



Remediation Strategy Addendum Report
(Vapour Risk Assessment)
Laystall Street, Ancoats, Manchester

Reference: 16-613-R2-RevA
Date: February 2024



REMEDIATION STRATEGY ADDENDUM REPORT

(VAPOUR RISK ASSESSMENT)

Laystall Street
Ancoats
Manchester

Prepared for:

Eric Wright Construction

Report Ref: 16-613-R2-RevA
Date Issued: February 2024

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QUALITY ASSURANCE

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QUALIFICATIONS	BSc(Hons), FGS, PIEMA, , MIEnvSc, CEnv	BSc(Hons), FGS, PIEMA, , MIEnvSc, CEnv	
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1. INTRODUCTION

1.1. BACKGROUND

E3P has been acting as Geoenvironmental Consultant on behalf of the Principal Contractor, Eric Wright Construction, and their client at the above site in order to suitably assess and inform the detailed design with a view to oversee and validate the required remediation and enabling works items.

E3P has been provided with a previous report completed by Clancy Consulting, Phase 2 Site Investigation Report – Proposed Laystall Street Development (Ref: 10/1448.1/001 Rev.01) dated October 2022 prepared for Great Places Housing Group. The report noted the detection of elevated PAHs and Naphthalene within the Made Ground however, it was their understanding at the time that in order to prepare the site for construction, the Made Ground would be removed from site in its entirety and therefore had stated the resulting risk to end users to be negligible.

E3P has completed a supplementary ground investigation at the site on behalf of Eric Wright Construction, the findings of which are presented within the E3P report entitled Supplementary Site Investigation, Remediation and Enabling Works Strategy (report ref: 16-613-R1, dated March 2023). In summary, further Naphthalene exceedances were identified throughout the Made Ground at the site and further assessment was recommended to fully understand the risk.

Ground gas monitoring completed during the Clancy Consulting ground investigation works, indicated the site would be classed as Characteristic Situation 1 or Green, suggesting no gas protection measures will be required.

However, as the detailed design has progressed there is no longer a requirement to remove all of the Made Ground and it is the intention to retain this where possible. As such it was recommended as part of the E3P Remediation and Enabling Works Strategy that further assessment of the vapour risk should be undertaken.

The E3P remediation and enabling work report provided an options appraisal in light of the requirements on site whereby it will either be necessary to export all impacted materials and replace with suitable fill / aggregate where required, or alternatively it may be possible to install a vapour membrane or upgrade the DPC and Radon membranes to also limit the migration of VOCs into the structure. With the latter being the likely option, it is necessary to complete a DQRA to ensure the level of detected vapours is not in excess of what this method may be able to mitigate against.

As such it was recommended that bulk sampling of the wells should be completed to determine the chemical composition of the gas to attribute a definitive source and inform a robust risk-based approach.

Following the completion of the demolition and site strip, six ground gas monitoring wells were installed in the proximity of the highest detected Naphthalene samples, particularly those in the area of the historic basement and deep areas of Made Ground with the intent to utilise these as vapour sampling positions and to determine the concentrations of vapours emitting from the soils. Following a period of allowing these to establish themselves E3P returned to site utilising Summa Cannister sampling methodology to obtain samples. Following lab analysis, the results of this sampling is then further assessed in section 4.

This report details the findings of bulk vapour sampling analysis within WS201, WS203 and WS204.



1.2. PROPOSED DEVELOPMENT

E3P understands that Eric Wright will assist their client in the construction of a high-rise structure with basement feature, lower level commercial and upper residential floors with associated substation, external pavement, and infrastructure.

1.3. OBJECTIVES

The objectives of this vapour risk assessment report are to provide a detailed assessment of vapour risk based on all available data from the E3P ground investigation works, and data from previous reporting completed by others, because of elevated Naphthalene concentrations recorded throughout the site within the soils analysis previously detected. The report intends to then outline any requirements that may be necessary to incorporate into the enabling earthworks and/or the buildings structural design.

1.4. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.5. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.



2. RADON

2.1. RADON PROTECTION MEASURES

Ground gas monitoring to date suggests that the site will fall into the bracket for Characteristic Situation 1, however, the southeast of the site is in an area where between 5% and 10% of homes are above the Radon Action Level, therefore basic radon protection measures will need to be incorporated into any proposed new dwellings.

All sites registered from 1st December 2022 onwards will have been assessed against the updated radon maps by NHBC and will be required to have radon protection measures installed in accordance with the updated mapping.

Figure 2.1 indicates that based on the 5% - 10% area observed, the site falls under a Radon Potential Class of 4 within the User Guide for the HPA-BGS Joint Radon Potential Dataset for Great Britain (Ref: IR/11/044, dated 2011). A Radon potential class of 4 indicates that basic Radon Measures are required in all new dwellings, as shown in figure 2.2.

FIGURE 2.1 RADON AFFECTED AREA POTENTIAL CLASS

Radon Potential Class*	Is the property in a Radon Affected Area?	Additional information
1	No	The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). The property is not in a radon affected area.
2	Yes	The property is in an Intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.
3	Yes	The property is in an Intermediate probability radon area (3 to 5% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.
4	Yes	The property is in an Intermediate probability radon area (5 to 10% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.
5	Yes	The property is in a Higher probability radon area (10 to 30% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.
6	Yes	The property is in a Higher probability radon area (more than 30% of homes are estimated to be at or above the Action Level). The property is in a radon affected area.

*The Radon Potential Class number should not be included in answers.

Source: User Guide for the HPA-BGS Joint Radon Potential Dataset for Great Britain (Ref: IR/11/044, dated 2011)



FIGURE 2.2 RADON AFFECTED AREA MEASURES REQUIRED

Radon Potential Class*	What level of radon protective measures are required for new buildings in England and Wales?	What level of radon protective measures are required for new dwellings in Scotland?
1	None**	None**
2	None	Stage 1
3	Basic	Stage 1
4	Basic	Stage 1
5	Full	Stage 2
6	Full	Stage 2

*The Radon Potential Class number should not be included in answers.

** in 2008 HPA recommended that building regulations be amended to ensure that all new buildings, extensions etc. include basic radon protective measures. At the time of writing, relevant UK authorities were considering this advice.

Source: User Guide for the HPA-BGS Joint Radon Potential Dataset for Great Britain (Ref: IR/11/044, dated 2011)

Basic radon protection measures are required to be installed as Section 5.1 of BRE211_2015: Radon Guidance on protective measures for new buildings.

Section 5.1 of BRE211_2015 states:

"For basic protection measures, the damp-proof course (DPC) to a cavity wall should be in the form of a cavity tray to prevent radon from entering the building through the cavity. Sealing of joints in the barrier and sealing around service penetrations are also required. It is important that attention is paid to detailing and workmanship in jointing of the barrier.

If good standards of design and workmanship are applied to the provision of a 1200 gauge damp-proof barrier to the floor sealed to a DPC/cavity tray through the walls, adequate protection from radon will be provided along with the general function of excluding moisture."

For all new dwellings constructed after 1st September 2023, in line with changes to the British Board of Agrément (BBA) building standards, plots requiring basic radon measures will require a specialized Radon Membrane, with minimum thickness of 0.4mm thick (1600 gauge) suitably installed and validated.

In addition to the remedial measures for Radon protection in Table 2.3, the contractor is also committed to installing a piling mat of quarried clean imported stone up to 680mm in thickness that will further reduce the likelihood of any vapours collecting within internal air space as the preferential pathway through this material will likely be towards external areas, venting to atmosphere.

The validation inspection is to include the items that are detailed within Table 2.3.



TABLE 2.3 RADON MITIGATION MEASURES VALIDATION ITEMS

INSPECTION	METHOD
Product Verification	Confirmation that suitable products have been installed to consist of photographs of product types, labels on packaging and delivery tickets.
Wall Cavity Inspection	Confirmation that gas membrane spans the external wall cavity above the periscopic vents.
General Condition	The membrane is to be inspected to ensure there are no tears, punctures or rips.
Jointing	The engineer is to check the overlaps between membranes are correctly sealed with sufficient overlaps.
Service Entry Points	Verification of the presence of preformed tophats sealed to the pipe and membrane as per the construction detail.
Passive Venting Systems	The engineer should verify the presence of vents at 2m centres on at least 3 of the external walls. Verification of the stone venting layer and presence of pipes to be supplied by photographic records from site.

