.65-15.85m bgl: No recovery.</i> <i>15.85-16.35m bgl: Non-intact recovered as red gravel. Gravel is fine to coarse subangular to subrounded of sandstone.</i> <i>16.35-16.65m bgl: Discontinuities are closely spaced, smooth and horizontal.</i> <i>16.65-17.15m bgl: No recovery.</i> <i>17.15-18.15m bgl: Discontinuities are closely spaced, smooth and horizontal. Vertical fracture at 17.17-17.22m bgl.</i> <i>18.15-18.82m bgl: Discontinuities are closely spaced, smooth and horizontal.</i> <i>18.82-18.94m bgl: Non-intact recovered as red fine to coarse sand.</i> <i>18.94-19.65m bgl: Discontinuities are closely to moderately spaced, smooth and horizontal. Vertical fracture at 19.47-19.65m bgl.</i>	16.0
			NI								
			4								
		16.65 - 18.15	NR	67	67	28					17.0
			8			18.0					
		18.15 - 19.65		100	92	29					19.0
			7								
			NI								
			4								
				TCR	SCR	RQD					
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 10.50m bgl. 3. Borehole completed at 27.15m bgl. 4. Borehole backfilled with arisings upon completion and reinstated with concrete.								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	



Cable Percussion with Rotary Core No.

Sheet 3 of 3

CO-ORDS: 383839E, 399319N

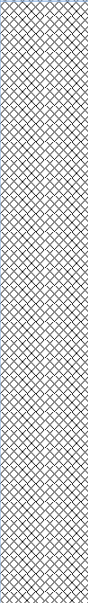
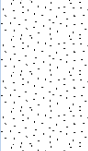
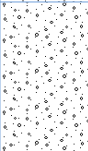
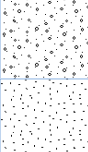
LEVEL: 33.91m OD

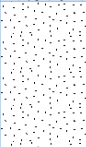
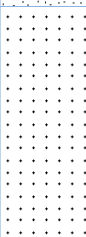
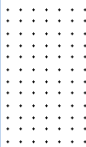
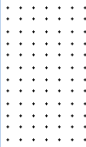
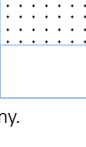
DATES: 29/04/2023 - 30/04/2023

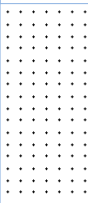
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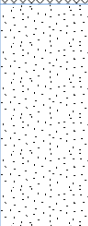
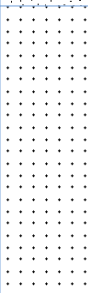
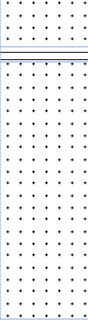
JEM

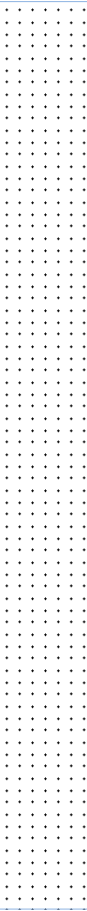
Remarks	1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 10.50m bgl. 3. Borehole completed at 27.15m bgl. 4. Borehole backfilled with arisings upon completion and reinstated with concrete.	ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane
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BROWNFIELD SOLUTIONS LTD									Rotary Borehole No.			
									BH108			
									Sheet 1 of 3			
PROJECT NO: C5313									CO-ORDS: 383822E, 399283N			
PROJECT NAME: BRWRY, MANCHESTER									Hole Type			
									RC			
									Scale			
									1:50			
CLIENT: DOMIS CONSTRUCTION LTD									Logged	Checked		
									MB	NS		
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description		
				TCR (%)	SCR (%)	RQD (%)						
							0.50	29.36		MADE GROUND: Backfill rubble [DRILLERS DESCRIPTION].		
											MADE GROUND: Brick fill [DRILLERS DESCRIPTION].	1.0
												2.0
												3.0
												4.0
								4.50	25.36		SAND [DRILLERS DESCRIPTION].	5.0
								6.00	23.86		SAND and GRAVEL [DRILLERS DESCRIPTION].	6.0
												7.0
								7.50	22.36		SAND [DRILLERS DESCRIPTION].	8.0
												9.0
							9.00	20.86		SAND and GRAVEL [DRILLERS DESCRIPTION].	9.0	
										10.0		
Remarks												
1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 7.50m bgl. 3. Borehole completed at 22.00m bgl. 4. Borehole installation: 5.00m plain, slotted to 7.00m bgl.										ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

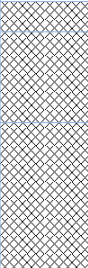
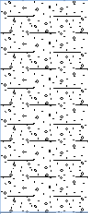
BROWNFIELD SOLUTIONS LTD									Rotary Borehole No.			
									BH108			
									Sheet 2 of 3			
PROJECT NO: C5313									CO-ORDS: 383822E, 399283N			
PROJECT NAME: BRWRY, MANCHESTER									LEVEL: 29.86m OD			
CLIENT: DOMIS CONSTRUCTION LTD									DATES: 11/04/2023 - 12/04/2023			
									Logged	Checked		
									MB	NS		
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description		
				TCR (%)	SCR (%)	RQD (%)						
							10.50	19.36				
										SAND [DRILLERS DESCRIPTION].	11.0	
		11.50 - 13.00	1	100	93	70	11.50	18.36		Medium strong partially weathered red SANDSTONE. <i>11.50-11.65m bgl: Discontinuities are medium spaced, smooth and horizontal.</i> <i>11.65-11.70m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone.</i> <i>11.70-12.28m bgl: Discontinuities are medium spaced, smooth and horizontal.</i> <i>12.28-12.33m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone.</i> <i>12.33-13.95m bgl: Discontinuities are medium spaced, smooth and horizontal.</i>	12.0	
			2									
			NI									
			4									
		13.00 - 14.50	8	100	93	77					13.0	
			NI									
			2									
		14.50 - 16.00	NR	90	83	43				13.95-14.00m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 14.00-14.50m bgl: Discontinuities are medium spaced, smooth and horizontal. 14.50-14.65m bgl: No recovery. 14.65-15.50m bgl: Discontinuities are closely spaced, smooth and horizontal.	14.0	
			14									
			NI									
			4									
		16.00 - 17.50	11	100	100	95				15.50-15.60m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 15.60-16.00m bgl: Discontinuities are medium spaced, smooth and horizontal.	15.0	
		17.50 - 19.00	8	100	100	87				16.00-20.50m bgl: Discontinuities are medium spaced, smooth and horizontal.	16.0	
		19.00 - 20.50	15	100	100	60					17.0	
												18.0
												19.0
												20.0
Remarks										1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 7.50m bgl. 3. Borehole completed at 22.00m bgl. 4. Borehole installation: 5.00m plain, slotted to 7.00m bgl.		
										ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

 BROWNFIELD SOLUTIONS LTD								Borehole Log		Rotary Borehole No.	
PROJECT NO: C5313								CO-ORDS: 383822E, 399283N		BH108	
										Sheet 3 of 3	
PROJECT NAME: BRWRY, MANCHESTER								LEVEL: 29.86m OD		Hole Type	
										RC	
CLIENT: DOMIS CONSTRUCTION LTD								DATES: 11/04/2023 - 12/04/2023		Scale	
										1:50	
								Logged	Checked		
								MB	NS		
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description	
		20.50 - 22.00		100	93	40				20.50-20.60m bgl: Non-intact recovered as gravel. Gravel is fine to coarse subangular of sandstone. 20.60-21.35m bgl: Discontinuities are medium spaced, smooth and horizontal.	21.0
			NI								
			8								
			2								
			1								
							21.35	8.51		Reddish brown weak thinly laminated MUDSTONE. 21.35-21.45m bgl: Discontinuities are medium spaced, smooth and horizontal. 21.45-21.55m bgl: Discontinuities are medium spaced, smooth and vertical. 21.55-22.00m bgl: Discontinuities are medium spaced, smooth and horizontal. Medium strong partially weathered red SANDSTONE. End of Borehole at 22.00m	22.0
							21.62	8.24			
							22.00	7.86			
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 7.50m bgl. 3. Borehole completed at 22.00m bgl. 4. Borehole installation: 5.00m plain, slotted to 7.00m bgl.								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

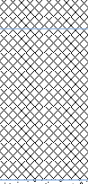
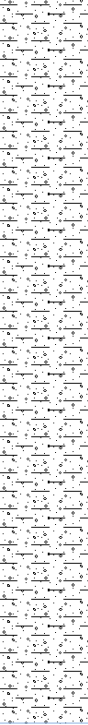
BROWNFIELD SOLUTIONS LTD									Rotary Borehole No.							
									BH109							
									Sheet 1 of 2							
PROJECT NO:					C5313				CO-ORDS:				383862E, 399224N			
PROJECT NAME:					BRWRY, MANCHESTER				LEVEL:				30.48m OD			
CLIENT:					DOMIS CONSTRUCTION LTD				DATES:				12/04/2023 - 13/04/2023			
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description						
				TCR (%)	SCR (%)	RQD (%)								MB	NS	
							0.10	30.38		MADE GROUND: Asphalt.						
										MADE GROUND: Brick fill [DRILLERS DESCRIPTION].						
														1.0		
														2.0		
														3.0		
								4.50	25.98		SAND [DRILLERS DESCRIPTION].				4.0	
													5.0			
													6.0			
													7.0			
													8.0			
			6.00 - 7.50	15	100	100	62	6.00	24.48		Medium strong partially weathered red SANDSTONE. 6.00-7.95m bgl: Discontinuities are medium spaced, smooth and horizontal.				6.0	
												7.0				
		7.50 - 8.50	7	100	80	93			7.95-8.00m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone. 8.00-8.10m bgl: Discontinuities are closely spaced, smooth and horizontal.				8.0			
			NI				8.20	22.28	8.10-8.15m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone.				9.0			
			1	83	83	35	8.30	22.18	Reddish brown weak thinly laminated MUDSTONE.				9.0			
		8.50 - 10.00	18							Medium strong partially weathered red SANDSTONE. 8.30-8.50m bgl: Discontinuities are medium spaced, smooth and horizontal. 8.50-8.80m bgl: No recovery. 8.30-9.80m bgl: Discontinuities are medium spaced, smooth and horizontal. Closely spaced at 9.55-9.40m bgl.				9.0		
			4	100	98	73				9.80-10.00m bgl: Discontinuities are medium spaced, smooth and				10.0		
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 6.00m bgl. 3. Borehole completed at 16.00m bgl. 4. No installation. 5. Borehole backfilled with arisings upon completion.								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane						

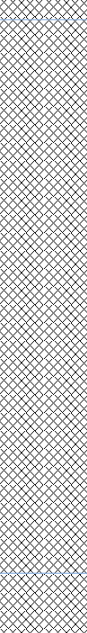
 BROWNFIELD SOLUTIONS LTD								Borehole Log		Rotary Borehole No.
										BH109
										Sheet 2 of 2
PROJECT NO: C5313				CO-ORDS: 383862E, 399224N				Hole Type		RC
PROJECT NAME: BRWRY, MANCHESTER				LEVEL: 30.48m OD				Scale		1:50
CLIENT: DOMIS CONSTRUCTION LTD				DATES: 12/04/2023 - 13/04/2023				Logged	Checked	
								MB	NS	
Well	Water Strike	Depth (m)	Type / FI	Coring			Depth (m)	Level (m OD)	Legend	Stratum Description
				TCR (%)	SCR (%)	RQD (%)				
		10.00 - 11.50	9							<i>horizontal.</i> <i>10.00-11.37m bgl: Discontinuities are medium spaced, smooth and horizontal.</i>
			1	80	80	70				
			NR							
		11.50 - 13.00	5							<i>11.37-11.40m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone.</i> <i>11.40-11.50m bgl: Discontinuities are medium spaced, smooth and horizontal.</i> <i>11.50-12.80m bgl: No recovery.</i>
				100	89	34				
			6							<i>12.80-13.55m bgl: Discontinuities are medium spaced, smooth and horizontal.</i>
			NI							
		13.00 - 14.50	7							<i>13.55-13.63m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone.</i> <i>13.63-14.02m bgl: Discontinuities are medium spaced, smooth and horizontal.</i>
			NI							
			6	100	100	87				<i>14.02-14.10m bgl: Non-intact recovered as red fine to coarse sand and gravel. Gravel is fine to coarse subangular to subrounded of sandstone.</i> <i>14.10-16.00m bgl: Discontinuities are medium spaced, smooth and horizontal.</i>
		14.50 - 16.00	8							
							16.00	14.48		End of Borehole at 16.00m
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered at 6.00m bgl. 3. Borehole completed at 16.00m bgl. 4. No installation. 5. Borehole backfilled with arisings upon completion.								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane

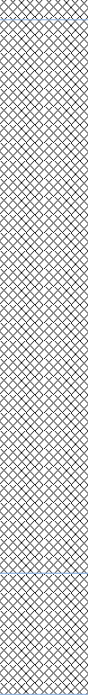
 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TP102 Sheet 1 of 1	
PROJECT NO: C5313						CO-ORDS: 383872E, 399248N		Hole Type TP	
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 39.26m OD		Scale 1:25	
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 11/04/23		Logged MB	Checked NS
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.50-0.60 0.60	B ES PID	0.0PPM	0.10	39.16		MADE GROUND: Concrete. MADE GROUND: Dark brown gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse of brick and sandstone.		1.0
	1.70-1.80 1.80	ES PID	0.0PPM	1.60	37.66		MADE GROUND: Light yellowish brown gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse of sandstone.		2.0
	2.20-2.30 2.30	B ES PID	0.0PPM	2.10	37.16		MADE GROUND: Dark brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, concrete, sandstone and mudstone.		3.0
				3.00	36.26		End of Trial Pit at 3.00m		4.0
									5.0
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered during the excavation. 3. Trial pit sides stable. 4. Trial pit backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

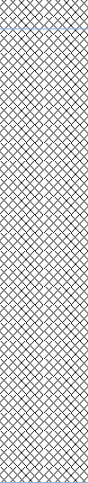
BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TP103	
PROJECT NO: C5313						CO-ORDS: 383874E, 399191N		Sheet 1 of 1	
								Hole Type TP	
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 30.45m OD		Scale 1:25	
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 11/04/23		Logged	Checked
								MB	NS
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.20-0.30	B ES PID	0.1PPM	0.10	30.35		MADE GROUND: Asphalt.	1.0	
	0.20			0.40	30.05		MADE GROUND: Brown sandy gravel with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of asphalt, mudstone, brick and concrete. Cobbles are subangular to subrounded of brick and concrete up to 200mm in diameter.		
							MADE GROUND: Reinforced concrete.		
	1.20-1.30	B ES PID	0.1PPM	0.90	29.55		MADE GROUND: Soft to firm reddish brown slightly gravelly sandy clay with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, mudstone and sandstone. Cobbles are subangular of sandstone up to 120mm in diameter.	2.0	
	1.20								
	2.50-2.60	B ES PID	0.1PPM	2.30	28.15		Reddish brown slightly gravelly slightly clayey fine to coarse SAND. Gravel is subrounded fine to coarse of sandstone and mudstone.	3.0	
	2.50								
				3.00	27.45				End of Trial Pit at 3.00m
									5.0
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Perched groundwater encountered during the excavation at 0.30m bgl as a small seepage. 3. Trial pit sides stable. 4. Trial pit backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

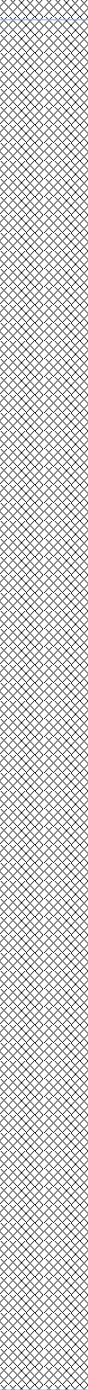
 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TP104 Sheet 1 of 1	
PROJECT NO: C5313						CO-ORDS: 383916E, 399187N		Hole Type TP	
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 40.17m OD		Scale 1:25	
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 13/04/23		Logged MB	Checked NS
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.30-0.40	B ES		0.10	40.07		MADE GROUND: Asphalt.	1.0 2.0 3.0 4.0 5.0	
				0.17	40.00		MADE GROUND: Dark grey sandy gravel. Sand is fine to coarse. Gravel is subangular fine to coarse of limestone and concrete.		
				0.24	39.93		MADE GROUND: Yellowish brown gravelly fine to coarse sand. Gravel is fine to coarse subangular of fine to coarse of limestone and concrete.		
				0.45	39.72		MADE GROUND: Brown gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse of brick and mudstone.		
				0.50	39.67		Soft to firm brown mottled blueish grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded to rounded of mudstone and sandstone.		
End of Trial Pit at 0.50m									
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered during the excavation. 3. Trial pit undertaken by archaeologists and logged by BSL engineer. 4. Trial pit backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

