



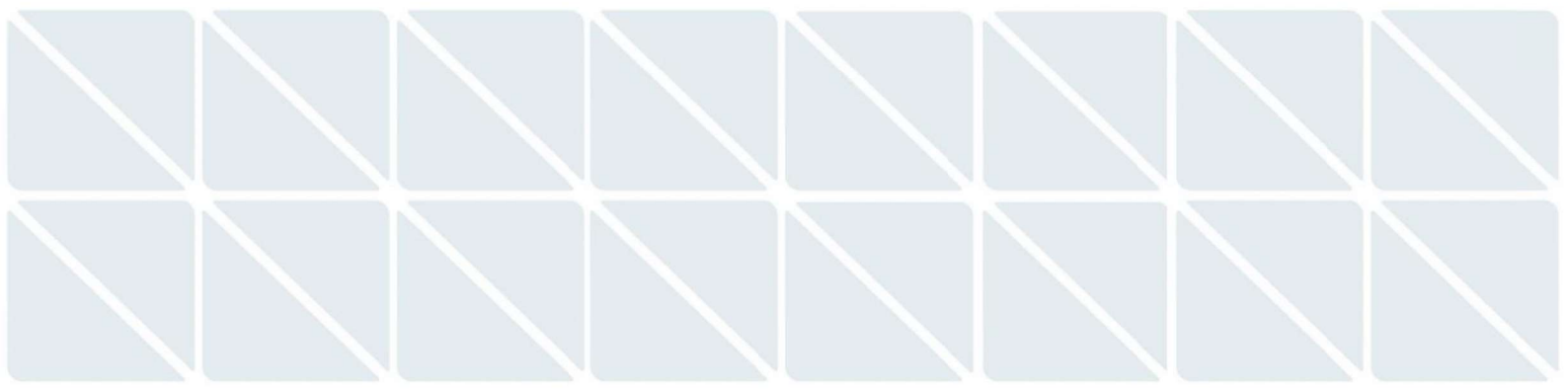
A-squared Studio

Renaissance Hotel Manchester

Remediation Strategy

August 2023

1602-A2S-XX-XX-RP-Y-0003-06





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Client	BG&E Consulting Engineers Ltd
Document Name	Remediation Strategy

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1602-A2S-XX-XX-RP-Y-0003-05	Sixth Issue (Revision 5) <i>(updated to address Premier House only)</i>	05	FK	29.11.2022
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1. Introduction

1.1. Background and Objectives

A-squared Studio Engineers Limited (A-squared) have been appointed by BG&E Consulting Engineers Ltd (BG&E) to prepare this Remediation Strategy for the proposed application boundary (also known as Premier House) at the Renaissance redevelopment site, Deansgate, Manchester. The application boundary is located inside a wider boundary which is not relevant to this Remediation Strategy. The application boundary is shown in Figure 1.1 and the proposed development is described in more detail in Section 2.

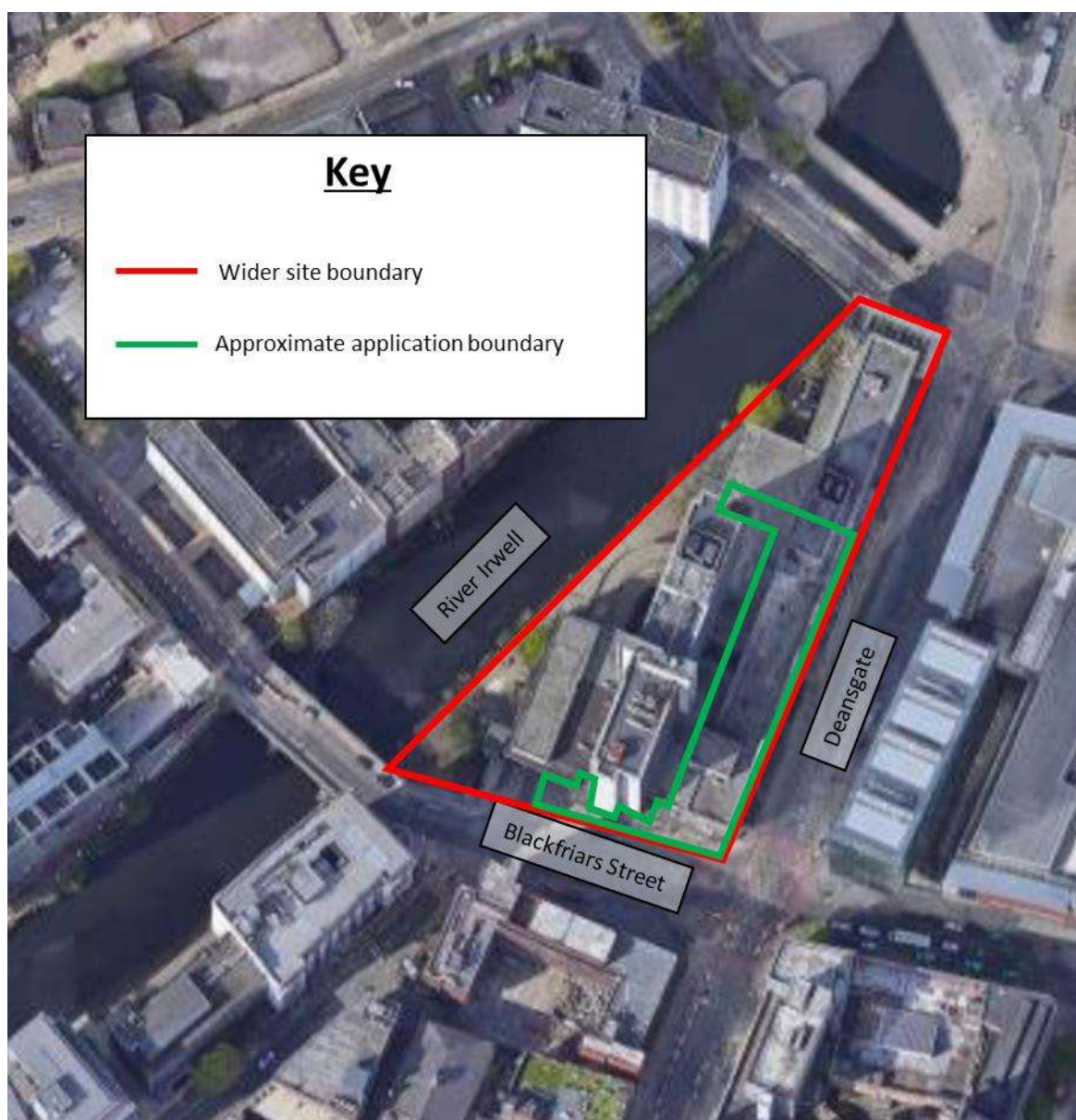


Figure 1.1 Site boundary plan

This Remediation Strategy has been prepared based on the specific recommendations provided in *A-squared Studio Engineers, Supplementary Geo-environmental Assessment Report, Renaissance Hotel Manchester, dated April 2022, ref. 1602-A2S-XX-XX-RP-Y-0004-01* (the 'SGA').

The SGA was prepared based on supplementary ground investigation and 2 no. existing geo-environmental assessment reports for the proposed development, referenced below:



- *E3P, Phase II Geoenvironmental Site Assessment, Renaissance, Manchester, Reference:14-261-R2-1, dated 21st May 2021* (the 'E3P Phase 2 Assessment').
- *E3P, Phase 1 Geoenvironmental Site Assessment, Renaissance, Manchester, Reference: 14-261-R1-1, dated September 2020* (the 'E3P Desk Study').

The content of the SGA and other geo-environmental assessment reports is generally not reproduced in this Remediation Strategy, so the previous reports should be read in conjunction with this Remediation Strategy. The most up-to-date geo-environmental risk assessment and conceptual site model (CSM) for the proposed development is presented in the SGA.

The SGA describes the findings of the multiple phases of site investigation carried out for the proposed redevelopment. Based on the results of the site investigations, the SGA assesses the extent of contamination and the risks to the proposed development, its users and the wider environment. The geo-environmental assessments include generic quantitative risk assessment (GQRA). Outline remediation recommendations are also provided in the SGA. This Remediation Strategy has been prepared to expand upon the outline remediation recommendations by providing a detailed specification of works to enable suitable mitigation of unacceptable risks (ref. *LCRM*) due to potential land contamination.

This Remediation Strategy has been prepared in general accordance with the principles set out in *Land Contamination Risk Management* (LCRM) guidance, published by the Environment Agency on the UK Government website, and in the context of the *National Planning Policy Framework* (NPPF) and *The Building Regulations 2010, Approved Document C - Site preparation and resistance to contaminants and moisture (2004 Edition incorporating 2010 and 2013 amendments)*. On full implementation of this Remediation Strategy, including specified verification procedures and reporting, it is the objective that land contamination risks will have been appropriately mitigated such that the site is suitable for the proposed use in accordance with the *NPPF*. The objective is also that after remediation the site will not be contaminated land as defined by *Part IIA, Environmental Protection Act 1990 (as amended)*.

This Remediation Strategy should be considered by the Principal Contractor alongside all other relevant contract documents. The requirements of all other contract documents must be achieved in full, as well as all the requirements of this Remediation Strategy.

It should be noted that where Local Authority is referenced, this may include the Local Planning Authority and / or Environmental Health Department under the Planning regime or Building Control Inspector in relation to Building Regulations requirements.

This Remediation Strategy can be issued to the Local Authority to support the proposed development of the application area through the Planning process.

1.2. Limitations

This Remediation Strategy is for the private and confidential use of the Client for whom it has been prepared and should not be reproduced in whole, in part or relied upon by third parties for any use whatsoever. A-Squared accepts no duty or responsibility (including negligence) to any party other than the stated Client and disclaims all liability of any nature whatsoever to any such party in respect of this Remediation Strategy.

The nature of ground investigation is such that differing ground conditions, whether geotechnical or geo-environmental, may be present between sampling positions and exploratory hole locations, which potentially limits the conclusions which can be drawn from the available data.

Should the site redevelopment plans change from those considered herein, then the detailed of the Remediation Strategy presented herein will need to be revised.



2. Site Description and Proposed Development

2.1. Site Location and Setting

The wider site is located within the Central Retail District of Manchester City Centre, Manchester, M3 1AZ. The site is roughly triangular in shape with Deansgate to the east, River Irwell to the west, Victoria Bridge Street to the north and Blackfriars Street to the south. The application area forms the south and eastern portion of the of a wider site.

The wider site is currently occupied by a 13-storey hotel, four-storey office building and multi-storey car park. There is an approximately 9.5 m difference in level across the site between Deansgate and the River Irwell, with an existing retaining wall along the Deansgate side. The building at the application area is predominantly office space.

The River Irwell is situated where there is a man-made river wall between the river and wider site boundary.

2.2. Proposed Development

The proposed development across the wider site comprises the refurbishment of the existing Premier House office building including a lateral extension over Deansgate and over-cladding the existing façade. The office building and hotel are proposed to be partially demolished in the north, to enable the construction of a residential building. The hotel is also proposed to undergo refurbishment.

The proposed redevelopment works specific to the application boundary (also known as Premier House) are:

- Erection of 5-storey office-led mixed use development at site of former Premier House office building (following demolition of the existing structure with the exception of structural elements that tie in with the Renaissance Hotel) comprising new office space (Use Class E) (floors 1-4) with ground floor reception area and commercial units x 4 (retail/ food and beverage floorspace (Class E/ Sui Generis Drinking Establishment Use), amendments to existing servicing arrangements including new service yard entrance, new rooftop amenity space for use of occupiers of floors 1-4, new roof top plant, new public realm and landscaping and supporting infrastructure and ancillary facilities including changing and shower facilities, refuse store, plant areas, cycle store and other ancillary facilities within lower ground floor.

The proposed lower ground floor and ground floor plans for the application boundary can be observed as Figure 2.1 and Figure 2.2.

No soft-landscaping or basement is proposed as part of the redevelopment within the application boundary.

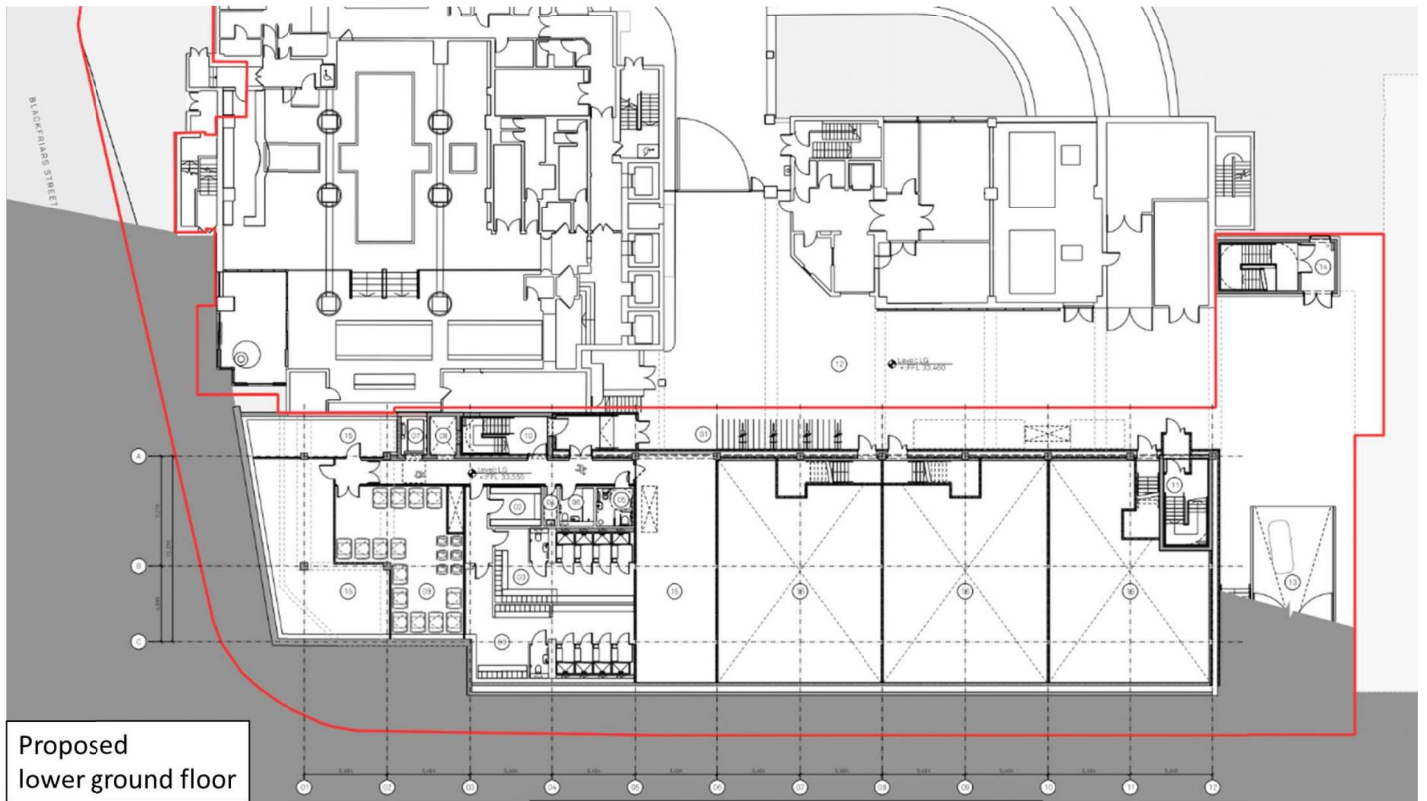


Figure 2.1 Proposed lower ground floor plan

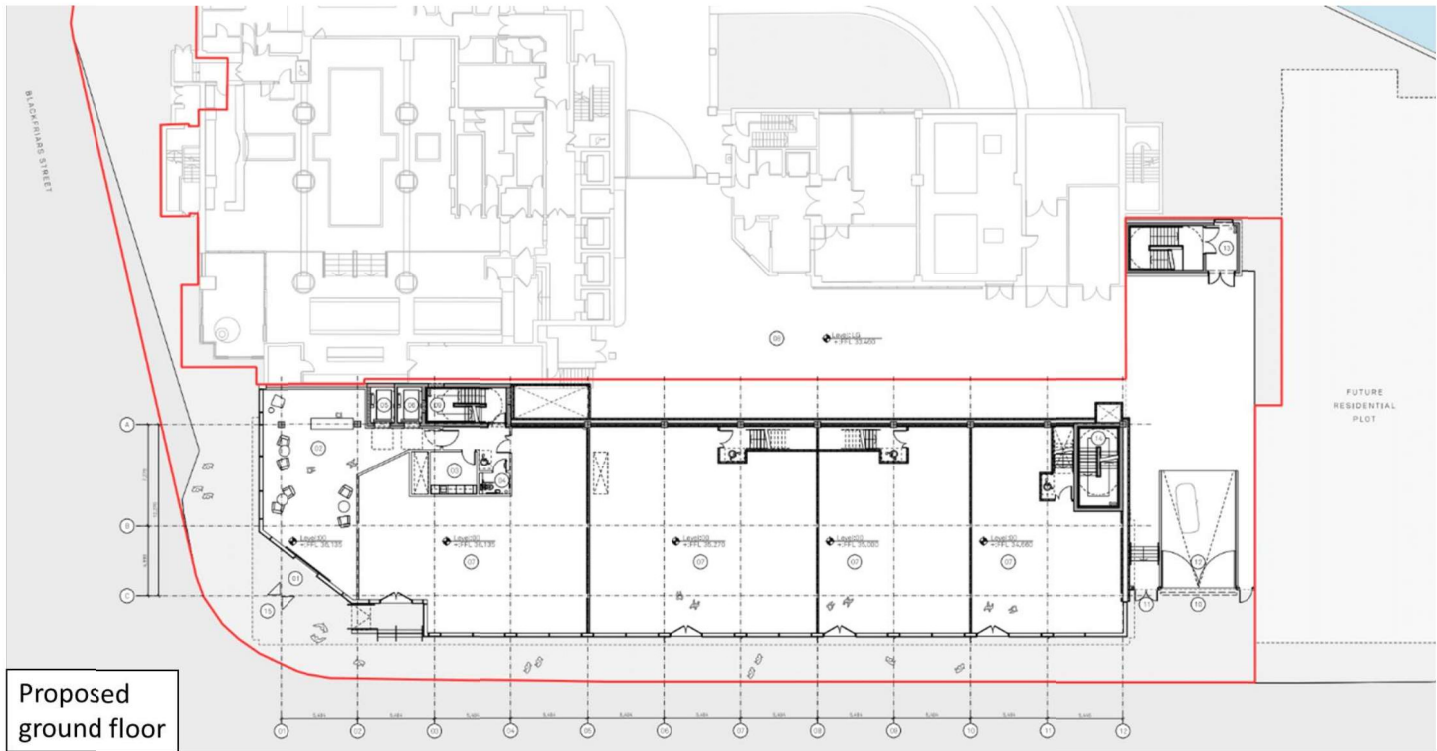


Figure 2.2 Proposed ground floor plan



3. Geo-environmental Risk Assessment Summary and Outline Remediation Plan

It is understood that the proposed development across the wider site will proceed through the Planning process as a number of separate applications. This Remediation Strategy has been prepared for the application area only.

Outline remediation recommendations for the entire site provided in the SGA can be summarised as follows:

- Install clean cover layers in areas of soft-landscaping.
- Where soft-landscaping is to be constructed, imported soils should be verified.
- Oversized clean service corridors should be installed if underground services are to be laid through the identified asbestos impacted soils at TP104.
- Appropriate soil vapour protection should be provided for appropriate areas of the northern residential redevelopment.
- Construction works should be completed with appropriate personal protective equipment (PPE) and provision of welfare including for any works conducted in asbestos impacted Made Ground.
- Unexpected contamination protocols should be implemented.

The outline remediation recommendations are based on the latest CSM and geo-environmental risk assessment for the proposed development is presented in the SGA. The unacceptable risk identified are summarised in Table 3.1 below.

Table 3.1 Summary risk assessment for the wider site prior to remediation

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Potential for Complete Pathway	Risk Level Classification
On-site	Direct contact with asbestos impacted soil	Proposed site end users	Yes (Unacceptable risk is present in areas of proposed soft-landscaping and if underground services are laid in the vicinity of TP104 where asbestos has been identified in Made Ground)	Low to moderate †
	Inhalation of windblown asbestos impacted soil			
	Ingestion of asbestos impacted soil			
	Soil vapour generation and inhalation	Proposed site residential end users	Yes (Unacceptable risk has been identified for the residential development in the north of the site due to dissolved phase VOCs detected in shallow groundwater)	Low to moderate †
Off-site	Soil vapour generation, on-site migration and inhalation	Proposed site residential end users	Yes (Unacceptable risk has been identified for the residential development in the north of the site due to dissolved phase VOCs detected in shallow groundwater which may be from an off-site source)	Low to moderate †

† - unacceptable risk (ref. *LCRM*)



A detailed specification for delivering the remediation recommendations relevant to the application area only is provided as Section 4. The following remedial measures are relevant to the application area:

- Oversized clean service corridors should be installed if underground services are to be laid through the identified asbestos impacted soils at TP104. The identified asbestos impacted soils are located within the application area.
- Construction works should be completed with appropriate personal protective equipment (PPE) and provision of welfare including for any works conducted in asbestos impacted Made Ground. The identified asbestos impacted soils are located within the application area.
- Unexpected contamination protocols should be implemented.

The proposed development plans for the application area indicate no soft-landscaping areas, so construction of clean cover layers and import of soils for this purpose will not occur. On this basis, the requirements associated with clean cover layer installation and soil import have not been included in the detailed specification of works despite being initially indicated in the SGA.

The proposed development at the application area is for commercial use. The residential areas of the wider site redevelopment are not located in the application area. Therefore, the requirements associated with the vapour protection have not been included in the detailed specification of works despite being initially indicated in the SGA.

Geotechnical aspects are not addressed herein. New buried concrete should be designed in accordance with the concrete classes and specifications defined elsewhere in the contract documentation.

Appropriate new water supply pipe construction should also be installed with the specification agreed with the utility provider. There are likely no restrictions on the new water supply pipe construction which can be safely installed. A full water supply pipe risk assessment and specification of requirements shall be undertaken as detailed in Section 4.

A summary risk assessment prior to remediation for the application area is provided as Table 3.2.

Table 3.2 Summary risk assessment for the application area prior to remediation

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Potential for Complete Pathway	Risk Level Classification
On-site Asbestos in Made Ground at TP104	Inhalation of windblown asbestos impacted soil	Proposed maintenance / construction workers working on underground utilities	Yes (Unacceptable risk is present if underground services are laid in the vicinity of TP104 where asbestos has been identified in Made Ground)	Low to moderate [†]

[†] - unacceptable risk (ref. *LCRM*)



4. Detailed Remediation Strategy

This Section 4 provides a detailed description of the remediation works required specifically for the application area. Verification measures are also described.

4.1. General Requirements

All remediation and verification requirements should be implemented by the Principal Contractor. It is also the responsibility of the Principal Contractor to ensure that any required Materials Management Plans (MMPs), Qualified Person Declarations, Environmental Permits, Health and Safety Plans, Risk Assessments and Method Statements (RAMS), Discharge Consents and any other permits / consents / exemptions etc. relevant to the construction phase are obtained / approved to enable successful implementation of the specified remediation and verification measures.

The Principal Contractor shall complete the construction works with appropriate PPE and provision of welfare and accounting for the asbestos impacted Made Ground identified in the vicinity of TP104. Construction phase asbestos management should be informed by a suitable asbestos specialist.

All verification evidences should be issued by the Principal Contractor to the project geo-environmental consultant preparing the Verification Report.

4.2. Unexpected Contamination

If any unexpected contamination is encountered then the Principal Contractor should safely stop works in the affected area and the project geo-environmental consultant should be engaged to inform future works. The following should be recorded by the Principal Contractor if unexpected contamination is encountered; details of the unexpected contamination (including photographs), the mitigation measures to be employed (decided in collaboration with the geo-environmental consultant), and any deviations from the works specified in this Remediation Strategy. All records shall be provided to the project geo-environmental consultant preparing the Verification Report.

Examples of unexpected contamination are provided in Table 4.1.

Table 4.1 Example evidences of unexpected contamination

Evidence	Details
Visual	- Fuel or oil-like substances mixed in with or smeared on the soil or floating on perched groundwater. - Waste materials (refuse, barrels, industrial waste, ash or tar) buried on site. - Marked variations in colour (such as red, orange, yellow, green, light or dark blue) may indicate the presence of a range of contaminants. - Soils including large amounts of ash and clinker. - Asbestos containing materials (ACMs) or ACM fragments outside the areas already identified as impacted.
Odours	- Fuel, oil and chemical type odours including solvents. - Unusual odours such as sweet odours or fishy odours.
Wellbeing	- Feeling lightheaded or nausea when near excavations or at the working face of an excavation. - Burning of nasal passages, throat, lungs or skin. - Blistering or reddening of skin due to contact with soil.

4.3. Retention of Monitoring Standpipes and Decommissioning

Monitoring standpipes have previously been installed at the site and these should be maintained and remain accessible until a time when they are no longer needed. An exploratory location plan including monitoring standpipe locations is provided as Appendix B.



The Principal Contractor is responsible for protecting the existing monitoring standpipes from damage during the works and must repair any damage caused. It is recommended that each monitoring standpipe is physically protected, such as with a concrete drainage ring or similar, to reduce the chance of damage from construction plant movements or otherwise.

Once a time has been reached when the wells are no longer needed they should be decommissioned. A-squared recommend that decommissioning takes place after a Foundation Works Risk Assessment (FWRA) has been accepted by the Local Authority and statutory consultees, and once this Remediation Strategy has been accepted by the Local Authority and statutory consultees. However, if the FWRA includes a groundwater monitoring programme during piling then the monitoring wells should not be decommissioned until this has been completed.

The Principal Contractor shall undertake decommissioning by filling each monitoring standpipe with bentonite and cutting the standpipe below finished formation level after removing the headworks. The method for the decommissioning and the volume of bentonite used in each well should be recorded. The Principal Contractor must ensure that no 'bridging' of the wells occurs during decommissioning so application of bentonite using a tremie pipe is recommended.

All decommissioning records shall be provided to the project geo-environmental consultant preparing the Verification Report.

4.4. Buried Services

A full water supply pipe risk assessment and specification of requirements shall be undertaken by the Principal Contractor. The specification for water supply pipe to be installed shall be agreed with the utility provider. The full risk assessment must be completed by a suitably qualified professional and included in the verification report. Correspondence between the Principal Contractor and utility provider agreeing the pipe specification should also be included in the verification report along with documentation confirming the pipe specification actually installed as as-built diagrams for new water supply pipes.

If buried services are to be installed where asbestos impacted Made Ground is present (e.g. in the vicinity of TP104 – see Figure 4.2), the services should be laid in oversize clean service corridors backfilled with suitable materials. Suitable materials include imported primary aggregate as described in Section 4.5.

The materials management protocols for imported materials as described in Section 4.5 should also be adhered to.

The oversize clean service corridors should extend at least 300 mm either side and below the buried services. A continuous high-visibility marker-layer should be installed at the base and side walls of each corridor, such as a layer of orange woven terram. The high-visibility marker layer is to indicate a no-dig zone for the operational phases of the development. Photographs of the trenches as well as an as-built survey plans showing the lateral extents and depths (including the marker-layer) should be prepared by the Principal Contractor and provided to the project geo-environmental consultant for inclusion in the verification report. Details on management of arisings is included in Section 4.5.

A conceptual cross-section of an oversize clean service corridor is provided as Figure 4.1.

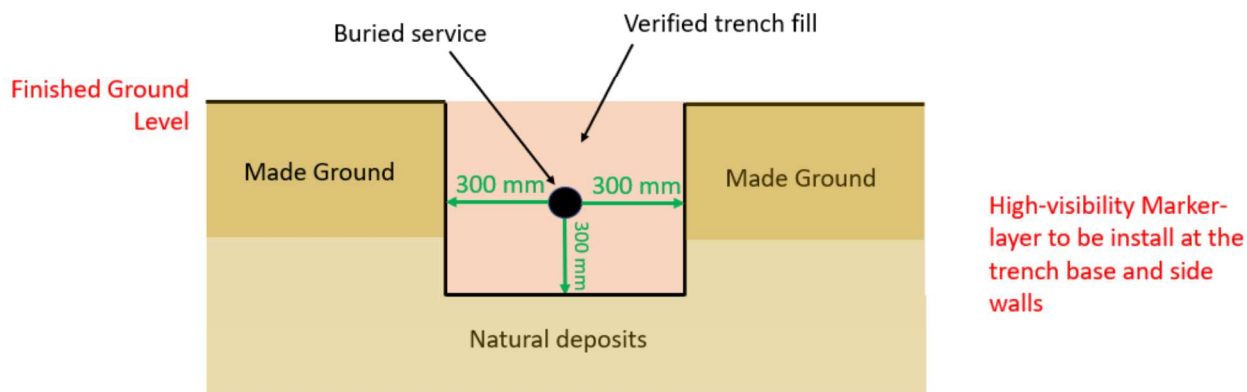


Figure 4.1 Oversize clean service corridor conceptual cross-section

The area where clean service corridors are required (due the asbestos detected in the vicinity of TP104) should new underground services be installed is shown on Figure 4.2.

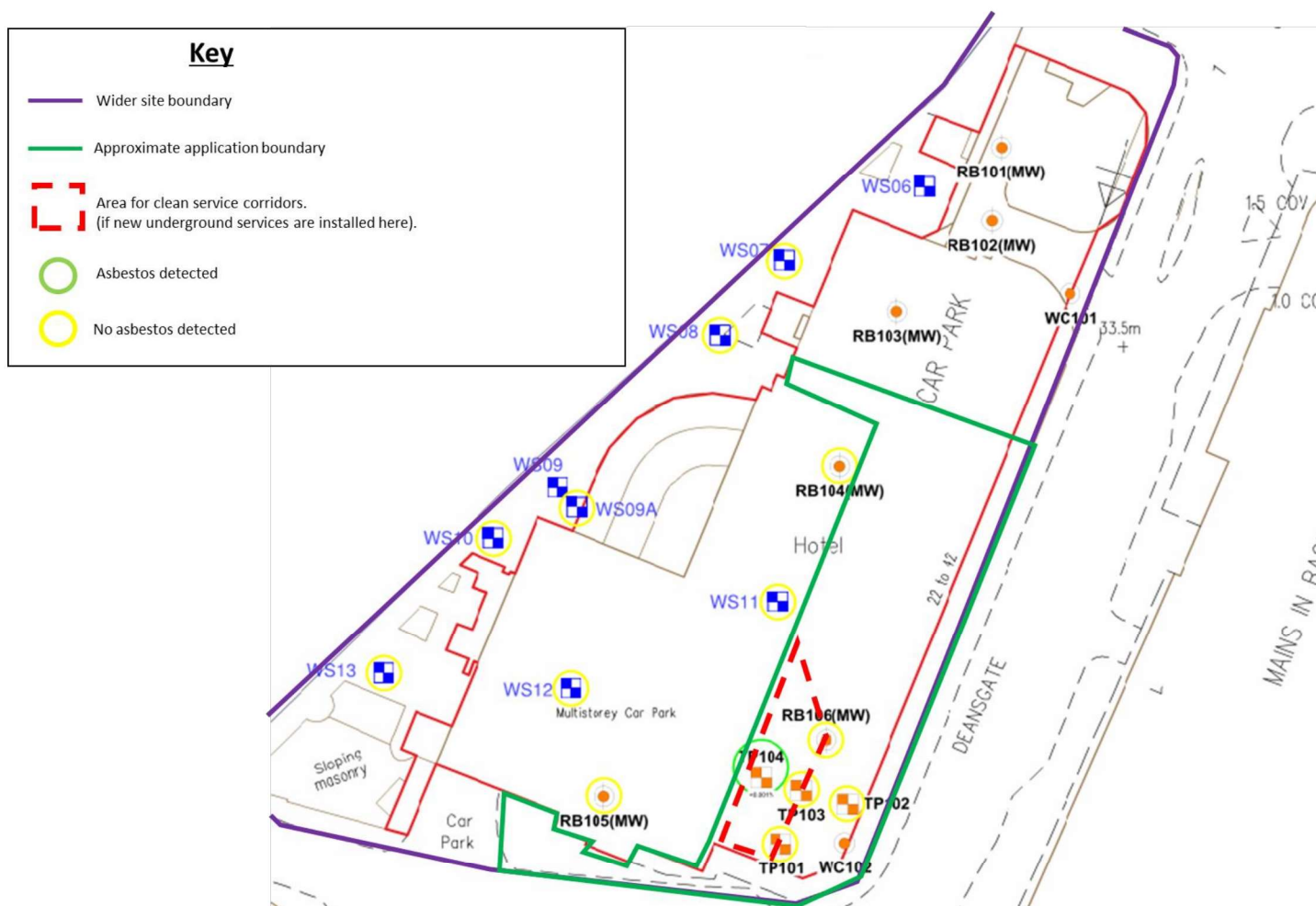


Figure 4.2 Area where clean service corridors are required if underground services are installed



4.5. Materials Management

4.5.1. Construction Phase

Construction phase materials management should adhere to Section 4.1. The SGA along with other associated documents and this Remediation Strategy should be issued to the Principal Contractor to enable their implementation of suitable construction phase working practices.