FIGURE 2.4 ENHANCED DPM PROVIDING BASIC RADON PROTECTION TO A SUSPENDED CONCRETE FLOOR (EXAMPLE ONLY)

5.1.2 Basic radon protection: in situ (ground-bearing) concrete slab

In the examples illustrated in figure 4, the radon membrane is installed over the site, up and through the perimeter wall and the slab is poured in the top. A separate cavity tray is installed as per figure 3.

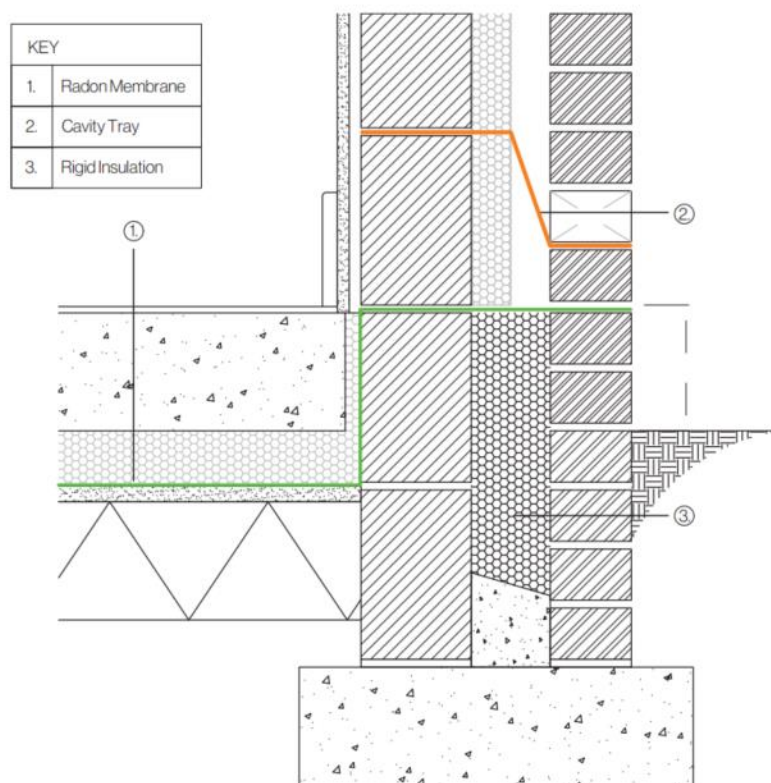


Figure 4: In situ ground bearing slab

Source: Section 5.1 of BRE211_2015 Radon



3. VAPOUR ASSESSMENT

3.1. GROUND GAS ASSESSMENT (CLANCY CONSULTING)

The Clancy Conceptual Site Model has identified that the underlying Made Ground may represent a potential source of ground gas generation. Ground conditions identify up to 3.00m of Made Ground present at the site generally comprising inert brick and concrete within a sand clay matrix (reworked natural).

However, based on the identification of these sources during the ground investigation, a completed phase of ground gas monitoring, and the Clancy gas assessment the site represents a low ground gas source generation potential. As such no specific mitigation measures are required pertinent to the ground gas regime at the site. No further risk is anticipated.

In addition, the contractor is also committed to installing a piling mat of quarried clean imported stone up to 680mm in thickness that will further reduce the likelihood of any ground gas collecting within internal air space as the preferential pathway through this material will likely be towards external areas, venting to atmosphere.

3.2. VAPOUR SAMPLING ANALYSIS

Following the completion of the spot sampling across the site, further analysis was required in order to understand the concentration of Naphthalene and further risk assess the potential for vapour particularly at the affected sample locations and possible source locations.

Summa cannisters were utilised to obtain a gas sample from each of the locations, where 10 TIC, TPHs and bulk gases were analysed. Samples were taken on the 3rd January 2024.

Table 3.1 below details the results of the analysis completed, where results recorded in $\mu\text{g}/\text{m}^3$ have been converted to mg/m^3 . The laboratory analysis is appended to this letter report (Ref: 24-77241/9769).

Table 3.1 summarises the results from the Naphthalene analysis and for the avoidance of doubt light end Aliphatic / Aromatic TPH banded analysis that may otherwise be indicative markers of vapour generation.

TABLE 3.1 SUMMARY OF TPH GAS SAMPLING ANALYSIS

COMPOUND	LOCATION AND RESULT					
	WS201		WS203		WS204	
	$\mu\text{g}/\text{m}^3$	mg/m^3	$\mu\text{g}/\text{m}^3$	mg/m^3	$\mu\text{g}/\text{m}^3$	mg/m^3
Naphthalene	<2.7	<0.0027	<2.7	<0.0027	<2.7	<0.0027
TPH Aliphatic C5-C6	84	0.084	74	0.074	68	0.068
TPH Aliphatic C6-C8	87	0.087	69	0.069	86	0.086
TPH Aliphatic C8-C10	65	0.065	56	0.056	82	0.082
TPH Aromatic C6-C7	<30	<0.030	<30	<0.030	<30	<0.030
TPH Aromatic C7-C8	<30	<0.030	<30	<0.030	<30	<0.030
TPH Aromatic C8-C10	<30	<0.030	<30	<0.030	<30	<0.030



In order to determine if the vapour concentrations detected would generate a risk to human health, the results in $\mu\text{g}/\text{m}^3$ have to be assessed against the Tolerable Daily Intake values (TDIs) for the relevant compound or group which are shown in Table 3.2.

In order to assess any potential risk, it is first necessary to identify the critical receptor which in this case is the future residents. The proposed residential end use means that the receptor for any vapour inhalation is a 0-6-year old child of approximately 12.70kg who breathes circa 11.85m³ of air per day.

TABLE 3.2 CHEMICAL PARAMETERS (TDI)

COMPOUND	$\text{TDI}_{\text{inhal}}$ $\mu\text{g kg}^{-1} \text{ BW day}^{-1}$	SOURCE
Naphthalene	60	TPH CWG
C5-C6 aliphatic	5000	TPH CWG
C6-C8 aliphatic		
C8-C10 aliphatic		
C6-C7 aromatic	1400	Environment Agency (2009) Contaminates in Soil: updated collation of toxicological data and intake values for humans. Toluene
C7-C8 aromatic		
C8-C10 aromatic	60	TPH CWG

TABLE 3.3 PHYSIOLOGICAL PARAMETERS AND JUSTIFICATION

PARAMETER	VALUE	SOURCE	JUSTIFICATION
Average body weight	12.70 kg	Table 4.6 SR3	Based on a 3 year old female child
Daily Inhalation Rate (long term exposure)	11.85 m ³ /day	Table 4.14 SR3	Based on a 0-6 year old female child

E3P has used the data in Tables 3.2 and 3.3 to devise Site Specific Screening Values (SSSVs) for each individual compounds or group using the below formula:

Site Specific Screening Value =	$\frac{\text{TDI (inhal)} \times \text{Body Weight}}{\text{Daily Inhalation Rate}}$
---------------------------------	---

The result is recorded in $\mu\text{g}/\text{m}^3$ which is then divided by 1000 to give a result expressed in mg/m^3 , which is the unit that the analysis results are recorded in.

Table 3.4 outlines the SSSVs for the individual compounds and groups for Banded TPHs.

TABLE 3.4 SITE SPECIFIC SCREENING VALUES RESIDENTIAL EXPOSURE - mg/m^3

COMPOUND	$\text{TDI}_{\text{inhal}}$ $\mu\text{g kg}^{-1} \text{ BW day}^{-1}$	SITE SPECIFIC SCREENING VALUES mg/m^3
Naphthalene	60	0.0643
C5-C6 aliphatic	5000	5.3586
C6-C8 aliphatic		5.3586
C8-C10 aliphatic	290	0.3108
C6-C7 aromatic	1400	1.5004
C7-C8 aromatic		1.5004
C8-C10 aromatic	60	0.0643

* Value based on $\text{ID}_{\text{inhal}} \mu\text{g kg}^{-1} \text{ BW day}^{-1}$

E3P has directly compared the SSSVs to the concentrations identified during the vapour monitoring as shown in Table 3.5.



