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SUB SURFACE
Site Investigation Specialists,
Geotechnical & Environmental Consultants

GROUND INVESTIGATION REPORT

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

PREPARED FOR
CASSEL & FLETCHER
CONSTRUCTION LIMITED

REPORT NO. 6921F
OCTOBER 2021

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GROUND INVESTIGATION FOR ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER

CLIENT: CASSEL & FLETCHER CONSTRUCTION LIMITED

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1. INTRODUCTION

This report has been prepared in accordance with a Purchase Order, No. 91-014 and dated 20 January 2021, from the Client.

The brief was set out in our estimate, ref. E4660 and dated 19 January 2021, and updated in our estimate, ref. E4660A and dated 20 January 2021, with amendments as the investigation proceeded and includes:

- 9 No. mini boreholes
- Contamination analysis
- Installation of standpipes followed by groundwater and ground gas monitoring
- Provision of an interpretative report on the above.

Mini Soil Surveys have previously compiled and issued a Phase II Ground Investigation Report, ref. NTH 2707 and dated March 2020, for the site. We have previously also compiled and issued reports for the site, including a Phase I Desk Study Report, ref. 6921 and dated March 2020 and a Phase I Coal Mining Risk Assessment Report, ref. 6921A dated April 2020. The above reports should be read in conjunction with this Phase II Ground Investigation Report.

During the monitoring period standpipes installed in M1A, M5, M6 and M9 were lost/ removed. In order to continuing monitoring after the fourth visit on 14 May 2021, four mini boreholes (M1B, M5A, M6A and MA) were taken out on 16 July 2021 and standpipes were installed. These works (6921E) were undertaken in accordance with our estimate, ref. E5004 and dated 24 May 2021, and receipt of a Purchase Order, No. 91-080 and dated 12 July 2021, from the Client.

1.1 Site Location and Description

The site is located to the north west of 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 SD. 8689 9950 (E.386920m, N.399500m).

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.

1.2 Proposed Development and Purpose of the Ground Investigation

We understand that the previous buildings on the site were destroyed by fire and it is proposed to construct a "L" shaped industrial building, apparently surrounded by access roads and hardstandings, as shown on Figures 3 and 4.

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The purpose of the investigation was to determine the ground conditions at the positions of the exploratory holes and to take samples for contamination analysis and assessment in order to determine necessary precautions and/or remedial measures required for the proposed development. Ground gas monitoring and assessment was also required to determine necessary precautions and/or remedial measures.

2. INVESTIGATION

2.1 Investigation Details

Ten mini boreholes (M1, M1A, M2, M3, M4, M5, M6, M7, M8 and M9) were put down to 0.20 and 4.00 metres depth at the positions determined and set out by Sub Surface North West Limited, as shown on Figure 5. Initially the hard surface cover was cored with a diamond drill and then the mini boreholes were progressed by hand digging. Eight mini boreholes were then advanced with a Dart Mini Sampling Rig fitted with windowless sample tubes of 84, 74, 64 and 54mm diameter. 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. On completion the M1, M2, M3, M4, M7 and M8 were backfilled with gravel sized fragments of stone as no installations were required.

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. The depths of strata found were as follows:

TABLE 1 STRATA

Expl. Hole No.	Ground Level (mOD)	Depth of Hard Surface Cover (m)	Depth of Insulation Board or Foam (m)	Depth of Made Ground (m)	Depth to Drift Deposits (m)	Depth of Hole (m)
M1	63.70	0.00-0.13 (c)	0.13-0.27 *			0.27
M1A	63.70	0.00-0.10 (c) 0.25-0.43 (c)	0.10-0.25 **	0.43-0.90	0.90	4.00
M2	63.65	0.00-0.35 (c) 0.45-0.50 (c)		0.35-0.45 0.50-0.80	0.80	4.00
M3	63.80	0.00-0.15 (c)			0.15	4.00
M4	63.55	0.00-0.15 (c)		0.15-1.35	1.35	4.00
M5	63.70	0.00-0.38(c)		0.38-1.70	1.70	4.00
M6	63.60	0.00-0.05(b)		0.05-0.80	0.80	4.00
M7	63.50	0.00-0.17(c) 0.40-0.80 (c)	0.17-0.20	0.20-0.40 0.80-2.45	2.45	4.00
M8	63.50	0.00-0.20(c)				0.20
M9	63.50	0.00-0.17(c) 0.25-0.50 (c)	0.17-0.20	0.50-2.50 ***	2.50	4.00

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M = Mini Borehole, (b) bituminous macadam, (c) = concrete.
* underlain by apparent electric cable.
** underlain by blue membrane.
*** underlain by 0.05m of peat.

