Supplementary guidance for the selection of water pipes in land potentially affected by contamination

Introduction

In January 2011, UK Water Industry Research (UKWIR) published "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21; the 'UKWIR Guidance'). Its aim is to ensure that the correct materials are selected for water pipes and components to be used below ground in brownfield sites to protect the quality of drinking water whilst taking into account the service life of the water distribution system. It supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 "Laying Pipes in Contaminated Land" which has been withdrawn.

The UKWIR Guidance is for use by developers, self-lay organisations, water companies and consultants when planning, designing and constructing water mains and/or services in brownfield sites. It defines brownfield sites as "land or premises that have previously been used or developed. They may also be vacant or derelict. However, they are not necessarily contaminated." The UKWIR Guidance states that it does not apply to greenfield sites; however, we consider this supplementary guidance and the relevant sections of the UKWIR guidance as being equally suitable for application to those greenfield sites considered to be potentially affected by contamination. Where greenfield sites are not affected by contamination a preliminary risk assessment (see below) will suffice.

The UKWIR Guidance also states that there should be no departure from its provisions "*except where formally approved by the Water Company, such departure being technically justifiable or representing advances in knowledge or product development*".

We have adopted the UKWIR Guidance in principle and produced this company specific supplementary guidance (the 'UUW Guidance') which includes the Risk Assessment for Water Pipes (the 'RA').

This guidance does not cover operative safety, health exposure modelling or accidental pipe damage.

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

Any application for new water supplies to a development (construction of new properties, or renovation or conversion of existing buildings) in land potentially affected by contamination shall include a completed RA.

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication "Model Procedures for the Management of Land Contamination" (ref: CLR11) that sets out whether the land through which the pipes are to be laid may be affected by contamination. The application of the source, pathway, receptor concept will be an integral part of any pipeline risk assessment. For each potential source (the contamination) and each potential receptor (the water pipe), consideration shall be given to whether a potential pathway between source and receptor exists, or may exist in the future, linking the two. There are normally only three pathways by which contamination may come into contact with water pipes. These are direct contact with the soil or backfill, an excessive vapour phase or a contaminated groundwater regime. If none of these conditions exist on site (adopting the source, pathway, receptor concept) then it is likely that extended and/or targeted soil testing will not be required and a simple risk assessment will suffice. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. The testing requirements are as described in the following section.

The signatories of the Water Supply Application Form and the RA must ensure that all assessments of land condition have been carried out in accordance with applicable current standards and guidelines by or under the direction of a suitably qualified competent person.

We require the competent person to be a) a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or b) a Specialist in Land Condition (SiLC) with appropriate geo-environmental experience.

Testing Requirements

The soil, rock and if appropriate groundwater tests that are required on all sites where the potential for organic contamination has been identified in the desk study and where water pipes are proposed to be laid must be accredited by United Kingdom Accreditation Service (UKAS) as a minimum and where commercially available the Environment Agency's Monitoring Certification Service (MCERTS). These accredited tests should be undertaken for:

Banded hydrocarbons EC5-EC10, EC10-EC16, EC16-EC40 (Total aliphatic and aromatic hydrocarbons for each banding may be summed). Aliphatic/aromatic fractionation and subsequent banding may be required should a more detailed site specific risk assessment be undertaken. The bandings have been amended to take into account readily available laboratory tests. The equivalent carbon number (EC) is used to assess petroleum hydrocarbon mixtures rather than the actual number of carbon atoms in the molecule in line with guidance issued by the Environment Agency (2005).

Volatile organic compounds (VOCs) (method by head space or purge & trap GCMS) with tentative identification of compounds greater than 20µg/kg. The method used should be capable of detecting a wide range of compounds listed in US EPA Method 8260C or similar. The method should include analysis of naphthalene.

BTEX (Benzene, toluene, ethyl benzene and xylenes) plus MTBE (Methyl-tertiary butyl ether) (by head space GCMS)

Semi-Volatile Organic Compounds (SVOCs) (method by GCMS) with tentative identification of compounds greater than 20µg/kg The method used should be capable of detecting the compounds listed in US EPA Method 8270D or similar. The total concentration of SVOCs excludes polycyclic aromatic hydrocarbons, ethers, nitrobenzene, ketones, aldehydes, phenols, cresols and chlorinated phenols. Phenols, cresols and chlorinated phenols which are detected by the SVOC analysis are given their own assessment criteria.

We do not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in the RA below replaces Table 3.1 of the UKWIR Guidance.

Where previous site uses include the use, storage, treatment, disposal or manufacture of any of the following, appropriate testing for these substances will be required:

Ethers, nitrobenzene, ketones, aldehydes and amines. Note that the presence of amines on any site at the proposed pipe depth +/- 1.0m precludes the use of polyethylene. The methods of analysis and method of calculation of total concentrations of these compounds will need to be agreed with UUW.

To comply with the testing requirements, the suites of tests that are required on all brownfield sites where wrapped steel, wrapped ductile iron or copper pipes are to be laid as minimum must include:

pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be

necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

Where required a sufficient number of test results should be obtained from the material in which the pipes are to be laid. CLAIRE/CIEH 2008 “Guidance on comparing soil contamination data with a critical concentration” may be used, where appropriate, to justify the number of soil samples tested; however, this statistical model should not be used on heterogeneous materials or used to average test results from different types of materials.

Further guidance on representative sampling is contained within BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites, the Department of the Environment’s Contaminated Land Research Report “Sampling strategies for contaminated land” prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4; 1994) and the Environment Agency’s “Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination” (ref: R&D Technical Report P5-066/TR; 2000).

Where remediation has been carried out on the site, the test results obtained from validation samples will be used in the assessment. Where a horizontal capping system has been or will be employed using materials spread across a site, sufficient samples will need to be taken to characterise the capping material used and the results presented to UUW. However, the sufficiency of sampling on the horizontal capping system, in which the pipeline will be placed, may be assessed on the basis of the source, quantity and type of materials used.

Detection Limits

Only positive concentrations, ie those above the limit of detection should be used in summation of VOC and SVOC (or other test groups of compounds ie phenols, cresols and chlorinated phenols). Laboratory methods shall provide a minimum limit of detection of 10µg/kg for each individual VOC or SVOC (or other test groups of compounds) quantitatively detected in accordance with the methods described above. For tentatively identified compounds (TICs), only those compounds with a concentration of 20µg/kg or greater shall be used in the summation of VOC and SVOC (or other test groups of compounds).

Protective Measures

Where polyethylene, ductile iron, steel or copper pipes are to be laid on a brownfield site or other land potentially affected by contamination (whether or not it has been remediated) and where the concentrations exceed the generic guideline values set out in Table 1 of the RA, the developer shall provide either:

a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or

b) more suitable pipe materials; or

c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

Liquid free phase product (e.g. oil or free solvent layers) shall not remain in the ground or groundwater in the vicinity of water pipes, whether barrier pipe or any other pipe materials are used.

When designing pipe routes on land potentially affected by contamination, new preferential contamination pathways along the route of new water pipes shall not be created. Particular measures may be required to prevent the possible migration of contamination through pipe bedding and into controlled waters.

References

BS10175:2011 “Investigation of Potentially Contaminated Sites Code of Practice”

CLAIRE/CIEH “Guidance on comparing soil contamination data with a critical concentration” 2008

Department of the Environment Contaminated Land Research Report “Sampling strategies for contaminated land” prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4) 1994

Environment Agency “Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination” (ref: R&D Technical Report P5-066/TR) 2000

Environment Agency “Model Procedures for the Management of Land Contamination” (ref: CLR11), 2004

Environment Agency P5-080/TR3 “The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils”, 2005

UK Water Industry Research (UKWIR) "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21)” January 2011

Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 “Laying Pipes in Contaminated Land” 2002

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United Utilities Water PLC, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
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Risk Assessment for Water Pipes (RA)

The risk assessment for water pipes will help you choose appropriate materials for your development. We are happy to deal with a risk assessment for water pipes in advance of any formal application for a new water supply.

If you need any help completing the form please call us on 0845 026 4296.

When completing this form electronically, the larger text boxes will expand in height if required.

Section 1: Development Details	
Development Name *(if it has one)*	Swan House
Development Address	Cable Street, M4 5DF
OS Grid Reference *(mid point)*	SJ 84510 98850
Developers Name	Ridge Manchester
UUW reference number *(for UU use only)*	

Please provide details below of the current and historical use of the site and adjacent sites.

If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.

The earliest historic maps (1850) shows the site is fully developed, occupied by Cable Street Mill with residential properties in the northwest of the site. During WWII, ruins are noted in the vicinity of the site with the building no longer recorded, potentially due to a bomb strike. In 1948, the site is noted as a warehouse with an extension recorded in the western corner in 1951. The buildings on site were demolished in 2021.

Section 2: Preliminary Risk Assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	☒ Yes ☐ No

If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

N/A

Section 3: Intrusive Site Investigation	
Have you completed any intrusive site investigation?	☒ Yes ☐ No
Date(s) when the site investigation(s) undertaken	10 - 14th September 2018, 19 - 29th January and 23 - 27th August 2021
At what level has groundwater been encountered?	2.80 and 14.00 - 16.00 metres below ground level or ☒ Not encountered

Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing.

If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.

Please refer to Curtins Phase 2 Ground Investigation for Swan House dated November 2021, ref 077409-CUR-00-XX-RP-GE-002-V04

Section 4.1 Soil Investigation. During the investigation, seventeen soil samples were taken from witihn made ground soils in 2018 investigation and 2021 investigations and tested for Curtins Suite A.

If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

N/A.

Section 4: Site Remediation	

Please provide details below of any site remediation (which may include a change in site levels) already completed.

If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.

Delineation of made ground around WS02 at 0.35m bgl encountered during 2018 investigation undertaken in August 2021 to remove hazardous material off site.

Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☒ Yes ☐ No ☐ N/A

Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection.

If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.

N/A

Section 5: Final Use of Site
Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection. *If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.*
Considering the final end use of the site as commercial and residential apartments, there is likely to be limited chemicals and fuel stored onsite, likely to be stored in plant areas.

What water pipe materials are intended to be used on site?	☒ PE ☐ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B Other (please specify):

Section 6: Additional Information
Please use the section below to provide any additional details to support your intended pipe selection. *If your supporting information has additional information to support your intended pipe selection, please reference below the relevant sections of your report.*
As no thresholds were exceeded at the proposed water pipe depth between 0.75m and 1.10m bgl therefore PE pipe is recommended. The elevated hydrocarbons identified in TPB at 0.30m were delineated and removed from site as part of the July/August 2021 investigation.

Section 7: Risk Assessor	
Name and relevant qualifications of person directing the risk assessment for water pipes	R Allen BSc (Hons) MSc FGS MCIWEM C.WEM CEng
Name and address of risk assessor's company	Curtins, 17-19 Whitworth St W, Manchester, M1 5W
Date risk assessment performed	07/01/2022

Section 8: Declaration			
I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and UUW's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information. I understand that failure to supply any of the required information may delay my application being processed.			
Name	Rob Allen	Company	Curtins
Phone Number	0161 236 2394	Date	07/01/2022

Please e-mail the completed form and supporting information to water.connections@uuplc.co.uk. Alternatively you can fax a paper version to 01925 678926 or post to us at United Utilities Water, Metering and Connections, Ullswater House, Lingley Mere, Warrington, WA5 3LP.

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07/12/04955

Table 1 - Pipe Selection Risk Assessment Summary (PSRAS)

1) *Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.*

2) *If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.*

What materials have been tested to populate Table 1 below?	☒ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