TABLE 3.5 DQRA RESULTS

COMPOUND	SITE SPECIFIC SCREENING VALUES (mg/m ³)	MAX MONITORING RESULT (mg/m ³)	LOCATION OF EXCEEDANCE
Naphthalene	0.0643	<0.0027	N/A
C5-C6 aliphatic	5.3586	0.084	N/A
C6-C8 aliphatic		0.087	N/A
C8-C10 aliphatic	0.3108	0.082	N/A
C6-C7 aromatic	1.5004	<0.03	N/A
C7-C8 aromatic		<0.03	N/A
C8-C10 aromatic	0.0643	<0.03	N/A

No exceedances against the SSSVs have been detected for Naphthalene or any (light end) TPH compounds analysed at the three target locations.

3.3. VAPOUR ASSESSMENT CONCLUSIONS

The ground gas monitoring wells are installed through the existing predominantly granular Made Ground fill material beneath the former slab and therefore offer a worst-case scenario, in reality the potential for gas migration through these materials is limited.

It should be noted that earthworks are still required as part of the enabling works to prepare the site that will involve the removal of (currently) buried substructures, eg basement features and former footings. In doing so and processing the materials for reuse there will be a natural attenuation of any compounds further reducing any risk.

Within WS201, WS203 and WS204, Naphthalene in vapour form has not been detected above the limit of detection (2.7ug/m³). Similarly, aromatic TPHs are also below the limit of detection. Aliphatic TPHs (C5-10) have been detected above limit of detection but against the site-specific target criteria generated from daily tolerable intake volumes for the likely worst-case receptor, no risk has been identified and no exceedances encountered in the data obtained to date.

Based on ground gas monitoring completed previously and reported under separate cover the ground gas classification at the subject site is CS1 and therefore no mitigation measures are required to manage this risk however Radon mapping does state that an area within the site boundary is above the trigger level of Radon emissions and so basic radon measures in the form of a resistant membrane should be installed to the substructure of the proposed plot. The specific design of this should be completed by a structural engineer and should be agreed with the local planning department ahead of any works being completed on site. Given the basic measures it is not anticipated that these will require a third party validation.

Given that the soils will be processed and reused within the site enabling works, ultimately, they will be placed beneath a building or hardstanding in the final development, and in the absence of any vapour risk it is considered that soils are suitable for their intended use and will not require and further assessment or mitigation measures in consideration of the proposed development.

In addition, the contractor is also committed to installing a piling mat of quarried clean imported stone up to 680mm in thickness that will further reduce the likelihood of any vapours collecting within internal air space as the preferential pathway through this material will likely be towards external areas, venting to atmosphere.

I trust that the content herein will be sufficient for your requirements, however, should you need to discuss or require further information or detail please contact us.



END OF REPORT



APPENDIX I

LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the client as indicated in Section 1.3.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover, reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
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10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.



APPENDIX II

GLOSSARY

TERMS

ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
CA	Coal Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation
MCV	Moisture condition value	WRAP	Waste and Resources Action Programme



Laystall Street, Manchester

Remediation Strategy Addendum Report

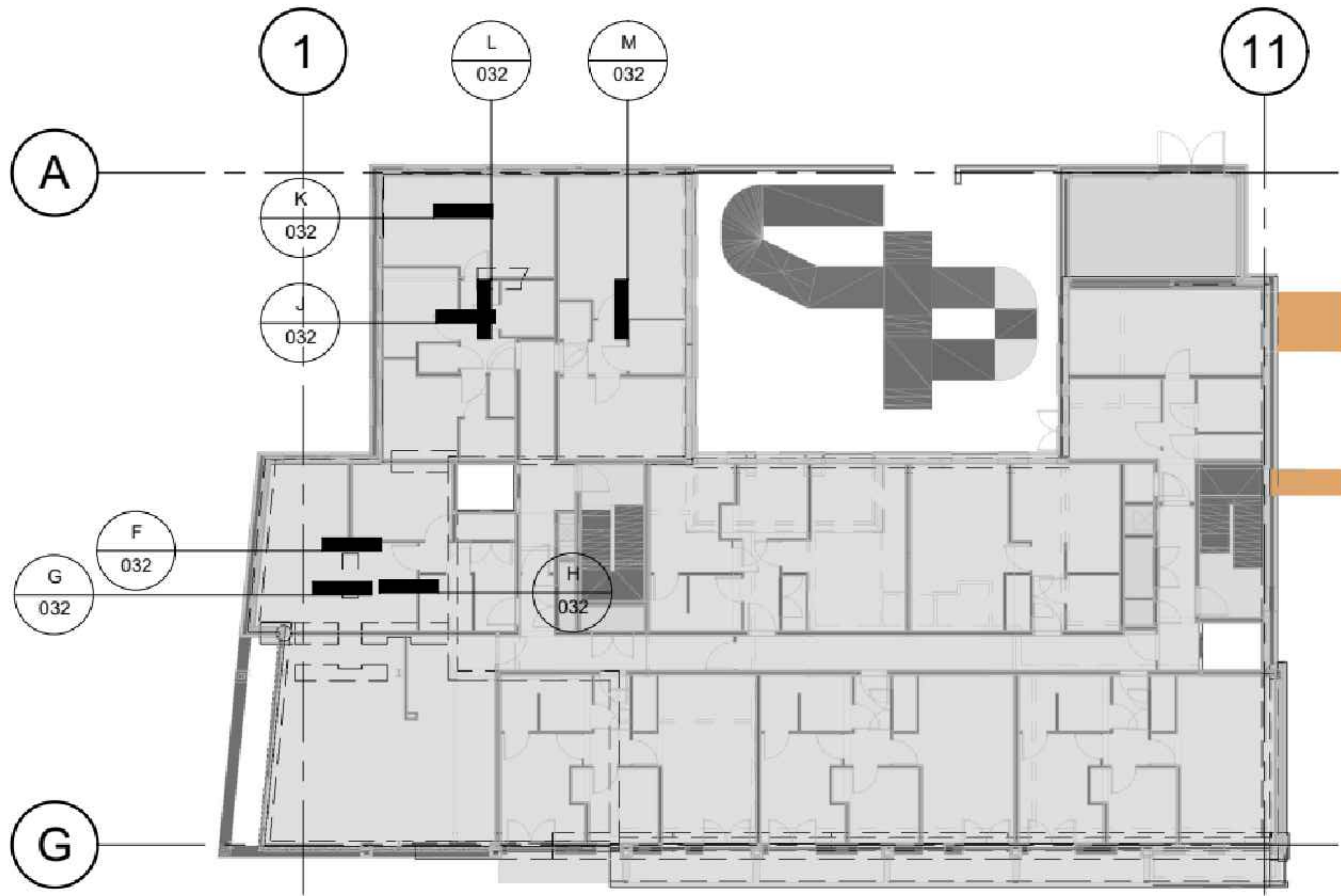
February 2024

MIBK	Methyl isobutyl ketone	WTE	Water table elevation
m	Metres	ppm	Parts per million
km	Kilometres	mg/m³	Milligram per metre cubed
% v/v	Percent volume in air	m bgl bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	kN/m²	Kilonewtons per metre squared
ppb	Parts per billion	µm	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	SSRT	Site Specific Remediation Target
PSD	Particle Size Distribution	DD	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	Mc	Moisture Content
ρ	Bulk Density	GPR	Ground Penetrating Radar
NDP	Nuclear Density Probe	FFL	Finished Floor Level
LEL	Lower Explosive Limit	UKWIR	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	LOD	Limit of Detection



APPENDIX III

DRAWINGS



Notes:

Client:

EWC

Job No:

16-613

Date:

02.03.2023

Drawing No:

002

Scale:

NTS@ A3



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Job Title:

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Manchester

Drawing Title:

Proposed
Development
Plan

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P1	REVA	02.03.2023	EB	RJW
Phase	Issue	Date	Drawn	Checked



Site Features

-  Car Park
-  Buildings
-  Material Boundaries
-  Believed Location of Basement

Notes:

