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SUPPLEMENTARY PFAS INVESTIGATION REPORT

**FOR
ARKADY INDUSTRIAL ESTATE,
BRISCOE LANE,
NEWTON HEATH,
GREATER MANCHESTER**

**PREPARED FOR
CASSEL & FLETCHER
CONSTRUCTION LIMITED**

**REPORT NO. 6921K
OCTOBER 2023**

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**SUPPLEMENTARY PFAS INVESTIGATION FOR ARKADY INDUSTRIAL ESTATE,
BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER, M40 2XG**

CLIENT: CASSEL & FLETCHER CONSTRUCTION LIMITED

1. INTRODUCTION

This report has been prepared in accordance with an email dated 9th August 2023, from the Client.

The brief was set out in our estimate, ref. E6605 and dated 9th August 2023, with amendments as the investigation proceeded and includes:

- 11 No. mini boreholes
- Installation of standpipes followed by groundwater monitoring
- Contamination analyses
- Provision of an interpretative report on the above.

This current phase of investigation has been undertaken in response to comments received from the Environment Agency regarding the use of potentially PFAS contaminated recycled concrete aggregate on the site, and to further characterise the groundwater PFAS contamination and obtain parameters to enable the design of an appropriate groundwater remediation strategy by a third party (Regenesys UK Limited).

The following Reports have previously been carried out for the site which should be read in conjunction with this report:

- Phase II Ground Investigation Report, ref. NTH 2707, dated March 2020, by Mini Soil Surveys
- Phase I Desk Study Report, ref. 6921, dated March 2020, by Sub Surface Consultants Limited
- Phase I Coal Mining Risk Assessment Report, ref. 6921A, dated April 2020, by Sub Surface Consultants Limited
- Phase II Ground Investigation Ref. 6921C, Sub Surface Consultants Limited
- Ground Gas Update Report, ref. 6921F, dated October 2021, by Sub Surface Consultants Limited
- PFAS Risk Assessment Report, ref. 6921H, dated October 2022, by Sub Surface Consultants Limited.

A summary of the findings of the investigations undertaken up to October 2022 was included in Section 1.3 of our Report No. 6921H.

1.1 Site Location and Description

The site is located at 230 Briscoe Lane in the Newton Heath district of Greater Manchester, as indicated on Figure 1. The approximate National Grid Reference of the centre of the site is 386920, 399500.

As shown on Figure 2, the 'L' shaped about 0.46 hectare site is bounded to the south east by Briscoe Lane with a cemetery beyond, to the south west by the premises of Anglo-European, to the north west by the premises of Mont Blanc Coldstore Company with a triangular railway junction beyond, to the east by derelict industrial premises and to the south east by the premises of Basic Welding Services (former Public House) with the junction of Briscoe Lane and Riverpark Road beyond.

The topography of the general area surrounding the site has been assessed using Ordnance Survey Open Data (Terra 50 contours and points), and Environment Agency LiDAR data (SJ89NE DTM). Whilst the site is generally flat the topography of the surrounding area slopes generally down to the south south west, towards the River Medlock.

1.2 Proposed Development and Purpose of the Ground Investigation

The site is currently being developed with the construction of an 'L' shaped light industrial unit, with associated hardstanding, as shown on Figure 2.

The purpose of the investigation was to:

- Sample the recycled concrete aggregate surfacing within the proposed building to determine whether the material has been impacted by PFAS contamination, to undertake sampling and analyses of the underlying soil to determine whether the re-use of site won recycled concrete aggregate has contributed to PFAS concentrations in the near surface soil.
- To install additional groundwater monitoring standpipes on an approximate 20m grid to facilitate post remediation verification monitoring.
- Carry out monitoring and sampling of the existing and additional standpipes for contamination analyses in order to determine whether PFAS concentrations in the perched groundwater on site are evolving and to characterise the perched ground water in the southern part of the site.

1.3 Current State of the Site

The site is partially developed and the following works have taken place to date:

- Crushing of the previous concrete floor slab to create aggregate for the sub base to proposed new floor slab.
- Foundation construction.
- Installation of the drainage scheme apart from the proposed attenuation tank.
- Erection of the steel frame and cladding.
- Installation of the roller shutters and external doors.
- Construction of the internal blockwork.
- Erection of the 1st floor mezzanine floor and stair installation.

Waste materials from foundation excavations etc. have been removed from site by a licensed waste contractor Fox Brothers (Lancashire) Limited and disposed of at Port Clarence Waste Recovery Park, Off Huntsman Drive, Port Clarence, Middlesbrough, TS2 1UE, operated by Augean Plc.

We understand no construction work has been undertaken since issue of our October 2022 report.

2. GROUND INVESTIGATION

2.1 Investigation Details

Eleven mini boreholes were put down to a depth of 4.00m using a Dart Mini Sampling Rig fitted with windowless sample tubes of 86mm reducing to 66mm diameter at the positions determined and set out by Sub Surface North West Limited, as shown on Figure 2. The samples were subsequently logged in accordance with BS EN ISO 14688-1: 2018 and BS EN ISO 14689-1: 2018 and the resulting Mini Borehole Records are appended.

M104 was terminated at 0.60m on a brick obstruction. The location was moved over and reattempted as M104A which also encountered a brick obstruction at 0.60m. The location was moved again to M104B which was successfully taken down to the target depth of 4.00m.

M105 encountered concrete slabs at 0.20m and 0.30m, and was terminated at 0.80m on a presumed concrete obstruction. The location was moved over and reattempted as M105A which also encountered the layers of concrete and a presumed concrete obstruction at 0.80m. The location was moved again to M105B which was successfully taken down to the target depth of 4.00m.

M107 was terminated at 1.00m on a presumed concrete obstruction. The location was moved over and reattempted as M107A which also encountered a presumed concrete obstruction at 1.00m. The location was moved again to M107B which was successfully taken down to the target depth of 4.00m.

M109 was also terminated at 1.00m on a presumed concrete obstruction. The location was moved over and reattempted as M109A which was successfully taken down to the target depth of 4.00m.

Ground levels at the exploratory hole positions have been interpolated from spot heights given on the topographical survey plan commissioned by ourselves, ref. 6921B dated April 2020. The reduced levels are related to Ordnance Datum.

2.2 Sub Surface Detail

Details of the strata encountered in the ground investigation are given on the appended Mini Borehole Records. The exploratory holes found Made Ground underlain by apparent glacial drift deposits. A general summary of the strata found is as follows:

2.2.1 Made Ground

Made ground was encountered to depths of 0.50m to 2.50m. The ground surface generally comprised compact light grey very sandy fine to coarse gravel sized fragments of concrete with medium concrete cobble content, with localised light brownish grey very sandy fine to coarse gravel sized fragments of stone. The initial granular surfacing was underlain by zones of dark brown ashy silty very sandy fine to coarse gravel sized fragment of stone, brick, concrete and localised glass, tile and clinker with localised low brick cobble content, and zones of very soft dark greyish brown or dark grey locally slightly ashy slightly gravelly slightly sandy silty clay with pockets of sand, with the gravel component comprising mainly fine to coarse brick, stone, glass and concrete, and zones of brown and occasional grey mottled slightly gravelly slightly sandy silty clay with the gravel component comprising fine to medium stone and brick.

6921K Arkady Ind. Estate, Manchester

2.2.2 Drift Deposits

Natural drift deposits were encountered at depths of between 0.50m and 2.50m and comprised mainly firm, stiff or very stiff high strength locally medium strength locally thinly laminated brown and occasionally grey mottled slightly gravelly silty clay consistent with findings of the previous investigations.

2.2.3 Bedrock

No bedrock was encountered in any of the exploratory holes during this or the previous investigation. A review of local historic borehole data held by the British Geological Survey (BGS) during the previous investigation found that drift strata have been encountered on the site to depth of at least 8.20m (Record SJ89NE2471), while records in the general surrounding area (SJ89NE2323, SJ89NE518, SJ89NE633, SJ89NE2508, SJ89NE469) suggest the bedrock is likely to comprise mudstone and is anticipated to be present at a depth of some 15m to 20m.

2.2.4 Groundwater

No groundwater was encountered in the exploratory holes although it should be noted that they were only left open for a short period of time and groundwater levels may be subject to seasonal and/or climatic variations.

One groundwater monitoring visit was undertaken on 11th September 2023 and standing water depths of between 0.20m and 3.58m were recorded.

3. SAMPLING, TESTING AND MONITORING

3.1 Sampling

Continuous core, bulk disturbed, and small disturbed environmental samples of the recycled concrete aggregate surfacing and underlying strata encountered were obtained and subjected to careful examination. Groundwater samples were also obtained from the monitoring standpipes.

Each environmental soil sample comprised a 750g plastic tub and each environmental water sample comprised a 200ml polyethylene bottle, both supplied by ALS Environmental and verified to be free of PFAS compounds. The samples were transported to the testing laboratory in insulated containers.

Due to the very low thresholds and limits of detection associated with PFAS compounds and their prevalence in various materials commonly found in site clothing and personal protective equipment (PPE), field blanks were taken to check for environmental contamination during sampling. The soil field blank comprised clean sand while that water blank comprised clean de-ionised water (both supplied by, and verified to be free of PFAS by ALS Environmental). The blanks were dispensed into sampling containers in the field following the same procedures as for the soil and groundwater samples.

The site operative taking the samples used tools and wore PPE and clothing that were known to be free of PFAS compounds. Tools were cleaned between samples using de-ionised water supplied by ALS Environmental and verified to be free of PFAS compounds.

The samples will be retained for a period of one month after the issue of this report, for reference purposes, and then disposed of unless otherwise instructed.

3.2 Installations and Monitoring

On completion of M101, M102, M103, M104, M105B, M106, M107B, M108, M109A, M110 and M111 hdpe standpipes were installed to a depth of 4.00m. The standpipes are slotted from 1.00m depth, have an internal diameter of 50mm and have removable quick release gas valves to enable both ground gas and groundwater monitoring and sampling to be undertaken. Details of the installations are given on the appended Borehole Records.

We have confirmed with our supplier that the pipes and fitting used are free from PFAS compounds.

Monitoring of the new standpipes and the previous M1C, M5B, M6B and M10 standpipes for groundwater has been undertaken on one occasion using portable equipment. The results of the monitoring are given on the appended Groundwater Monitoring Results sheet.

3.3 Laboratory Testing

Contamination analyses have been performed on eight soil samples, six recycled concrete aggregate samples and one blank soil sample by an MCERTS and UKAS accredited laboratory (ALS Environmental). The concrete aggregate analyses were undertaken on crushed samples with a maximum particle size of 19mm. Analyses were also undertaken on eight samples of groundwater plus one blank water sample taken on 11th September 2023 from the standpipes installed in M108, M109A, M110 and M111, and the previous standpipes in M1C, M5B, M6B and M10 to determine concentrations of the following PFAS compounds:

PFBA	PFPeS	EtFOSAA
PFPA	Total PFOS	9CI-PF3ONS
PFHxA	PFMOPrA	PFNS
PFBS	3:3 FTCA	FHxSA
PFHpA	PFMOBA	PFTTrDA
6:2 FTS	4:2 FTS	11CI-PF3OUdS
PFOA	NFDHA	PFUnDS
PFHxS	HFPO-DA	PFTeA
PFNA	PFEESA	PFDoS
PFHpS	5:3 FTCA	PFTTrDS
PFDA	ADONA	PFHxDA
Linear PFOS	FBSA	MeFOSE
Branched PFOS	PFecHS	N-MeFOSA
PFUnA	8:2 FTS	EtFOSE
PFDoA	HFPO-TA	PFODA
PFOSA	MeFOSAA	N-EtFOSA
PFDS	7:3 FTCA	6:2 FTAB

The results of the above analyses are appended. The testing suite was designed based on the published guidance and consultation with ALS Environmental and includes a broader range of PFAS species than the analyses undertaken during the previous investigation.

4. APPRAISAL AND RECOMMENDATIONS

4.1 Comments on the Profile

At the outset it should be appreciated that only a small proportion of the area to be developed has been investigated and consequently the recommendations made and opinions expressed in this report can only be applied to such conditions as were encountered in the exploratory holes. The exploratory holes indicate a nature and degree of similarity to the extent that we consider them likely to be representative of the natural ground conditions.

Due to the site having been previously developed, and the nature of Made Ground, localised variations in thickness and composition should be anticipated and hence interpolation or extrapolation from the exploratory holes to adjoining areas should only be undertaken with caution.

Details of the findings of the investigation are given on the appended Mini Borehole Records and a summary of the ground conditions is given in Section 2.2.

4.2 Permeability Tests

Falling head permeability tests were undertaken in the Made Ground and Natural strata in M102, M104B, and M111. The 0.12m to 0.30m holes were filled with water and the water level was then monitored for a period of 180 minutes.

Water levels were found to have fallen insufficiently to determine the “Basic Time Lag” and hence the permeability could not be accurately determined. Details of the falling head permeability tests are appended.

There was initial movement in groundwater level during the first 15 minutes of reading and extrapolation of this data suggest that the upper made ground could have a coefficient of permeability of the order of 9.0×10^{-6} m/s, however this should be regarded as a very rough estimate and is likely to be highly variable across the site.

There was no movement in the water levels in the tests conducted in the natural clay and for this stratum we would recommend a very low hydraulic conductivity of the order of 1×10^{-11} is assumed (based on values suggested by Domenico and Schwartz, 1990).

4.3 PFAS Analyses

4.3.1 Assessment (Soil & Recycled concrete aggregate)

In order to provide an assessment of the presence of contamination eight soil and six recycled concrete aggregate samples (including one field blank) have been analysed for a suite of determinants and the results are appended.

Limited generic assessment criteria for the protection of human health are currently available for per and polyfluoroalkyl substances which are regarded as being emerging contaminants. For the purposes of this risk assessment we have compared the perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) results with soil screening values published by the Environment Agency for assessing ecological risks (from *‘Derivation and Use of Soil Screening Values for Assessing Ecological Risks’* Report-ShARE id26 Rev.2022).

The speciated PFAS analyses on the soil and recycled concrete aggregate samples tested found no concentrations above the limit of detection levels. The limits of detection for PFOA and PFOS (1µg/kg) are below the SSVs (0.019mg/kg PFOA and 0.013mg/kg PFOS).

In the sand field blank, all PFAS compounds tested for were below the limit of detection.

4.3.2 Assessment (Water)

Eight samples of groundwater taken from the standpipes installed in M1C, M5B, M6B, M10, M108, M109A, M110, and M111 and one field blank, all taken on 11th September 2023 have been analysed for a suite of PFAS compounds and the results are appended.

To assess the risk to surface water bodies the PFOS results have been compared with the Environmental Quality Standard (EQS) and the PFOA results have been compared with the Australian ESL for freshwater.