A general summary of the strata found is as follows:

2.2.1 Made Ground

Reinforced concrete was initially encountered in all but M6 where bituminous macadam surfacing was present. Underlying the concrete were layers of insulation board or foam in M1, M1A, M7 and M9. In addition layers of granular and cohesive Made Ground was also found. M1 and M8 which were terminated at 0.27 and 0.20 metres depth due to an apparent electric cable and an additional layer of concrete respectively. The base of the Made Ground was found to vary from 0.15 metres depth (north western margin) to 2.50 metres depth (south eastern margin).

Granular Made Ground generally comprised slightly silty slightly sandy to sandy gravel sized fragments of stone, brick, slag, clinker and concrete with in parts cobble sized fragments of brick and concrete.

Cohesive Made Ground was generally found to be slightly gravelly slightly sandy silty clay, the gravel sized fragments comprising brick, stone, slag, concrete and occasional plastic. Organic content or odours were noted in M4, M5, M7 and M9.

2.2.2 Drift Deposits

In all but M9, the above Made Ground was underlain directly by cohesive, apparently glacial, drift deposits which were proven to 4.00 metres depth. These deposits were found to be generally firm or stiff, but locally soft, slightly gravelly silty clays, the gravel comprising siltstone, sandstone, coal and quartz.

In M9, the above Made Ground was underlain directly by 0.05 metres of soft black slightly sandy fibrous peat.

2.2.3 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.

Seven ground gas and groundwater monitoring visits have been undertaken between 22 February 2021 and 19 September 2021. As indicated on the ground gas and groundwater monitoring sheet it was not possible to monitor all of the standpipes on all of the monitoring visits. Standpipes were installed in M1A/M1B, M5/M5A, M6/M6A and M9/ M9A and the depth to groundwater was found to be 0.80 to 1.20, 0.00 to 2.35, 0.50 to 0.65 and 1.40 to 1.50 metres depth respectively.

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3. SAMPLING, TESTING AND MONITORING

3.1 Sampling

Continuous core and bulk disturbed samples were obtained for the strata encountered and were subjected to careful examination.

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 M1A, M5, M6 and M9 hdpe standpipes were installed to depths of 4.00, 4.00, 4.00 and 3.50 metres respectively. The standpipes are slotted from 1.00 metres 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 Mini Borehole Records.

Monitoring of the standpipes for ground gas and groundwater has been undertaken on seven occasions using portable equipment. A Gas Data GFM 435 was used for monitoring methane, carbon dioxide, oxygen, gas flows and atmospheric pressure. The results of the monitoring is given on the appended Ground Gas and Groundwater Monitoring Results sheet.

3.4 Laboratory Testing

Contamination analyses have been performed on thirteen soil samples to determine: pH and concentrations of sulphate, sulphide, cyanide, arsenic, boron (soluble), cadmium, chromium, hexavalent chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, speciated total petroleum hydrocarbons (TPHs), the speciated polynuclear aromatic hydrocarbons (PAHs) suite, the benzene/ ethylbenzene/ toluene/ xylene (BTEX) suite and phenols. In addition all thirteen soil samples were subjected to an asbestos screen.

In addition four soil samples were also analysed for a suite of volatile organic compounds (VOCs) to identify chlorinated solvent contamination.

In view of the Electricity Sub-stations present one soil sample, from M7 at 1.00 to 2.00 metres depth, was subjected to speciated poly chlorinated bi-phenyls (PCBs) analysis.

Foams were used to control the fire at the former development and in view of this two soil samples have been subjected to a suite of speciated Perflouro Alkyl analysis.