P1	REVA	13.02.2023	OW	MJ
Phase	Issue	Date	Drawn	Checked

Client:

EWC

Job Title:

Laystall Street,
Manchester

Job No:

16-613

Drawing No:

004

Date:

13.02.2023

Scale:

1:1000 @ A3

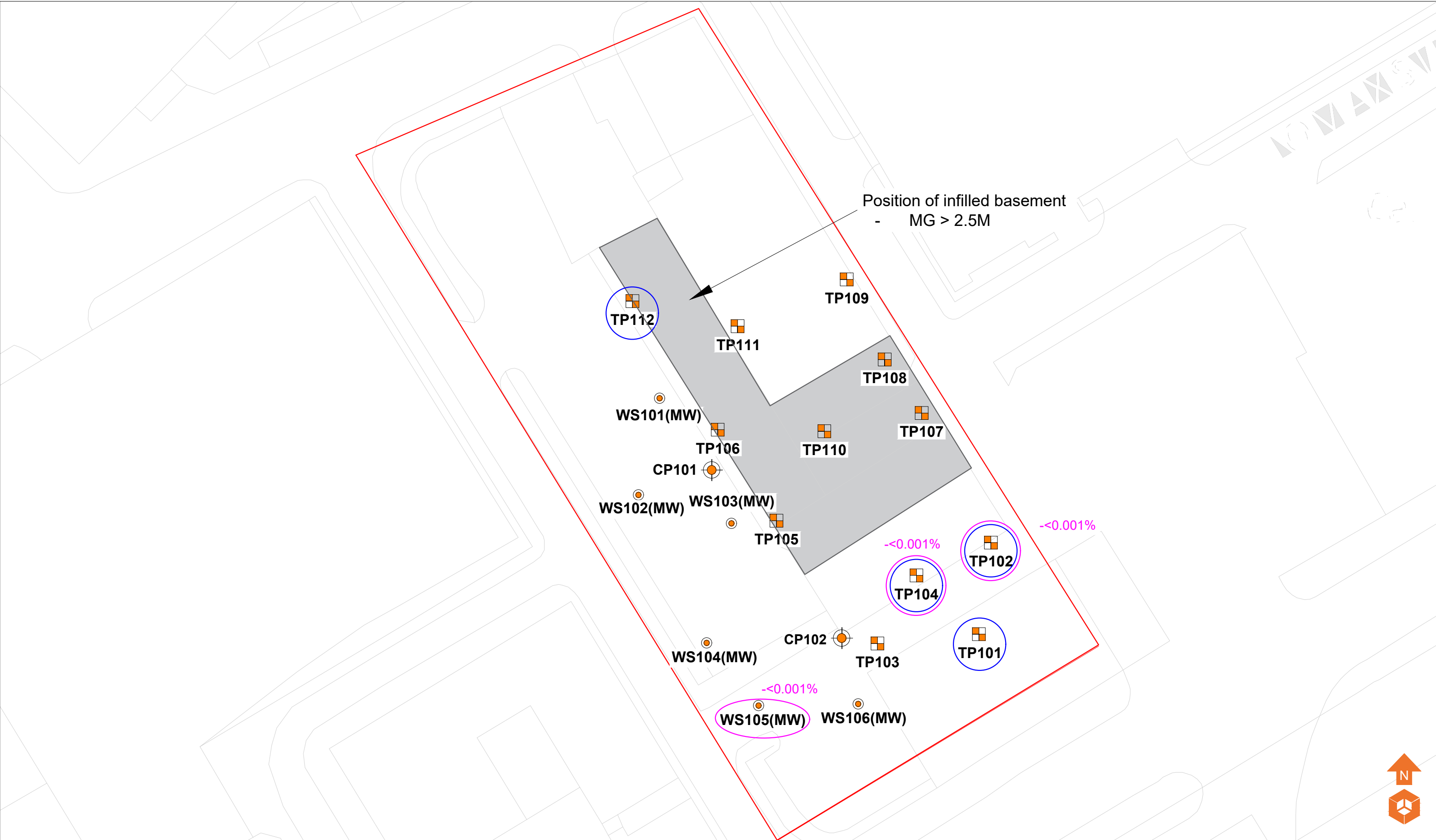


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Location Symbols TP101 Approximate Trial Pit Location WS101 Approximate Window Sample Probehole Location CP101 Approximate Cable Percussive Borehole Location CBR101 Approximate California Bearing Ratio Test Location (E3P February 2024) -WS101 - WS106 and CP101-102 (E3P March 2022 Phase II Geoenvironmental Site Assessment.) -TP101 - TP112 (E3P February 2023 Supplementary Site Assessment)					Notes:					Client: EWC		Job No: 16-613	Date: 05.02.2024	e3p Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk																					
					<table><tr><td>P1</td><td>REVC</td><td>05.02.2024</td><td>EB</td><td>RJW</td></tr><tr><td>P1</td><td>REVB</td><td>19.01.2023</td><td>OW</td><td>RJW</td></tr><tr><td>P1</td><td>REVA</td><td>23.02.2023</td><td>OW</td><td>MJ</td></tr><tr><td>Phase</td><td>Issue</td><td>Date</td><td>Drawn</td><td>Checked</td></tr></table>					P1	REVC	05.02.2024	EB	RJW	P1	REVB	19.01.2023	OW	RJW	P1	REVA	23.02.2023	OW	MJ	Phase	Issue	Date	Drawn	Checked	Job Title: Laystall Street, Manchester		Drawing Title: Exploratory Hole Location Plan		The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.	
P1	REVC	05.02.2024	EB	RJW																															
P1	REVB	19.01.2023	OW	RJW																															
P1	REVA	23.02.2023	OW	MJ																															
Phase	Issue	Date	Drawn	Checked																															
										Drawing No: 005	Scale: NTS@ A3																								



Location Symbols TP101 Approximate Trial Pit Location WS101 Approximate Window Sample Probehole Location CP101 Approximate Cable Percussive Borehole Location Contaminants of Concern Naphthalene Asbestos - Chrysotile and Amosite -WS101 - WS106 and CP101-102 (E3P M arch 2022 Phase II Geoenvironmental Site Assessment.) -TP101 - TP112 (E3P February 2023 Supplementary Site Assessment)					Notes:					Client: EWC		Job No: 16-613		Date: 27.02.2023		e3p Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9612 E-mail: info@e3p.co.uk Website: www.e3p.co.uk	
					P1 REVA 27.02.2023 OW MJ Phase Issue Date Drawn Checked					Job Title: Laystall Street, Manchester		Drawing No: 019		Scale: 1:1000 @ A3		The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.	

APPENDIX IV

LOGS



Borehole Log

Borehole No.

WS201

Sheet 1 of 1

Project Name: Laystall Street

Project No.
16613

Co-ords: 384976.00 - 398272.00

Hole Type
WS

Location: Manchester

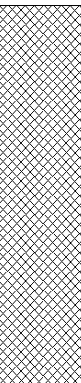
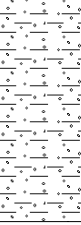
Level:

Scale
1:50

Client: Eric Wright

Dates: 20/12/2023 -

Logged By
J. Waugh

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								MADE GROUND: Brown mottled greyish brown locally clayey silty sandy gravel. Gravel is fine to coarse angular to subangular of sandstone with ash, brick, clinker and concrete fragments.	1
					2.50			MADE GROUND: Black sandy gravel. Gravel is fine to medium angular to subangular of occasional sandstone with ash, clinker and occasional brick fragments.	2
					3.00			MADE GROUND: Brown mottled greyish brown locally clayey silty sandy gravel. Gravel is fine to coarse angular to subangular of sandstone with ash, brick, clinker and concrete fragments.	3
					3.50			Firm to stiff brown to greyish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of sandstone.	4
					5.00			End of borehole at 5.00 m	5
									6
									7
									8
									9
									10

Remarks

1. Complete
2. Casing refused at 2.20m bgl.
3. Hole collapsing from 2.000m bgl.
4. Monitoring well installed.
5. Response Zone: 0.50m - 2.00m bgl.





Borehole Log

Borehole No.