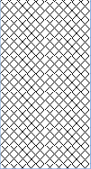
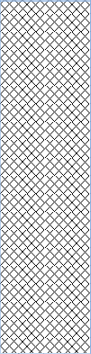
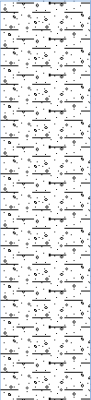
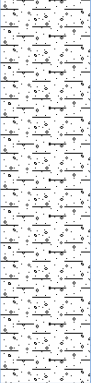
BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No.
PROJECT NO: C5313						CO-ORDS: 383925E, 399183N		TP105
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 40.24m OD		Sheet 1 of 1
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 11/04/23		Hole Type
								TP
								Scale
								1:25
						Logged	Checked	
						MB	NS	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
	0.10			0.10	40.14		MADE GROUND: Asphalt.	
							MADE GROUND: Dark brown sandy gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, asphalt, concrete, sandstone and limestone.	
	0.40-0.50	B					Soft to firm brown mottled blueish grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subrounded to rounded fine to medium of mudstone and sandstone.	1.0
	0.40	ES	0.1PPM					
	0.60-1.00	PID		0.60	39.64			
		B					End of Trial Pit at 3.00m	3.0
	0.60	ES	0.1PPM					
		PID		3.00	37.24			4.0
								5.0
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Perched groundwater encountered during the excavation at 0.60m bgl as a small seepage. 3. Trial pit sides stable. 4. Trial pit backfilled with arisings upon completion.					ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TT101 Sheet 1 of 1	
PROJECT NO: C5313						CO-ORDS: 383830E, 399269N		Hole Type TP	
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 30.52m OD		Scale 1:25	
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 12/04/23		Logged MB	Checked NS
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10-0.20	B ES PID	0.0PPM	0.07	30.45		MADE GROUND: Asphalt.	1.0	
	0.20						MADE GROUND: Brown gravelly fine to coarse sand with medium cobble content. Gravel is subangular to subrounded fine to coarse of brick, concrete and rebar. Cobbles are subangular to subrounded of concrete and brick up to 180mm in diameter.		
	1.90-2.00	B ES PID	0.0PPM	1.90	28.62		MADE GROUND: Soft brown slightly sandy gravelly clay with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick up to 180mm in diameter. <i>Black staining and slight hydrocarbon odour observed at 1.90m bgl.</i> End of Trial Pit at 2.10m	2.0	
	2.00			2.10	28.42				
								3.0	
								4.0	
								5.0	
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered during the excavation at 1.70m bgl as a medium seepage. 3. Trial trench sides stable. 4. Trial trench terminated at 2.10m bgl on a hard obstruction. 5. Trial trench backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. TT102 Sheet 1 of 1	
PROJECT NO: C5313						CO-ORDS: 383816E, 399295N		Hole Type TP	
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 30.47m OD		Scale 1:25	
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 12/04/23		Logged MB Checked NS	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.20-0.30 0.20	B ES PID	0.0PPM	0.07	30.40		MADE GROUND: Asphalt. MADE GROUND: Brown gravelly fine to coarse sand with medium cobble content. Gravel is subangular to subrounded fine to coarse of brick, concrete and rebar. Cobbles are subangular to subrounded of concrete and brick up to 180mm in diameter.		
	2.00-2.10 2.00	B ES PID	0.0PPM	1.90 2.30	28.57 28.17		MADE GROUND: Soft brown slightly sandy gravelly clay with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick and mudstone. Cobbles are subangular of brick up to 180mm in diameter. End of Trial Pit at 2.30m		
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Groundwater encountered during the excavation at 1.70m bgl as a medium seepage. 3. Trial trench sides stable. 4. Trial trench terminated at 2.30m bgl on a hard obstruction. 5. Trial trench backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD					Trial Pit Log			No.	
WELL A									
PROJECT NO: C5313					CO-ORDS: 383882E, 399277N			Sheet 1 of 1	
PROJECT NAME: BRWRY, MANCHESTER					LEVEL: 39.72m OD			Hole Type TP	
CLIENT: DOMIS CONSTRUCTION LTD					DATES: 11/04/23			Scale 1:25	
								Logged	Checked
								MB	NS
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.20-0.30 0.30	ES PID	0.0PPM	0.10	39.62		MADE GROUND: Concrete.		
							MADE GROUND: Brown sandy gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick and concrete.		
				1.60	38.12		End of Trial Pit at 1.60m		
1.0 2.0 3.0 4.0 5.0									

 BROWNFIELD SOLUTIONS LTD						Trial Pit Log		No. WELL C Sheet 1 of 1 Hole Type TP Scale 1:25 Logged Checked MB NS	
PROJECT NO: C5313						CO-ORDS: 383860E, 399220N			
PROJECT NAME: BRWRY, MANCHESTER						LEVEL: 30.53m OD			
CLIENT: DOMIS CONSTRUCTION LTD						DATES: 12/04/23			
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.20-0.30 0.30	B ES PID	0.0PPM	0.07	30.46		MADE GROUND: Asphalt. MADE GROUND: Brown sandy gravel with medium cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick, timber, metal, concrete and rebar. Cobbles are subangular to subrounded of brick and concrete up to 200mm in diameter.	1.0	
									2.0
								3.0	
								4.0	
				4.60 4.60	25.93 25.93		MADE GROUND: Concrete. End of Trial Pit at 4.60m	5.0	
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. No groundwater encountered during the excavation. 3. Trial pit undertaken by archaeologists and logged by BSL engineer. 4. Trial pit backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.
									WS101
									Sheet 1 of 1
PROJECT NO: C5313							CO-ORDS: 383884E, 399252N		Hole Type
									WS
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 39.55m OD		Scale
									1:30
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 29/03/23		Logged
									JM
									Checked
									JEM
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	PID	1.0PPM	0.20	39.35		CONCRETE: 60% aggregate, angular to subangular of mixed lithologies set in a fine grained light grey cement matrix. No reinforcement.	
		0.30-0.50	ES					MADE GROUND: Light yellowish brown gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone.	
		1.00-1.20	ES		0.95	38.60		MADE GROUND: Soft brown mottled dark grey gravelly clay. Gravel is subangular fine to coarse of brick, mudstone, coal and sandstone. Occasional fragments of pottery. [Slight organic odour from 0.95m to 2.00m bgl]	1.0
		1.00	PID	1.2PPM					
		1.20	SPT	N=4 (1,0/1,0,1,2)					
		1.50	D						
		2.00	SPT	N=3 (1,1/0,1,1,1)	2.35	37.20		Firm brown mottled orange slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone.	2.0
		2.50	D						
		3.00	SPT	N=14 (2,2/3,3,4,4)				Becoming stiff from 3.00m bgl.	3.0
		3.50	D						
		4.00	SPT	N=25 (3,3/4,4,7,10)					4.0
		5.00	SPT	N=25 (4,4/5,5,7,8)					
					5.45	34.10	End of Borehole at 5.45m		
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Hand dug inspection pit excavated to 1.20m bgl. 3. No groundwater encountered. 4. Borehole installation: 1.00m plain, slotted to 2.00m bgl.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane



Window Sampler No.

WS102

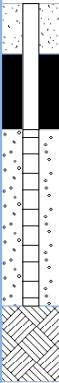
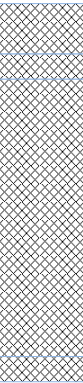
Sheet 1 of 1

CO-ORDS: 383871E, 399229N

LEVEL: 35.74m OD

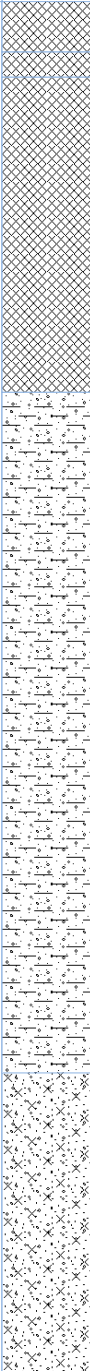
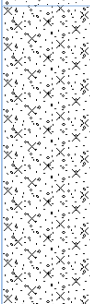
DATES: 29/03/23

Logged	Checked
JM	JEM

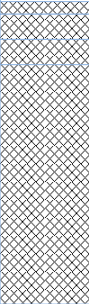
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.30-0.50 0.30	ES PID	0.6PPM	0.20	35.54		MADE GROUND: Asphalt.	1.0		
					0.30	35.44		MADE GROUND: Dark grey gravel. Gravel is subangular fine to coarse of limestone and concrete. MADE GROUND: Soft brown mottled dark grey gravelly clay with high cobble content. Gravel is subangular fine to coarse of brick, mudstone, coal and sandstone. Cobbles are angular of brick up to 200mm in diameter.			
		1.00-1.20 1.00	ES PID	1.9PPM							
			1.20	SPT	N≥50 (25 for 75mm/50 for 125mm)						
		1.35	SPT	N≥50 (25 for 70mm/50 for 80mm)	1.40	34.34					
					1.50	34.24		MADE GROUND: Concrete.			
								End of Borehole at 1.50m			
									2.0		
									3.0		
									4.0		
									5.0		
									6.0		

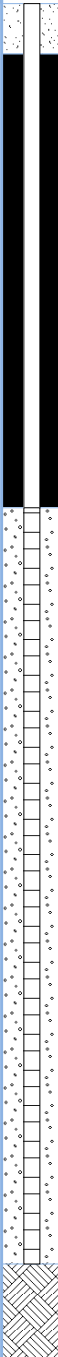
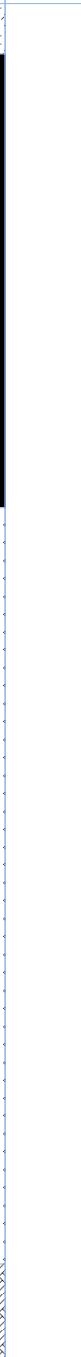
1. Clearance of services by BSL engineer using CAT and Genny.
2. Hand dug inspection pit excavated to 1.20m bgl.
3. No groundwater encountered.
4. Borehole terminated at 1.50m on solid obstruction.
5. Borehole installation: 0.50m plain, slotted to 1.20m bgl.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.	
									WS103	
									Sheet 1 of 1	
PROJECT NO: C5313							CO-ORDS: 383905E, 399229N		Hole Type	
									WS	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 40.04m OD		Scale	
									1:30	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 29/03/23		Logged	Checked
									JM	JEM
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.30-0.50 0.30	ES PID	0.5PPM	0.20 0.30	39.84 39.74		MADE GROUND: Asphalt.	1.0	
		0.80-1.00	ES					MADE GROUND: Dark grey gravel. Gravel is subangular fine to coarse of limestone and concrete.		
		1.00	PID	1.8PPM				MADE GROUND: Soft brown mottled dark grey gravelly clay. Gravel is subangular fine to coarse of brick, mudstone, coal and sandstone.		
		1.20	D SPT	N=6 (1,1/1,1,2,2)						
					1.55	38.49				
		2.00	D SPT	N=7 (1,1/2,1,2,2)				Firm brown mottled orange slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone.		
		3.00	SPT	N=8 (3,2/2,1,2,3)						
		4.00	SPT	N=9 (1,1/2,2,2,3)						
					4.25	35.79		Medium dense light brown slightly gravelly silty fine to coarse SAND. Gravel is subangular fine to coarse of sandstone.	4.0	
		5.00	D SPT	N=11 (2,2/2,3,3,3)					5.0	
					5.45	34.59		End of Borehole at 5.45m	6.0	
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Hand dug inspection pit excavated to 1.20m bgl. 3. No groundwater encountered. 4. Borehole backfilled with arisings upon completion.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

 BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No. WS104 Sheet 1 of 1	
PROJECT NO: C5313							CO-ORDS: 383887E, 399208N		Hole Type WS	
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 35.68m OD		Scale 1:30	
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 29/03/23		Logged JM	Checked JEM
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.20	35.48		MADE GROUND: Asphalt.		
					0.30	35.38		MADE GROUND: Dark grey gravel. Gravel is subangular fine to coarse of limestone and concrete.		
					0.50	35.18		MADE GROUND: Soft brown mottled dark grey gravelly clay. Gravel is subangular fine to coarse of brick, mudstone, coal and sandstone.		
					0.55	35.13		MADE GROUND: Concrete.		
								End of Borehole at 0.55m		
								1.0		
								2.0		
								3.0		
								4.0		
								5.0		
								6.0		
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Hand dug inspection pit excavated to 0.55m bgl. 3. Borehole terminated at 0.55m bgl due to concrete obstruction.						ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane		

BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.
									WS104A
									Sheet 1 of 1
PROJECT NO: C5313							CO-ORDS: 383888E, 399217N		Hole Type
									WS
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 35.70m OD		Scale
									1:30
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 12/04/23		Logged
									Checked
									MB
									JEM
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30-0.40 0.30	B ES PID	0.0PPM	0.05	35.65		MADE GROUND: Asphalt.	1.0
					0.15	35.55		MADE GROUND: Concrete.	
					0.25	35.45		MADE GROUND: Brick.	
								MADE GROUND: Brown sandy gravel. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of brick and concrete.	
					1.20	34.50		End of Borehole at 1.20m	2.0
									3.0
									4.0
									5.0
									6.0
Remarks		1. Clearance of services by BSL engineer using CAT and Genny. 2. Hand dug inspection pit excavated to 1.20m bgl. 3. No groundwater encountered. 4. Coordinates and levels inferred from topographical survey.							ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane

BROWNFIELD SOLUTIONS LTD							Borehole Log		Window Sampler No.
									WS105
									Sheet 1 of 1
PROJECT NO: C5313							CO-ORDS: 383902E, 399210N		Hole Type
									WS
PROJECT NAME: BRWRY, MANCHESTER							LEVEL: 35.67m OD		Scale
									1:30
CLIENT: DOMIS CONSTRUCTION LTD							DATES: 29/03/23		Logged
									Checked
									JM
									JEM
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30-0.50 0.30	ES PID	39.2PPM	0.30	35.37		CONCRETE: 60% aggregate, angular to subangular of mixed lithologies set in a fine grained light grey cement matrix. No reinforcement.	1.0
					0.60	35.07		MADE GROUND: Dark blackish grey gravelly clay. Gravel is subangular fine to coarse of mudstone, brick and coal. [Mild hydrocarbon odour and staining]	
					0.95	34.72		MADE GROUND: Soft brown mottled dark grey gravelly clay. Gravel is subangular fine to coarse of brick, mudstone, coal and sandstone.	
		1.00-1.20 1.00 1.20	ES PID D SPT	2.9PPM N=11 (2,2/2,3,3,3)				Firm brown mottled orange slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone.	
		2.00	SPT	N=13 (2,2/4,3,3,3)				Becoming stiff from 2.00m bgl.	2.0
		3.00	D SPT	N=15 (2,2/3,3,4,5)					3.0
		4.00	SPT	N=30 (3,4/5,7,8,10)					4.0
		5.00	D SPT	N≥50 (7,10/50 for 235mm)					5.0
					5.38	30.29		End of Borehole at 5.38m	6.0
Remarks								ES = Environmental Sample D = Disturbed Sample B = Bulk Sample LB = Large Bulk Sample U = Undisturbed Sample UT = Undisturbed Thin Wall Sample SPT = Standard Penetration Test PID = Photoionization Detector (ppm) PPM = Part Per Million HSV = Hand Shear Vane	
1. Clearance of services by BSL engineer using CAT and Genny. 2. Hand dug inspection pit excavated to 1.20m bgl. 3. No groundwater encountered. 4. Borehole installation: 2.00m plain, slotted to 5.00m bgl.									