To assess the risk to groundwater resources the PFOA and total PFOS results have been compared with the UK Health Security Agency Tier 1 thresholds for PFOS and PFOA (taken from The Drinking Water Inspectorate Guidance, July 2022). For PFHxS Perfluoro-1-hexanesulfonate, PFNA Perfluoro-n-nonanoic acid, Linear PFOS, and Branched PFOS, the US ATSDR Minimum Risk Level (MRL) has been used. No appropriate thresholds were found for the other PFAS compounds tested for. The thresholds used are summarised in the following table:

TABLE 1 GROUNDWATER PFAS ASSESSMENT THRESHOLDS

Determinant	Environmental Thresholds		Human Health Thresholds	
	EQS (ng/l)	Australian ESL Freshwater (ng/l)	US MRL (ng/l)	UK DWS (ng/l)
PFBA	-	-	-	10
PFPA	-	-	-	10
PFHxA	-	-	-	10
PFBS	-	-	-	10
PFHpA	-	-	-	10
6:2FTS	-	-	-	10
PFOA	-	19000	21	10
PFHxS	-	-	140	10
PFNA	-	-	21	10
PFHpS	-	-	-	10
PFDA	-	-	-	10
Linear PFOS	-	-	14	10
Branched PFOS	-	-	14	10
Total PFOS	0.65	0.23	-	10

TABLE 1 (Cont)

Determinant	Environmental Thresholds		Human Health Thresholds	
	EQS (ng/l)	Australian ESL Freshwater (ng/l)	US MRL (ng/l)	UK DWS (ng/l)
PFOA				10
PFOA				10
PFOA				10
PFOA				10
PFOA				10
Total PFOS				10
PFMOPrA				10
3:3 FTCA				10
PFMOBA				10
4:2 FTS				10
NFDHA				10
HFPO-DA				10
PFEESA				10
5:3 FTCA				10
ADONA				10
FBSA				10
PFecHS				10
8:2 FTS				10
HFPO-TA				10
MeFOSAA				10
7:3 FTCA				10
EtFOSAA				10
9CI-PF3ONS				10
PFNS				10
FHxSA				10
PFTTrDA				10
11CI-PF3OUdS				10
PFOuDS				10
PFTeA				10
PFOuS				10
PFTTrDS				10
PFHxDA				10
MeFOSE				10
N-MeFOSA				10

TABLE 1 (Cont)

Determinant	Environmental Thresholds		Human Health Thresholds	
	EQS (ng/l)	Australian ESL Freshwater (ng/l)	US MRL (ng/l)	UK DWS (ng/l)
EtFOSE				10
PFODA				10
N-EtFOSA				10
6:2 FTAB				10

It should be noted that since the time of the previous report the UK DWS values have been reduced by an order of magnitude and the range of applicable compounds expanded to cover all PFAS species.

We have listed the samples from the current investigation where measurable PFAS compounds were recorded and where the levels of contamination have exceeded the EQS, ESL, UK DWI and/ or US MRL values, as follows:

TABLE 2 GROUNDWATER PFAS ANALYSES SUMMARY

Determinand	LOD (ng/l)	M108 1.10m (ng/l)	M109 1.30m (ng/l)	M110 1.18m (ng/l)	M111 5.04m (ng/l)	M6B 0.66m (ng/l)	M1C 0.94m (ng/l)
PFPA	<1	–	–	17.6 ^A	–	19.4 ^A	–
PFBS	<1	–	–	18.5 ^A	–	–	–
PFHxA	<1	–	–	23.3 ^A	–	–	–
PFHpA	<1	–	–	–	–	12.7 ^A	–
PFPeS	<1	–	–	11.2 ^A	–	–	–
PFOA	<0.65	–	–	14.7 ^A	–	27.1 ^{A C}	–
PFHxS	<1	–	–	47.3 ^A	–	–	–
Linear PFOS	<0.65	–	–	19.1 ^{A C}	–	–	–
Branched PFOS	<0.65	–	–	24.3 ^{A C}	–	–	–
6:2 FTAB	<10	12.6 ^A	–	–	–	–	–
Total PFOS	<0.65	6.66 ^{B D}	8.59 ^{B D}	43.5 ^{A B D}	0.975 ^{B D}	6.14 ^{B D}	7.08 ^{B D}

^A Exceeds DWS ^B Exceeds EQS ^C Exceeds US MRL ^D Exceeds Australian ESL

In the blank water sample all PFAS compounds tested for were below the limit of detection apart from 6:2 FTAB. It is conjectured that this aberration may be due to contamination from the pens used to label the water samples.

The majority of the results were generally found to be below the published limit thresholds, the exceptions being PFPA, PFBS, PFHxA, PFHpA, PFPeS, PFOA, PFHxS, Linear PFOS, Branched PFOS, 6:2 FTAB, and Total PFOS, particularly in the samples taken from M110 and M6B. Total PFOS was found to be elevated in six of the eight samples tested and this determinant has been used to generate a plan showing the relative concentrations across the site which is given on the appended Figure 3.

Plots showing the relative total PFAS concentrations across all of the standpipes sampled, and showing the evolution of selected PFAS species over time in M1(C) and M6(B) are given on Figure 4.

The results suggest the PFAS concentrations may be attenuating by adsorption to soil particles, or may be migrating within the perched water towards the deeper made ground at the southern end of the site.

4.4 Conclusions

On the basis of the information uncovered to date our opinion remains that the most likely source of PFAS contamination on the site remains the use of firefighting foams used to suppress the 2018 fire. The perched water contamination appears to be generally low scale (when compared with the concentrations found on site where PFAS compounds have been produced/used on industrial scales).

4.4.1 Recycled concrete aggregate & Near Surface Soil

No PFAS contamination was found in the recycled concrete aggregate or soil samples tested and therefore we concluded that there is no significant soil source leaching into the perched groundwater and there has been no redistribution of PFAS contamination resulting from the re-use of the crushed site won concrete.

4.4.2 Contaminated Groundwater

As discussed in our previous report the hydraulic gradient on site appears to be very shallow and lateral migration is likely to be impeded by the relatively low permeability of the Glacial Till strata. The estimated breakthrough times for a hypothetical receptor 50m away were estimated to be of the order of 4.62×10^9 years in the cohesive strata and some 2.04×10^7 years if the dense sand stratum recorded at 8.20m on the BGS log comprises a bed of significant thickness rather than a localised thin band.

The finding of the latest groundwater analyses indicate the highest concentrations of PFAS compounds are to be found in the southern part of the site (M110). Given the low permeability of the made ground, in our opinion this is unlikely to be due to migration and it is more likely that there has been some attenuation due to adsorption to the soil matrix. However, this part of the site was not previously characterised, and an alternative hypothesis would be that if during the 2018 incident the firefighting equipment was staged at the southern end of the site (as is likely for access) then there may have been greater initial contamination of the perched water in this part of the site due to spillage of PFAS containing aqueous film forming foams (AFFF) or greater runoff of PFAS contaminated water infiltrating the made ground.

The permeability assessment suggests that any migration of PFAS impacted perched groundwater through the natural cohesive strata will be limited.

4.4.3 Human Health Risk Assessment

Given the findings of the soil and concrete analyses and the proposal to implement a concrete floor slab and hardstanding across the site, in our opinion the risks associated with direct contact with PFS contaminated material or inhalation of PFAS contaminated dust are negligible.

Where polyethylene water supply pipes are used for new water supply connections there is unlikely to be any permeation of PFAS compounds with a chain length of C4 or greater. However, there is scant evidence as to whether the smaller molecules of short chain PFAS compounds, which may also be present albeit in lower concentrations, could permeate polyethylene supply pipes when submerged in PFAS contaminated groundwater. As a precaution we would recommend that barrier pipe is used for any water supply pipes placed in areas where shallow perched groundwater depths were recorded.

4.4 **Proposed Remediation Strategy**

Following a review of our previous reports and a site visit to inspect the current state of the development, Regenesi have proposed the following provisional remediation strategy with the broad aim of reducing the risk of offsite PFAS migration in the perched water held in the Made Ground. Regenesi intend to refine the remediation strategy on receipt of this supplementary report.

The proposed site-specific treatment is to comprise SourceStop™ colloidal activated carbon (CAC) application to the PFAS impacted Made Ground overlying the clay stratum. The treatment immobilises the PFAS within the soil through sorption, preventing or drastically reducing further discharge of mass from the source area. This enhances the natural attenuation (ENA) of the plume and avoids impact to downgradient receptors.

Regenesi have assured us that the treatment is a sustainable, passive solution with no ongoing operational costs, no waste, and a safe and easy application.

Regenesi have tentatively identified a 1,500 square metre continuous area, and an average Made Ground vertical treatment area of 1.0m (est. 0.3-1.3m BGL) for treatment, although this may be extended based on findings of the current investigation as the estimated zone of PFAS impact will now take in the additional standpipe where PFAS concentrations were recorded (M110).

It is anticipated that SourceStop would be applied across the treatment area via direct-push method, through a grid-network of points cored through the concrete floor.

Following completion of the Source Stop application a programme of verification monitoring would be implemented using the available monitoring wells to confirm that natural attenuation is occurring.

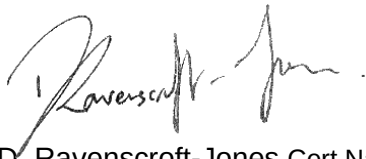
The detailed proposed remediation methodology and verification plan will be set out in a separate document and submitted to the Local Authority Planning Department and the Environment Agency for their consideration prior to implementation.

4.5 General

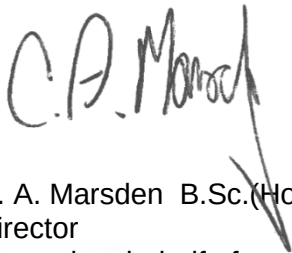
This report and a detailed Remediation Strategy should be provided to the Local Authority Environmental Health Officer and the Environment Agency prior to commencing with any remedial action or development.

We trust that this report fulfils your present requirements but if you have any queries or we can be of further assistance please contact the undersigned or Ms Anna Marsden at our Preston office.

SUB SURFACE CONSULTANTS LIMITED
REPORT No. 6921K
OCTOBER 2023



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Principal Geoenvironmental Engineer
For and on behalf of
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C. A. Marsden B.Sc.(Hons.), C.Eng., M.I.C.E.
Director
For and on behalf of
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GROUNDWATER MONITORING RESULTS



Insitu Test Results

Site:	ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, MANCHESTER, M40 2XG
Client:	CASSEL & FLETCHER CONSTRUCTION LIMITED
Engineer:	

Job Number:	6921K
Sheet:	1 / 1

GROUNDWATER MONITORING RESULTS SHEET

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INSITU TEST RESULTS



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
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Insitu Test Results

Site: ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER

Job Number
6921K

Client: CASSEL & FLETCHER CONSTRUCTION LIMITED

Sheet:

Engineer:

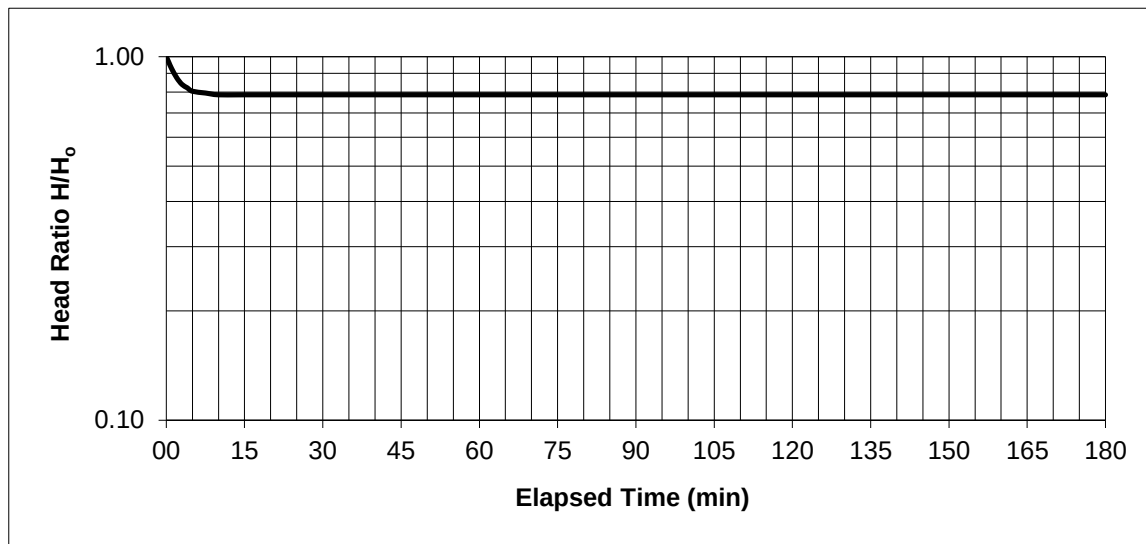
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Falling Head Permeability Test

HOLE NO: M102

TEST NO: 1

DATE: 24/08/2023



Time Elapsed		Depth of Water [d _t]	Water Column Ht. [h _t = d _s - d _t]	Head Ratio [h _t / h ₀]
(min)	(sec)	(m)	(m)	
00	00	0.09	0.56	1.00
00	30	0.11	0.54	0.96
01	00	0.13	0.52	0.93
02	00	0.16	0.49	0.88
03	00	0.18	0.47	0.84
04	00	0.19	0.46	0.82
05	00	0.20	0.45	0.80
07	30	0.21	0.45	0.79
10	00	0.21	0.44	0.79
15	00	0.21	0.44	0.79
30	00	0.21	0.44	0.79
45	00	0.21	0.44	0.79
60	00	0.21	0.44	0.79
90	00	0.21	0.44	0.79
120	00	0.21	0.44	0.79
180	00	0.21	0.44	0.79

Top of test section: 0.09 m

Bottom of test section: 0.65 m

Response Zone [L]: 0.56 m

Diameter [D]: 0.30 m

Cross Sectional Area [A]: 0.07 m²

Standing Water Depth [d_s]: 0.65 m

Initial Water Column H_t [h₀]: 0.56 m

Basic Time Lag [T]: — s

Intake Factor [F]: 2.5453 m

where $F = \frac{2 \pi L}{\log_e [(L/D) + \{1 + (L/D)^2\}]}$

COEFFICIENT OF PERMEABILITY

$$k = \frac{A}{F \times T}$$

k = N/A* m/s

Test Strata:

MADE GROUND: brown very silty very sandy fine to coarse gravel sized fragments of stone, brick, and concrete with low stone cobble content.

Remarks:

*Unable to determine soil infiltration rate due to relative impermeability of the test strata.



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Insitu Test Results

Site: ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER

Job Number
6921K

Client: CASSEL & FLETCHER CONSTRUCTION LIMITED

Sheet:

Engineer:

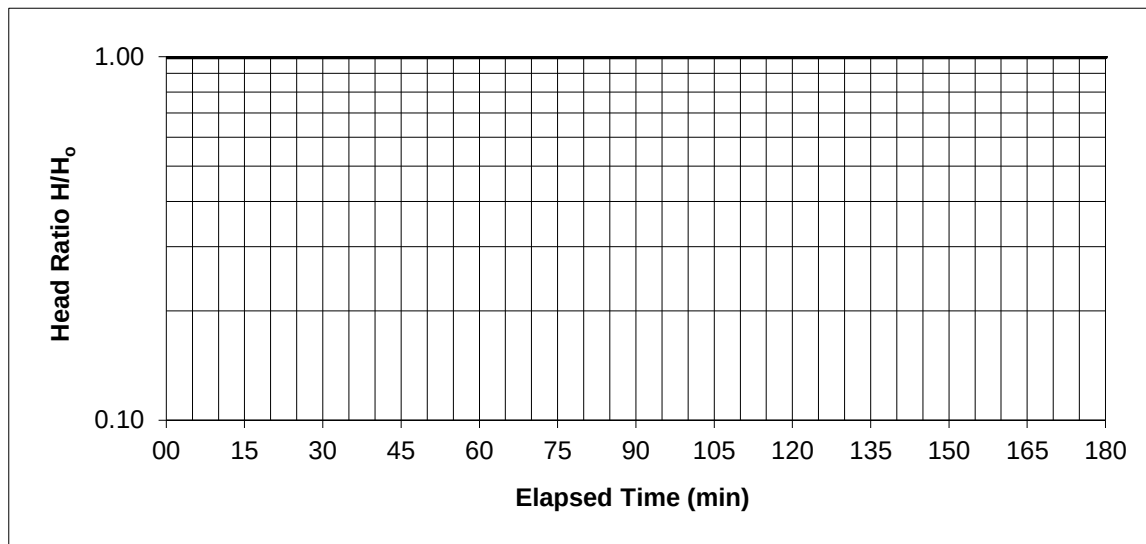
2/6

Falling Head Permeability Test

HOLE NO: M102

TEST NO: 2

DATE: 24/08/2023



Time Elapsed		Depth of Water [d _t]	Water Column Ht. [h _t = d _s - d _t]	Head Ratio [h _t / h ₀]
(min)	(sec)	(m)	(m)	
00	00	0.65	1.35	1.00
00	30	0.65	1.35	1.00
01	00	0.65	1.35	1.00
02	00	0.65	1.35	1.00
03	00	0.65	1.35	1.00
04	00	0.65	1.35	1.00
05	00	0.65	1.35	1.00
07	30	0.65	1.35	1.00
10	00	0.65	1.35	1.00
15	00	0.65	1.35	1.00
30	00	0.65	1.35	1.00
45	00	0.65	1.35	1.00
60	00	0.65	1.35	1.00
90	00	0.65	1.35	1.00
120	00	0.65	1.35	1.00
180	00	0.65	1.35	1.00

Top of test section: 1.00 m

Bottom of test section: 2.00 m

Response Zone [L]: 1.00 m

Diameter [D]: 0.12 m

Cross Sectional Area [A]: 0.01 m²

Standing Water Depth [d_s]: 2.00 m

Initial Water Column H_t [h₀]: 1.35 m

Basic Time Lag [T]: — s

Intake Factor [F]: 2.2305 m

where $F = \frac{2 \pi L}{\log_e [(L/D) + \{1 + (L/D)^2\}]}$

COEFFICIENT OF PERMEABILITY

$$k = \frac{A}{F \times T}$$

k = N/A* m/s

Test Strata:

Firm brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to coarse sandstone, siltstone and quartz.