WS202

Sheet 1 of 1

Project Name: Laystall Street

Project No.
16613

Co-ords: 384986.00 - 398267.00

Hole Type
WS

Location: Manchester

Level:

Scale
1:50

Client: Eric Wright

Dates: 20/12/2023 -

Logged By
J. Waugh

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					3.00			MADE GROUND: Brown mottled greyish brown locally clayey silty sandy gravel. Gravel is fine to coarse angular to subangular of sandstone with ash, brick, clinker and concrete fragments.	1
									2
								Firm to stiff brown to greyish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of sandstone.	3
									4
					5.00			End of borehole at 5.00 m	5
									6
									7
									8
									9
									10

Remarks

1. Complete
2. Water strike encountered at 3.00m bgl.
3. Monitoring well installed.
4. Response Zone: 0.50m - 3.00m bgl.





Borehole Log

Borehole No.

WS203

Sheet 1 of 1

Project Name: Laystall Street

Project No.
16613

Co-ords: 384981.00 - 398259.00

Hole Type
WS

Location: Manchester

Level:

Scale
1:50

Client: Eric Wright

Dates: 20/12/2023 -

Logged By
J. Waugh

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								MADE GROUND: Brown mottled greyish brown locally clayey silty sandy gravel. Gravel is fine to coarse angular to subangular of sandstone with ash, brick, clinker and concrete fragments.	1
									2
									3
					3.70			Firm to stiff brown to greyish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of sandstone.	4
					5.00			End of borehole at 5.00 m	5
									6
									7
									8
									9
									10

Remarks

1. Complete
2. Water strike encountered at 3.00m bgl.
3. Hydrocarbon odour encountered at 3.00m - 3.50m bgl.
4. Monitoring well installed.
5. Response Zone: 0.50m - 3.50m bgl.



Borehole Log

Borehole No.

WS204

Sheet 1 of 1

Project Name: Laystall Street

Project No.
16613

Co-ords: 384994.00 - 398254.00

Hole Type
WS

Location: Manchester

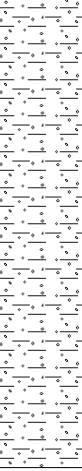
Level:

Scale
1:50

Client: Eric Wright

Dates: 20/12/2023 -

Logged By
J. Waugh

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10			MADE GROUND: Soft dark grey silty very sandy very gravelly clay. Gravel is fine to coarse angular to subangular of sandstone with ash, brick and clinker fragments.	
					0.70			MADE GROUND: Dark grey silty sandy gravel. Gravel is fine to coarse angular to subangular of sandstone with ash, brick and clinker fragments.	1
					1.50			MADE GROUND: Soft light brown to greyish brown sandy gravelly clay. Gravel is fine to medium angular to subangular of sandstone with ash, brick and clinker fragments.	2
								Firm to stiff brown to greyish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of sandstone.	3 4
					5.00				End of borehole at 5.00 m

Remarks

- Complete
- Monitoring well installed.
- Response Zone: 0.50m - 1.50m bgl.

Borehole Log

Borehole No.

WS205

Sheet 1 of 1

Project Name: Laystall Street

Project No.
16613

Co-ords: 384977.00 - 398249.00

Hole Type
WS

Location: Manchester

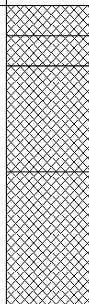
Level:

Scale
1:50

Client: Eric Wright

Dates: 20/12/2023 -

Logged By
J. Waugh

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND: Soft dark grey silty very sandy very gravelly clay. Gravel is fine to coarse angular to subangular of sandstone with ash, brick and clinker fragments. MADE GROUND: Grey silty sandy gravel. Gravel is fine to coarse angular to subangular of limestone and sandstone with ash, brick and clinker fragments. MADE GROUND: Reddish brown very silty very gravelly sand. Gravel is fine to coarse angular to subangular of sandstone with ash, brick and clinker fragments. MADE GROUND: Dark grey to black very silty very gravelly sand. Gravel is fine to coarse angular to subangular of sandstone with ash, brick and clinker fragments. Firm to stiff brown to greyish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of sandstone.	
					0.40				
					1.10				
					2.00				
					5.00				
								End of borehole at 5.00 m	

Remarks

- Complete
- Monitoring well installed.
- Response Zone: 0.50m - 2.00m bgl.

Borehole Log

Borehole No.

WS206

Sheet 1 of 1

Project Name: Laystall Street

Project No.
16613

Co-ords: 384966.00 - 398264.00

Hole Type
WS

Location: Manchester

Level:

Scale
1:50

Client: Eric Wright

Dates: 20/12/2023 -

Logged By
J. Waugh

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10			MADE GROUND: Soft dark grey silty very sandy very gravelly clay. Gravel is fine to coarse angular to subangular of sandstone with ash, brick and clinker fragments. MADE GROUND: Grey silty sandy gravel. Gravel is fine to coarse angular to subangular of limestone and sandstone with ash, brick and clinker fragments. MADE GROUND: Reddish brown very silty very gravelly sand. Gravel is fine to coarse angular to subangular of sandstone with ash, brick and clinker fragments. MADE GROUND: Light greyish brown sandy gravel. Gravel is fine to coarse angular to subrounded of sandstone with ash, brick and clinker fragments. MADE GROUND: Dark grey to black very silty very gravelly sand. Gravel is fine to coarse angular to subangular of sandstone with ash, brick and clinker fragments. Stiff to very stiff brown to greyish brown slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of sandstone.	1
					0.30				
					1.00				
					1.70				
					2.00				
					4.00			End of borehole at 4.00 m	4
									5
									6
									7
									8
									9
									10

Remarks

1. Refused on very stiff CLAY at 4.00m bgl.
2. Monitoring well installed.
3. Response Zone: 0.50m - 2.00m bgl.

APPENDIX V

VAPOUR SAMPLING

RESULTS



4041

Roy Walker

E3P
Taylor Road
Urmston
Manchester
M41 7JQ

t: -
f: -
e: rwalker@e3p.co.uk



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

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

Analytical Report Number : 24-77241/9769

Project / Site name:	Laystall St, Manchester	Samples received on:	08/01/2024
Your job number:	16-613	Samples instructed on/ Analysis started on:	08/01/2024
Your order number:	007181	Analysis completed by:	15/01/2024
Report Issue Number:	1	Report issued on:	15/01/2024
Samples Analysed:	3 gas samples		

Signed:

Jeanette Abbot
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Report Number	24-77241 / 9769		
Order number			
Sample Number	2923257	Sample date	03/01/2024
Sample ID	WS201 (700017)	Sample Start Time	
Depth		Sample Stop Time	
Canister Number	1694	Initial Pressure (PSI)	-13.46
Sample Volume	720	Final Pressure (PSI)	-2.95
		Dilution	3.23