APPENDIX B

Chemical Testing Results



Nicola Swallow
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WD18 8YS

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e: n.swallow@brownfield-solutions.co.uk

Analytical Report Number : 23-29123

Project / Site name:	BRWRY, Manchester	Samples received on:	18/04/2023
Your job number:	C5313	Samples instructed on/ Analysis started on:	18/04/2023
Your order number:	C5313 4139 JM	Analysis completed by:	25/04/2023
Report Issue Number:	1	Report issued on:	25/04/2023
Samples Analysed:	1 soil sample		

Signed:

Dominika Warjan
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 23-29123
Project / Site name: BRWRY, Manchester
Your Order No: C5313 4139 JM

Lab Sample Number				2652398
Sample Reference				TP102
Sample Number				None Supplied
Depth (m)				0.50-0.60
Date Sampled				11/04/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	18
Total mass of sample received	kg	0.001	NONE	0.9

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	IZJ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.5
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	310
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.16
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	155
Organic Matter (automated)	%	0.1	MCERTS	7.9

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.5
Acenaphthylene	mg/kg	0.05	MCERTS	0.24
Acenaphthene	mg/kg	0.05	MCERTS	0.31
Fluorene	mg/kg	0.05	MCERTS	0.27
Phenanthrene	mg/kg	0.05	MCERTS	3.3
Anthracene	mg/kg	0.05	MCERTS	1
Fluoranthene	mg/kg	0.05	MCERTS	8.7
Pyrene	mg/kg	0.05	MCERTS	10
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.9
Chrysene	mg/kg	0.05	MCERTS	6.3
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	5.6
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	4.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.8
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.4
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	5.2

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	64
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	93
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2
Chromium (III)	mg/kg	1	NONE	26
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	520
Lead (aqua regia extractable)	mg/kg	1	MCERTS	1300
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.9
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	49
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	240

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 23-29123
Project / Site name: BRWRY, Manchester

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2652398	TP102	None Supplied	0.50-0.60	Brown loam and gravel.

Analytical Report Number : 23-29123
Project / Site name: BRWRY, Manchester

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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e: n.swallow@brownfield-solutions.co.uk

Analytical Report Number : 23-28310

Project / Site name:	BRWRY, Manchester	Samples received on:	13/04/2023
Your job number:	C5313	Samples instructed on/ Analysis started on:	13/04/2023
Your order number:	C5313 4139 JM	Analysis completed by:	25/04/2023
Report Issue Number:	1	Report issued on:	26/04/2023
Samples Analysed:	17 soil samples		

Signed:

Joanna Wawrzeczko
Joanna Wawrzeczko
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647729	2647730	2647731	2647732
Sample Reference				BH101	BH101	BH102	BH102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.70	1.60	0.00-0.20	0.50-1.00
Date Sampled				30/03/2023	30/03/2023	28/03/2023	28/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	-	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	-	26	18
Total mass of sample received	kg	0.001	NONE	0.8	-	0.8	0.8

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile & Amosite	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.097	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.097	-
Asbestos Analyst ID	N/A	N/A	N/A	IZJ	IZJ	ASE	IZJ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	-	8	8.3
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	42	-	90	230
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.021	-	0.045	0.11
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	20.8	-	44.9	114
Organic Matter (automated)	%	0.1	MCERTS	4.3	-	6.2	2.6

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.36	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.11	-	0.12	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.51	-	0.36	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.41	-	0.29	0.07
Phenanthrene	mg/kg	0.05	MCERTS	4.2	-	3.4	0.9
Anthracene	mg/kg	0.05	MCERTS	0.94	-	0.75	0.18
Fluoranthene	mg/kg	0.05	MCERTS	6.4	-	5.4	1.2
Pyrene	mg/kg	0.05	MCERTS	6.1	-	5.2	1.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.7	-	2.5	0.52
Chrysene	mg/kg	0.05	MCERTS	3	-	2.4	0.54
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3	-	2.9	0.6
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.2	-	1.2	0.32
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.5	-	2.5	0.53
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.6	-	1.4	0.34
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.33	-	0.34	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.9	-	1.6	0.37

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	35.3	-	30.3	6.65
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	30	-	11	16
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.3	-	1.3	1.3
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	-	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	15	-	16	27
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	-	17	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100	-	70	230
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	-	390	740
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	0.8	2.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	-	14	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0

Analytical Report Number: 23-28310
Project / Site name: BRWRY, Manchester
Your Order No: C5313 4139 JM

Lab Sample Number				2647729	2647730	2647731	2647732
Sample Reference				BH101	BH101	BH102	BH102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.70	1.60	0.00-0.20	0.50-1.00
Date Sampled				30/03/2023	30/03/2023	28/03/2023	28/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220	-	220	490

Monoaromatics & Oxygenates

Total BTEX & MTBE	mg/kg	0.007	NONE	< 0.007	-	-	< 0.007
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Monoaromatics & Oxygenates

Benzene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005
o-xylene	mg/kg	0.005	MCERTS	< 0.005	-	-	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	-	-	< 0.005

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	80	-	-	22
TPH-CWG - Aliphatic >EC16 - EC35 _{EH, CU, 1D, AL}	mg/kg	10	MCERTS	80	-	-	22
TPH-CWG - Aliphatic >EC35 - EC40 _{EH, CU, 1D, AL}	mg/kg	10	NONE	57	-	-	< 10
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	80	-	-	26

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	MCERTS	2.3	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	14	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	130	-	-	< 10
TPH-CWG - Aromatic >EC35 - EC40 _{EH, CU, 1D, AR}	mg/kg	10	NONE	110	-	-	< 10
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	150	-	-	11
TPH Total C5 - C40 _{EH, CU+HS, 1D, TOTAL}	mg/kg	10	NONE	390	-	-	39

TPH (C5 - C10) _{HS, 1D, TOTAL}	mg/kg	1	NONE	< 1.0	-	-	< 1.0
TPH (C10 - C16) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	< 10	-	-	< 10
TPH (C16 - C40) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	390	-	-	39

VOCs

Chloromethane	µg/kg	5	NONE	-	-	-	-
Chloroethane	µg/kg	5	NONE	-	-	-	-
Bromomethane	µg/kg	5	ISO 17025	-	-	-	-
Vinyl Chloride	µg/kg	5	NONE	-	-	-	-
Trichlorofluoromethane	µg/kg	5	NONE	-	-	-	-
1,1-Dichloroethene	µg/kg	5	NONE	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-
1,1-Dichloroethane	µg/kg	5	ISO 17025	-	-	-	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647729	2647730	2647731	2647732
Sample Reference				BH101	BH101	BH102	BH102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.70	1.60	0.00-0.20	0.50-1.00
Date Sampled				30/03/2023	30/03/2023	28/03/2023	28/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Trichloromethane	µg/kg	5	ISO 17025	-	-	-	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	-
1,2-Dichloroethane	µg/kg	5	ISO 17025	-	-	-	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	5	NONE	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-
Tetrachloromethane	µg/kg	5	NONE	-	-	-	-
1,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-
Trichloroethene	µg/kg	5	ISO 17025	-	-	-	-
Dibromomethane	µg/kg	5	ISO 17025	-	-	-	-
Bromodichloromethane	µg/kg	5	ISO 17025	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-
Dibromochloromethane	µg/kg	5	ISO 17025	-	-	-	-
Tetrachloroethene	µg/kg	5	NONE	-	-	-	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	-	-	-
Chlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	-
Styrene	µg/kg	5	ISO 17025	-	-	-	-
Tri bromomethane	µg/kg	5	NONE	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	-
Isopropylbenzene	µg/kg	5	ISO 17025	-	-	-	-
Bromobenzene	µg/kg	5	ISO 17025	-	-	-	-
n-Propylbenzene	µg/kg	5	ISO 17025	-	-	-	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	-
tert-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	-
sec-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	-
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
p-Isopropyltoluene	µg/kg	5	ISO 17025	-	-	-	-
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
Butylbenzene	µg/kg	5	NONE	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	5	NONE	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
Hexachlorobutadiene	µg/kg	5	NONE	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
Sum of the above VOCs	µg/kg	50	NONE	-	-	-	-

SVOCs

Aniline	mg/kg	0.1	NONE	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-

Analytical Report Number: 23-28310
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 Your Order No: C5313 4139 JM

Lab Sample Number				2647729	2647730	2647731	2647732
Sample Reference				BH101	BH101	BH102	BH102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.70	1.60	0.00-0.20	0.50-1.00
Date Sampled				30/03/2023	30/03/2023	28/03/2023	28/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-
Hexachloroethane	mg/kg	0.05	ISO 17025	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-
2-Nitrophenol	mg/kg	0.3	NONE	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-
4-Nitroaniline	mg/kg	0.2	NONE	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-
Azobenzene	mg/kg	0.3	NONE	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	-	-
Anthraquinone	mg/kg	0.3	NONE	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-

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Lab Sample Number				2647729	2647730	2647731	2647732
Sample Reference				BH101	BH101	BH102	BH102
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30-0.70	1.60	0.00-0.20	0.50-1.00
Date Sampled				30/03/2023	30/03/2023	28/03/2023	28/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status	

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647733	2647734	2647735	2647736
Sample Reference				BH103	BH104	BH104	BH105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-1.00	0.15-0.20	0.80-1.20	0.20-0.50
Date Sampled				31/03/2023	27/03/2023	27/03/2023	30/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	-	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	-	18	11
Total mass of sample received	kg	0.001	NONE	0.8	-	0.9	0.9

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.001	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	0.001	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	ASE	IZJ	IZJ	IZJ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.7	-	8.3	8.3
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	290	-	400	65
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.15	-	0.2	0.032
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	147	-	199	32.4
Organic Matter (automated)	%	0.1	MCERTS	2.5	-	2.7	2.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.25
Acenaphthylene	mg/kg	0.05	MCERTS	0.25	-	< 0.05	0.13
Acenaphthene	mg/kg	0.05	MCERTS	3	-	< 0.05	0.53
Fluorene	mg/kg	0.05	MCERTS	3.6	-	< 0.05	0.55
Phenanthrene	mg/kg	0.05	MCERTS	38	-	0.57	7.1
Anthracene	mg/kg	0.05	MCERTS	7.5	-	0.11	1.8
Fluoranthene	mg/kg	0.05	MCERTS	37	-	0.83	7.3
Pyrene	mg/kg	0.05	MCERTS	28	-	0.74	7.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	12	-	0.39	3.3
Chrysene	mg/kg	0.05	MCERTS	9.8	-	0.4	3.5
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	12	-	0.43	3.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.7	-	0.14	1.3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	9	-	0.33	3.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	4.8	-	0.22	1.9
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.4	-	< 0.05	0.51
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	4.9	-	0.22	2.4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	173	-	4.38	44.3
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	29	-	95	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	1.5
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	-	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	37	-	25	56
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	-	25	57
Copper (aqua regia extractable)	mg/kg	1	MCERTS	130	-	120	80
Lead (aqua regia extractable)	mg/kg	1	MCERTS	2900	-	200	270
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	-	32	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0

Analytical Report Number: 23-28310
Project / Site name: BRWRY, Manchester
Your Order No: C5313 4139 JM

Lab Sample Number				2647733	2647734	2647735	2647736
Sample Reference				BH103	BH104	BH104	BH105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-1.00	0.15-0.20	0.80-1.20	0.20-0.50
Date Sampled				31/03/2023	27/03/2023	27/03/2023	30/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	-	100	140

Monoaromatics & Oxygenates

Total BTEX & MTBE	mg/kg	0.007	NONE	< 0.007	-	-	-
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Monoaromatics & Oxygenates

Benzene	mg/kg	0.005	MCERTS	< 0.005	-	-	-
Toluene	mg/kg	0.005	MCERTS	< 0.005	-	-	-
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	-	-	-
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	-	-	-
o-xylene	mg/kg	0.005	MCERTS	< 0.005	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	MCERTS	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	MCERTS	7.5	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	12	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	30	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35 _{EH, CU, 1D, AL}	mg/kg	10	MCERTS	41	-	-	-
TPH-CWG - Aliphatic >EC35 - EC40 _{EH, CU, 1D, AL}	mg/kg	10	NONE	< 10	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	49	-	-	-

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	MCERTS	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	MCERTS	15	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	64	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	74	-	-	-
TPH-CWG - Aromatic >EC35 - EC40 _{EH, CU, 1D, AR}	mg/kg	10	NONE	20	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	150	-	-	-
TPH Total C5 - C40 _{EH, CU+HS, 1D, TOTAL}	mg/kg	10	NONE	120	-	-	-

TPH (C5 - C10) _{HS, 1D, TOTAL}	mg/kg	1	NONE	< 1.0	-	-	-
TPH (C10 - C16) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	< 10	-	-	-
TPH (C16 - C40) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	110	-	-	-

VOCs

Chloromethane	µg/kg	5	NONE	-	-	-	-
Chloroethane	µg/kg	5	NONE	-	-	-	-
Bromomethane	µg/kg	5	ISO 17025	-	-	-	-
Vinyl Chloride	µg/kg	5	NONE	-	-	-	-
Trichlorofluoromethane	µg/kg	5	NONE	-	-	-	-
1,1-Dichloroethene	µg/kg	5	NONE	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-
1,1-Dichloroethane	µg/kg	5	ISO 17025	-	-	-	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647733	2647734	2647735	2647736
Sample Reference				BH103	BH104	BH104	BH105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-1.00	0.15-0.20	0.80-1.20	0.20-0.50
Date Sampled				31/03/2023	27/03/2023	27/03/2023	30/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Trichloromethane	µg/kg	5	ISO 17025	-	-	-	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	-
1,2-Dichloroethane	µg/kg	5	ISO 17025	-	-	-	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	5	NONE	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-
Tetrachloromethane	µg/kg	5	NONE	-	-	-	-
1,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-
Trichloroethene	µg/kg	5	ISO 17025	-	-	-	-
Dibromomethane	µg/kg	5	ISO 17025	-	-	-	-
Bromodichloromethane	µg/kg	5	ISO 17025	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-
Dibromochloromethane	µg/kg	5	ISO 17025	-	-	-	-
Tetrachloroethene	µg/kg	5	NONE	-	-	-	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	-	-	-
Chlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	-
Styrene	µg/kg	5	ISO 17025	-	-	-	-
Tri bromomethane	µg/kg	5	NONE	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	-
Isopropylbenzene	µg/kg	5	ISO 17025	-	-	-	-
Bromobenzene	µg/kg	5	ISO 17025	-	-	-	-
n-Propylbenzene	µg/kg	5	ISO 17025	-	-	-	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	-
tert-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	-
sec-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	-
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
p-Isopropyltoluene	µg/kg	5	ISO 17025	-	-	-	-
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
Butylbenzene	µg/kg	5	NONE	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	5	NONE	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
Hexachlorobutadiene	µg/kg	5	NONE	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-
Sum of the above VOCs	µg/kg	50	NONE	-	-	-	-

SVOCS

Aniline	mg/kg	0.1	NONE	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647733	2647734	2647735	2647736
Sample Reference				BH103	BH104	BH104	BH105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-1.00	0.15-0.20	0.80-1.20	0.20-0.50
Date Sampled				31/03/2023	27/03/2023	27/03/2023	30/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-
Hexachloroethane	mg/kg	0.05	ISO 17025	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-
2-Nitrophenol	mg/kg	0.3	NONE	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-
4-Nitroaniline	mg/kg	0.2	NONE	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-
Azobenzene	mg/kg	0.3	NONE	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	-	-
Anthraquinone	mg/kg	0.3	NONE	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647733	2647734	2647735	2647736
Sample Reference				BH103	BH104	BH104	BH105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70-1.00	0.15-0.20	0.80-1.20	0.20-0.50
Date Sampled				31/03/2023	27/03/2023	27/03/2023	30/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status	

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-28310
Project / Site name: BRWRY, Manchester
Your Order No: C5313 4139 JM

Lab Sample Number				2647737	2647738	2647739	2647740
Sample Reference				BH106	TT102	WS104A	WS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50-1.00	0.20-0.30	0.30-0.40	0.30-0.50
Date Sampled				28/03/2023	11/04/2023	12/04/2023	29/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	46	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	9.6	22	19
Total mass of sample received	kg	0.001	NONE	0.8	0.9	0.8	0.5