Contamination analyses have also been performed on three samples of groundwater taken on 22 February 2021 from the standpipes installed in M1A, M5 and M6 to determine: pH and concentrations of sulphate, sulphide, cyanide, arsenic, boron (soluble), cadmium, chromium, hexavalent chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, speciated TPHs, the speciated PAHs suite, the BTEX suite and phenols.

In addition two of the above groundwater samples have been subjected to a suite of speciated Perflouro Alkyl analysis.

The results of the above analyses are appended.

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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 Contamination Considerations

We understand that the previous buildings on the site were destroyed by fire and it is proposed to construct a "L" shaped industrial building, apparently surrounded by access roads and hardstandings, as shown on Figures 3 and 4.

The ground investigation found the surface to be covered by reinforced concrete, and a localised area of bituminous surfacing, underlain in parts by interlayered insulation boards, foam, buried concrete and granular and cohesive Made Ground to between 0.15 and 2.50 metres depth. Generally firm and stiff cohesive drift deposits were then proven to 4.00 metres depth.

We have previously undertaken a Phase I Desk Study Report, ref. 6921 and dated March 2020, and this Phase II ground investigation has been undertaken to provide a contamination risk assessment in accordance with the Phase I Conceptual Ground Model.

It should be appreciated that the suite of determinants analysed for consists of a range of contaminants identified in the Conceptual Ground Model. However, the absence of any other specific contaminants cannot be guaranteed.

4.2.1 Assessment (Soil)

In order to provide an assessment of the presence of contamination thirteen soil samples have been analysed for a suite of determinants and the results are appended.

Levels of the determinants have been compared against the most recently published guideline values. Contaminated Land: Applications in Real Environments (CL:AIRE) published guideline values in December 2009 to supplement previous guideline values. The Department for Environment, Food and Rural Affairs (DEFRA) published in March 2014 Category 4 Screening Levels (C4SLs) for arsenic, cadmium, lead, hexavalent chromium, benzo(a)pyrene and benzene.

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Land Quality Management Limited (LQM)/ Chartered Institute of Environmental Health (CIEH) then published Suitable for Use Levels (S4ULs) in November 2014, which largely superseded the previous guideline values. Updated S4ULs values for cadmium and phenols were published in July 2015 and for nickel in August 2015. The guideline values (S4ULs and occasionally C4SLs and CL:AIRE) are derived using the Environment Agency's CLEA Model and vary dependent upon the land use; allotment and residential use being the most sensitive and commercial/ industrial use being the least sensitive.

For the purposes of assessment, as the proposed development is an industrial building, contamination analyses have been compared with the guideline values for a standard land use of commercial and industrial.

The contamination analysis determined no elevated levels of the determinants analysed for when compared with the guideline values for a standard land use of commercial and industrial. Guideline values for the assessment can be supplied directly to the Regulator, if requested.

An asbestos screen was undertaken on all thirteen soil samples and no asbestos was detected.

The speciated poly chlorinated bi-phenyls (PCBs) analysis and speciated Perflouro Alkyl analysis found no levels above the limit of detection levels.

In addition to the above, an assessment of risk to personnel who will come into contact with on-site materials throughout the site has been undertaken.

4.2.2 Assessment (Water)

Three samples of groundwater taken from the standpipes installed in M1A, M5 and M6 on 22 February 2021 have been analysed for a suite of determinants in accordance with the Conceptual Ground Model and the results are appended.

To assess the risk to surface water bodies the results have been compared with the Environmental Quality Standards (EQS) for annual allowable concentrations, published in the Department of Environment Food and Rural Affairs (DEFRA) Water Framework Directive Directions 2015, or the best equivalent (e.g. the Dangerous Substance Directive List II Substances).

To assess the risk to groundwater resources the results have been compared with the United Kingdom Drinking Water Standards (UK DWS), published in the Water Supply (Water Quality) Regulations 2016. Where no UK DWS is available the World Health Organisation (WHO) Drinking Water Guidelines have been adopted.