CAS #	Compound Name	Accreditation	LoD	Result	Units #	LoD	Result	Units
71-55-6	1,1,1-Trichloroethane	ISO 17025	2.8	< 2.8	µg/m3	0.5	< 0.5	ppbv
79-34-5	1,1,2,2-Tetrachloroethane	ISO 17025	3.5	< 3.5	µg/m3	0.5	< 0.5	ppbv
79-00-5	1,1,2-Trichloroethane	ISO 17025	2.8	< 2.8	µg/m3	0.5	< 0.5	ppbv
75-35-4	1,1-Dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
75-34-3	1,1-Dichloroethane	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
120-82-1	1,2,4-Trichlorobenzene	ISO 17025	3.8	< 3.8	µg/m3	0.5	< 0.5	ppbv
95-63-6	1,2,4-Trimethylbenzene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
106-93-4	1,2-Dibromoethane	ISO 17025	3.9	< 3.9	µg/m3	0.5	< 0.5	ppbv
95-50-1	1,2-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
107-06-2	1,2-Dichloroethane	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
78-87-5	1,2-Dichloropropane	ISO 17025	2.4	< 2.4	µg/m3	0.5	< 0.5	ppbv
106-99-0	1,3-Butadiene	ISO 17025	1.1	< 1.1	µg/m3	0.5	< 0.5	ppbv
541-73-1	1,3-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
106-46-7	1,4-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
123-91-1	1,4-Dioxane	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
622-96-8	4-Ethyltoluene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
67-64-1	Acetone	ISO 17025	9.7	53	µg/m3	4	22	ppbv
107-02-8	Acrolein	ISO 17025	1.2	8.3	µg/m3	0.5	3.5	ppbv
75-27-4	Bromodichloromethane	ISO 17025	3.4	< 3.4	µg/m3	0.5	< 0.5	ppbv
100-44-7	Benzyl chloride	ISO 17025	2.6	< 2.6	µg/m3	0.5	< 0.5	ppbv
71-43-2	Benzene	ISO 17025	1	< 1.0	µg/m3	0.3	< 0.3	ppbv
74-83-9	Bromomethane	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
156-59-2	Cis-1,2-dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
10061-01-5	Cis-1,3-dichloropropene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
108-90-7	Chlorobenzene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
56-23-5	Carbon tetrachloride	ISO 17025	3.2	< 3.2	µg/m3	0.5	< 0.5	ppbv
75-15-0	Carbon disulphide	ISO 17025	9.5	13	µg/m3	3	4.1	ppbv
75-00-3	Chloroethane	ISO 17025	1.3	< 1.3	µg/m3	0.5	< 0.5	ppbv
67-66-3	Chloroform	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
74-87-3	Chloromethane	ISO 17025	10.4	< 10	µg/m3	5	< 5.0	ppbv
110-82-7	Cyclohexane	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
124-48-1	Dibromochloromethane	ISO 17025	4.3	< 4.3	µg/m3	0.5	< 0.5	ppbv
75-71-8	Dichlorodifluoromethane	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
75-09-2	Dichloromethane	ISO 17025	24.8	36	µg/m3	7	10	ppbv
76-14-2	Dichlorotetrafluoroethane	ISO 17025	3.6	< 3.6	µg/m3	0.5	< 0.5	ppbv
141-78-6	Ethyl acetate	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
100-41-4	Ethylbenzene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
64-17-5	Ethanol	ISO 17025	5.8	31	µg/m3	3	16	ppbv
87-68-3	Hexachlorobutadiene	ISO 17025	5.4	< 5.4	µg/m3	0.5	< 0.5	ppbv
142-82-5	Heptane	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
110-54-3	Hexane	ISO 17025	10.8	25	µg/m3	3	7	ppbv
67-63-0	Isopropyl alcohol	ISO 17025	5	12	µg/m3	2	4.8	ppbv
591-78-6	2-Hexanone (MBK)	ISO 17025	2.1	2.4	µg/m3	0.5	0.6	ppbv
78-93-3	MEK	ISO 17025	1.5	12	µg/m3	0.5	4	ppbv
80-62-6	Methyl methacrylate	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
108-10-1	MIBK	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
1634-04-4	MTBE	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
95-47-6	O-xylene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
	M/p-xylene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
115-07-1	Propene	ISO 17025	0.9	< 0.9	µg/m3	0.5	< 0.5	ppbv
100-42-5	Styrene	ISO 17025	2.2	< 2.2	µg/m3	0.5	< 0.5	ppbv
156-60-5	Trans-1,2-dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
1061-02-6	Trans-1,3-dichloropropene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
75-25-2	Bromoform	ISO 17025	5.3	< 5.3	µg/m3	0.5	< 0.5	ppbv
79-01-6	Trichloroethene	ISO 17025	2.7	4.4	µg/m3	0.5	0.8	ppbv
75-69-4	Trichlorofluoromethane	ISO 17025	2.9	< 2.9	µg/m3	0.5	< 0.5	ppbv
76-13-1	Trichlorotrifluoroethane	ISO 17025	3.9	< 3.9	µg/m3	0.5	< 0.5	ppbv
127-18-4	Tetrachloroethene	ISO 17025	3.5	< 3.5	µg/m3	0.5	< 0.5	ppbv
109-99-9	THF	ISO 17025	1.5	< 1.5	µg/m3	0.5	< 0.5	ppbv
108-67-8	1,3,5-Trimethylbenzene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
108-88-3	Toluene	ISO 17025	1.2	5.7	µg/m3	0.3	1.5	ppbv
108-05-4	Vinyl acetate	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
75-01-4	Vinyl chloride	ISO 17025	1.3	< 1.3	µg/m3	0.5	< 0.5	ppbv
91-20-3	Naphthalene	ISO 17025	2.7	< 2.7	µg/m3	0.5	< 0.5	ppbv

- results in ug/m3 outside the scope of accreditation

Report Number	24-77241 / 9769		
Order number			
Sample Number	2923257	Sample date	03/01/2024
Sample ID	WS201 (700017)	Sample Start Time	
Depth		Sample Stop Time	
Canister Number	1694	Initial Pressure (PSI)	-13.46
Sample Volume	720	Final Pressure (PSI)	-2.95
		Dilution	3.23

CAS #	Compound Name	Accreditation	LoD	Result	Units	LoD	Result	Units
79-00-5	TPH Aliphatic C5-C6	NONE	30	84	µg/m3			
75-35-4	TPH Aliphatic C6-C8	NONE	30	87	µg/m3			
75-34-3	TPH Aliphatic C8-C10	NONE	30	65	µg/m3			
120-82-1	TPH Aromatic C6-C7	NONE	30	< 30	µg/m3			
95-63-6	TPH Aromatic C7-C8	NONE	30	< 30	µg/m3			
106-93-4	TPH Aromatic C8-C10	NONE	30	< 30	µg/m3			
	TPH >C10-C12	ISO 17025	30	< 30	ug/m3			
	PRO C5-C12	ISO 17025	30	270	ug/m3	5	44	ppbv
	TPH >C5-C6	ISO 17025	30	84	ug/m3			
	TPH >C6-C8	ISO 17025	30	93	ug/m3			
	TPH >C8-C10	ISO 17025	30	68	ug/m3			

CAS #	Compound Name	Accreditation	VOC TICS		
			Compound Name	% Match	Amount (ppbv)
	VOC TIC Match 1	None	hexamethyl-Cyclotrisiloxane,	90	52
	VOC TIC Match 2	None	octamethyl-Cyclotetrasiloxane,	94	37
	VOC TIC Match 3	None	trimethyl-Silanol	88	14
	VOC TIC Match 4	None	N.D.	-	-
	VOC TIC Match 5	None	N.D.	-	-
	VOC TIC Match 6	None	N.D.	-	-
	VOC TIC Match 7	None	N.D.	-	-
	VOC TIC Match 8	None	N.D.	-	-
	VOC TIC Match 9	None	N.D.	-	-
	VOC TIC Match 10	None	N.D.	-	-

Report Number	24-77241 / 9769		
Order number			
Sample Number	2923258	Sample date	03/01/2024
Sample ID	WS203 (700018)	Sample Start Time	
Depth		Sample Stop Time	
Canister Number	1703	Initial Pressure (PSI)	-14.15
Sample Volume	750	Final Pressure (PSI)	-3.19
		Dilution	3.37