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.017	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.017	-
Asbestos Analyst ID	N/A	N/A	N/A	IZJ	IZJ	ASE	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.5	11	9.3	8.3
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	350	960	190	880
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.17	0.48	0.096	0.44
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	173	481	95.8	441
Organic Matter (automated)	%	0.1	MCERTS	2.9	2.1	3.4	4.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.35	0.54	3.2	2.2
Acenaphthylene	mg/kg	0.05	MCERTS	0.1	0.21	1.3	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.3	1.2	4.5	43
Fluorene	mg/kg	0.05	MCERTS	1	1.1	4.1	33
Phenanthrene	mg/kg	0.05	MCERTS	23	9.9	38	130
Anthracene	mg/kg	0.05	MCERTS	5.5	2.8	9.8	39
Fluoranthene	mg/kg	0.05	MCERTS	40	14	37	170
Pyrene	mg/kg	0.05	MCERTS	39	13	39	140
Benzo(a)anthracene	mg/kg	0.05	MCERTS	19	5.8	18	68
Chrysene	mg/kg	0.05	MCERTS	17	6.1	20	61
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	19	6.5	17	81
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	6.3	2.9	6.5	24
Benzo(a)pyrene	mg/kg	0.05	MCERTS	16	5.8	15	67
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.5	3.9	7.8	34
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	2.2	0.79	2.2	9.4
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	7.9	4.5	9.9	35

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	202	78.6	233	945
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	23	8.2	34	27
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.3	0.6	7	1.6
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	27	16	20	27
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	16	20	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	93	39	2400	350
Lead (aqua regia extractable)	mg/kg	1	MCERTS	490	60	950	280
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	1.4	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	40	14	37	39
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 23-28310
Project / Site name: BRWRY, Manchester
Your Order No: C5313 4139 JM

Lab Sample Number	2647737	2647738	2647739	2647740
Sample Reference	BH106	TT102	WS104A	WS105
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50-1.00	0.20-0.30	0.30-0.40	0.30-0.50
Date Sampled	28/03/2023	11/04/2023	12/04/2023	29/03/2023
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	440 110 4400 460

Monoaromatics & Oxygenates

Total BTEX & MTBE	mg/kg	0.007	NONE	< 0.007	-	< 0.007	< 0.007
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Monoaromatics & Oxygenates

Benzene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
o-xylene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	-	< 0.005	< 0.005

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	MCERTS	< 1.0	-	< 1.0	53
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	MCERTS	4	-	< 2.0	260
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	10	-	< 8.0	350
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	61	-	51	420
TPH-CWG - Aliphatic >EC16 - EC35 _{EH, CU, 1D, AL}	mg/kg	10	MCERTS	71	-	51	770
TPH-CWG - Aliphatic >EC35 - EC40 _{EH, CU, 1D, AL}	mg/kg	10	NONE	11	-	11	100
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	75	-	59	1100

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	MCERTS	< 1.0	-	< 1.0	2.7
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	MCERTS	8.9	-	11	160
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	71	-	64	500
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	99	-	110	620
TPH-CWG - Aromatic >EC35 - EC40 _{EH, CU, 1D, AR}	mg/kg	10	NONE	< 10	-	< 10	100
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	180	-	180	1300
TPH Total C5 - C40 _{EH, CU+HS, 1D, TOTAL}	mg/kg	10	NONE	270	-	260	2600

TPH (C5 - C10) _{HS, 1D, TOTAL}	mg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0
TPH (C10 - C16) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	13	-	13	470
TPH (C16 - C40) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	250	-	250	2100

VOCs

Chloromethane	µg/kg	5	NONE	-	-	-	< 5.0#
Chloroethane	µg/kg	5	NONE	-	-	-	< 5.0
Bromomethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Vinyl Chloride	µg/kg	5	NONE	-	-	-	< 5.0
Trichlorofluoromethane	µg/kg	5	NONE	-	-	-	< 5.0
1,1-Dichloroethene	µg/kg	5	NONE	-	-	-	< 5.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	-	-	< 5.0
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	-	-	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	< 5.0
1,1-Dichloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	< 5.0

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647737	2647738	2647739	2647740
Sample Reference				BH106	TT102	WS104A	WS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50-1.00	0.20-0.30	0.30-0.40	0.30-0.50
Date Sampled				28/03/2023	11/04/2023	12/04/2023	29/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Trichloromethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,2-Dichloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Trans-1,2-dichloroethene	µg/kg	5	NONE	-	-	-	< 5.0
Benzene	µg/kg	5	MCERTS	-	-	-	< 5.0
Tetrachloromethane	µg/kg	5	NONE	-	-	-	< 5.0
1,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Trichloroethene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Dibromomethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Bromodichloromethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Toluene	µg/kg	5	MCERTS	-	-	-	< 5.0
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Dibromochloromethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Tetrachloroethene	µg/kg	5	NONE	-	-	-	< 5.0
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Chlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	-	-	-	< 5.0
Styrene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Tri bromomethane	µg/kg	5	NONE	-	-	-	< 5.0
o-Xylene	µg/kg	5	MCERTS	-	-	-	< 5.0
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	< 5.0
Isopropylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Bromobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
n-Propylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
2-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	< 5.0
4-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
tert-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
sec-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
p-Isopropyltoluene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Butylbenzene	µg/kg	5	NONE	-	-	-	< 5.0
1,2-Dibromo-3-chloropropane	µg/kg	5	NONE	-	-	-	< 5.0#
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Hexachlorobutadiene	µg/kg	5	NONE	-	-	-	< 5.0
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	< 5.0
Sum of the above VOCs	µg/kg	50	NONE	-	-	-	< 50

SVOCs

Aniline	mg/kg	0.1	NONE	-	-	-	3.8
Phenol	mg/kg	0.2	ISO 17025	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1

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 Project / Site name: BRWRY, Manchester
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Lab Sample Number				2647737	2647738	2647739	2647740
Sample Reference				BH106	TT102	WS104A	WS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50-1.00	0.20-0.30	0.30-0.40	0.30-0.50
Date Sampled				28/03/2023	11/04/2023	12/04/2023	29/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	ISO 17025	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	2.2
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	1.7
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	43
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	24
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	-	-	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	-	-	33
Azobenzene	mg/kg	0.3	NONE	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	130
Anthracene	mg/kg	0.05	MCERTS	-	-	-	39
Carbazole	mg/kg	0.3	MCERTS	-	-	-	12
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	NONE	-	-	-	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	170
Pyrene	mg/kg	0.05	MCERTS	-	-	-	140
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	68
Chrysene	mg/kg	0.05	MCERTS	-	-	-	61
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	81
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	24
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	67
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	34
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	9.4
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	35

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Lab Sample Number				2647737	2647738	2647739	2647740
Sample Reference				BH106	TT102	WS104A	WS105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50-1.00	0.20-0.30	0.30-0.40	0.30-0.50
Date Sampled				28/03/2023	11/04/2023	12/04/2023	29/03/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status	

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Project / Site name: BRWRY, Manchester
Your Order No: C5313 4139 JM

Lab Sample Number				2647741	2647742	2647743	2647744
Sample Reference				WS105	TP103	TP105	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.20-0.30	0.40-0.50	0.60-1.00
Date Sampled				29/03/2023	11/04/2023	11/04/2023	11/04/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	11	9.8	4.3	12
Total mass of sample received	kg	0.001	NONE	0.8	0.9	0.8	0.8

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	Not-detected	-
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	N/A	ASE	ASE	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	10.6	8.3	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	770	1400	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.38	0.68	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	383	677	-
Organic Matter (automated)	%	0.1	MCERTS	1.2	6.8	1.9	1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	0.42	0.49	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.72	0.27	-
Acenaphthene	mg/kg	0.05	MCERTS	-	2.8	6.6	-
Fluorene	mg/kg	0.05	MCERTS	-	2.3	5	-
Phenanthrene	mg/kg	0.05	MCERTS	-	16	39	-
Anthracene	mg/kg	0.05	MCERTS	-	7	11	-
Fluoranthene	mg/kg	0.05	MCERTS	-	41	36	-
Pyrene	mg/kg	0.05	MCERTS	-	38	34	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	19	18	-
Chrysene	mg/kg	0.05	MCERTS	-	20	15	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	28	15	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	13	6.1	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	26	13	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	18	5.5	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	3.9	1.7	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	21	6.1	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	259	211	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	8	7.3	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	0.6	0.7	-
Chromium (hexavalent)	mg/kg	1.2	NONE	-	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	-	27	12	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	27	12	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	32	37	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	93	190	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	25	25	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	-

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Project / Site name: BRWRY, Manchester
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Lab Sample Number				2647741	2647742	2647743	2647744
Sample Reference				WS105	TP103	TP105	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.20-0.30	0.40-0.50	0.60-1.00
Date Sampled				29/03/2023	11/04/2023	11/04/2023	11/04/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	120	120	-

Monoaromatics & Oxygenates

Total BTEX & MTBE	mg/kg	0.007	NONE	< 0.007	-	< 0.007	< 0.007
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Monoaromatics & Oxygenates

Benzene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
o-xylene	mg/kg	0.005	MCERTS	< 0.005	-	< 0.005	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	-	< 0.005	< 0.005

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 _{HS, 1D, AL}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 _{EH, CU, 1D, AL}	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH, CU, 1D, AL}	mg/kg	2	MCERTS	< 2.0	-	3.4	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	< 8.0	-	12	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 _{EH, CU, 1D, AL}	mg/kg	8	MCERTS	< 8.0	-	99	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35 _{EH, CU, 1D, AL}	mg/kg	10	MCERTS	< 10	-	110	< 10
TPH-CWG - Aliphatic >EC35 - EC40 _{EH, CU, 1D, AL}	mg/kg	10	NONE	< 10	-	46	< 10
TPH-CWG - Aliphatic (EC5 - EC35) _{EH, CU+HS, 1D, AL}	mg/kg	10	NONE	< 10	-	110	< 10

TPH-CWG - Aromatic >EC5 - EC7 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 _{HS, 1D, AR}	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 _{EH, CU, 1D, AR}	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH, CU, 1D, AR}	mg/kg	2	MCERTS	< 2.0	-	32	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	< 10	-	120	< 10
TPH-CWG - Aromatic >EC21 - EC35 _{EH, CU, 1D, AR}	mg/kg	10	MCERTS	< 10	-	260	< 10
TPH-CWG - Aromatic >EC35 - EC40 _{EH, CU, 1D, AR}	mg/kg	10	NONE	< 10	-	68	< 10
TPH-CWG - Aromatic (EC5 - EC35) _{EH, CU+HS, 1D, AR}	mg/kg	10	NONE	< 10	-	410	< 10
TPH Total C5 - C40 _{EH, CU+HS, 1D, TOTAL}	mg/kg	10	NONE	< 10	-	640	< 10

TPH (C5 - C10) _{HS, 1D, TOTAL}	mg/kg	1	NONE	< 1.0	-	< 1.0	< 1.0
TPH (C10 - C16) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	< 10	-	35	< 10
TPH (C16 - C40) _{EH, CU, 1D, TOTAL}	mg/kg	10	NONE	< 10	-	610	< 10

VOCs

Chloromethane	µg/kg	5	NONE	-	-	< 5.0#	-
Chloroethane	µg/kg	5	NONE	-	-	< 5.0	-
Bromomethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Vinyl Chloride	µg/kg	5	NONE	-	-	< 5.0	-
Trichlorofluoromethane	µg/kg	5	NONE	-	-	< 5.0	-
1,1-Dichloroethene	µg/kg	5	NONE	-	-	< 5.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	-	< 5.0	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	-	< 5.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	< 5.0	-
1,1-Dichloroethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	< 5.0	-

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647741	2647742	2647743	2647744
Sample Reference				WS105	TP103	TP105	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.20-0.30	0.40-0.50	0.60-1.00
Date Sampled				29/03/2023	11/04/2023	11/04/2023	11/04/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Trichloromethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,2-Dichloroethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Trans-1,2-dichloroethene	µg/kg	5	NONE	-	-	< 5.0	-
Benzene	µg/kg	5	MCERTS	-	-	< 5.0	-
Tetrachloromethane	µg/kg	5	NONE	-	-	< 5.0	-
1,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Trichloroethene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Dibromomethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Bromodichloromethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Toluene	µg/kg	5	MCERTS	-	-	< 5.0	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Dibromochloromethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Tetrachloroethene	µg/kg	5	NONE	-	-	< 5.0	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Chlorobenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	< 5.0	-
p & m-Xylene	µg/kg	5	MCERTS	-	-	< 5.0	-
Styrene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Tribromomethane	µg/kg	5	NONE	-	-	< 5.0	-
o-Xylene	µg/kg	5	MCERTS	-	-	< 5.0	-
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	< 5.0	-
Isopropylbenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Bromobenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
n-Propylbenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-	-	< 5.0	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
tert-Butylbenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
sec-Butylbenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
p-Isopropyltoluene	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Butylbenzene	µg/kg	5	NONE	-	-	< 5.0	-
1,2-Dibromo-3-chloropropane	µg/kg	5	NONE	-	-	< 5.0#	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Hexachlorobutadiene	µg/kg	5	NONE	-	-	< 5.0	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	< 5.0	-
Sum of the above VOCs	µg/kg	50	NONE	-	-	< 50	-

SVOCs

Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-

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Project / Site name: BRWRY, Manchester
Your Order No: C5313 4139 JM

Lab Sample Number				2647741	2647742	2647743	2647744
Sample Reference				WS105	TP103	TP105	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.20-0.30	0.40-0.50	0.60-1.00
Date Sampled				29/03/2023	11/04/2023	11/04/2023	11/04/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-
Hexachloroethane	mg/kg	0.05	ISO 17025	-	-	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-
2-Nitrophenol	mg/kg	0.3	NONE	-	-	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.49	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	2.6	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	< 0.1	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	0.27	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	6.6	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	4.4	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	-	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-
4-Nitroaniline	mg/kg	0.2	NONE	-	-	< 0.2	-
Fluorene	mg/kg	0.05	MCERTS	-	-	5	-
Azobenzene	mg/kg	0.3	NONE	-	-	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	39	-
Anthracene	mg/kg	0.05	MCERTS	-	-	11	-
Carbazole	mg/kg	0.3	MCERTS	-	-	1.7	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	< 0.2	-
Anthraquinone	mg/kg	0.3	NONE	-	-	3.1	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	36	-
Pyrene	mg/kg	0.05	MCERTS	-	-	34	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	< 0.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	18	-
Chrysene	mg/kg	0.05	MCERTS	-	-	15	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	15	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	6.1	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	13	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	5.5	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	1.7	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	6.1	-

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Lab Sample Number				2647741	2647742	2647743	2647744
Sample Reference				WS105	TP103	TP105	TP105
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00-1.20	0.20-0.30	0.40-0.50	0.60-1.00
Date Sampled				29/03/2023	11/04/2023	11/04/2023	11/04/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status	

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Project / Site name: BRWRY, Manchester
Your Order No: C5313 4139 JM

Lab Sample Number				2647745
Sample Reference				WELL C
Sample Number				None Supplied
Depth (m)				0.20-0.30
Date Sampled				12/04/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	12
Total mass of sample received	kg	0.001	NONE	0.9

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-
Asbestos Quantification Total	%	0.001	ISO 17025	-
Asbestos Analyst ID	N/A	N/A	N/A	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.9
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	710
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.35
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	354
Organic Matter (automated)	%	0.1	MCERTS	2.4

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.86
Anthracene	mg/kg	0.05	MCERTS	0.2
Fluoranthene	mg/kg	0.05	MCERTS	1.3
Pyrene	mg/kg	0.05	MCERTS	1.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.69
Chrysene	mg/kg	0.05	MCERTS	0.75
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.88
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.32
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.72
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.37
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.57

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	8.2
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2
Chromium (III)	mg/kg	1	NONE	28
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	46
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0

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Lab Sample Number				2647745
Sample Reference				WELL C
Sample Number				None Supplied
Depth (m)				0.20-0.30
Date Sampled				12/04/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	180

Monoaromatics & Oxygenates

Total BTEX & MTBE	mg/kg	0.007	NONE	-
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Monoaromatics & Oxygenates

Benzene	mg/kg	0.005	MCERTS	-
Toluene	mg/kg	0.005	MCERTS	-
Ethylbenzene	mg/kg	0.005	MCERTS	-
p & m-xylene	mg/kg	0.005	MCERTS	-
o-xylene	mg/kg	0.005	MCERTS	-
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS,1D,AL}	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS,1D,AL}	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS,1D,AL}	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH,CU,1D,AL}	mg/kg	1	MCERTS	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH,CU,1D,AL}	mg/kg	2	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH,CU,1D,AL}	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH,CU,1D,AL}	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC35 _{EH,CU,1D,AL}	mg/kg	10	MCERTS	-
TPH-CWG - Aliphatic >EC35 - EC40 _{EH,CU,1D,AL}	mg/kg	10	NONE	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH,CU+HS,1D,AL}	mg/kg	10	NONE	-