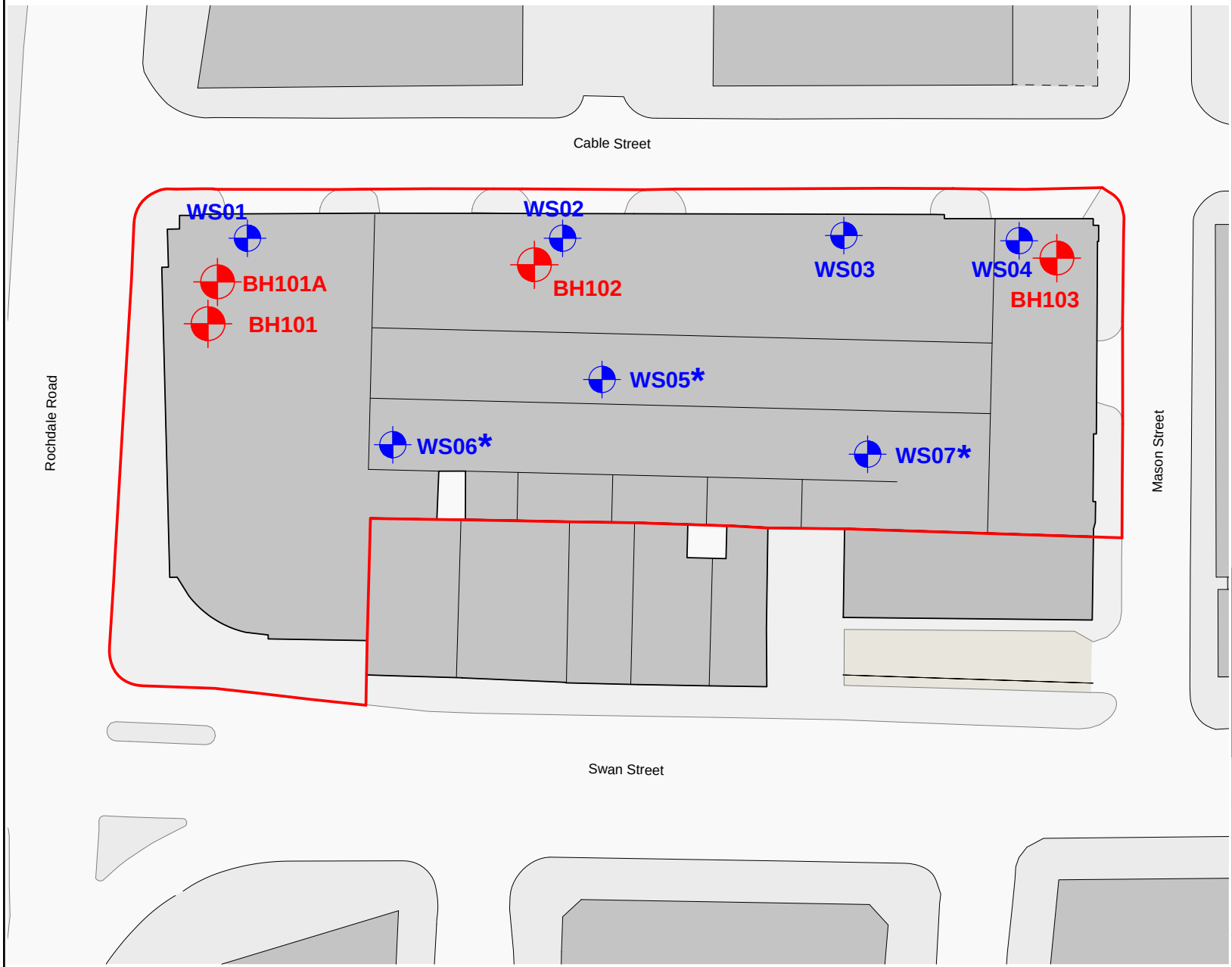
All concentrations in mg/kg

Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth See Note [2]	Maximum site concentration See Note [3]	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass					
Total BTEX & MTBE		0.1	Pass	<0.01	Y			
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass					
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	<0.01	Y	2	37	TPB at 0.30m bgl
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	1	Y	3	3	
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	1	Y	16	17	-
Phenols* (from SVOC analysis)		2	Pass					
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass					
Ethers*	Only where identified	0.5	Pass					
Nitrobenzene*		0.5	Pass					
Ketones*		0.5	Pass					
Aldehydes*		0.5	Pass					
Amines		Fail	Pass					
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]	0.01	Y	7.45 - 9.53		

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.



2019 Investigation

Window Sample Borehole Location

* Denotes borehole drilled in basement

All boreholes were followed on by dynamic probing with the exception of WS05.

All boreholes were installed with the exception of WS06.

2021 Investigation

Sonic Borehole Location

Rev:	Description:	Date:	By:	Chkd:

curtins

Curtins Consulting Ltd,
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
t: 0161 236 2394
e: manchester@curtins.com
www.curtins.com

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Status: INFORMATION

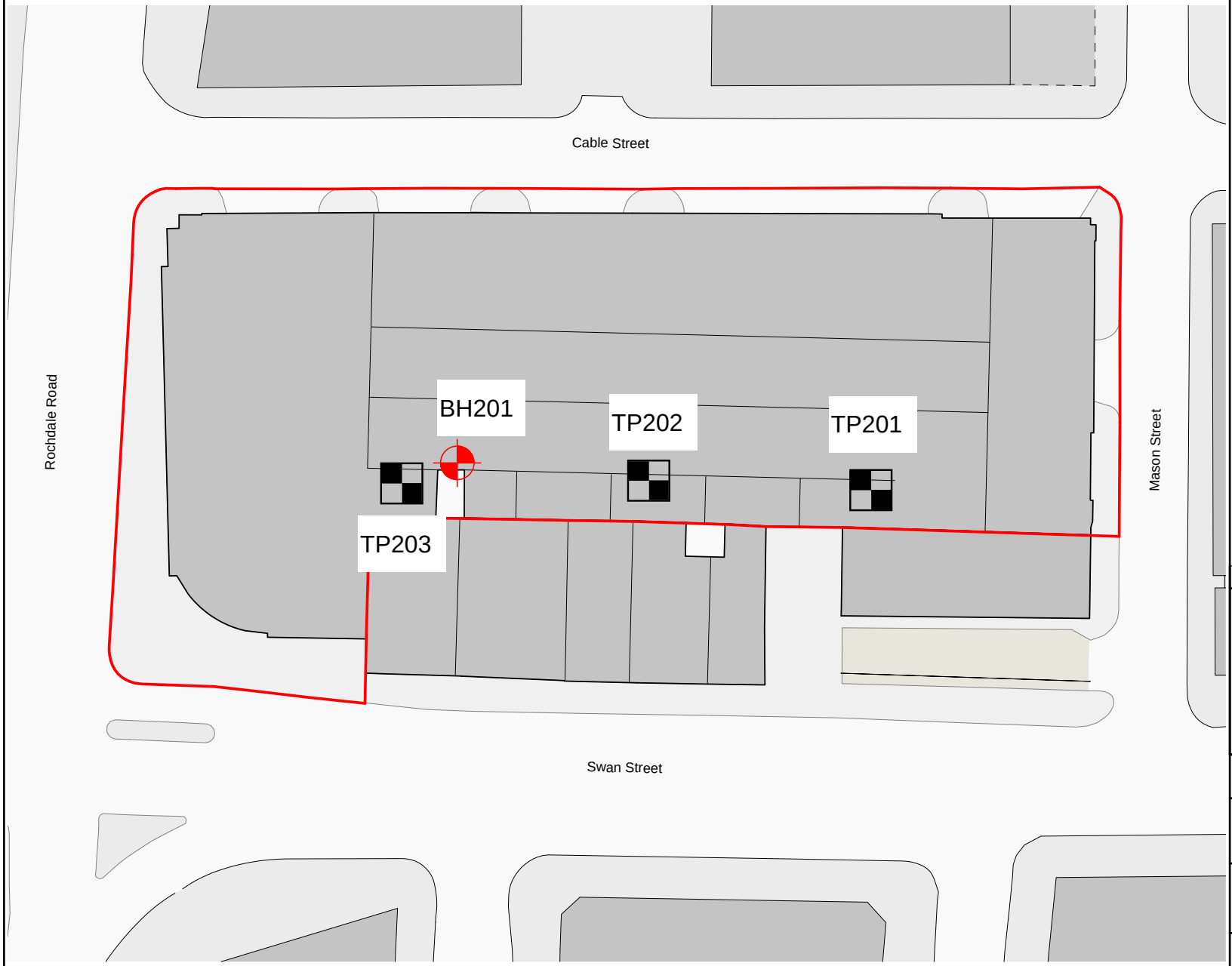
Project: Swan House

Drg Title: Exploratory Hole Location Plan

Scale:	Size:	First Issue:	Drawn:	Checked:
NTS	A3	02/02/21	PN	SH

Drg No: 077409-CUR-00-XX-DR-GE-80002-P01 Rev: /

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Cable Percussive Borehole with Rotary Follow-on Location

Trial Pit

Rev:	Description:	Date:	By:	Chkd:

Curtins Consulting Ltd,
Merchant Exchange, 17-19 Whitworth Street West, Manchester, M1 5WG
t: 0161 236 2394
e: manchester@curtins.com
www.curtins.com

Structures - Civils - Environmental - Infrastructure - Transport Planning - Sustainability - Expert Advisory Services
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Status: INFORMATION

Project: Swan House

Drg Title: Exploratory Hole Location Plan

Scale:	Size:	First Issue:	Drawn:	Checked:
NTS	A3	21/08//21	PN	SH

Drg No: 077409-CUR-00-XX-DR-GE-80003-P01 Rev: /

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Manchester
M1 5WG

Borehole Log

Borehole No.
WS01
Sheet 1 of 1

Project Name: Swan House, Manchester	Project No. B067266.201	Co-ords: -	Hole Type WS
Location: Cable Street, Manchester		Level: 50.90	Scale 1:50
Client: Foundation Real Estate		Dates: 13/09/2018 - 13/09/2018	Logged By MH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.28	50.62		MADE GROUND: CONCRETE.
					0.34	50.56		MADE GROUND: Reddish brown medium SAND.
		0.55 - 0.65	ES		0.47	50.43		MADE GROUND: CONCRETE.
		1.00		N=17 (2,2/4,4,4,5)				Stiff brown mottled grey sandy slightly gravelly CLAY. Gravel is fine, angular to subrounded sandstone and coal. Rare medium gravel of sandstone and coal.
		1.70 - 2.00	D					
		2.00		N=24 (2,3/5,5,7,7)				
		3.00		N=24 (2,4/4,6,7,7)				
		3.50	D					*Rare grey mottling from 3.40m bgl.*
		4.00		N=22 (2,3/4,5,6,7)				
		4.70 - 5.00	D		4.60	46.30		Stiff brown sandy CLAY. Rare gravel of fine and medium subangular to subrounded sandstone.
					5.00	45.90		End of borehole at 5.00 m

Remarks
Borehole undertaken in loading bay from existing ground level. Ground level estimated from previous GPR survey. Hand dug service clearance pit to 1.20m bgl. No groundwater encountered. Dynamic Probe follow on to 7.00m bgl. Downhole magnetometery conducted by UXO specialist. Borehole cleared for UXO to a maximum depth of 7.00m bgl.

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Borehole Log

Borehole No.
WS02
Sheet 1 of 1

Project Name: Swan House, Manchester	Project No. B067266.201	Co-ords: -	Hole Type WS
Location: Cable Street, Manchester		Level: 51.00	Scale 1:50
Client: Foundation Real Estate		Dates: 14/09/2018 - 14/09/2018	Logged By MH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.35	ES		0.31	50.69		MADE GROUND: CONCRETE.
					0.35	50.65		MADE GROUND: Very loose dark greyish brown slightly clayey fine SAND. Slight hydrocarbon odour (Possible fuel oil).
		0.70	ES		0.49	50.51		MADE GROUND: CONCRETE.
		1.00		N=21 (2,4/4,5,6,6)	1.05	49.95		MADE GROUND: Loose black slightly silty fine and medium SAND. Rare subangular to subrounded cobble of brick.
		1.05 - 1.30	ES					*Rare pockets of red sand (Weathered brick).*
		1.80 - 2.00	D					Stiff brown with grey mottling slightly sandy slightly gravelly CLAY. Gravel is fine and medium angular to subrounded sandstone and coal.
		2.00		N=25 (2,4/5,6,7,7)				
		3.00		N=25 (2,4/5,6,7,7)	3.00	48.00		Stiff brown with occasional light brown and grey mottling sandy slightly gravelly CLAY. Gravel is fine, subangular to subrounded sandstone and coal.
								Rare gravel from 3.50m bgl.
		3.80 - 4.00	D					
		4.00		N=15 (2,2/3,3,4,5)				
					5.00	46.00		End of borehole at 5.00 m

Remarks
Borehole undertaken in loading bay from existing ground level. Ground level estimated from previous GPR survey. Hand dug service clearance pit to 1.20m bgl. No groundwater encountered. Dynamic Probe follow on to 7.00m bgl. Downhole magnetometery conducted by UXO specialist. Borehole cleared for UXO to a maximum depth of 7.00m bgl.

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Manchester
M1 5WG

Borehole Log

Borehole No.
WS03
Sheet 1 of 1

Project Name: Swan House, Manchester	Project No. B067266.201	Co-ords: -	Hole Type WS
Location: Cable Street, Manchester		Level: 51.10	Scale 1:50
Client: Foundation Real Estate		Dates: 13/09/2018 - 14/09/2018	Logged By MH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15	50.95		MADE GROUND: CONCRETE.
					0.19	50.91		MADE GROUND: Reddish brown medium SAND.
		0.40	ES		0.34	50.76		MADE GROUND: CONCRETE.
		1.00		N=4 (0,0/0,1,2,1)				MADE GROUND: Loose black gravelly fine to coarse SAND. Gravel is fine to coarse angular to subrounded brick, concrete, ash, clinker, slate, rare coal, and sandstone.
					1.30	49.80		MADE GROUND: Very soft brown slightly sandy slightly gravelly CLAY. Gravel is fine angular to subrounded brick, coal and sandstone.
		1.70	ES					
		2.00		N=2 (0,0/0,0,1,1)				
	▼				2.80	48.30		Firm brown sandy slightly gravelly CLAY. Gravel is fine and medium subangular to rounded sandstone.
		3.00	ES					
		3.00		N=15 (3,3/3,3,4,5)	3.20	47.90		Stiff brown with grey mottling sandy slightly gravelly CLAY. Gravel is fine sandstone and coal.
		4.00		N=20 (2,3/3,4,6,7)				
		4.80 - 5.00	D					
					5.00	46.10		End of borehole at 5.00 m

Remarks
Borehole undertaken in loading bay from existing ground level. Ground level estimated from previous GPR survey.
Hand dug service clearance pit to 1.20m bgl. Groundwater encountered at 2.80m bgl. Dynamic Probe follow on to 7.00m bgl.
Downhole magnetometery conducted by UXO specialist. Borehole cleared for UXO to a maximum depth of 7.00m bgl.