Remarks:

*Unable to determine soil infiltration rate due to relative impermeability of the test strata.



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Insitu Test Results

Site: ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER

Client: CASSEL & FLETCHER CONSTRUCTION LIMITED

Engineer:

Job Number
6921K

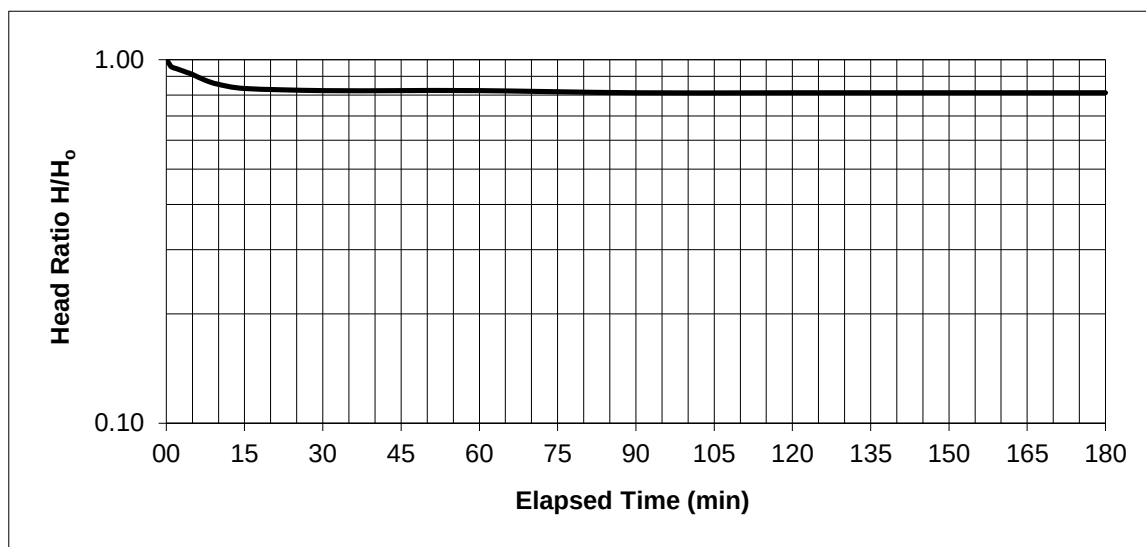
Sheet:
3/6

Falling Head Permeability Test

HOLE NO: M104B

TEST NO: 1

DATE: 25/08/2023



Time Elapsed		Depth of Water [d _t]	Water Column Ht. [h _t = d _s - d _t]	Head Ratio [h _t / h ₀]
(min)	(sec)	(m)	(m)	
00	00	0.15	0.45	1.00
00	30	0.16	0.44	0.98
01	00	0.17	0.43	0.96
02	00	0.18	0.43	0.94
03	00	0.18	0.42	0.93
04	00	0.19	0.42	0.92
05	00	0.19	0.41	0.91
07	30	0.21	0.40	0.88
10	00	0.22	0.39	0.86
15	00	0.23	0.38	0.83
30	00	0.23	0.37	0.82
45	00	0.23	0.37	0.82
60	00	0.23	0.37	0.82
90	00	0.24	0.37	0.81
120	00	0.24	0.37	0.81
180	00	0.24	0.37	0.81

Top of test section: 0.15 m

Bottom of test section: 0.60 m

Response Zone [L]: 0.45 m

Diameter [D]: 0.30 m

Cross Sectional Area [A]: 0.07 m²

Standing Water Depth [d_s]: 0.60 m

Initial Water Column H_t [h₀]: 0.45 m

Basic Time Lag [T]: — s

Intake Factor [F]: 2.3665 m

where $F = \frac{2 \pi L}{\log_e [(L/D) + \{1 + (L/D)^2\}]}$

COEFFICIENT OF PERMEABILITY

$k = \frac{A}{F \times T}$

$k = \text{N/A}^* \text{ m/s}$

Test Strata:

MADE GROUND: dark brown very silty very sandy fine to coarse gravel sized fragments of brick, concrete, stone and glass with low brick cobble content.

Remarks:

*Unable to determine soil infiltration rate due to relative impermeability of the test strata.



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Insitu Test Results

Site: ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER

Job Number
6921K

Client: CASSEL & FLETCHER CONSTRUCTION LIMITED

Sheet:

Engineer:

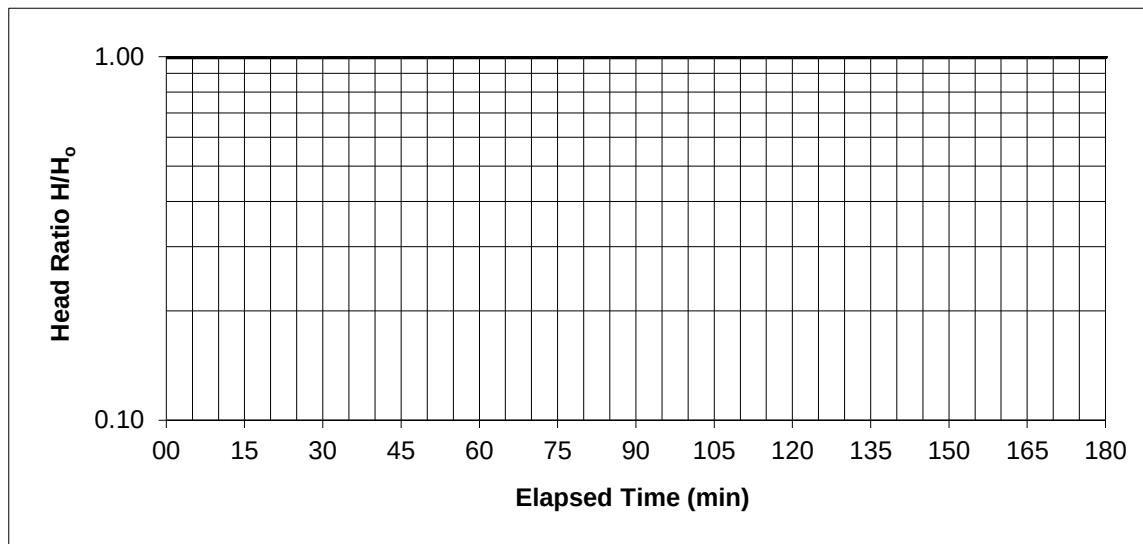
4/6

Falling Head Permeability Test

HOLE NO: M104B

TEST NO: 2

DATE: 25/08/2023



Time Elapsed		Depth of Water [d _t]	Water Column Ht. [h _t = d _s - d _t]	Head Ratio [h _t / h ₀]
(min)	(sec)	(m)	(m)	
00	00	0.59	1.41	1.00
00	30	0.59	1.41	1.00
01	00	0.59	1.41	1.00
02	00	0.59	1.41	1.00
03	00	0.59	1.41	1.00
04	00	0.59	1.41	1.00
05	00	0.59	1.41	1.00
07	30	0.59	1.41	1.00
10	00	0.59	1.41	1.00
15	00	0.59	1.41	1.00
30	00	0.59	1.41	1.00
45	00	0.59	1.41	1.00
60	00	0.59	1.41	1.00
90	00	0.59	1.41	1.00
120	00	0.59	1.41	1.00
180	00	0.59	1.41	1.00

Top of test section: 1.00 m

Bottom of test section: 2.00 m

Response Zone [L]: 1.00 m

Diameter [D]: 0.12 m

Cross Sectional Area [A]: 0.01 m²

Standing Water Depth [d_s]: 2.00 m

Initial Water Column H_t [h₀]: 1.41 m

Basic Time Lag [T]: — s

Intake Factor [F]: 2.2305 m

where $F = \frac{2 \pi L}{\log_e [(L/D) + \{1 + (L/D)^2\}]}$

COEFFICIENT OF PERMEABILITY

$$k = \frac{A}{F \times T}$$

k = N/A* m/s

Test Strata:

Firm to stiff thinly laminated greyish brown slightly gravelly slightly sandy silty CLAY. Gravel comprises fine to medium sandstone, siltstone, quartz and coal.

Remarks:

*Unable to determine soil infiltration rate due to relative impermeability of the test strata.

**SUB SURFACE**SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907**Insitu Test Results**

Site: ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER

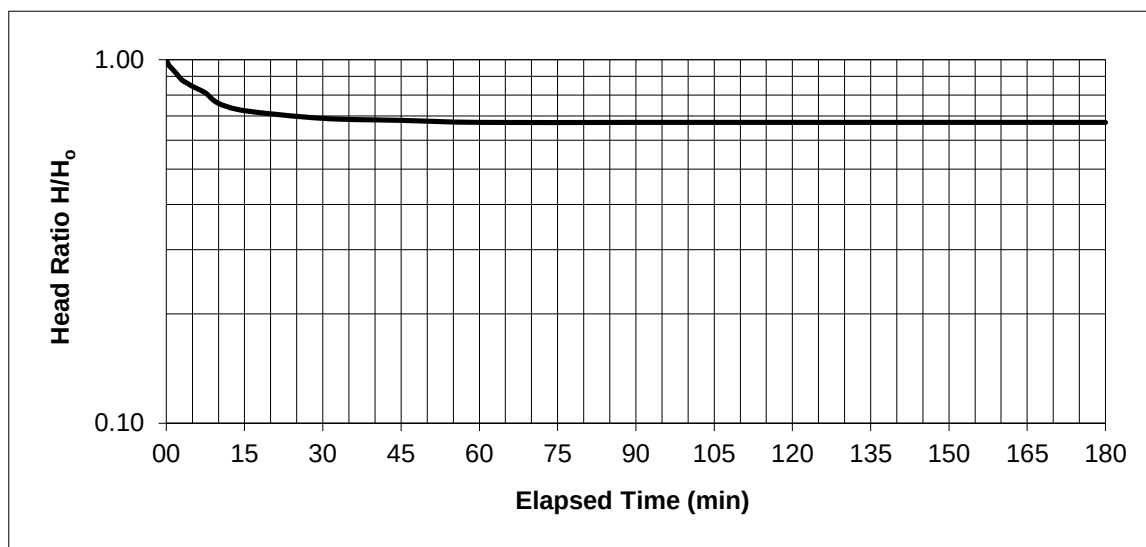
Job Number
6921K

Client: CASSEL & FLETCHER CONSTRUCTION LIMITED

Sheet:

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Engineer:

Falling Head Permeability Test**HOLE NO: M111****TEST NO: 2****DATE: 25/08/2023**

Time Elapsed		Depth of Water [d _t]	Water Column Ht. [h _t = d _s - d _t]	Head Ratio [h _t / h ₀]
(min)	(sec)	(m)	(m)	
00	00	0.02	0.58	1.00
00	30	0.04	0.56	0.97
01	00	0.05	0.55	0.95
02	00	0.07	0.53	0.91
03	00	0.09	0.51	0.88
04	00	0.10	0.50	0.86
05	00	0.11	0.49	0.84
07	30	0.13	0.47	0.81
10	00	0.16	0.44	0.76
15	00	0.18	0.42	0.72
30	00	0.20	0.40	0.69
45	00	0.21	0.40	0.68
60	00	0.21	0.39	0.67
90	00	0.21	0.39	0.67
120	00	0.21	0.39	0.67
180	00	0.21	0.39	0.67

Top of test section: 0.02 m

Bottom of test section: 0.60 m

Response Zone [L]: 0.58 m

Diameter [D]: 0.30 m

Cross Sectional Area [A]: 0.07 m²Standing Water Depth [d_s]: 0.60 mInitial Water Column H_t [h₀]: 0.58 m

Basic Time Lag [T]: 3,000 s

Intake Factor [F]: 2.5783 m

where F =

$$\frac{2 \pi L}{\log_e [(L/D) + \{1 + (L/D)^2\}]}$$

COEFFICIENT OF PERMEABILITY

$$k = \frac{A}{F \times T}$$

k = N/A* m/s

Test Strata:

MADE GROUND: brown very silty very sandy fine to coarse gravel sized fragments of stone, brick, concrete and occasional pockets of clay.

Remarks:

*Unable to determine soil infiltration rate due to relative impermeability of the test strata.

**SUB SURFACE**SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907**Insitu Test Results**

Site: ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER

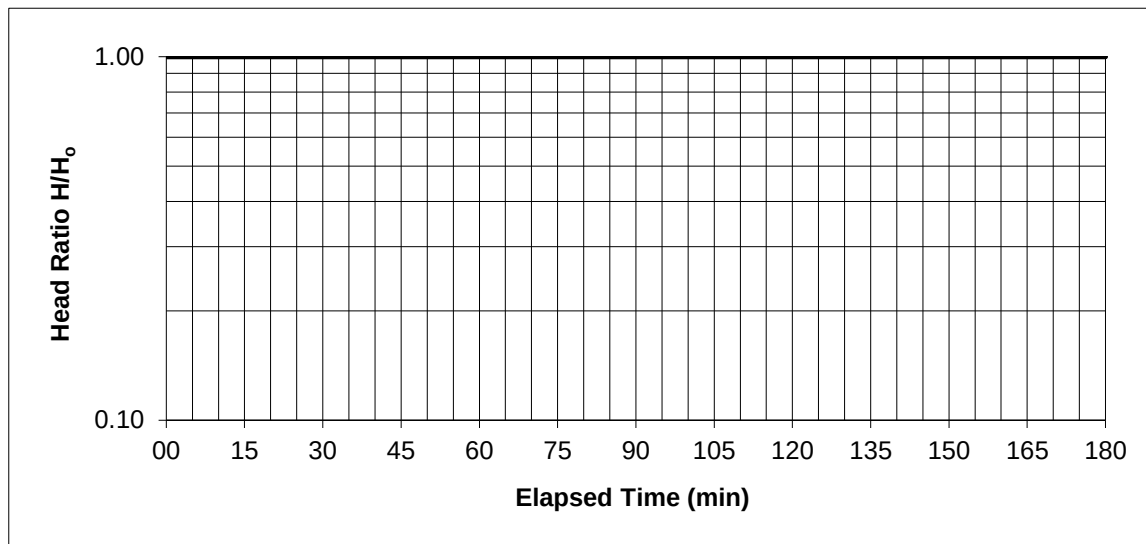
Job Number
6921K

Client: CASSEL & FLETCHER CONSTRUCTION LIMITED

Sheet:

6/6

Engineer:

Falling Head Permeability Test**HOLE NO: M111****TEST NO: 2****DATE: 25/08/2023**

Time Elapsed		Depth of Water [d _t]	Water Column Ht. [h _t = d _s - d _t]	Head Ratio [h _t / h ₀]
(min)	(sec)	(m)	(m)	
00	00	0.62	1.38	1.00
00	30	0.62	1.38	1.00
01	00	0.62	1.38	1.00
02	00	0.62	1.38	1.00
03	00	0.62	1.38	1.00
04	00	0.62	1.38	1.00
05	00	0.62	1.38	1.00
07	30	0.62	1.38	1.00
10	00	0.62	1.38	1.00
15	00	0.62	1.38	1.00
30	00	0.62	1.38	1.00
45	00	0.62	1.38	1.00
60	00	0.62	1.38	1.00
90	00	0.62	1.38	1.00
120	00	0.62	1.38	1.00
180	00	0.62	1.38	1.00

Top of test section: 1.00 m

Bottom of test section: 2.00 m

Response Zone [L]: 1.00 m

Diameter [D]: 0.12 m

Cross Sectional Area [A]: 0.01 m²

Standing Water Depth [d_s]: 2.00 m

Initial Water Column H_t [h₀]: 1.38 m

Basic Time Lag [T]: — s

Intake Factor [F]: 2.2305 m

where $F = \frac{2 \pi L}{\log_e [(L/D) + \{1 + (L/D)^2\}]}$

COEFFICIENT OF PERMEABILITY

$$k = \frac{A}{F \times T}$$

k = N/A* m/s

Test Strata:

Firm to stiff brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel comprises fine to coarse sandstone, siltstone and quartz. (possible made ground).