CAS #	Compound Name	Accreditation	LoD	Result	Units #	LoD	Result	Units
71-55-6	1,1,1-Trichloroethane	ISO 17025	2.8	< 2.8	µg/m3	0.5	< 0.5	ppbv
79-34-5	1,1,2,2-Tetrachloroethane	ISO 17025	3.5	< 3.5	µg/m3	0.5	< 0.5	ppbv
79-00-5	1,1,2-Trichloroethane	ISO 17025	2.8	< 2.8	µg/m3	0.5	< 0.5	ppbv
75-35-4	1,1-Dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
75-34-3	1,1-Dichloroethane	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
120-82-1	1,2,4-Trichlorobenzene	ISO 17025	3.8	< 3.8	µg/m3	0.5	< 0.5	ppbv
95-63-6	1,2,4-Trimethylbenzene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
106-93-4	1,2-Dibromoethane	ISO 17025	3.9	< 3.9	µg/m3	0.5	< 0.5	ppbv
95-50-1	1,2-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
107-06-2	1,2-Dichloroethane	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
78-87-5	1,2-Dichloropropane	ISO 17025	2.4	< 2.4	µg/m3	0.5	< 0.5	ppbv
106-99-0	1,3-Butadiene	ISO 17025	1.1	< 1.1	µg/m3	0.5	< 0.5	ppbv
541-73-1	1,3-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
106-46-7	1,4-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
123-91-1	1,4-Dioxane	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
622-96-8	4-Ethyltoluene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
67-64-1	Acetone	ISO 17025	9.7	42	µg/m3	4	17	ppbv
107-02-8	Acrolein	ISO 17025	1.2	4.5	µg/m3	0.5	1.9	ppbv
75-27-4	Bromodichloromethane	ISO 17025	3.4	< 3.4	µg/m3	0.5	< 0.5	ppbv
100-44-7	Benzyl chloride	ISO 17025	2.6	< 2.6	µg/m3	0.5	< 0.5	ppbv
71-43-2	Benzene	ISO 17025	1	< 1.0	µg/m3	0.3	< 0.3	ppbv
74-83-9	Bromomethane	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
156-59-2	Cis-1,2-dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
10061-01-5	Cis-1,3-dichloropropene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
108-90-7	Chlorobenzene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
56-23-5	Carbon tetrachloride	ISO 17025	3.2	< 3.2	µg/m3	0.5	< 0.5	ppbv
75-15-0	Carbon disulphide	ISO 17025	9.5	< 9.5	µg/m3	3	< 3.0	ppbv
75-00-3	Chloroethane	ISO 17025	1.3	< 1.3	µg/m3	0.5	< 0.5	ppbv
67-66-3	Chloroform	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
74-87-3	Chloromethane	ISO 17025	10.4	< 10	µg/m3	5	< 5.0	ppbv
110-82-7	Cyclohexane	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
124-48-1	Dibromochloromethane	ISO 17025	4.3	< 4.3	µg/m3	0.5	< 0.5	ppbv
75-71-8	Dichlorodifluoromethane	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
75-09-2	Dichloromethane	ISO 17025	24.8	< 25	µg/m3	7	< 7.0	ppbv
76-14-2	Dichlorotetrafluoroethane	ISO 17025	3.6	< 3.6	µg/m3	0.5	< 0.5	ppbv
141-78-6	Ethyl acetate	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
100-41-4	Ethylbenzene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
64-17-5	Ethanol	ISO 17025	5.8	32	µg/m3	3	17	ppbv
87-68-3	Hexachlorobutadiene	ISO 17025	5.4	< 5.4	µg/m3	0.5	< 0.5	ppbv
142-82-5	Heptane	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
110-54-3	Hexane	ISO 17025	10.8	12	µg/m3	3	3.3	ppbv
67-63-0	Isopropyl alcohol	ISO 17025	5	11	µg/m3	2	4.3	ppbv
591-78-6	2-Hexanone (MBK)	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
78-93-3	MEK	ISO 17025	1.5	8.9	µg/m3	0.5	3	ppbv
80-62-6	Methyl methacrylate	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
108-10-1	MIBK	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
1634-04-4	MTBE	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
95-47-6	O-xylene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
	M/p-xylene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
115-07-1	Propene	ISO 17025	0.9	< 0.9	µg/m3	0.5	< 0.5	ppbv
100-42-5	Styrene	ISO 17025	2.2	< 2.2	µg/m3	0.5	< 0.5	ppbv
156-60-5	Trans-1,2-dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
1061-02-6	Trans-1,3-dichloropropene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
75-25-2	Bromoform	ISO 17025	5.3	< 5.3	µg/m3	0.5	< 0.5	ppbv
79-01-6	Trichloroethene	ISO 17025	2.7	< 2.7	µg/m3	0.5	< 0.5	ppbv
75-69-4	Trichlorofluoromethane	ISO 17025	2.9	< 2.9	µg/m3	0.5	< 0.5	ppbv
76-13-1	Trichlorotrifluoroethane	ISO 17025	3.9	< 3.9	µg/m3	0.5	< 0.5	ppbv
127-18-4	Tetrachloroethene	ISO 17025	3.5	< 3.5	µg/m3	0.5	< 0.5	ppbv
109-99-9	THF	ISO 17025	1.5	< 1.5	µg/m3	0.5	< 0.5	ppbv
108-67-8	1,3,5-Trimethylbenzene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
108-88-3	Toluene	ISO 17025	1.2	5.4	µg/m3	0.3	1.4	ppbv
108-05-4	Vinyl acetate	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
75-01-4	Vinyl chloride	ISO 17025	1.3	< 1.3	µg/m3	0.5	< 0.5	ppbv
91-20-3	Naphthalene	ISO 17025	2.7	< 2.7	µg/m3	0.5	< 0.5	ppbv

- results in ug/m3 outside the scope of accreditation

Report Number	24-77241 / 9769		
Order number			
Sample Number	2923258	Sample date	03/01/2024
Sample ID	WS203 (700018)	Sample Start Time	
Depth		Sample Stop Time	
Canister Number	1703	Initial Pressure (PSI)	-14.15
Sample Volume	750	Final Pressure (PSI)	-3.19
		Dilution	3.37

CAS #	Compound Name	Accreditation	LoD	Result	Units	LoD	Result	Units
79-00-5	TPH Aliphatic C5-C6	NONE	30	74	µg/m3			
75-35-4	TPH Aliphatic C6-C8	NONE	30	69	µg/m3			
75-34-3	TPH Aliphatic C8-C10	NONE	30	56	µg/m3			
120-82-1	TPH Aromatic C6-C7	NONE	30	< 30	µg/m3			
95-63-6	TPH Aromatic C7-C8	NONE	30	< 30	µg/m3			
106-93-4	TPH Aromatic C8-C10	NONE	30	< 30	µg/m3			
	TPH >C10-C12	ISO 17025	30	< 30	ug/m3			
	PRO C5-C12	ISO 17025	30	230	ug/m3	5	37	ppbv
	TPH >C5-C6	ISO 17025	30	74	ug/m3			
	TPH >C6-C8	ISO 17025	30	75	ug/m3			
	TPH >C8-C10	ISO 17025	30	58	ug/m3			

CAS #	Compound Name	Accreditation	Compound Name	% Match	Amount (ppbv)
	VOC TIC Match 1	None	hexamethyl-Cyclotrisiloxane	90	45
	VOC TIC Match 2	None	octamethyl-Cyclotetrasiloxane	92	45
	VOC TIC Match 3	None	N.D.	-	-
	VOC TIC Match 4	None	N.D.	-	-
	VOC TIC Match 5	None	N.D.	-	-
	VOC TIC Match 6	None	N.D.	-	-
	VOC TIC Match 7	None	N.D.	-	-
	VOC TIC Match 8	None	N.D.	-	-
	VOC TIC Match 9	None	N.D.	-	-
	VOC TIC Match 10	None	N.D.	-	-

Report Number	24-77241 / 9769		
Order number			
Sample Number	2923259	Sample date	03/01/2024
Sample ID	WS204 (700019)	Sample Start Time	
Depth		Sample Stop Time	
Canister Number	1685	Initial Pressure (PSI)	-13.46
Sample Volume	810	Final Pressure (PSI)	-1.57
		Dilution	3.14