TPH-CWG - Aromatic >EC5 - EC7 _{HS,1D,AR}	mg/kg	0.001	NONE	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS,1D,AR}	mg/kg	0.001	NONE	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS,1D,AR}	mg/kg	0.001	NONE	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH,CU,1D,AR}	mg/kg	1	MCERTS	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH,CU,1D,AR}	mg/kg	2	MCERTS	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH,CU,1D,AR}	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH,CU,1D,AR}	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic >EC35 - EC40 _{EH,CU,1D,AR}	mg/kg	10	NONE	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH,CU+HS,1D,AR}	mg/kg	10	NONE	-
TPH Total C5 - C40 _{EH,CU+HS,1D,TOTAL}	mg/kg	10	NONE	-

TPH (C5 - C10) _{HS,1D,TOTAL}	mg/kg	1	NONE	-
TPH (C10 - C16) _{EH,CU,1D,TOTAL}	mg/kg	10	NONE	-
TPH (C16 - C40) _{EH,CU,1D,TOTAL}	mg/kg	10	NONE	-

VOCs

Chloromethane	µg/kg	5	NONE	-
Chloroethane	µg/kg	5	NONE	-
Bromomethane	µg/kg	5	ISO 17025	-
Vinyl Chloride	µg/kg	5	NONE	-
Trichlorofluoromethane	µg/kg	5	NONE	-
1,1-Dichloroethene	µg/kg	5	NONE	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-
1,1-Dichloroethane	µg/kg	5	ISO 17025	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647745
Sample Reference				WELL C
Sample Number				None Supplied
Depth (m)				0.20-0.30
Date Sampled				12/04/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Trichloromethane	µg/kg	5	ISO 17025	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-
1,2-Dichloroethane	µg/kg	5	ISO 17025	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	-
Trans-1,2-dichloroethene	µg/kg	5	NONE	-
Benzene	µg/kg	5	MCERTS	-
Tetrachloromethane	µg/kg	5	NONE	-
1,2-Dichloropropane	µg/kg	5	ISO 17025	-
Trichloroethene	µg/kg	5	ISO 17025	-
Dibromomethane	µg/kg	5	ISO 17025	-
Bromodichloromethane	µg/kg	5	ISO 17025	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-
Toluene	µg/kg	5	MCERTS	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	-
Dibromochloromethane	µg/kg	5	ISO 17025	-
Tetrachloroethene	µg/kg	5	NONE	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	-
Chlorobenzene	µg/kg	5	ISO 17025	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-
Ethylbenzene	µg/kg	5	MCERTS	-
p & m-Xylene	µg/kg	5	MCERTS	-
Styrene	µg/kg	5	ISO 17025	-
Tri bromomethane	µg/kg	5	NONE	-
o-Xylene	µg/kg	5	MCERTS	-
1,1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-
Isopropylbenzene	µg/kg	5	ISO 17025	-
Bromobenzene	µg/kg	5	ISO 17025	-
n-Propylbenzene	µg/kg	5	ISO 17025	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-
tert-Butylbenzene	µg/kg	5	ISO 17025	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-
sec-Butylbenzene	µg/kg	5	ISO 17025	-
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	-
p-Isopropyltoluene	µg/kg	5	ISO 17025	-
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	-
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	-
Butylbenzene	µg/kg	5	NONE	-
1,2-Dibromo-3-chloropropane	µg/kg	5	NONE	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-
Hexachlorobutadiene	µg/kg	5	NONE	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-
Sum of the above VOCs	µg/kg	50	NONE	-

SVOCS

Aniline	mg/kg	0.1	NONE	-
Phenol	mg/kg	0.2	ISO 17025	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-

Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647745
Sample Reference				WELL C
Sample Number				None Supplied
Depth (m)				0.20-0.30
Date Sampled				12/04/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-
2-Methylphenol	mg/kg	0.3	MCERTS	-
Hexachloroethane	mg/kg	0.05	ISO 17025	-
Nitrobenzene	mg/kg	0.3	MCERTS	-
4-Methylphenol	mg/kg	0.2	NONE	-
Isophorone	mg/kg	0.2	MCERTS	-
2-Nitrophenol	mg/kg	0.3	NONE	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-
Naphthalene	mg/kg	0.05	MCERTS	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-
4-Chloroaniline	mg/kg	0.1	NONE	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-
Dimethyl phthalate	mg/kg	0.1	MCERTS	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-
Acenaphthylene	mg/kg	0.05	MCERTS	-
Acenaphthene	mg/kg	0.05	MCERTS	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-
Dibenzofuran	mg/kg	0.2	MCERTS	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-
4-Nitroaniline	mg/kg	0.2	NONE	-
Fluorene	mg/kg	0.05	MCERTS	-
Azobenzene	mg/kg	0.3	NONE	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-
Phenanthrene	mg/kg	0.05	MCERTS	-
Anthracene	mg/kg	0.05	MCERTS	-
Carbazole	mg/kg	0.3	MCERTS	-
Dibutyl phthalate	mg/kg	0.2	NONE	-
Anthraquinone	mg/kg	0.3	NONE	-
Fluoranthene	mg/kg	0.05	MCERTS	-
Pyrene	mg/kg	0.05	MCERTS	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-
Chrysene	mg/kg	0.05	MCERTS	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-



Analytical Report Number: 23-28310
 Project / Site name: BRWRY, Manchester
 Your Order No: C5313 4139 JM

Lab Sample Number				2647745
Sample Reference				WELL C
Sample Number				None Supplied
Depth (m)				0.20-0.30
Date Sampled				12/04/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number 23-28310

Project / Site name: BRWRY, Manchester

Your Order No: C5313 4139 JM

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2647731	BH102	0.00-0.20	100	Loose Fibrous Debris	Chrysotile & Amosite	0.097	0.097
2647733	BH103	0.70-1.00	119	Loose Fibrous Debris	Chrysotile	0.001	0.001
2647739	WS104A	0.30-0.40	103	Loose Fibrous Debris	Chrysotile	0.017	0.017

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

Analytical Report Number : 23-28310

Project / Site name: BRWRY, Manchester

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2647729	BH101	None Supplied	0.30-0.70	Brown loam and gravel.
2647731	BH102	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
2647732	BH102	None Supplied	0.50-1.00	Brown clay and loam with gravel and vegetation.
2647733	BH103	None Supplied	0.70-1.00	Brown loam and sand with gravel.
2647735	BH104	None Supplied	0.80-1.20	Brown clay and loam with gravel.
2647736	BH105	None Supplied	0.20-0.50	Brown loam and sand with gravel.
2647737	BH106	None Supplied	0.50-1.00	Brown clay and loam with gravel and vegetation.
2647738	TT102	None Supplied	0.20-0.30	Brown loam and sand with stones.
2647739	WS104A	None Supplied	0.30-0.40	Brown loam and sand with gravel.
2647740	WS105	None Supplied	0.30-0.50	Brown clay and loam with gravel.
2647741	WS105	None Supplied	1.00-1.20	Brown clay with gravel.
2647742	TP103	None Supplied	0.20-0.30	Brown loam and gravel.
2647743	TP105	None Supplied	0.40-0.50	Brown loam with gravel.
2647744	TP105	None Supplied	0.60-1.00	Brown clay.
2647745	WELL C	None Supplied	0.20-0.30	Brown loam and sand with gravel.

Analytical Report Number : 23-28310
Project / Site name: BRWRY, Manchester

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS

Analytical Report Number : 23-28310
Project / Site name: BRWRY, Manchester

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

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

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

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and therefore may be compromised.

Sample Deviation Report



Analytical Report Number : 23-28310

Project / Site name: BRWRY, Manchester

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH101	None Supplied	S	2647729	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH101	None Supplied	S	2647729	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH101	None Supplied	S	2647729	c	TPH in (Soil)	L076-PL	c
BH102	None Supplied	S	2647732	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH102	None Supplied	S	2647732	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH102	None Supplied	S	2647732	c	TPH in (Soil)	L076-PL	c
BH106	None Supplied	S	2647737	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH106	None Supplied	S	2647737	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH106	None Supplied	S	2647737	c	TPH in (Soil)	L076-PL	c
WS105	None Supplied	S	2647740	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS105	None Supplied	S	2647740	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS105	None Supplied	S	2647740	c	TPH in (Soil)	L076-PL	c
WS105	None Supplied	S	2647740	c	Volatile organic compounds in soil	L073B-PL	c
WS105	None Supplied	S	2647741	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS105	None Supplied	S	2647741	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WS105	None Supplied	S	2647741	c	TPH in (Soil)	L076-PL	c

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27320

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422331	1422332	1422333	1422334	1422335	1422336
Sample ID	TP2	TP2	TP4	TP6	TP8	TP10
Depth	0.20	0.90	1.00	0.40-0.50	1.00	1.00
Other ID						
Sample Type	D	D	D	D	D	D
Sampling Date	13/11/18	13/11/18	15/11/18	14/11/18	15/11/18	13/11/18
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Preparation									
Stones Removed	DETSC 1003*	0	%	0.0	0.0	0.0	0.0	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	10	15	11	10	11	8.9
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	5.3	15	10	5.7	6.9	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.7	0.3	0.1	0.6	0.4
Chromium	DETSC 2301#	0.15	mg/kg	12	15	38	10	37	20
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	14	49	28	14	23	44
Lead	DETSC 2301#	0.3	mg/kg	210	1400	74	79	93	87
Mercury	DETSC 2325#	0.05	mg/kg	0.11	0.84	0.19	0.07	0.10	0.17
Nickel	DETSC 2301#	1	mg/kg	9.2	12	19	12	52	20
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	0.8	< 0.5	0.7	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	39	170	99	40	95	93
Inorganics									
pH	DETSC 2008#			11.8	8.6	10.0	8.7	11.0	8.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.6	< 0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	0.6	1.2	1.5	1.0	1.5	1.6
Chloride	DETSC 2055	1	mg/kg	52.4	92.7	43.3	37.3	60.0	17.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	110	920	560	140	230	100
Sulphide	DETSC 2024*	10	mg/kg	12	16	20	28	32	36
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.17	0.33	0.33	0.06	0.30	0.11
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg				< 0.01		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg				< 0.01		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg				2.7		
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg				190		
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg				700		
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg				640		
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg				180		
Aliphatic C5-C35	DETSC 3072*	10	mg/kg				1700		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg				< 0.01		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg				< 0.01		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg				2.5		
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg				51		
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg				320		
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg				490		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg				140		
Aromatic C5-C35	DETSC 3072*	10	mg/kg				1000		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg				2700		
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	5.2	< 0.1	< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10	< 10	390	< 10	< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27320

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422331	1422332	1422333	1422334	1422335	1422336
Sample ID	TP2	TP2	TP4	TP6	TP8	TP10
Depth	0.20	0.90	1.00	0.40-0.50	1.00	1.00
Other ID						
Sample Type	D	D	D	D	D	D
Sampling Date	13/11/18	13/11/18	15/11/18	14/11/18	15/11/18	13/11/18
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	< 10	< 10	2600	< 10	14
EPH (C16-C21)	DETSC 3311	10	mg/kg	< 10	17	59	3500	94	90
EPH (C21-C35)	DETSC 3311	10	mg/kg	59	50	400	1000	560	200
EPH (C8-C40)	DETSC 3311*	10	mg/kg	77	78	500	7500	750	340
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	6.5	< 0.1	0.2
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	< 0.1	4.1	0.2	1.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	0.9
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	0.4	< 0.1	1.4	4.5
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	0.1	< 0.1	< 0.1	1.2
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.7	0.9	< 0.1	3.4	7.3
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.8	1.0	< 0.1	3.4	7.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	0.3	< 0.1	1.7	3.0
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.4	5.5	< 0.1	2.1	3.4
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	0.9	< 0.1	3.0	2.6
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	0.4	< 0.1	1.4	1.4
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	0.7	< 0.1	3.3	3.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.7	< 0.1	2.7	2.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1	0.6	< 0.1	2.8	2.0
PAH Total	DETSC 3301	1.6	mg/kg	< 1.6	4.0	12	11	26	40
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27320

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422337	1422338
Sample ID	BH6	BH7
Depth	0.50	0.80
Other ID		
Sample Type	D	D
Sampling Date	12/11/18	13/11/18
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Preparation					
Stones Removed	DETSC 1003*	0	%	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	8.9	15
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	13	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.4
Chromium	DETSC 2301#	0.15	mg/kg	60	28
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	89	120
Lead	DETSC 2301#	0.3	mg/kg	53	110
Mercury	DETSC 2325#	0.05	mg/kg	0.09	0.17
Nickel	DETSC 2301#	1	mg/kg	39	17
Selenium	DETSC 2301#	0.5	mg/kg	0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	120	95
Inorganics					
pH	DETSC 2008#			10.5	9.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.1
Total Organic Carbon	DETSC 2002	0.1	%	1.4	1.7
Chloride	DETSC 2055	1	mg/kg	58.6	33.9
Sulphate Aqueous Extract as SO ₄	DETSC 2076#	10	mg/l	270	67
Sulphide	DETSC 2024*	10	mg/kg	40	< 10
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.21	0.09
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		
Aromatic C5-C35	DETSC 3072*	10	mg/kg		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27320

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422337	1422338
Sample ID	BH6	BH7
Depth	0.50	0.80
Other ID		
Sample Type	D	D
Sampling Date	12/11/18	13/11/18
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	19
EPH (C16-C21)	DETSC 3311	10	mg/kg	24	80
EPH (C21-C35)	DETSC 3311	10	mg/kg	210	140
EPH (C8-C40)	DETSC 3311*	10	mg/kg	300	260
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	0.6
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	1.5
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	1.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.7	5.4
Anthracene	DETSC 3301	0.1	mg/kg	0.2	1.2
Fluoranthene	DETSC 3301	0.1	mg/kg	1.3	6.4
Pyrene	DETSC 3301	0.1	mg/kg	1.6	6.0
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.7	2.4
Chrysene	DETSC 3301	0.1	mg/kg	0.9	2.8
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	1.2	2.0
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.5	1.0
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	1.0	2.4
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	1.1	1.7
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.3
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	1.0	1.4
PAH Total	DETSC 3301	1.6	mg/kg	10	36
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27974

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1426438	1426439	1426440	1426441	1426442
Sample ID	TP1	TP5	BH4	BH7	BH9
Depth	0.60	0.30	0.50	0.50	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	16/11/18	16/11/18	14/11/18	14/11/18	15/11/18
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
Preparation								
Stones Removed	DETSC 1003*	0	%	0.0	0.0	0.0	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	10	9.7	3.7	15	14
Metals								
Arsenic	DETSC 2301#	0.2	mg/kg	5.8	12	1.5	13	19
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.6	0.4	0.9	1.7
Chromium	DETSC 2301#	0.15	mg/kg	17	11	2.6	21	20
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	36	63	3.9	61	120
Lead	DETSC 2301#	0.3	mg/kg	42	150	6.1	89	240
Mercury	DETSC 2325#	0.05	mg/kg	0.05	0.09	< 0.05	0.33	0.24
Nickel	DETSC 2301#	1	mg/kg	13	12	3.9	18	26
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	87	100	33	140	260
Inorganics								
pH	DETSC 2008#			10.8	7.6	9.1	11.1	8.1
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.6	< 0.1	0.1	0.2
Total Organic Carbon	DETSC 2002	0.1	%	1.4	2.5	1.9	< 0.1	2.4
Chloride	DETSC 2055	1	mg/kg	22.6	43.7	18.3	36.7	20.1
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	220	43	120	90	65
Sulphide	DETSC 2024*	10	mg/kg	24	12	28	20	< 10
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.31	0.07	0.07	0.17	0.11
Petroleum Hydrocarbons								
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg			< 0.01		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg			< 0.01		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01		
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg			< 1.5		
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg			< 1.2		
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg			< 1.5		
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg			38		
Aliphatic C5-C35	DETSC 3072*	10	mg/kg			38		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg			< 0.01		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg			< 0.01		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01		
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg			< 0.9		
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg			21		
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg			250		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg			3200		
Aromatic C5-C35	DETSC 3072*	10	mg/kg			3500		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg			3500		
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 100.0	< 10	< 100.0	< 10	< 10