Remarks:

*Unable to determine soil infiltration rate due to relative impermeability of the test strata.

CONTAMINATION ANALYSIS RESULTS



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Sub Surface Laboratories Ltd
3 Peel Street
Preston
Lancashire
PR2 2QS

Attention: David Ravenscroft-Jones

CERTIFICATE OF ANALYSIS

Date of report Generation:	14 September 2023
Customer:	Sub Surface Laboratories Ltd
Sample Delivery Group (SDG):	230831-28
Your Reference:	69219
Location:	Arkady ind.est Newton Heath
Report No:	703876
Order Number:	

We received 15 samples on Thursday August 31, 2023 and 15 of these samples were scheduled for analysis which was completed on Thursday September 14, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 230831-28
Client Ref.: 69219

Report Number: 703876
Location: Arkady ind.est Newton Heath

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28557510	BLANK	D		23/08/2023
28557496	M101	D	0.10 - 0.20	23/08/2023
28557497	M101	D	0.70 - 0.80	23/08/2023
28557498	M103	D	0.00 - 0.10	25/08/2023
28557499	M104	D	0.10 - 0.20	25/08/2023
28557501	M105	D	0.00 - 0.10	24/08/2023
28557502	M107	D	0.10 - 0.20	23/08/2023
28557503	M107	D	0.60 - 1.00	23/08/2023
28557504	M108	D	0.10 - 0.20	23/08/2023
28557505	M109	D	0.50 - 0.80	23/08/2023
28557506	M110	D	0.10 - 0.20	23/08/2023
28557507	M110	D	0.60 - 1.00	23/08/2023
28557508	M111	D	0.10 - 0.20	24/08/2023
28557509	M111	D	0.70 - 0.80	24/08/2023
28557500	M104B	D	0.60 - 0.70	25/08/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230831-28
Client Ref.: 69219

Report Number: 703876
Location: Arkady ind.est Newton Heath

Superseded Report:

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

PFAS Solids

All

NDPs: 0
Tests: 15

Sample description

All

NDPs: 0
Tests: 15

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

28557500	M1048	D	0.60 - 0.70	1kg TUB with Handle (ALE260)	S
28557509	M111	D	0.70 - 0.80	1kg TUB with Handle (ALE260)	S
28557508	M111	D	0.10 - 0.20	1kg TUB with Handle (ALE260)	S
28557507	M110	D	0.60 - 1.00	1kg TUB with Handle (ALE260)	S
28557506	M110	D	0.10 - 0.20	1kg TUB with Handle (ALE260)	S
28557505	M109	D	0.50 - 0.80	1kg TUB with Handle (ALE260)	S
28557504	M108	D	0.10 - 0.20	1kg TUB with Handle (ALE260)	S
28557503	M107	D	0.60 - 1.00	1kg TUB with Handle (ALE260)	S
28557502	M107	D	0.10 - 0.20	1kg TUB with Handle (ALE260)	S
28557501	M105	D	0.00 - 0.10	1kg TUB with Handle (ALE260)	S
28557499	M104	D	0.10 - 0.20	1kg TUB with Handle (ALE260)	S
28557498	M103	D	0.00 - 0.10	1kg TUB with Handle (ALE260)	S
28557497	M101	D	0.70 - 0.80	1kg TUB with Handle (ALE260)	S
28557496	M101	D	0.10 - 0.20	1kg TUB with Handle (ALE260)	S
28557510	BLANK	D		1kg TUB with Handle (ALE260)	S



CERTIFICATE OF ANALYSIS

Validated

SDG: 230831-28
Client Ref.: 69219

Report Number: 703876
Location: Arkady ind.est Newton Heath

Superseded Report:

Sample Descriptions

Grain Sizes

very fine <0.063mm **fine** 0.063mm - 0.1mm **medium** 0.1mm - 2mm **coarse** 2mm - 10mm **very coarse** >10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
28557510	BLANK		Light Brown	Sand	None	None
28557496	M101	0.10 - 0.20	Dark Brown	Sandy Loam	Stones	Crushed Brick
28557497	M101	0.70 - 0.80	Dark Brown	Sandy Clay Loam	Stones	Crushed Brick
28557498	M103	0.00 - 0.10	Dark Brown	Sand	Stones	None
28557499	M104	0.10 - 0.20	Dark Brown	Sand	Stones	None
28557501	M105	0.00 - 0.10	Light Brown	Sand	Stones	None
28557502	M107	0.10 - 0.20	Light Brown	Sand	Stones	None
28557503	M107	0.60 - 1.00	Dark Brown	Sand	Stones	Crushed Brick
28557504	M108	0.10 - 0.20	Light Brown	Sand	Stones	None
28557505	M109	0.50 - 0.80	Dark Brown	Sandy Clay Loam	Stones	None
28557506	M110	0.10 - 0.20	Dark Brown	Sand	Stones	Vegetation
28557507	M110	0.60 - 1.00	Dark Brown	Sandy Clay Loam	Stones	Vegetation
28557508	M111	0.10 - 0.20	Dark Brown	Sand	Stones	None
28557509	M111	0.70 - 0.80	Dark Brown	Clay	Stones	None
28557500	M104B	0.60 - 0.70	Dark Brown	Sandy Loam	Stones	Crushed Brick

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230831-28
Client Ref.: 69219

Report Number: 703876
Location: Arkady ind.est Newton Heath

Superseded Report:

Table of Results - Appendix

Method No	Description
PM024	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM338	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in Solids

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230831-28
Client Ref.: 69219

Report Number: 703876
Location: Arkady ind.est Newton Heath

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28557510	28557496	28557497	28557498	28557499	28557501	28557502	28557503	28557504	28557505
Customer Sample Ref.	BLANK	M101	M101	M103	M104	M105	M107	M107	M108	M109
AGS Ref.	D	D	D	D	D	D	D	D	D	D
Depth		0.10 - 0.20	0.70 - 0.80	0.00 - 0.10	0.10 - 0.20	0.00 - 0.10	0.10 - 0.20	0.60 - 1.00	0.10 - 0.20	0.50 - 0.80
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS Solids	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023
Sample description	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023

Lab Sample No(s)	28557506	28557507	28557508	28557509	28557500
Customer Sample Ref.	M110	M110	M111	M111	M104B
AGS Ref.	D	D	D	D	D
Depth	0.10 - 0.20	0.60 - 1.00	0.10 - 0.20	0.70 - 0.80	0.60 - 0.70
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
PFAS Solids	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023	08-Sep-2023
Sample description	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023



CERTIFICATE OF ANALYSIS

SDG: 230831-28
Client Ref: 69219

Report Number: 703876
Location: Arkady ind.est Newton Heath

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US

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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Sub Surface Laboratories Ltd
3 Peel Street
Preston
Lancashire
PR2 2QS

Attention: David Ravenscroft-Jones

CERTIFICATE OF ANALYSIS

Date of report Generation:	20 September 2023
Customer:	Sub Surface Laboratories Ltd
Sample Delivery Group (SDG):	230913-40
Your Reference:	6921 K
Location:	Arkady Industrial Estate
Report No:	704533
Order Number:	

We received 9 samples on Wednesday September 13, 2023 and 9 of these samples were scheduled for analysis which was completed on Wednesday September 20, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 230913-40
Client Ref.: 6921 K

Report Number: 704533
Location: Arkady Industrial Estate

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
28620466	CONTROL			
28620470	M10		0.20	11/09/2023
28620471	M108		1.10	11/09/2023
28620473	M109		1.30	11/09/2023
28620474	M110		1.18	11/09/2023
28620475	M111		5.04	11/09/2023
28620468	M5B		0.64	11/09/2023
28620469	M6B		0.66	11/09/2023
28620467	M1C		0.94	11/09/2023

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 230913-40

Report Number: 704533

Superseded Report:

Client Ref.: 6921 K

Location: Arkady Industrial Estate

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water
Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer
Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

PFAS Liquids (Full Suite)

All

NDPs: 0
Tests: 9

28620467	M1C		0.94	Digitube to PFAS analysis.	GW
28620469	M68		0.66	Digitube to PFAS analysis.	GW
28620468	M58		0.64	Digitube to PFAS analysis.	GW
28620475	M111		5.04	Digitube to PFAS analysis.	GW
28620474	M110		1.18	Digitube to PFAS analysis.	GW
28620473	M109		1.30	Digitube to PFAS analysis.	GW
28620471	M108		1.10	Digitube to PFAS analysis.	GW
28620470	M10		0.20	Digitube to PFAS analysis.	GW
28620466	CONTROL			Digitube to PFAS analysis.	UNL
X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 230913-40
Client Ref.: 6921 K

Report Number: 704533
Location: Arkady Industrial Estate

Superseded Report:

Results Legend			Customer Sample Ref.		CONTROL	M10	M108	M109	M110	M111
# ISO17025 accredited.	M mCERTS accredited.	aq Aqueous / settled sample.	Depth (m)	Sample Type	Unspecified Liquid (UNL)	0.20 Ground Water (GW)	1.10 Ground Water (GW)	1.30 Ground Water (GW)	1.18 Ground Water (GW)	5.04 Ground Water (GW)
diss.filt Dissolved / filtered sample.	tot.unfilt Total / unfiltered sample.	* Subcontracted - refer to subcontractor report for accreditation status.	Date Sampled	Sample Time	13/09/2023	11/09/2023	11/09/2023	11/09/2023	11/09/2023	11/09/2023
** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery	(F) Trigger breach confirmed	1-4**@ Sample deviation (see appendix)	Date Received	SDG Ref	230913-40	230913-40	230913-40	230913-40	230913-40	230913-40
			Lab Sample No.(s)	AGS Reference	28620466	28620470	28620471	28620473	28620474	28620475
Component	LOD/Units	Method								
PFBA (375-22-4)	<2 ng/l	TM434	<2		§	3.04	#	#	#	#
PFMOPrA (377-73-1)	<1 ng/l	TM434	<1		§	<1	#	#	#	#
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2		§	<2	#	#	#	#
PFPA (2706-90-3)	<1 ng/l	TM434	<1		§	3.22	#	9.71	4.22	17.6
PfMOBA (863090-89-5)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5
NFDHA (151772-58-6)	<3 ng/l	TM434	<3		§	<3	#	<3	<6	<15
PFBS (375-73-5)	<1 ng/l	TM434	<1		§	<1	#	2.03	2.31	18.5
PFHxA (307-24-4)	<1 ng/l	TM434	<1		§	3.07	#	2.41	3.83	23.3
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2		§	<2	#	<2	<4	<10
PFEESA (113507-82-7)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5
PFHpA (375-85-9)	<1 ng/l	TM434	<1		§	1.13	#	2.16	3.66	9.51
PFPeS (2706-91-4)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	11.2
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5		§	<5	#	<5	<10	<25
ADONA (919005-14-4)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	5.75
FBSA (30334-69-1)	<1 ng/l	TM434	<1		§	<1	#	1.01	<2	6.75
PFOA (335-67-1)	<0.65 ng/l	TM434	<0.65		§	<0.65	#	6.18	6.67	14.7
PFHxS (355-46-4)	<1 ng/l	TM434	<1		§	<1	#	2.16	<2	47.3
PFNA (375-95-1)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5
PFecHS (133201-07-7)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5
PFHpS (375-92-8)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2		§	<2	#	<2	<4	<10
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5		§	<5	#	<5	<10	<25
PFDA (335-76-2)	<2 ng/l	TM434	<2		§	<2	#	<2	<4	<10
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2		§	<2	#	<2	<4	<10
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5		§	<5	#	<5	<10	<25
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65		§	<0.65	#	4.5	5.47	19.1
Branched PFOS	<0.65 ng/l	TM434	<0.65		§	<0.65	#	2.16	3.11	24.3
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2		§	<2	#	<2	<4	<10
PFUnA (2058-94-8)	<2 ng/l	TM434	<2		§	<2	#	<2	<4	<10
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5
PFNS (68259-12-1)	<1 ng/l	TM434	<1		§	<1	#	<1	<2	<5



CERTIFICATE OF ANALYSIS

Validated

SDG: 230913-40
Client Ref.: 6921 K

Report Number: 704533
Location: Arkady Industrial Estate

Superseded Report:

Results Legend			Customer Sample Ref.			M5B	M6B	M1C			
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted - refer to subcontractor report for accreditation status. ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery (F) Trigger breach confirmed 1-4*§@ Sample deviation (see appendix)			Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference			0.64 Ground Water (GW) 11/09/2023	0.66 Ground Water (GW) 11/09/2023	0.94 Ground Water (GW) 11/09/2023			
Component	LOD/Units	Method									
PFBA (375-22-4)	<2 ng/l	TM434	<2	#	#	<4	#	#			
PFMOPra (377-73-1)	<1 ng/l	TM434	<1	#	#	<2	#	#			
3:3 FTCA (356-02-5)	<2 ng/l	TM434	<2	#	#	<4	#	#			
PFPA (2706-90-3)	<1 ng/l	TM434	4.14	#	#	<2	#	#			
PFMOBA (863090-89-5)	<1 ng/l	TM434	<1	#	#	<2	#	#			
4:2 FTS (757124-72-4)	<1 ng/l	TM434	<1	#	#	<2	#	#			
NFDHA (151772-58-6)	<3 ng/l	TM434	<3	#	#	<6	#	#			
PFBS (375-73-5)	<1 ng/l	TM434	1.59	#	#	2.2	#	#			
PFHxA (307-24-4)	<1 ng/l	TM434	2.92	#	#	3.06	#	#			
HFPO-DA (13252-13-6)	<2 ng/l	TM434	<2	#	#	<4	#	#			
PFEESA (113507-82-7)	<1 ng/l	TM434	<1	#	#	<2	#	#			
PFHpA (375-85-9)	<1 ng/l	TM434	1.51	#	#	3.5	#	#			
PFPeS (2706-91-4)	<1 ng/l	TM434	<1	#	#	<2	#	#			
5:3 FTCA (914637-49-3)	<5 ng/l	TM434	<5	#	#	<10	#	#			
ADONA (919005-14-4)	<1 ng/l	TM434	<1	#	#	<2	#	#			
6:2 FTS (27619-97-2)	<1 ng/l	TM434	<1	#	#	<2	#	#			
FBSA (30334-69-1)	<1 ng/l	TM434	<1	#	#	<2	#	#			
PFOA (335-67-1)	<0.65 ng/l	TM434	1.58	#	#	4.49	#	#			
PFHxS (355-46-4)	<1 ng/l	TM434	<1	#	#	4.31	#	#			
PFNA (375-95-1)	<1 ng/l	TM434	<1	#	#	<2	#	#			
PFecHS (133201-07-7)	<1 ng/l	TM434	<1	#	#	<2	#	#			
PFHpS (375-92-8)	<1 ng/l	TM434	<1	#	#	<2	#	#			
8:2 FTS (39108-34-4)	<2 ng/l	TM434	<2	#	#	<4	#	#			
HFPO-TA (13252-14-7)	<5 ng/l	TM434	<5	#	#	<10	#	#			
PFDA (335-76-2)	<2 ng/l	TM434	<2	#	#	<4	#	#			
MeFOSAA (2355-31-9)	<2 ng/l	TM434	<2	#	#	<4	#	#			
7:3 FTCA (812-70-4)	<5 ng/l	TM434	<5	#	#	<10	#	#			
Linear PFOS (1763-23-1)	<0.65 ng/l	TM434	<0.65	#	#	4.01	#	#			
Branched PFOS	<0.65 ng/l	TM434	<0.65	#	#	3.07	#	#			
EtFOSAA (2991-50-6)	<2 ng/l	TM434	<2	#	#	<4	#	#			
PFUnA (2058-94-8)	<2 ng/l	TM434	<2	#	#	<4	#	#			
9CI-PF3ONS (756426-58-1)	<1 ng/l	TM434	<1	#	#	<2	#	#			
PFNS (68259-12-1)	<1 ng/l	TM434	<1	#	#	<2	#	#			