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Borehole Log

Borehole No.
WS04
Sheet 1 of 1

Project Name: Swan House, Manchester	Project No. B067266.201	Co-ords: -	Hole Type WS
Location: Cable Street, Manchester		Level: 51.10	Scale 1:50
Client: Foundation Real Estate		Dates: 13/09/2018 - 13/09/2018	Logged By MH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.13	50.97		MADE GROUND: CONCRETE.
		0.30	ES		0.24	50.86		MADE GROUND: Light brownish grey and black GRAVEL of concrete and tarmac.
					0.31	50.79		
		0.70	ES		0.47	50.63		MADE GROUND: Reddish brown medium SAND.
					0.85	50.25		MADE GROUND: CONCRETE.
					1.13	49.97		MADE GROUND: Brown and black gravelly medium and coarse SAND. Gravel is fine to coarse angular to subangular brick, concrete and clinker. rare metal fragments. Localised clay pockets.
		1.35		N=30 (1,5/9,7,7,7)	1.35	49.75		
		1.40 - 1.70	ES					MADE GROUND: Light red medium grained SANDSTONE.
		2.00		N=5 (3,3/3,1,1,0)				MADE GROUND: Limestone GRAVEL (Drillers Description).
					2.25	48.85		MADE GROUND: Red sandy GRAVEL. Gravel is fine to coarse angular to subrounded brick, concrete and slate.
		2.40 - 2.70	ES					
		2.70 - 3.00	ES		2.70	48.40		MADE GROUND: Very soft brown sandy slightly gravelly CLAY. Gravel is fine to medium sandstone and coal. (Reworked).
					3.00	48.10		MADE GROUND: Very soft dark greyish brown sandy slightly gravelly CLAY. Rare blackened plant/wood fragments. Slight organic odour. (Reworked).
								End of borehole at 3.00 m

Remarks

Borehole undertaken in loading bay from existing ground level. Ground level estimated from previous GPR survey.
Hand dug service clearance pit to 1.20m bgl. Possible brick wall encountered between 1.35m - 2.25m bgl. Deviation of window sampler within Made Ground deposits prevented progression of borehole. Borehole terminated at 3.00m bgl. No groundwater encountered. Dynamic Probe follow on to 4.50m bgl.
Downhole magnetometery conducted by UXO specialist. Borehole cleared for UXO to a maximum depth of 4.50m bgl.

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Manchester
M1 5WG

Borehole Log

Borehole No.
WS05
Sheet 1 of 1

Project Name: Swan House, Manchester	Project No. B067266.201	Co-ords: -	Hole Type WS
Location: Cable Street, Manchester		Level:	Scale 1:50
Client: Foundation Real Estate		Dates: 10/09/2018 - 10/09/2018	Logged By SH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND: CONCRETE.
					1.17			End of borehole at 1.17 m

Remarks
Borehole undertaken within basement.
Hand dug service clearance pit to 1.20m bgl. Possible pad foundation identified. Borehole terminated at 1.17m bgl. No groundwater encountered.

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M1 5WG

Borehole Log

Borehole No.
WS06
Sheet 1 of 1

Project Name: Swan House, Manchester	Project No. B067266.201	Co-ords: -	Hole Type WS
Location: Cable Street, Manchester		Level:	Scale 1:50
Client: Foundation Real Estate		Dates: 10/09/2018 - 11/09/2018	Logged By SH/MH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.25			MADE GROUND: CONCRETE.
		1.00		N=25 (3,4/5,6,6,8)				Stiff brown with grey mottling sandy slightly gravelly CLAY.
		2.00		N=17 (3,3/3,4,4,6)				
		3.00		N=21 (3,3/4,5,6,6)				
		3.00 - 3.25	D					
					3.50			Firm brown sandy CLAY. Slightly damp.
					3.80			Stiff brown sandy CLAY.
		4.00		N=20 (3,4/4,5,5,6)				
					4.20			Stiff brown sandy CLAY. Rare gravel of fine sandstone and coal.
		4.70 - 4.90	D					
					5.00			End of borehole at 5.00 m

Remarks
Borehole undertaken within basement.
Hand dug service clearance pit to 1.20m bgl. No groundwater encountered. Dynamic Probe follow on to 7.00m bgl.

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M1 5WG

Borehole Log

Borehole No.
WS07
Sheet 1 of 1

Project Name: Swan House, Manchester	Project No. B067266.201	Co-ords: -	Hole Type WS
Location: Cable Street, Manchester		Level:	Scale 1:50
Client: Foundation Real Estate		Dates: 11/09/2018 - 12/09/2018	Logged By MH

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 - 0.50	ES		0.31			MADE GROUND: CONCRETE.
		1.00		N=23 (2,3/5,5,6,7)				Stiff dark brown with occasional dark grey mottling slightly sandy slightly gravelly CLAY. Gravel is fine, angular to rounded sandstone and coal.
		1.90 - 2.00	D					
		2.00		N=20 (2,3/4,5,5,6)				
		3.00		N=17 (2,3/4,4,4,5)				
		3.80 - 4.00	D		3.90			Firm dark brown with rare light brown mottling sandy slightly gravelly CLAY. Rare light brown mottling. Gravel is fine subangular sandstone.
		4.00		N=13 (2,1/2,3,4,4)				*Deposits recorded as wet between 4.60m - 4.80m bgl.*
					5.00			End of borehole at 5.00 m

Remarks
Borehole undertaken within basement.
Hand dug service clearance pit to 1.20m bgl. No groundwater encountered. Dynamic Probe follow on to 7.00m bgl.

Borehole Log

Borehole No.
BH101
Sheet 1 of 1

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location:	Manchester		Level:	Scale 1:50
Client:	RGCM Ltd		Dates: 19/01/2021 - 19/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmac
					0.30			MADE GROUND: Concrete block
					0.50			MADE GROUND: Concrete slab
					0.80			MADE GROUND: Reddish brown slightly clayey angular to subangular fine to coarse gravel of brick and concrete.
								MADE GROUND: Dark brown slightly silty gravelly clay with low cobble content. Gravel is angular to subrounded, fine to coarse of brick.
					1.50			MADE GROUND: Concrete slab
					1.55			End of borehole at 1.55 m

Remarks
Service inspection pit hand excavated from GL to 1.20m. Borehole terminated at 1.50m bgl due to possible slab encountered. Position reviewed in relation to services and decision made to relocate to BH101A.

Borehole Log

Borehole No. **BH101A**

Sheet 1 of 4

Project Name: Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location: Manchester		Level: 49.95	Scale 1:50
Client: RGCM Ltd		Dates: 19/01/2021 - 22/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.04	49.91		MADE GROUND: Tarmac
					0.24	49.71		MADE GROUND: Concrete slab
					0.40	49.55		MADE GROUND: Concrete block
		0.66 - 0.70	D		0.60	49.35		MADE GROUND: Concrete slab
					0.65	49.30		MADE GROUND: Dark brown slightly gravelly clay. Gravel is angular to subrounded, fine to coarse including brick.
		1.00 - 1.10	D					
		1.20	D					Firm to very stiff brown occassional orange mottling slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded, fine to coarse including sandstone and mudstone.
		1.20		N=10 (0,3/2,3,1,4)				
		1.70 - 1.80	D					
		2.00		N=24 (4,6/5,6,6,7)				
		2.00 - 2.45	D					
		2.50 - 2.60	D					
		3.00		N=19 (7,6/7,4,3,5)				
		3.00 - 3.45	D					
		3.50 - 3.60	D					
		4.00		N=27 (8,7/8,6,6,7)				
		4.00 - 4.45	D					
		4.50 - 4.60	D					
		5.00 - 5.45	U	Ublow=100				
		5.50 - 5.60	D					
		6.00		N=30 (9,8/7,9,7,7)				
		6.00 - 6.45	D					
		7.00 - 7.10	D					
		7.50 - 7.95	U	Ublow=100				
		8.50 - 8.60	D					
		9.00		N=33 (8,8/9,8,7,9)				
		9.00 - 9.45	D					
		10.00 - 10.10	D					

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 14.00m bgl rising to 12.90m bgl. Refer to BH101A RC log for rotary drilling details and core recovery parameters.

AGS

Borehole Log

Borehole No. **BH101A**
Sheet 2 of 4

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords:	-	Hole Type BH
Location:	Manchester		Level:	49.95	Scale 1:50
Client:	RGCM Ltd		Dates:	19/01/2021 - 22/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.50		N=37 (10,9/10,8,9,10)				
		10.50 - 10.95	D					
		11.50 - 11.60	D					
		12.00 - 12.45	U	Ublow=100				
		12.60 - 12.70	D		12.55	37.40		Very dense brown slightly gravelly fine to coarse SAND. Gravel is subrounded to well rounded including sandstone, mudstone and siltstone.
	▼	13.50		50 (25 for 15mm/50 for 150mm)				
		14.50 - 14.60	D					
		15.00	D					
		15.00		50 (19,6/50 for 170mm)				
		16.00 - 16.10	D					
					17.00	32.95		Very dense reddish brown slightly gravelly medium to coarse SAND. Gravel is subangular to subrounded, fine to medium of sandstone.
					20.00	29.95		

Continued on next sheet

Remarks
Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 14.00m bgl rising to 12.90m bgl.
Refer to BH101A RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH101A**

Sheet 3 of 4

Project Name: Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location: Manchester		Level: 49.95	Scale 1:50
Client: RGCM Ltd		Dates: 19/01/2021 - 22/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Weak reddish brown fine to medium grained SANDSTONE.
								From 20.00 to 20.65m no recovery.
								From 20.65 to 20.85m recovered as non-intact core of sandy gravel.
								20.85 to 21.50m 0 - 10 degrees very closely spaced to closely spaced, planar rough
								From 21.50 to 21.73m no recovery.
								21.73 to 21.79m 0 - 10 degrees extremely closely spaced to very closely spaced, planar rough
								From 21.79 to 21.83m recovered as non-intact core of fine to medium sand.
								21.85 to 21.90m 0 - 10 degrees extremely closely to very closely spaced, planar rough
								From 21.90 to 22.00m recovered as non-intact core of fine to medium sand.
								22.00 to 22.95m 0 - 10 degrees extremely closely spaced to very closely spaced, planar rough
								From 22.95 to 23.35m no recovery
								From 23.35 to 23.50m recovered as non-intact core of gravelly fine to medium sand.
					23.65	26.30		*From 23.50 to 23.65m highly weathered.*
								Medium strong reddish brown fine to medium grained SANDSTONE.
		24.10 - 24.32	C					*23.65 to 24.50m 0-10 degrees closely spaced to medium spaced locally extremely closely spaced, planar rough*
								From 24.50 to 25.50m no recovery.
								From 25.50 to 25.70m highly weathered.
								25.70 to 25.90m 0-10 degrees extremely closely spaced to very closely spaced, planar rough
								From 25.90 to 26.0m no recovery.
		26.14 - 26.27	C					*26.00 to 27.5m 0 - 10 degrees closely spaced to medium spaced locally very closely spaced, planar rough*
		26.93 - 27.17	C					
								27.50 to 28.67m 0 - 10 degrees extremely closely spaced to very closely spaced, planar rough
								From 28.67 to 29.50m no recovery.
								From 29.50 to 29.60m recovered as non-intact core of slightly sandy subrounded fine to coarse gravel of sandstone.
		29.84 - 30.00	C					

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 14.00m bgl rising to 12.90m bgl.
Refer to BH101A RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH101A** Sheet 4 of 4

Project Name: Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location: Manchester		Level: 49.95	Scale 1:50
Client: RGCM Ltd		Dates: 19/01/2021 - 22/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		30.66 - 31.01	C					*29.60 to 31.82m 0 - 10 degrees closely spaced to medium spaced locally extremely closely spaced, planar rough*
								From 31.82 to 32.00m no recovery.
								32.00 to 33.40m 0 - 10 degrees medium spaced locally extremely closely spaced, planar rough
		32.86 - 33.27	C					
								From 33.40 to 33.50m no recovery.
								33.50 to 35.05m 0 - 10 degrees very closely spaced to closely spaced, planar rough
					33.90	16.05		Medium strong reddish brown medium to coarse grained SANDSTONE.
								From 35.05 to 35.50m no recovery.
		35.85 - 35.99	C					
					36.50	13.45		*From 36.34 to 36.40m recovered as non-intact core of sandy subangular to well rounded, fine to coarse gravel of sandstone.*
								36.40 to 36.50m 0 - 10 degrees closely spaced to medium spaced, planar rough
		36.93 - 37.15	C					Medium strong reddish brown fine to medium grained SANDSTONE.
								From 36.50 to 36.77m recovered as non-intact core of angular to subangular fine to coarse gravel and cobbles.
								36.71 to 37.83m 0 - 10 degrees closely spaced to medium spaced, planar rough
					37.85	12.10		*From 37.83 to 38.00m no recovery.*
								Medium strong reddish brown coarse SANDSTONE.
		38.83 - 38.97	C					
								From 39.20 to 39.25m recovered as non-intact core of sandy subangular coarse gravel of sandstone.
								From 39.40 to 39.50m no recovery.
								39.50 to 40.00m 0 - 10 degrees very closely spaced to closely spaced, planar rough
					40.00	9.95		End of borehole at 40.00 m

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 14.00m bgl rising to 12.90m bgl.
Refer to BH101A RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH102**

Sheet 1 of 5

Project Name: Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location: Manchester		Level: 50.10	Scale 1:50
Client: RGCM Ltd		Dates: 21/01/2021 - 26/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	50.00		MADE GROUND: Concrete slab
					0.30	49.80		MADE GROUND: Concete block
		0.45 - 0.60	ES		0.40	49.70		MADE GROUND: Reinforced concrete
					0.45	49.65		MADE GROUND: Reddish brown angular to subangular, fine to coarse gravel of brick.
		0.90 - 1.00	D		0.80	49.30		MADE GROUND: Brown/orange slightly sandy slightly gravelly clay with low cobble content. Sand is medium to coarse. Gravel is angular to subrounded, fine to coarse including brick and concrete. Cobbles are angular of brick.
		1.20 1.20	D	N=19 (5,6/4,5,5,5)				Stiff to very stiff brown with occasional light brown mottling slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to rounded, fine to coarse of sandstone and mudstone.
		1.70 - 1.80	D					
		2.00 2.00	D	N=21 (6,5/6,5,4,6)				
		2.50 - 2.60	D					
		3.00 - 3.45	D	Ublow=100				
		3.50 - 3.60	D					
		4.00 4.00	D	N=23 (8,4/4,6,6,7)				
		4.50 - 4.60	D					
		5.00 5.00	D	N=29 (8,7/7,6,8,8)				
		5.50 - 5.60	D					
		6.00 - 6.45	U	Ublow=100				
		7.00 - 7.10	D					
		7.50 7.50	D	N=34 (8,9/10,8,8,8)				
		8.50 - 8.60	D					
		9.00 9.00	D	N=38 (11,10/10,10,8,10)				
		10.00 - 10.10	D					