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27974

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1426438	1426439	1426440	1426441	1426442
Sample ID	TP1	TP5	BH4	BH7	BH9
Depth	0.60	0.30	0.50	0.50	0.50
Other ID					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	16/11/18	16/11/18	14/11/18	14/11/18	15/11/18
Sampling Time	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units					
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 100.0	< 10	< 100.0	< 10	< 10
EPH (C16-C21)	DETSC 3311	10	mg/kg	< 100.0	< 10	170	< 10	26
EPH (C21-C35)	DETSC 3311	10	mg/kg	760	47	3500	< 10	79
EPH (C8-C40)	DETSC 3311*	10	mg/kg	1000	56	4400	< 10	120
PAHs								
Naphthalene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	0.2	0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	< 0.1	0.2
Acenaphthene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	0.1	0.5
Fluorene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	0.2	0.5
Phenanthrene	DETSC 3301	0.1	mg/kg	< 1.0	0.3	< 0.1	0.5	3.8
Anthracene	DETSC 3301	0.1	mg/kg	< 1.0	< 0.1	< 0.1	0.1	0.9
Fluoranthene	DETSC 3301	0.1	mg/kg	1.6	0.5	< 0.1	0.8	6.3
Pyrene	DETSC 3301	0.1	mg/kg	1.5	0.9	< 0.1	1.0	5.8
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 1.0	0.3	< 0.1	0.5	2.4
Chrysene	DETSC 3301	0.1	mg/kg	< 1.0	0.3	< 0.1	0.5	2.6
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 1.0	0.4	< 0.1	0.4	1.9
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 1.0	0.2	< 0.1	0.3	1.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 1.0	0.4	< 0.1	0.7	2.7
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 1.0	0.4	< 0.1	0.5	1.8
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 1.0	0.2	< 0.1	0.1	0.3
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 1.0	0.3	< 0.1	0.6	1.1
PAH Total	DETSC 3301	1.6	mg/kg	< 16.0	4.2	< 1.6	6.5	32
Phenols								
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.6	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 18-29210

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1435223	1435224	1435225
Sample ID	BH2	BH5	TP3
Depth	0.40	0.95	0.70
Other ID			
Sample Type	SOIL	SOIL	SOIL
Sampling Date	03/12/18	03/12/18	03/12/18
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Preparation						
Stones Removed	DETSC 1003*	0	%	0.0	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	16	27	16
Metals						
Arsenic	DETSC 2301#	0.2	mg/kg	18	220	18
Cadmium	DETSC 2301#	0.1	mg/kg	4.9	0.9	3.5
Chromium	DETSC 2301#	0.15	mg/kg	25	29	24
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	230	120	140
Lead	DETSC 2301#	0.3	mg/kg	410	490	300
Mercury	DETSC 2325#	0.05	mg/kg	0.37	6.6	0.42
Nickel	DETSC 2301#	1	mg/kg	29	37	24
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	7.1	< 0.5
Zinc	DETSC 2301#	1	mg/kg	420	150	400
Inorganics						
pH	DETSC 2008#			9.0	7.5	8.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	1.7	1.9	2.2
Total Organic Carbon	DETSC 2002	0.1	%	1.8	7.5	1.8
Chloride	DETSC 2055	1	mg/kg	11.2	34.2	10.9
Sulphate Aqueous Extract as SO ₄	DETSC 2076#	10	mg/l	120	1500	69
Sulphide	DETSC 2024*	10	mg/kg	68	60	32
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.12	1.8	0.09
Petroleum Hydrocarbons						
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10	< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	13	< 10
EPH (C16-C21)	DETSC 3311	10	mg/kg	24	90	34
EPH (C21-C35)	DETSC 3311	10	mg/kg	470	540	110
EPH (C8-C40)	DETSC 3311*	10	mg/kg	640	690	160
PAHs						
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	0.2	0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	0.5	0.3
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	0.1	0.3
Phenanthrene	DETSC 3301	0.1	mg/kg	0.2	1.3	1.7
Anthracene	DETSC 3301	0.1	mg/kg	0.1	1.4	0.4
Fluoranthene	DETSC 3301	0.1	mg/kg	0.6	2.4	2.7
Pyrene	DETSC 3301	0.1	mg/kg	1.7	3.5	2.9
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	1.4	2.2	1.3
Chrysene	DETSC 3301	0.1	mg/kg	2.2	2.7	1.4
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	2.0	3.5	1.3
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	1.0	1.3	0.7

Summary of Chemical Analysis Soil Samples

Our Ref 18-29210

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1435223	1435224	1435225
Sample ID	BH2	BH5	TP3
Depth	0.40	0.95	0.70
Other ID			
Sample Type	SOIL	SOIL	SOIL
Sampling Date	03/12/18	03/12/18	03/12/18
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	1.4	1.9	1.6
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	1.3	2.8	1.3
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.3	0.5	0.3
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	0.9	2.6	1.2
PAH Total	DETSC 3301	1.6	mg/kg	13	27	18
Phenols						
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	2.0	0.6	< 0.3



Certificate of Analysis

Certificate Number 19-08533

16-May-19

Client Geotechnical & Environmental Associates
Unit 1
Church Farm
Gotham Road
Nottingham
NG11 0DE

Our Reference 19-08533

Client Reference J18242

Order No (not supplied)

Contract Title OBG Manchester

Description 4 Water samples.

Date Received 09-May-19

Date Started 09-May-19

Date Completed 16-May-19

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

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 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. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in blue ink, appearing to read "A Fenwick".

Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Water Samples

Our Ref 19-08533

Client Ref J18242

Contract Title OBG Manchester

Lab No	1498442	1498443	1498444	1498445
Sample ID	BH2	BH3	BH6	BH10
Depth				
Other ID				
Sample Type	WATER	WATER	WATER	WATER
Sampling Date	02/05/19	02/05/19	02/05/19	02/05/19
Sampling Time	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Metals							
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	1.3	1.7	1.4	1.7
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	4.6	4.3	5.2	< 0.25
Chromium, Hexavalent	DETSC 2203	0.007	mg/l	< 0.007	< 0.007	< 0.007	< 0.007
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.30	0.33	0.31	0.25
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	3.0	2.2	1.2	1.6
Inorganics							
Conductivity	DETSC 2009	1	uS/cm	766	759	752	757
pH	DETSC 2008			7.3	7.2	7.1	7.1
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	1.2	< 0.015	0.31	< 0.015
Chloride	DETSC 2055	0.1	mg/l	33	30	27	33
Nitrate as NO3	DETSC 2055	0.1	mg/l	0.41	0.47	< 0.10	< 0.10
Sulphate as SO4	DETSC 2055	0.1	mg/l	120	120	120	140
Sulphide	DETSC 2208	10	ug/l	22	23	22	200
Total Organic Carbon	DETSC 2085	1	mg/l	44	30	44	43
Petroleum Hydrocarbons							
EPH (C10-C40)	DETSC 3311	10	ug/l	260	530	99	< 10
PAHs							
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	0.04	0.02	< 0.01	< 0.01
Anthracene	DETSC 3304	0.01	ug/l	0.01	0.01	< 0.01	< 0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.03	0.02	< 0.01	< 0.01
Pyrene	DETSC 3304	0.01	ug/l	0.03	0.02	< 0.01	< 0.01
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.01	< 0.01	< 0.01	< 0.01
Chrysene	DETSC 3304	0.01	ug/l	0.01	0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.02	0.02	< 0.01	< 0.01
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.01	0.01	< 0.01	< 0.01
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.01	0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	0.02	0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.02	0.01	< 0.01	< 0.01
PAH Total	DETSC 3304	0.2	ug/l	0.23	< 0.20	< 0.20	< 0.20
Phenols							
Phenol	DETSC 3451*	0.5	ug/l	< 0.50	< 0.50	< 0.50	< 5.00

Information in Support of the Analytical Results

Our Ref 19-08533
 Client Ref J18242
 Contract OBG Manchester

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1498442	BH2 WATER	02/05/19	GB 1L	Chromium, Hexavalent (4 days), Kone (Sulphide) (5 days), pH/Cond/TDS (2 days), PAH MS (5 days), EPH (4 days)	
1498443	BH3 WATER	02/05/19	GB 1L	Chromium, Hexavalent (4 days), Kone (Sulphide) (5 days), pH/Cond/TDS (2 days), PAH MS (5 days), EPH (4 days)	
1498444	BH6 WATER	02/05/19	GB 1L	Chromium, Hexavalent (4 days), Kone (Sulphide) (5 days), pH/Cond/TDS (2 days), PAH MS (5 days), EPH (4 days)	
1498445	BH10 WATER	02/05/19	GB to 500ml	Chromium, Hexavalent (4 days), Kone (Sulphide) (5 days), pH/Cond/TDS (2 days), PAH MS (5 days), EPH (4 days)	

Key: G-Glass B-Bottle

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
 Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



Certificate of Analysis

Certificate Number 19-09617

28-May-19

Client Geotechnical & Environmental Associates
Unit 1
Church Farm
Gotham Road
Nottingham
NG11 0DE

Our Reference 19-09617

Client Reference (not supplied)

Order No (not supplied)

Contract Title Dutton St Manchester

Description One Water sample.

Date Received 23-May-19

Date Started 23-May-19

Date Completed 28-May-19

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

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 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. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager



2139

Summary of Chemical Analysis

Water Samples

Our Ref 19-09617

Client Ref

Contract Title Dutton St Manchester

Lab No	1505382
Sample ID	BH2
Depth	
Other ID	
Sample Type	WATER
Sampling Date	20/05/19
Sampling Time	n/s

Test	Method	LOD	Units	
Metals				
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	2.4
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	0.04
Chromium, Dissolved	DETSC 2306	0.25	ug/l	9.8
Chromium, Hexavalent	DETSC 2203	0.007	mg/l	0.011
Lead, Dissolved	DETSC 2306	0.09	ug/l	8.3
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.03
Nickel, Dissolved	DETSC 2306	0.5	ug/l	2.2
Inorganics				
Conductivity	DETSC 2009	1	uS/cm	600
pH	DETSC 2008			7.8
Ammoniacal Nitrogen as N	DETSC 2207	0.015	mg/l	< 0.015
Chloride	DETSC 2055	0.1	mg/l	28
Nitrate as NO3	DETSC 2055	0.1	mg/l	13
Sulphate as SO4	DETSC 2055	0.1	mg/l	100
Sulphide	DETSC 2208	10	ug/l	89
Total Organic Carbon	DETSC 2085	1	mg/l	15
Petroleum Hydrocarbons				
Aliphatic C5-C6	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C6-C8	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aliphatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aliphatic C5-C35	DETSC 3072*	10	ug/l	< 10
Aromatic C5-C7	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C7-C8	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C8-C10	DETSC 3322	0.1	ug/l	< 0.1
Aromatic C10-C12	DETSC 3072*	1	ug/l	< 1.0
Aromatic C12-C16	DETSC 3072*	1	ug/l	< 1.0
Aromatic C16-C21	DETSC 3072*	1	ug/l	< 1.0
Aromatic C21-C35	DETSC 3072*	1	ug/l	< 1.0
Aromatic C5-C35	DETSC 3072*	10	ug/l	< 10
TPH Ali/Aro Total	DETSC 3072*	10	ug/l	< 10
EPH (C10-C40)	DETSC 3311	10	ug/l	110
Benzene	DETSC 3322	1	ug/l	< 1.0
Toluene	DETSC 3322	1	ug/l	< 1.0
Ethylbenzene	DETSC 3322	1	ug/l	< 1.0
Xylene	DETSC 3322	1	ug/l	< 1.0

Summary of Chemical Analysis

Water Samples

Our Ref 19-09617

Client Ref

Contract Title Dutton St Manchester

Lab No	1505382
Sample ID	BH2
Depth	
Other ID	
Sample Type	WATER
Sampling Date	20/05/19
Sampling Time	n/s

Test	Method	LOD	Units	
PAHs				
Naphthalene	DETSC 3304	0.05	ug/l	0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	0.04
Anthracene	DETSC 3304	0.01	ug/l	0.02
Fluoranthene	DETSC 3304	0.01	ug/l	0.10
Pyrene	DETSC 3304	0.01	ug/l	0.12
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.06
Chrysene	DETSC 3304	0.01	ug/l	0.08
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.15
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.06
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.09
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	0.18
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	0.02
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.15
PAH Total	DETSC 3304	0.2	ug/l	1.1
Phenols				
Phenol	DETSC 3451*	0.5	ug/l	< 0.50

Information in Support of the Analytical Results

Our Ref 19-09617
 Client Ref
 Contract Dutton St Manchester

Containers Received & Deviating Samples

Lab No	Sample ID	Date		Containers Received	Holding time exceeded for tests	Inappropriate container for tests
		Sampled				
1505382	BH2 WATER	20/05/19		GB 1L x2, GV x2	pH/Cond/TDS (1 days)	
Key: G-Glass B-Bottle V-Vial DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.						

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :- Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months



Certificate of Analysis

Certificate Number 18-27320-1

12-Apr-19

Client Geotechnical & Environmental Associates
Unit 1
Church Farm
Gotham Road
Nottingham
NG11 0DE

Our Reference 18-27320-1

Client Reference J18242

Order No J18242-P04

Contract Title Old Brewery Gardens, Manchester

Description 8 Soil samples.

Date Received 19-Nov-18

Date Started 19-Nov-18

Date Completed 12-Apr-19

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

Notes This test supersedes 18-27320, extra testing

Opinions and interpretations are outside the laboratory's scope of ISO 17025 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. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Matrix Descriptions

Our Ref 18-27320-1

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Sample ID	Depth	Lab No	Completed	Matrix Description
TP2	0.2	1422331	27/11/2018	Brown very gravelly, clayey SAND (Possible made ground - brick)
TP2	0.9	1422332	27/11/2018	Dark brown gravelly, clayey SAND (Possible made ground - brick)
TP4	1	1422333	27/11/2018	Dark brown gravelly, clayey SAND (Possible made ground - brick)
TP6	0.40-0.50	1422334	27/11/2018	Brown gravelly, clayey SAND
TP8	1	1422335	27/11/2018	Very dark brown gravelly, sandy CLAY
TP10	1	1422336	27/11/2018	Dark brown gravelly, sandy CLAY including some rootlets (Possible made ground - brick)
BH6	0.5	1422337	27/11/2018	Very dark brown gravelly, sandy CLAY (Possible made ground - brick)
BH7	0.8	1422338	27/11/2018	Very dark brown gravelly, sandy CLAY (Possible made ground - brick)

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27320-1

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422331	1422332	1422333	1422334	1422335	1422336
Sample ID	TP2	TP2	TP4	TP6	TP8	TP10
Depth	0.20	0.90	1.00	0.40-0.50	1.00	1.00
Other ID						
Sample Type	D	D	D	D	D	D
Sampling Date	13/11/18	13/11/18	15/11/18	14/11/18	15/11/18	13/11/18
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Asbestos Quantification	DETSC 1102	0						Y	Y
Preparation									
Stones Removed	DETSC 1003*	0	%	0.0	0.0	0.0	0.0	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	10	15	11	10	11	8.9
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	5.3	15	10	5.7	6.9	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.7	0.3	0.1	0.6	0.4
Chromium	DETSC 2301#	0.15	mg/kg	12	15	38	10	37	20
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	14	49	28	14	23	44
Lead	DETSC 2301#	0.3	mg/kg	210	1400	74	79	93	87
Mercury	DETSC 2325#	0.05	mg/kg	0.11	0.84	0.19	0.07	0.10	0.17
Nickel	DETSC 2301#	1	mg/kg	9.2	12	19	12	52	20
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	0.8	< 0.5	0.7	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	39	170	99	40	95	93
Inorganics									
pH	DETSC 2008#			11.8	8.6	10.0	8.7	11.0	8.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.6	< 0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	0.6	1.2	1.5	1.0	1.5	1.6
Chloride	DETSC 2055	1	mg/kg	52.4	92.7	43.3	37.3	60.0	17.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	110	920	560	140	230	100
Sulphide	DETSC 2024*	10	mg/kg	12	16	20	28	32	36
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.17	0.33	0.33	0.06	0.30	0.11
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg				< 0.01		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg				< 0.01		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg				2.7		
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg				190		
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg				700		
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg				640		
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg				180		
Aliphatic C5-C35	DETSC 3072*	10	mg/kg				1700		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg				< 0.01		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg				< 0.01		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg				2.5		
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg				51		
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg				320		
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg				490		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg				140		
Aromatic C5-C35	DETSC 3072*	10	mg/kg				1000		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg				2700		
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	5.2	< 0.1	< 0.1