CERTIFICATE OF ANALYSIS

Validated

SDG: 230913-40
Client Ref.: 6921 K

Report Number: 704533
Location: Arkady Industrial Estate

Superseded Report:

Results Legend			Customer Sample Ref. Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	M5B	M6B	M1C			
#	ISO17025 accredited.			0.64	0.66	0.94			
M	mCERTS accredited.			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)			
aq	Aqueous / settled sample.			11/09/2023	11/09/2023	11/09/2023			
diss.filt	Dissolved / filtered sample.			.	.	.			
tot.unfilt	Total / unfiltered sample.			13/09/2023	13/09/2023	13/09/2023			
*	Subcontracted - refer to subcontractor report for accreditation status.			230913-40	230913-40	230913-40			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			28620468	28620469	28620467			
(F)	Trigger breach confirmed								
1-4**	Sample deviation (see appendix)								
Component	LOD/Units	Method							
FHxSA (41997-13-1)	<1 ng/l	TM434	<1	<1	<2				
			#	#	#				
PFDoA (307-55-1)	<2 ng/l	TM434	<2	<2	<4				
			#	#	#				
PFDS (335-77-3)	<2 ng/l	TM434	<2	<2	<4				
			#	#	#				
PFTrDA (72629-94-8)	<3 ng/l	TM434	<3	<3	<6				
			#	#	#				
11Cl-PF3OUdS (763051-92-9)	<2 ng/l	TM434	<2	<2	<4				
			#	#	#				
PFUnDS (749786-16-1)	<2 ng/l	TM434	<2	<2	<4				
			#	#	#				
PFTeA (376-06-7)	<1 ng/l	TM434	<1	<1	<2				
			#	#	#				
PFOSA (754-91-6)	<2 ng/l	TM434	<2	<2	<4				
			#	#	#				
PFDoS (79780-39-5)	<2 ng/l	TM434	<2	<2	<4				
			#	#	#				
PFTrDS (174675-49-1)	<1 ng/l	TM434	<1	<1	<2				
			#	#	#				
PFHxDA (67905-19-5)	<1 ng/l	TM434	<1	<1	<2				
			#	#	#				
MeFOSE (24448-09-7)	<10 ng/l	TM434	<10	<10	<20				
			#	#	#				
N-MeFOSA (31506-32-8)	<1 ng/l	TM434	<1	<1	<2				
			#	#	#				
EtFOSE (1691-99-2)	<10 ng/l	TM434	<10	<10	<20				
			#	#	#				
PFODA (16517-11-6)	<1 ng/l	TM434	<1	<1	<2				
			#	#	#				
N-EtFOSA (4151-50-2)	<1 ng/l	TM434	<1	<1	<2				
			#	#	#				
6:2 FTAB (34455-29-3)	<10 ng/l	TM434	<10	<10	<20				
Total PFOS	<0.65 ng/l	TM434	<0.65	6.14	7.08				
			#	#	#				



CERTIFICATE OF ANALYSIS

Validated

SDG: 230913-40 Report Number: 704533 Superseded Report:
Client Ref.: 6921 K Location: Arkady Industrial Estate

Table of Results - Appendix

Method No	Description
TM434	Analysis of PFAS

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 230913-40
Client Ref.: 6921 K

Report Number: 704533
Location: Arkady Industrial Estate

Superseded Report:

Test Completion Dates

Lab Sample No(s)	28620466	28620470	28620471	28620473	28620474	28620475	28620468	28620469	28620467
Customer Sample Ref.	CONTROL	M10	M108	M109	M110	M111	M5B	M6B	M1C
AGS Ref.									
Depth		0.20	1.10	1.30	1.18	5.04	0.64	0.66	0.94
Type	Unspecified	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
PFAS Liquids (Full Suite)	19-Sep-2023	19-Sep-2023	19-Sep-2023	20-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	19-Sep-2023	20-Sep-2023



CERTIFICATE OF ANALYSIS

SDG: 230913-40
Client Ref: 6921 K

Report Number: 704533
Location: Arkady Industrial Estate

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

MINI BOREHOLE RECORD SHEETS

SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.		Borehole Number M101		
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD) 63.70		Client CASSEL & FLETCHER CONSTRUCTION LIMITED			Job Number 6921K	
		Location As Shown on Fig.2			Dates 23/08/2023		Engineer			Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.40	B						MADE GROUND: grey very sandy fine to coarse gravel sized fragments of concrete with low concrete cobble content.				
0.10-0.20	D					(0.60)					
0.40-0.70	B						MADE GROUND: dark greyish brown silty very sandy fine to coarse gravel sized fragments of brick, stone, concrete with low brick cobble content and with some pockets of clay.				
0.70-0.80	D				63.10	0.60					
0.70-1.20	B						MADE GROUND: firm dark brown gravelly slightly sandy silty clay with occasional pockets of sand. Gravel sized fragments are fine to coarse stone and brick.				
					62.80	0.90					
1.20-2.00	C			1.20m to 2.00m - 100% recovery.			Stiff brown thinly laminated slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to coarse sandstone, siltstone, quartz and coal.				
					62.50	1.20					
							Stiff brown thinly laminated slightly gravelly slightly sandy silty CLAY with silt on laminae.				
						(1.15)					
2.00-3.00	C			2.00m to 3.00m - 90% recovery.			Greyish brown slightly silty fine SAND.				
					61.35	2.35 (0.10)					
					61.25	2.45	Pinkish brown slightly silty medium SAND.				
						(0.45)					
					60.80	2.90	Firm becoming stiff thinly laminated greyish brown slightly gravelly silty CLAY. Gravel comprises subangular to subrounded fine to medium sandstone, siltstone and coal.				
3.00-4.00	C			3.00m to 4.00m - 100% recovery.							
					60.60	3.10					
						(0.90)					
				23/08/2023: DRY							
					59.70	4.00					
Remarks Hand dug inspection pit to 1.20m to check for services Hand dug pit sides unstable. Core diameters: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m. On completion installed a 50mm dia. hdpe groundwater monitoring standpipe with a removable cap and gravel surround to 4.00m, a bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m. Logged in accordance BS5930:1999 A2								Scale (approx) 1:20	Logged By MSB/WJP/DJ	Figure No. 6921K.M101	

<div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div></div>							Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.			Borehole Number M102	
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD) 63.70		Client CASSEL & FLETCHER CONSTRUCTION LIMITED			Job Number 6921K	
		Location As Shown on Fig.2			Dates 24/08/2023		Engineer			Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.10 0.00-0.40	D B				63.60	(0.10) 0.10	MADE GROUND: grey very sandy fine to coarse gravel sized fragments of concrete with medium concrete cobble content.				
0.30-0.40 0.40-1.20	D B					(0.55)	MADE GROUND: brown very silty very sandy fine to coarse gravel sized fragments of stone, brick and concrete with low stone cobble content.below 0.35m with occasional pockets of clay.				
					63.05	0.65	Firm becoming stiff brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to coarse sandstone, siltstone and quartz.				
1.20-2.00	C			1.20m to 2.00m - 100% recovery.		(2.10)					
2.00-3.00	C			2.00m to 3.00m - 75% recovery.							
					60.95	2.75	Stiff greyish brown slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to medium sandstone, siltstone, quartz and coal.				
3.00-4.00	C			3.00m to 4.00m - 35% recovery.		(1.25)					
				24/08/2023:DRY	59.70	4.00					
Remarks Hand dug inspection pit to 1.00m to check for services Hand dug pit sides unstable. Core diameters: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m. On completion installed a 50mm dia. hdpe groundwater monitoring standpipe with a removable cap and gravel surround to 4.00m, a bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m.								Scale (approx) 1:20	Logged By MSB/WJP/DJ		
Logged in accordance BS5930:1999 A2								Figure No. 6921K.M101			



ARKADY INDUSTRIAL ESTATE, BRISCOE LANE,
NEWTON HEATH. GTR MANCHESTER.

**Borehole
Number
M103**

Job Number
6921K

Sheet
1/1

Remarks Hand dug inspection pit to 1.00m to check for services Hand dug pit sides unstable. Core diameters: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m. On completion installed a 50mm dia. hdpe groundwater monitoring standpipe with a removable cap and gravel surround to 4.00m, a bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m. Logged in accordance BS5930:1999 A2	Scale (approx)	Logged By
	1:20	MSB/WJP/D
	Figure No. 6921K.M101	

<div><div><div>S</div><div>S</div></div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS</div><div>3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div>							Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.		Borehole Number M104	
Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD) 63.69		Client CASSEL & FLETCHER CONSTRUCTION LIMITED		Job Number 6921K		
		Location As Shown on Fig.2		Dates 25/08/2023		Engineer		Sheet 1/1		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10-0.20	D					(0.30)	MADE GROUND: greyish brown silty very sandy fine to coarse gravel sized fragments of stone, concrete and brick.			
0.40-0.50	D				63.39	0.30 (0.30)	MADE GROUND: light brown very silty very sandy fine to coarse gravel sized fragments of stone, brick, concrete, tile, glass with medium brick cobble content and occasional pockets of clay.			
				25/08/2023:DRY	63.09	0.60	...@0.60m brick obstruction. Complete at 0.60m			
<div>Remarks Hand dug inspection pit to 0.60m to check for services. Hand dug pit sides unstable. Terminated on brick obstruction at 0.60m, borehole moved to M104A.</div>							Scale (approx) 1:20	Logged By MSB/WJP/DJ	Figure No. 6921K.M101	

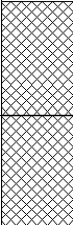


SUB SURFACE
 SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS
 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907

Site
 ARKADY INDUSTRIAL ESTATE, BRISCOE LANE,
 NEWTON HEATH, GTR MANCHESTER.

Borehole Number
M104A

Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD) 63.76		Client CASSEL & FLETCHER CONSTRUCTION LIMITED		Job Number 6921K	
		Location As Shown on Fig.2		Dates 25/08/2023		Engineer		Sheet 1/1	

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.20	D					(0.30)	MADE GROUND: greyish brown silty very sandy fine to coarse gravel sized fragments of stone, concrete and brick.		
0.40-0.50	D				63.46	0.30 (0.30)	MADE GROUND: light brown very silty very sandy fine to coarse gravel sized fragments of stone, brick, concrete, tile, glass with medium brick cobble content and occasional pockets of clay.		
				25/08/2023: DRY	63.16	0.60	...@0.60m brick obstruction. Complete at 0.60m		

Remarks
 Hand dug inspection pit to 0.60m to check for services.
 Hand dug pit sides unstable.
 Terminated on brick obstruction at 0.60m, borehole moved to M104B.

Scale (approx)
 1:20

Logged By
 MSB/WJP/DJ

Figure No.
 6921K.M101

Logged in accordance BS5930:1999 A2

<div><div><div>S</div><div>S</div></div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div>						Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.			Borehole Number M104B	
Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD) 63.69		Client CASSEL & FLETCHER CONSTRUCTION LIMITED			Job Number 6921K	
		Location As Shown on Fig.2		Dates 25/08/2023		Engineer			Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10-0.40	B				63.59	(0.10) 0.10	MADE GROUND: concrete surfacing.			
0.40-1.20	B					(0.45)	MADE GROUND: dark brown very silty very sandy fine to coarse gravel sized fragments of brick, concrete, stone and glass with low brick cobble content and occasional pockets of clay.			
0.60-0.70	D				63.14	0.55 (0.45)	Firm to stiff brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and quartz.			
1.20-2.00	C			1.20m to 2.00m - 80% recovery.	62.69	1.00	Firm to stiff becoming stiff thinly laminated greyish brown slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to medium sandstone, siltstone, quartz and coal.			
2.00-3.00	C			2.00m to 3.00m - 80% recovery.		(3.00)	...below 2.70m becoming soft.			
3.00-4.00	C			3.00m to 4.00m - No recovery.						
					59.69	4.00				
Remarks Hand dug inspection pit to 1.00m to check for services Hand dug pit sides unstable to 0.55m. Core diameters: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m. On completion installed a 50mm dia. hdpe groundwater monitoring standpipe with a removable cap and gravel surround to 4.00m, a bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m.								Scale (approx) 1:20	Logged By MSB/WJP/DJ	
								Figure No. 6921K.M101		
Logged in accordance BS5930:1999 A2										

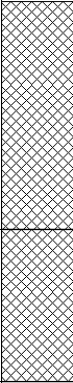
<div><div><div>S</div><div>S</div></div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS</div><div>3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div>					<div>Site</div> <div>ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.</div>			<div>Borehole Number</div> <div>M105</div>		
<div>Boring Method</div> <div>MINI PERCUSSIVE</div>		<div>Casing Diameter</div>			<div>Ground Level (mOD)</div> <div>63.59</div>		<div>Client</div> <div>CASSEL & FLETCHER CONSTRUCTION LIMITED</div>		<div>Job Number</div> <div>6921K</div>	
		<div>Location</div> <div>As Shown on Fig.2</div>			<div>Dates</div> <div>24/08/2023</div>		<div>Engineer</div>		<div>Sheet</div> <div>1/1</div>	
<div>Depth (m)</div>	<div>Sample / Tests</div>	<div>Casing Depth (m)</div>	<div>Water Depth (m)</div>	<div>Field Records</div>	<div>Level (mOD)</div>	<div>Depth (m) (Thickness)</div>	<div>Description</div>	<div>Legend</div>	<div>Water</div>	
0.00-0.10	D				63.49	(0.10)	MADE GROUND: grey very sandy fine to coarse gravel sized fragments of concrete with low concrete cobble content.			
					63.39	0.10 (0.10)	MADE GROUND: concrete slab.			
					63.29	0.20 (0.10)	MADE GROUND: concrete slab.			
0.40-0.50	D					0.30	MADE GROUND: brown very sandy fine to coarse gravel sized fragments of concrete, stone, brick and tile with low brick cobble content.			
				24/08/2023: DRY	62.79	0.80	...at 0.80m presumed concrete obstruction.			
							Complete at 0.80m			
<div>Remarks</div> <div>Hand dug inspection pit to 0.80m to check for services</div> <div>Hand dug pit sides unstable.</div> <div>Terminated on presumed concrete obstruction at 0.80m, moved over to M105A.</div>								<div>Scale (approx)</div> <div>1:20</div>	<div>Logged By</div> <div>MSB/WJP/DJ</div>	
Logged in accordance BS5930:1999 A2								<div>Figure No.</div> <div>6921K.M101</div>		