4.5.2. Permanent Works

It is the responsibility of the Principal Contractor to assess the suitability for use of any materials imported to site. Imported materials may fall into the following three general categories:

- Primary Aggregate – There is no requirement to chemically validate these materials, but delivery documentation must confirm the primary nature and origin of the material for the Principal Contractor.
- Secondary Aggregate – Documentation must be available from the supplier confirming material sources and that the materials have verifiable 'non-waste' status (suitable documentation would include evidence that the aggregate has been produced in accordance with *Wrap, Quality Protocol, Aggregates from Inert Waste, End of waste criteria for the production of aggregates from inert waste* and that appropriate verification testing results are available in accordance with the supplier's Factory Production Control manual or other documented QA / QC procedures);
- Imported Soils – Imported soils are not expected to be required. If the requirement for imported soil changes then A-squared must be informed so appropriate measures can be specified.

It is understood that there are no bulk earthworks to be undertaken and on this basis it would appear an MMP in accordance with the *CL:AIRE Definition of Waste Code of Practice* is not required. Should earthworks need to be undertaken then A-squared must be contacted so that we can specify appropriate measures to be implemented.

It is recommended that any imported primary aggregate or secondary aggregate is recorded within an Earthworks Plan including stockpile referencing and clearly identified areas of permanent placement cross-referenced with the soil sample names.

Oversized clean service corridor(s) have been recommended around TP104 (see Section 4.4) where there are localised asbestos fibres in Made Ground. Made Ground excavated for the construction of clean service corridors shall not cross-contaminate other soils. Either the excavated Made Ground shall be immediately placed in a collection wagon a removed from site, or shall be appropriately stored and managed on site prior to collection for off-site disposal. On-site storage and management shall include maintaining segregation of the excavated Made Ground by placing it on a membrane and covering with a suitable liner. The stockpile(s) shall also be clearly marked using signage.

Should evidence of unexpected contamination be identified during the project (see specific details in Section 4.2) then any excavated soils from the impacted area must be kept separate from other soils to prevent cross-contamination until a means of onward management has been determined. On-site storage and management shall include maintaining segregation of the excavated soil by placing it on a membrane and covering with a suitable liner. Suitable management and containment of any liquids / leachate must also be provided. The stockpile(s) shall also be clearly marked using signage.

4.6. Waste

Where materials are geotechnically or geo-environmentally unsuitable for reuse within the proposed redevelopment they shall be either sent to an off-site Waste Recovery Facility or to a suitably licensed waste disposal facility. The Principal Contractor is responsible for characterising all wastes generated in accordance with the Landfill Directive, Landfill Regulations, Waste Regulations and the Hazardous Waste Regulations, current and applicable at the time of works. The Principal Contractor shall ensure that no mixing of generated wastes occurs and that no cross-contamination of waste streams occurs. Where practicable and cost effective, materials



requiring off-site disposal should be selected and pre-treated to minimise waste volumes and to reduce the volume of Hazardous waste.

The Principal Contractor will be responsible for liaison with waste disposal operators and to compile a complete chain of custody in addition to complying with current waste legislation and regulation. The Principal Contractor shall collate documentary evidence to demonstrate their compliance with the duty of care arising with regards to waste legislation, including:

- Waste management licenses or exemptions;
- Completed Waste Transfer Notes;
- Completed Hazardous Waste Consignment Notes; and
- Certificate of Registration for Registered Waste Carriers.

There are no requirements for the Principal Contractor to provide evidences in relation to waste for the site Verification Report. However, the Principal Contractor could comply with this Section 4.6 to assist their management of waste.

Protocols for managing excavated Made Ground for the construction of clean service corridors around TP104, and for managing unexpected contamination which has been excavated, are set out in Section 4.5.

4.7. Monitoring and Maintenance

There are no long-term monitoring and maintenance requirements beyond the verification procedures defined herein.

It is recommended that this Remediation Strategy and the future site Verification Report are considered by those preparing the Health and Safety file for the operational phase of the proposed development.

Risks to site workers and the environment during the construction phase can be appropriately managed by successful implementation of construction phase risk assessments and method statements (RAMS), which may include some monitoring protocols. The construction phase risks from potential contamination should be appropriately considered and mitigated by the Principal Contractor in their preparation and implementation of construction phase RAMS and Construction Phase Plan (CPP). The associated construction phase risks from potential contamination are not considered further in this document.

4.8. Deep Foundations Works (Piling)

It is understood that the proposed development includes construction of piled foundations.

Construction of piled foundations for the proposed development should be undertaken in accordance with the FWRA included in the SGA.



5. Verification Plan (Verification Summary)

The following bullet-points provide a brief summary of the verification evidences to be collated by the Principal Contractor and provided to the project geo-environmental consultant (as described in detail in Section 4):

- Records of any unexpected contamination encountered and dealt with in accordance with Section 4.2;
- Records of monitoring well decommissioning undertaken as per Section 4.3;
- Water supply pipe risk assessment and verification records as per Section 4.4;
- Detailed verification records for the oversize service trenches (clean service corridors) in accordance with Section 4.4 (should new underground services be installed in the asbestos impacted area); and
- Verification records for the materials management described in Section 4.5.

The Principal Contractor must supply the required verification evidences to the project geo-environmental consultant who will then prepare the site Verification Report.

Please be aware that this Remediation Strategy also includes information to assist with waste classification (e.g. Section 4.6). This information has been provided for information purposes, to assist regulatory compliance, and generally does not represent formal verification requirements to demonstrate suitability for use in accordance with the *NPPF*.



6. Proposed Conceptual Site Model (CSM) for the Remediated Site

Table 6.1 provides a summary of how the remediation works specified herein address the unacceptable risks identified following ground investigation (as summarised in Section 3).

Table 6.1 Remediated site conceptualisation

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Potential for Complete Pathway
On-site Asbestos in Made Ground at TP104	Inhalation of windblown asbestos impacted soil	Proposed maintenance / construction workers working on underground utilities	No (Installation and verification of localised clean service corridors backfilled with primary aggregate mean that below-ground maintenance workers should not come in contact with asbestos impacted Made Ground in the vicinity of TP104)



7. Final Remarks

A-squared have been appointed by BG&E to prepare this Remediation Strategy for the proposed development based on the assessments presented in *A-squared Studio Engineers, Supplementary Geo-environmental Assessment Report, Renaissance Hotel Manchester, dated April 2022, ref. 1602-A2S-XX-XX-RP-Y-0004-01* (the 'SGA').

This Remediation Strategy has been prepared in accordance with the principles set out in *Land Contamination Risk Management* (LCRM) guidance, published by the Environment Agency on the UK Government website, and in the context of the *National Planning Policy Framework* (NPPF) and *The Building Regulations 2010, Approved Document C - Site preparation and resistance to contaminants and moisture (2004 Edition incorporating 2010 and 2013 amendments)*.

This Remediation Strategy has been prepared to enable suitable mitigation of unacceptable risks due to potential land contamination for the application area only. A verification plan is provided. The recommended remediation and verification is for the specifically proposed development.

Outline remediation recommendations can be summarised as follows:

- Oversized clean service corridors should be installed if underground services are to be laid through the identified asbestos impacted soils at TP104.
- A full water supply pipe risk assessment and specification of requirements shall be undertaken.
- Construction works should be completed with appropriate personal protective equipment (PPE) and provision of welfare including for any works conducted in asbestos impacted Made Ground.
- Unexpected contamination protocols should be implemented.

A detailed specification for delivering the remediation recommendations is provided as Section 4 herein.

On full implementation of this Remediation Strategy, including specified verification procedures and reporting, it is considered that the identified land contamination risks will have been appropriately mitigated such that the application area is suitable for the proposed use in accordance with the *NPPF*. After remediation the application area will also not be contaminated land as defined by *Part IIA, Environmental Protection Act 1990 (as amended)*.

This Remediation Strategy can be issued to the Local Authority to support the proposed development through the Planning process.



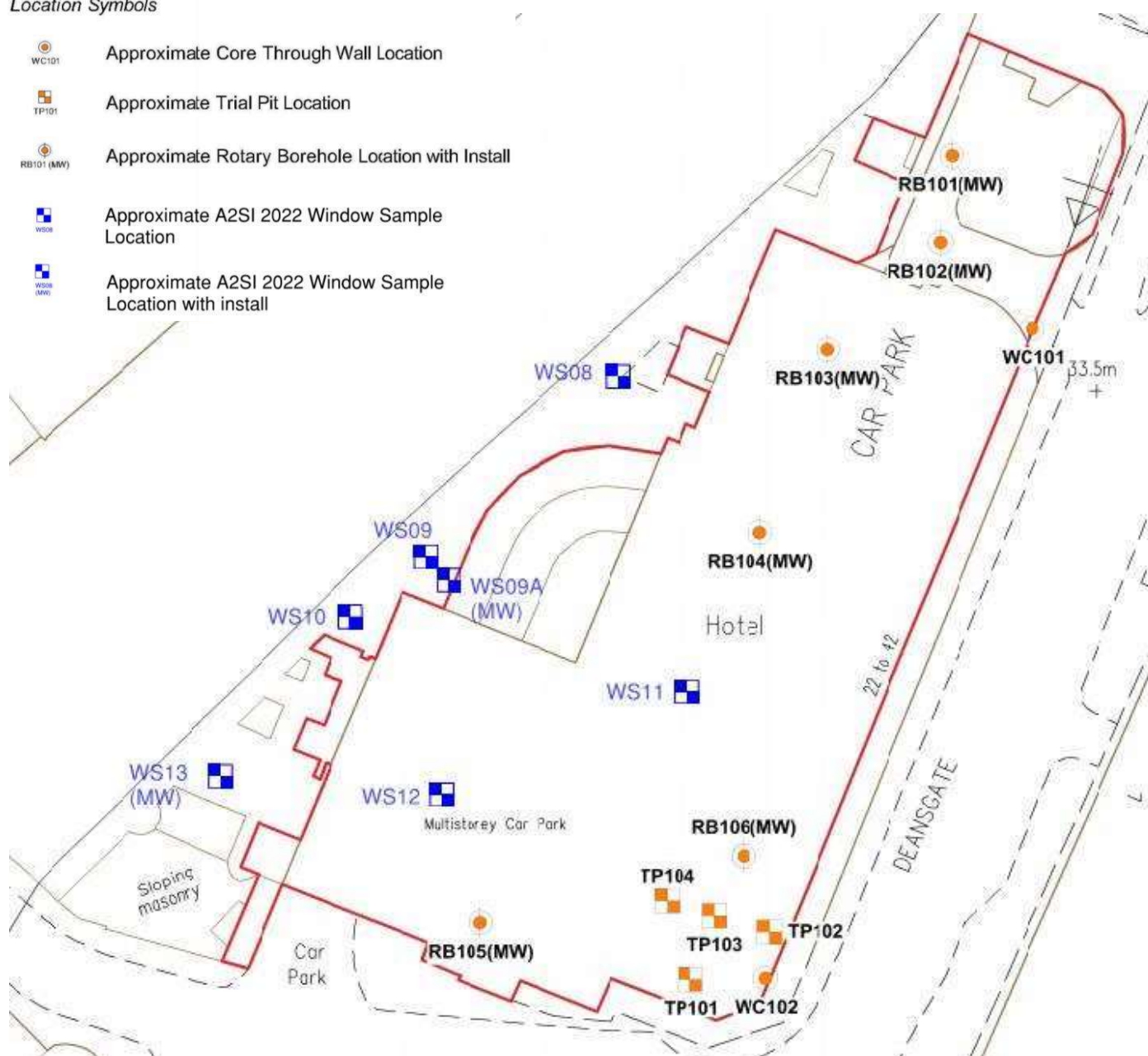
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Appendix B: Exploratory Location Plan

Location Symbols

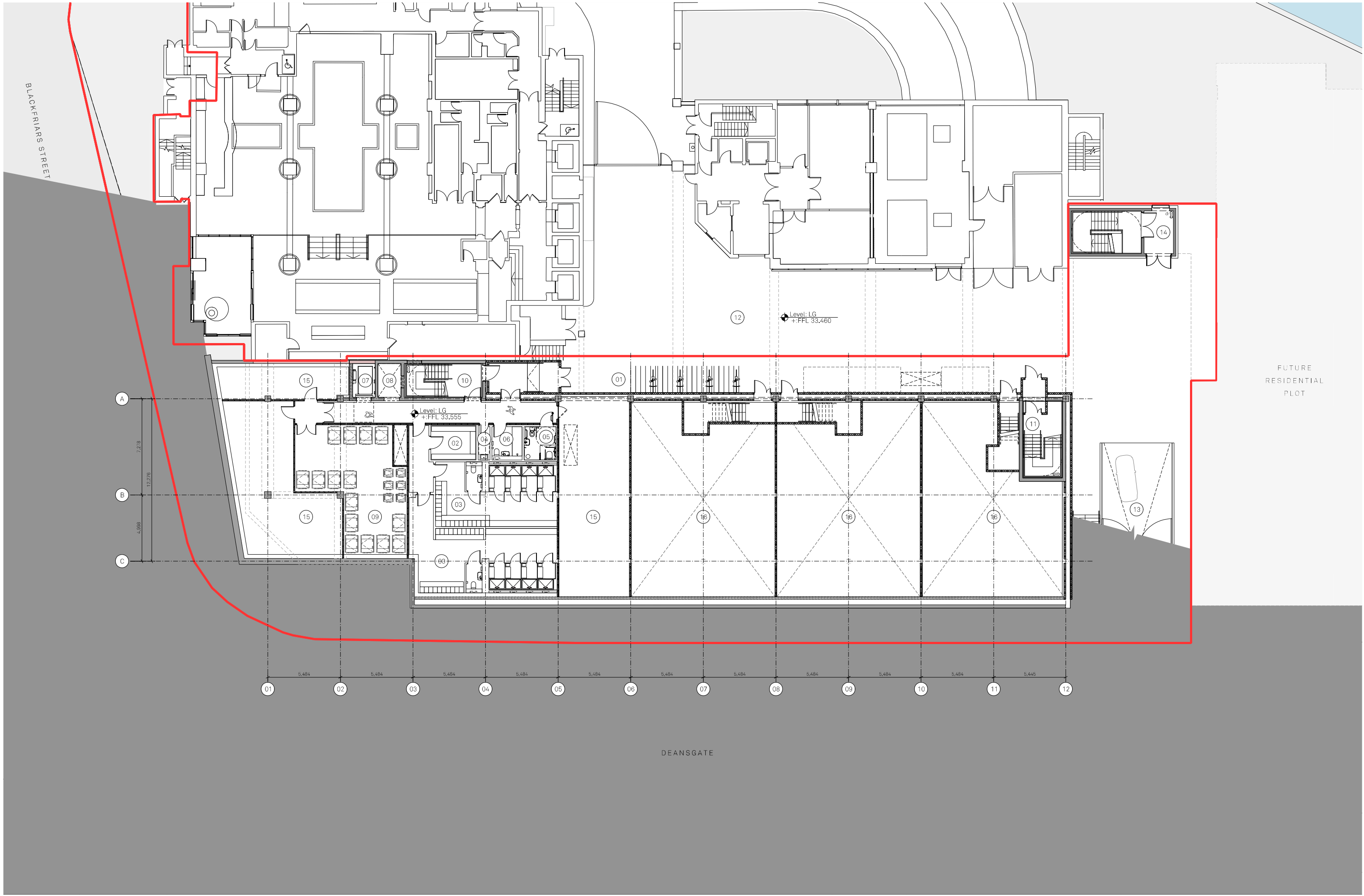
-  WC101 Approximate Core Through Wall Location
-  TP101 Approximate Trial Pit Location
-  RB101 (MW) Approximate Rotary Borehole Location with Install
-  WS08 Approximate A2SI 2022 Window Sample Location
-  WS08 (MW) Approximate A2SI 2022 Window Sample Location with install



(MW) = monitoring well present



Appendix C: Proposed Development Plans



Appendix D: A2SI Factual Report



A2 Site Investigation

Renaissance, Manchester

Factual Report

April 2022

17321-A2SI-XX-XX-RP-X-0001-01





Project Name	Renaissance, Manchester
Project Number	17321
Client	BG&E
Document Name	Factual Report

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17321-A2SI-XX-XX-RP-X-0001-00	First Issue		00	RB	04/02/2022
17321-A2SI-XX-XX-RP-X-0001-01	Second Issue	Including additional works	01	FA	08/04/2022



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Appendices

Appendix A: Exploratory Hole Location Plan

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Appendix C: Gas and Groundwater Monitoring Results

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1. Introduction

A2 Site Investigation Limited were appointed by BG&E to undertake a geotechnical ground investigation 6 Deansgate, Manchester M3 1RH. This report describes the work undertaken and presents the findings to date.

2. Site Location

The site is located within the Central Retail District of Manchester City Centre, Manchester, M3 1RH. The site is roughly triangular with Deansgate to the east, River Irwell to the west, Victoria Bridge Street to the north and Blackfriars Street to the south. The site forms part of a wider development associated with the existing hotel. The River Irwell is situated within a man-made channel understood to be supported by concrete and masonry walls.

The site is currently occupied by a 13-storey hotel, four-storey office building and multi-storey car park. There is an approximately 9.5 m difference in level across the site between Deansgate and the River Irwell, with an existing retaining wall along the Deansgate side.

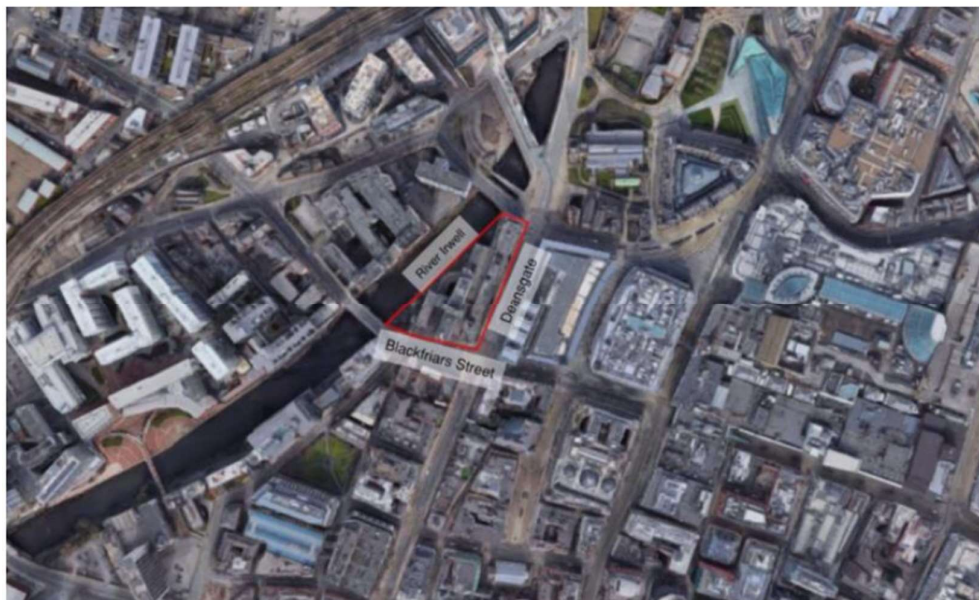


Figure 2.1 Site location and extent shown in red

3. Anticipated Ground Conditions

From a review of available geological maps and memoirs, including the online British Geological Survey “Geology of Britain Viewer”, and previous site investigations, the following geological sequence was anticipated:

Table 3.1 Anticipated geological sequence

Unit	Depth (mbgl) ^[1]	Thickness (m)	Description
Made Ground	0.0	10.0	Asphalt, roadstone, brick and concrete fill with gravels.
Chester Formation	10.0	>100	Weak, very thinly bedded, reddish brown, medium to coarse grained sandstone.

1. Depth refers to top of stratum.



4. Purpose and Scope of the Investigation

The purpose of the investigation was to recover data on the ground and groundwater conditions at the site relating to geotechnical risks that may affect the proposed development.

This investigation comprised of the excavation of inspection pits using vacuum excavation, drilling of rotary cored borehole and dynamic sampling boreholes. In addition, in-situ testing, geo-environmental and geotechnical sampling was undertaken along with installation of combined gas and groundwater monitoring wells.

A2 Site Investigation Limited have been commissioned to undertake a ground investigation at the site comprising three phases of work;

The Phase 1 fieldwork was undertaken between 20th – 22nd December 2021. The Phase 2 fieldwork was undertaken between 22nd – 23rd February 2022. The Phase 3 fieldwork was undertaken between 28th – 30th March 2022. Monitoring visit was undertaken on 15th March 2022.

This detailed scope of works was as follows:

Phase 1:

- 6 no. Vacuum excavated inspection pits.
- 1 no. Rotary drilled borehole to a depth of 10.5m (BH01).
- 5 no. Dynamic Sampler boreholes to a maximum depth of 6m (WS01-05).
- Walkover of the site to identify and take water levels in historical monitoring wells.

Phase 2:

- 8no. window sample boreholes to a maximum depth of 3mbgl (WS06-WS13).
- 1no. return monitoring visit was undertaken to determine ground gas and groundwater levels and groundwater sampling the historical and newly installed monitoring wells.

Phase 3:

- 2no. Rotary drilled boreholes to a depth of 12m (BH02-03).

5. Limitations of Report

This report has been prepared in accordance with the specification provided by the client. The data reported relates to the specific locations where each exploratory hole was formed and may not represent the ground and groundwater conditions of the site as a whole. Furthermore, it should be considered that groundwater levels may vary throughout the year due to seasonal conditions and other influences such as flooding and leaking mains, storm drainage and foul water systems.

6. Standards

The site investigation, soil descriptions and laboratory testing were undertaken in accordance with following standards

- UK Specification for Ground Investigation 2nd Edition, published by ICE Publishing (2012)
- BGS Geology of Britain Viewer: 2018. www.bgs.ac.uk. British Geological Survey
- British Standards Institution BS 5930:2015+A1:2020, Code of practice for site investigations.
- British Standards Institution BS 10175:2011+A2:2017, Investigation of potentially contaminated sites – code of practice.
- British Standards Institution BS EN ISO 14688-1:2018, Geotechnical investigation and testing, classification of soil. Identification and description.



- British Standards Institution BS EN ISO 14688-2:2018, Geotechnical investigation and testing. Identification and classification of soil. Principle for a classification.
- British Standards Institution BS EN ISO 22475-1: 2006 : Geotechnical investigation and testing – Sampling methods and groundwater measurements - Part 1 Technical principles for execution.

7. Ground Investigation Summary

7.1. Fieldwork Overview

A walkover was conducted on the first day of the ground investigation and confirmed the anticipated layout of the site.

Following a review of all available service information and site reconnaissance, all locations were scanned using Electromagnetic (CAT & Genny) techniques to check for services within proximity to exploratory hole locations. All positions were surveyed to determine the National Grid coordinates. Due to the density of underground services around the site, all locations have been Vacuum Excavated to 1.50mbegl for a safer excavation of starter pits.

A preliminary UXO desk study was undertaken by Zetica (2014). The preliminary UXO risk assessment recommended that further action was warranted to address the level of UXO risk at this site. Based on the results; it was necessary to have UXO supervision onsite to conduct a watching brief and undertake downhole magnetometer testing during the drilling.

All works were supervised by a senior ground engineer.

An exploratory hole location plan is shown in Appendix A.

7.2. Rotary Rig Borehole

The rotary borehole (BH01) was progressed using a Comacchio GEO 305 rotary rig with sampling to a maximum depth of 10.50 mbegl. Standard Penetration Tests (SPTs) were carried out in the borehole.

BH02 and BH03 was not undertaken due to heavy density of underground services on proposed location. A series of vacuum excavated trial pits were undertaken at alternative locations but it was not possible to locate a safe area to drill the boreholes and work was abandoned after three days.

All soils encountered were logged on site and sub-sampled accordingly for geotechnical laboratory analysis. Core runs were photographed, and are presented in Appendix B.

7.3. Window Sample Boreholes

The window sampler boreholes (WS01-WS05) were progressed with a track mounted rig using dynamic sampling techniques to a maximum depth of 6.0 mbegl. SPT's were undertaken in all exploratory holes at 1m spacing.

During site works, WS01 was cancelled due to a sperate excavation within proximity to the starter pit. It was not possible to ascertain an alternative drilling location due to the density of underground services within the immediate area.

WS02 was drilled to a depth of 4mbgl and backfilled with bentonite to surface.

WS03, WS04 and WS05 had refusals between 1.5-1.6 mbegl, all encountering concrete slab at termination depth. It was not possible to ascertain an alternative drilling location due to the density of underground services within the immediate area of the exploratory hole locations.

WS06 was not drilled due to no access to the location. WS07 was not drilled for health and safety reasons due to demolition works happening above hole location.



WS08 had refusal at 0.95m, encountering brickwork at termination depth. Two other locations were attempted (WS08A and WS08B), but hole was terminated for the same reason. WS09 also had refusal, being terminated at 0.8m due to thick layer of concrete extending from 0.4m to termination depth. A location nearby was attempted with success (WS09A) to 4m.

All soils encountered were logged on site and samples recovered for geotechnical and geo-environmental laboratory analysis.

A standpipe piezometer was installed in two of the window sample boreholes (WS09A and WS13) for subsequent sampling and monitoring of groundwater levels.

7.4. Gas and Groundwater Monitoring Installations

7.4.1. Previous Groundwater Monitoring Installations

Groundwater monitoring pipes were installed during Phase II Geoenvironmental Site Assessment conducted by E3P (E3P, Phase II Geoenvironmental Site Assessment, Renaissance, Manchester, Reference:14-261-R2-1, dated 21) 1st May 2021. The monitoring wells are each comprised of one 50mm internal diameter PVC casing and well screen. Details of all installations are shown in Table 7.4.1 below.

Table 7.4.1 Identified Monitoring Installation details

Location Ref	Base of Borehole (mbegl)	Installation Diameter (mbegl)	Type of Installation	Bottom of Response Zone (mbegl)	Top of Response Zone (mbegl)	Strata
RBH101	10.0	50mm	SP/G	10.0	2.0	Chester Formation
RBH102*	10.0	50mm	SP/G	1.5	0.5	Made Ground
RBH103	10.0	50mm	SP/G	10.0	2.0	Chester Formation
RBH104	10.0	50mm	SP/G	10.0	2.0	Chester Formation
RBH105	10.0	50mm	SP/G	10.0	2.0	Chester Formation
RBH106	10.0	50mm	SP/G	10.0	2.0	Chester Formation

Key

SP/G – Standpipe with Gas Monitoring Valve

*** - Monitoring well not found**

During the site walkover, all previous installed wells at the basement car park level were identified with the exception of RBH102, which at the time of the walkover had heavy pallets, possibly obstructing the headworks as shown in the photo 7.4.1.



Figure 7.4.1 Possible RBH102 location with obstruction.

7.4.2. Gas and Groundwater Monitoring Installations

Combined gas and groundwater monitoring pipes were installed in WS09A and WS13. The monitoring installation comprises of a 50mm internal diameter PVC casing and wellscreen. Details are shown in Table 7.4.2 below:

Table 7.4.2 Gas and Groundwater Monitoring Installations

Location Ref	Base of Borehole (mbegl)	Installation Diameter (mbegl)	Type of Installation	Bottom of Response Zone (mbegl)	Top of Response Zone (mbegl)	Strata
WS09A	4.0	50mm	SP/G	3.5	2.0	Made Ground/Possible Glaciofluvial Deposits
WS13	6.0	50mm	SP/G	4.0	2.0	Made Ground

Key

SP/G – Standpipe with Gas Monitoring Valve

8. Ground Conditions

8.1. Encountered Geology

The following ground conditions were encountered at the site. The measurements were taken from the top of the existing exploratory holes (mbegl). Details are shown in Table 8.1 below:

**Table 8.1 Ground Conditions Encountered**

Unit	Depth (mbegl)	Thickness (m)	Description
Made Ground	0.00	1.70	Medium dense greyish brown slightly clayey silty SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to subangular, fine to coarse of concrete and brick.
Weathered Chester Formation	1.70	4.1	Dense reddish brown poorly cemented fine to medium SAND.
Chester Formation	5.8	Not Proven	Weak thinly to medium laminated reddish brown medium to coarse grained cemented SANDSTONE.

Detailed exploratory hole logs can be found in Appendix B.

8.2. Groundwater

Groundwater inflows were encountered in at all borehole locations as detailed in Table 8.2 below.

Location Ref	Depth of inflow (mbgl)	Rising to (Mins)				Strata / Remarks
		5	10	15	20	
WS09A	2.90	-	-	-	-	Made Ground
WS13	3.50	-	-	-	-	Made Ground

9. Laboratory Testing

9.1. Geotechnical Testing

Geotechnical laboratory testing was undertaken by GSTL Limited and Geolabs, both United Kingdom Accreditation Service (UKAS) accredited laboratory, in accordance with relevant standards.

The following type and number of tests scheduled is shown in Table 9.1 below and the results are presented in Appendix D.

Table 9.1 Geotechnical Testing

Test Description	Number of Tests
Natural moisture content	1
4 Point Liquid and Plastic Limit BS 1377:1990 - Part 2: 4.3 and 5.3	1
Particle Size Distribution Wet Sieve Method BS 1377:1990 - Part 2	2
Pipette Analysis BS 1377:1990 - Part 2: 9.4	2
Triaxial - 100mm single stage	1



Test Description	Number of Tests
Determination of Point Load Value	3
Natural water content of rock	3
BRE Suite D	3
BRE Reduced Suite	2

9.2. Geo-environmental Testing

Selected soil and groundwater samples were sent for geo-environmental laboratory testing which was undertaken by The Environmental Laboratory (ELAB) and i2 analytical Environmental Science, both United Kingdom Accreditation Service (UKAS) accredited laboratory. ISO17025 and MCERTS accredited methods were specified where applicable and can be seen on the laboratory testing certificates presented in Appendix E.

Tables 9.2.1 and 9.2.2 presents a summary of the scheduled Geo-environmental tests and the results are presented in Appendix D

Table 9.2.1 Geo-Environmental Testing – Laboratory Analyses – Soils

Test Description	Number of Tests
Risk Assessment Suite	7
Speciated Phenols by HPLC	3
Free Cyanide	7
Total Cyanide	7
Speciated VOCs	5
A2SI Metals Leachate Suite – BS12457-1 (single stage 2:1 liquids / solids ratio).	7
A2SI PAH Leachate Suite – BS12457-1 (single stage 2:1 liquids / solids ratio).	7
Leachable Free Cyanide – BS12457-1 (single stage 2:1 liquids / solids ratio).	7
Leachable Total Cyanide – BS12457-1 (single stage 2:1 liquids / solids ratio).	7
TPH CWG	6
Asbestos ID (followed by quantification if required)	9
Speciated PAH (EPA16)	6



Table 9.2.2 Geo-Environmental Testing – Laboratory Analyses – Groundwater

Test Description	Number of Tests
Risk Assessment Suite (Water)	6
Speciated Phenols by HPLC	6
Free Cyanide	6
Total Cyanide	6
Speciated VOCs	6
Speciated SVOCs	6
Dissolved Chromium (III + IV); LOD = 0.5 ug/L.	6

10. Gas, Vapour and Groundwater Monitoring

One round of gas and groundwater monitoring have been undertaken. A summary is provided in Table 10.1 & Table 10.2. The results are presented in Appendix C

10.1. Ground Gas/Vapour

Gas monitoring was undertaken using a calibrated Gas Data GFM436 hand-held gas analyser and a calibrated MiniRae Lite ATEX Photo Ionisation Detector (PID) and a summary is shown in Table 10.1 below;

Table 10.1 Ground Gas/Vapour Monitoring Results

Exploratory Hole Reference	Monitoring Round Date	Minimum O ₂ (%)	Maximum CO ₂ (%)	Maximum CH ₄ (%)	H ₂ S (ppm)	CO (ppm)	Maximum PID (ppm)	Barometric Pressure (mb)
RB101	14/03/2022	NR – No access to the locations due to demolition works						
RB102	14/03/2022	NR – No access to the locations due to demolition works						
RB103	14/03/2022	19.3	0.7	<0.1	<0.1	<0.1	-	1016
RB104	14/03/2022	18.1	1.7	<0.1	<0.1	<0.1	-	1016
RB105	14/03/2022	19.7	<0.1	<0.1	<0.1	<0.1	-	1016
RB106	14/03/2022	20.3	<0.1	<0.1	<0.1	<0.1	-	1016
WS09A	14/03/2022	20.2	0.5	<0.1	<0.1	<0.1	-	1016
WS13	14/03/2022	19.7	0.6	<0.1	<0.1	<0.1	-	1016

NR – no reading taken during visit.