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 15.00m bgl to 12.00m bgl. Refer for BH102 RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH102**

Sheet 2 of 5

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords:	-	Hole Type BH
Location:	Manchester		Level:	50.10	Scale 1:50
Client:	RGCM Ltd		Dates:	21/01/2021 - 26/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.50 10.50	D	N=46 (12,11/12,12,11,11)				
		11.50 - 11.60	D					
		12.00 12.00	D	N=49 (13,12/13,13,11,12)				
		13.00 - 13.10	D		13.00	37.10		Very dense brown slightly gravelly fine to coarse SAND. Gravel is subrounded to well rounded of sandstone, mudstone and siltstone.
		13.50 13.50	D	N=50 (14,11/14,14,13,9)				
		14.50 - 14.60	D					
	▼	15.00 15.00	D	50 (20,5/50 for 165mm)	15.00	35.10		Very dense reddish brown slightly gravelly medium to coarse SAND. Gravel is subangular to subrounded, fine to medium of sandstone.
		16.00 - 16.10	D					
		16.50 16.50	D	50 (19,6/50 for 170mm)				
		17.50 - 17.60	D					
		18.00 18.00	D	50 (25 for 50mm/50 for 152mm)				
		19.00 - 19.10	D					
		19.50 19.50	D	50 (25 for 40mm/50 for 145mm)				

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 15.00m bgl to 12.00m bgl. Refer for BH102 RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH102**

Sheet 3 of 5

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location:	Manchester		Level: 50.10	Scale 1:50
Client:	RGCM Ltd		Dates: 21/01/2021 - 26/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		20.50 - 20.60	D					
		21.00		50 (25 for 30mm/50 for 85mm)				
		22.00 - 22.10	D		22.00	28.10		Weak reddish brown medium to coarse grained SANDSTONE.
								From 22.00 to 22.24m highly fractured.
								22.42 to 23.20m 0 - 10 degrees extremely closely spaced to closely spaced , planar rough
								From 23.20 to 24.15m no recovery.
								From 24.15 to 24.20m recovered as non-intact core of sandy angular cobbles.
								24.20 to 26.00m 0 - 10 degrees very closely spaced to closely spaced locally extremely closely spaced, planar rough
								From 26.00 to 26.50m no recovery.
								26.50 to 28.00m 5 - 15 degrees very closely spaced to closely spaced locally extremely closely spaced, planar rough
		27.78 - 27.96	C					
								28.00 to 29.35m 10 - 30 degrees very closely spaced to closely spaced, planar rough
		29.00 - 29.16	C					
								From 29.35 to 30.12m no recovery.

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 15.00m bgl to 12.00m bgl. Refer for BH102 RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH102**

Sheet 4 of 5

Project Name: Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location: Manchester		Level: 50.10	Scale 1:50
Client: RGCM Ltd		Dates: 21/01/2021 - 26/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		31.52 - 31.77	C					*30.12 to 30.24m 0 - 10 degrees very closely spaced, planar rough* *From 30.24 to 30.30m recovered as non-intact core of sandy subangular coarse gravel of sandstone.* *30.30 to 32.28m 5 - 15 degrees closely spaced to medium spaced locally very closely, planar rough*
								From 32.28 to 32.5m no recovery.
					32.50	17.60		Medium strong reddish brown fine to medium grained SANDSTONE. *32.50 to 34.00m 0 - 5 degrees medium spaced locally very closely spaced, planar rough*
		33.06 - 33.44	C					
					34.00	16.10		Medium strong reddish brown medium to coarse grained SANDSTONE. *34.00 to 36.83m 0 - 10 degrees closely spaced to medium spaced locally very closely spaced, planar rough*
		34.34 - 34.50	C					
		35.83 - 36.09	C					
								From 36.83 to 37.10m no recovery.
								37.10 to 37.17m 0 - 10 degrees very closely spaced, planar rough *From 37.17 to 37.28m recovered as non-intact core of angular to subangular fine to coarse gravel and cobbles.* *37.28 to 37.69m 5 - 10 degrees medium spaced, planar rough* *From 37.69 to 37.83m highly weathered.* *37.83 to 39.88m 5 - 25 degrees closely spaced to medium spaced locally very closely spaced, planar rough*
		39.68 - 39.88	C					
					40.00	10.10		Continued on next sheet

31 32 33 34 35 36 37 38 39 40

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 15.00m bgl to 12.00m bgl. Refer for BH102 RC log for rotary drilling details and core recovery parameters.

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Borehole Log

Borehole No.
BH102
Sheet 5 of 5

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location:	Manchester		Level: 50.10	Scale 1:50
Client:	RGCM Ltd		Dates: 21/01/2021 - 26/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								From 39.88 to 40.00m no recovery.
								End of borehole at 40.00 m

41
42
43
44
45
46
47
48
49
50

Remarks
Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 15.00m bgl to 12.00m bgl. Refer for BH102 RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH103**

Sheet 1 of 4

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location:	Manchester		Level: 50.42	Scale 1:50
Client:	RGCM Ltd		Dates: 25/01/2021 - 28/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	50.32		MADE GROUND: Concrete slab
					0.30	50.12		MADE GROUND: Concrete block
					0.40	50.02		MADE GROUND: Concrete slab
					0.50	49.92		MADE GROUND: Reinforced concrete
								MADE GROUND: Reddish brown angular to subangular, fine to coarse gravel of brick.
					1.00	49.42		MADE GROUND: Dark brown sandy gravelly clay with low ash content. Sand is medium to coarse. Gravel is angular to subrounded, fine to coarse including brick and concrete.
		1.20	D					
		1.20		N=7 (2,1/3,1,2,1)				
		1.40 - 1.60	ES					
		1.70 - 1.80	D					
					1.80	48.62		Soft brown mottled light brown/orange CLAY.
		2.00		N=7 (2,2/3,1,1,2)				
		2.00 - 2.45	D					
		2.50 - 2.60	D		2.50	47.92		Stiff to very stiff brown silty slightly gravelly CLAY with moderate cobble content. Gravel is subangular to well rounded incluidng sandstone, mudstone and siltstone. Cobbles are subrounded of sandstone and mudstone.
		3.00 - 3.45	U	Ublow=100				
		3.50 - 3.60	D					
		4.00		N=15 (2,3/4,3,4,4)				
		4.00 - 4.45	D					
		5.00 - 5.45	U	Ublow=100				
		5.50 - 5.60	D					
		6.00		N=18 (5,4/4,5,3,6)				
		6.00 - 6.45	D					
		7.00 - 7.10	D					
		7.50		N=25 (5,6/5,7,6,7)				
		7.50 - 7.95	D					
		8.50 - 8.60	D					
		9.00		N=29 (7,8/7,6,8,8)				
		9.00 - 9.45	D					
		10.00 - 10.10	D		10.00	40.42		

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 16.00m bgl to 12.40m bgl. Refer to BH103 RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH103**

Sheet 2 of 4

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords:	-	Hole Type BH
Location:	Manchester		Level:	50.42	Scale 1:50
Client:	RGCM Ltd		Dates:	25/01/2021 - 28/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.50		N=31 (9,10/9,7,8,7)				Dense brown slightly gravelly medium to coarse SAND. Gravel is subangular to rounded, fine to coarse of sandstone, siltstone and mudstone.
		10.50 - 10.95	D					
		11.50 - 11.60	D					
		12.00		N=36 (10,9/10,8,10,8)				
		12.00 - 12.45	D					
		13.00 - 13.10	D					
		13.10		N=36 (8,7/9,8,9,10)				
		15.00		N=36 (9,9/10,9,8,9)				
		15.00 - 15.45	D					
	▼	16.00	D		16.00	34.42		
		16.50		N=46 (11,12/12,13,10,11)				Dense to very dense reddish brown slightly gravelly medium to coarse SAND. Gravel is subangular to rounded, fine to coarse of sandstone.
		17.50 - 17.60	D					
		18.00	D					
		18.00		50 (20,5/50 for 170mm)				
		19.00 - 19.10	D					
		19.50	D					
		19.50		50 (23,2/50 for 157mm)				

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 16.00m bgl to 12.40m bgl. Refer to BH103 RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH103**

Sheet 3 of 4

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords:	-	Hole Type BH
Location:	Manchester		Level:	50.42	Scale 1:50
Client:	RGCM Ltd		Dates:	25/01/2021 - 28/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		20.50 - 20.60	D					
		21.00 21.00	D	50 (25 for 75mm/50 for 160mm)				
		22.00 - 22.10	D					
					24.20	26.22		Weak reddish brown fine to medium grained SANDSTONE. *From 24.20 to 24.45m highly weathered.* *24.40 to 25.05m 0 - 10 degrees very closely spaced to closely space, planar rough* *From 25.05 to 25.12m recovered as non-intact core of sandy angular to subangular fine to coarse gravel and cobbles.* *25.12 to 25.17m 0 - 10 degrees very closely spaced, planar rough* *From 25.17 to 25.23m recovered as non-intact core of sandy angular to subangular fine to coarse gravel and cobbles.* *25.23 to 25.40m 0 - 10 degrees very closely spaced to closely spaced locally extremely closely spaced, planar rough* *From 25.40 to 25.55m recovered as non-intact core of gravelly medium to coarse sand.* *25.55 to 26.26 0 - 10 degrees extremely closely spaced to closely spaced, planar rough* *From 26.26 to 26.40 highly weathered.* *From 26.40 to 26.50m no recovery.* *From 26.50 to 26.83m no recovery.* *26.83 to 28.60m 0 - 10 degrees very closely spaced to closely spaced, planar rough*
		25.78 - 26.00	C					
		28.20 - 28.38	C					
								From 28.38 to 23.40m sandy infill *From 28.60 to 29.00m recovered as non-intact core of sandy angular to subangular fine to coarse gravel and cobbles.*
					29.00	21.42		Medium strong reddish brown fine to medium grained SANDSTONE. *29.00 to 30.65m 0 - 10 degrees closely spaced to medium sapced, locally extremely closely to very closely paced, planar rough*

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 16.00m bgl to 12.40m bgl. Refer to BH103 RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH103** Sheet 4 of 4

Project Name:	Swan House Supplementary Investigation	Project No. 077409	Co-ords: -	Hole Type BH
Location:	Manchester		Level: 50.42	Scale 1:50
Client:	RGCM Ltd		Dates: 25/01/2021 - 28/01/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		30.12 - 30.33	C					*From 30.65 to 31.00m no recovery.*
								31.00 to 33.90m 0 - 10 degrees closely spaced to medium spaced, planar rough
								From 31.10 to 31.35m very weak.
								From 31.73 to 31.82m very weak.
		32.29 - 32.46	C					
								From 33.62 to 33.78m extremely closely spaces thin dark grey laminations
								From 33.78 to 33.90 very weak.
								From 33.90 to 34.00m no recovery.
		34.28 - 34.46	C					*34.00 to 35.43m 0 - 10 degrees extremely closely spaced to closely spaced, planar rough*
								From 35.43 to 35.50 no recovery.
								35.50 to 35.57m 1 No. discontinuity 0 -10 degrees planar rough
								From 35.57 to 35.64m recovered as non-intact core of sandy angular to subangular fine to coarse gravel.
								35.64 to 37.10m 10 - 20 degrees closely spaced to medium spaced locally very closely spaced, planar rough
								From 36.46 to 36.72m extremely to very closely spaced think dark grey laminations.
		37.28 - 37.60	C					*From 37.1 to 37.15m recovered as non-intact core of sandy angular to subangular fine to coarse gravel.*
								37.15 to 37.28m 0 - 10 degrees very closely spaced to closely spaced, planar rough
								From 37.28 to 37.31m recovered as non-intact core of sandy angular to subangular fine to coarse gravel.
								37.31 to 38.28m 0 - 10 degrees closely spaced to medium spaced locally very closely spaced, planar rough
								From 38.28 to 38.50m no recovery
								38.50 to 40.00m 0 - 10 degrees very closely spaced to closely spaced, planar rough
		39.08 - 39.28	C					
					40.00	10.42		End of borehole at 40.00 m

Remarks

Service inspection pit hand excavated from GL to 1.20m. Groundwater encountered at 16.00m bgl to 12.40m bgl. Refer to BH103 RC log for rotary drilling details and core recovery parameters.