<div><div><div>S</div><div>S</div></div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS</div><div>3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div>					<div>Site</div> <div>ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.</div>			<div>Borehole Number</div> <div>M105A</div>		
<div>Boring Method</div> <div>MINI PERCUSSIVE</div>		<div>Casing Diameter</div>			<div>Ground Level (mOD)</div> <div>63.60</div>		<div>Client</div> <div>CASSEL & FLETCHER CONSTRUCTION LIMITED</div>		<div>Job Number</div> <div>6921K</div>	
		<div>Location</div> <div>As Shown on Fig.2</div>			<div>Dates</div> <div>24/08/2023</div>		<div>Engineer</div>		<div>Sheet</div> <div>1/1</div>	
<div>Depth (m)</div>	<div>Sample / Tests</div>	<div>Casing Depth (m)</div>	<div>Water Depth (m)</div>	<div>Field Records</div>	<div>Level (mOD)</div>	<div>Depth (m) (Thickness)</div>	<div>Description</div>	<div>Legend</div>	<div>Water</div>	
0.00-0.10	D				63.50	(0.10)	MADE GROUND: grey very sandy fine to coarse gravel sized fragments of concrete with low concrete cobble content.			
					63.40	(0.10)	MADE GROUND: concrete slab.			
					63.30	(0.10)	MADE GROUND: concrete slab.			
0.40-0.50	D					(0.50)	MADE GROUND: brown very sandy fine to coarse gravel sized fragemtns of concrete, stone, brick and tile with low brick cobble content.			
				24/08/2023: DRY	62.80	0.80	...at 0.80m presumed concrete obstruction.			
							Complete at 0.80m			
<div>Remarks</div> <div>Hand dug inspection pit to 0.80m to check for services</div> <div>Hand dug pit sides unstable.</div> <div>Terminated on presumed concrete obstruction at 0.80m, moved over to M105B.</div>								<div>Scale (approx)</div> <div>1:20</div>	<div>Logged By</div> <div>MSB/WJP/DJ</div>	<div>Figure No.</div> <div>6921K.M105A</div>
Logged in accordance BS5930:1999 A2										

SUB SURFACE					Site		Borehole Number				
SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907					ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.		M105B				
Boring Method		Casing Diameter			Ground Level (mOD)		Client		Job Number		
MINI PERCUSSIVE					63.59		CASSEL & FLETCHER CONSTRUCTION LIMITED		6921K		
		Location			Dates		Engineer		Sheet		
		As Shown on Fig.2			25/08/2023				1/1		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.20	B						MADE GROUND: grey very sandy fine to coarse gravel sized fragments of concrete with low concrete cobble content.				
0.20-0.80	B				63.29	0.30 (0.30)	MADE GROUND: brown very sandy fine to coarse gravel sized fragments of stone, brick, concrete and tile with low brick cobble content.				
						0.35 (0.35)					
0.80-1.20	B				62.94	0.65 (0.35)	Firm becoming stiff brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY with occasional rootlets. Gravel comprises subangular to subrounded fine to coarse sandstone and coal.				
1.20-2.00	C			1.20m to 2.00m - 100% recovery.		(2.35)					
2.00-3.00	C			2.00m to 3.00m - 100% recovery.							
3.00-4.00	C			3.00m to 4.00m - 100% recovery.	60.59	3.00 (1.00)	Stiff brown thinly laminated slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to medium sandstone and siltstone.				
				25/08/2023:DRY	59.59	4.00					
Remarks								Scale (approx)	Logged By		
Hand dug inspection pit to 1.20m to check for services Hand dug pit sides unstable to 0.65m. Core diameters: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m. On completion installed a 50mm dia. hdpe groundwater monitoring standpipe with a removable cap and gravel surround to 4.00m, a bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m.								1:20	MSB/WJP/DJ		
								Figure No.			
Logged in accordance BS5930:1999 A2								6921K.M101			

<div><div><div>S</div><div>S</div></div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div>							Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.			Borehole Number M106	
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD) 63.56		Client CASSEL & FLETCHER CONSTRUCTION LIMITED			Job Number 6921K	
		Location As Shown on Fig.2			Dates 24/08/2023		Engineer			Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.70 0.10-0.20	B D						MADE GROUND: light brownish grey very sandy fine to coarse gravel sized fragments of concrete and stone with low concrete cobble content.				
						(0.70)					
0.70-0.95 0.70-1.00	D B				62.86	0.70 (0.25)	MADE GROUND: dark brown ashy silty very sandy fine to coarse gravel sized fragments of stone, brick, concrete, glass and clinker with low brick cobble content.				
					62.61	0.95					
1.00-1.20	B						Firm becoming stiff brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to coarse sandstone, siltstone and quartz.				
1.20-2.00	C			1.20m to 2.00m - 100% recovery.		(1.05)					
2.00-3.00	C			2.00m to 3.00m - 90% recovery.	61.56	2.00 (0.20)	Firm brown slightly sandy silty CLAY.				
					61.36	2.20	Stiff brown and occasional grey mottled thinly laminated slightly gravelly slightly sandy silty CLAY with occasional bands of brown silty fine sand. Gravel comprises subangular to subrounded fine to coarse sandstone, siltstone, quartz and coal.				
3.00-4.00	C			3.00m to 4.00m - 100% recovery.		(1.80)	...below 3.00m no bands of sand.				

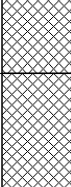
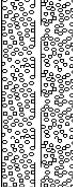
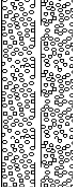
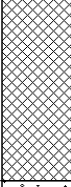
<div><div><div>S</div><div>S</div></div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS</div><div>3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div>							<div>Site</div> <div>ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.</div>		<div>Borehole Number</div> <div>M107</div>	
<div>Boring Method</div> <div>MINI PERCUSSIVE</div>		<div>Casing Diameter</div>		<div>Ground Level (mOD)</div> <div>63.51</div>		<div>Client</div> <div>CASSEL & FLETCHER CONSTRUCTION LIMITED</div>		<div>Job Number</div> <div>6921K</div>		
		<div>Location</div> <div>As Shown on Fig.2</div>		<div>Dates</div> <div>23/08/2023</div>		<div>Engineer</div>		<div>Sheet</div> <div>1/1</div>		
<div>Depth (m)</div>	<div>Sample / Tests</div>	<div>Casing Depth (m)</div>	<div>Water Depth (m)</div>	<div>Field Records</div>	<div>Level (mOD)</div>	<div>Depth (m) (Thickness)</div>	<div>Description</div>	<div>Legend</div>	<div>Water</div>	
0.10-0.20	D						MADE GROUND: light grey very sandy fine to coarse gravel sized fragments of concrete with low concrete cobble content.	<div></div>		
						(0.60)				
0.60-1.00	D				62.91	0.60	MADE GROUND: dark greyish brown silty very sandy fine to coarse gravel sized fragments of concrete, stone, brick with low brick and concrete cobble content.	<div></div>		
						(0.40)				
				23/08/2023: DRY	62.51	1.00	...at 1.00m presumed concrete obstruction.			
							Complete at 1.00m			
<div>Remarks</div> <div>Hand dug inspection pit to 1.00m to check for services</div> <div>Hand dug pit sides unstable.</div> <div>Terminated on presumed concrete obstruction at 1.00m, moved over to M107A.</div>								<div>Scale (approx)</div> <div>1:20</div>	<div>Logged By</div> <div>MSB/WJP/DJ</div>	
<div>Logged in accordance BS5930:1999 A2</div>								<div>Figure No.</div> <div>6921K.M107</div>		

<div>  SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907 </div>							Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.		Borehole Number M107A
Boring Method MINI PERCUSSIVE		Casing Diameter		Ground Level (mOD) 63.51		Client CASSEL & FLETCHER CONSTRUCTION LIMITED		Job Number 6921K	
		Location As Shown on Fig.2		Dates 23/08/2023		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.20	D					(0.60)	MADE GROUND: light grey very sandy fine to coarse gravel sized fragments of concrete with low concrete cobble content.		
0.60-1.00	D				62.91	0.60 (0.40)	MADE GROUND: dark greyish brown silty very sandy fine to coarse gravel sized fragments of concrete, stone, brick with low brick and concrete cobble content.		
				23/08/2023: DRY	62.51	1.00	...at 1.00m presumed concrete obstruction. Complete at 1.00m		
Remarks Hand dug inspection pit to 1.00m to check for services Hand dug pit sides unstable. Terminated on presumed concrete obstruction at 1.00m, moved over to M107B.								Scale (approx) 1:20	Logged By MSB/WJP/DJ
Logged in accordance BS5930:1999 A2								Figure No. 6921K.M107A	



ARKADY INDUSTRIAL ESTATE, BRISCOE LANE,
NEWTON HEATH. GTR MANCHESTER.

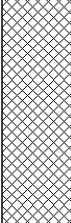
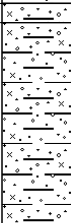
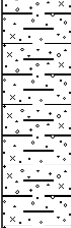
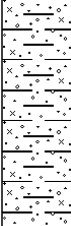
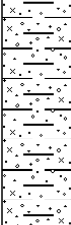
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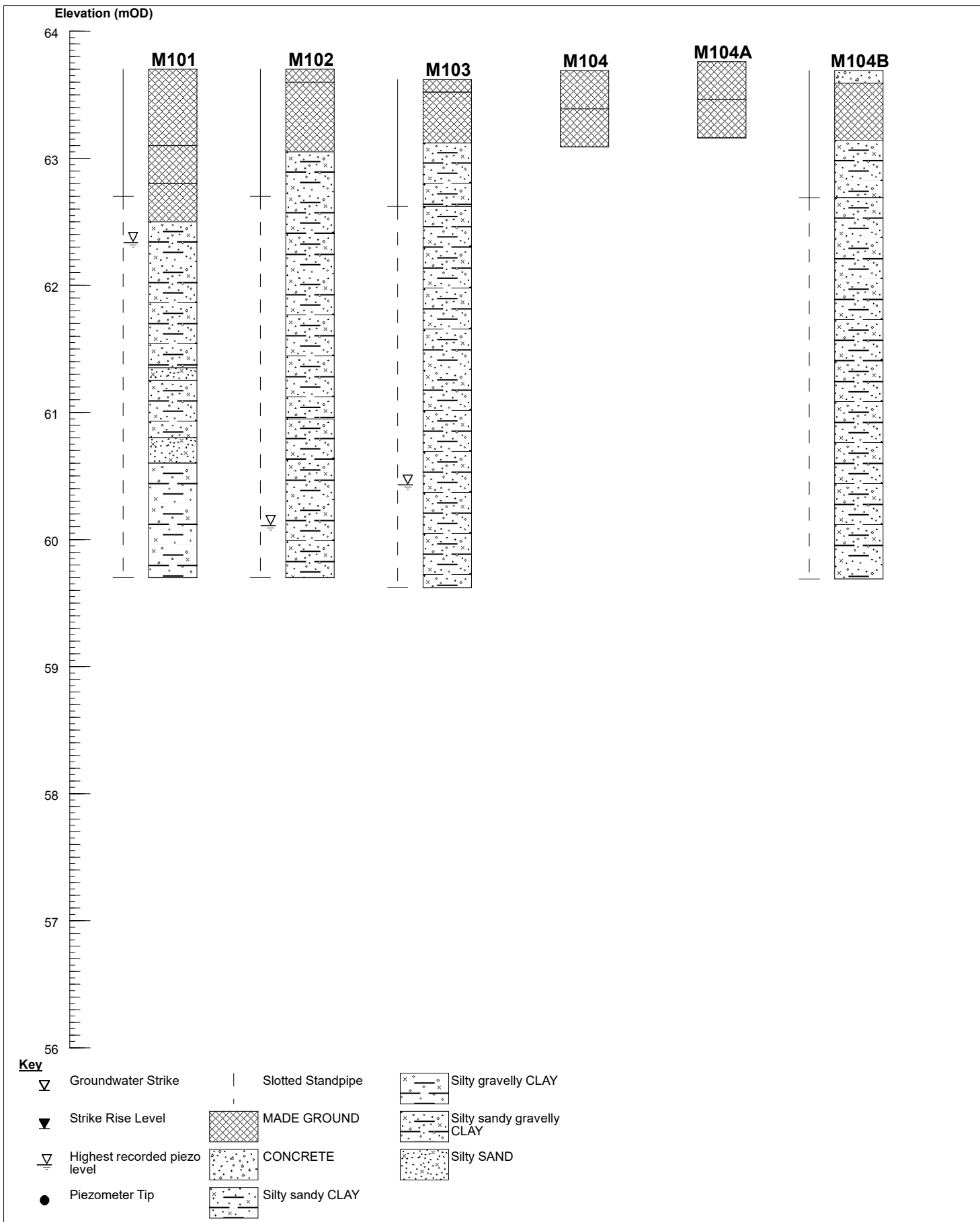
<div><div><div><div>S</div><div>S</div></div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS</div><div>3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div><div><div>Site</div><div>ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.</div></div><div><div>Borehole Number</div><div>M108</div></div></div>					<div><div>Boring Method</div><div>MINI PERCUSSIVE</div></div>		<div><div>Casing Diameter</div></div>		<div><div>Ground Level (mOD)</div><div>63.70</div></div>		<div><div>Client</div><div>CASSEL & FLETCHER CONSTRUCTION LIMITED</div></div>		<div><div>Job Number</div><div>6921K</div></div>	
					<div><div>Location</div><div>As Shown on Fig.2</div></div>		<div><div>Dates</div><div>23/08/2023</div></div>		<div><div>Engineer</div></div>		<div><div>Sheet</div><div>1/1</div></div>			
<div>Depth (m)</div>	<div>Sample / Tests</div>	<div>Casing Depth (m)</div>	<div>Water Depth (m)</div>	<div>Field Records</div>	<div>Level (mOD)</div>	<div>Depth (m) (Thickness)</div>	<div>Description</div>	<div>Legend</div>	<div>Water</div>	<div>Instr</div>				
0.00-0.50	B						MADE GROUND: light grey very sandy fine to coarse gravel sized fragments of concrete with high concrete cobble content.							
0.10-0.20	D					(0.50)								
0.50-1.20	C			0.50m to 1.20m: No recovery in core.	63.20	0.50	MADE GROUND: dark greyish brown silty very sandy fine to coarse gravel sized fragments of brick, stone and concrete with low brick cobble content.							
0.50-1.20	D					(0.70)								
1.20-2.00	C			1.20m to 2.00m - 100% recovery.	62.50	1.20	MADE GROUND: soft greyish brown gravelly slightly sandy slightly silty clay. Gravel sized fragments are fine to coarse concrete, stone and brick.							
						(1.30)								
2.00-3.00	C			2.00m to 3.00m - 100% recovery.	61.20	2.50	Firm to stiff brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to medium siltstone, sandstone and quartz.							
						(1.50)								
3.00-4.00	C			3.00m to 4.00m - 100% recovery.	59.70	4.00								
<div><div>Remarks</div><div>Hand dug inspection pit to 1.20m to check for services</div><div>Hand dug pit sides unstable.</div><div>Core diameters: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m.</div><div>On completion installed a 50mm dia. hdpe groundwater monitoring standpipe with a removable cap and gravel surround to 4.00m, a bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m.</div><div>23/08/2023: DRY</div></div>								<div><div>Scale (approx)</div><div>1:20</div></div>	<div><div>Logged By</div><div>MSB/WJP/DJ</div></div>	<div><div>Figure No.</div><div>6921K.M101</div></div>				
<div>Logged in accordance BS5930:1999 A2</div>														