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We have listed the samples where the levels of contamination have exceeded the EQS, UK DWS and/ or WHO, as follows:

TABLE 2 ASSESSMENT OF GROUNDWATER CONTAMINATION

Determinant	Expl. Hole No	Depth (m)	Recorded Level (µg/l)	EQS (µg/l)	UK DWS (µg/l)	WHO (µg/l)
sulphate	M1A	0.80	490,000	400,000	250,000	-
cadmium	M5	1.00	0.09	0.08	5.0	3.0
chromium	M1A M5 M6	0.80 1.00 0.50	22 43 20	4.7	50	50
copper	M1A M5 M6	0.80 1.00 0.50	2.9 67 2.2	1.0	2,000	2,000
molybdenum	M5	1.00	1,500	-	-	70
nickel	M1A M5 M6	0.80 1.00 0.50	11 18 8.6	4.0	20	70
lead	M5	1.00	1.8	1.2	10	10
selenium	M1A M5 M6	0.80 1.00 0.50	16 21 24	-	10	40
zinc	M1A	0.80	11	10.9	5,000	-

TABLE 3 ASSESSMENT OF GROUNDWATER CONTAMINATION

Determinant	Expl. Hole No	Depth (m)	Recorded Level (µg/l)	EQS (µg/l)	UK DWS * (µg/l)	(Tier)
PFOA	M1A	0.80	0.0146	-	0.01-0.1	2
Linear PFOS	M1A M6	0.80 0.50	0.0482 0.0365	9.1	0.01-0.1	2
Branched PFOS	M1A M6	0.80 0.50	0.0414 0.0267	9.1	0.01-0.1	2

PFOA = Perflouro-n-octanoic acid, PFOS = Perflouro-1-octanesulfonate
* the Drinking Water Inspectorate Drinking Water Regulations

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The results of the groundwater analysis indicate:

- sulphate, cadmium, chromium, copper, nickel and zinc exceed the EQS value in one to three groundwater samples.
- molybdenum exceeds the WHO value in the groundwater sample from M5.
- selenium exceeds the UK DWS value in all three groundwater samples.
- PFOAs in M1A fall into Tier 2 of the Drinking Water Inspectorate Drinking Water Regulations (which requires consultation with local health professionals and monitoring levels in drinking water).
- PFOSs in M1A and M6 fall into Tier 2 of the Drinking Water Inspectorate Drinking Water Regulations (which requires consultation with local health professionals and monitoring levels in drinking water).

It should be noted that the EQS values for cadmium, chromium, copper, lead, nickel and zinc are based on the bioavailable component. The groundwater analyses report total concentrations of metal ions rather than bioavailable concentrations and consequently may indicate a false exceedance of the EQS.

In view of the levels of copper, lead, nickel and zinc being below the UKA DWS, in our opinion, these exceedances are of no concern and no further analysis is required.

The UK DWS is a post treatment standard and as such is very stringent.

4.2.3 Conclusions and Recommendations

Section 78a(2) of the Environmental Protection Act: 1990 as amended by the Contaminated Land (England) (Amendment) regulations 2012, and Section 86 of the Water Act 2003, defines CONTAMINATED LAND for the purposes of Part IIA as:

“any land which appears to the LOCAL AUTHORITY in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

(a) SIGNIFICANT HARM is being caused or there is a SIGNIFICANT POSSIBILITY of such harm being caused; or
(b) SIGNIFICANT POLLUTION OF CONTROLLED WATERS is being, or is likely to be, caused”

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Before a LOCAL AUTHORITY can make the judgement that land appears to be CONTAMINATED LAND on the basis that SIGNIFICANT HARM is being caused, or that there is a SIGNIFICANT POSSIBILITY of such harm being caused, the LOCAL AUTHORITY must identify a SIGNIFICANT POLLUTANT LINKAGE. This means that each of the following has to be identified:

(a) a CONTAMINANT;
(b) a relevant RECEPTOR (defined as living organisms, ecological systems, controlled waters or property); and
(c) a PATHWAY by means of which either:
  (i) the CONTAMINANT is causing SIGNIFICANT HARM to that RECEPTOR, or
  (ii) there is a SIGNIFICANT POSSIBILITY of such harm being caused by that CONTAMINANT to that RECEPTOR

It should be noted that the words in capitals have a legal definition within the legislation.

Without a clear identification of all three elements of the pollutant linkage, land cannot be identified as contaminated under the regime.