10.2. Groundwater

The groundwater levels and any free phase liquids were measured using a calibrated Geotech Oil/Water Interface meter. All Groundwater levels were recorded in the monitoring wells during the monitoring visits and the results are presented in Table 10.2 below; All monitoring wells which groundwater was recorded, a groundwater sample was taken for laboratory analyses.

Table 10.2 Groundwater Monitoring Results (mbegl)

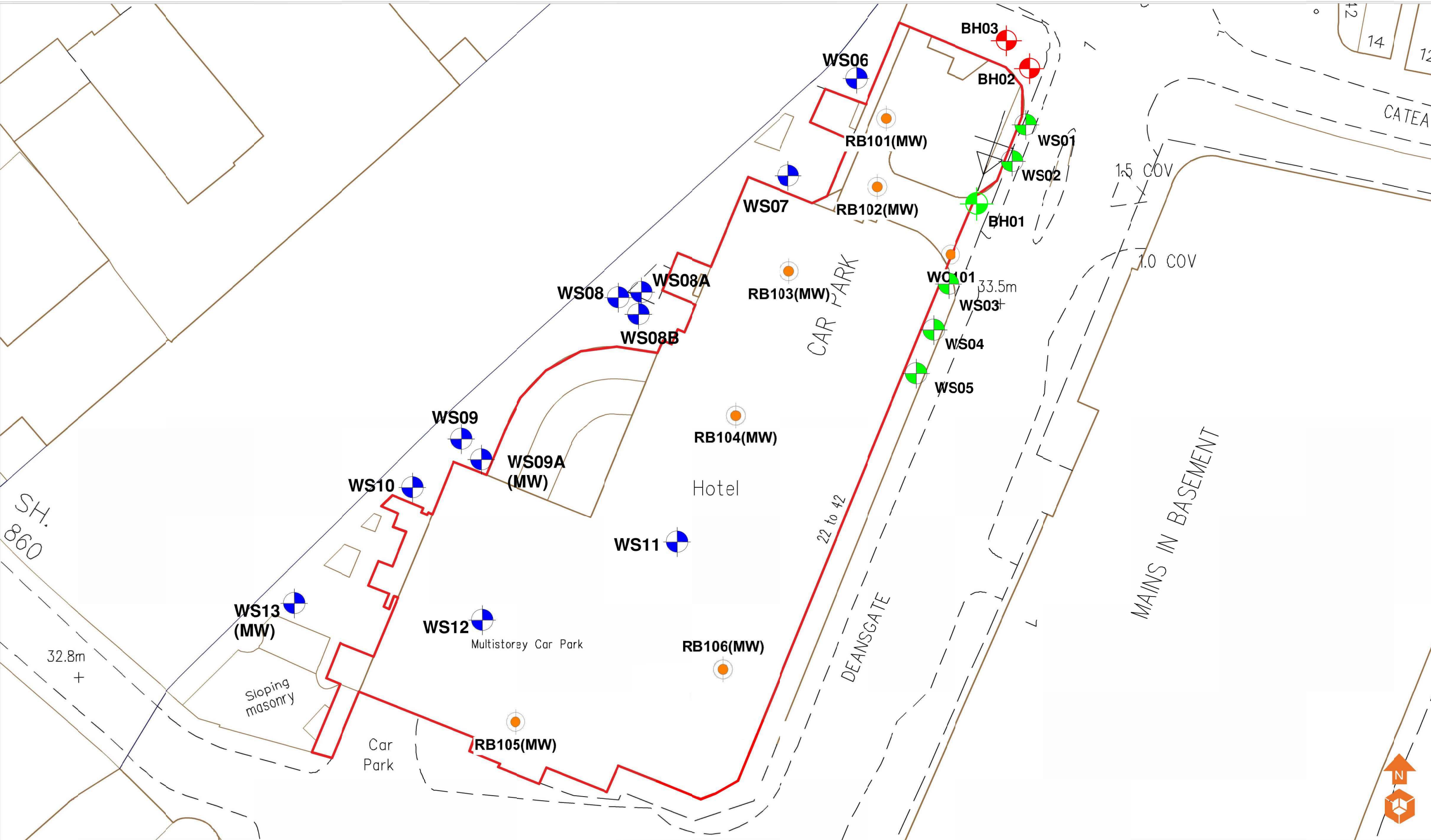
Exploratory Hole Reference	Depth of Monitoring Well (mbegl)	Visit	Notes
		11/11/2021 (mbegl)	
RB101		NR – No access to the locations due to demolition works	
RB102		NR – No access to the locations due to demolition works	
RB103	7.44	3.33	No Free Phase Product Detected
RB104	5.63	2.13	No Free Phase Product Detected
RB105	5.54	2.21	No Free Phase Product Detected
RB106	4.89	2.10	No Free Phase Product Detected
WS09A	3.70	3.41	No Free Phase Product Detected
WS13	4.10	3.41	No Free Phase Product Detected

NR – no reading taken during visit.

Full results of groundwater monitoring can be found in Appendix C.



Appendix A: Exploratory Hole Location Plan



Location Symbols

- Approximate Rotary Borehole Location with Install
- Approximate Rotary Borehole Locations - A2 Phase 1 Site Works
- Approximate Window Sample Borehole Locations - A2 Phase 1 Site Works
- Approximate Window Sample Borehole Locations - A2 Phase 2 Site Works
- Approximate Rotary Borehole Locations - A2 Phase 3 Site Works

Notes:

P1	REVA	07.04.2021	EB	NS
Phase	Issue	Date	Drawn	Checked

Client:

Property Alliance
Group Ltd

Job Title:

Renaissance
Deansgate

Job No:

14-261

Drawing No:

018

Date:

07.04.2021

Scale:

NTS

Drawing Title:

Contamination Issues Plan -
Human Health



Environmental Engineering
Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Appendix B: Exploratory Hole Logs and Photographic Record



Borehole Log

Project Renaissance Manchester				Borehole No BH01	
Job No 17321	Start 20-12-21 Finish 21-12-21	Ground Level (mOD) 33.38	Co-Ordinates E 383,783.0 N 398,660.0		Depth (m) 10.5m
Client BG&E			SPT Energy Ratio 62%		Sheet 1 of 2

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.40	ES1	VOC-0.0ppm		33.31		0.07	
				33.23		0.15	
				32.98		0.40	
				32.68		(0.30) 0.70	
1.20	ES2	VOC-0.0ppm				(1.00)	
1.50	SPT (s)	(1, 1, 1, 0, 1, 1) N = 3		31.68		1.70	
1.70	ES3	VOC-0.0ppm					
2.50	D4 SPT (s)	(2, 3, 4, 6, 6, 7) N = 23				(1.30)	
4.00	D5 SPT (s)	(5, 5, 8, 7, 8, 7) N = 30		30.38		3.00	
						(1.00)	
				29.38		4.00	
						(0.80)	
5.00	D6 ES7 SPT (s)	VOC-0.0ppm (2, 9, 19, 31, 0, 0) N = 50/85 mm		28.58		4.80	
				28.38		5.00	
						(0.80)	
				27.58		5.80	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Casing Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1. Borehole scanned with GPR, CAT & Genny 2. Vacuum excavated starter pit dug to 1.2m
All dimensions in metres Scale 1:37.5		Contractor A2 Site Investigation				Method/ Plant Used		Comacchio 305		Logged By FA	Status FINAL



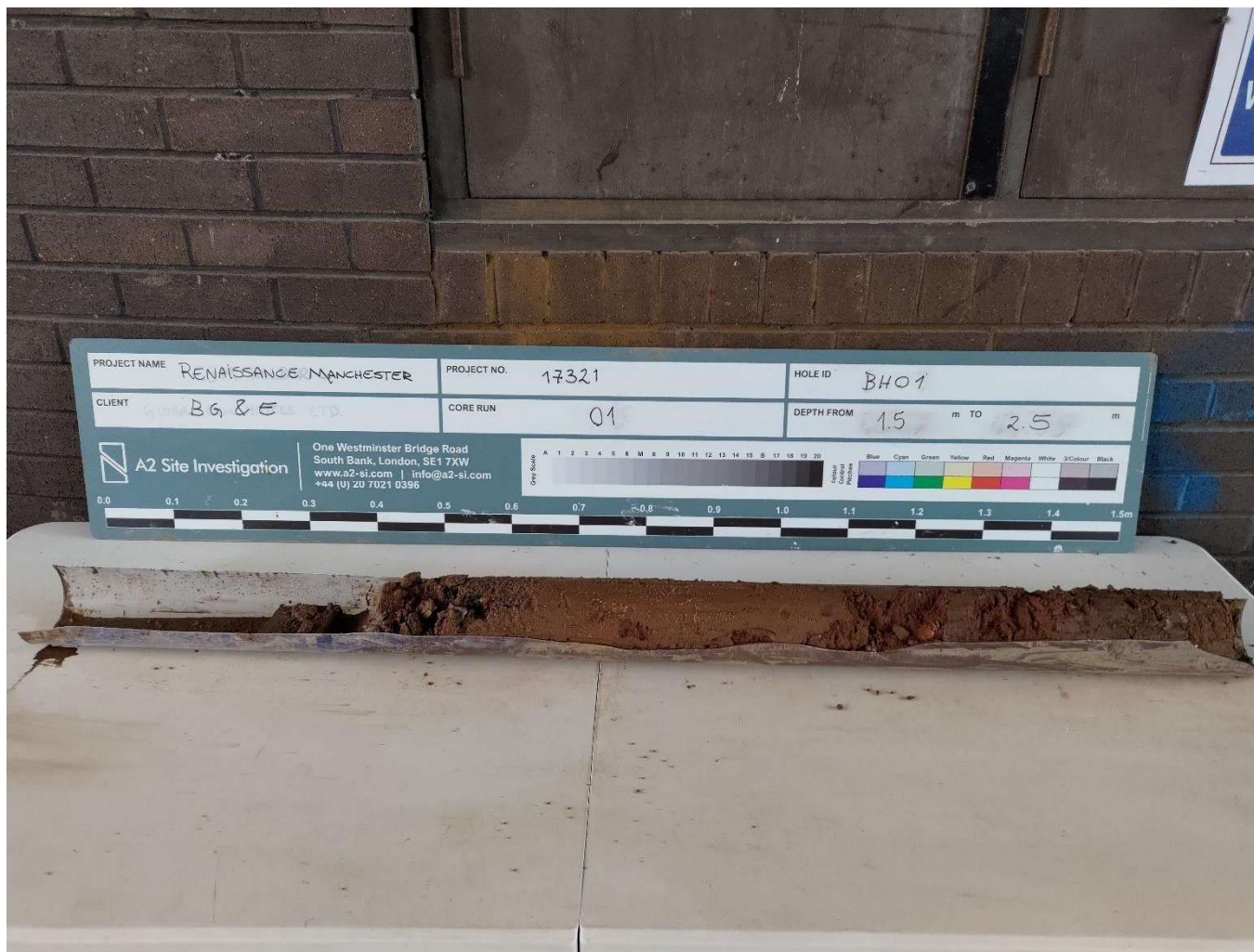
Borehole Log

Project Renaissance Manchester				Borehole No BH01	
Job No 17321	Start 20-12-21 Finish 21-12-21	Ground Level (mOD) 33.38		Co-Ordinates E 383,783.0 N 398,660.0	Depth (m) 10.5m
Client BG&E			SPT Energy Ratio 62%		Sheet 2 of 2

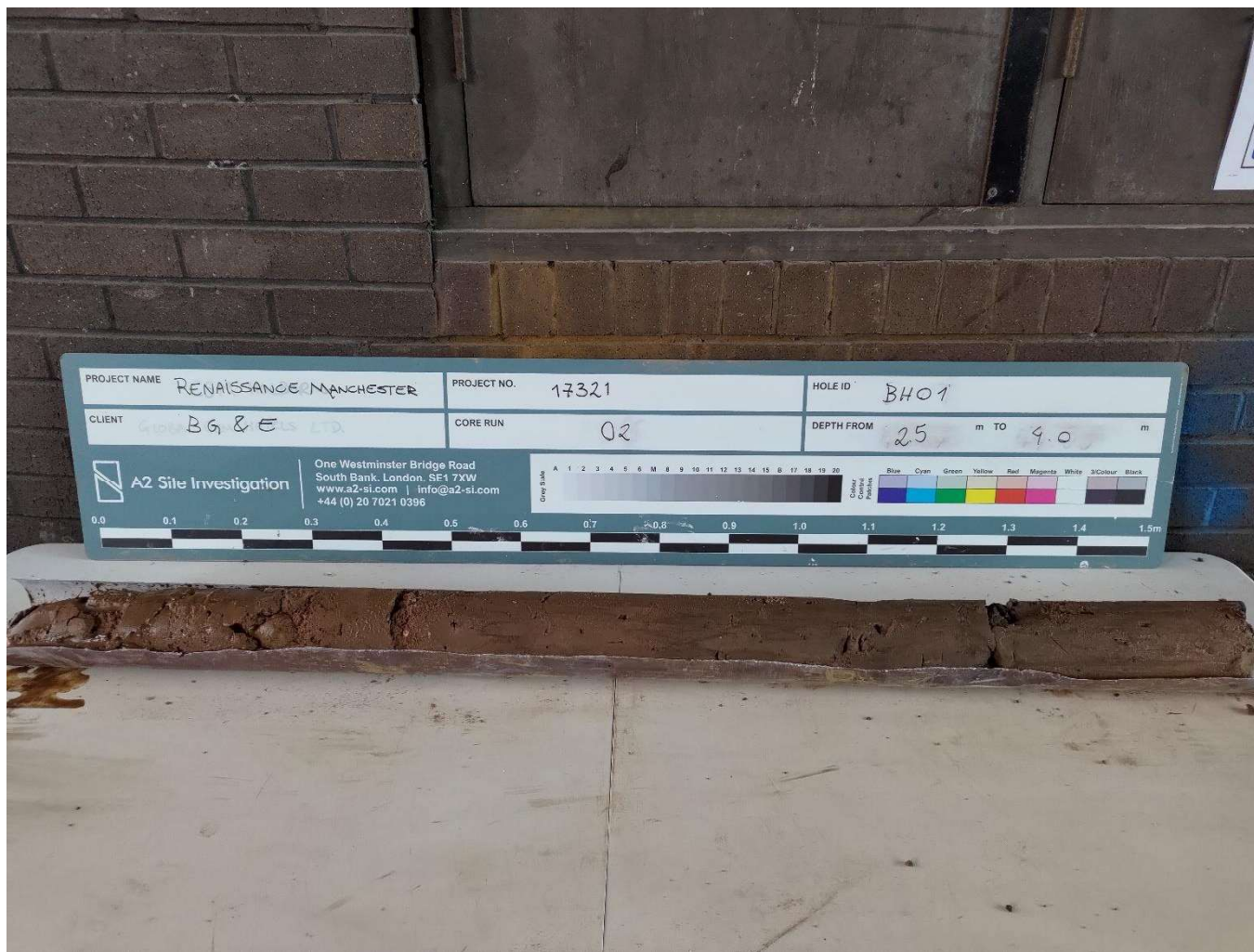
SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
9.00	SPT (c)	(25, 0, 50, 0, 0, 0) N = 50/30 mm				Weak thinly to medium laminated reddish brown medium to coarse grained cemented SANDSTONE. Partially weathered (CHESTER FORMATION). Discontinuities: 1. 0-10° bedding fractures, closely spaced (60/180/450), planar, rough. (continued) ...layer of medium to coarse SAND from 7.8m to 8.0m... ...becomes medium strong and unweathered from 8.0m...	
						(4.70)	
10.50	SPT (c)	(25, 0, 50, 0, 0, 0) N = 50/30 mm		22.88		10.50	
----- Borehole Terminated at 10.5m -----							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
21-12-21	10.50	5.00	200								1.Borehole scanned with GPR, CAT & Genny 2.Vaccum excavated starter pit dug to 1.2m
All dimensions in metres Scale 1:37.5		Contractor A2 Site Investigation				Method/ Plant Used		Comacchio 305		Logged By FA	Status FINAL

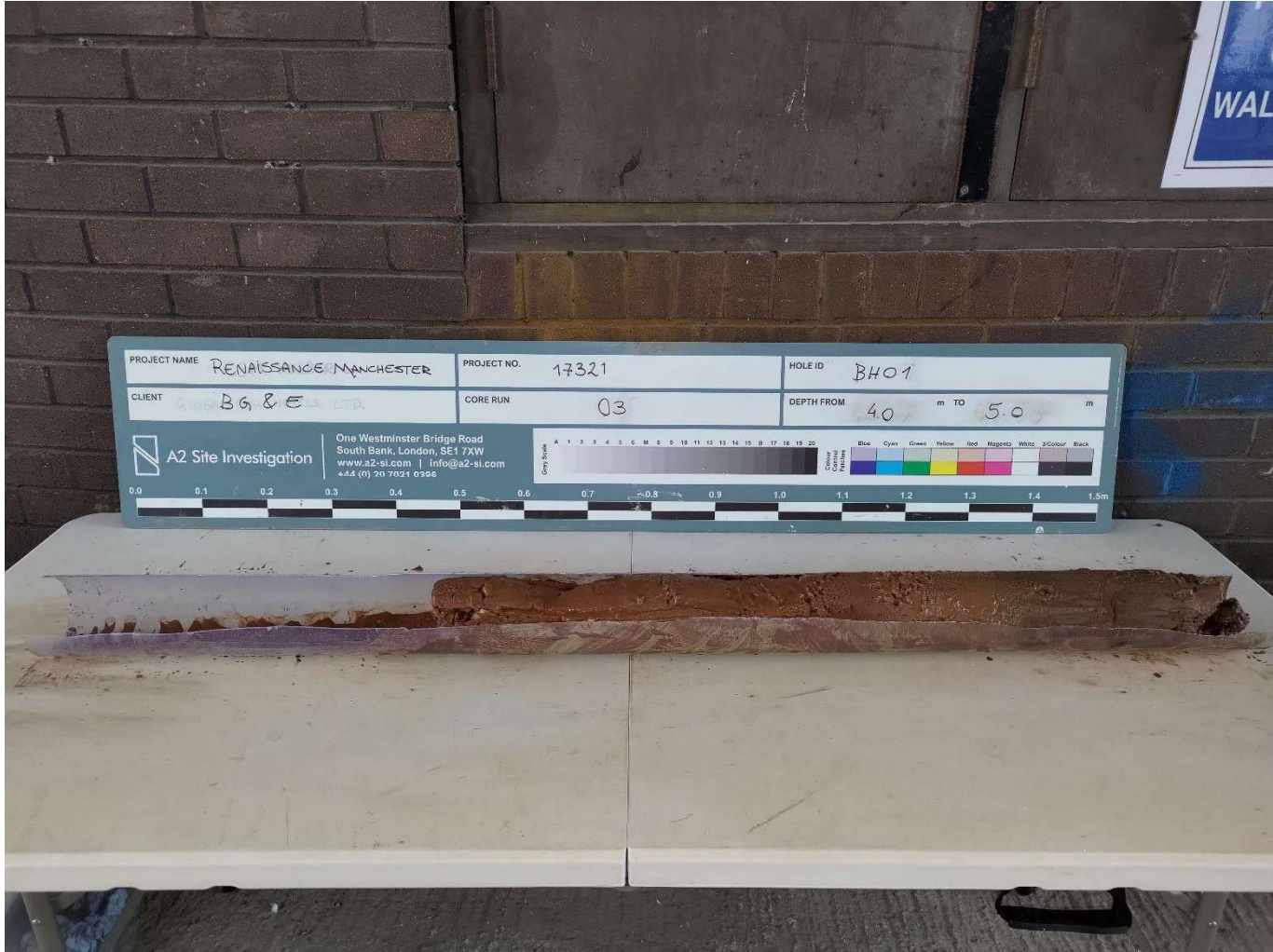
Report ID: A2SI AGS BH LOG FINAL || Project: 17321 RENAISSANCE MANCHESTER.GPJ || Library: A2SI AGS 4_0.GLB || Date: 8 April 2022
A2 Site Investigation, 1 Westminster Bridge Road, SE1 7XW, Telephone: 020 7021 0396



Client BG & E	Title BH01 Photographic Record		Site Renaissance Manchester		
	Core Run 01		Created JS	Checked	Authorised
	Depth From (m) 1.50	Depth To (m) 2.50	Status FINAL	Rev 0	Project No 17321



Client BG & E	Title BH01 Photographic Record		Site Renaissance Manchester		
	Core Run 02		Created JS	Checked	Authorised
	Depth From (m) 2.50	Depth To (m) 4.00	Status FINAL	Rev 0	Project No 17321



A2 Site Investigation
One Westminster Bridge Road London SE1 7XW

Client
BG & E

Title
BH01 Photographic Record

Core Run
03

Depth From (m)
4.00

Depth To (m)
5.00

Site
Renaissance Manchester

Created
JS

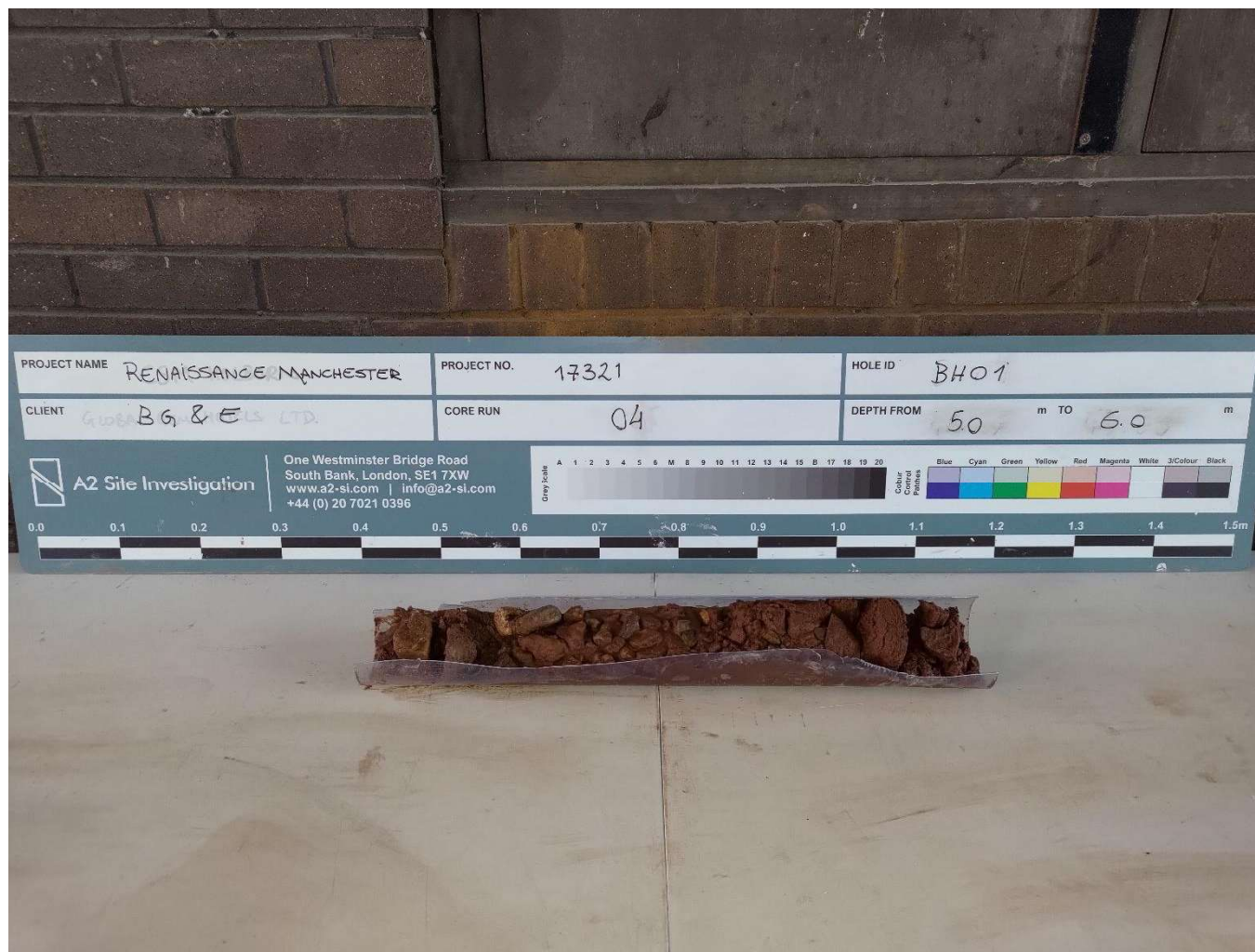
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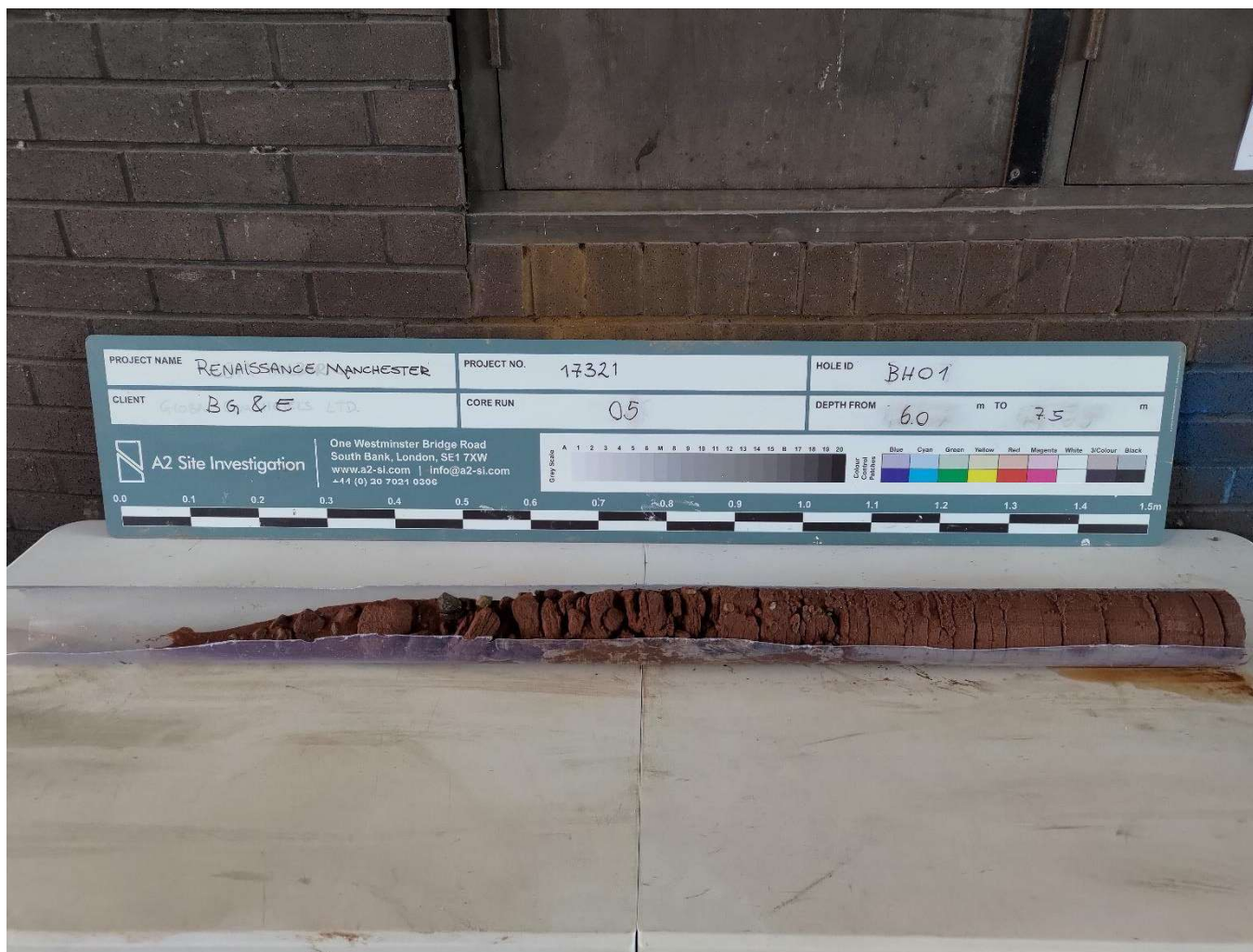
Rev
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Authorised