Summary of Chemical Analysis Soil Samples

Our Ref 18-27320-1

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422331	1422332	1422333	1422334	1422335	1422336
Sample ID	TP2	TP2	TP4	TP6	TP8	TP10
Depth	0.20	0.90	1.00	0.40-0.50	1.00	1.00
Other ID						
Sample Type	D	D	D	D	D	D
Sampling Date	13/11/18	13/11/18	15/11/18	14/11/18	15/11/18	13/11/18
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
EPH (C10-C12)	DETS 3311	10	mg/kg	< 10	< 10	< 10	390	< 10	< 10
EPH (C12-C16)	DETS 3311	10	mg/kg	< 10	< 10	< 10	2600	< 10	14
EPH (C16-C21)	DETS 3311	10	mg/kg	< 10	17	59	3500	94	90
EPH (C21-C35)	DETS 3311	10	mg/kg	59	50	400	1000	560	200
EPH (C8-C40)	DETS 3311*	10	mg/kg	77	78	500	7500	750	340
PAHs									
Naphthalene	DETS 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	6.5	< 0.1	0.2
Acenaphthylene	DETS 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	DETS 3301	0.1	mg/kg	< 0.1	0.1	< 0.1	4.1	0.2	1.1
Fluorene	DETS 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.5	0.9
Phenanthrene	DETS 3301	0.1	mg/kg	< 0.1	0.4	0.4	< 0.1	1.4	4.5
Anthracene	DETS 3301	0.1	mg/kg	< 0.1	0.2	0.1	< 0.1	< 0.1	1.2
Fluoranthene	DETS 3301	0.1	mg/kg	< 0.1	0.7	0.9	< 0.1	3.4	7.3
Pyrene	DETS 3301	0.1	mg/kg	< 0.1	0.8	1.0	< 0.1	3.4	7.1
Benzo(a)anthracene	DETS 3301	0.1	mg/kg	< 0.1	0.4	0.3	< 0.1	1.7	3.0
Chrysene	DETS 3301	0.1	mg/kg	< 0.1	0.4	5.5	< 0.1	2.1	3.4
Benzo(b)fluoranthene	DETS 3301	0.1	mg/kg	< 0.1	0.5	0.9	< 0.1	3.0	2.6
Benzo(k)fluoranthene	DETS 3301	0.1	mg/kg	< 0.1	0.2	0.4	< 0.1	1.4	1.4
Benzo(a)pyrene	DETS 3301	0.1	mg/kg	< 0.1	0.5	0.7	< 0.1	3.3	3.1
Indeno(1,2,3-c,d)pyrene	DETS 3301	0.1	mg/kg	< 0.1	< 0.1	0.7	< 0.1	2.7	2.1
Dibenzo(a,h)anthracene	DETS 3301	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Benzo(g,h,i)perylene	DETS 3301	0.1	mg/kg	< 0.1	< 0.1	0.6	< 0.1	2.8	2.0
PAH Total	DETS 3301	1.6	mg/kg	< 1.6	4.0	12	11	26	40
Phenols									
Phenol - Monohydric	DETS 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27320-1

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422337	1422338
Sample ID	BH6	BH7
Depth	0.50	0.80
Other ID		
Sample Type	D	D
Sampling Date	12/11/18	13/11/18
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Asbestos Quantification	DETSC 1102	0		Y	Y
Preparation					
Stones Removed	DETSC 1003*	0	%	0.0	0.0
Moisture Content 30°C	DETSC 1004*	0.1	%	8.9	15
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	13	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.4
Chromium	DETSC 2301#	0.15	mg/kg	60	28
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	89	120
Lead	DETSC 2301#	0.3	mg/kg	53	110
Mercury	DETSC 2325#	0.05	mg/kg	0.09	0.17
Nickel	DETSC 2301#	1	mg/kg	39	17
Selenium	DETSC 2301#	0.5	mg/kg	0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	120	95
Inorganics					
pH	DETSC 2008#			10.5	9.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.1
Total Organic Carbon	DETSC 2002	0.1	%	1.4	1.7
Chloride	DETSC 2055	1	mg/kg	58.6	33.9
Sulphate Aqueous Extract as SO ₄	DETSC 2076#	10	mg/l	270	67
Sulphide	DETSC 2024*	10	mg/kg	40	< 10
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.21	0.09
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg		
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg		
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg		
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg		
Aliphatic C5-C35	DETSC 3072*	10	mg/kg		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg		
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg		
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg		
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg		
Aromatic C5-C35	DETSC 3072*	10	mg/kg		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg		
EPH (C8-C10)	DETSC 3321*	0.1	mg/kg	< 0.1	< 0.1

Summary of Chemical Analysis

Soil Samples

Our Ref 18-27320-1

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422337	1422338
Sample ID	BH6	BH7
Depth	0.50	0.80
Other ID		
Sample Type	D	D
Sampling Date	12/11/18	13/11/18
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
EPH (C10-C12)	DETSC 3311	10	mg/kg	< 10	< 10
EPH (C12-C16)	DETSC 3311	10	mg/kg	< 10	19
EPH (C16-C21)	DETSC 3311	10	mg/kg	24	80
EPH (C21-C35)	DETSC 3311	10	mg/kg	210	140
EPH (C8-C40)	DETSC 3311*	10	mg/kg	300	260
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	0.6
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	1.5
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	1.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.7	5.4
Anthracene	DETSC 3301	0.1	mg/kg	0.2	1.2
Fluoranthene	DETSC 3301	0.1	mg/kg	1.3	6.4
Pyrene	DETSC 3301	0.1	mg/kg	1.6	6.0
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	0.7	2.4
Chrysene	DETSC 3301	0.1	mg/kg	0.9	2.8
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	1.2	2.0
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.5	1.0
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	1.0	2.4
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	1.1	1.7
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	0.3
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	1.0	1.4
PAH Total	DETSC 3301	1.6	mg/kg	10	36
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Summary of Asbestos Analysis Soil Samples

Our Ref 18-27320-1

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1422331	TP2 0.20	SOIL	NAD	none	Rebekah Sayer
1422332	TP2 0.90	SOIL	NAD	none	Rebekah Sayer
1422333	TP4 1.00	SOIL	NAD	none	Rebekah Sayer
1422334	TP6 0.40-0.50	SOIL	NAD	none	Rebekah Sayer
1422335	TP8 1.00	SOIL	Chrysotile	Chrysotile present in bundles	Rebekah Sayer
1422336	TP10 1.00	SOIL	Chrysotile	Chrysotile present in bundles	Rebekah Sayer
1422337	BH6 0.50	SOIL	Chrysotile Amosite	Amosite and Chrysotile present in bundles	Rebekah Sayer
1422338	BH7 0.80	SOIL	Amosite Chrysotile	Amosite and Chrysotile present in bundles	Rebekah Sayer

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.

Summary of Asbestos Quantification Analysis

Soil Samples

Our Ref 18-27320-1

Client Ref J18242

Contract Title Old Brewery Gardens, Manchester

Lab No	1422335	1422336	1422337	1422338
Sample ID	TP8	TP10	BH6	BH7
Depth	1.00	1.00	0.50	0.80
Other ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sampling Date	15/11/18	13/11/18	12/11/18	13/11/18
Sampling Time				

Test	Method	Units				
Total Mass% Asbestos (a+b+c)	DETS 1102	Mass %	0.007	< 0.001	0.022	0.001
Gravimetric Quantification (a)	DETS 1102	Mass %	na	na	na	na
Detailed Gravimetric Quantification (b)	DETS 1102	Mass %	0.007	<0.001	0.022	0.001
Quantification by PCOM (c)	DETS 1102	Mass %	na	na	na	na
Potentially Respirable Fibres (d)	DETS 1102	Fibres/g	na	na	na	na
Breakdown of Gravimetric Analysis (a)						
Mass of Sample		g	40.39	51.33	59.09	47.89
ACMs present*		type				
Mass of ACM in sample		g				
% ACM by mass		%				
% asbestos in ACM		%				
% asbestos in sample		%				
Breakdown of Detailed Gravimetric Analysis (b)						
% Amphibole bundles in sample		Mass %	na	na	<0.001	<0.001
% Chrysotile bundles in sample		Mass %	0.007	<0.001	0.021	<0.001
Breakdown of PCOM Analysis (c)						
% Amphibole fibres in sample		Mass %	na	na	na	na
% Chrysotile fibres in sample		Mass %	na	na	na	na
Breakdown of Potentially Respirable Fibre Analysis (d)						
Amphibole fibres		Fibres/g	na	na	na	na
Chrysotile fibres		Fibres/g	na	na	na	na

* Denotes test or material description outside of UKAS accreditation.
 % asbestos in Asbestos Containing Materials (ACMs) is determined by
 by reference to HSG 264.
 Recommended sample size for quantification is approximately 1kg
 # denotes deviating sample

Information in Support of the Analytical Results

Our Ref 18-27320-1
 Client Ref J18242
 Contract Old Brewery Gardens, Manchester

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1422331	TP2 0.20 SOIL	13/11/18	GJ 250ml, PT 1L		
1422332	TP2 0.90 SOIL	13/11/18	GJ 250ml, PT 1L		
1422333	TP4 1.00 SOIL	15/11/18	GJ 250ml, PT 1L		
1422334	TP6 0.40-0.50 SOIL	14/11/18	GJ 250ml, GJ 60ml, PT 1L		
1422335	TP8 1.00 SOIL	15/11/18	GJ 250ml, PT 1L		
1422336	TP10 1.00 SOIL	13/11/18	GJ 250ml, PT 1L		
1422337	BH6 0.50 SOIL	12/11/18	GJ 250ml, PT 1L		
1422338	BH7 0.80 SOIL	13/11/18	GJ 250ml		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

APPENDIX C

JIWG Decision Support Tool – Work Categories

Project Reference	C5313
Site Name	BRWRY, Manchester
Client	Domis Construction Ltd
Run by	PH
Date	29-Jun-23
Scenario details	Working within / disturbance of soils within Asbestos Work Areas (except BH102)

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

Select ACM type (run model for each type to generate 'Worst Case' output)

Extent of degradation of ACMs at outset of work

Friability and degree of bonding by matrix (ACM matrix, not ground materials)

Distribution of Visible Asbestos Across Affected Area

Amount of asbestos fibre in selected ACM/fibre type as % of host material

Loose fibrous asbestos debris

Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)

Friable ACM or ACM with fibres not firmly linked in a matrix

No visible ACMs/fibre bundles

Low quantities - >0.01 to <0.05 %wt/wt

Sub-total

Hazard ranking

Score

3

4

2

0

2

11

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

Stage 2			
Exposure Factors		Score	
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.001 fibres/ml	0	
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4	
Activity type and effect on deterioration of ACMs during work	Not low intensity, significant deterioration expected	4	
Best description of primary host material matrix (soil/made ground)	Coarse to Fine Gravel	3	
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3	
Sub-total		14	
Exposure ranking		Medium	
Combined hazard and exposure ranking		25	Medium

Stage 3	
Risk Assessment Outputs	
Probable Licensing Status	Non-Licensed Work
RPE*	EN149 type FFP3 disposable
Dust Suppression**	Manual/localised dust suppression
Hygiene/Decontamination***	Localised and basic personal decontamination facilities
*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.	
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)	
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis	

Project Reference	C5313
Site Name	BRWRY, Manchester
Client	Domis Construction Ltd
Run by	PH
Date	29-Jun-23
Scenario details	Working within / disturbing soils within Asbestos Work Area associated with BH102

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

Select ACM type (run model for each type to generate 'Worst Case' output)

Extent of degradation of ACMs at outset of work

Friability and degree of bonding by matrix (ACM matrix, not ground materials)

Distribution of Visible Asbestos Across Affected Area

Amount of asbestos fibre in selected ACM/fibre type as % of host material

Sub-total

Hazard ranking

Loose fibrous asbestos debris	3
Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friable ACM or ACM with fibres not firmly linked in a matrix	2
No visible ACMs/fibre bundles	0
Moderate quantities - >0.05 to <0.1 %wt/wt	3

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Score

12

Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

Stage 2		Score	
Exposure Factors			
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.001 fibres/ml	0	
Anticipated duration of exposure to asbestos	> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4	
Activity type and effect on deterioration of ACMs during work	Not low intensity, significant deterioration expected	4	
Best description of primary host material matrix (soil/made ground)	Coarse to Fine Gravel	3	
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3	
Sub-total		14	
Exposure ranking		Medium	
Combined hazard and exposure ranking	26	Medium	

Stage 3

Risk Assessment Outputs

Probable Licensing Status

RPE*

Dust Suppression**

Hygiene/Decontamination***

Notifiable Non-Licensed Work

EN140 with P3 filter half mask

Localised mechanical dust suppression

Localised and enhanced personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.

**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)

***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

APPENDIX D

JIWG Decision Support Tool – Receptor Ranking

Decision Support Tool for Receptor Risk Ranking

Stage 1		
Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Loose fibrous asbestos debris	3
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly amosite (and possible trace tremolite/anthophyllite) with/without chrysotile (no crocidolite)	3
Sub-total		14
Hazard ranking		Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

Stage 2		Score	
Emission Factors			
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Moderate quantities - 0.05 to <0.1 %wt/wt	3	
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3	
Activity type and effect on deterioration of ACMs	High disturbance, significant deterioration expected	4	
Best description of primary host material matrix	Made Ground - Recycled Aggregate, Track Ballast	4	
Sub-total		14	
Exposure ranking			Medium

Stage 3			
Pathway and Receptor Sensitivity		Score	
Receptor category	Construction	No score required	
Age of Receptor	Young adult (>16 and <24)	2	
Duration of exposure/site occupancy	> 1hr <10 hr daily exposure (e.g. part-time to full time occupational exposure or extended daily recreational exposure)	3	
Receptor ranking		5	Medium
Combined hazard, exposure and receptor ranking			Medium
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material present near the surface, potential to be disturbed during non-construction/routine use of land	D	
Pathway ranking		4D	Medium
Overall ranking			Medium

Project Reference	C5313
Site Name	BRWRY, Manchester
Client	Domis Construction Ltd
Run by	PH
Date	29-Jun-23
Reviewed by	NS
Characterisation of scenario being evaluated	Excavation of asbestos impacted soils during site-wide proof dig, sorting and re-engineering of material into piling mat
Interpretation of scenario ranking by DST	Medium risk to site workers within Asbestos Work Areas. Low risk to those beyond this defined areas of the site.

APPENDIX E

BSL Guidance – Re-use and Disposal of Waste

Re-Use Of Waste - Guidance Note

Definition of Waste

The Environment Agency considers waste to be “...any material that is discarded, or intended to be discarded...” This includes any soil from trenches, footing, site strip etc. It is no longer required in its original location, therefore it is considered to be waste.

CL:AIRE: Code of Practice

Where materials are excavated for construction purposes, wherever possible these should be retained on site for engineering purposes if they are suitable for use. This can be implemented under the CL:AIRE “Development Industry Code of Practice for the Definition of Waste” (CL:AIRE DoWCoP), also commonly referred to as a “Materials Management Plan”.

The developer/contractor is advised to complete all works under the DoWCoP.

Potential scenarios where soils may be able to be re-used:

- Material capable of being used in another place on the same site without treatment.
- Material capable of being used in another place on the same site following ex-situ treatment on site.
- Material capable of being used in another development site without treatment (Direct Transfer).
- Material capable of being used in another development site following ex-situ treatment on another site eg Hub site.

The Code of Practice requires 4 No. Factors to be addressed:

1. Protection of human health and protection of the environment.
2. Suitability of use, without further treatment.
3. Certainty of use.
4. Quantity of material.

In order to satisfy these requirements the following are required:

- i) Consultation/approval with Local Authority & Environment Agency to confirm they have no objections to the proposed re-use of waste soils, or the risk assessments for the site.
- ii) Risk Assessments to demonstrate that the site does not present an Environmental Hazard.
- iii) Remediation Strategy for contaminated sites (or Design Statement for non-contaminated sites).
- iv) Materials Management Plan (MMP) which details material generated stockpiles and the end use.
- v) Volume calculations.
- vi) Planning permission for the development.
- vii) Contractual details to be clear, regarding who steps in if a contractor goes into administration/liquidation.

The use of the CoP is effectively industry regulated, there is a requirement to appoint an independent Qualified Person (QP) who checks all the requirements have been met and registers the documentation with the Environment Agency. This person must not have had any involvement with the preparing of the risk assessments or remedial strategy on the site.