The National Planning Policy Framework states that, “after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990”. Therefore, the general principles detailed above apply to this assessment.

Our assessment, based on thirteen soil samples, indicates that there are no contaminants requiring remediation and/or precautions to be taken for the proposed development.

If waste materials are to be removed from the site, classification of the waste should be undertaken to determine the most appropriate tip to use and the associated costs. It should be noted that significant cost savings can sometimes be made on waste disposal by correct classification of the waste, a service that we can provide.

S4ULs, C4SLs and CL:AIRE assume long term contact with contamination and assess chronic health risk. The risk of short term acute exposure to site personnel is dealt with in the remit of the Health and Safety Executive under the Health and Safety at Work Act: 1974 and Regulations made under the Act, including the Control of Substances Hazardous to Health (COSHH) Regulations. The levels of contamination and risk to site personnel should be considered under the Construction Design and Management (CDM) Regulations at the planning stage and in the development of the designers and contractors Health and Safety Plans and Method Statements. The risk of contact with on-site soils should be minimised and the following precautions should be taken as a minimum requirement.

Site personnel involved in earthworks and excavations should wear gloves, overalls, and boots and smoking should be prohibited.

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The hydrogeology section of the Phase I report indicates that the drift deposits, a secondary undifferentiated aquifer, are underlain by Coal Measures bedrock, a Secondary A aquifer. However, the ground investigation has found the drift deposits to be cohesive and probably greater than 4 metres in thickness. In our opinion the cohesive drift deposits represent an aquiclude which will protect the underlying Secondary A aquifer. The Phase I report also indicates that there are three surface water abstraction licences, five groundwater abstraction licences but no potable water abstraction licences within 2000 metres of the site boundary. In addition there are no Source Protection Zones, set up to protect a water source within 500 metres of the site of boundary, present. The hydrology section of the Phase I report indicates that there are no watercourses (rivers, streams or canals) or surface water features (ponds or lakes) within 250 metres of the site boundary.

Given the above, the contaminants found in the groundwater, are unlikely to affect "controlled waters" in the form of groundwater or surface water.

Should it be necessary for groundwater to be pumped from on-site excavations the groundwater analysis should be submitted to the appropriate waste water authority with a request for a discharge consent. Following receipt of a discharge consent groundwater is likely to be discharged to a sewer or to an off-site licensed discharge point.

4.3 Ground Gas Considerations

Ground gas monitoring has been undertaken on seven visits and the results of the monitoring visits are appended.

Ground gases: methane, carbon dioxide and oxygen and flow rate have been monitored and the ranges of ground gases and flow rate during the monitoring period are as follows:

TABLE 4 GROUND GAS CONCENTRATIONS AND FLOW RATE

Methane (% vol. In air)	Carbon Dioxide (% vol. in air)	Oxygen (% vol. in air)	Gas Flow Rate (litres/ hour)
0.0	0.0 to 2.6	20.8 to 16.0	< 0.1

It can be seen from the monitoring that no elevated levels of methane or gas flows have been detected. However, slightly elevated levels of carbon dioxide and depleted levels of associated oxygen have been detected.

The levels of gas have been assessed in accordance with British Standard 8485, "Code of practice for the design of protective measures for methane and carbon dioxide gasses for new buildings", published in June 2015 and updated in January 2019 (BS.8485:2015+A1:2019).

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The characteristic hazardous gas flow rate (Q_{hg}) is calculated by dividing the maximum gas (methane or carbon dioxide) concentration by 100 and multiplying by the maximum flow rate in litres per hour (minimum 0.1 l/hr for Sub Surface monitoring equipment). For this site Q_{hg} = [2.6/ 100] x 0.1 = 0.0026 l/hr

BS.8485:2015+A1:2019, Table 2, indicates that the site falls into Characteristic Situation 1 (CS1) and BS.8485:2015+A1:2019, Table 4, indicates that for a CS1 and the type of development proposed a score of zero gives no protection and remedial measures required.

All excavations of greater than 1.20 metres depth, however, should be routinely checked for air quality prior to man entry and appropriate precautions taken.

Any manholes, inspection chambers or other void spaces formed beneath the sites ground surface are potential ground gas traps. Precautions, as per the excavations above, should be taken.