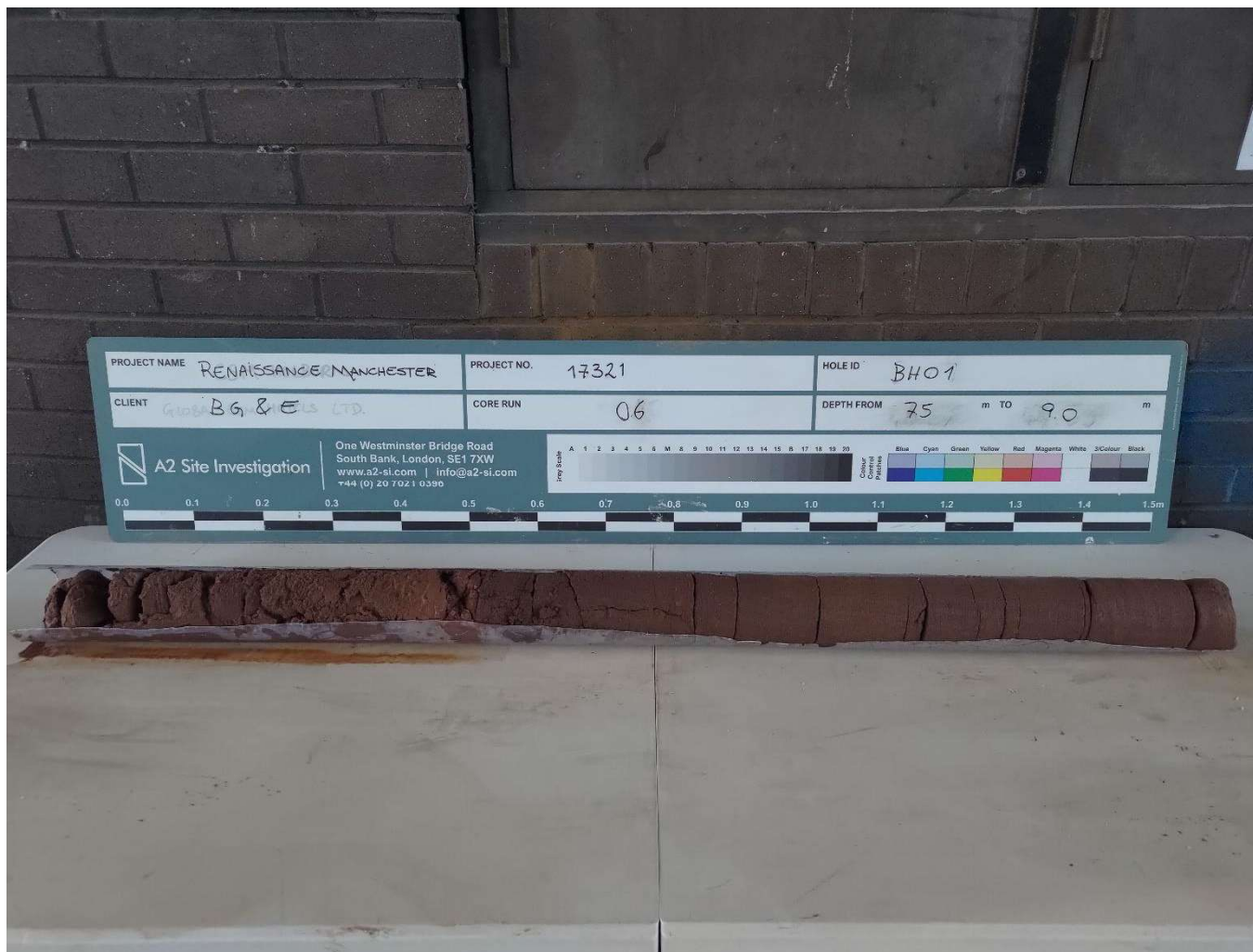
Project No
17321



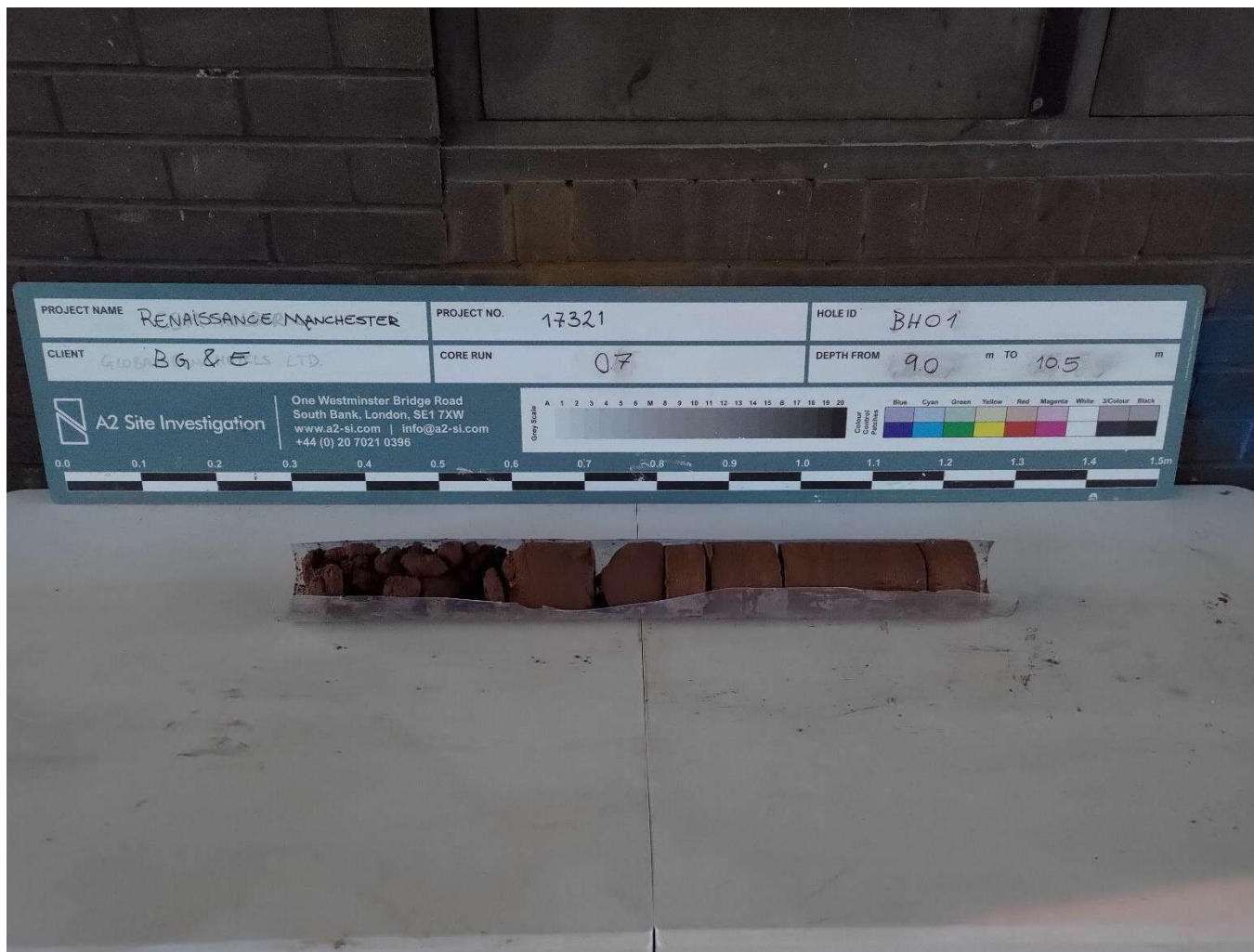
Client BG & E	Title BH01 Photographic Record		Site Renaissance Manchester		
	Core Run 04		Created JS	Checked	Authorised
	Depth From (m) 5.00	Depth To (m) 6.00	Status FINAL	Rev 0	Project No 17321



Client BG & E	Title BH01 Photographic Record		Site Renaissance Manchester		
	Core Run 05		Created JS	Checked	Authorised
	Depth From (m) 6.00	Depth To (m) 7.50	Status FINAL	Rev 0	Project No 17321



Client BG & E	Title BH01 Photographic Record		Site Renaissance Manchester		
	Core Run 06		Created JS	Checked	Authorised
	Depth From (m) 7.50	Depth To (m) 9.00	Status FINAL	Rev 0	Project No 17321

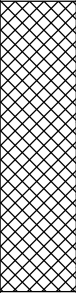
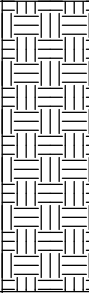


Client BG & E	Title BH01 Photographic Record		Site Renaissance Manchester		
	Core Run 07		Created JS	Checked	Authorised
	Depth From (m) 9.00	Depth To (m) 10.5	Status FINAL	Rev 0	Project No 17321



Borehole Log

Project Renaissance Manchester				Borehole No WS01	
Job No 17321	Start 20-12-21 Finish 21-12-21	Ground Level (mOD) 32.93	Co-Ordinates E 383,791.0 N 398,676.0		Depth (m) 1.2m
Client BG&E			SPT Energy Ratio %		Sheet 1 of 1

SAMPLES & TESTS							STRATA		Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
0.40	ES1	VOC 0.0ppm				(1.20)	Soft to firm brown mottled greyish brown sandy very gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular, fine to coarse of brick, flint, concrete, plastic. (MADE GROUND)		
1.20	ES2	VOC 0.0ppm		31.73		1.20			----- Borehole Terminated at 1.2m -----

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Casing Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1. Borehole scanned with GPR, CAT & Genny 2. Vacuum excavated starter pit dug to 1.2m 3. Borehole cancelled due to excavation nearby after starter pit was dug. No alternative location was possible due to underground services density in the area.
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig		Logged By FA	Status FINAL



Borehole Log

Project Renaissance Manchester				Borehole No WS02	
Job No 17321	Start 20-12-21 Finish 21-12-21	Ground Level (mOD) 33.29	Co-Ordinates E 383,786.0 N 398,668.0		Depth (m) 4m
Client BG&E			SPT Energy Ratio 67%		Sheet 1 of 1

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.50	ES1	VOC 0.0ppm		33.22		0.07	
				32.99		0.30	
						(0.70)	
1.30	ES2	VOC 0.0ppm		32.29		1.00	
						(1.80)	
2.00	SPT (s)	(2, 2, 1, 1, 0, 1) N = 3					
2.30	ES3	VOC 0.0ppm					
3.00	ES4	VOC 0.0ppm		30.49		2.80	
						(0.80)	
3.80	ES5	VOC 0.0ppm		29.69		3.60	
						(0.40)	
				29.29		4.00	
4.00	SPT (s)	(11, 14, 24, 26, 0, 0) N = 50/145 mm					
----- Borehole Terminated at 4m -----							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Casing Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1. Borehole scanned with GPR, CAT & Genny 2. Vacuum excavated starter pit dug to 1.2m
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig	Logged By FA		Status FINAL





Borehole Log

Project Renaissance Manchester					Borehole No WS03
Job No 17321	Start 20-12-21 Finish 21-12-21	Ground Level (mOD) 33.75	Co-Ordinates E 383,781.0 N 398,654.0	Depth (m) 1.6m	
Client BG&E			SPT Energy Ratio 67%	Sheet 1 of 1	

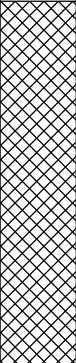
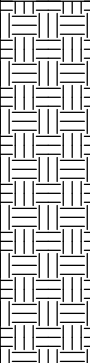
SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.40	ES1	VOC 0.0ppm		33.68		0.07	
				33.45		0.30	
						(1.30)	
1.30	ES2	VOC 0.0ppm					
1.30	SPT (c)	(12, 13, 12, 14, 14, 10)		32.15		1.60	
1.60	ES3	VOC 0.0ppm					
----- Borehole Terminated at 1.6m -----							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1. Borehole scanned with GPR, CAT & Genny 2. Vacuum excavated starter pit dug to 1.2m 3. Borehole refused at 1.6m on a concrete slab. No alternative location was possible due to underground services density in the area.
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig		Logged By FA	Status FINAL



Borehole Log

Project Renaissance Manchester				Borehole No WS04	
Job No 17321	Start 20-12-21 Finish 21-12-21	Ground Level (mOD) 33.75		Co-Ordinates E 383,780.0 N 398,652.0	Depth (m) 1.5m
Client BG&E			SPT Energy Ratio 67%		Sheet 1 of 1

SAMPLES & TESTS							STRATA	Instrument/ Backfill	
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
0.50	ES1	VOC 0.0ppm				(1.50)	Medium dense greyish brown very clayey sandy angular to subrounded, fine to coarse GRAVEL of brick, concrete, quartzite and flint with low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of brick and quartzite. (MADE GROUND)		
1.30	ES2	VOC 0.0ppm				1.50			
1.30	SPT (c)	(19, 6, 24, 26, 0, 0) N = 50/85 mm		32.25					----- Borehole Terminated at 1.5m -----

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig		Logged By FA	Status FINAL



Borehole Log

Project Renaissance Manchester				Borehole No WS05	
Job No 17321	Start 20-12-21 Finish 21-12-21	Ground Level (mOD) 33.75	Co-Ordinates E 383,778.0 N 398,650.0		Depth (m) 1.5m
Client BG&E			SPT Energy Ratio 67%		Sheet 1 of 1

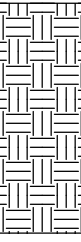
SAMPLES & TESTS							STRATA		Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
0.50	ES1	VOC 0.0ppm				(1.50)	Medium dense greyish brown very clayey sandy angular to subrounded, fine to coarse GRAVEL of brick, concrete, quartzite and flint with low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of brick and quartzite. (MADE GROUND)		
1.30	ES2	VOC 0.0ppm							
1.30	SPT (c)	(15, 10, 24, 26, 0, 0) N = 50/105 mm		32.25		1.50			----- Borehole Terminated at 1.5m -----

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Casing Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1. Borehole scanned with GPR, CAT & Genny 2. Vacuum excavated starter pit dug to 1.2m 3. Borehole refused at 1.5m on a concrete slab. No alternative location was possible due to underground services density in the area.
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig		Logged By FA	Status FINAL



Borehole Log

Project Renaissance Manchester				Borehole No WS08	
Job No 17321	Start 22-03-22 Finish 22-03-22	Ground Level (mOD) 25.16	Co-Ordinates E 383,736.8 N 398,645.1		Depth (m) 0.95m
Client BG&E			SPT Energy Ratio %		Sheet 1 of 1

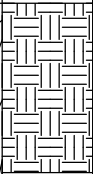
SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.50 0.50	ES1	VOC 0.0 ppm		25.09		0.07	
				25.01		0.15	
					(0.25)	0.40	
				24.76			
					(0.25)	0.65	
				24.51			
					(0.30)	0.95	
				24.21			
CONCRETE Slab							
Compact light red fine to medium SAND with occasional roots (MADE GROUND)							
Loose light grey angular to subangular coarse GRAVEL of type 1 material (MADE GROUND)							
Medium dense red slightly silty gravelly fine to coarse SAND with medium cobble content. Gravel is angular to subangular fine to coarse of granite, brick and sandstone. Cobbles are angular of brick and sandstone. (MADE GROUND) 0.50 ...with high cobble content from 0.5m...							
Brickwork (MADE GROUND)							
----- Borehole Terminated at 0.95m -----							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1.Borehole scanned with GPR, CAT & Genny 2.Borehole terminated due to refusal
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		Digging tools		Logged By FA	Status FINAL



Borehole Log

Project Renaissance Manchester				Borehole No WS08A	
Job No 17321	Start 23-03-22	Finish 23-03-22	Ground Level (mOD) 25.16	Co-Ordinates E 383,739.5 N 398,641.7	Depth (m) 0.7m
Client BG&E				SPT Energy Ratio %	Sheet 1 of 1

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Description	
0.50 0.50	ES1	VOC 0.0 ppm		25.09		0.07	
				25.01		0.15	
					(0.25)		
				24.76		0.40	
					(0.25)		
				24.51		0.65	
				24.46		0.70	
CONCRETE Slab							
Compact light red fine to medium SAND with occasional roots (MADE GROUND)							
Loose light grey angular to subangular coarse GRAVEL of type 1 material (MADE GROUND)							
Medium dense red slightly silty gravelly fine to coarse SAND with medium cobble content. Gravel is angular to subangular fine to coarse of granite, brick and sandstone. Cobbles are angular of brick and sandstone. (MADE GROUND)							
0.50 ... with high cobble content from 0.5m...							
Brickwork (MADE GROUND)							
----- Borehole Terminated at 0.7m -----							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1.Borehole scanned with GPR, CAT & Genny 2.Borehole terminated due to refusal
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		Digging tools		Logged By FA	Status FINAL



Borehole Log

Project Renaissance Manchester				Borehole No WS08B	
Job No 17321	Start 23-03-22 Finish 23-03-22	Ground Level (mOD) 25.16	Co-Ordinates E 383,735.5 N 398,640.3		Depth (m) 1.2m
Client BG&E			SPT Energy Ratio 67%		Sheet 1 of 1

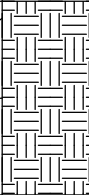
SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.60 0.60	ES1	VOC 0.0 ppm		25.09		0.07	
				25.01		0.15	
				(0.25)			
				24.76		0.40	
0.60 1.10	SPT (s)	(25, 50, 0, 0, 0, 0) N = 0/0 mm				(0.80)	
				23.96		1.20	
----- Borehole Terminated at 1.2m -----							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1.Borehole scanned with GPR, CAT & Genny 2.Borehole terminated due to refusal
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig	Logged By FA		Status FINAL



Borehole Log

Project Renaissance Manchester					Borehole No WS09	
Job No 17321		Start 22-03-22 Finish 22-03-22	Ground Level (mOD) 25.06	Co-Ordinates E 383,713.1 N 398,623.8		Depth (m) 0.8m
Client BG&E				SPT Energy Ratio %		Sheet 1 of 1

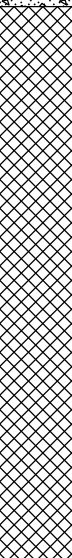
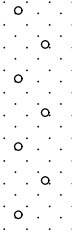
SAMPLES & TESTS							STRATA		Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
				24.99		0.07	CONCRETE slab		
				(0.33)		Medium dense grey angular to subangular medium to coarse GRAVEL of concrete, type 1 material and tarmacadam. (MADE GROUND)			
				24.66		0.40	Reinforced CONCRETE with 7mm diameter rebar mesh 40mm spaced.		
				24.26		(0.40)			
						0.80	----- Borehole Terminated at 0.8m -----		

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1.Borehole scanned with GPR, CAT & Genny 2.Borehole terminated due to refusal
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		Digging tools		Logged By FA	Status FINAL



Borehole Log

Project Renaissance Manchester				Borehole No WS09A	
Job No 17321	Start 22-03-22 Finish 22-03-22	Ground Level (mOD) 25.16	Co-Ordinates E 383,716.1 N 398,621.1		Depth (m) 4m
Client BG&E			SPT Energy Ratio 67%		Sheet 1 of 1

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.50 0.50	ES1	VOC 0.0 ppm		25.09		0.07	CONCRETE slab
						(0.33)	Medium dense grey angular to subangular medium to coarse GRAVEL of concrete, type 1 material and tarmacadam. (MADE GROUND)
				24.76		0.40	Reinforced CONCRETE with 7mm diameter rebar mesh 40mm spaced.
				24.46		0.70	
1.20	SPT (s)	(1, 1, 1, 1, 1, 1) N = 4				(2.30)	Loose to medium dense red slightly gravelly fine to coarse SAND with low cobble content. Gravel is angular to subangular fine to coarse of sandstone and brick. Cobbles are angular of brick and sandstone. (MADE GROUND)
1.50	ES2	VOC 0.0 ppm					
2.00	SPT (s)	(1, 2, 0, 1, 1, 0) N = 2					
2.50	ES3	VOC 0.0 ppm					
3.00	SPT (s)	(2, 1, 2, 1, 4, 4) N = 11				(1.00)	Medium dense reddish brown slightly gravelly fine to coarse SAND. Gravel is angular fine to coarse of sandstone. (Possible GLACIOFLUVIAL DEPOSITS)
3.50	ES4	VOC 0.0 ppm					
4.00	SPT (s)	(1, 0, 1, 1, 1, 0) N = 3					
----- Borehole Terminated at 4m -----							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Casing Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1. Borehole scanned with GPR, CAT & Genny 2. Groundwater strike at 2.9m
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig	Logged By FA		Status FINAL



A2 Site Investigation

One Westminster Bridge Road London SE1 7XW

Client
BG & E

Title
WS09A Photographic Record

Site
Renaissance Manchester

Core Run

-

Created
FA

Checked
RB

Authorised
DS

Depth From (m)
1.20

Depth To (m)
4.00

Status
FINAL

Rev
0

Project No
17321



Borehole Log

Project Renaissance Manchester				Borehole No WS10	
Job No 17321	Start 23-03-22 Finish 23-03-22	Ground Level (mOD) 25.11	Co-Ordinates E 383,703.7 N 398,616.7		Depth (m) 6m
Client BG&E			SPT Energy Ratio 67%		Sheet 1 of 2

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.50	ES1	VOC 0.0 ppm		25.04		0.07	
0.50				24.86		0.25	
				24.66		0.45	
1.20	SPT (s)	(1, 0, 1, 1, 2, 2) N = 6					
1.50	ES2	VOC 0.0 ppm					
2.00	SPT (s)	(2, 2, 1, 1, 2, 1) N = 5					
2.50	ES3	VOC 0.0 ppm					
3.00	SPT (s)	(1, 1, 1, 0, 0, 1) N = 2					
3.50	ES4	VOC 0.0 ppm					
4.00	SPT (s)	(4, 4, 3, 2, 2, 2) N = 9		21.11		4.00	
4.50	ES5	VOC 0.0 ppm					

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Casing Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1.Borehole scanned with GPR, CAT & Genny
							</				



Borehole Log

Project Renaissance Manchester				Borehole No WS10	
Job No 17321	Start 23-03-22 Finish 23-03-22	Ground Level (mOD) 25.11	Co-Ordinates E 383,703.7 N 398,616.7		Depth (m) 6m
Client BG&E			SPT Energy Ratio 67%		Sheet 2 of 2

SAMPLES & TESTS							STRATA	Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
5.00	SPT (s)	(3, 2, 2, 2, 3, 2) N = 9				(2.00)	Medium dense greyish brown clayey slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of brick, ceramic, glass and sandstone. (MADE GROUND) (continued)	
5.50 5.50	ES6	VOC 0.0 ppm				5.50 ...becomes very clayey from 5.5m...		
				19.11		6.00	----- Borehole Terminated at 6m -----	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Casing Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1. Borehole scanned with GPR, CAT & Genny
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig		Logged By FA	Status FINAL



A2 Site Investigation
One Westminister Bridge Road London SE1 7XW

Client
BG & E

Title
WS10 Photographic Record

Core Run
-

Depth From (m)
1.20

Depth To (m)
6.00

Site
Renaissance Manchester

Created
FA

Status
FINAL

Checked
RB

Rev
0

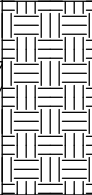
Authorised
DS

Project No
17321

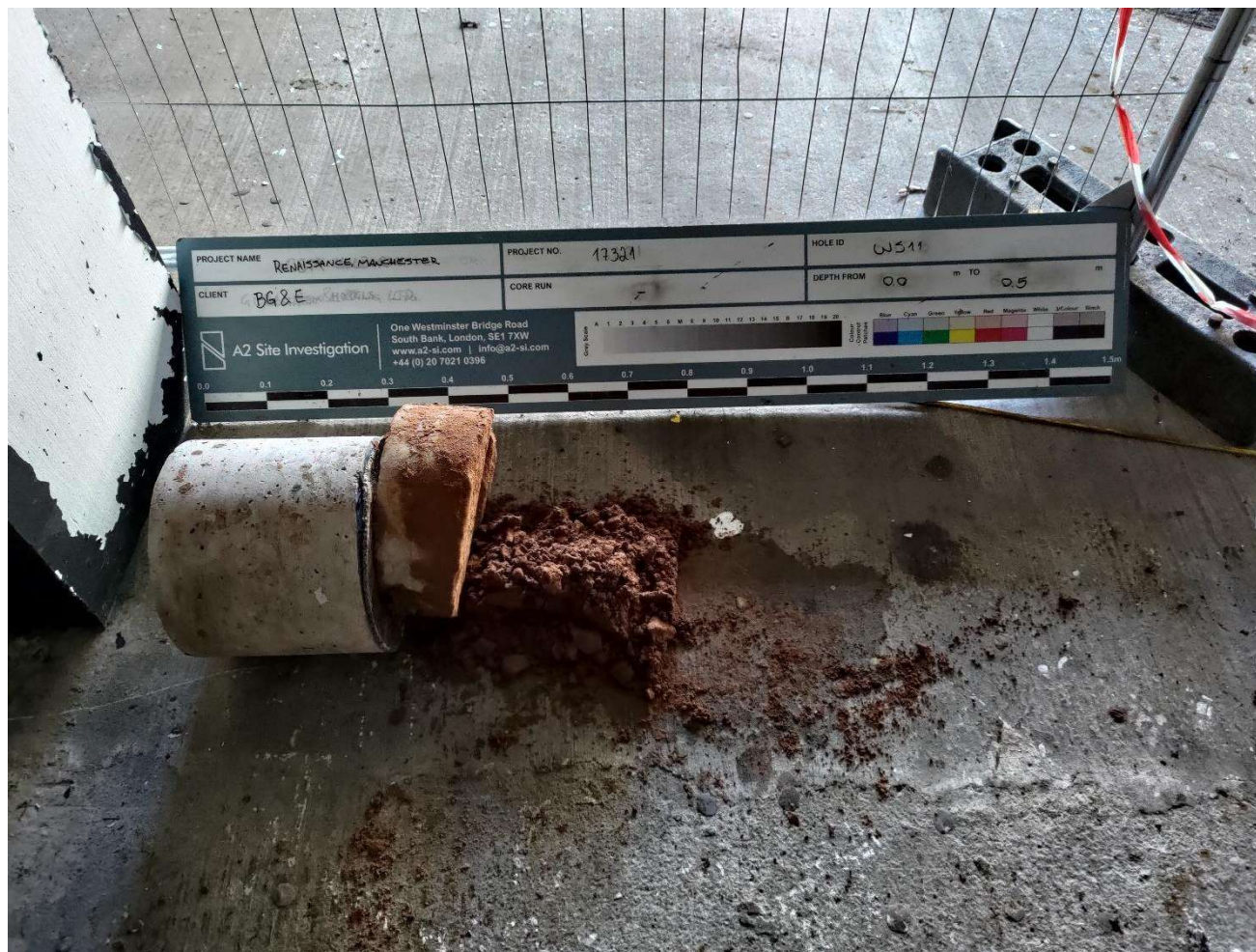


Borehole Log

Project Renaissance Manchester				Borehole No WS11	
Job No 17321	Start 22-03-22	Finish 22-03-22	Ground Level (mOD) 25.26	Co-Ordinates E 383,746.3 N 398,608.6	Depth (m) 0.8m
Client BG&E				SPT Energy Ratio 67%	Sheet 1 of 1

SAMPLES & TESTS							STRATA		Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
0.50 0.50 0.60	ES1 SPT (s)	VOC 0.0 ppm (25, 19, 50, 0, 0, 0) N = 50/70 mm				(0.25) 0.25	Car park CONCRETE slab		
				25.01		0.26		Rubber membrane	
				25.00		0.35		CONCRETE slab	
				24.91				Weak thinly to medium laminated reddish brown medium to coarse grained cemented SANDSTONE. Partially weathered (CHESTER FORMATION).	
						24.46		(0.45) 0.80	
----- Borehole Terminated at 0.8m -----									

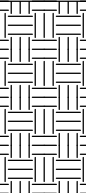
Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1.Borehole scanned with GPR, CAT & Genny 2.Borehole terminated due to refusal
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig	Logged By FA		Status FINAL





Borehole Log

Project Renaissance Manchester				Borehole No WS12	
Job No 17321	Start 22-03-22	Finish 22-03-22	Ground Level (mOD) 25.26	Co-Ordinates E 383,715.9 N 398,596.2	Depth (m) 0.8m
Client BG&E				SPT Energy Ratio 67%	Sheet 1 of 1

SAMPLES & TESTS							STRATA		Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
0.50 0.50 0.60	ES1 SPT (s)	VOC 0.0 ppm (25, 19, 50, 0, 0, 0) N = 50/70 mm				(0.25) 0.25	Car park CONCRETE slab		
				25.01					
				25.00		0.26	Rubber membrane		
				24.91		0.35	CONCRETE slab		
						(0.45)	Weak thinly to medium laminated reddish brown medium to coarse grained cemented SANDSTONE. Partially weathered (CHESTER FORMATION).		
			24.46			0.80			
----- Borehole Terminated at 0.8m -----									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Casing Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1.Borehole scanned with GPR, CAT & Genny 2.Borehole terminated due to refusal
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig	Logged By FA		Status FINAL



Client BG & E	Title WS12 Photographic Record		Site Renaissance Manchester		
	Core Run -		Created JS	Checked RB	Authorised DS
	Depth From (m) 0.00	Depth To (m) 0.80	Status FINAL	Rev 0	Project No 17321



Borehole Log

Project Renaissance Manchester				Borehole No WS13	
Job No 17321	Start 22-03-22 Finish 22-03-22	Ground Level (mOD) 25.08	Co-Ordinates E 383,688.0 N 398,598.0		Depth (m) 6m
Client BG&E			SPT Energy Ratio 67%		Sheet 1 of 2

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.50	ES1	VOC 0.0 ppm		25.01		0.07	
0.50						(0.43)	
1.00				24.58		0.50	
1.50	ES2	VOC 0.0 ppm				(2.50)	
1.50							
2.00							
2.50	ES3	VOC 0.0 ppm					
2.50							
3.00							
3.50	ES4	VOC 0.0 ppm					
3.50							
4.00							
4.00	ES5	VOC 0.0 ppm				(2.80)	
4.00							
4.00							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
											1. Borehole scanned with GPR, CAT & Genny 2. Groundwater strike at 3.5m 3. Hole collapsed to 4.0m before installation
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used		WS Rig		Logged By FA	Status FINAL



Borehole Log

Project Renaissance Manchester				Borehole No WS13
Job No 17321	Start 22-03-22 Finish 22-03-22	Ground Level (mOD) 25.08	Co-Ordinates E 383,688.0 N 398,598.0	Depth (m) 6m
Client BG&E			SPT Energy Ratio 67%	Sheet 2 of 2

SAMPLES & TESTS							STRATA	Instrument/ Backfill
Depth (m)	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
5.00	ES6 SPT (s)	(2, 0, 1, 0, 1, 0) N = 2 VOC 0.0 ppm					Loose to medium dense brownish grey clayey slightly gravelly fine to medium SAND. Gravel is angular to subangular fine to medium of brick and sandstone. (MADE GROUND) (<i>continued</i>)	
5.00								
5.00								
				19.28		5.80		
				19.08		6.00	Weak grey medium to coarse grained SANDSTONE (Possible CHESTER FORMATION)	
							----- Borehole Terminated at 6m -----	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Hole Depth (m)	Casing Depth	Dia. mm	Water Depth (m)	Remarks	From	To	Hours	From	To	
All dimensions in metres Scale 1:31.25		Contractor A2 Site Investigation				Method/ Plant Used WS Rig			Logged By FA		Status FINAL

Report ID: A2SI AGS BH LOG FINAL || Project: 17321 RENAISSANCE MANCHESTER,GPJ || Library: A2SI AGS 4_0.GLB || Date: 8 April 2022





Appendix C: Gas and Groundwater Monitoring Results

Environmental Monitoring & Sampling Services Limited

Report Number: C0997/4894
 Customer: A2 Site Investigation Limited
 Site Name: Renaissance, Deansgate, Manchester.
 Visit Date: 14/03/2022
 Monitoring Technician: Paul Brennan

Installation	Time	Water Level*	Installation Base*	Cover/pipe height above ground level*	Approx. gas sampling period	Methane (Peak)	Methane (Steady)	Methane (Peak)	Methane (Steady)	Carbon Dioxide (Peak)	Carbon Dioxide (Steady)	Oxygen (Low)	Oxygen (Steady)	Carbon Monoxide	Hydrogen Sulphide	Differential Pressure (Peak)	Differential Pressure (Steady)	Flow Rate (Peak)	Flow Rate (Steady)	Approx. flow rate sampling period	VOC (by PID 10.6ev lamp) (Peak)	VOC (by PID 10.6ev lamp) (Steady)	Atmospheric Pressure	Comments
	(hrs:min)	(m)	(m)	(m)	(sec)	(% Vol)	(% Vol)	(% LEL)	(% LEL)	(% Vol)	(% Vol)	(% Vol)	(% Vol)	(ppm)	(ppm)	(Pa)	(Pa)	(l/hr)	(l/hr)	(sec)	(ppm)	(ppm)	(mb)	
Start	09:57	-	-	-	-	-	<0.1	-	<0.1	-	<0.1	-	20.3	<1	<1	-	0	-	0.0	-	-	<1	1016	
Finish	11:47	-	-	-	-	-	<0.1	-	<0.1	-	<0.1	-	20.4	<1	<1	-	0	-	0.0	-	-	<1	1016	
RB101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No access active demolition taking place where installation located.
RB102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No access. Demolition in progress on floor above and pile of rubble over approx location of installation. No visible evidence on surface slab.
RB103	10:17	3.33	7.44	GL	300	-	<0.1	-	<0.1	-	0.7	-	19.3	<1	<1	-	0	-	0.0	60	-	<1	1016	
RB104	10:40	2.13	5.63	GL	300	-	<0.1	-	<0.1	-	1.7	-	18.1	<1	<1	-	0	-	0.0	60	-	<1	1016	
RB105	11:11	2.21	5.54	GL	300	-	<0.1	-	<0.1	-	<0.1	-	19.7	<1	<1	-	0	-	0.0	60	-	<1	1016	Bung slightly loose on arrival.
RB106	10:55	2.10	4.89	GL	300	-	<0.1	-	<0.1	-	<0.1	-	20.3	<1	<1	-	0	-	0.0	60	-	<1	1016	Backfill around installation collapsed and able to dip to 3.8m bgl outside pipe.
WS09A	11:28	3.41	3.70	GL	300	-	<0.1	-	<0.1	-	0.5	-	20.2	<1	<1	-	0	-	0.0	60	-	<1	1016	
WS13	11:43	3.41	4.10	GL	300	-	<0.1	-	<0.1	-	0.6	-	19.7	<1	<1	-	0	-	0.0	60	-	<1	1016	

Instrument	Manufacturer	Model	S/N	Calibration Date	These works have been undertaken in accordance with the following monitoring & sampling methodologies:
Infra Red Gas Analyser	Gas Data	GFM430	10167	23/02/2022	Method Statement for Ground Gas Determinations IRGA & PID v2. Peak ground gas or low oxygen concentrations are reported only when different to steady readings.
Dipmeter	Geotechnical Instruments	DM2.1-60	79964		Method Statement for Groundwater and Product Level Measurement v2.
Interface Meter	Not utilised	N/A	N/A		* = Water and base level measurements dipped to top of cover or pipe if no cover.
Photoionisation Detector.	RAE Systems	PGM6208	M01C009161	24/01/2022	PID concentrations determined over 180 seconds.