Soils which require treatment on site (eg bioremediation, stabilisation) will require an Environmental Permit for treatment, together with justification and validation to prove, once treated, this material is suitable for use.

Site management procedures need to be in place to ensure that material is tracked through from excavation stockpiling, treatment and remediation processes. Should the process of material tracking be considered non-robust, or not adhered to, this may fail the test whether excavated materials may be considered non-waste.

Alternatives include the EA U1 exemption (soils and stones <1000 tonnes and aggregates <5000 tonnes) and the Waste Framework Directive, which applies to naturally occurring soils used on site of origin only. Aggregates can also fall under the EA WRAP Quality Protocols.

Waste Classification For Soils

Introduction

Waste producers have a duty of care to classify the waste they are producing:

- before it is collected, disposed of or recovered.
- to identify the controls that apply to the movement of the waste.
- to complete waste documents and records.
- to identify suitably authorised waste management options.
- to prevent harm to people and the environment.

The most sustainable and economic method of dealing with waste soil is usually the retention and re-use on site. Where this is not possible there are three main options for the disposal of soils:

1. Disposal to a permitted waste recycling facility.
2. Re-use on another site (subject to the suitability).
3. Disposal to a landfill site.

The disposal to a permitted facility will be subject to the **specific conditions of the permits for each individual facility** and will vary dependent on location and environmental sensitivity of the receiving site. Re-use on another site will also be subject to the acceptability criteria of that site.

The guidance below relates to disposal to **landfill sites only**.

Background for Landfill Disposal

In July 2005 the United Kingdom implemented the European Directive 1999/31/EC (The Landfill Directive), this introduced the current regime for waste and waste disposal to landfill. The Landfill Directive places controls on waste disposal. These controls include requirements to follow the waste acceptance procedures and criteria that have been agreed by the Council of the European Union and are laid out in Council Decision 2003/33/EC.

Before a waste can be accepted at a landfill site, the landfill **operator** must be satisfied that the waste meets his permit conditions, the waste acceptance procedures (WAP) and waste acceptance criteria (WAC).

If disposal to landfill is the best management option for the waste soils, these procedures **must** be followed or the operator may refuse to accept the waste.

Key Points

- Not all waste can be landfilled
- Landfills are classified according to whether they can accept **hazardous, non-hazardous** or **inert** wastes.
- Wastes can only be accepted at a landfill if they meet the waste acceptance criteria (WAC) for that class of landfill.
- Most wastes must be treated before you can send them to landfill.
- There are formal processes for identifying and checking wastes that must be followed before wastes can be accepted at a landfill site.

Classification

Wastes are listed in the European Waste Catalogue (EWC 2002) and grouped according to generic industry, process or waste types. Wastes within the EWC are either hazardous or non-hazardous. Some of these wastes are hazardous without further assessment (absolute entries) or are 'mirror' entries that require further assessment of their hazardous properties in order to determine whether they are hazardous waste.

Waste soil has mirror entries on the EWC and as such the first phase of the waste classification process is that of determining if the waste is hazardous or not i.e the hazard assessment. The most common EWC waste codes related to soil are:

17 05	soil (including excavated soil from contaminated sites), stones and dredging spoil
17 05 03*	soil and stones containing dangerous substances
17 05 04	soil and stones other than those mentioned in 17 05 03

Soils may contain certain contaminants (eg asbestos, oil,) which have prescribed concentration thresholds, that if breached will render the material hazardous waste. These are based on specific "hazardous properties" which include hazards such as carcinogenicity, flammability and toxicity.

In the first instance the concentrations of plausible contaminants within the soil should be identified and wastes should be **classified based on their total concentrations**.

Waste Definitions

Inert	- Will not undergo any significant physical, chemical or biological transformations. - Will not dissolve. - Will not burn. - Will not physically or chemically react. - Will not biodegrade. - Will not adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health. - Has insignificant total leachability and pollutant content. - Produces a leachate with an ecotoxicity that is insignificant (if it produces leachate).
Non-Hazardous	Is not inert (see above) Is not hazardous (see below)
Hazardous	Soil has hazardous properties as defined in WM3 (Guidance on the classification and assessment of waste (1st edition 2015)- Technical Guidance)
Stable Non-reactive hazardous waste#	Hazardous waste, the leaching behaviour of which will not change adversely in the long-term, under landfill design conditions or foreseeable accidents either: in the waste alone (for example, by biodegradation), under the impact of long-term ambient conditions (for example, water, air, temperature or mechanical constraints) or by the impact of other wastes (including waste products such as leachate and gas).

This option allows hazardous waste that is stable and thus has a low leaching potential to be deposited in cells with a standard of containment consistent with non-hazardous wastes.

WAC Testing

The purpose of WAC analysis is to confirm that the waste complies with the relevant WAC for the receiving landfill. If the waste has any disposal route other than a landfill site (e.g. recycling facility, incineration etc) the **WAC is not relevant**. Furthermore the WAC limits **cannot be used to make an assessment of whether a waste is hazardous**. WAC testing does however define if a non-hazardous waste is suitable for an inert landfill.

Classification based on Total Concentrations ¹	Non-Hazardous Waste		Hazardous Waste	
WAC testing	Below inert WAC limit values:	Above inert WAC limit values:	Below hazardous WAC limit values	Above hazardous WAC limit values
Landfill requirements	INERT landfill	NON-HAZARDOUS landfill ²	HAZARDOUS landfill	PRE-TREATMENT ³

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.

Hydrocarbons in Soils

WM3 uses the term Oil or Waste Oil to cover hydrocarbons products such as fuel oil, petrol or diesel. These are defined by WM3 as hazardous under an absolute entry in the List of Wastes. However hydrocarbons in soils are a mixture rather than a pure product and are therefore not absolute entries.

Known Oils

The simplest scenario is where the identity of the contaminating oil is known or can be identified. If the oil is known the manufacturer's or supplier's REACH compliant safety data sheet for the specific oil can be obtained and the hazard statement codes on that Safety Data Sheet can be used for the hazardous waste assessment.

Where the identity of the oil can only be identified down to a petroleum group level (i.e. the contaminating oil is known to be diesel, but the specific type/brand is unknown), then the classification of that petroleum group should be used in the assessment. The marker compounds associated with that petroleum group may be used to confirm carcinogenicity.

Oils may contain a range of hydrocarbons, so the presence of for instance Diesel Range Organics (DRO) does not enable the assessor to conclude that diesel is present. These hydrocarbons may have arisen from other oils, the laboratory needs to provide an interpretation of the chromatograph to determine if it is consistent with diesel or weathered diesel as a whole.

The concentration of known oils should be determined using a method that as a minimum spans the range in which the carbon numbers for that known oil fall.

Unknown Oils

Where hydrocarbons are contaminating soils it is likely that the oil will be unknown or cannot be determined.

WM3 states that:

For contaminated land specific consideration must be given to the following before proceeding;

- The presence of other organic contaminants, for example solvents or coal tar that could be detected as hydrocarbons. Coal Tar is not an oil and is considered separately in WM3 example 2. Where the site history or investigation indicates the presence of hydrocarbons from oil and other sources (e.g. coal tar), and the origin of the hydrocarbons cannot reliably be assigned to either, then a worst case approach of considering the hydrocarbons both as waste oil (in accordance with this example) and from other sources, for example coal tar should be taken.
- The presence of diesel, or weathered diesel, should be specifically considered by the laboratory and where this is confirmed by the hydrocarbon profile the oil should be assessed as a known or identified oil (diesel).

The use of **marker compounds** is optional; however it is recommended that where possible the marker compounds should be used.

WM3 states:

If the identity of the oil is unknown, and the petroleum group cannot be established, then the oil contaminating the waste can be classified as non-carcinogenic/mutagenic due to the presence of oil if all three of the following criteria are met:

- The waste contains benzo[a]pyrene (BaP) at a concentration of less than 0.01% (1/10,000th) of the TPH concentration (This is the carcinogenic limit specified in table 3.1 of the CLP for BaP)
- This has been determined by an appropriate and representative sampling approach in accordance with the principles set out in Appendix D of WM3, and
- The analysis clearly demonstrates, for example by carbon bands or chromatograph, and the laboratory has reasonably concluded that the hydrocarbons present have not arisen from petrol or diesel.

For example:

TPH Concentration (mg/kg)	Petrol or Diesel	BaP (mg/kg)	Classification
10,000	No	0.9	Non- Hazardous
1,000	No	Not available	Hazardous
1,000	Yes	Not relevant	Hazardous

References

1. Environmental Permitting (England and Wales) Regulations 2010 (as amended) (EP Regulations), the Landfill Directive (1999/31/EC) and the subsequent Council Decisions.
2. Environment Agency Environmental Permitting Regulations: "Inert Waste Guidance- Standards and Measures for the Deposit of Inert Waste on Land" 2009.
3. Environment Agency "Waste acceptance at landfills - Guidance on waste acceptance procedures and criteria" Nov 2010.
4. Environment Agency "Guidance on the classification and assessment of waste (Technical Guidance WM3)".
5. Classification, Labelling and Packaging of Substances Regulation (EC 1272/2008) (CLP).
6. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives
7. 2014/955/EU: Commission Decision of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament
8. Environmental Permitting Guidance The Landfill Directive For the Environmental Permitting (England and Wales) Regulations 2010 Updated March 2010 Version 3.1
9. Classification, Labelling and Packaging of Substances Regulation (EC 1272/2008) (CLP).

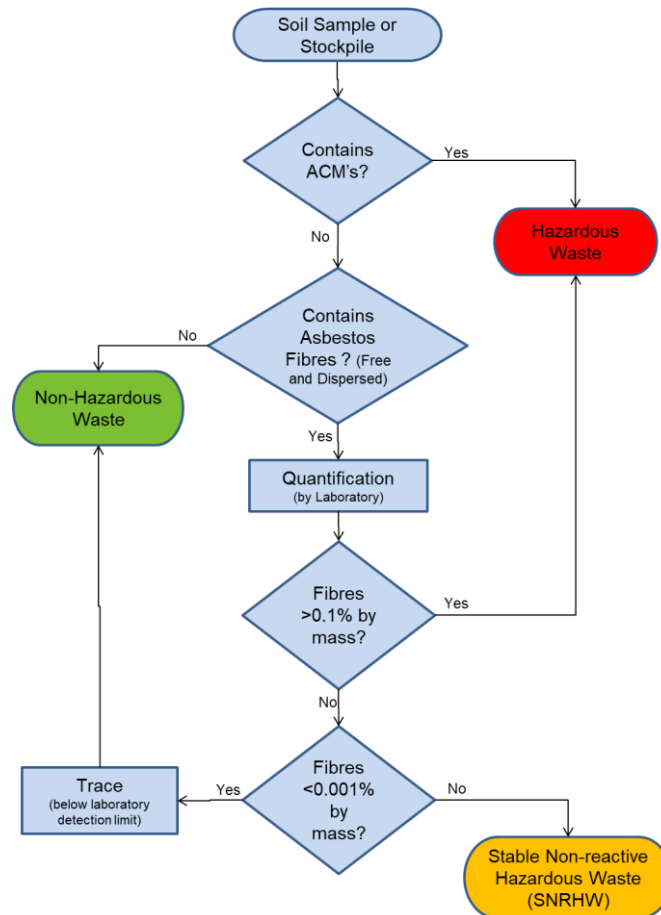
Additional Asbestos Guidance Notes

Disposal

The 1st Edition of WM3 “Guidance on the classification and assessment of waste”, details the way in which Asbestos is assessed within soils.

The assessment of asbestos containing waste is dependent on whether the asbestos is present as:

- Fibres that are free and dispersed, or
- Identifiable pieces of asbestos containing materials (ACM’s)



Identifiable pieces of asbestos are any particle of a size that can be identified as potentially being asbestos by a competent person if examined by the naked eye. The result is that commonly soils with visible ACM’s are sorted and the ACM’s removed by hand picking and separate disposal.

Asbestos concentrations below 0.001% by mass are below standard laboratory detection limits and are not currently regarded as containing asbestos for the purposes of disposal and may be disposed of to an inert landfill site¹. These levels are often termed “trace” by laboratories.

Asbestos concentrations between 0.001% and 0.1% are stable non-reactive hazardous waste (SNRHW)¹. Waste transfer stations where soil recycling takes place may be able to take SNRHW, but are unlikely to take soils containing asbestos above trace concentrations.

The following codes should be assigned to the asbestos waste as appropriate:

17 06	Insulation materials and asbestos-containing construction materials
17 06 01	Insulation materials containing asbestos
17 06 03	Other insulation materials consisting of or containing hazardous substances
17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05	Construction material containing asbestos

WM3 indicates that 17 06 05 would normally be used in preference to 17 06 01 for the asbestos in asbestos contaminated soil and stones.

Construction materials containing asbestos and “other suitable materials” may be landfilled at landfills for non-hazardous waste in accordance with the Landfill Directive without testing.

This means that wastes that are only hazardous because of their asbestos content can be disposed of at landfills for non-hazardous waste in separate landfill cells that only accept asbestos wastes and other suitable materials. The Landfill Directive requires that stable non-reactive hazardous waste shall not be deposited with biodegradable waste (for example organic material, household waste, paper etc..) and must meet the waste acceptance criteria set out in accordance with Annex II.

Construction

Health and Safety Executive (HSE) guidance on asbestos is not directly related to soil and much of the guidance focuses on the removal of asbestos from buildings. The overarching legislation is the Control of Asbestos Regulation (CAR 2012). However where work involves (or is likely to involve) contact with asbestos then CAR 2012 requires a risk assessment including whether or not the work is licensed or notifiable non-licensed work and may require an Asbestos Management Plan. Work becomes notifiable if it is considered that the control limit could be exceeded.

Brownfield sites frequently have soils that contain asbestos and the presence of asbestos needs to be considered within the context of construction, particularly in relation to groundworks. The exposure of soils and the use of excavators and plant to move soil around increases the possibility of fibres becoming airborne. However it is good site practice to not generate dusts and to employ dust suppression on all sites regardless of the presence of asbestos.

The legal control limit for asbestos is 0.1f/ml over a continuous four hour period. The control limit is not a 'safe' level and exposure from work activities involving asbestos must be reduced to as far below the control limit as possible.

Clearly the higher the concentrations in the soil the greater potential there is for fibres to be released, however IOM publication TM/88/14 "the release of dispersed asbestos fibres from soil" 1988 concludes that:

- Mixtures of asbestos in dry soils with asbestos content as low as 0.001% can produce airborne respirable asbestos concentrations greater than 0.1f/ml in dust clouds where the respirable dust concentrations are less than 5mg/m³.
- An action limit is recommended of no higher than 0.001% asbestos in soils above which steps should be taken to minimise exposure to airborne fibres (eg by wetting).
- The addition of relatively small quantities (10%) of water can reduce the airborne fibre concentrations by an order of magnitude.

Where asbestos has been identified at concentrations above 0.001% as free and dispersed fibres in the soil precautions need to be adopted. Concentrations below this are considered to be normal background, although good site practice dictates that the generation of dusts should be avoided and therefore any fugitive fibre release from minor concentrations should be kept to a practical minimum.

End Use

The use of materials containing asbestos and material containing asbestos is prohibited under EU legislation. There is currently a Joint Industry Working Group (JIWG) tasked with producing a Code of Practice for Asbestos in Soil, Made Ground and Construction & Demolition Material that will clarify in due course the position of the various government agencies.

Asbestos containing materials can remain in situ under a suitable cover system which may be hardsurfacing or soft landscaping (with or without hard dig layers and markers).

There is a risk that future maintenance may compromise such systems and details of the presence of asbestos should be kept in the Health and Safety File.

Preliminary publications from JIWG (April 2015) provide guides for decision making in relation to construction. These are at a "Beta" test stage and further publications will be provided in due course.

The re-use of waste soils should be undertaken in accordance with the CL:AIRE Code of Practice and is subject to suitable risk assessments demonstrating low risk. There is nothing that specifically excludes the re-use of soils containing asbestos as fill to raise levels. However the movement of materials increases the risk of fibres becoming airborne and suitable precautions will be required.

The re-use of soils containing asbestos at concentrations above hazardous waste levels is likely to meet with regulatory opposition. Assuming a suitable strategy could be agreed this would take a considerable amount of time and is only likely to be feasible where there is a long program for implementation.

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