Borehole Log

Borehole No. **BH201**

Sheet 1 of 5

Project Name: Swan House Post Demo SI	Project No. 077409.002	Co-ords: 384495.96 - 398859.93	Hole Type BH
Location: Manchester		Level: 48.04	Scale 1:50
Client: RG Group Ltd		Dates: 23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40	ES		0.34	47.70		MADE GROUND: Concrete slab
								Stiff dark brown slightly gravelly silty CLAY.
		1.20 1.20 - 1.65	D	N=18 (3,4/4,4,5,5)				
		2.00 2.00 - 2.45	D	N=20 (3,3/4,5,4,7)				
		3.00 - 3.45	U					
		4.00 4.00 - 4.45	D	N=15 (2,2/3,4,4,4)				
		5.00 5.00 - 5.45	D	N=17 (2,3/4,4,4,5)				
		6.00 - 6.45	U					
		7.00 - 7.45	D					
		7.50		N=35 (4,5/8,8,9,10)				
		8.50	D					
		10.00	D					

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

Borehole Log

Borehole No. **BH201**

Sheet 2 of 5

Project Name:	Swan House Post Demo SI	Project No. 077409.002	Co-ords:	384495.96 - 398859.93	Hole Type BH
Location:	Manchester		Level:	48.04	Scale 1:50
Client:	RG Group Ltd		Dates:	23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.50		50 (25 for 105mm/50 for 115mm)	10.30	37.74		Very dense light brown/yellowish brown slightly gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of mudstone and sandstone.
		12.00		50 (25 for 95mm/50 for 65mm)				
		12.00 - 12.45	B		12.30	35.74		Very dense brown very gravelly fine to coarse SAND. Gravel is subrounded to well rounded of mudstone, sandstone and quartz.
		13.50		N=48 (8,8/10,12,12,14)				
		13.50 - 13.95	B					
		15.00		50 (25 for 50mm/50 for 50mm)				
					15.60	32.44		Very dense reddish brown slightly gravelly medium to coarse SAND. Gravel is subangular to subrounded, fine to medium of sandstone.
		16.50		50 (25 for 50mm/50 for 50mm)				
		16.50 - 16.95	B					
		18.00		0 (50 for 20mm/0 for 0mm)				
					18.50	29.54		Very weak reddish brown fine to medium grained SANDSTONE. *18.50 to 18.87m 0 - 10 degrees very closely spaced, planar rough* *From 18.87 to 18.97m recovered as non-intact core of sandy angular gravel of sandstone.* *From 18.97 to 20.00m no recovery.*

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

Borehole Log

Borehole No. **BH201**

Sheet 3 of 5

Project Name:	Swan House Post Demo SI	Project No. 077409.002	Co-ords:	384495.96 - 398859.93	Hole Type BH
Location:	Manchester		Level:	48.04	Scale 1:50
Client:	RG Group Ltd		Dates:	23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								From 20.00 to 20.08m recovered as non-intact core of gravelly medium to coarse sand.
								20.08 to 20.46m 0 - 10 degrees very closely spaced to closely spaced, planar rough.
					20.46	27.58		Weak reddish brown fine to medium grained SANDSTONE.
								20.46 to 21.14m 0 - 10 degrees very closely spaced to clsoely spaced, planar rough.
								From 21.14 to 21.50m no recovery.
								21.50 to 24.41m 0 - 30 degrees very closely spaced to medium spaced, planar rough.
								From 24.41 to 24.50m no recovery.
								24.50 to 24.91m 0 -10 degrees very closely spaced locally closely, planar rough.
								From 24.91 to 24.96m recovered as non-intact core of angular gravel of sandstone.
								24.96 to 24.99m 0 degrees very closely spaced, planar rough.
								From 24.99 to 25.02m recovered as non-intact core of angular gravel of sandstone.
								25.05 to 25.54m 0 - 10 degrees closely spaced, planar rough.
								From 25.54 to 25.70m recovered as non-intact core of gravelly medium to coarse sand.
								25.70 to 27.45m 0 - 10 degrees closely spaced to medium spaced locally very closely spaced, planar rough.
								From 27.45 to 27.47m recovered as non-intact core of sandstone cobbles.
								27.47 to 29.46m 0 -10 degrees closely spaced to medium spaced locally very closely spaced, planar rough.
					29.46	18.58		Medium strong reddish brown fine to medium grained SANDSTONE.
								29.46 to 30.47m 0 - 10 degrees closely spaced to medium
								Continued on next sheet

21 22 23 24 25 26 27 28 29 30

Remarks

Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

AGS

Borehole Log

Borehole No. **BH201**

Sheet 4 of 5

Project Name:	Swan House Post Demo SI	Project No. 077409.002	Co-ords:	384495.96 - 398859.93	Hole Type BH
Location:	Manchester		Level:	48.04	Scale 1:50
Client:	RG Group Ltd		Dates:	23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								spaced, planar rough.
								From 30.47 to 30.50m no recovery.
								30.50 to 31.68 0 - 10 degrees closely spaced to medium spaced, planar rough.
								From 31.03 to 31.13m mudstone band.
								From 31.68 to 32.00m no recovery.
								32.00 to 34.84m 0 - 10 degrees closely spaced to medium spaced, planar rough.
								From 33.40 to 33.50m no recovery.
								From 33.50 to 33.79m coarse
								From 34.84 to 35.00m no recovery.
								35.00 to 38.00m 0 - 10 degrees closely spaced to medium spaced, planar rough.
					38.00	10.04		Weak reddish brown medium to coarse grained SANDSTONE.
								38.00 to 39.50m 0 - 10 degrees closely spaced locally very closely spaced, planar rough.
								From 39.34 to 39.42m very weak.
					39.50	8.54		Medium strong reddish brown fine to medium grained SANDSTONE.
								39.50 to 41.00m 0 - 10 degrees medium spaced to widely
								Continued on next sheet

31 32 33 34 35 36 37 38 39 40

Remarks

Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

AGS

Borehole Log

Borehole No.
BH201
Sheet 5 of 5

Project Name:	Swan House Post Demo SI	Project No. 077409.002	Co-ords:	384495.96 - 398859.93	Hole Type BH
Location:	Manchester		Level:	48.04	Scale 1:50
Client:	RG Group Ltd		Dates:	23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								spaced, planar rough.
					41.00	7.04		End of borehole at 41.00 m

41
42
43
44
45
46
47
48
49
50

Remarks
Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

Rotary Core Log

Borehole No. **BH201**

Sheet 1 of 5

Project Name: Swan House Post Demo SI	Project No. 077409.002	Co-ords: 384495.96 - 398859.93	Hole Type RC
Location: Manchester		Level: 48.04	Scale 1:50
Client: RG Group Ltd		Dates: 23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Depth (m)	Type / FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		0.40	ES				0.34	47.70		MADE GROUND: Concrete slab
										Stiff dark brown slightly gravelly silty CLAY.
		1.20 - 1.65	D							
		2.00 - 2.45	D							
		3.00 - 3.45	U							
		4.00 - 4.45	D							
		5.00 - 5.45	D							
		6.00 - 6.45	U							
		7.00 - 7.45	D							
		8.50	D							
		10.00	D							

1 2 3 4 5 6 7 8 9 10

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

AGS

Rotary Core Log

Borehole No. **BH201**

Sheet 2 of 5

Project Name:	Swan House Post Demo SI	Project No. 077409.002	Co-ords:	384495.96 - 398859.93	Hole Type RC
Location:	Manchester		Level:	48.04	Scale 1:50
Client:	RG Group Ltd		Dates:	23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Depth (m)	Type / FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
							10.30	37.74		
										Very dense light brown/yellowish brown slightly gravelly fine to coarse SAND. Gravel is subangular to rounded fine to coarse of mudstone and sandstone.
		12.00 - 12.45	B							
							12.30	35.74		
										Very dense brown very gravelly fine to coarse SAND. Gravel is subrounded to well rounded of mudstone, sandstone and quartz.
		13.50 - 13.95	B							
							15.60	32.44		
										Very dense reddish brown slightly gravelly medium to coarse SAND. Gravel is subangular to subrounded, fine to medium of sandstone.
		16.50 - 16.95	B							
			22				18.50	29.54		Very weak reddish brown fine to medium grained SANDSTONE.
			NI							*18.50 to 18.87m 0 - 10 degrees very closely spaced, planar rough*
		18.50 - 20.00	NR	31	25	0				*From 18.87 to 18.97m recovered as non-intact core of sandy angular gravel of sandstone.*
										From 18.97 to 20.00m no recovery.
										Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

Rotary Core Log

Borehole No. **BH201**

Sheet 3 of 5

Project Name: Swan House Post Demo SI	Project No. 077409.002	Co-ords: 384495.96 - 398859.93	Hole Type RC
Location: Manchester		Level: 48.04	Scale 1:50
Client: RG Group Ltd		Dates: 23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Depth (m)	Type / FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		20.00 - 21.50	NI 18 9 NR	76	71	52	20.46	27.58		*From 20.00 to 20.08m recovered as non-intact core of gravelly medium to coarse sand.* *20.08 to 20.46m 0 - 10 degrees very closely spaced to closely spaced, planar rough.* Weak reddish brown fine to medium grained SANDSTONE. *20.46 to 21.14m 0 - 10 degrees very closely spaced to clsoely spaced, planar rough.* *From 21.14 to 21.50m no recovery.*
		21.50 - 23.00	9	100	100	67				*21.50 to 24.41m 0 - 30 degrees very closely spaced to medium spaced, planar rough.*
		23.00 - 24.50		94	94	80				
		24.50 - 26.00	NR 12 8 NI	100	84	71				*From 24.41 to 24.50m no recovery.* *24.50 to 24.91m 0 -10 degrees very closely spaced locally closely, planar rough.* *From 24.91 to 24.96m recovered as non-intact core of angular gravel of sandstone.* *24.96 to 24.99m 0 degrees very closely spaced, planar rough.* *From 24.99 to 25.02m recovered as non-intact core of angular gravel of sandstone.* *25.05 to 25.54m 0 - 10 degrees closely spaced, planar rough.*
		26.00 - 27.50	8	100	100	82				*From 25.54 to 25.70m recovered as non-intact core of gravelly medium to coarse sand.* *25.70 to 27.45m 0 - 10 degrees closely spaced to medium spaced locally very closely spaced, planar rough.*
		27.50 - 29.00	7	100	100	100				*From 27.45 to 27.47m recovered as non-intact core of sandstone cobbles.* *27.47 to 29.46m 0 -10 degrees closely spaced to medium spaced locally very closely spaced, planar rough.*
		29.00 - 30.50	16	98	98	91	29.46	18.58		Medium strong reddish brown fine to medium grained SANDSTONE. *29.46 to 30.47m 0 - 10 degrees closely spaced to medium*

Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

AGS

Rotary Core Log

Borehole No. **BH201**

Sheet 4 of 5

Project Name: Swan House Post Demo SI	Project No. 077409.002	Co-ords: 384495.96 - 398859.93	Hole Type RC
Location: Manchester		Level: 48.04	Scale 1:50
Client: RG Group Ltd		Dates: 23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Depth (m)	Type / FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
										spaced, planar rough.
		30.50 - 32.00	6	79	79	67				*From 30.47 to 30.50m no recovery.* *30.50 to 31.68 0 - 10 degrees closely spaced to medium spaced, planar rough.* *From 31.03 to 31.13m mudstone band.*
			NR							*From 31.68 to 32.00m no recovery.*
		32.00 - 33.50	5	100	100	100				*32.00 to 34.84m 0 - 10 degrees closely spaced to medium spaced, planar rough.* *From 33.40 to 33.50m no recovery.*
		33.50 - 35.00		89	89	89				*From 33.50 to 33.79m coarse*
			NR							*From 34.84 to 35.00m no recovery.*
		35.00 - 36.50	6	100	100	95				*35.00 to 38.00m 0 - 10 degrees closely spaced to medium spaced, planar rough.*
		36.50 - 38.00		100	100	93				
		38.00 - 39.50	7	100	100	81	38.00	10.04		Weak reddish brown medium to coarse grained SANDSTONE. *38.00 to 39.50m 0 - 10 degrees closely spaced locally very closely spaced, planar rough.* *From 39.34 to 39.42m very weak.*
			5				39.50	8.54		Medium strong reddish brown fine to medium grained SANDSTONE. *39.50 to 41.00m 0 - 10 degrees medium spaced to widely*
										Continued on next sheet

Remarks

Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

Rotary Core Log

Borehole No.
BH201
Sheet 5 of 5

Project Name:	Swan House Post Demo SI	Project No. 077409.002	Co-ords:	384495.96 - 398859.93	Hole Type RC
Location:	Manchester		Level:	48.04	Scale 1:50
Client:	RG Group Ltd		Dates:	23/08/2021 - 27/03/2021	Logged By PN

Well	Water Strikes	Depth (m)	Type / FI	Coring TCR	Coring SCR	Coring RQD	Depth (m)	Level (m)	Legend	Stratum Description
		39.50 - 41.00		100	100	100				*spaced, planar rough.*
							41.00	7.04		End of borehole at 41.00 m

41
42
43
44
45
46
47
48
49
50

Remarks
Service inspection pit hand excavated from GL to 1.20m. No groundwater encountered. Water level recorded at 13.50m bgl overnight.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/00959
Issue Number: 1 **Date:** 09 February, 2021

Client:
Curtins Consulting (Manchester)
Merchant Exchange
17-19 Whitworth Street
Manchester
UK
M1 5WG

Project Manager: EBMA/Philippa Neesham/Siobhán Hyde
Project Name: Swan House
Project Ref: B077409
Order No: EBMA2678
Date Samples Received: 28/01/21
Date Instructions Received: 02/02/21
Date Analysis Completed: 09/02/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Danielle Brierley
Client Manager

Envirolab Job Number: 21/00959

Client Project Name: Swan House

Client Project Ref: B077409

Lab Sample ID	21/00959/1	21/00959/2						Units	Limit of Detection	Method ref
Client Sample No	1	1								
Client Sample ID	BH102	BH103								
Depth to Top	0.45	1.4								
Depth To Bottom	0.6	1.6								
Date Sampled	22-Jan-21	22-Jan-21								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
% Stones >10mm$_A$	2.7	20.0						% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.83	8.82						pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.18	0.17						g/l	0.01	A-T-026s
Cyanide (total)$_A$$^{M\#}$	<1	<1						mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2						mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	1.0	4.0						% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	8						mg/kg	1	A-T-024s
Boron (water soluble)$_D$	1.4	<1.0						mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	1.3	0.9						mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	29	46						mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	59	17						mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1						mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	18	268						mg/kg	1	A-T-024s
Mercury$_D$	<0.17	0.27						mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	37	20						mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	2						mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	54	37						mg/kg	5	A-T-024s