Weather Conditions:					Site Conditions:	
Temperature (°C)	10-12	Precipitation:	Dry	Ground Conditions:	Dry	
Wind Conditions	Light breeze becoming gentle breeze	Cloud Cover:	Clear becoming cloudy			

Results and factual data included in this report are representative of the conditions encountered during the event.
 EMSS Ltd cannot be responsible for the suitability of installations installed.



Low Flow Monitoring & Sampling Test Report

Location:	RB103	Well diameter:	50
Report Number:	C0997/4895	Project:	Renaissance, Deansgate.
Client:	A2 Site Investigation Limited		
Test Date:	14/03/2022	Operator:	Paul Brennan

Level Measurements taken to:	Top of cover.		
Depth to water (m):	3.32	Total depth (m):	7.42
Depth to LNAPL (m):	ND	Depth to DNAPL (m):	ND
Cover level above ground level (m):	GL	Pipe below cover (m):	0.12
Approximate tube position (m):	3.8	Screen depth (mbgl):	2-10
Cover level (mAOD):	0.00		
Initial depth to water (mAOD)	-3.32	Total depth (mAOD)	-7.42

Estimated volume pumped (Ltrs):	17	Flow Rate (ml/min)	410-430
Pump Type - Solinst 410 Peristaltic.		Tubing type:	LDPE
Device Model - SmarTROLL MP		Device S/N -	339309

Time	pH	Temperature	Electrical Conductivity	Dissolved Oxygen	ORP	Depth	Depth
(hh:mm)	(pH Units)	(°C)	(µS/cm)	(%)	(mV)	(m)	(mAOD)
13:05	7.17	10.7	2345.5	48.6	418	3.40	-
13:10	7.17	11.0	2366.0	10.0	274	3.46	-
13:15	7.16	10.9	2335.8	10.5	254	3.48	-
13:20	7.15	11.0	2317.6	10.1	245	3.49	-
13:25	7.14	11.0	2337.7	8.7	250	3.49	-
13:30	7.14	11.1	2348.1	7.9	252	3.49	-
13:35	7.13	11.1	2376.7	7.0	253	3.49	-
13:40	7.12	11.2	2386.5	5.4	255	3.50	-
13:45	7.11	11.3	2393.2	4.8	252	3.50	-

Sample Description:

Clear, no obvious odour or sheen.

Containers:

1 x 1ltr glass, 1 x 1ltr plastic, 2 x vials, 1 x fixed cyanide, 1 x fixed ammonia & COD.

Comments:

Installation inside demolition area and could only be done 14/3/22.

Laboratory Job Number:

Unknown.



Low Flow Monitoring & Sampling Test Report

Location:	RB104	Well diameter:	50
Report Number:	C0997/4895	Project:	Renaissance, Deansgate.
Client:	A2 Site Investigation Limited		
Test Date:	14/03/2022	Operator:	Paul Brennan

Level Measurements taken to:	Top of cover.		
Depth to water (m):	2.12	Total depth (m):	5.62
Depth to LNAPL (m):	ND	Depth to DNAPL (m):	ND
Cover level above ground level (m):	GL	Pipe below cover (m):	0.10
Approximate tube position (m):	2.6	Screen depth (mbgl):	2-10
Cover level (mAOD):	0.00		
Initial depth to water (mAOD)	-2.12	Total depth (mAOD)	-5.62

Estimated volume pumped (Ltrs):	20	Flow Rate (ml/min)	470-500
Pump Type - Solinst 410 Peristaltic.		Tubing type:	LDPE
Device Model - SmarTROLL MP		Device S/N -	339309

Time	pH	Temperature	Electrical Conductivity	Dissolved Oxygen	ORP	Depth	Depth
(hh:mm)	(pH Units)	(°C)	(µS/cm)	(%)	(mV)	(m)	(mAOD)
14:22	7.10	10.3	1266.7	9.7	476	2.24	-
14:27	7.12	10.5	1263.0	3.0	308	2.36	-
14:32	7.11	10.6	1250.1	2.5	265	2.43	-
14:37	7.13	10.7	1230.1	3.1	241	2.48	-
14:42	7.14	10.7	1207.1	4.5	239	2.53	-
14:47	7.13	10.7	1202.7	6.0	231	2.54	-
14:52	7.13	10.7	1186.3	8.2	236	2.56	-
14:57	7.14	10.8	1153.2	8.7	229	2.58	-
15:02	7.15	10.8	1135.7	10.0	235	2.58	-

Sample Description:

Pale brown, no obvious odour or sheen.

Containers:

1 x 1ltr glass, 1 x 1ltr plastic, 2 x vials, 1 x fixed cyanide, 1 x fixed ammonia & COD.

Comments:

Soft bottom.

Laboratory Job Number:

Unknown.



Low Flow Monitoring & Sampling Test Report

Location:	RB105	Well diameter:	50
Report Number:	C0997/4895	Project:	Renaissance, Deansgate.
Client:	A2 Site Investigation Limited		
Test Date:	15/03/2022	Operator:	Paul Brennan

Level Measurements taken to:		Top of cover.	
Depth to water (m):	2.17	Total depth (m):	5.55
Depth to LNAPL (m):	ND	Depth to DNAPL (m):	ND
Cover level above ground level (m):	GL	Pipe below cover (m):	0.25
Approximate tube position (m):	2.7	Screen depth (mbgl):	2-10
Cover level (mAOD):	0.00		
Initial depth to water (mAOD)	-2.17	Total depth (mAOD)	-5.55

Estimated volume pumped (Ltrs):	15	Flow Rate (ml/min)	470-480
Pump Type - Solinst 410 Peristaltic.		Tubing type:	LDPE
Device Model - SmarTROLL MP		Device S/N - 339309	

Time	pH	Temperature	Electrical Conductivity	Dissolved Oxygen	ORP	Depth	Depth
(hh:mm)	(pH Units)	(°C)	(µS/cm)	(%)	(mV)	(m)	(mAOD)
07:56	7.34	9.8	381.3	48.4	402	2.27	-
08:01	7.39	10.5	376.5	44.4	237	2.33	-
08:06	7.39	10.5	376.6	44.0	198	2.36	-
08:11	7.41	10.6	376.7	44.9	186	2.39	-
08:16	7.43	10.7	375.1	43.8	176	2.39	-
08:21	7.44	10.7	375.4	43.4	178	2.40	-
08:26	7.45	10.7	376.2	42.7	181	2.40	-

Sample Description:

Clear, no obvious odour or sheen.

Containers:

1 x 1ltr glass, 1 x 1ltr plastic, 2 x vials, 1 x fixed cyanide, 1 x fixed ammonia & COD.

Comments:

Laboratory Job Number:

Unknown.



Low Flow Monitoring & Sampling Test Report

Location:	RB106	Well diameter:	50
Report Number:	C0997/4895	Project:	Renaissance, Deansgate.
Client:	A2 Site Investigation Limited		
Test Date:	14/03/2022	Operator:	Paul Brennan

Level Measurements taken to:	Top of cover.		
Depth to water (m):	2.10	Total depth (m):	4.90
Depth to LNAPL (m):	ND	Depth to DNAPL (m):	ND
Cover level above ground level (m):	GL	Pipe below cover (m):	0.14
Approximate tube position (m):	2.6	Screen depth (mbgl):	2-10
Cover level (mAOD):	0.00		
Initial depth to water (mAOD)	-2.10	Total depth (mAOD)	-4.90

Estimated volume pumped (Ltrs):	24	Flow Rate (ml/min)	630-650
Pump Type - Solinst 410 Peristaltic.		Tubing type:	LDPE
Device Model - SmarTROLL MP		Device S/N -	339309

Time	pH	Temperature	Electrical Conductivity	Dissolved Oxygen	ORP	Depth	Depth
(hh:mm)	(pH Units)	(°C)	(µS/cm)	(%)	(mV)	(m)	(mAOD)
15:36	7.18	10.2	951.2	67.9	406	2.21	-
15:41	7.18	10.3	1060.7	64.7	269	2.26	-
15:46	7.18	10.4	1130.6	64.5	250	2.29	-
15:51	7.17	10.4	1161.3	64.7	235	2.30	-
15:56	7.19	10.5	1194.9	64.6	234	2.30	-
16:01	7.17	10.5	1221.4	64.7	235	2.30	-
16:06	7.17	10.5	1250.5	64.6	228	2.30	-
16:11	7.16	10.5	1264.7	64.3	232	2.31	-
16:16	7.16	10.5	1278.0	64.0	226	2.32	-

Sample Description:

Clear, no obvious odour or sheen.

Containers:

1 x 1ltr glass, 1 x 1ltr plastic, 2 x vials, 1 x fixed cyanide, 1 x fixed ammonia & COD.

Comments:

Soft bottom.

Laboratory Job Number:

Unknown.



Low Flow Monitoring & Sampling Test Report

Location:	WS09A	Well diameter:	50
Report Number:	C0997/4895	Project:	Renaissance, Deansgate.
Client:	A2 Site Investigation Limited		
Test Date:	15/03/2022	Operator:	Paul Brennan

Level Measurements taken to:	Top of cover.		
Depth to water (m):	3.41	Total depth (m):	3.71
Depth to LNAPL (m):	ND	Depth to DNAPL (m):	ND
Cover level above ground level (m):	GL	Pipe below cover (m):	0.17
Approximate tube position (m):	Near base	Screen depth (mbgl):	2-3.5
Cover level (mAOD):	0.00		
Initial depth to water (mAOD)	-3.41	Total depth (mAOD)	-3.71

Estimated volume pumped (Ltrs):	2	Flow Rate (ml/min)	140
Pump Type - Solinst 410 Peristaltic.		Tubing type:	LDPE
Device Model - SmarTROLL MP		Device S/N -	339309

Time	pH	Temperature	Electrical Conductivity	Dissolved Oxygen	ORP	Depth	Depth
(hh:mm)	(pH Units)	(°C)	(µS/cm)	(%)	(mV)	(m)	(mAOD)
09:12	7.40	9.4	902.9	32.9	395	3.47	-
09:17	7.41	10.1	875.9	27.5	270	3.51	-
09:22	7.40	10.2	889.4	30.8	251	3.52	-

Sample Description:

Pale brown, no obvious odour or sheen.

Containers:

1 x 1ltr glass, 1 x 1ltr plastic, 2 x vials, 1 x fixed cyanide, 1 x fixed ammonia & COD.

Comments:

Low pump rate due to column depth. Commenced sampling due to falling water level.

Laboratory Job Number:

Unknown.



Low Flow Monitoring & Sampling Test Report

Location:	WS13	Well diameter:	50
Report Number:	C0997/4895	Project:	Renaissance, Deansgate.
Client:	A2 Site Investigation Limited		
Test Date:	15/03/2022	Operator:	Paul Brennan

Level Measurements taken to:	Top of cover.		
Depth to water (m):	3.41	Total depth (m):	4.10
Depth to LNAPL (m):	ND	Depth to DNAPL (m):	ND
Cover level above ground level (m):	GL	Pipe below cover (m):	0.14
Approximate tube position (m):	Near base	Screen depth (mbgl):	2-4
Cover level (mAOD):	0.00		
Initial depth to water (mAOD)	-3.41	Total depth (mAOD)	-4.10

Estimated volume pumped (Ltrs):	19	Flow Rate (ml/min)	390-440
Pump Type - Solinst 410 Peristaltic.		Tubing type:	LDPE
Device Model - SmarTROLL MP		Device S/N -	339309

Time	pH	Temperature	Electrical Conductivity	Dissolved Oxygen	ORP	Depth	Depth
(hh:mm)	(pH Units)	(°C)	(µS/cm)	(%)	(mV)	(m)	(mAOD)
10:12	7.37	9.1	851.7	42.9	319	3.48	-
10:17	7.35	8.2	914.1	2.5	235	3.47	-
10:22	7.35	8.2	944.1	1.6	220	3.48	-
10:27	7.36	8.2	951.9	1.4	210	3.48	-
10:32	7.35	8.2	953.8	1.4	201	3.48	-
10:37	7.35	8.3	957.7	1.3	193	3.48	-
10:42	7.35	8.3	955.2	1.3	186	3.48	-
10:47	7.35	8.3	964.4	1.3	182	3.48	-
10:52	7.35	8.3	962.2	1.2	176	3.48	-

Sample Description:

Clear with grey tint, no obvious odour or sheen.

Containers:

1 x 1ltr glass, 1 x 1ltr plastic, 2 x vials, 1 x fixed cyanide, 1 x fixed ammonia & COD.

Comments:

Soft botom. Initial water heavy with sediment and allowed to bypass the flow through cell.

Laboratory Job Number:

Unknown.





Appendix D: Geotechnical Laboratory Testing



Contract Number: 57522

Client Ref: **17321**
Client PO: **PO503**

Report Date: **04-02-2022**

Client **A2 Site Investigation Limited**
Broom House, 39/43 London Road,
Hadleigh, Benfleet,
Essex
SS7 2QL

Contract Title: **Renaissance Manchester**
For the attention of: **Fernando Afonso**

Date Received: **12-01-2022**
Date Completed: **04-02-2022**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	1
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	1
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	2
PSD: Sedimentation by pipette carried out with Wet Sieve (Wet Sieve must also be selected) BS 1377:1990 - Part 2 : 9.4 - * UKAS	2
BRE Reduced Suite includes pH, water & acid soluble sulphate and total sulphur Sub-contracted Test - @ Non Accredited Test	2
Quick Undrained Triaxial Compression test - single specimen at one confining pressure (100mm or 38mm diameter) BS 1377:1990 - Part 7 : 8 - * UKAS	1

Notes: Observations and Interpretations are outside the UKAS Accreditation
* - denotes test included in laboratory scope of accreditation
- denotes test carried out by approved contractor
@ - denotes non accredited tests

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 Signatories:

Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)
Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)



Laboratory Report



GEO Site & Testing Services Ltd

Contract Number: 57522

Test Description	Qty
Determination of Point Load Value Axial or Diametrical including WC *Please note GSTL is not accredited for the water content of rock* ISRM Suggested Method for Point Load Strength - * UKAS	3
Disposal of samples for job	1

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

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 Signatories:

Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)

Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)

GEO Site & Testing Services Ltd

Unit 3-4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN

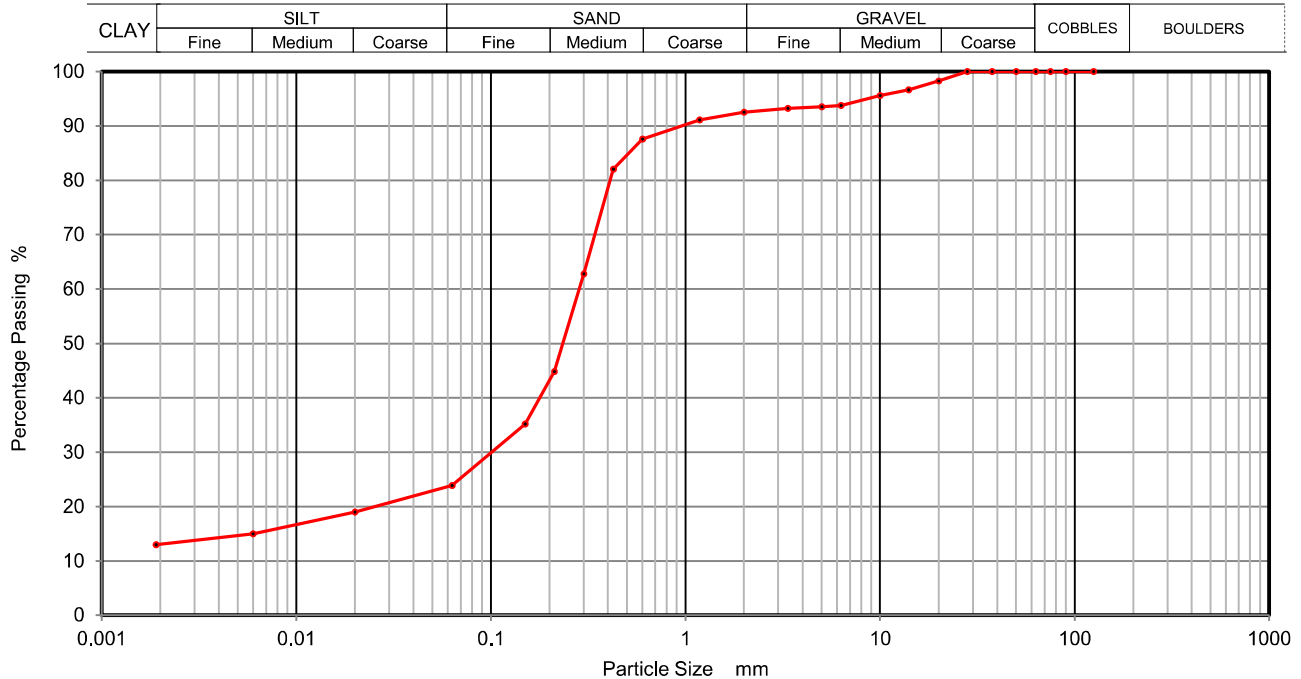
Tel: 01554 784040 Fax: 01554 784041 info@gstl.co.uk gstl.co.uk



PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Contract Number	Renaissance Manchester
Borehole/Pit No.	BH01
Sample No.	
Depth Top	2.00
Depth Base	2.50
Sample Type	B

Site Name	57522
Soil Description	Brown slightly fine to coarse gravelly silty clayey fine to coarse SAND
Date Tested	02/02/2022



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	19
90	100	0.0060	15
75	100	0.0020	13
63	100		
50	100		
37.5	100		
28	100		
20	98		
14	97		
10	96		
6.3	94		
5	94		
3.35	93		
2	93		
1.18	91		
0.6	88		
0.425	82		
0.3	63		
0.212	45		
0.15	35		
0.063	24		

Sample Proportions	% dry mass
Cobbles	0
Gravel	7
Sand	69
Silt	11
Clay	13

Remarks
Preparation and testing in accordance with BS1377 unless noted below

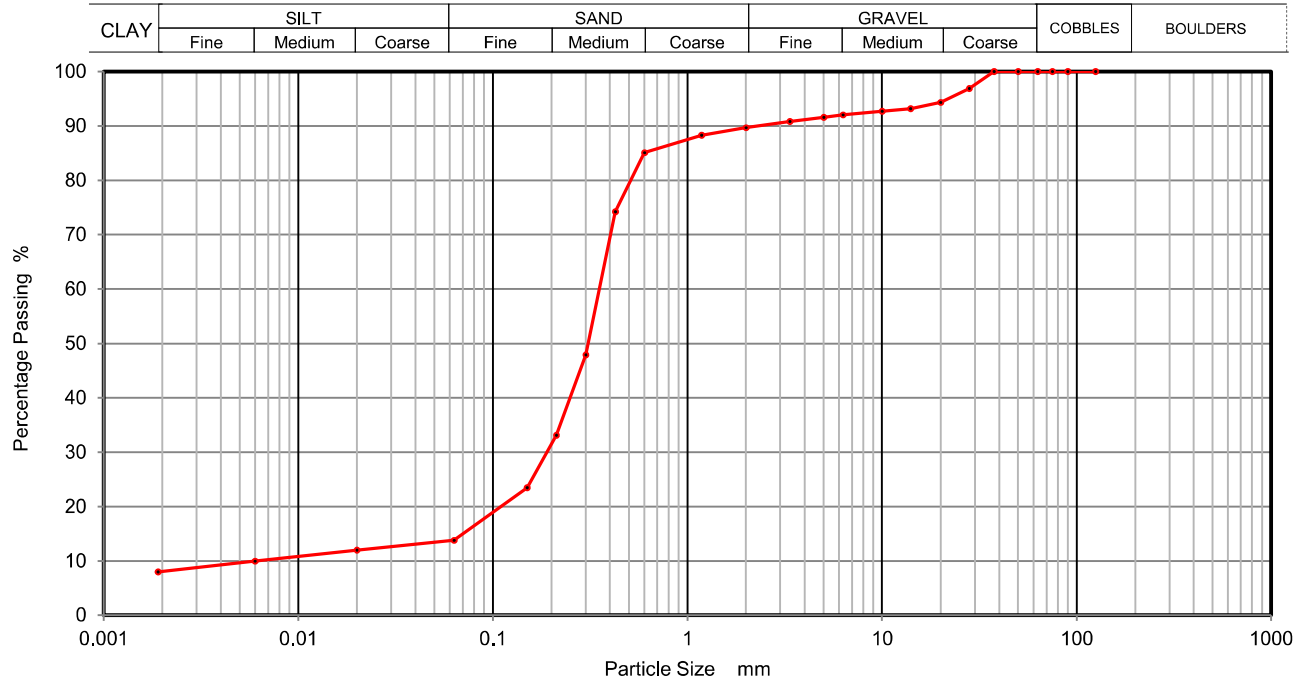
Operator	Checked	03/02/2022	Richard John	
David	Approved	04/02/2022	Paul Evans	





PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4	Contract Number	Renaissance Manchester
		Borehole/Pit No.	BH01
Site Name	57522	Sample No.	
Soil Description	Brown slightly silty slightly clayey fine to coarse gravelly fine to coarse SAND	Depth Top	4.00
		Depth Base	4.50
Date Tested	02/02/2022	Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0200	12
90	100	0.0060	10
75	100	0.0020	8
63	100		
50	100		
37.5	100		
28	97		
20	94		
14	93		
10	93		
6.3	92		
5	92		
3.35	91		
2	90		
1.18	88		
0.6	85		
0.425	74		
0.3	48		
0.212	33		
0.15	24		
0.063	14		

Sample Proportions	% dry mass
Cobbles	0
Gravel	10
Sand	76
Silt	6
Clay	8

Remarks
 Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	03/02/2022	Richard John	
David	Approved	04/02/2022	Paul Evans	





**Single Stage Unconsolidated-Undrained Triaxial
Test
BS 1377 : 1990 Part 7 : 8**

Contract Number 57522

Borehole/Pit No. BH01

Site Name Renaissance Manchester

Sample No.

Soil Description Brown silty CLAY

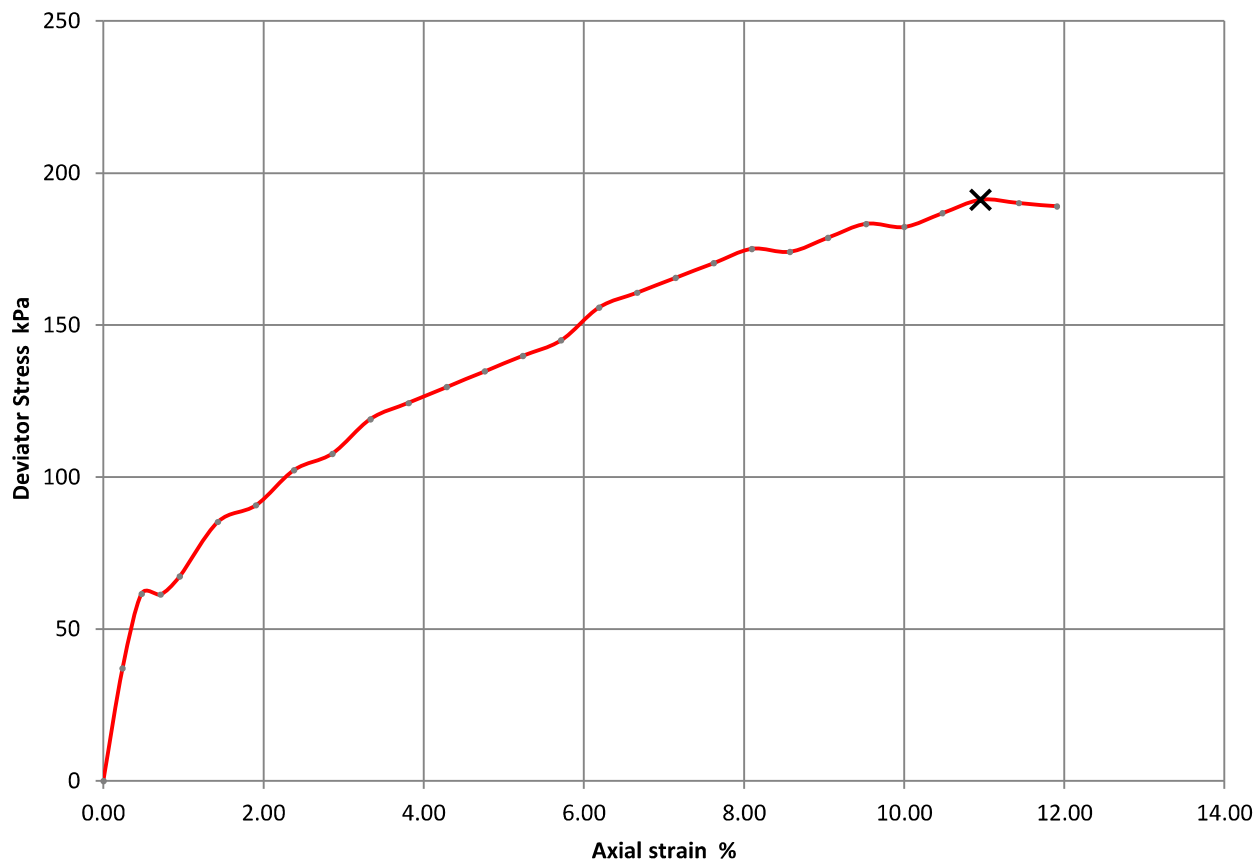
Depth Top (m) 3.30

Depth Base (m) 3.60

Date Tested 31/01/2022

Sample Type U

Technician Daniel B



Moisture Content (%)	13
Bulk Density (Mg/m ³)	2.03
Dry Density (Mg/m ³)	1.80
Specimen Length (mm)	210
Specimen Diameter (mm)	105
Cell Pressure (kPa)	60
Deviator Stress (kPa)	191
Undrained Shear Strength (kPa)	96
Failure Strain (%)	11
Mode Of Failure	Compound
Membrane Used/Thickness	Rubber/0.3mm
Rate of Strain (%/min)	1.43

Checked	03/02/2022	Richard John	
Approved	04/02/2022	Paul Evans	







ANALYTICAL TEST REPORT

Contract no: 104799

Contract name: Renaissance, Manchester

Client reference: 17321

Clients name: Geo Site & Testing Services

Clients address: Unit 3 and 4 Heol Aur
Dafen Industrial Estate, Dafen
Llanelli, Carmarthenshire
SA14 8QN

Samples received: 20 January 2022

Analysis started: 20 January 2022

Analysis completed: 27 January 2022

Report issued: 27 January 2022

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
\$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by:

Megan Harris

Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			104799-1	104799-2
Sample id			BH01	BH01
Depth (m)			2.00-2.50	3.50
Sample Type			B	D
Date sampled			-	-
Test	Method	Units		
pH	CE004 ^U	units	8.9	8.9
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	<10	24
Sulphate (total)	CE062 ^U	mg/kg SO ₄	<100	<100
Sulphate (total)	CE062 ^U	% w/w SO ₄	<0.01	<0.01
Sulphur (total)	CE119	mg/kg S	<100	<100
Sulphur (total)	CE119	% w/w S	<0.01	<0.01

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO ₄
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	U	100	mg/kg SO ₄
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	U	0.01	% w/w SO ₄
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		100	mg/kg S
CE119	Sulphur (total)	Acid extraction, ICP-OES	Dry		0.01	% w/w S

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
104799-1	BH01	2.00-2.50	Y	All (NSD)
104799-2	BH01	3.50	Y	All (NSD)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

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

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.