CAS #	Compound Name	Accreditation	LoD	Result	Units #	LoD	Result	Units
71-55-6	1,1,1-Trichloroethane	ISO 17025	2.8	< 2.8	µg/m3	0.5	< 0.5	ppbv
79-34-5	1,1,2,2-Tetrachloroethane	ISO 17025	3.5	< 3.5	µg/m3	0.5	< 0.5	ppbv
79-00-5	1,1,2-Trichloroethane	ISO 17025	2.8	< 2.8	µg/m3	0.5	< 0.5	ppbv
75-35-4	1,1-Dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
75-34-3	1,1-Dichloroethane	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
120-82-1	1,2,4-Trichlorobenzene	ISO 17025	3.8	< 3.8	µg/m3	0.5	< 0.5	ppbv
95-63-6	1,2,4-Trimethylbenzene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
106-93-4	1,2-Dibromoethane	ISO 17025	3.9	< 3.9	µg/m3	0.5	< 0.5	ppbv
95-50-1	1,2-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
107-06-2	1,2-Dichloroethane	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
78-87-5	1,2-Dichloropropane	ISO 17025	2.4	< 2.4	µg/m3	0.5	< 0.5	ppbv
106-99-0	1,3-Butadiene	ISO 17025	1.1	< 1.1	µg/m3	0.5	< 0.5	ppbv
541-73-1	1,3-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
106-46-7	1,4-Dichlorobenzene	ISO 17025	3.1	< 3.1	µg/m3	0.5	< 0.5	ppbv
123-91-1	1,4-Dioxane	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
622-96-8	4-Ethyltoluene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
67-64-1	Acetone	ISO 17025	9.7	47	µg/m3	4	19	ppbv
107-02-8	Acrolein	ISO 17025	1.2	6	µg/m3	0.5	2.6	ppbv
75-27-4	Bromodichloromethane	ISO 17025	3.4	< 3.4	µg/m3	0.5	< 0.5	ppbv
100-44-7	Benzyl chloride	ISO 17025	2.6	< 2.6	µg/m3	0.5	< 0.5	ppbv
71-43-2	Benzene	ISO 17025	1	< 1.0	µg/m3	0.3	< 0.3	ppbv
74-83-9	Bromomethane	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
156-59-2	Cis-1,2-dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
10061-01-5	Cis-1,3-dichloropropene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
108-90-7	Chlorobenzene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
56-23-5	Carbon tetrachloride	ISO 17025	3.2	< 3.2	µg/m3	0.5	< 0.5	ppbv
75-15-0	Carbon disulphide	ISO 17025	9.5	23	µg/m3	3	7.2	ppbv
75-00-3	Chloroethane	ISO 17025	1.3	< 1.3	µg/m3	0.5	< 0.5	ppbv
67-66-3	Chloroform	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
74-87-3	Chloromethane	ISO 17025	10.4	< 10	µg/m3	5	< 5.0	ppbv
110-82-7	Cyclohexane	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
124-48-1	Dibromochloromethane	ISO 17025	4.3	< 4.3	µg/m3	0.5	< 0.5	ppbv
75-71-8	Dichlorodifluoromethane	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
75-09-2	Dichloromethane	ISO 17025	24.8	59	µg/m3	7	17	ppbv
76-14-2	Dichlorotetrafluoroethane	ISO 17025	3.6	< 3.6	µg/m3	0.5	< 0.5	ppbv
141-78-6	Ethyl acetate	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
100-41-4	Ethylbenzene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
64-17-5	Ethanol	ISO 17025	5.8	22	µg/m3	3	12	ppbv
87-68-3	Hexachlorobutadiene	ISO 17025	5.4	< 5.4	µg/m3	0.5	< 0.5	ppbv
142-82-5	Heptane	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
110-54-3	Hexane	ISO 17025	10.8	35	µg/m3	3	9.8	ppbv
67-63-0	Isopropyl alcohol	ISO 17025	5	9.7	µg/m3	2	3.9	ppbv
591-78-6	2-Hexanone (MBK)	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
78-93-3	MEK	ISO 17025	1.5	9.1	µg/m3	0.5	3	ppbv
80-62-6	Methyl methacrylate	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
108-10-1	MIBK	ISO 17025	2.1	< 2.1	µg/m3	0.5	< 0.5	ppbv
1634-04-4	MTBE	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
95-47-6	O-xylene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
	M/p-xylene	ISO 17025	1.3	< 1.3	µg/m3	0.3	< 0.3	ppbv
115-07-1	Propene	ISO 17025	0.9	< 0.9	µg/m3	0.5	< 0.5	ppbv
100-42-5	Styrene	ISO 17025	2.2	< 2.2	µg/m3	0.5	< 0.5	ppbv
156-60-5	Trans-1,2-dichloroethene	ISO 17025	2	< 2.0	µg/m3	0.5	< 0.5	ppbv
1061-02-6	Trans-1,3-dichloropropene	ISO 17025	2.3	< 2.3	µg/m3	0.5	< 0.5	ppbv
75-25-2	Bromoform	ISO 17025	5.3	< 5.3	µg/m3	0.5	< 0.5	ppbv
79-01-6	Trichloroethene	ISO 17025	2.7	< 2.7	µg/m3	0.5	< 0.5	ppbv
75-69-4	Trichlorofluoromethane	ISO 17025	2.9	< 2.9	µg/m3	0.5	< 0.5	ppbv
76-13-1	Trichlorotrifluoroethane	ISO 17025	3.9	< 3.9	µg/m3	0.5	< 0.5	ppbv
127-18-4	Tetrachloroethene	ISO 17025	3.5	< 3.5	µg/m3	0.5	< 0.5	ppbv
109-99-9	THF	ISO 17025	1.5	< 1.5	µg/m3	0.5	< 0.5	ppbv
108-67-8	1,3,5-Trimethylbenzene	ISO 17025	2.5	< 2.5	µg/m3	0.5	< 0.5	ppbv
108-88-3	Toluene	ISO 17025	1.2	5.7	µg/m3	0.3	1.5	ppbv
108-05-4	Vinyl acetate	ISO 17025	1.8	< 1.8	µg/m3	0.5	< 0.5	ppbv
75-01-4	Vinyl chloride	ISO 17025	1.3	< 1.3	µg/m3	0.5	< 0.5	ppbv
91-20-3	Naphthalene	ISO 17025	2.7	< 2.7	µg/m3	0.5	< 0.5	ppbv

- results in ug/m3 outside the scope of accreditation

Report Number	24-77241 / 9769		
Order number			
Sample Number	2923259	Sample date	03/01/2024
Sample ID	WS204 (700019)	Sample Start Time	
Depth		Sample Stop Time	
Canister Number	1685	Initial Pressure (PSI)	-13.46
Sample Volume	810	Final Pressure (PSI)	-1.57
		Dilution	3.14

CAS #	Compound Name	Accreditation	LoD	Result	Units	LoD	Result	Units
79-00-5	TPH Aliphatic C5-C6	NONE	30	68	µg/m3			
75-35-4	TPH Aliphatic C6-C8	NONE	30	86	µg/m3			
75-34-3	TPH Aliphatic C8-C10	NONE	30	82	µg/m3			
120-82-1	TPH Aromatic C6-C7	NONE	30	< 30	µg/m3			
95-63-6	TPH Aromatic C7-C8	NONE	30	< 30	µg/m3			
106-93-4	TPH Aromatic C8-C10	NONE	30	< 30	µg/m3			
	TPH >C10-C12	ISO 17025	30	< 30	ug/m3			
	PRO C5-C12	ISO 17025	30	280	ug/m3	5	45	ppbv
	TPH >C5-C6	ISO 17025	30	68	ug/m3			
	TPH >C6-C8	ISO 17025	30	93	ug/m3			
	TPH >C8-C10	ISO 17025	30	84	ug/m3			

CAS #	Compound Name	Accreditation	VOC TICS		
			Compound Name	% Match	Amount (ppbv)
	VOC TIC Match 1	None	hexamethyl-Cyclotrisiloxane	9	12
	VOC TIC Match 2	None	Butane	82	16
	VOC TIC Match 3	None	N.D.	-	-
	VOC TIC Match 4	None	N.D.	-	-
	VOC TIC Match 5	None	N.D.	-	-
	VOC TIC Match 6	None	N.D.	-	-
	VOC TIC Match 7	None	N.D.	-	-
	VOC TIC Match 8	None	N.D.	-	-
	VOC TIC Match 9	None	N.D.	-	-
	VOC TIC Match 10	None	N.D.	-	-



4041



Analytical Report Number : 24-77241/ 9769

Project / Site name: Laystall St, Manchester

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
PRO in air samples	Determination of Petroleum Range Organics in air by GC-MS	TO-15 Summa gas canister methodology	L107B-PL		ISO 17025
Tentatively identified compounds (VOC) in air	Determination of volatile organic compounds total ion count in air by GC-MS.	In-house method based on TO-15	L106B-PL		NONE
VOC in air samples	Determination of Volatile Organics Compounds in air by GC-MS	TO-15 Summa gas canister methodology	L106B-PL		ISO 17025

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

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

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

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

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