Envirolab Job Number: 21/00959

Client Project Name: Swan House

Client Project Ref: B077409

Lab Sample ID	21/00959/1	21/00959/2						Units	Limit of Detection	Method ref
Client Sample No	1	1								
Client Sample ID	BH102	BH103								
Depth to Top	0.45	1.4								
Depth To Bottom	0.6	1.6								
Date Sampled	22-Jan-21	22-Jan-21								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_D^{\#}$	NAD	NAD								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_D$	N/A	N/A								A-T-045

Envirolab Job Number: 21/00959

Client Project Name: Swan House

Client Project Ref: B077409

Lab Sample ID	21/00959/1	21/00959/2						Units	Limit of Detection	Method ref
Client Sample No	1	1								
Client Sample ID	BH102	BH103								
Depth to Top	0.45	1.4								
Depth To Bottom	0.6	1.6								
Date Sampled	22-Jan-21	22-Jan-21								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
PAH-16MS (MSD order)										
Naphthalene$_A^{M\#}$	0.16	<0.03						mg/kg	0.03	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01						mg/kg	0.01	A-T-019s
Acenaphthene$_A^{M\#}$	0.13	0.02						mg/kg	0.01	A-T-019s
Fluorene$_A^{M\#}$	0.08	<0.01						mg/kg	0.01	A-T-019s
Phenanthrene$_A^{M\#}$	0.40	0.07						mg/kg	0.03	A-T-019s
Anthracene$_A^{M\#}$	0.08	<0.02						mg/kg	0.02	A-T-019s
Fluoranthene$_A^{M\#}$	0.35	<0.08						mg/kg	0.08	A-T-019s
Pyrene$_A^{M\#}$	0.26	<0.07						mg/kg	0.07	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	0.13	<0.04						mg/kg	0.04	A-T-019s
Chrysene$_A^{M\#}$	0.14	<0.06						mg/kg	0.06	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	0.12	<0.05						mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07						mg/kg	0.07	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	0.11	<0.04						mg/kg	0.04	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.06	<0.03						mg/kg	0.03	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04						mg/kg	0.04	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05						mg/kg	0.05	A-T-019s
Total PAH-16MS (MSD order)$_A^{M\#}$	2.02	0.09						mg/kg	0.03	A-T-019s

Envirolab Job Number: 21/00959

Client Project Name: Swan House

Client Project Ref: B077409

Lab Sample ID	21/00959/1	21/00959/2						Units	Limit of Detection	Method ref
Client Sample No	1	1								
Client Sample ID	BH102	BH103								
Depth to Top	0.45	1.4								
Depth To Bottom	0.6	1.6								
Date Sampled	22-Jan-21	22-Jan-21								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6A	6A								
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Total Aliphatics$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1	<1						mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1	<1						mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	1	4						mg/kg	1	A-T-055s
Total Aromatics$_A$	1	6						mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	1	7						mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01						mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Curtins Consulting (Manchester), Merchant Exchange, 17-19 Whitworth Street , Manchester, UK, M1 5WG

Project: Swan House

Clients Project No: B077409

Project No: 21/00959

Date Received: 02/02/2021 (am)

Cool Box Temperatures (°C): 5.5

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/07525
Issue Number: 1 **Date:** 21 July, 2021

Client:
Curtins Consulting (Manchester)
Merchant Exchange
17-19 Whitworth Street
Manchester
UK
M1 5WG

Project Manager: EBMA/Siobhán Hyde
Project Name: Swan House Post - Demo
Project Ref: 077409
Order No: EBMA2965
Date Samples Received: 09/07/21
Date Instructions Received: 12/07/21
Date Analysis Completed: 21/07/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Holly Neary-King
Client Services Supervisor

Envirolab Job Number: 21/07525

Client Project Name: Swan House Post - Demo

Client Project Ref: 077409

Lab Sample ID	21/07525/1	21/07525/2	21/07525/3	21/07525/4				Units	Limit of Detection	Method ref
Client Sample No			WAC	WAC						
Client Sample ID	WS2-A	WS2-B	WS2-A	WA2-B						
Depth to Top	0.35	0.35	0.35	0.35						
Depth To Bottom										
Date Sampled	08-Jul-21	08-Jul-21	08-Jul-21	08-Jul-21						
Sample Type	Soil - ES	Soil - ES	Soil	Soil						
Sample Matrix Code	4A	4A	4AB	4A						
% Stones >10mm$_A$	17.5	20.2	45.6	29.2				% w/w	0.1	A-T-044
pH$_D^{M\#}$	9.73	9.82	-	-				pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.22	0.06	-	-				g/l	0.01	A-T-026s
Cyanide (total)$_A^{M\#}$	<1	<1	-	-				mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	-	-				mg/kg	0.2	A-T-050s
Organic matter$_D^{M\#}$	1.8	1.7	-	-				% w/w	0.1	A-T-032 OM
Arsenic$_D^{M\#}$	9	9	-	-				mg/kg	1	A-T-024s
Boron (water soluble)$_D$	1.4	1.9	-	-				mg/kg	1	A-T-027s
Cadmium$_D^{M\#}$	0.8	0.9	-	-				mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	28	25	-	-				mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	16	18	-	-				mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	-	-				mg/kg	1	A-T-040s
Lead$_D^{M\#}$	55	163	-	-				mg/kg	1	A-T-024s
Mercury$_D$	<0.17	0.60	-	-				mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	17	18	-	-				mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	<1	-	-				mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	106	139	-	-				mg/kg	5	A-T-024s
Coronene$_A$	2.39	2.21	-	-				mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/07525

Client Project Name: Swan House Post - Demo

Client Project Ref: 077409

Lab Sample ID	21/07525/1	21/07525/2	21/07525/3	21/07525/4				Units	Limit of Detection	Method ref
Client Sample No			WAC	WAC						
Client Sample ID	WS2-A	WS2-B	WS2-A	WA2-B						
Depth to Top	0.35	0.35	0.35	0.35						
Depth To Bottom										
Date Sampled	08-Jul-21	08-Jul-21	08-Jul-21	08-Jul-21						
Sample Type	Soil - ES	Soil - ES	Soil	Soil						
Sample Matrix Code	4A	4A	4AB	4A						
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	-	-						A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	-	-						A-T-045

Envirolab Job Number: 21/07525

Client Project Name: Swan House Post - Demo

Client Project Ref: 077409

Lab Sample ID	21/07525/1	21/07525/2	21/07525/3	21/07525/4				Units	Limit of Detection	Method ref
Client Sample No			WAC	WAC						
Client Sample ID	WS2-A	WS2-B	WS2-A	WA2-B						
Depth to Top	0.35	0.35	0.35	0.35						
Depth To Bottom										
Date Sampled	08-Jul-21	08-Jul-21	08-Jul-21	08-Jul-21						
Sample Type	Soil - ES	Soil - ES	Soil	Soil						
Sample Matrix Code	4A	4A	4AB	4A						
PAH-16MS (MSD order)										
Naphthalene$_A^{M\#}$	30.5	15.3	-	-				mg/kg	0.03	A-T-019s
Acenaphthylene$_A^{M\#}$	0.48	0.32	-	-				mg/kg	0.01	A-T-019s
Acenaphthene$_A^{M\#}$	78.2	39	-	-				mg/kg	0.01	A-T-019s
Fluorene$_A^{M\#}$	32.1	17.2	-	-				mg/kg	0.01	A-T-019s
Phenanthrene$_A^{M\#}$	173	105	-	-				mg/kg	0.03	A-T-019s
Anthracene$_A^{M\#}$	36.3	22.3	-	-				mg/kg	0.02	A-T-019s
Fluoranthene$_A^{M\#}$	142	91.8	-	-				mg/kg	0.08	A-T-019s
Pyrene$_A^{M\#}$	99.4	65.8	-	-				mg/kg	0.07	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	44.1	31.2	-	-				mg/kg	0.04	A-T-019s
Chrysene$_A^{M\#}$	62.1	39.4	-	-				mg/kg	0.06	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	43	28.2	-	-				mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	17.3	10.8	-	-				mg/kg	0.07	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	29.3	20	-	-				mg/kg	0.04	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	17.8	12.4	-	-				mg/kg	0.03	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	3.56	2.45	-	-				mg/kg	0.04	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	13.7	9.80	-	-				mg/kg	0.05	A-T-019s
Total PAH-16MS (MSD order)$_A^{M\#}$	823	511	-	-				mg/kg	0.03	A-T-019s

Envirolab Job Number: 21/07525

Client Project Name: Swan House Post - Demo

Client Project Ref: 077409

Lab Sample ID	21/07525/1	21/07525/2	21/07525/3	21/07525/4				Units	Limit of Detection	Method ref
Client Sample No			WAC	WAC						
Client Sample ID	WS2-A	WS2-B	WS2-A	WA2-B						
Depth to Top	0.35	0.35	0.35	0.35						
Depth To Bottom										
Date Sampled	08-Jul-21	08-Jul-21	08-Jul-21	08-Jul-21						
Sample Type	Soil - ES	Soil - ES	Soil	Soil						
Sample Matrix Code	4A	4A	4AB	4A						
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	-	-				mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	0.58	<0.01	-	-				mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	61	<20	-	-				mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	55	61	-	-				mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	108	184	-	-				mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	117	165	-	-				mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	358	348	-	-				mg/kg	1	A-T-055s
Total Aliphatics$_A$	699	758	-	-				mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	-	-				mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	-	-				mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	124	36	-	-				mg/kg	1	A-T-055s
Aro >C10-C12$_A$	360	178	-	-				mg/kg	1	A-T-055s
Aro >C12-C16$_A$	1770	1190	-	-				mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	3570	2600	-	-				mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	6560	5330	-	-				mg/kg	1	A-T-055s
Total Aromatics$_A$	12400	9360	-	-				mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	13100	10100	-	-				mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	-	-				mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	-	-				mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	0.03	<0.01	-	-				mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	0.12	<0.01	-	-				mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	0.17	<0.01	-	-				mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	-	-				mg/kg	0.01	A-T-022s

REPORT NOTES

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Analytical results reflect the quality of the sample at the time of analysis only.
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A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Curtins Consulting (Manchester), Merchant Exchange, 17-19 Whitworth Street , Manchester, UK, M1 5WG

Project: Swan House Post - Demo

Clients Project No: 077409

Project No: 21/07525

Date Received: 12/07/2021 (am)

Cool Box Temperatures (°C): 18.6

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-120:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/07525/1	21/07525/2	21/07525/3	21/07525/4
Client Sample No			WAC	WAC
Client Sample ID/Depth	WS2-A 0.35m	WS2-B 0.35m	WS2-A 0.35m	WA2-B 0.35m
Date Sampled	08/07/21	08/07/21	08/07/21	08/07/21
A-T-019s	15/07/2021	15/07/2021		
A-T-022s	16/07/2021	16/07/2021		
A-T-024s	16/07/2021	16/07/2021		
A-T-025w			21/07/2021	21/07/2021
A-T-026s	16/07/2021	16/07/2021		
A-T-026w			21/07/2021	21/07/2021
A-T-027s	15/07/2021	15/07/2021		
A-T-030s			15/07/2021	15/07/2021
A-T-031s	16/07/2021	16/07/2021		
A-T-031w			21/07/2021	21/07/2021
A-T-032 OM	16/07/2021	16/07/2021		
A-T-032s			16/07/2021	16/07/2021
A-T-032w			21/07/2021	21/07/2021
A-T-037w			21/07/2021	21/07/2021
A-T-040s	16/07/2021	16/07/2021		
A-T-042sTCN	13/07/2021	13/07/2021		
A-T-044	14/07/2021	14/07/2021	14/07/2021	14/07/2021
A-T-045	13/07/2021	13/07/2021		
A-T-050s	13/07/2021	13/07/2021		
A-T-050w			21/07/2021	21/07/2021
A-T-055s	16/07/2021	16/07/2021		
A-T-ANCs			16/07/2021	16/07/2021
Calc-no stones			21/07/2021	21/07/2021
Probe (w)			21/07/2021	21/07/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/09483
Issue Number: 1 **Date:** 10 September, 2021

Client:
Curtins Consulting (Manchester)
Merchant Exchange
17-19 Whitworth Street
Manchester
UK
M1 5WG

Project Manager: EBMA/Philippa Neesham
Project Name: Swan House
Project Ref: B077409.002
Order No: EBMA3034
Date Samples Received: 27/08/21
Date Instructions Received: 01/09/21
Date Analysis Completed: 10/09/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/09483

Client Project Name: Swan House

Client Project Ref: B077409.002

Lab Sample ID	21/09483/1							Units	Limit of Detection	Method ref
Client Sample No	1									
Client Sample ID	BH201									
Depth to Top	0.40									
Depth To Bottom										
Date Sampled	23-Aug-21									
Sample Type	Soil - ES									
Sample Matrix Code	5A									
% Stones >10mm$_A$	<0.1							% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	9.35							pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.05							g/l	0.01	A-T-026s
Cyanide (total)$_A$$^{M\#}$	<1							mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2							mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	1.3							% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1							mg/kg	1	A-T-024s
Boron (water soluble)$_D$	<1.0							mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	0.8							mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	20							mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	25							mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1							mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	12							mg/kg	1	A-T-024s
Mercury$_D$	<0.17							mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	32							mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1							mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	50							mg/kg	5	A-T-024s