Appendix E: Geo-Environmental Testing



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Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 22-37881

Issue: 1

Date of Issue: 11/01/2022

Contact: ELAB Results

Customer Details: A2 Site Investigation Limited
One Westminster Bridge Road
South Bank
London
SE1 7XW

Quotation No: Q20-01974

Order No: PO507

Customer Reference: 17321

Date Received: 23/12/2021

Date Approved: 11/01/2022

Details: Renaissance, Manchester

Approved by:

Mike Varley, General Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

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Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
262855	BH01 0.40	20/12/2021	04/01/2022	Loamy sand	g
262856	BH01 1.20	20/12/2021	04/01/2022		
262857	BH01 1.70	21/12/2021	04/01/2022	Sand	
262858	BH01 5.00	21/12/2021	04/01/2022		
262859	BH01 3.00	21/12/2021	04/01/2022	Sand	
262860	BH01 4.00	21/12/2021	04/01/2022	Sandy clay	
262861	WS01 0.40	20/12/2021	04/01/2022		
262862	WS01 1.20	20/12/2021	04/01/2022	Loamy sand	g
262863	WS02 0.50	20/12/2021	04/01/2022	Sandy silty loam	g
262864	WS02 1.30	20/12/2021	04/01/2022		
262865	WS02 2.30	21/12/2021	04/01/2022	Sandy loam	g
262866	WS02 3.00	21/12/2021	04/01/2022		
262867	WS02 3.80	21/12/2021	04/01/2022		
262868	WS03 0.40	20/12/2021	04/01/2022	Loamy sand	g
262869	WS03 1.30	20/12/2021	04/01/2022		
262870	WS04 0.50	20/12/2021	04/01/2022		
262871	WS04 1.30	20/12/2021	04/01/2022	Loamy sand	g
262872	WS05 0.50	20/12/2021	04/01/2022		
262873	WS05 1.30	20/12/2021	04/01/2022	Loamy sand	g

Results Summary

Report No.: 22-37881, issue number 1

ELAB Reference	262855	262857	262859	262860	262862	262863	262865	262868	262871	262873
Customer Reference										
Sample ID										
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	BH01	BH01	BH01	BH01	WS01	WS02	WS02	WS03	WS04	WS05
Sample Depth (m)	0.40	1.70	3.00	4.00	1.20	0.50	2.30	0.40	1.30	1.30
Sampling Date	20/12/2021	21/12/2021	21/12/2021	21/12/2021	20/12/2021	20/12/2021	21/12/2021	20/12/2021	20/12/2021	20/12/2021

Determinand	Codes	Units	LOD										
Soil sample preparation parameters													
Moisture Content	N	%	0.1	11.9	14.4	17.9	13.1	11.7	4.9	6.4	10.3	12.1	10.5
Material removed	N	%	0.1	42.5	14.8	< 0.1	< 0.1	42.5	68.9	61.3	51.0	41.3	45.7
Description of Inert material removed	N		0	Stones,clinker	Stones	None	None	Stones	Stones	Stones	Stones,clinker	Stones,clinker	Stones
Metals													
Arsenic	M	mg/kg	1	37.5	n/t	n/t	n/t	17.2	8.3	7.8	14.7	22.8	18.9
Barium	U	mg/kg	10	325	n/t	n/t	n/t	238	1090	80.4	169	266	302
Beryllium	U	mg/kg	1	4.0	n/t	n/t	n/t	1.1	1.1	< 1.0	1.4	1.3	1.1
Cadmium	M	mg/kg	0.5	0.6	n/t	n/t	n/t	0.9	2.1	1.8	0.6	1.1	0.9
Chromium	M	mg/kg	5	41.6	n/t	n/t	n/t	26.3	19.6	15.7	25.7	28.3	29.6
Chromium (III)	N	mg/kg	5	41.6	n/t	n/t	n/t	26.3	19.6	15.7	25.7	28.3	29.6
Copper	M	mg/kg	5	154	n/t	n/t	n/t	77.2	29.8	19.8	55.2	128	89.1
Lead	M	mg/kg	5	157	n/t	n/t	n/t	206	95.5	27.2	142	500	220
Mercury	M	mg/kg	0.5	< 0.5	n/t	n/t	n/t	1.1	< 0.5	< 0.5	< 0.5	5.0	1.3
Molybdenum	N	mg/kg	0.5	8.4	n/t	n/t	n/t	2.0	1.8	1.3	2.9	2.2	2.0
Nickel	M	mg/kg	5	69.5	n/t	n/t	n/t	28.2	41.4	26.4	34.8	31.8	28.4
Selenium	M	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium	M	mg/kg	5	72.2	n/t	n/t	n/t	25.5	18.7	11.9	31.2	31.2	27.8
Zinc	M	mg/kg	5	192	n/t	n/t	n/t	144	169	197	129	217	155
Anions													
Water Soluble Sulphate	M	g/l	0.02	n/t	0.02	< 0.02	0.03	n/t	n/t	n/t	n/t	n/t	n/t
Water Soluble Sulphate	M	mg/kg	40	180	n/t	n/t	n/t	41	182	210	166	180	54
Inorganics													
Free Cyanide	N	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	n/t	n/t	n/t	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Total Cyanide	M	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphur	N	%	0.01	n/t	0.02	0.01	0.01	n/t	n/t	n/t	n/t	n/t	n/t
Acid Soluble Sulphate (SO4)	U	%	0.02	n/t	0.02	< 0.02	0.02	n/t	n/t	n/t	n/t	n/t	n/t
Water Soluble Boron	N	mg/kg	0.5	1.9	n/t	n/t	n/t	< 0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5

Results Summary

Report No.: 22-37881, issue number 1

				262855	262857	262859	262860	262862	262863	262865	262868	262871	262873
ELAB Reference													
Customer Reference													
Sample ID													
Sample Type				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location				BH01	BH01	BH01	BH01	WS01	WS02	WS02	WS03	WS04	WS05
Sample Depth (m)				0.40	1.70	3.00	4.00	1.20	0.50	2.30	0.40	1.30	1.30
Sampling Date				20/12/2021	21/12/2021	21/12/2021	21/12/2021	20/12/2021	20/12/2021	21/12/2021	20/12/2021	20/12/2021	20/12/2021
Determinand	Codes	Units	LOD										
Miscellaneous													
Fraction of Organic Carbon	N		0.0001	0.0250	n/t	n/t	n/t	0.0100	0.0040	0.0020	0.0080	0.0150	0.0100
pH	M	pH units	0.1	9.7	8.7	8.8	8.5	9.0	8.9	8.8	9.7	9.4	9.2
Soil Organic Matter	U	%	0.1	4.0	n/t	n/t	n/t	1.6	0.5	0.2	1.1	2.4	1.5
Total Organic Carbon	N	%	0.01	2.5	n/t	n/t	n/t	1.0	0.40	0.20	0.80	1.5	1.0
Phenols													
Phenol	M	mg/kg	1	< 1	n/t	n/t	n/t	< 1	n/t	n/t	n/t	< 1	n/t
M,P-Cresol	N	mg/kg	1	< 1	n/t	n/t	n/t	< 1	n/t	n/t	n/t	< 1	n/t
O-Cresol	N	mg/kg	1	< 1	n/t	n/t	n/t	< 1	n/t	n/t	n/t	< 1	n/t
3,4-Dimethylphenol	N	mg/kg	1	< 1	n/t	n/t	n/t	< 1	n/t	n/t	n/t	< 1	n/t
2,3-Dimethylphenol	M	mg/kg	1	< 1	n/t	n/t	n/t	< 1	n/t	n/t	n/t	< 1	n/t
2,3,5-trimethylphenol	M	mg/kg	1	< 1	n/t	n/t	n/t	< 1	n/t	n/t	n/t	< 1	n/t
Total Monohydric Phenols	N	mg/kg	5	< 5	n/t	n/t	n/t	< 5	n/t	n/t	n/t	< 5	n/t
Polyaromatic hydrocarbons													
Naphthalene	M	mg/kg	0.1	< 0.1	n/t	n/t	n/t	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	n/t	n/t	n/t	< 0.1	< 0.1	< 0.1	< 0.1	0.3	< 0.1
Acenaphthene	M	mg/kg	0.1	0.3	n/t	n/t	n/t	0.1	< 0.1	< 0.1	0.2	4.6	0.1
Fluorene	M	mg/kg	0.1	0.2	n/t	n/t	n/t	< 0.1	< 0.1	< 0.1	0.1	2.9	< 0.1
Phenanthrene	M	mg/kg	0.1	2.1	n/t	n/t	n/t	0.8	0.4	< 0.1	1.4	26.1	0.8
Anthracene	M	mg/kg	0.1	0.5	n/t	n/t	n/t	0.2	0.1	< 0.1	0.3	5.7	0.2
Fluoranthene	M	mg/kg	0.1	2.4	n/t	n/t	n/t	0.8	0.7	0.1	2.5	31.4	1.0
Pyrene	M	mg/kg	0.1	2.0	n/t	n/t	n/t	0.8	0.6	0.1	2.0	27.1	0.9
Benzo(a)anthracene	M	mg/kg	0.1	1.0	n/t	n/t	n/t	0.4	0.3	< 0.1	1.0	12.2	0.5
Chrysene	M	mg/kg	0.1	1.3	n/t	n/t	n/t	0.5	0.4	< 0.1	1.3	15.8	0.7
Benzo(b)fluoranthene	M	mg/kg	0.1	1.1	n/t	n/t	n/t	0.5	0.3	< 0.1	1.0	17.1	0.5
Benzo(k)fluoranthene	M	mg/kg	0.1	1.1	n/t	n/t	n/t	0.5	0.3	< 0.1	1.2	10.4	0.5
Benzo(a)pyrene	M	mg/kg	0.1	1.1	n/t	n/t	n/t	0.5	0.3	< 0.1	1.1	13.2	0.5
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	0.7	n/t	n/t	n/t	0.2	0.2	< 0.1	0.7	8.0	0.4
Dibenzo(a,h)anthracene	M	mg/kg	0.1	0.2	n/t	n/t	n/t	< 0.1	< 0.1	< 0.1	0.2	1.6	0.1
Benzo(g,h,i)perylene	M	mg/kg	0.1	0.5	n/t	n/t	n/t	0.2	0.2	< 0.1	0.6	7.1	0.3
Total PAH(16)	M	mg/kg	0.4	14.6	n/t	n/t	n/t	5.6	4.1	0.8	13.8	184	6.7

Results Summary

Report No.: 22-37881, issue number 1

ELAB Reference	262855	262857	262859	262860	262862	262863	262865	262868	262871	262873
Customer Reference										
Sample ID										
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	BH01	BH01	BH01	BH01	WS01	WS02	WS02	WS03	WS04	WS05
Sample Depth (m)	0.40	1.70	3.00	4.00	1.20	0.50	2.30	0.40	1.30	1.30
Sampling Date	20/12/2021	21/12/2021	21/12/2021	21/12/2021	20/12/2021	20/12/2021	21/12/2021	20/12/2021	20/12/2021	20/12/2021

Determinand	Codes	Units	LOD	20/12/2021	21/12/2021	27/12/2021	27/12/2021	28/12/2021	28/12/2021	29/12/2021	29/12/2021	29/12/2021	29/12/2021
BTEX													
Benzene	M	ug/kg	10	g < 10.0	n/t	n/t	n/t	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0
Toluene	M	ug/kg	10	g < 10.0	n/t	n/t	n/t	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0
Ethylbenzene	M	ug/kg	10	g < 10.0	n/t	n/t	n/t	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0
Xylenes	M	ug/kg	10	g < 10.0	n/t	n/t	n/t	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0
MTBE	N	ug/kg	10	g < 10.0	n/t	n/t	n/t	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0	g < 10.0
TPH CWG													
>C5-C6 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	g < 0.01	n/t	n/t	n/t	g < 0.01	g < 0.01	g < 0.01	g < 0.01	g < 0.01	g < 0.01
>C6-C8 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	g < 0.01	n/t	n/t	n/t	g < 0.01	g < 0.01	g < 0.01	g < 0.01	g < 0.01	g < 0.01
>C8-C10 Aliphatic (HS_1D_MS+EH_2D_AL)	N	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	2.9	< 1.0
>C16-C21 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	4.2	< 1.0
>C21-C35 Aliphatic (EH_2D_AL)	M	mg/kg	1	7.3	n/t	n/t	n/t	< 1.0	6.4	< 1.0	14.4	11.9	< 1.0
>C35-C40 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	1.8	< 1.0	4.3	2.8	< 1.0
Total aliphatic hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_AL)	N	mg/kg	1	8.2	n/t	n/t	n/t	< 1.0	8.8	< 1.0	20.6	23.3	< 1.0
>C5-C7 Aromatic (HS_1D_MS)	N	mg/kg	0.01	g < 0.01	n/t	n/t	n/t	g < 0.01	g < 0.01	g < 0.01	g < 0.01	g < 0.01	g < 0.01
>C7-C8 Aromatic (HS_1D_MS)	N	mg/kg	0.01	g < 0.01	n/t	n/t	n/t	g < 0.01	g < 0.01	g < 0.01	g < 0.01	g < 0.01	g < 0.01
>C8-C10 Aromatic (HS_1D_MS+EH_2D_AR)	N	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0
>C10-C12 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	< 1.0	11.9	< 1.0
>C12-C16 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	n/t	n/t	n/t	< 1.0	< 1.0	< 1.0	1.6	34.4	< 1.0
>C16-C21 Aromatic (EH_2D_AR)	M	mg/kg	1	2.8	n/t	n/t	n/t	1.1	1.2	< 1.0	3.1	80.7	< 1.0
>C21-C35 Aromatic (EH_2D_AR)	M	mg/kg	1	8.9	n/t	n/t	n/t	4.4	11.6	< 1.0	29.3	127	2.7
>C35-C40 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	n/t	n/t	n/t	1.0	3.0	< 1.0	14.5	8.7	< 1.0
Total aromatic hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_AR)	N	mg/kg	1	13.1	n/t	n/t	n/t	6.9	16.2	1.5	48.9	264	3.9
Total petroleum hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_Total)	N	mg/kg	1	21.3	n/t	n/t	n/t	7.3	25.0	1.6	69.5	287	4.0



Results Summary

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Report No.: 22-37881, issue number 1

ELAB Reference	262855	262862	262871
Customer Reference			
Sample ID			
Sample Type	SOIL	SOIL	SOIL
Sample Location	BH01	WS01	WS04
Sample Depth (m)	0.40	1.20	1.30
Sampling Date	20/12/2021	20/12/2021	20/12/2021

Determinand	Codes	Units	LOD			
VOC						
Heptane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Octane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Nonane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
m+p-xylene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
o-xylene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
cis-1,2-dichloroethene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Chloroform	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Tetrachloromethane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
1,1,1-Trichloroethane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Trichloroethylene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Tetrachloroethylene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
1,1,1,2-Tetrachloroethane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
1,1,2,2-Tetrachloroethane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Chlorobenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Bromobenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Bromodichloromethane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Methylethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
1,1-Dichloro-1-propene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Trans - 1-2 - dichloroethylene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
2,2-Dichloropropane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Bromochloromethane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,2-Dichloroethane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Dibromomethane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
1,2-Dichloropropane	M	ug/kg	10	< 10.0	< 10.0	< 10.0
cis-1,3-Dichloro-1-propene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
trans-1,3-Dichloro-1-propene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
1,1,2-Trichloroethane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Dibromochloromethane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,3-Dichloropropane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,2-dibromoethane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Styrene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Propylbenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
2-Chlorotoluene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,2,4-Trimethylbenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
4-Chlorotoluene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
t-butylbenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,3,5-Trimethylbenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1-methylpropylbenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
p-cymene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,3-Dichlorobenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Butylbenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,2-Dibromo-3-chloropropane	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Hexachlorobutadiene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1-2-3 - Trichlorobenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Naphthalene	N	ug/kg	10	< 10.0	< 10.0	15.3
1-2-4 - Trichlorobenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,4-Dichlorobenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
1,2-Dichlorobenzene	N	ug/kg	10	< 10.0	< 10.0	< 10.0
Bromoform	N	ug/kg	10	< 10.0	< 10.0	< 10.0

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Results Summary

Report No.: 22-37881, issue number 1

ELAB Reference	262855	262862	262863	262865	262868	262871	262873
Customer Reference							
Sample ID							
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	BH01	WS01	WS02	WS02	WS03	WS04	WS05
Sample Depth (m)	0.40	1.20	0.50	2.30	0.40	1.30	1.30
Sampling Date	20/12/2021	20/12/2021	20/12/2021	21/12/2021	20/12/2021	20/12/2021	20/12/2021

Determinand	Codes	Units	LOD							
Metals										
Chromium (III)	N	ug/l	5	15	< 5	< 5	< 5	< 5	< 5	6
Arsenic 2:1 extract	N	ug/l	5	99	22	< 5	< 5	6	11	24
Barium 2:1 extract	N	ug/l	5	17	5	33	25	15	11	< 5
Beryllium 2:1 extract	N	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Boron 2:1 extract	N	ug/l	5	89	< 5	10	< 5	< 5	7	< 5
Cadmium 2:1 extract	N	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium 2:1 extract	N	ug/l	5	15	< 5	< 5	< 5	< 5	< 5	6
Copper 2:1 extract	N	ug/l	5	86	56	63	44	44	42	37
Lead 2:1 extract	N	ug/l	5	10	< 5	< 5	< 5	< 5	< 5	< 5
Mercury 2:1 extract	N	ug/l	0.1	0.2	0.1	0.1	0.1	< 0.1	0.2	0.1
Molybdenum 2:1 extract	N	ug/l	5	8	< 5	< 5	< 5	< 5	< 5	< 5
Nickel 2:1 extract	N	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium 2:1 extract	N	ug/l	5	9	< 5	< 5	< 5	< 5	< 5	< 5
Vanadium 2:1 extract	N	ug/l	5	62	6	< 5	< 5	5	< 5	8
Zinc 2:1 extract	N	ug/l	5	20	11	8	23	14	9	8



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Results Summary

Report No.: 22-37881, issue number 1

ELAB Reference	262855	262862	262863	262865	262868	262871	262873
Customer Reference							
Sample ID							
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location	BH01	WS01	WS02	WS02	WS03	WS04	WS05
Sample Depth (m)	0.40	1.20	0.50	2.30	0.40	1.30	1.30
Sampling Date	20/12/2021	20/12/2021	20/12/2021	21/12/2021	20/12/2021	20/12/2021	20/12/2021

Determinand	Codes	Units	LOD							
Inorganics										
Hexavalent chromium	N	ug/l	100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
Free Cyanide	N	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Total Cyanide	N	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Polyaromatic hydrocarbons										
Naphthalene Leachate GCMS	N	ug/l	0.01	0.02	0.02	0.02	0.01	0.04	< 0.01	0.02
Acenaphthylene Leachate GCMS	N	ug/l	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Acenaphthene Leachate GCMS	N	ug/l	0.01	0.01	0.03	0.01	0.01	0.14	0.01	0.01
Fluorene Leachate GCMS	N	ug/l	0.01	< 0.01	0.01	< 0.01	< 0.01	0.02	< 0.01	0.01
Phenanthrene Leachate GCMS	N	ug/l	0.01	0.04	0.19	0.05	0.06	1.29	0.03	0.08
Anthracene Leachate GCMS	N	ug/l	0.01	0.01	0.05	< 0.01	0.01	0.13	0.01	0.03
Fluoranthene Leachate GCMS	N	ug/l	0.01	0.02	0.18	0.02	0.02	0.22	0.05	0.09
Pyrene Leachate GCMS	N	ug/l	0.01	0.04	0.22	0.02	0.02	2.12	0.06	0.10
Benzo (a) anthracene Leachate GCMS	N	ug/l	0.01	0.01	0.04	0.01	< 0.01	0.27	0.03	0.05
Chrysene Leachate GCMS	N	ug/l	0.01	0.02	0.11	0.01	< 0.01	0.38	0.02	0.05
Benzo (b) fluoranthene Leachate GCMS	N	ug/l	0.01	0.02	0.06	0.01	< 0.01	0.34	0.02	0.04
Benzo (k) fluoranthene Leachate GCMS	N	ug/l	0.01	0.02	0.06	0.01	< 0.01	0.30	0.02	0.03
Benzo (a) pyrene Leachate GCMS	N	ug/l	0.01	0.04	0.07	0.01	< 0.01	0.25	0.02	0.04
Indeno (1,2,3-cd) pyrene Leachate GCMS	N	ug/l	0.01	0.01	0.03	< 0.01	< 0.01	0.26	< 0.01	0.02
Dibenzo(a,h)anthracene Leachate GCMS	N	ug/l	0.01	0.01	0.02	< 0.01	< 0.01	0.18	< 0.01	0.01
Benzo(ghi)perylene Leachate GCMS	N	ug/l	0.01	0.02	0.04	0.01	< 0.01	0.38	0.01	0.03
Total PAH(16) Leachate GCMS	N	ug/l	0.01	0.32	1.15	0.22	0.18	6.31	0.32	0.62

Results Summary

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Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos Identification	Gravimetric Analysis Total (%)	Gravimetric Analysis by ACM Type (%)	Free Fibre Analysis (%)	Total Asbestos (%)
262855	0.40	BH01	Brown sandy soil with stones,brick,clinker	No asbestos detected	n/t	n/t	n/t	n/t
262862	1.20	WS01	Brown sandy soil with stones,brick,clinker	No asbestos detected	n/t	n/t	n/t	n/t
262863	0.50	WS02	Brown soil with stones	No asbestos detected	n/t	n/t	n/t	n/t
262865	2.30	WS02	Brown soil with stones	No asbestos detected	n/t	n/t	n/t	n/t
262868	0.40	WS03	Brown sandy soil with stones,clinker	No asbestos detected	n/t	n/t	n/t	n/t
262871	1.30	WS04	Brown sandy soil with stones,brick,clinker	No asbestos detected	n/t	n/t	n/t	n/t
262873	1.30	WS05	Brown sandy soil with stones,clinker	No asbestos detected	n/t	n/t	n/t	n/t

Method Summary

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Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Leachate cyanide 10:1 extract	N		10/01/2022		Colorimetry
Leachate metals 2:1 extract	N		11/01/2022	101	ICPMS
Free cyanide	N	As submitted sample	05/01/2022	107	Colorimetry
Hexavalent chromium	N	As submitted sample	05/01/2022	110	Colorimetry
pH	M	Air dried sample	05/01/2022	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	07/01/2022	115	Ion Chromatography
Aqua regia extractable metals	M	Air dried sample	05/01/2022	118	ICPMS
Phenols in solids	M	As submitted sample	05/01/2022	121	HPLC
PAH (GC-FID)	M	As submitted sample	05/01/2022	133	GC-FID
PAHs and/or PCBs in leachates	N		10/01/2022	135	GC-MS
Water soluble anions	M	Air dried sample	05/01/2022	172	Ion Chromatography
Low range Aliphatic hydrocarbons soil	N	As submitted sample	05/01/2022	181	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	05/01/2022	181	GC-MS
VOC in solids	M	As submitted sample	05/01/2022	181	GC-MS
BTEX in solids	M	As submitted sample	05/01/2022	181A	GC-MS
Water soluble boron	N	Air dried sample	06/01/2022	202	Colorimetry
Total cyanide	M	As submitted sample	05/01/2022	204	Colorimetry
Total organic carbon/Total sulphur	N	Air dried sample	06/01/2022	210	IR
TPH CWG soil by gc-gc	M	As submitted sample	05/01/2022	271	
Asbestos identification	U	Air dried sample	06/01/2022	280	Microscopy
Soil organic matter	U	Air dried sample	06/01/2022	BS1377:P3	Titrimetry

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Report Information

Report No.: 22-37881, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry



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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 22-38986

Issue: 1

Date of Issue: 04/03/2022

Contact: LAB@A2 SI

Customer Details: A2 Site Investigation Limited
One Westminster Bridge Road
South Bank
London
SE1 7XW

Quotation No: Q20-01974

Order No: PO507

Customer Reference: 17321

Date Received: 25/02/2022

Date Approved: 04/03/2022

Details: Renaissance, Manchester

Approved by:

Mike Varley, General Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 22-38986, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
269593	WS08 0.50	23/02/2022	25/02/2022	Loamy sand	
269594	WS08A 0.50	23/02/2022	25/02/2022		
269595	WS08B 0.60	23/02/2022	25/02/2022		
269596	WS09A 0.50	23/02/2022	25/02/2022	Sand	
269597	WS09A 1.50	23/02/2022	25/02/2022		
269598	WS09A 2.50	23/02/2022	25/02/2022		
269599	WS09A 3.50	23/02/2022	25/02/2022		
269600	WS13 0.50	22/02/2022	25/02/2022	Loamy sand	
269601	WS13 1.50	22/02/2022	25/02/2022	Loamy sand	
269602	WS13 2.50	22/02/2022	25/02/2022		
269603	WS13 3.50	22/02/2022	25/02/2022		
269604	WS13 4.00	22/02/2022	25/02/2022		
269605	WS13 5.00	22/02/2022	25/02/2022		
269606	WS11 0.50	22/02/2022	25/02/2022		
269607	WS12 0.50	22/02/2022	25/02/2022		
269608	WS10 0.50	23/02/2022	25/02/2022	Loamy sand	
269609	WS10 1.50	23/02/2022	25/02/2022	Loamy sand	
269610	WS10 2.50	23/02/2022	25/02/2022		
269611	WS10 3.50	23/02/2022	25/02/2022		
269612	WS10 4.50	23/02/2022	25/02/2022		
269613	WS10 5.50	23/02/2022	25/02/2022		
269614	WS07 0.50	23/02/2022	25/02/2022		
269615	WS07A 0.40	23/02/2022	25/02/2022		



Results Summary

2683

Report No.: 22-38986, issue number 1

ELAB Reference	269593	269596	269600
Customer Reference			
Sample ID			
Sample Type	SOIL	SOIL	SOIL
Sample Location	WS08	WS09A	WS13
Sample Depth (m)	0.50	0.50	0.50
Sampling Date	23/02/2022	23/02/2022	22/02/2022

Determinand	Codes	Units	LOD			
Soil sample preparation parameters						
Moisture Content	N	%	0.1	11.9	8.5	16.9
Polyaromatic hydrocarbons						
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	0.3
Pyrene	M	mg/kg	0.1	< 0.1	< 0.1	0.3
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	0.1
Chrysene	M	mg/kg	0.1	< 0.1	< 0.1	0.2
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	0.2
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	0.2
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	0.2
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo[g,h,i]perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	1.9
BTEX						
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0	< 10.0
MTBE	N	ug/kg	10	< 10.0	< 10.0	< 10.0
TPH CWG						
>C5-C6 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic (HS_1D_MS+EH_2D_AL)	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic (EH_2D_AL)	M	mg/kg	1	2.3	< 1.0	< 1.0
>C35-C40 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
Total aliphatic hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_AL)	N	mg/kg	1	3.7	< 1.0	< 1.0
>C5-C7 Aromatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic (HS_1D_MS+EH_2D_AR)	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic (EH_2D_AR)	M	mg/kg	1	1.8	< 1.0	< 1.0
>C35-C40 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
Total aromatic hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_AR)	N	mg/kg	1	3.2	< 1.0	< 1.0
Total petroleum hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_Total)	N	mg/kg	1	6.9	< 1.0	< 1.0



Results Summary

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Report No.: 22-38986, issue number 1

ELAB Reference	269601	269608	269609
Customer Reference			
Sample ID			
Sample Type	SOIL	SOIL	SOIL
Sample Location	WS13	WS10	WS10
Sample Depth (m)	1.50	0.50	1.50
Sampling Date	22/02/2022	23/02/2022	23/02/2022

Determinand	Codes	Units	LOD			
Soil sample preparation parameters						
Moisture Content	N	%	0.1	11.2	24.0	18.4
Polyaromatic hydrocarbons						
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	0.1	< 0.1	< 0.1
Pyrene	M	mg/kg	0.1	0.1	< 0.1	< 0.1
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Chrysene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Benzo[g,h,i]perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	< 0.4
BTEX						
Benzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0	< 10.0
Xylenes	M	ug/kg	10	< 10.0	< 10.0	< 10.0
MTBE	N	ug/kg	10	< 10.0	< 10.0	< 10.0
TPH CWG						
>C5-C6 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C6-C8 Aliphatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aliphatic (HS_1D_MS+EH_2D_AL)	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C10-C12 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C12-C16 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C16-C21 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C21-C35 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	3.4
>C35-C40 Aliphatic (EH_2D_AL)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
Total aliphatic hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_AL)	N	mg/kg	1	< 1.0	< 1.0	5.3
>C5-C7 Aromatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C7-C8 Aromatic (HS_1D_MS)	N	mg/kg	0.01	< 0.01	< 0.01	< 0.01
>C8-C10 Aromatic (HS_1D_MS+EH_2D_AR)	N	mg/kg	1	< 1.0	< 1.0	< 1.0
>C10-C12 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C12-C16 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C16-C21 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
>C21-C35 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	8.2
>C35-C40 Aromatic (EH_2D_AR)	M	mg/kg	1	< 1.0	< 1.0	< 1.0
Total aromatic hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_AR)	N	mg/kg	1	< 1.0	< 1.0	10.1
Total petroleum hydrocarbons (>C5 - C40) (HS_1D_MS+EH_2D_Total)	N	mg/kg	1	< 1.0	< 1.0	15.4



Results Summary

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Report No.: 22-38986, issue number 1

ELAB Reference	269600	269608
Customer Reference		
Sample ID		
Sample Type	SOIL	SOIL
Sample Location	WS13	WS10
Sample Depth (m)	0.50	0.50
Sampling Date	22/02/2022	23/02/2022

Determinand	Codes	Units	LOD		
VOC					
Heptane	N	ug/kg	10	< 10.0	< 10.0
Octane	N	ug/kg	10	< 10.0	< 10.0
Nonane	N	ug/kg	10	< 10.0	< 10.0
Benzene	M	ug/kg	10	< 10.0	< 10.0
Toluene	M	ug/kg	10	< 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	< 10.0	< 10.0
m+p-xylene	M	ug/kg	10	< 10.0	< 10.0
o-xylene	M	ug/kg	10	< 10.0	< 10.0
cis-1,2-dichloroethene	N	ug/kg	10	< 10.0	< 10.0
1,1-Dichloroethane	M	ug/kg	10	< 10.0	< 10.0
Chloroform	M	ug/kg	10	< 10.0	< 10.0
Tetrachloromethane	M	ug/kg	10	< 10.0	< 10.0
1,1,1-Trichloroethane	M	ug/kg	10	< 10.0	< 10.0
Trichloroethylene	M	ug/kg	10	< 10.0	< 10.0
Tetrachloroethylene	M	ug/kg	10	< 10.0	66.4
1,1,1,2-Tetrachloroethane	M	ug/kg	10	< 10.0	< 10.0
1,1,2,2-Tetrachloroetha	M	ug/kg	10	< 10.0	< 10.0
Chlorobenzene	M	ug/kg	10	< 10.0	< 10.0
Bromobenzene	M	ug/kg	10	< 10.0	< 10.0
Bromodichloromethane	M	ug/kg	10	< 10.0	< 10.0
Methylethylbenzene	M	ug/kg	10	< 10.0	< 10.0
1,1-Dichloro-1-propene	M	ug/kg	10	< 10.0	< 10.0
Trans - 1-2 -dichloroethylene	N	ug/kg	10	< 10.0	< 10.0
2,2-Dichloropropane	N	ug/kg	10	< 10.0	< 10.0
Bromochloromethane	N	ug/kg	10	< 10.0	< 10.0
1,2-Dichloroethane	M	ug/kg	10	< 10.0	< 10.0
Dibromomethane	M	ug/kg	10	< 10.0	< 10.0
1,2-Dichloropropane	M	ug/kg	10	< 10.0	< 10.0
cis-1,3-Dichloro-1-propene	M	ug/kg	10	< 10.0	< 10.0
trans-1,3-Dichloro-1-propene	M	ug/kg	10	< 10.0	< 10.0
1,1,2-Trichloroethane	N	ug/kg	10	< 10.0	< 10.0
Dibromochloromethane	N	ug/kg	10	< 10.0	< 10.0
1,3-Dichloropropane	N	ug/kg	10	< 10.0	< 10.0
1,2-dibromoethane	N	ug/kg	10	< 10.0	< 10.0
Styrene	N	ug/kg	10	< 10.0	< 10.0
Propylbenzene	N	ug/kg	10	< 10.0	< 10.0
2-Chlorotoluene	N	ug/kg	10	< 10.0	< 10.0
1,2,4-Trimethylbenzene	N	ug/kg	10	< 10.0	< 10.0
4-Chlorotoluene	N	ug/kg	10	< 10.0	< 10.0
t-butylbenzene	N	ug/kg	10	< 10.0	< 10.0
1,3,5-Trimethylbenzene	N	ug/kg	10	< 10.0	< 10.0
1-methylpropylbenzene	N	ug/kg	10	< 10.0	< 10.0
p-cymene	N	ug/kg	10	< 10.0	< 10.0
1,3-Dichlorobenzene	N	ug/kg	10	< 10.0	< 10.0
Butylbenzene	N	ug/kg	10	< 10.0	< 10.0
1,2-Dibromo-3-chloropropane	N	ug/kg	10	< 10.0	< 10.0
Hexachlorobutadiene	N	ug/kg	10	< 10.0	< 10.0
1-2-3 - Trichlorobenzene	N	ug/kg	10	< 10.0	< 10.0
Naphthalene	N	ug/kg	10	< 10.0	< 10.0
1-2-4 - Trichlorobenzene	N	ug/kg	10	< 10.0	< 10.0
1,4-Dichlorobenzene	N	ug/kg	10	< 10.0	< 10.0
1,2-Dichlorobenzene	N	ug/kg	10	< 10.0	< 10.0
Bromoform	N	ug/kg	10	< 10.0	< 10.0

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Results Summary

Report No.: 22-38986, issue number 1

Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #)
in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos	Gravimetric Analysis Total	Gravimetric Analysis by ACM Type	Free Fibre Analysis	Total Asbestos
269593	0.50	WS08	Brown Sandy	No asbestos detected	n/t	n/t	n/t	n/t
269596	0.50	WS09A	Brown Sandy Soil,Stones	No asbestos detected	n/t	n/t	n/t	n/t
269600	0.50	WS13	Brown sandy Soil,Stones,Concrete,Brick	No asbestos detected	n/t	n/t	n/t	n/t
269601	1.50	WS13	brown sandy soil,Stones,Clinker	No asbestos detected	n/t	n/t	n/t	n/t
269606	0.50	WS11	Brown sandy Soil	No asbestos detected	n/t	n/t	n/t	n/t
269607	0.50	WS12	Brown sandy Soil	No asbestos detected	n/t	n/t	n/t	n/t
269608	0.50	WS10	Brown sandy Soil,Stones,Clinker	No asbestos detected	n/t	n/t	n/t	n/t
269609	1.50	WS10	Brown Sandy Soil,Stones,Clinker	No asbestos detected	n/t	n/t	n/t	n/t
269614	0.50	WS07	Brown sandy Soil,Stones,Clinker	No asbestos detected	n/t	n/t	n/t	n/t



Method Summary

Report No.: 22-38986, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
PAH (GC-FID)	M	As submitted sample	01/03/2022	133	GC-FID
Low range Aliphatic hydrocarbons soil	N	As submitted sample	04/03/2022	181	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	04/03/2022	181	GC-MS
VOC in solids	M	As submitted sample	04/03/2022	181	GC-MS
BTEX in solids	M	As submitted sample	04/03/2022	181A	GC-MS
TPH CWG soil by gc-gc	M	As submitted sample	28/02/2022	271	
Asbestos identification	U	Air dried sample	04/03/2022	280	Microscopy

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Report Information

Report No.: 22-38986, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry



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THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 22-39468

Issue: 2. Replaces Analytical Report number 22-39468; issue no.1

Date of Issue: 29/03/2022

Contact: Fernando Afonso

Customer Details: A2 Site Investigation Limited
One Westminster Bridge Road
South Bank
London
SE1 7XW

Quotation No: Q20-01974

Order No: PO695

Customer Reference: 17321

Date Received: 21/03/2022

Date Approved: 29/03/2022

Details: Renaissance, Manchester

Approved by:

Mike Varley, General Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

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Sample Summary

Report No.: 22-39468, issue number 2

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
272020	RB103 3.32	15/03/2022	21/03/2022		
272021	RB104 2.12	15/03/2022	21/03/2022		
272022	RB105 2.17	15/03/2022	21/03/2022		
272023	RB106 2.10	15/03/2022	21/03/2022		
272024	WS09A 3.41	15/03/2022	21/03/2022		
272025	WS13 3.41	15/03/2022	21/03/2022		



Results Summary

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Report No.: 22-39468, issue number 2