<div><div><div><div>S</div><div>S</div></div><div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS</div><div>3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div><div><div>Site</div><div>ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.</div></div></div></div>						<div><div>Borehole Number</div><div>M109</div></div>				
<div><div>Boring Method</div><div>MINI PERCUSSIVE</div></div>		<div><div>Casing Diameter</div></div>			<div><div>Ground Level (mOD)</div><div>63.35</div></div>		<div><div>Client</div><div>CASSEL & FLETCHER CONSTRUCTION LIMITED</div></div>		<div><div>Job Number</div><div>6921K</div></div>	
		<div><div>Location</div><div>As Shown on Fig.2</div></div>			<div><div>Dates</div><div>23/08/2023</div></div>		<div><div>Engineer</div></div>		<div><div>Sheet</div><div>1/1</div></div>	
<div>Depth (m)</div>	<div>Sample / Tests</div>	<div>Casing Depth (m)</div>	<div>Water Depth (m)</div>	<div>Field Records</div>	<div>Level (mOD)</div>	<div>Depth (m) (Thickness)</div>	<div>Description</div>	<div>Legend</div>	<div>Water</div>	
0.20-0.30	D				63.25	(0.10) 0.10	MADE GROUND: light grey medium to coarse gravel sized fragments of stone.	<div></div>		
						(0.30)	MADE GROUND: dark grey ashy very gravelly silty fine to coarse sand. Gravel sized fragments are fine to coarse stone, brick, glass, clinker, tile and concrete.	<div></div>		
0.50-0.80	D				62.95	0.40	MADE GROUND: very soft dark greyish brown slightly gravelly slightly sandy silty clay with occasional pockets of sand. Gravel sized fragments are fine to coarse brick, stone, glass and concrete.	<div></div>		
						(0.60)				
				23/08/2023:DRY	62.35	1.00	...@1.00m presumed concrete obstruction.			
							Complete at 1.00m			
<div><div>Remarks</div><div>Hand dug inspection pit to 1.00m to check for services. Terminated on presumed concrete obstruction at 1.00m, borehole moved to M109.</div></div>								<div><div>Scale (approx)</div><div>1:20</div></div>	<div><div>Logged By</div><div>MSB/WJP/DJ</div></div>	
<div><div>Logged in accordance BS5930:1999 A2</div></div>								<div><div>Figure No.</div><div>6921K.M109</div></div>		

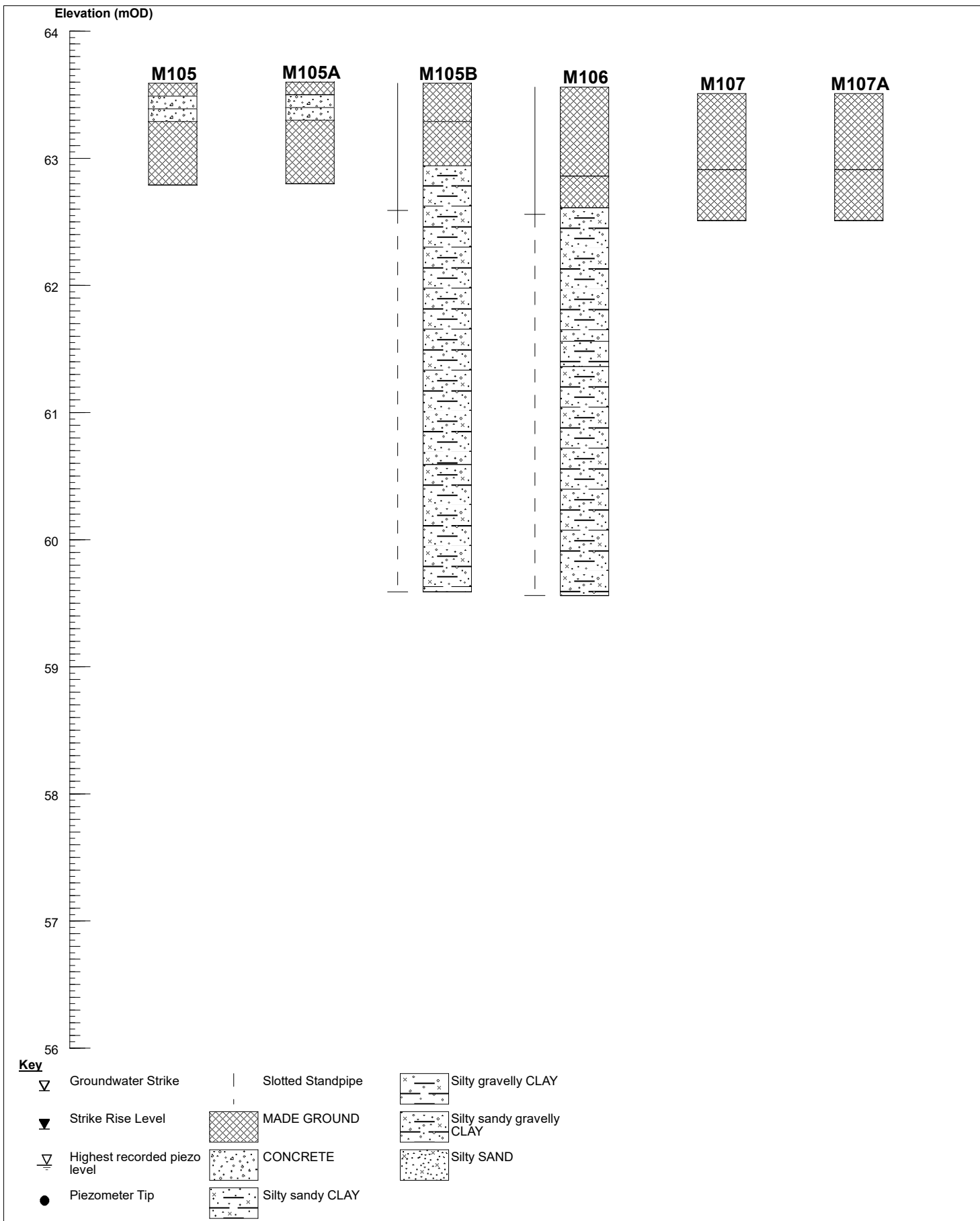
<div><div><div></div><div></div></div><div><div>SUB SURFACE</div><div>SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907</div></div></div>							Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.			Borehole Number M109A	
Boring Method MINI PERCUSSIVE		Casing Diameter 115mm cased to 3.00m			Ground Level (mOD) 63.35		Client CASSEL & FLETCHER CONSTRUCTION LIMITED			Job Number 6921K	
		Location As Shown on Fig.2			Dates 23/08/2023		Engineer			Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.10-0.40	B				63.25	(0.10) 0.10	MADE GROUND: light grey medium to coarse gravel sized fragments of stone.				
0.40-1.20	B				62.95	(0.30) 0.40	MADE GROUND: dark grey ashy very gravelly silty fine to coarse sand. Gravel sized fragments are fine stone, brick, glass, clinker, tile and concrete.				
1.20-2.00	C			1.20m to 2.00m - 80% recovery.		(1.05)	MADE GROUND: very soft dark greyish brown slightly gravelly slightly sandy silty clay with occasional pockets of sand. Gravel sized fragments are fine to coarse brick, stone, glass and concrete.				
2.00-3.00	C			2.00m to 3.00m - 80% recovery.	61.90	1.45 (0.35)	Soft brown and occasional grey mottled slightly gravelly slightly sandy silty clay. Gravel comprises subangular to subrounded fine to medium sandstone, siltstone and quartz.				
3.00-4.00	C			3.00m to 4.00m - 30% recovery.	61.55	1.80	Firm to stiff brown and occasional grey mottled becoming brown slightly sandy slightly silty CLAY.				
						(1.20)	...at 2.30m brown sandy band.				
							...below 2.60m slightly gravelly. Gravel comprises subangular to subrounded fine to medium sandstone, siltstone and quartz.				
					60.35	3.00	Firm brown and occasional grey mottled thinly laminated slightly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine siltstone.				
						(1.00)					
				23/08/2023:DRY	59.35	4.00					
<div>Remarks</div> <div>Hand dug inspection pit to 1.20m to check for services Hand dug pit sides unstable to 0.40m. Core diameters: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m. Borehole collapsed back to base of casing (3.00m). On completion installed a 50mm dia. hdpe groundwater monitoring standpipe with a removable cap and gravel surround to 3.00m, a bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m.</div> <div>Logged in accordance BS5930:1999 A2</div>								Scale (approx)	Logged By		
								1:20	MSB/WJP/DJ		
								Figure No. 6921K.M101			

SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.		Borehole Number M110		
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD) 63.50		Client CASSEL & FLETCHER CONSTRUCTION LIMITED		Job Number 6921K		
		Location As Shown on Fig.2			Dates 23/08/2023		Engineer		Sheet 1/1		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.60 0.10-0.20	B D			1.20m to 2.00m - 100% recovery.			MADE GROUND: light grey very sandy fine to coarse gravel sized fragments of concrete and stone with medium concrete cobble content.				
0.60-1.00 0.60-1.00	B D					62.90	0.60	MADE GROUND: soft to firm dark brown slightly gravelly slightly sandy silty clay with occasional pockets of sand. Gravel sized fragments are fine to coarse stone, brick, concrete, tile and slate.			
1.20-2.00	C			2.00m to 3.00m - 100% recovery.			MADE GROUND: dark grey slightly ashy gravelly sandy silty clay. Gravel sized fragments are fine to coarse stone, concrete and brick. (slight organic odour).				
						61.90	1.60	MADE GROUND: brown and occasional grey mottled locally dark grey slightly gravelly slightly sandy silty clay. Gravel sized fragments are fine to medium stone and brick.			
2.00-3.00	C			3.00m to 4.00m - 100% recovery.			MADE GROUND: brown and occasional grey mottled slightly gravelly slightly sandy silty clay. Gravel sized fragments are siltstone, sandstone and quartz.				
						61.30	2.20	MADE GROUND: brown and occasional grey mottled slightly gravelly slightly sandy silty clay. Gravel sized fragments are siltstone, sandstone and quartz.			
					61.00	2.50	...at 2.50m clay pipe.				
							Stiff locally firm brown and occasional grey mottled thinly laminated slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to medium siltstone, sandstone and quartz.				
3.00-4.00	C			23/08/2023:DRY							
					60.10	3.40	Stiff brown and occasional grey mottled slightly gravelly slightly silty CLAY. Gravel comprises subangular to subrounded fine to coarse siltstone, sandstone and quartz.				

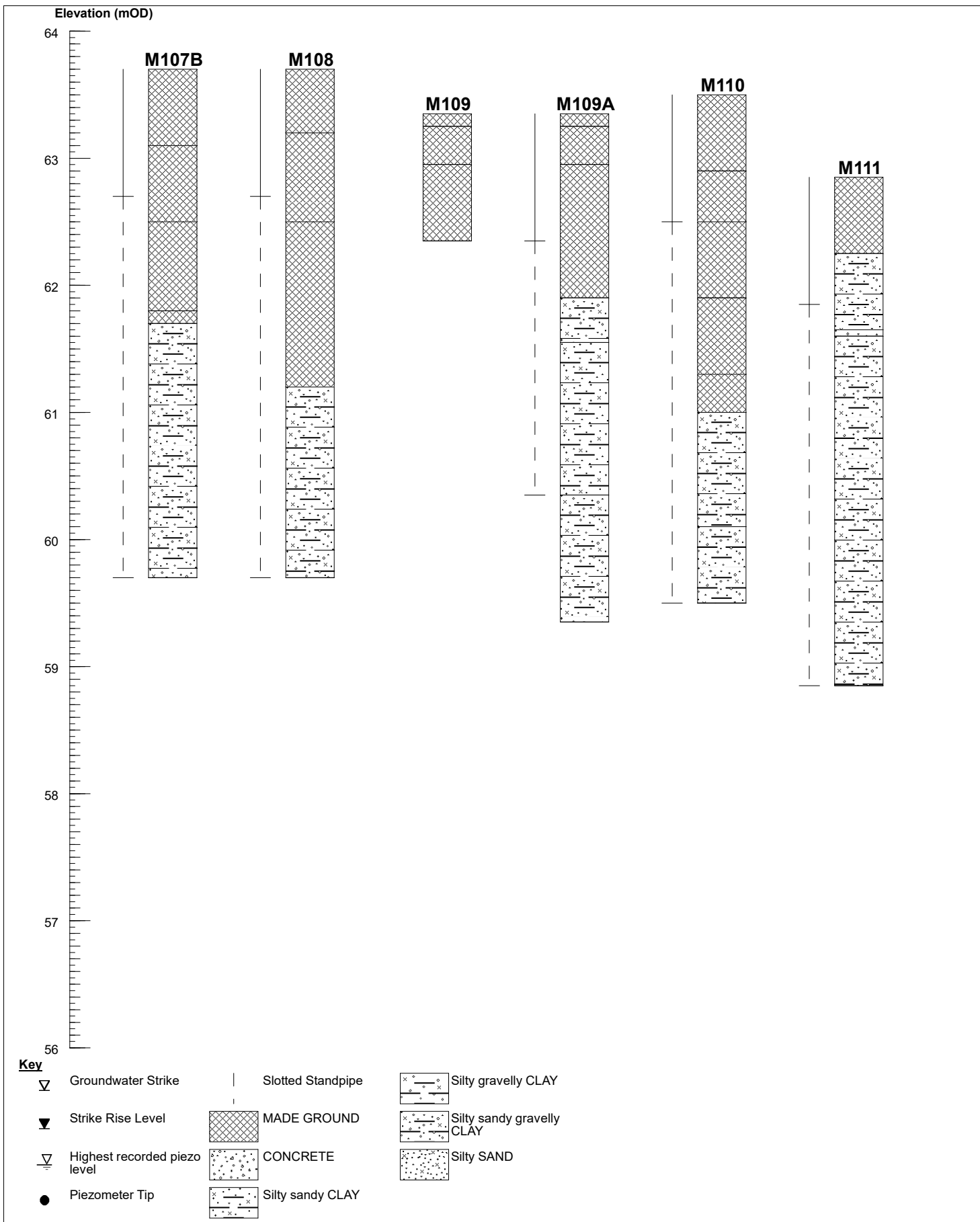
SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907							Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.		Borehole Number M111		
Boring Method MINI PERCUSSIVE		Casing Diameter			Ground Level (mOD) 62.85		Client CASSEL & FLETCHER CONSTRUCTION LIMITED			Job Number 6921K	
		Location As Shown on Fig.2			Dates 24/08/2023		Engineer			Sheet 1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.50	B						MADE GROUND: brown very silty very sandy fine to coarse gravel sized fragments of stone, brick, concrete and occasional pockets of clay.				
0.10-0.20	D					(0.60)					
0.50-1.20	B				62.25	0.60	Firm to stiff brown and occasional grey mottled slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to coarse sandstone, siltstone and quartz. (Possible Made Ground).				
0.70-0.80	D					(0.60)					
1.20-2.00	C			1.20m to 2.00m - 100% recovery.	61.65 61.60	1.20 (0.95)	Yellowish brown gravelly slightly sandy silty CLAY. Gravel comprises subangular fine to coarse sandstone. (Possible Made Ground).				
							Firm to stiff brown and occasional grey mottled thinly laminated slightly gravelly slightly sandy silty CLAY. Gravel comprises subangular to subrounded fine to medium sandstone, siltstone and quartz.				
2.00-3.00	C			2.00m to 3.00m - 30% recovery.		(2.75)					
3.00-4.00	B			3.00m to 4.00m - recovered as bulk sample			...below 3.00m no laminations.				
				24/08/2023:DRY	58.85	4.00					
Remarks Hand dug inspection pit to 1.00m to check for services Hand dug pit sides unstable to 0.60m. Core diameters: 86mm to 2.00m, 76mm to 3.00m, 66mm to 4.00m. On completion installed a 50mm dia. hdpe groundwater monitoring standpipe with a removable cap and gravel surround to 4.00m, a bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to 0.00m. Logged in accordance BS5930:1999 A2								Scale (approx) 1:20	Logged By MSB/WJP/DJ		
								Figure No. 6921K.M101			