Envirolab Job Number: 21/09483

Client Project Name: Swan House

Client Project Ref: B077409.002

Lab Sample ID	21/09483/1							Units	Limit of Detection	Method ref
Client Sample No	1									
Client Sample ID	BH201									
Depth to Top	0.40									
Depth To Bottom										
Date Sampled	23-Aug-21									
Sample Type	Soil - ES									
Sample Matrix Code	5A									
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD									A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A									A-T-045

Envirolab Job Number: 21/09483

Client Project Name: Swan House

Client Project Ref: B077409.002

Lab Sample ID	21/09483/1							Units	Limit of Detection	Method ref
Client Sample No	1									
Client Sample ID	BH201									
Depth to Top	0.40									
Depth To Bottom										
Date Sampled	23-Aug-21									
Sample Type	Soil - ES									
Sample Matrix Code	5A									
PAH-16MS										
Acenaphthene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	<0.02							mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05							mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	<0.06							mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04							mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08							mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	<0.01							mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03							mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	<0.07							mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08							mg/kg	0.01	A-T-019s

Envirolab Job Number: 21/09483

Client Project Name: Swan House

Client Project Ref: B077409.002

Lab Sample ID	21/09483/1							Units	Limit of Detection	Method ref
Client Sample No	1									
Client Sample ID	BH201									
Depth to Top	0.40									
Depth To Bottom										
Date Sampled	23-Aug-21									
Sample Type	Soil - ES									
Sample Matrix Code	5A									
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	2							mg/kg	1	A-T-055s
Total Aliphatics$_A$	2							mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1							mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1							mg/kg	1	A-T-055s
Aro >C12-C16$_A$	<1							mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	<1							mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	2							mg/kg	1	A-T-055s
Total Aromatics$_A$	2							mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	5							mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01							mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

v1

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Curtins Consulting (Manchester), Merchant Exchange, 17-19 Whitworth Street , Manchester, UK, M1 5WG

Project: Swan House

Clients Project No: B077409.002

Project No: 21/09483

Date Received: 01/09/2021 (am)

Cool Box Temperatures (°C): 16.3

Lab Sample ID	21/09483/1
Client Sample No	1
Client Sample ID/Depth	BH201 0.40m
Date Sampled	23/08/21
Deviation Code	
F	✓

Key

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	21/09483/1
Client Sample No	1
Client Sample ID/Depth	BH201 0.40m
Date Sampled	23/08/21
Cyanide (total)	✓
VPHCWG	✓
BTEX (total)	✓

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/09483/1
Client Sample No	1
Client Sample ID/Depth	BH201 0.40m
Date Sampled	23/08/21
A-T-004s	07/09/2021
A-T-007s	07/09/2021
A-T-019s	08/09/2021
A-T-022s	10/09/2021
A-T-024s	08/09/2021
A-T-025w	10/09/2021
A-T-026s	08/09/2021
A-T-026w	10/09/2021
A-T-027s	07/09/2021
A-T-030s	07/09/2021
A-T-031s	07/09/2021
A-T-031w	10/09/2021
A-T-032 OM	07/09/2021
A-T-032s	07/09/2021
A-T-032w	10/09/2021
A-T-037w	10/09/2021
A-T-040s	08/09/2021
A-T-042sTCN	08/09/2021
A-T-044	06/09/2021
A-T-045	03/09/2021
A-T-050s	08/09/2021
A-T-050w	10/09/2021
A-T-055s	10/09/2021
A-T-ANCs	07/09/2021
Calc-no stones	10/09/2021
Probe (w)	10/09/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/07524
Issue Number: 1 **Date:** 19 July, 2021

Client:
Curtins Consulting (Manchester)
Merchant Exchange
17-19 Whitworth Street
Manchester
UK
M1 5WG

Project Manager: EBMA/Siobhán Hyde
Project Name: Swan House Post - Demo
Project Ref: 077409
Order No: EBMA2964
Date Samples Received: 09/07/21
Date Instructions Received: 12/07/21
Date Analysis Completed: 19/07/21

Prepared by:

Melanie Marshall
Laboratory Coordinator

Approved by:

Richard Wong
Client Manager

Envirolab Job Number: 21/07524

Client Project Name: Swan House Post - Demo

Client Project Ref: 077409

Lab Sample ID	21/07524/1	21/07524/2	21/07524/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP A	TP B	TP C							
Depth to Top	2.00	0.30	1.00							
Depth To Bottom										
Date Sampled	08-Jul-21	08-Jul-21	08-Jul-21							
Sample Type	Soil	Soil	Soil							
Sample Matrix Code										
% Stones >10mm$_A$	<0.1	18.5	1.0					% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	8.60	12.40	9.36					pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.04	<0.01	0.06					g/l	0.01	A-T-026s
Cyanide (total)$_A$$^{M\#}$	<1	<1	<1					mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2					mg/kg	0.2	A-T-050s
Organic matter$_D$$^{M\#}$	0.8	1.0	0.8					% w/w	0.1	A-T-032 OM
Arsenic$_D$$^{M\#}$	<1	2	3					mg/kg	1	A-T-024s
Boron (water soluble)$_D$	<1.0	1.4	<1.0					mg/kg	1	A-T-027s
Cadmium$_D$$^{M\#}$	0.9	<0.5	0.9					mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	23	6	23					mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	28	13	33					mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1					mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	11	19	11					mg/kg	1	A-T-024s
Mercury$_D$	<0.17	0.78	<0.17					mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	36	11	37					mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	<1	<1	<1					mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	59	18	60					mg/kg	5	A-T-024s

Envirolab Job Number: 21/07524

Client Project Name: Swan House Post - Demo

Client Project Ref: 077409

Lab Sample ID	21/07524/1	21/07524/2	21/07524/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP A	TP B	TP C							
Depth to Top	2.00	0.30	1.00							
Depth To Bottom										
Date Sampled	08-Jul-21	08-Jul-21	08-Jul-21							
Sample Type	Soil	Soil	Soil							
Sample Matrix Code										
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	NAD							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	N/A							A-T-045

Envirolab Job Number: 21/07524

Client Project Name: Swan House Post - Demo

Client Project Ref: 077409

Lab Sample ID	21/07524/1	21/07524/2	21/07524/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP A	TP B	TP C							
Depth to Top	2.00	0.30	1.00							
Depth To Bottom										
Date Sampled	08-Jul-21	08-Jul-21	08-Jul-21							
Sample Type	Soil	Soil	Soil							
Sample Matrix Code										
PAH-16MS (MSD order)										
Naphthalene$_A^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	0.04	<0.03					mg/kg	0.03	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02					mg/kg	0.02	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08					mg/kg	0.08	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06					mg/kg	0.06	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05					mg/kg	0.05	A-T-019s
Total PAH-16MS (MSD order)$_A^{M\#}$	<0.08	<0.08	<0.08					mg/kg	0.03	A-T-019s

Envirolab Job Number: 21/07524

Client Project Name: Swan House Post - Demo

Client Project Ref: 077409

Lab Sample ID	21/07524/1	21/07524/2	21/07524/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP A	TP B	TP C							
Depth to Top	2.00	0.30	1.00							
Depth To Bottom										
Date Sampled	08-Jul-21	08-Jul-21	08-Jul-21							
Sample Type	Soil	Soil	Soil							
Sample Matrix Code										
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	1	<1	<1					mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	2	4	1					mg/kg	1	A-T-055s
Total Aliphatics$_A$	3	6	1					mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	<1	37	<1					mg/kg	1	A-T-055s
Aro >C10-C12$_A$	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C12-C16$_A$	1	<1	<1					mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	1	<1	1					mg/kg	1	A-T-055s
Aro >C21-C35$_A^{M\#}$	5	6	3					mg/kg	1	A-T-055s
Total Aromatics$_A$	7	43	5					mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	10	50	6					mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s

REPORT NOTES

General
This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Curtins Consulting (Manchester), Merchant Exchange, 17-19 Whitworth Street , Manchester, UK, M1 5WG

Project: Swan House Post - Demo

Clients Project No: 077409

Project No: 21/07524

Date Received: 12/07/2021 (am)

Cool Box Temperatures (°C): 18.6

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples 5 ± 3°C), ISO 18400-120:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/07524/1	21/07524/2	21/07524/3
Client Sample No			
Client Sample ID/Depth	TP A 2.00m	TP B 0.30m	TP C 1.00m
Date Sampled	08/07/21	08/07/21	08/07/21
A-T-019s	14/07/2021	14/07/2021	14/07/2021
A-T-022s	14/07/2021	14/07/2021	14/07/2021
A-T-024s	16/07/2021	16/07/2021	16/07/2021
A-T-026s	16/07/2021	16/07/2021	16/07/2021
A-T-027s	15/07/2021	15/07/2021	15/07/2021
A-T-031s	16/07/2021	16/07/2021	16/07/2021
A-T-032 OM	19/07/2021	19/07/2021	19/07/2021
A-T-040s	16/07/2021	16/07/2021	16/07/2021
A-T-042sTCN	13/07/2021	13/07/2021	13/07/2021
A-T-044	14/07/2021	14/07/2021	14/07/2021
A-T-045	13/07/2021	13/07/2021	13/07/2021
A-T-050s	13/07/2021	13/07/2021	13/07/2021
A-T-055s	14/07/2021	14/07/2021	14/07/2021

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

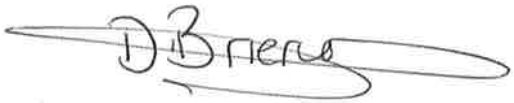
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 18/07504
Issue Number: 1 **Date:** 24 September, 2018

Client:
Curtins Consulting
Merchant Exchange
17-19 Whitworth Street
Manchester
UK
M1 5WG

Project Manager: Matthew Holroyd/Siobhán Hyde
Project Name: Swan House, Manchester
Project Ref: B067266.201
Order No: EBMA1404
Date Samples Received: 14/09/18
Date Instructions Received: 18/09/18
Date Analysis Completed: 24/09/18

Prepared by:



Danielle Brierley
Client Manager

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 18/07504

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07504/2	18/07504/3	18/07504/4	18/07504/5	18/07504/6	18/07504/7	18/07504/8	18/07504/9	Units	Method ref
Client Sample No	2	3	4	5	1	1	2	3		
Client Sample ID	WS04	WS04	WS04	WS04	WS01	WS03	WS03	WS03		
Depth to Top	0.70	1.40	2.40	2.70	0.55	0.40	1.70	3.00		
Depth To Bottom		1.70	2.70	3.00	0.65					
Date Sampled	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	5AB	4AB	6	3	6	4A	6A	6		
% Stones >10mm$_A$	5.5	15.9	<0.1	<0.1	<0.1	2.8	5.1	<0.1	% w/w	A-T-044
pH$_D$$^{M\#}$	8.14	9.53	8.25	7.52	8.53	8.40	7.45	8.25	pH	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	1.48	0.40	0.06	0.36	0.24	0.18	0.29	0.07	g/l	A-T-026s
Cyanide (total)$_A$$^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	A-T-050s
Organic matter$_D$$^{M\#}$	2.1	0.8	3.7	8.4	3.2	5.9	11.6	2.9	% w/w	A-T-032 OM
Arsenic$_D$$^{M\#}$	9	5	1	2	4	12	16	<1	mg/kg	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	1.1	1.0	<1.0	2.2	<1.0	1.4	1.5	<1.0	mg/kg	A-T-027s
Cadmium$_D$$^{M\#}$	0.9	0.7	0.5	<0.5	1.1	1.0	1.1	1.2	mg/kg	A-T-024s
Copper$_D$$^{M\#}$	26	11	9	8	20	84	69	20	mg/kg	A-T-024s
Chromium$_D$$^{M\#}$	16	19	17	23	27	10	21	39	mg/kg	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-040s
Lead$_D$$^{M\#}$	69	18	21	12	36	412	335	23	mg/kg	A-T-024s
Mercury$_D$	0.31	<0.17	<0.17	<0.17	<0.17	0.37	<0.17	<0.17	mg/kg	A-T-024s
Nickel$_D$$^{M\#}$	20	16	10	12	20	17	28	34	mg/kg	A-T-024s
Selenium$_D$$^{\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-024s
Zinc$_D$$^{M\#}$	36	27	29	33	60	46	78	59	mg/kg	A-T-024s

Envirolab Job Number: 18/07504

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07504/2	18/07504/3	18/07504/4	18/07504/5	18/07504/6	18/07504/7	18/07504/8	18/07504/9	Units	Method ref
Client Sample No	2	3	4	5	1	1	2	3		
Client Sample ID	WS04	WS04	WS04	WS04	WS01	WS03	WS03	WS03		
Depth to Top	0.70	1.40	2.40	2.70	0.55	0.40	1.70	3.00		
Depth To Bottom		1.70	2.70	3.00	0.65					
Date Sampled	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	5AB	4AB	6	3	6	4A	6A	6		
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD		A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

Envirolab Job Number: 18/07504

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07504/2	18/07504/3	18/07504/4	18/07504/5	18/07504/6	18/07504/7	18/07504/8	18/07504/9	Units	Method ref
Client Sample No	2	3	4	5	1	1	2	3		
Client Sample ID	WS04	WS04	WS04	WS04	WS01	WS03	WS03	WS03		
Depth to Top	0.70	1.40	2.40	2.70	0.55	0.40	1.70	3.00		
Depth To Bottom		1.70	2.70	3.00	0.65					
Date Sampled	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	5AB	4AB	6	3	6	4A	6A	6		
PAH-16MS										
Naphthalene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Acenaphthene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.02	mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	0.08	<0.03	0.15	mg/kg	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	0.12	<0.08	0.25	mg/kg	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	0.10	<0.07	0.19	mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	0.06	<0.04	0.09	mg/kg	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06	<0.06	<0.06	<0.06	0.08	<0.06	0.12	mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	0.11	mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	0.06	<0.04	0.06	mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	<0.03	0.04	mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08	<0.08	<0.08	<0.08	0.62	<0.08	1.08	mg/kg	A-T-019s