ELAB Reference	272020	272021	272022	272023	272024	272025
Customer Reference						
Sample ID						
Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
Sample Location	RB103	RB104	RB105	RB106	WS09A	WS13
Sample Depth (m)	3.32	2.12	2.17	2.10	3.41	3.41
Sampling Date	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022

Determinand	Codes	Units	LOD						
Dissolved Metals									
Arsenic	U	ug/l	0.5	< 0.5	3.0	0.6	< 0.5	2.3	1.8
Boron	N	ug/l	5	206	111	45	13	83	87
Barium	U	ug/l	1	38	90	41	191	38	80
Beryllium	U	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	U	ug/l	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	U	ug/l	0.5	< 0.5	1.0	1.2	0.6	2.4	< 0.5
Chromium (III)	N	ug/l	0.5	< 0.5	≤ 1.0	≤ 1.2	≤ 0.6	≤ 2.4	< 0.5
Copper	U	ug/l	0.5	0.6	7.4	< 0.5	0.5	3.4	2.9
Mercury	U	ug/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	U	ug/l	1	< 1	6	< 1	< 1	7	4
Nickel	U	ug/l	0.5	2.1	8.3	< 0.5	1.8	1.2	2.3
Lead	U	ug/l	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	2.1
Selenium	U	ug/l	1	< 1	4	< 1	2	2	< 1
Vanadium	U	ug/l	0.5	< 0.5	7.0	< 0.5	< 0.5	1.6	< 0.5
Zinc	U	ug/l	1.2	10.9	23.3	< 1.2	16.8	3.0	13.8
Anions									
Sulphate	U	mg/l	0.5	416	175	23.1	146	69.1	63.2
Inorganics									
Free Cyanide	N	ug/l	5	< 5	< 5	< 5	< 5	< 5	< 5
Hexavalent Chromium (Dissolved)	N	ug/l	0.5	< 0.5	≤ 1.0	≤ 1.2	≤ 0.6	≤ 2.4	< 0.5
Total Cyanide	U	ug/l	5	6	< 5	< 5	< 5	< 5	< 5
Miscellaneous									
Dissolved organic carbon	N	mg/l	1.5	3.3	11	2.2	2.7	3.0	3.5
pH	U	pH units	0.1	6.7	7.3	8.3	7.4	7.4	7.0
Suspended Solids	N	mg/l	0.1	26	120	8.0	24	12	74
Total Organic Carbon	N	mg/l	0.9	3	18	2	3	3	4

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Results Summary

2683

Report No.: 22-39468, issue number 2

ELAB Reference	272020	272021	272022	272023	272024	272025
Customer Reference						
Sample ID						
Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
Sample Location	RB103	RB104	RB105	RB106	WS09A	WS13
Sample Depth (m)	3.32	2.12	2.17	2.10	3.41	3.41
Sampling Date	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022

Determinand	Codes	Units	LOD						
Phenols									
Phenol	N	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1
M,P-Cresol	N	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1
O-Cresol	N	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1
3,4-Dimethylphenol	N	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1
2,3-Dimethylphenol	N	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1
2,3,5-trimethylphenol	N	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1
Total Monohydric Phenols	N	ug/l	1	< 1	< 1	< 1	< 1	< 1	< 1
Polyaromatic hydrocarbons									
Naphthalene GCMS	N	ug/l	0.01	0.01	0.02	0.02	0.01	0.02	0.01
Acenaphthylene GCMS	N	ug/l	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene GCMS	N	ug/l	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene GCMS	N	ug/l	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene GCMS	N	ug/l	0.01	0.02	0.06	0.01	< 0.01	0.02	0.05
Anthracene GCMS	N	ug/l	0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.01
Fluoranthene GCMS	N	ug/l	0.01	0.02	0.06	< 0.01	< 0.01	0.02	0.12
Pyrene GCMS	N	ug/l	0.01	0.02	0.06	< 0.01	< 0.01	0.02	0.13
Benzo (a) anthracene GCMS	N	ug/l	0.01	0.02	0.03	< 0.01	< 0.01	< 0.01	0.06
Chrysene GCMS	N	ug/l	0.01	0.02	0.04	< 0.01	< 0.01	0.01	0.07
Benzo (b) fluoranthene GCMS	N	ug/l	0.01	0.04	0.33	< 0.01	< 0.01	< 0.01	0.16
Benzo (k) fluoranthene GCMS	N	ug/l	0.01	0.03	0.26	< 0.01	< 0.01	< 0.01	0.42
Benzo (a) pyrene GCMS	N	ug/l	0.01	0.04	0.03	< 0.01	< 0.01	0.01	0.09
Indeno (1,2,3-cd) pyrene GCMS	N	ug/l	0.01	0.08	0.02	0.01	0.02	< 0.01	0.05
Dibenzo(a,h)anthracene GCMS	N	ug/l	0.01	0.08	< 0.01	< 0.01	0.01	< 0.01	0.02
Benzo(ghi)perylene GCMS	N	ug/l	0.01	0.08	0.03	< 0.01	< 0.01	< 0.01	0.06
Total PAH(16) GCMS	N	ug/l	0.01	0.48	0.98	0.13	0.09	0.15	1.26

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Results Summary

2683

Report No.: 22-39468, issue number 2

ELAB Reference	272020	272021	272022	272023	272024	272025
Customer Reference						
Sample ID						
Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
Sample Location	RB103	RB104	RB105	RB106	WS09A	WS13
Sample Depth (m)	3.32	2.12	2.17	2.10	3.41	3.41
Sampling Date	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022

Determinand	Codes	Units	LOD						
BTEX									
Benzene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Toluene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Ethylbenzene	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Xylenes	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
MTBE	U	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
TPH CWG									
>C5-C6 Aliphatic (HS_1D_MS)	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C6-C8 Aliphatic (HS_1D_MS)	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aliphatic (EH_CU_1D_AL)	N	ug/l	5	7.8	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C10-C12 Aliphatic (EH_CU_1D_AL)	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aliphatic (EH_CU_1D_AL)	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C16-C21 Aliphatic (EH_CU_1D_AL)	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C21-C35 Aliphatic (EH_CU_1D_AL)	N	ug/l	5	5.5	76.4	< 5.0	17.6	< 5.0	6.2
>C35-C40 Aliphatic (EH_CU_1D_AL)	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Aliphatic (HS_1D_MS+EH_CU_1D_AL)	N	ug/l	5	13.2	76.4	< 5.0	17.6	< 5.0	6.2
>C5-C7 Aromatic (HS_1D_MS)	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C7-C8 Aromatic (HS_1D_MS)	N	ug/l	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aromatic (EH_CU_1D_AR)	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C10-C12 Aromatic (EH_CU_1D_AR)	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C12-C16 Aromatic (EH_CU_1D_AR)	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
>C16-C21 Aromatic (EH_CU_1D_AR)	N	ug/l	5	< 5.0	5.6	< 5.0	< 5.0	< 5.0	< 5.0
>C21-C35 Aromatic (EH_CU_1D_AR)	N	ug/l	5	< 5.0	69.8	< 5.0	8.3	< 5.0	< 5.0
>C35-C40 Aromatic (EH_CU_1D_AR)	N	ug/l	5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total (>C5-C40) Aromatic (HS_1D_MS+EH_CU_1D_AR)	N	ug/l	5	< 5.0	75.4	< 5.0	8.3	< 5.0	< 5.0
Total (>C5-C40) Alii/Aro (HS_1D_MS+EH_CU_1D_Total)	N	ug/l	5	13.2	152	< 5.0	25.9	< 5.0	6.2

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Results Summary

Report No.: 22-39468, issue number 2

ELAB Reference	272020	272021	272022	272023	272024	272025
Customer Reference						
Sample ID						
Sample Type	WATER	WATER	WATER	WATER	WATER	WATER
Sample Location	RB103	RB104	RB105	RB106	WS09A	WS13
Sample Depth (m)	3.32	2.12	2.17	2.10	3.41	3.41
Sampling Date	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022
Determinand	Codes	Units	LOD			
VOC						
MTBE	N	ug/l	1	< 1	< 1	< 1
Heptane	N	ug/l	1	< 1	< 1	< 1
Octane	N	ug/l	1	< 1	< 1	< 1
Nonane	N	ug/l	1	< 1	< 1	< 1
Benzene	N	ug/l	1	< 1	< 1	< 1
Toluene	N	ug/l	1	< 1	< 1	< 1
Ethylbenzene	N	ug/l	1	< 1	< 1	< 1
m+p-xylene	N	ug/l	1	< 1	< 1	< 1
o-xylene	N	ug/l	1	< 1	< 1	< 1
cis-1,2-dichloroethene	N	ug/l	1	8	< 1	2
1,1-Dichloroethane	N	ug/l	1	< 1	< 1	< 1
Chloroform	N	ug/l	1	< 1	8	2
Tetrachloromethane	N	ug/l	1	< 1	< 1	< 1
1,1,1-Trichloroethane	N	ug/l	1	< 1	< 1	< 1
Trichloroethylene	N	ug/l	1	27	< 1	1
Tetrachloroethylene	N	ug/l	1	79	< 1	13
1,1,1,2-Tetrachloroethane	N	ug/l	1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	N	ug/l	1	< 1	< 1	< 1
Chlorobenzene	N	ug/l	1	< 1	< 1	< 1
Bromobenzene	N	ug/l	1	< 1	< 1	< 1
Bromodichloromethane	N	ug/l	1	< 1	< 1	< 1
Methylethylbenzene	N	ug/l	1	< 1	< 1	< 1
1,1-Dichloro-1-propene	N	ug/l	1	< 1	< 1	< 1
Trans - 1-2 -dichloroethylene	N	ug/l	1	< 1	< 1	< 1
2,2-Dichloropropane	N	ug/l	1	< 1	< 1	< 1
Bromochloromethane	N	ug/l	1	< 1	< 1	< 1
1,2-Dichloroethane	N	ug/l	1	< 1	< 1	< 1
Dibromomethane	N	ug/l	1	< 1	< 1	< 1
1,2-Dichloropropane	N	ug/l	1	< 1	< 1	< 1
cis-1,3-Dichloro-1-propene	N	ug/l	1	< 1	< 1	< 1
trans-1,3-Dichloro-1-propene	N	ug/l	1	< 1	< 1	< 1
1,1,2-Trichloroethane	N	ug/l	1	< 1	< 1	< 1
Dibromochloromethane	N	ug/l	1	< 1	< 1	< 1
1,3-Dichloropropane	N	ug/l	1	< 1	< 1	< 1
Dibromoethane	N	ug/l	1	< 1	< 1	< 1
Styrene	N	ug/l	1	< 1	< 1	< 1
Propylbenzene	N	ug/l	1	< 1	< 1	< 1
2-Chlorotoluene	N	ug/l	1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	N	ug/l	1	< 1	< 1	< 1
4-Chlorotoluene	N	ug/l	1	< 1	< 1	< 1
t-butylbenzene	N	ug/l	1	< 1	< 1	< 1
1,3,5-Trimethylbenzene	N	ug/l	1	< 1	< 1	< 1
1-methylpropylbenzene	N	ug/l	1	< 1	< 1	< 1
p-cymene	N	ug/l	1	< 1	< 1	< 1
1,3-Dichlorobenzene	N	ug/l	1	< 1	< 1	< 1
Butylbenzene	N	ug/l	1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	N	ug/l	1	< 1	< 1	< 1
Hexachlorobutadiene	N	ug/l	1	< 1	< 1	< 1
1-2-3 - Trichlorobenzene	N	ug/l	1	< 1	< 1	< 1
Naphthalene	N	ug/l	1	< 1	< 1	< 1
1-2-4 - Trichlorobenzene	N	ug/l	1	< 1	< 1	< 1
1,4-Dichlorobenzene	N	ug/l	1	< 1	< 1	< 1
1,2-Dichlorobenzene	N	ug/l	1	< 1	< 1	< 1
Bromoform	N	ug/l	1	< 1	< 1	< 1

Results Summary

Report No.: 22-39468, issue number 2

ELAB Reference				272020	272021	272022	272023	272024	272025
Customer Reference									
Sample ID									
Sample Type				WATER	WATER	WATER	WATER	WATER	WATER
Sample Location				RB103	RB104	RB105	RB106	WS09A	WS13
Sample Depth (m)				3.32	2.12	2.17	2.10	3.41	3.41
Sampling Date				15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022
Determinand	Codes	Units	LOD						
SVOC									
Phenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Aniline	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Bis(2-chloroethyl)ether	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2-Chlorophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1,3-Dichlorobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1,4-Dichlorobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Benzyl Alcohol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1,2-Dichlorobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2-Methylphenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Bis(2-chloroisopropyl)ether	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
3 and 4-methylphenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
N-Nitrosodi-n-propylamine	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Hexachloroethane	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Nitrobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Isophorone	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2-Nitrophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2,4-Dimethylphenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Bis(2-chloroethoxy)methane	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2,4-Dichlorophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1,3,5-Trichlorobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Naphthalene	N	ug/l	0.01	0.01	0.02	0.02	0.01	0.02	0.01
3-Chloroaniline	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Hexachloro-1,3-butadiene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
4-Chloro-3-methylphenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2-Methylnaphthalene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1-Methylnaphthalene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Hexachlorocyclopentadiene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2,4,6-Trichlorophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2,4,5-Trichlorophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1-Chloronaphthalene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2-Nitroaniline	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1,4-Dinitrobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Dimethyl phthalate	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1-3-dinitrobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2-6-dinitrotoluene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Acenaphthylene	N	ug/l	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01
1,2-Dinitrobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
3-Nitroaniline	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Acenaphthene	N	ug/l	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01
4-nitrophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Dibenzofuran	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2,3,5,6-Tetrachlorophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
2,3,4,6-Tetrachlorophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Diethyl phthalate	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1-chloro-4-phenoxybenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Fluorene	N	ug/l	0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-Nitroaniline	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Dinitro-o-cresol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Diphenylamine	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Azobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
1-bromo-4-phenoxybenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Hexachlorobenzene	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Pentachlorophenol	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00

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Results Summary

Report No.: 22-39468, issue number 2

ELAB Reference				272020	272021	272022	272023	272024	272025
Customer Reference									
Sample ID									
Sample Type				WATER	WATER	WATER	WATER	WATER	WATER
Sample Location				RB103	RB104	RB105	RB106	WS09A	WS13
Sample Depth (m)				3.32	2.12	2.17	2.10	3.41	3.41
Sampling Date				15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022
Determinand	Codes	Units	LOD						
SVOC									
Phenanthrene	N	ug/l	0.01	0.02	0.06	0.01	< 0.01	0.02	0.05
Anthracene	N	ug/l	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	0.01
Carbazole	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Dibutyl phthalate	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Fluoranthene	N	ug/l	0.01	0.02	0.06	< 0.01	< 0.01	0.02	0.15
Pyrene	N	ug/l	0.01	0.03	0.06	< 0.01	< 0.01	0.02	0.16
Butyl benzyl phthalate	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Bis-2-ethylhexyladipate	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Diisooctyl phthalate	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Benzo(a)anthracene	N	ug/l	0.01	0.03	0.04	< 0.01	< 0.01	< 0.01	0.08
Chrysene	N	ug/l	0.01	0.03	0.04	< 0.01	< 0.01	0.01	0.10
Bis(2-ethylhexyl)phthalate	N	ug/l	1	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00	< 1.00
Benzo(b)fluoranthene	N	ug/l	0.01	0.05	0.03	0.01	< 0.01	< 0.01	0.08
Benzo(k)fluoranthene	N	ug/l	0.01	0.05	0.03	0.01	< 0.01	0.01	0.08
Benzo(a)pyrene	N	ug/l	0.01	0.04	0.03	< 0.01	< 0.01	< 0.01	0.10
Indeno(1,2,3-CD)pyrene	N	ug/l	0.01	0.08	0.02	< 0.01	0.02	< 0.01	0.05
Dibenzo(a,h)anthracene	N	ug/l	0.01	0.09	< 0.01	< 0.01	0.01	< 0.01	0.02
Benzo(ghi)perylene	N	ug/l	0.01	0.09	0.03	0.01	0.01	0.01	0.06

Method Summary

Report No.: 22-39468, issue number 2

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Water					
Aliphatic/Aromatic hydrocarbons in water	N		25/03/2022		GC-FID
Phenols in waters	N		23/03/2022		HPLC
Dissolved metals by ICP in waters	U		23/03/2022	101	ICPMS
Dissolved organic carbon	N		24/03/2022	102	IR
pH of waters	U		23/03/2022	113	Electromeric
Chromium Hexavalent in waters	N		25/03/2022	123	Colorimetry
Cyanide in waters	U		23/03/2022	132	Colorimetry
PAHs and/or PCBs in waters	N		24/03/2022	135	GC-MS
Suspended Solids in waters	N		28/03/2022	155	Gravimetry
SVOC in waters	N		24/03/2022	167	GC-MS
BTEX in waters	U		23/03/2022	200	GC-MS
Low range Aliphatic hydrocarbons water	N		23/03/2022	200	GC-MS
Low range Aromatic hydrocarbons water	N		23/03/2022	200	GC-MS
VOC in waters	N		22/03/2022	200	GC-MS
Cyanide in waters	U		23/03/2022	205	Colorimetry
Aliphatic hydrocarbons in water	N		24/03/2022	215	GC-FID
Aromatic hydrocarbons in water	N		24/03/2022	215	GC-FID
Anions	U		23/03/2022	270	Ion Chromatography
Dissolved metals by ICP in waters	U		23/03/2022	301	ICPMS
Total metals by ICP	U		29/03/2022	301	ICPMS

Tests marked N are not UKAS accredited

Report Information

Report No.: 22-39468, issue number 2

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed. ELAB are unable to provide an interpretation or opinion on the content of this report. The results relate only to the sample received. PCB congener results may include any coeluting PCBs Uncertainty of measurement for the determinands tested are available upon request Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

TPH Classification - HWOL Acronym System

HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
2D	GC-GC - Double coil gas chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry



A2 Site Investigation

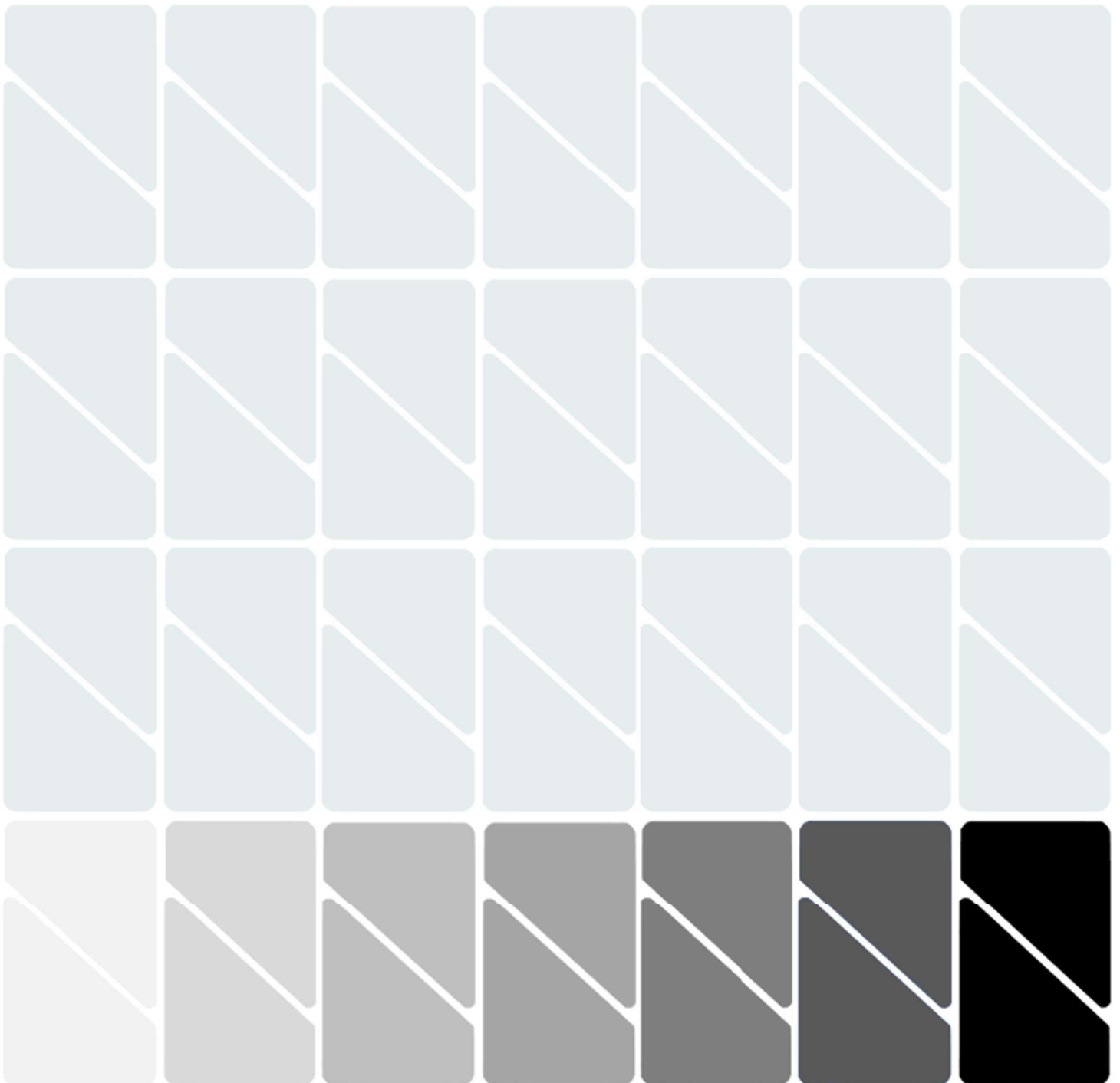
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Appendix E: GQRA Screening Tables

Controlled Waters Generic Quantitative Assessment for Groundwater

1602 - Renaissance Manchester Supplementary

Key:	
	Exceedance of the Drinking Water GAC
	Exceedance of Environmental Quality GAC
	Exceedance of both GAC
GAC - Generic Assessment Criteria	

Laboratory Report Ref.	Units	Drinking Water GAC	Environmental Quality GAC	272020	1835881	272021	1835882	272022	272023	272024	272025	1835880
Exploratory Location Ref.				RB103	RB104	RB104	RB105	RB105	RB106	WS09A	WS13	RB101
Sample Date				15/03/2022	13/04/2021	15/03/2022	13/04/2021	15/03/2022	15/03/2022	15/03/2022	15/03/2022	13/04/2021
Aquifer Unit				Chester Formation	Chester Formation	Chester Formation	Chester Formation	Chester Formation	Chester Formation	MG	MG	Chester Formation
GAC Refs.				UK and EU Drinking Water Standards and WHO Guideline Values			Environmental Quality Standards (EQS) published by the UK, EU and EA					

Miscellaneous												
Dissolved organic carbon	mg/l	-	-	3.3	6.01	11	0.97	2.2	2.7	3.0	3.5	0.80
pH	pH units	-	-	6.7	10.2	7.3	10.0	8.3	7.4	7.4	7.0	7.3
Suspended Solids	mg/l	-	-	26	-	120	-	8.0	24	12	74	-
Total Organic Carbon	mg/l	-	-	3	-	18	-	2	3	3	4	-

Anions and Other												
Sulphate	mg/l	250	400	416	-	175	-	23.1	146	69.1	63.2	-
Free Cyanide	ug/l	-	1	< 5	-	< 5	-	< 5	< 5	< 5	< 5	-
Hexavalent Chromium (Dissolved)	ug/l	-	3.4	< 0.5	< 5.0	≤ 1.0	< 5.0	≤ 1.2	≤ 0.6	≤ 2.4	< 0.5	< 5.0
Total Cyanide	ug/l	50	-	6	< 1.0	< 5	< 1.0	< 5	< 5	< 5	< 5	< 1.0

Heavy Metals and Metalloids												
Arsenic	ug/l	10	50	< 0.5	2.93	3.0	1.18	0.6	< 0.5	2.3	1.8	0.39
Boron	ug/l	1000	2000	206	-	111	-	45	13	83	87	-
Barium	ug/l	700	-	38	-	90	-	41	191	38	80	-
Beryllium	ug/l	12	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Cadmium	ug/l	5	0.08	< 0.5	0.03	< 0.5	< 0.02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.02
Chromium	ug/l	50	4.7	< 0.5	3.8	1.0	1.6	1.2	0.6	2.4	< 0.5	1.2
Chromium (III)	ug/l	50	4.7	< 0.5	3.8	≤ 1.0	1.6	≤ 1.2	≤ 0.6	≤ 2.4	< 0.5	1.2
Copper	ug/l	2000	1	0.6	8.4	7.4	2.9	< 0.5	0.5	3.4	< 0.5	3.1
Mercury	ug/l	1	-	< 0.05	1.22	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	ug/l	-	-	< 1	-	6	-	< 1	< 1	7	4	-
Nickel	ug/l	20	4	2.1	2.1	8.3	0.5	< 0.5	1.8	1.2	2.3	1.2
Lead	ug/l	10	1.2	< 0.5	< 0.2	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	0.2
Selenium	ug/l	10	-	< 1	2.8	4	2.2	< 1	2	2	< 1	< 0.6
Vanadium	ug/l	-	20	< 0.5	-	7.0	-	< 0.5	< 0.5	1.6	< 0.5	-
Zinc	ug/l	3,000	10.9	10.9	2.7	23.3	2.2	< 1.2	16.8	3.0	13.8	7.8

PAHs												
Naphthalene GCMS	ug/l	-	2	0.01	-	0.02	-	0.02	0.01	0.02	0.01	-
Acenaphthylene GCMS	ug/l	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	-
Acenaphthene GCMS	ug/l	-	-	< 0.01	-	0.02	-	< 0.01	< 0.01	< 0.01	< 0.01	-
Fluorene GCMS	ug/l	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	-
Phenanthrene GCMS	ug/l	-	-	0.02	-	0.06	-	0.01	< 0.01	0.02	0.05	-
Anthracene GCMS	ug/l	-	0.1	< 0.01	-	0.01	-	< 0.01	< 0.01	< 0.01	0.01	-
Fluoranthene GCMS	ug/l	-	0.0063	0.02	-	0.06	-	< 0.01	< 0.01	0.02	0.12	-
Pyrene GCMS	ug/l	-	-	0.02	-	0.06	-	< 0.01	< 0.01	0.02	0.13	-
Benzo (a) anthracene GCMS	ug/l	-	-	0.02	-	0.03	-	< 0.01	< 0.01	< 0.01	0.06	-
Chrysene GCMS	ug/l	-	-	0.02	-	0.04	-	< 0.01	< 0.01	0.01	0.07	-
Benzo (b) fluoranthene GCMS	ug/l	-	-	0.04	-	0.33	-	< 0.01	< 0.01	< 0.01	0.16	-
Benzo (k) fluoranthene GCMS	ug/l	-	-	0.03	-	0.26	-	< 0.01	< 0.01	< 0.01	0.42	-
Benzo(ghi)perylene GCMS	ug/l	-	-	0.08	-	0.03	-	< 0.01	< 0.01	< 0.01	0.06	-
Indeno (1,2,3-cd) pyrene GCMS	ug/l	-	-	0.08	-	0.02	-	0.01	0.02	< 0.01	0.05	-
Dibenzo(a,h)anthracene GCMS	ug/l	-	-	0.08	-	< 0.01	-	< 0.01	0.01	< 0.01	0.02	-
Benzo (a) pyrene GCMS	ug/l	0.01	0.0002	0.04	-	0.63	-	< 0.01	< 0.01	0.01	0.08	-
Total PAH(16) GCMS	ug/l	-	-	0.48	-	0.98	-	0.13	0.09	0.15	1.26	-

TPH												
>C5-C6 Aliphatic	ug/l	300	20	< 1.0	< 10	< 1.0	< 10	< 1.0	< 1.0	< 1.0	< 1.0	< 10
>C6-C8 Aliphatic	ug/l	300	20	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aliphatic	ug/l	300	20	7.8	< 1.0	< 5.0	< 1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0
>C10-C12 Aliphatic	ug/l	300	20	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0
>C12-C16 Aliphatic	ug/l	300	20	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C16-C21 Aliphatic	ug/l	Insoluble	Insoluble	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C21-C35 Aliphatic	ug/l	Insoluble	Insoluble	5.5	< 10	76.4	< 10	< 5.0	17.6	< 5.0	6.2	< 10
>C35-C40 Aliphatic	ug/l	Insoluble	Insoluble	< 5.0	-	< 5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	-
Total (>C5-C35) Aliphatic	ug/l	-	-	-	< 10	-	< 10	-	-	-	-	< 10
Total (>C5-C40) Aliphatic	ug/l	-	-	13.2	-	76.4	-	< 5.0	17.6	< 5.0	6.2	-
>C5-C7 Aromatic	ug/l	1	10	< 1.0	< 10	< 1.0	< 10	< 1.0	< 1.0	< 1.0	< 1.0	< 10
>C7-C8 Aromatic	ug/l	700	74	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aromatic	ug/l	300	20	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0
>C10-C12 Aromatic	ug/l	90	20	< 5.0	< 1.0	< 5.0	< 1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0
>C12-C16 Aromatic	ug/l	90	20	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C16-C21 Aromatic	ug/l	90	20	< 5.0	< 10	5.6	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C21-C35 Aromatic	ug/l	90	20	< 5.0	< 10	69.8	< 10	< 5.0	8.3	< 5.0	< 5.0	< 10
>C35-C40 Aromatic	ug/l	-	20	< 5.0	-	< 5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	-
Total (>C5-C35) Aromatic	ug/l	-	-	-	< 10	-	< 10	-	-	-	-	< 10
Total (>C5-C40) Aromatic	ug/l	-	-	< 5.0	-	75.4	-	< 5.0	8.3	< 5.0	< 5.0	-
Total (>C5-C40) Al/Aro	ug/l	-	-	13.2	-	152	-	< 5.0	25.9	< 5.0	6.2	-

BTEX and MTBE

Benzene	ug/l	1	10	< 1.00	< 1.0	< 1.00	< 1.0	< 1.00	< 1.00	< 1.00	< 1.00	< 1.0
Toluene	ug/l	700	74	< 1.00	< 1.0	< 1.00	< 1.0	< 1.00	< 1.00	< 1.00	< 1.00	< 1.0
Ethylbenzene	ug/l	300	20	< 1.00	< 1.0	< 1.00	< 1.0	< 1.00	< 1.00	< 1.00	< 1.00	< 1.0
Xylenes	ug/l	500	30	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
p & m-xylene	ug/l	500	30	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
o-xylene	ug/l	500	30	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
MTBE	ug/l	15	-	< 1.00	< 1.0	< 1.00	< 1.0	< 1.00	< 1.00	< 1.00	< 1.00	< 1.0

VOC

MTBE	ug/l	15	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Heptane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Octane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Nonane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Benzene	ug/l	1	10	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Toluene	ug/l	700	74	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Ethylbenzene	ug/l	300	20	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
m+p-xylene	ug/l	500	30	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
o-xylene	ug/l	500	30	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
cis-1,2-dichloroethene	ug/l	-	-	8	< 1.0	< 1	< 1.0	< 1	< 1	2	-	< 1.0
1,1-Dichloroethane	ug/l	0.007	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Chloroform	ug/l	-	2.5	< 1	8.6	< 1	7.9	8	2	< 1	< 1	18.8
Bromoform	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Dibromochloromethane	ug/l	100	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Bromodichloromethane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Tetrachloromethane	ug/l	3	12	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,1,1-Trichloroethane	ug/l	200	100	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Trichloroethylene	ug/l	-	10	27	< 1.0	< 1	< 1.0	< 1	< 1	1	< 1	< 1.0
Tetrachloroethylene	ug/l	10 (sum)	10	79	< 1.0	< 1	< 1.0	< 1	< 1	13	< 1	< 1.0
1,1,1,2-Tetrachloroethane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,1,2,2-Tetrachloroethane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Chlorobenzene	ug/l	100	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Bromobenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Methylethylbenzene	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,1-Dichloro-1-propene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Trans - 1,2 - dichloroethylene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
2,2-Dichloropropane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Bromochloromethane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,2-Dichloroethane	ug/l	3	10	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Dibromomethane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,2-Dichloropropane	ug/l	22	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
cis-1,3-Dichloro-1-propene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
trans-1,3-Dichloro-1-propene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,1,2-Trichloroethane	ug/l	5	400	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,3-Dichloropropane	ug/l	20	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Dibromochloromethane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Styrene	ug/l	20	50	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Propylbenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
2-Chlorotoluene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,2,4-Trimethylbenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
4-Chlorotoluene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
t-butylbenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,3,5-Trimethylbenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1-methylpropylbenzene	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
p-cymene	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,3-Dichlorobenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Butylbenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,2-Dibromo-3-chloropropane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Hexachlorocyclopentadiene	ug/l	0.6	0.6	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,2,3 - Trichlorobenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Naphthalene	ug/l	-	2	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,2,4 - Trichlorobenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,4-Dichlorobenzene	ug/l	300	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,2-Dichlorobenzene	ug/l	1000	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Chloroethane	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Chloroethane	ug/l	0.5	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Bromoethane	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Vinyl Chloride	ug/l	0.5	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Trichlorofluoromethane	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,1-Dichloroethene	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,2-Dibromomethane	ug/l	0.4	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
sec-Butylbenzene	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Isopropylbenzene	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
p-Isopropyltoluene	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0