SS SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907	Nominal Section			
Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.	Date Drawn 12/10/2023	Date Checked	Sheet 1/3	Job Number 6921K
Client CASSEL & FLETCHER CONSTRUCTION LIMITED	Drawn By	Checked By	Scale 1:40[V]	Figure No. 6921K.1

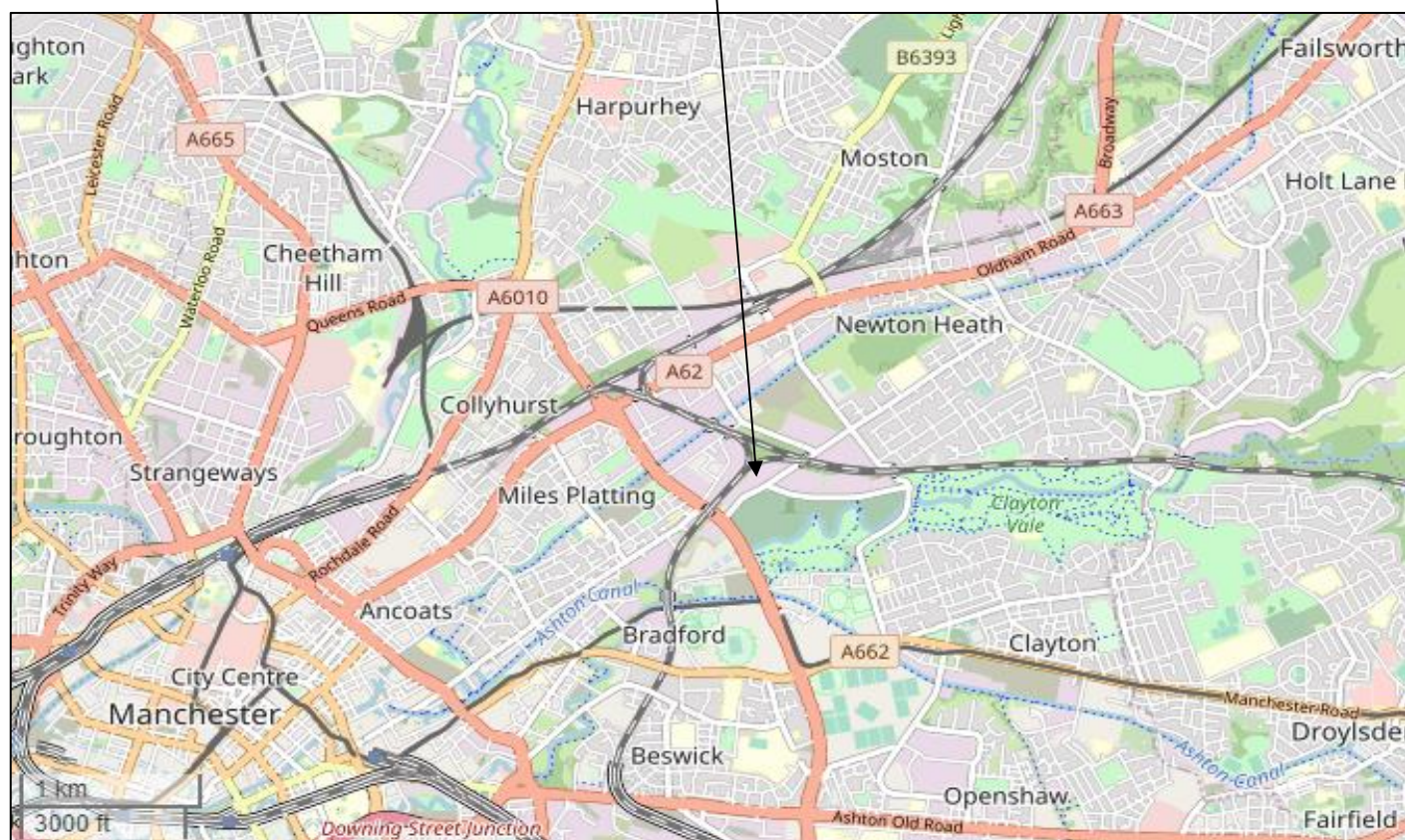


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Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.	Date Drawn 12/10/2023		Date Checked	Sheet 2/3
	Job Number 6921K			
Client CASSEL & FLETCHER CONSTRUCTION LIMITED	Drawn By		Checked By	Scale 1:40[V]
				Figure No. 6921K.1



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Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GTR MANCHESTER.	Date Drawn 12/10/2023	Date Checked	Sheet 3/3	Job Number 6921K
	Drawn By	Checked By	Scale 1:40[V]	Figure No. 6921K.1
Client CASSEL & FLETCHER CONSTRUCTION LIMITED				

FIGURES



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site

ARKADY INDUSTRIAL ESTATE, BRISCOE LANE,
NEWTON HEATH, GREATER MANCHESTER

Client

CASSEL & FLETCHER CONSTRUCTION LIMITED

Site Location

Date Drawn

26/05/2022

Date Checked

Orientation



Job No.

6921K

Drawn By

DJ

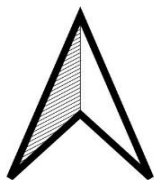
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Scale

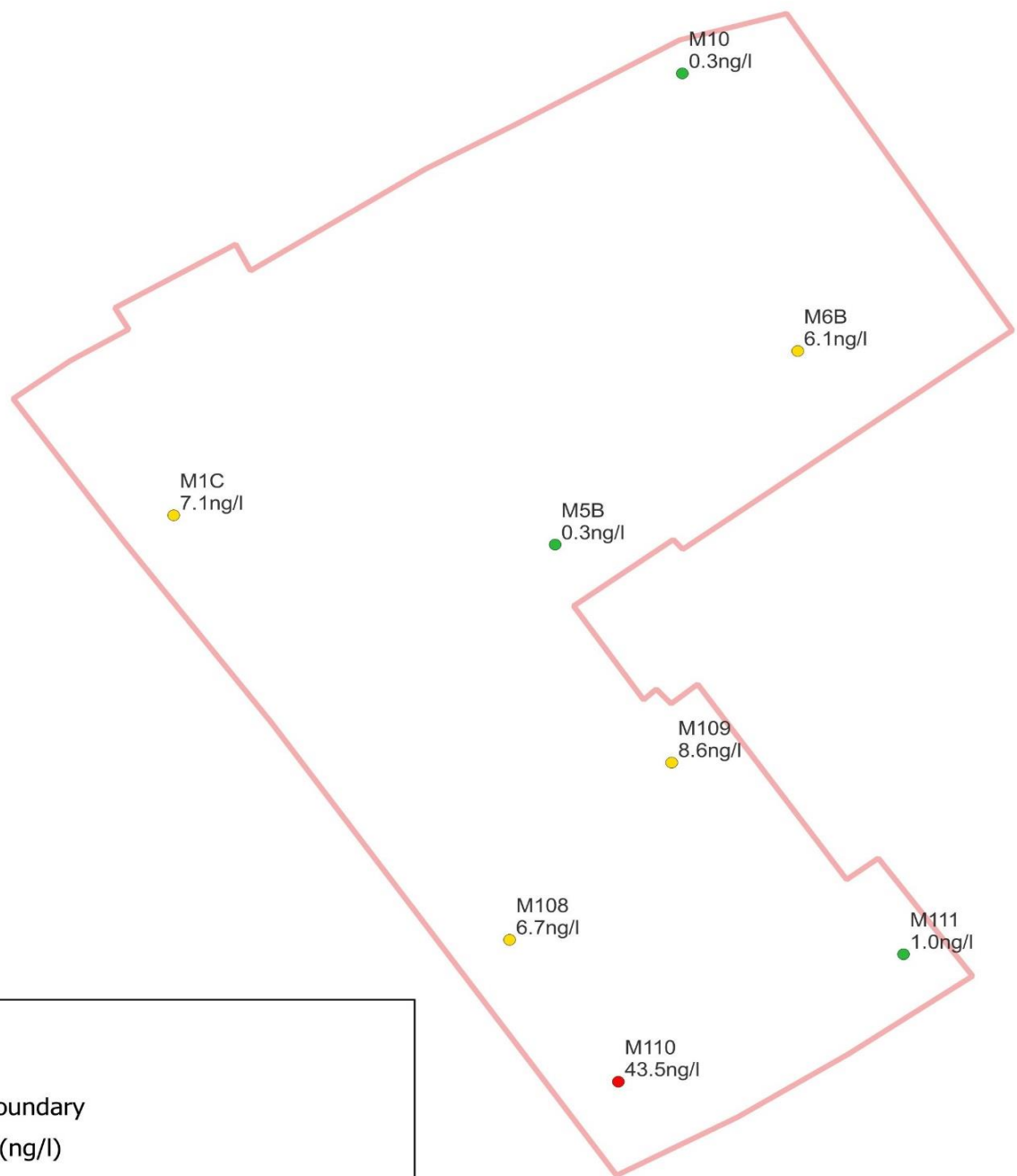
As Shown

Figure No.

1



 SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Proposed Development Layout & Locations of Mini Boreholes			
	Date Drawn 09-Oct-23	Date Checked	Orientation 	Job No. 6921K
Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	Drawn By DJ	Checked By	Scale —	Figure No. 2
Client CASSEL & FLETCHER CONSTRUCTION LIMITED				



Key

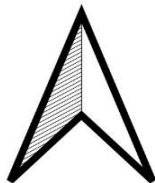
Site Boundary

Total PFOS (ng/l)

- 0 - 1
- 1 - 10
- 10 - 100

NB: Non detects assumed to be at half the limit of detection.

0 10 20 m



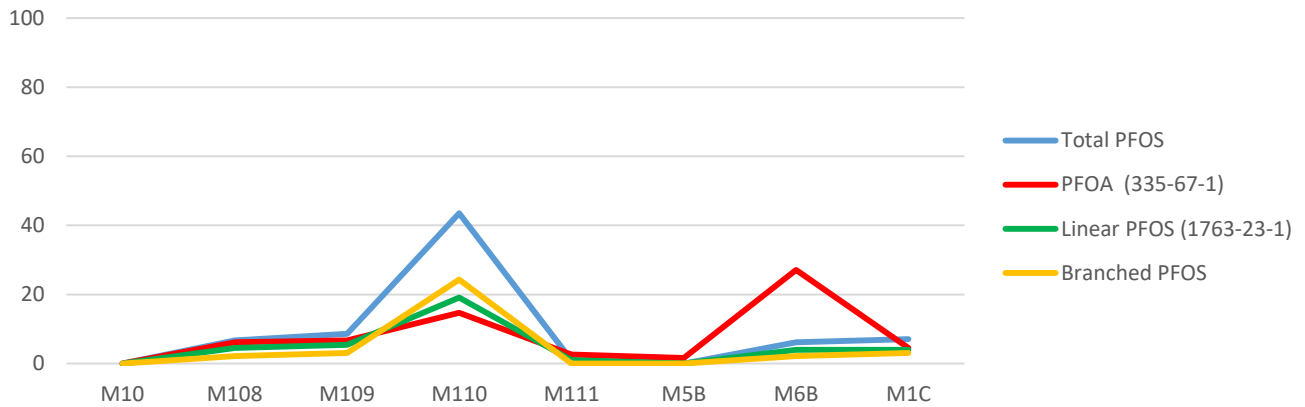
SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

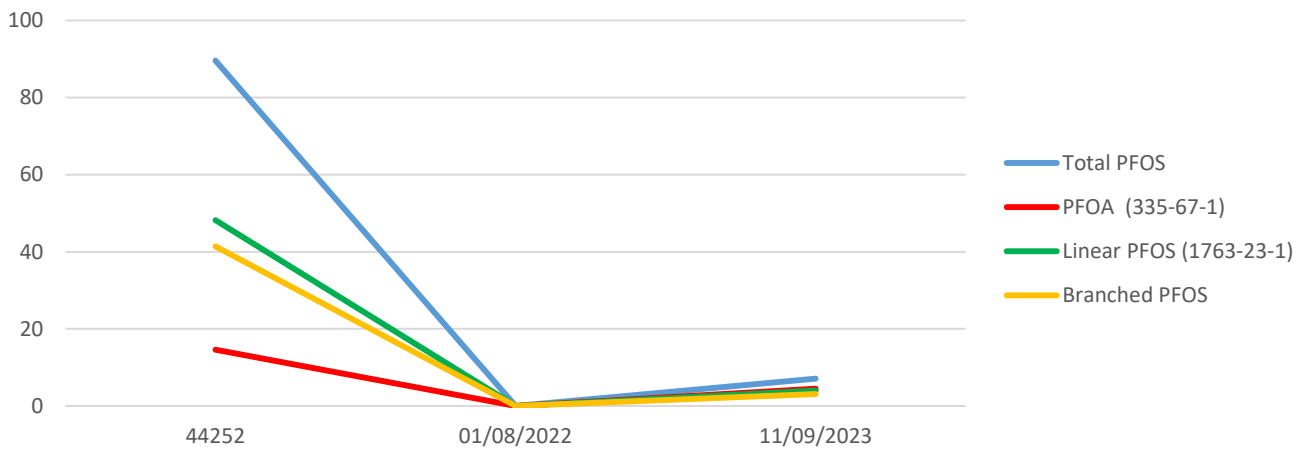
Total PFOS Distribution

Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	Date Drawn 09-Oct-23	Date Checked 	Orientation 	Job No. 6921K
Client CASSEL & FLETCHER CONSTRUCTION LIMITED	Drawn By DJ	Checked By 	Scale —	Figure No. 3

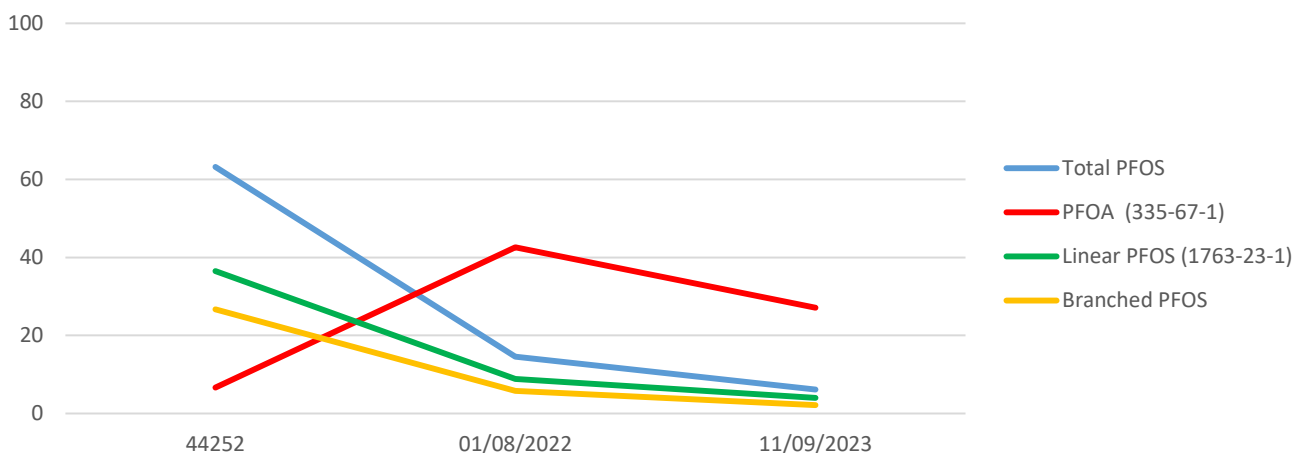
PFAS in Groundwater by Location (August 2023)



M1 PFAS Comparison



M6 PFAS Comparison



SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site

ARKADY INDUSTRIAL ESTATE, BRISCOE LANE,
NEWTON HEATH, GREATER MANCHESTER

Client

CASSEL & FLETCHER CONSTRUCTION LIMITED

Comparison of Total PFAS Between Standpipes & Concentrations of Selected PFAS Species Over Time.

Date Drawn

09-Oct-23

Date Checked

Orientation



Job No.

6921K

Drawn By

DJ

Checked By

Scale

—

Figure No.

4