Envirolab Job Number: 18/07504

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07504/2	18/07504/3	18/07504/4	18/07504/5	18/07504/6	18/07504/7	18/07504/8	18/07504/9	Units	Method ref
Client Sample No	2	3	4	5	1	1	2	3		
Client Sample ID	WS04	WS04	WS04	WS04	WS01	WS03	WS03	WS03		
Depth to Top	0.70	1.40	2.40	2.70	0.55	0.40	1.70	3.00		
Depth To Bottom		1.70	2.70	3.00	0.65					
Date Sampled	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18	13-Sep-18		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	5AB	4AB	6	3	6	4A	6A	6		
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	mg/kg	A-T-022s
Ali >C8-C10$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-055s
Ali >C12-C16$_A^{M\#}$	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-055s
Ali >C16-C21$_A^{M\#}$	<1	<1	<1	1	<1	<1	<1	<1	mg/kg	A-T-055s
Ali >C21-C35$_A$	1	<1	3	22	5	2	1	5	mg/kg	A-T-055s
Total Aliphatics >C5-C35$_A$	1	<1	3	25	5	2	1	5	mg/kg	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
Aro >C8-C10$_A^{M\#}$	2	<1	1	3	1	2	1	2	mg/kg	A-T-055s
Aro >C10-C12$_A^{M\#}$	1	<1	<1	1	<1	1	<1	1	mg/kg	A-T-055s
Aro >C12-C16$_A$	2	<1	1	4	1	3	2	2	mg/kg	A-T-055s
Aro >C16-C21$_A^{M\#}$	3	<1	1	4	1	3	2	2	mg/kg	A-T-055s
Aro >C21-C35$_A^{M\#}$	12	<1	8	67	8	11	6	10	mg/kg	A-T-055s
Total Aromatics >C5-C35$_A$	21	<1	13	80	11	21	12	19	mg/kg	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	23	<1	15	105	16	24	13	24	mg/kg	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-022s

Envirolab Job Number: 18/07504

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07504/10	18/07504/11	18/07504/12						Units	Method ref
Client Sample No	1	2	3							
Client Sample ID	WS02	WS02	WS02							
Depth to Top	0.35	0.70	1.05							
Depth To Bottom			1.30							
Date Sampled	14-Sep-18	14-Sep-18	14-Sep-18							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4	4A	5							
% Stones >10mm$_A$	<0.1	<0.1	<0.1						% w/w	A-T-044
pH$_D$$^{M\#}$	8.95	8.77	8.05						pH	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.02	0.06	0.12						g/l	A-T-026s
Cyanide (total)$_A$$^{M\#}$	<1	<1	<1						mg/kg	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2						mg/kg	A-T-050s
Organic matter$_D$$^{M\#}$	3.5	2.7	1.1						% w/w	A-T-032 OM
Arsenic$_D$$^{M\#}$	2	2	4						mg/kg	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	1.8	1.2	<1.0						mg/kg	A-T-027s
Cadmium$_D$$^{M\#}$	0.6	0.5	1.1						mg/kg	A-T-024s
Copper$_D$$^{M\#}$	13	7	21						mg/kg	A-T-024s
Chromium$_D$$^{M\#}$	7	9	31						mg/kg	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1						mg/kg	A-T-040s
Lead$_D$$^{M\#}$	18	76	19						mg/kg	A-T-024s
Mercury$_D$	<0.17	<0.17	<0.17						mg/kg	A-T-024s
Nickel$_D$$^{M\#}$	12	8	39						mg/kg	A-T-024s
Selenium$_D$$^{\#}$	<1	<1	<1						mg/kg	A-T-024s
Zinc$_D$$^{M\#}$	46	21	56						mg/kg	A-T-024s

Envirolab Job Number: 18/07504

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07504/10	18/07504/11	18/07504/12						Units	Method ref
Client Sample No	1	2	3							
Client Sample ID	WS02	WS02	WS02							
Depth to Top	0.35	0.70	1.05							
Depth To Bottom			1.30							
Date Sampled	14-Sep-18	14-Sep-18	14-Sep-18							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4	4A	5							
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	NAD	NAD	NAD							A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A	N/A							

Envirolab Job Number: 18/07504

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07504/10	18/07504/11	18/07504/12						Units	Method ref
Client Sample No	1	2	3							
Client Sample ID	WS02	WS02	WS02							
Depth to Top	0.35	0.70	1.05							
Depth To Bottom			1.30							
Date Sampled	14-Sep-18	14-Sep-18	14-Sep-18							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4	4A	5							
PAH-16MS										
Naphthalene$_A^{M\#}$	2.51	<0.03	<0.03						mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.10	<0.01	<0.01						mg/kg	A-T-019s
Acenaphthene$_A^{M\#}$	8.93	0.07	<0.01						mg/kg	A-T-019s
Fluorene$_A^{M\#}$	4.39	0.03	<0.01						mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	27.7	0.23	<0.03						mg/kg	A-T-019s
Anthracene$_A^{M\#}$	7.26	0.07	<0.02						mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	28.6	0.31	<0.08						mg/kg	A-T-019s
Pyrene$_A^{M\#}$	22.6	0.24	<0.07						mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	11.5	0.12	<0.04						mg/kg	A-T-019s
Chrysene$_A^{M\#}$	13.2	0.13	<0.06						mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	11.7	0.11	<0.05						mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	4.71	<0.07	<0.07						mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	9.05	0.10	<0.04						mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	4.62	0.07	<0.03						mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	0.98	<0.04	<0.04						mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	3.63	0.06	<0.05						mg/kg	A-T-019s
Total PAH-16MS$_A^{M\#}$	161	1.54	<0.08						mg/kg	A-T-019s

Envirolab Job Number: 18/07504

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07504/10	18/07504/11	18/07504/12						Units	Method ref
Client Sample No	1	2	3							
Client Sample ID	WS02	WS02	WS02							
Depth to Top	0.35	0.70	1.05							
Depth To Bottom			1.30							
Date Sampled	14-Sep-18	14-Sep-18	14-Sep-18							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	4	4A	5							
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
Ali >C8-C10$_A^{M\#}$	<1	<1	<1						mg/kg	A-T-055s
Ali >C10-C12$_A^{M\#}$	1	<1	<1						mg/kg	A-T-055s
Ali >C12-C16$_A^{M\#}$	2	<1	<1						mg/kg	A-T-055s
Ali >C16-C21$_A^{M\#}$	6	<1	<1						mg/kg	A-T-055s
Ali >C21-C35$_A$	411	2	<1						mg/kg	A-T-055s
Total Aliphatics >C5-C35$_A$	420	2	<1						mg/kg	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
Aro >C8-C10$_A^{M\#}$	4	2	<1						mg/kg	A-T-055s
Aro >C10-C12$_A^{M\#}$	10	1	<1						mg/kg	A-T-055s
Aro >C12-C16$_A$	60	2	<1						mg/kg	A-T-055s
Aro >C16-C21$_A^{M\#}$	126	3	<1						mg/kg	A-T-055s
Aro >C21-C35$_A^{M\#}$	540	8	2						mg/kg	A-T-055s
Total Aromatics >C5-C35$_A$	741	17	2						mg/kg	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	1160	19	2						mg/kg	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01						mg/kg	A-T-022s

REPORT NOTES

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This report shall not be reproduced, except in full, without written approval from Envirolab.
All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 18/07339
Issue Number: 1 **Date:** 19 September, 2018

Client:
Curtins Consulting
Merchant Exchange
17-19 Whitworth Street
Manchester
UK
M1 5WG

Project Manager: Matthew Holroyd/Siobhán Hyde
Project Name: Swan House, Manchester
Project Ref: B067266.201
Order No: EBMA1393
Date Samples Received: 12/09/18
Date Instructions Received: 13/09/18
Date Analysis Completed: 19/09/18

Prepared by:

Holly Neary-King
Sales Executive

Approved by:

Danielle Brierley
Client Manager

Envirolab Job Number: 18/07339

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07339/1	18/07339/2							Units	Method ref
Client Sample No	ES1	ES1								
Client Sample ID	WS06	WS07								
Depth to Top	0.30	0.40								
Depth To Bottom		0.50								
Date Sampled	10-Sep-18	10-Sep-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	3	3								
% Stones >10mm$_A$	<0.1	<0.1							% w/w	A-T-044
pH$_D$$^{M\#}$	8.30	8.86							pH	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	0.09	0.07							g/l	A-T-026s
Cyanide (total)$_A$$^{M\#}$	<1	<1							mg/kg	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2							mg/kg	A-T-050s
Organic matter$_D$$^{M\#}$	1.4	1.4							% w/w	A-T-032 OM
Arsenic$_D$$^{M\#}$	3	3							mg/kg	A-T-024s
Boron (water soluble)$_D$$^{M\#}$	<1.0	<1.0							mg/kg	A-T-027s
Cadmium$_D$$^{M\#}$	1.5	1.5							mg/kg	A-T-024s
Copper$_D$$^{M\#}$	23	22							mg/kg	A-T-024s
Chromium$_D$$^{M\#}$	32	31							mg/kg	A-T-024s
Chromium (hexavalent)$_D$	<1	<1							mg/kg	A-T-040s
Lead$_D$$^{M\#}$	14	12							mg/kg	A-T-024s
Mercury$_D$	<0.17	<0.17							mg/kg	A-T-024s
Nickel$_D$$^{M\#}$	39	38							mg/kg	A-T-024s
Selenium$_D$$^{\#}$	1	<1							mg/kg	A-T-024s
Zinc$_D$$^{M\#}$	62	60							mg/kg	A-T-024s

Envirolab Job Number: 18/07339

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07339/1	18/07339/2							Units	Method ref
Client Sample No	ES1	ES1								
Client Sample ID	WS06	WS07								
Depth to Top	0.30	0.40								
Depth To Bottom		0.50								
Date Sampled	10-Sep-18	10-Sep-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	3	3								
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_A^{\#}$	NAD	NAD								A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	N/A								

Envirolab Job Number: 18/07339

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07339/1	18/07339/2							Units	Method ref
Client Sample No	ES1	ES1								
Client Sample ID	WS06	WS07								
Depth to Top	0.30	0.40								
Depth To Bottom		0.50								
Date Sampled	10-Sep-18	10-Sep-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	3	3								
PAH-16MS										
Naphthalene$_A^{M\#}$	<0.03	<0.03							mg/kg	A-T-019s
Acenaphthylene$_A^{M\#}$	<0.01	<0.01							mg/kg	A-T-019s
Acenaphthene$_A^{M\#}$	<0.01	<0.01							mg/kg	A-T-019s
Fluorene$_A^{M\#}$	<0.01	<0.01							mg/kg	A-T-019s
Phenanthrene$_A^{M\#}$	0.04	<0.03							mg/kg	A-T-019s
Anthracene$_A^{M\#}$	<0.02	<0.02							mg/kg	A-T-019s
Fluoranthene$_A^{M\#}$	<0.08	<0.08							mg/kg	A-T-019s
Pyrene$_A^{M\#}$	<0.07	<0.07							mg/kg	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	<0.04	<0.04							mg/kg	A-T-019s
Chrysene$_A^{M\#}$	<0.06	<0.06							mg/kg	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	<0.05	<0.05							mg/kg	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	<0.07	<0.07							mg/kg	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	<0.04	<0.04							mg/kg	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	<0.03	<0.03							mg/kg	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	<0.04	<0.04							mg/kg	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	<0.05	<0.05							mg/kg	A-T-019s
Total PAH-16MS$_A^{M\#}$	<0.08	<0.08							mg/kg	A-T-019s

Envirolab Job Number: 18/07339

Client Project Name: Swan House, Manchester

Client Project Ref: B067266.201

Lab Sample ID	18/07339/1	18/07339/2							Units	Method ref
Client Sample No	ES1	ES1								
Client Sample ID	WS06	WS07								
Depth to Top	0.30	0.40								
Depth To Bottom		0.50								
Date Sampled	10-Sep-18	10-Sep-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	3	3								
TPH CWG										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
Ali >C8-C10$_A^{M\#}$	<1	<1							mg/kg	A-T-055s
Ali >C10-C12$_A^{M\#}$	<1	<1							mg/kg	A-T-055s
Ali >C12-C16$_A^{M\#}$	2	1							mg/kg	A-T-055s
Ali >C16-C21$_A^{M\#}$	1	1							mg/kg	A-T-055s
Ali >C21-C35$_A$	1	1							mg/kg	A-T-055s
Total Aliphatics >C5-C35$_A$	5	5							mg/kg	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
Aro >C8-C10$_A^{M\#}$	<1	<1							mg/kg	A-T-055s
Aro >C10-C12$_A^{M\#}$	<1	<1							mg/kg	A-T-055s
Aro >C12-C16$_A$	1	1							mg/kg	A-T-055s
Aro >C16-C21$_A^{M\#}$	1	1							mg/kg	A-T-055s
Aro >C21-C35$_A^{M\#}$	8	7							mg/kg	A-T-055s
Total Aromatics >C5-C35$_A$	12	9							mg/kg	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	16	14							mg/kg	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01							mg/kg	A-T-022s

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For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

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Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.