SVOC												
Phend	ug/l	-	7.7	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Aniline	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Bis(2-chloroethyl)ether	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2-Chlorophenol	ug/l	-	50	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1,3-Dichlorobenzene	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1,4-Dichlorobenzene	ug/l	300	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Benzyl Alcohol	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1,2-Dichlorobenzene	ug/l	1000	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2-Methylphenol	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Bis(2-chloroisopropyl)ether	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
3 and 4-methylphenol	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
N-Nitrosod-n-propylamine	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Hexachloroethane	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Nitrobenzene	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Isophorone	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2-Nitrophenol	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2,4-Dimethylphenol	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Bis(2-chloroethoxy)methane	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2,4-Dichlorophenol	ug/l	-	4.2	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1,3,5-Trichlorobenzene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Naphthalene	ug/l	-	2	0.01	< 0.01	0.02	< 0.01	0.02	< 0.01	0.02	< 0.01	< 0.01
3-Chloroaniline	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Hexachloro-1,3-butadiene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
4-Chloro-3-methylphenol	ug/l	-	40	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2-Methylnaphthalene	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1-Methylnaphthalene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Hexachlorocyclopentadiene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2,4,6-Trichlorophenol	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2,4,5-Trichlorophenol	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1-Chloronaphthalene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2-Nitroaniline	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1,4-Dinitrobenzene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Dimethyl phthalate	ug/l	-	800	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1,3-dinitrobenzene	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2,6-dinitrotoluene	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Acenaphthylene	ug/l	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-Dinitrobenzene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
3-Nitroaniline	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Acenaphthene	ug/l	-	-	< 0.01	-	0.02	-	< 0.01	< 0.01	< 0.01	< 0.01	-
4-nitrophenol	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Dibenzofuran	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2,3,5,6-Tetrachlorophenol	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2,3,4,6-Tetrachlorophenol	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Diethyl phthalate	ug/l	-	200	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1-chloro-4-phenylbenzene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Fluorene	ug/l	-	-	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-Nitroaniline	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Dinitro-o-cresol	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Diphenylamine	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Azobenzene	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1-bromo-4-phenylbenzene	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Hexachlorobenzene	ug/l	0.05	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Pentachlorophenol	ug/l	9	0.4	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Phenanthrene	ug/l	-	-	0.02	< 0.01	0.06	< 0.01	0.01	< 0.01	0.02	0.05	< 0.01
Anthracene	ug/l	-	0.1	< 0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Carbazole	ug/l	-	-	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Dibutyl phthalate	ug/l	-	8	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Fluoranthene	ug/l	-	0.0063	0.02	< 0.01	0.06	< 0.01	< 0.01	< 0.01	0.02	0.15	< 0.01
Pyrene	ug/l	-	-	0.03	< 0.01	0.06	< 0.01	< 0.01	< 0.01	0.02	0.15	< 0.01
Butyl benzyl phthalate	ug/l	-	7.5	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Bis-2-ethoxydiadipate	ug/l	8	1.3	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Disocetyl phthalate	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Benzo(a)anthracene	ug/l	-	-	0.03	< 0.01	0.04	< 0.01	< 0.01	< 0.01	< 0.01	0.08	< 0.01
Chrysene	ug/l	-	-	0.03	< 0.01	0.04	< 0.01	< 0.01	< 0.01	0.01	0.10	< 0.01
Bis(2-ethylhexyl)phthalate	ug/l	-	-	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Benzo(b)fluoranthene	ug/l	-	-	0.05	< 0.01	0.03	< 0.01	0.01	< 0.01	< 0.01	0.08	< 0.01
Benzo(k)fluoranthene	ug/l	-	-	0.05	< 0.01	0.03	< 0.01	0.01	< 0.01	0.01	0.08	< 0.01
Benzo(ghi)perylene	ug/l	-	-	0.09	< 0.01	0.03	< 0.01	0.01	0.01	0.01	0.06	< 0.01
Indeno(1,2,3-CD)pyrene	ug/l	-	-	0.08	< 0.01	0.02	< 0.01	< 0.01	0.02	< 0.01	0.05	< 0.01
Dibenzo(a,h)anthracene	ug/l	-	-	0.09	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.02	< 0.01
Benzo(a)pyrene	ug/l	0.01	0.0002	0.04	< 0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01	0.10	< 0.01
4-Methylphenol	ug/l	-	-	-	< 0.05	-	< 0.05	-	-	-	-	< 0.05
1,2,4-Trichlorobenzene	ug/l	-	-	-	< 0.05	-	< 0.05	-	-	-	-	< 0.05
4-Chloroaniline	ug/l	-	-	-	< 0.05	-	< 0.05	-	-	-	-	< 0.05
Hexachlorobutadiene	ug/l	0.6	0.6	-	< 0.05	-	< 0.05	-	-	-	-	< 0.05
2-Chloronaphthalene	ug/l	-	-	-	< 0.05	-	< 0.05	-	-	-	-	< 0.05
2,4-Dinitrotoluene	ug/l	-	-	-	< 0.05	-	< 0.05	-	-	-	-	< 0.05
3&4-Methylphenol	ug/l	-	-	-	< 0.10	-	< 0.10	-	-	-	-	< 0.10
Anthraquinone	ug/l	-	-	-	< 0.05	-	< 0.05	-	-	-	-	< 0.05
Bromophenyl phenyl ether	ug/l	-	-	-	< 0.05	-	< 0.05	-	-	-	-	< 0.05

Phenolics												
Phend	ug/l	-	7.7	1	-	< 1	-	< 1	< 1	< 1	< 1	-
M,P-Cresol	ug/l	-	-	1	-	< 1	-	< 1	< 1	< 1	< 1	-
O-Cresol	ug/l	-	-	1	-	< 1	-	< 1	< 1	< 1	< 1	-
3,4-Dimethylphenol	ug/l	-	-	1	-	< 1	-	< 1	< 1	< 1	< 1	-
2,3-Dimethylphenol	ug/l	-	-	1	-	< 1	-	< 1	< 1	< 1	< 1	-
2,3,5-trimethylphenol	ug/l	-	-	1	-	< 1	-	< 1	< 1	< 1	< 1	-
Total Monohydric Phenols	ug/l	-	7.7	1	4.8	< 1	3.4	< 1	< 1	< 1	< 1	4.8

Human Health Generic Quantitative Assessment for Groundwater

1602 - Renaissance Manchester Supplementary

Key:	
	Exceedance of the residential GAC
	Exceedance of the commercial GAC
	GAC - Generic Assessment Criteria

Laboratory Report Ref.	Units	GAC	272020	1835881	272021	1835882	272022	272023	272024	272025	1835880	
Exploratory Location Ref.			RB103	RB 104	RB104	RB 105	RB105	RB106	WS09	WS13	RB 101	
Sample Date			15/03/2022	13/04/2021	15/03/2022	13/04/2021	15/03/2022	15/03/2022	15/03/2022	15/03/2022	15/03/2022	13/04/2021
Aquifer Unit			Chester Formation	Chester Formation	Chester Formation	Chester Formation	Chester Formation	Chester Formation	MG	MG	Chester Formation	
		Residential	Commercial									

Miscellaneous

Dissolved organic carbon	mg/l	-	3.3	6.01	11	0.97	2.2	2.7	3.0	3.5	0.80
pH	pH units	-	6.7	10.2	7.3	10.0	8.3	7.4	7.4	7.0	7.3
Suspended Solids	mg/l	-	26	-	120	-	8.0	24	12	74	-
Total Organic Carbon	mg/l	-	3	-	18	-	2	3	3	4	-

Anions and Other

Sulphate	mg/l	-	416	-	175	-	23.1	146	69.1	63.2	-
Free Cyanide	ug/l	-	< 5	-	< 5	-	< 5	< 5	< 5	< 5	-
Hexavalent Chromium (Dissolved)	ug/l	-	<0.5	-	≤ 1.0	-	≤ 1.2	≤ 0.6	≤ 2.4	<0.5	-
Total Cyanide	ug/l	-	6	< 1.0	< 5	< 1.0	< 5	< 5	< 5	< 5	< 1.0

Heavy Metals and Metalloids

Arsenic	ug/l	-	< 0.5	2.93	3.0	1.18	0.6	< 0.5	2.3	1.8	0.39
Boron	ug/l	-	206	-	111	-	45	13	83	87	-
Barium	ug/l	-	38	-	90	-	41	191	38	80	-
Beryllium	ug/l	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Cadmium	ug/l	-	< 0.5	0.03	< 0.5	< 0.02	< 0.5	< 0.5	< 0.5	< 0.5	< 0.02
Chromium	ug/l	-	< 0.5	3.8	1.0	1.6	1.2	0.6	2.4	< 0.5	1.2
Chromium (III)	ug/l	-	<0.5	3.8	≤ 1.0	1.6	≤ 1.2	≤ 0.6	≤ 2.4	<0.5	1.2
Copper	ug/l	-	0.6	8.4	7.4	2.9	< 0.5	0.5	3.4	2.9	3.1
Mercury	ug/l	-	< 0.05	1.22	< 0.05	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	ug/l	-	< 1	-	6	-	< 1	< 1	7	4	-
Nickel	ug/l	-	2.1	2.1	8.3	0.5	< 0.5	1.8	1.2	2.3	1.2
Lead	ug/l	-	< 0.5	< 0.2	< 0.5	< 0.2	< 0.5	< 0.5	< 0.5	2.1	0.2
Selenium	ug/l	-	< 1	2.8	4	2.2	< 1	2	2	< 1	< 0.6
Vanadium	ug/l	-	< 0.5	-	7.0	-	< 0.5	< 0.5	1.6	< 0.5	-
Zinc	ug/l	-	10.9	2.7	23.3	2.2	< 1.2	16.8	3.0	13.8	7.8

PAHs

Naphthalene GCMS	ug/l	200	23000	0.01	-	0.02	-	0.02	0.01	0.02	0.01	-
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Acenaphthylene GCMS	ug/l	220000	20000000	< 0.01	-	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	-
Acenaphthene GCMS	ug/l	170000	15000000	< 0.01	-	0.02	-	< 0.01	< 0.01	< 0.01	< 0.01	-
Fluorene GCMS	ug/l	210000	18000000	< 0.01	-	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	-
Phenanthrene GCMS	ug/l	-	-	0.02	-	0.06	-	0.01	< 0.01	0.02	0.05	-
Anthracene GCMS	ug/l	-	-	< 0.01	-	0.01	-	< 0.01	< 0.01	< 0.01	0.01	-
Fluoranthene GCMS	ug/l	-	-	0.02	-	0.06	-	< 0.01	< 0.01	0.02	0.12	-
Pyrene GCMS	ug/l	-	-	0.02	-	0.06	-	< 0.01	< 0.01	0.02	0.13	-
Benzo (a) anthracene GCMS	ug/l	-	-	0.02	-	0.03	-	< 0.01	< 0.01	< 0.01	0.06	-
Chrysene GCMS	ug/l	-	-	0.02	-	0.04	-	< 0.01	< 0.01	0.01	0.07	-
Benzo (b) fluoranthene GCMS	ug/l	-	-	0.04	-	0.33	-	< 0.01	< 0.01	< 0.01	0.16	-
Benzo (k) fluoranthene GCMS	ug/l	-	-	0.03	-	0.26	-	< 0.01	< 0.01	< 0.01	0.42	-
Benzo (a) pyrene GCMS	ug/l	-	-	0.04	-	0.03	-	< 0.01	< 0.01	0.01	0.09	-
Indeno (1,2,3-cd) pyrene GCMS	ug/l	-	-	0.08	-	0.02	-	0.01	0.02	< 0.01	0.05	-
Dibenzo(a,h)anthracene GCMS	ug/l	-	-	0.08	-	< 0.01	-	< 0.01	0.01	< 0.01	0.02	-
Benzo(ghi)perylene GCMS	ug/l	-	-	0.08	-	0.03	-	< 0.01	< 0.01	< 0.01	0.06	-
Total PAH(16) GCMS	ug/l	-	-	0.48	-	0.98	-	0.13	0.09	0.15	1.26	-

TPH

>C5-C6 Aliphatic	ug/l	1900	190000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C6-C8 Aliphatic	ug/l	1500	150000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aliphatic	ug/l	57	5700	7.8	< 1.0	< 5.0	< 1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0
>C10-C12 Aliphatic	ug/l	37	3600	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C12-C16 Aliphatic	ug/l	-	-	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C16-C21 Aliphatic	ug/l	-	-	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C21-C35 Aliphatic	ug/l	-	-	5.5	< 10	76.4	< 10	< 5.0	17.6	< 5.0	6.2	< 10
>C35-C40 Aliphatic	ug/l	-	-	< 5.0	-	< 5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	-
Total (>C5-35) Aliphatic	ug/l	-	-	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Total (>C5-C40) Aliphatic	ug/l	-	-	13.2	-	76.4	-	< 5.0	17.6	< 5.0	6.2	-
>C5-C7 Aromatic	ug/l	210000	20000000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C7-C8 Aromatic	ug/l	220000	21000000	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
>C8-C10 Aromatic	ug/l	1900	190000	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C10-C12 Aromatic	ug/l	6800	660000	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C12-C16 Aromatic	ug/l	39000	3700000	< 5.0	< 10	< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C16-C21 Aromatic	ug/l	-	-	< 5.0	< 10	5.6	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 10
>C21-C35 Aromatic	ug/l	-	-	< 5.0	< 10	69.8	< 10	< 5.0	8.3	< 5.0	< 5.0	< 10
>C35-C40 Aromatic	ug/l	-	-	< 5.0	-	< 5.0	-	< 5.0	< 5.0	< 5.0	< 5.0	-
Total (>C5-C35) Aromatic	ug/l	-	-	-	< 10	-	< 10	-	-	-	-	< 10
Total (>C5-C40) Aromatic	ug/l	-	-	< 5.0	-	75.4	-	< 5.0	8.3	< 5.0	< 5.0	-
Total (>C5-C40) Ali/Aro	ug/l	-	-	13.2	< 10	152	< 10	< 5.0	25.9	< 5.0	6.2	< 10

BTEX and MTBE

Benzene	ug/l	210	20000	< 1.00	< 1.0	< 1.00	< 1.0	< 1.00	< 1.00	< 1.00	< 1.00	< 1.0
Toluene	ug/l	230000	21000000	< 1.00	< 1.0	< 1.00	< 1.0	< 1.00	< 1.00	< 1.00	< 1.00	< 1.0
Ethylbenzene	ug/l	10000	960000	< 1.00	< 1.0	< 1.00	< 1.0	< 1.00	< 1.00	< 1.00	< 1.00	< 1.0

Xylenes	ug/l	9500	940000	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
p & m-xylene	µg/l	9500	940000	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
o-xylene	µg/l	12,000	1,100,000	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
MTBE	ug/l	83000	7800000	< 1.00	< 1.0	< 1.00	< 1.0	< 1.00	< 1.00	< 1.00	< 1.00	< 1.0

VOC

MTBE	ug/l	83,000	7800000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Heptane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Octane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Nonane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Benzene	ug/l	210	20000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Toluene	ug/l	230,000	21000000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Ethylbenzene	ug/l	10,000	960000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
m+p-xylene	ug/l	9,500	1,920,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
o-xylene	ug/l	12,000	1,100,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
cis-1,2-dichloroethene	ug/l	130	13000	8	< 1.0	< 1	< 1.0	< 1	< 1	2	1	< 1.0
1,1-Dichloroethane	ug/l	2,700	260,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Chloroform	ug/l	790	85000	< 1	8.6	< 1	7.9	8	2	< 1	< 1	18.8
Tetrachloromethane	ug/l	5.3	770	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,1,1-Trichloroethane	ug/l	3,000	290,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Trichloroethylene	ug/l	5.7	530	27	< 1.0	< 1	< 1.0	< 1	< 1	1	< 1	< 1.0
Tetrachloroethylene	ug/l	34	4,600	79	< 1.0	< 1	< 1.0	< 1	< 1	13	< 1	< 1.0
1,1,1,2-Tetrachloroethane	ug/l	240	22,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,1,2,2-Tetrachloroethane	ug/l	1,600	150,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Chlorobenzene	ug/l	98	15,000	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Bromobenzene	ug/l	220	20,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Bromodichloromethane	ug/l	17	1,600	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Methylethylbenzene	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,1-Dichloro-1-propene	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Trans - 1-2 -dichloroethylene	ug/l	160	16,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
2,2-Dichloropropane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Bromochloromethane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,2-Dichloroethane	ug/l	8.9	2,600	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Dibromomethane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,2-Dichloropropane	ug/l	22	2,600	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
cis-1,3-Dichloro-1-propene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
trans-1,3-Dichloro-1-propene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,1,2-Trichloroethane	ug/l	520	49,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Dibromochloromethane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,3-Dichloropropane	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Dibromoethane	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
Styrene	ug/l	8,800	810,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Propylbenzene	ug/l	2,700	240,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
2-Chlorotoluene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,2,4-Trimethylbenzene	ug/l	24	2,200	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
4-Chlorotoluene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
t-butylbenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,3,5-Trimethylbenzene	ug/l	-	-	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1-methylpropylbenzene	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
p-cymene	ug/l	-	-	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,3-Dichlorobenzene	ug/l	31	2,800	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0

Butylbenzene	ug/l	-		< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,2-Dibromo-3-chloropropane	ug/l	-		< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Hexachlorobutadiene	ug/l	1.7	230	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1-2-3 - Trichlorobenzene	ug/l	35	3,100	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Naphthalene	ug/l	220	23,000	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1-2-4 - Trichlorobenzene	ug/l	68	7,200	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,4-Dichlorobenzene	ug/l	5,000	460,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
1,2-Dichlorobenzene	ug/l	2,000	220,000	< 1	< 1.0	< 1	< 1.0	< 1	< 1	< 1	< 1	< 1.0
Bromoform	ug/l	3,100	400,000	< 1	-	< 1	-	< 1	< 1	< 1	< 1	-
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Vinyl Chloride	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,2-Dichloropropane	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,1-Dichloropropene	ug/l	22	2600	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Isopropylbenzene	ug/l	850	86,000	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
sec-Butylbenzene	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
p-Isopropyltoluene	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Butylbenzene	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Chloromethane	ug/l	14	1400	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Chloroethane	ug/l	10000	1000000	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Bromomethane	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Trichlorofluoromethane	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,1-Dichloroethene	ug/l	160	16000	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,1-Dichloropropene	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
1,2-Dibromoethane	ug/l	-		-	< 1.0	-	< 1.0	-	-	-	-	< 1.0
Chlorobenzene	ug/l	98	15000	-	< 1.0	-	< 1.0	-	-	-	-	< 1.0

SVOC

Phenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Aniline	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Bis(2-chloroethyl)ether	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2-Chlorophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1,3-Dichlorobenzene	ug/l	31	2800	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
1,4-Dichlorobenzene	ug/l	5,000	460,000	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Benzyl Alcohol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1,2-Dichlorobenzene	ug/l	2,000	220,000	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
2-Methylphenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Bis(2-chloroisopropyl)ether	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
3 and 4-methylphenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
N-Nitrosodi-n-propylamine	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Hexachloroethane	ug/l	8.5	740	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Nitrobenzene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Isophorone	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2-Nitrophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2,4-Dimethylphenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Bis(2-chloroethoxy)methane	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2,4-Dichlorophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1,3,5-Trichlorobenzene	ug/l	7.4	660	< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Naphthalene	ug/l	220	23000	0.01	< 0.01	0.02	< 0.01	0.02	0.01	0.02	0.01	< 0.01
3-Chloroaniline	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Hexachloro-1,3-butadiene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
4-Chloro-3-methylphenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-

2-Methynaphthalene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1-Methylnaphthalene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Hexachlorocyclopentadiene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2,4,6-Trichlorophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2,4,5-Trichlorophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1-Chloronaphthalene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2-Nitroaniline	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1,4-Dinitrobenzene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Dimethyl phthalate	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1-3-dinitrobenzene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2-6-dinitrotoluene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Acenaphthylene	ug/l	220,000	20,000,000	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01
1,2-Dinitrobenzene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
3-Nitroaniline	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Acenaphthene	ug/l	-		< 0.01	-	0.02	-	< 0.01	< 0.01	< 0.01	< 0.01	-
4-nitrophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Dibenzofuran	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2,3,5,6-Tetrachlorophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
2,3,4,6-Tetrachlorophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Diethyl phthalate	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1-chloro-4-phenoxybenzene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Fluorene	ug/l	210,000	18,000,000	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-Nitroaniline	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Dinitro-o-cresol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Diphenylamine	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Azobenzene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
1-bromo-4-phenoxybenzene	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Hexachlorobenzene	ug/l	16	1400	< 1.00	< 0.05	< 1.00	< 0.05	< 1.00	< 1.00	< 1.00	< 1.00	< 0.05
Pentachlorophenol	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Phenanthrene	ug/l	-		0.02	-	0.06	-	0.01	< 0.01	0.02	0.05	-
Anthracene	ug/l	-		< 0.01	-	0.02	-	< 0.01	< 0.01	< 0.01	0.01	-
Carbazole	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Dibutyl phthalate	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Fluoranthene	ug/l	-		0.02	-	0.06	-	< 0.01	< 0.01	0.02	0.15	-
Pyrene	ug/l	-		0.03	-	0.06	-	< 0.01	< 0.01	0.02	0.16	-
Butyl benzyl phthalate	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Bis-2-ethylhexyladipate	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Diisooctyl phthalate	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Benzo(a)anthracene	ug/l	-		0.03	-	0.04	-	< 0.01	< 0.01	< 0.01	0.08	-
Chrysene	ug/l	-		0.03	-	0.04	-	< 0.01	< 0.01	0.01	0.10	-
Bis(2-ethylhexyl)phthalate	ug/l	-		< 1.00	-	< 1.00	-	< 1.00	< 1.00	< 1.00	< 1.00	-
Benzo(b)fluoranthene	ug/l	-		0.05	-	0.03	-	0.01	< 0.01	< 0.01	0.08	-
Benzo(k)fluoranthene	ug/l	-		0.05	-	0.03	-	0.01	< 0.01	0.01	0.08	-
Benzo(a)pyrene	ug/l	-		0.04	-	0.03	-	< 0.01	< 0.01	< 0.01	0.10	-
Indeno(1,2,3-CD)pyrene	ug/l	-		0.08	-	0.02	-	< 0.01	0.02	< 0.01	0.05	-
Dibenzo(a,h)anthracene	ug/l	-		0.09	-	< 0.01	-	< 0.01	0.01	< 0.01	0.02	-
Benzo(ghi)perylene	ug/l	-		0.09	-	0.03	-	0.01	0.01	0.01	0.06	-

Phenolics

Phenol	ug/l	-		1	-	< 1	-	< 1	< 1	< 1	< 1	-
M,P-Cresol	ug/l	-		1	-	< 1	-	< 1	< 1	< 1	< 1	-
O-Cresol	ug/l	-		1	-	< 1	-	< 1	< 1	< 1	< 1	-
3,4-Dimethylphenol	ug/l	-		1	-	< 1	-	< 1	< 1	< 1	< 1	-
2,3-Dimethylphenol	ug/l	-		1	-	< 1	-	< 1	< 1	< 1	< 1	-
2,3,5-trimethylphenol	ug/l	-		1	-	< 1	-	< 1	< 1	< 1	< 1	-
Total Monohydric Phenols	ug/l	-		1	4.8	< 1	3.4	< 1	< 1	< 1	< 1	4.8

Human Health Generic Quantitative Assessment for Soil

1602 - Renaissance Manchester Supplementary

Key:
Exceedance of the GAC
GAC - Generic Assessment Criteria

Laboratory Report Ref, Exploratory Location Ref, Sample Depth (m) Sample Date Made Ground / Natural ?	Units	Residential without home grown produce	Commercial	A2SI								E3P															
				269093	269098	269600	269601	269606	269609	269606	269607	269614	1766020	1766021	1766022	1766023	176614	176616	176618	176621	176622	176623	176624	176625	176626	176627	176628
				WS08	WS09A	WS13	WS13	WS10	WS10	WS11	WS12	WS07	N4101	N4102	N4103	N4103	N4104	N4104	N4105	N4105	N4106	N4106	N4107	N4107	N4108	N4108	N4109
				0.50	0.50	0.50	1.50	0.50	1.50	0.5	0.5	0.5	0.8	0.8	0.8	0.4	0.31	0.30	0.30	0.30	0.31	0.30	0.30	0.31	0.30	0.30	0.31
				23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022	23/02/2022				44250	44250	44250	44250	44250	44250	44250	44250	44250	44250	44250	44250	44250	44250	44250
				MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG
				1% SOM		GAC Ref.																					
				GAC																							

Anions and Other																											
Stone Content	%	-	-	-	-	-	-	-	-	-	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	31	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	-	-	-	-	-	-	-	-	-	-	-	19	19	19	14	11	22	11	24	14	14	14	14	14	14	14
Total mass of sample received	kg	-	-	-	-	-	-	-	-	-	-	-	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
pH - Automated	pH Units	-	-	-	-	-	-	-	-	-	-	-	9.2	12.4	9.2	12.3	7.8	9.1	11.3	9.5	11.7	11.3	12.3	11.3	11.3	11.3	11.3
Total Sulfate	mg/kg	34		34									4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Total Sulfate as SO ₄	mg/kg	-	-	-	-	-	-	-	-	-	-	-	94	3500	270	5100	1300	100	980	140	2800	1200	1800	640	390	390	390
Water Soluble SO ₄ (21 Leach Equiv.) 1hr extraction	mg/kg	-	-	-	-	-	-	-	-	-	-	-	0.014	0.015	0.063	0.011	0.42	0.0095	0.007	0.031	0.0047	0.007	0.0047	0.007	0.007	0.007	0.007
Water Soluble SO ₄ (21 Leach Equiv.) 1hr extraction	mg/kg	-	-	-	-	-	-	-	-	-	-	-	25	31	100	21	330	30	29	30	32	33	130	54	54	54	54
Water Soluble SO ₄ (21 Leach Equiv.) 1hr extraction	mg/kg	-	-	-	-	-	-	-	-	-	-	-	13.5	15.3	85.3	10.5	416	9.5	19.3	14.3	16.3	31.2	4.7	76.7	26.6	26.6	26.6
Water Soluble SO ₄ (21 Leach Equiv.) 1hr extraction	mg/kg	-	-	-	-	-	-	-	-	-	-	-	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total Sulphur	mg/kg	-	-	-	-	-	-	-	-	-	-	-	< 90	2500	390	1900	390	< 90	390	< 90	1100	590	630	630	630	630	630

Asbestos																												
Asbestos in Soil	Type	Present																										
Asbestos in Soil	%	Detectable																										
Asbestos Quantification Stage 2	%	0.001																										
Asbestos Quantification Total	%	0.001																										

Heavy Metals and Metalloids																											
Arsenic (aqueous extractable)	mg/kg	40	540	DEFRA CASLs	-	-	-	-	-	-	-	-	-	1.7	3.2	2.2	3.9	3.6	3.2	2.6	3.2	3.2	3.5	1.6	1.9	1.9	1.9
Cadmium (aqueous extractable)	mg/kg	190	410	LQM S4ULs	-	-	-	-	-	-	-	-	-	< 0.2	0.3	< 0.2	0.3	< 0.2	< 0.2	0.6	< 0.2	< 0.2	0.4	< 0.2	0.4	0.4	0.3
Chromium (hexavalent)	mg/kg	21	8900	DEFRA CASLs	-	-	-	-	-	-	-	-	-	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqueous extractable)	mg/kg	910	48	LQM S4ULs	-	-	-	-	-	-	-	-	-	4.2	14	5.7	16	7.5	5.9	6.2	6.5	13	6.5	6.2	6.1	5.9	5.9
Copper (aqueous extractable)	mg/kg	7100	65000	LQM S4ULs	-	-	-	-	-	-	-	-	-	15	29	14	30	20	11	12	13	22	27	16	13	13	12
Lead (aqueous extractable)	mg/kg	100	2000	DEFRA CASLs	-	-	-	-	-	-	-	-	-	15	29	14	30	20	11	12	13	22	27	16	13	13	12
Mercury (aqueous extractable)	mg/kg	15	320	LQM S4ULs	-	-	-	-	-	-	-	-	-	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqueous extractable)	mg/kg	190	890	LQM S4ULs	-	-	-	-	-	-	-	-	-	5.9	9.3	7.4	17	7.7	7.8	8.8	8.8	9	9.2	8.6	8.6	8.6	8.6
Selenium (aqueous extractable)	mg/kg	400	10000	LQM S4ULs	-	-	-	-	-	-	-	-	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqueous extractable)	mg/kg	40000	730000	LQM S4ULs	-	-	-	-	-	-	-	-	-	21	84	38	85	31	18	45	18	55	94	24	29	29	29

PAHs																											
Naphthalene	mg/kg	2.3	190	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	2800	85000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	2800	85000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	2800	85000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[a]anthracene	mg/kg	1300	22000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[b]fluoranthene	mg/kg	1300	22000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[k]fluoranthene	mg/kg	1500	23000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[e]pyrene	mg/kg	1500	23000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[h]perylene	mg/kg	1900	29000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[i]perylene	mg/kg	11	170	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[j]fluoranthene	mg/kg	30	350	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[k]perylene	mg/kg	110	1200	DEFRA CASLs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[l]perylene	mg/kg	5.3	77	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[m]perylene	mg/kg	29	300	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[n]perylene	mg/kg	0.31	3.5	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo[ghi]perylene	mg/kg	350	3000	LQM S4ULs	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
total PAHs (15)	mg/kg	-	< 0.04	19	-	0.04	-	0.04	-	0.04	-	-	< 0.80	< 0.80	1.99	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80

VOC																										
Heptane	ug/kg	-	-	-	-	< 10.0	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Octane	ug/kg	-	-	-	-	< 10.0	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nonane	ug/kg	-	-	-	-	< 10.0	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/kg	890	27000	DEFRA CASCL	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	ug/kg	880000	36000000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	ug/kg	83000	3300000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m-xylene	ug/kg	78000	12100000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-xylene	ug/kg	88000	6600000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/kg	100	14000	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	ug/kg	2500	280000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	ug/kg	1200	66000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	ug/kg	20	2800	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	ug/kg	880	660000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	ug/kg	10	1200	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	ug/kg	190	19000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2,2-Pentachloroethane	ug/kg	1500	110000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	ug/kg	3900	270000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorene	ug/kg	400	60000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	ug/kg	910	97000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	ug/kg	19	2200	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylchloromethane	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloro-1-propene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethylene	ug/kg	180	22000	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	ug/kg	2,2	270	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	ug/kg	240	3000	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloro-1-propene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	ug/kg	880	14000	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromochloroethane	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biphenyl	ug/kg	35000	3300000	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene	ug/kg	49000	41000	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Ethylbenzene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	ug/kg	410	42000	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Ethyltoluene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-Ethylbenzene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1-methylpropylbenzene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	ug/kg	410	130000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bulkybenzene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3,5-tetra-chlorobenzene	ug/kg	-	-	-	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	ug/kg	320	110000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/kg	1,500	102000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	ug/kg	2,300	190	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/kg	2,500	220000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	ug/kg	61,000	4400000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	ug/kg	24,000	2000000	LQM S4ULS	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromofom	ug/kg	5,200	760000	CLAIRE GAC	-	-	-	< 10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenolics																										
Total Phenols (monohydric)	mg/kg	440	440	LQM S4ULS	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0



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