4.4 General

We recommend that consultation should be undertaken with, and the written approval obtained from, the Local Authority Environmental Health Officer and the Local Authority Building Control Officer prior to commencing 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. 6921F
OCTOBER 2021

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INSITU TEST RESULTS

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Insitu Test Results

Site: ARKADY INDUSTRIAL ESTATE, BRISCOE LN, NEWTON HEATH, GT MANCHESTER

Client: CASSEL & FLETCHER CONSTRUCTION LIMITED

Engineer:

Job Number: 6921F

Sheet: 1 / 1

GROUND GAS AND GROUNDWATER MONITORING RESULTS SHEET

Date	Hole No.	Methane (% Volume)	Carbon Dioxide (% Volume)	Oxygen (% Volume)	Gas Flow Rate (l/hr)	Atmospheric Pressure (millibars)	Depth to Groundwater (m)
22/02/21	M1A*	#	#	#	#	1005	0.80
	M5*	0.0	0.0	19.7	< 0.1		1.00
	M6*	0.0	0.0	19.9	< 0.1		0.50
	M9	##	##	##	##		##
26/03/21	M1A	0.0	0.6	***17.8***	< 0.1	994	0.95
	M5	0.0	0.0	19.7	< 0.1		1.25
	M6	0.0	0.3	19.9	< 0.1		0.65
	M9	##	##	##	##		##
06/04/21	M1A	0.0	0.6	***17.5***	< 0.1	1011	0.80
	M5	0.0	0.0	19.6	< 0.1		1.15
	M6	###	###	###	###		###
	M9	##	##	##	##		##
14/05/21	M1A	##	##	##	##	1001	##
	M5	0.0	0.1	19.1	< 0.1		1.20
	M6	###	###	###	###		###
	M9	##	##	##	##		##
Standpipes lost/ removed. Additional mini boreholes taken out and standpipes installed (6921E)							
16/08/21	M1B	$	$	$	$	1008	$
	M5A	$$	$$	$$	$$		0.00
	M6A	0.0	0.1	20.6	< 0.1		0.55
	M9A	0.0	***1.7***	***17.4***	< 0.1		1.45
24/08/21	M1B	0.0	0.0	20.4	< 0.1	1024	1.00
	M5A	$$	$$	$$	$$		0.00
	M6A	0.0	0.1	20.8	< 0.1		0.50
	M9A	0.0	***1.5***	18.2	< 0.1		1.40
17/09/21	M1B	0.0	0.0	19.4	< 0.1	1004	1.20
	M5A	0.0	***2.6***	***16.2***	< 0.1		2.35
	M6A	0.0	0.0	20.8	< 0.1		0.65
	M9A	0.0	***1.9***	***16.0***	< 0.1		1.50

Remarks: Elevated levels of methane and carbon dioxide and depleted levels of oxygen are shown in ***bold/italics*** .
* Following monitoring groundwater sample taken for contamination analysis.
# Not monitored as quick release valve open.
Not monitored as inaccessible/ standpipe missing.
Barrels tipped over and leaking contents in the vicinity of the cover.
$ Not monitored as covered by building material.
$$ Not monitored as area flooded. Water baled out of the standpipe.

CONTAMINATION ANALYSIS RESULTS

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

mCERTS

Final Report

Report No.:	21-04194-1		
Initial Date of Issue:	24-Feb-2021		
Client	Sub Surface		
Client Address:	3 Peel Street Preston Lancashire PR2 2QS		
Contact(s):	Simon Gabbatt		
Project	(6921C) Arkady Ind. Est, Briscoe Lane, Newton Heath, Gt. Manchester		
Quotation No.:		**Date Received:**	12-Feb-2021
Order No.:		**Date Instructed:**	12-Feb-2021
No. of Samples:	13		
Turnaround (Wkdays):	5	**Results Due:**	18-Feb-2021
Date Approved:	24-Feb-2021	**Subcon Results Due:**	05-Mar-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

(6921C) Arkady, Briscoe Ln, Newton Heath, Gt Man.

Client: Sub Surface				Chemtest Job No.:	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194
Quotation No.:				Chemtest Sample ID.:	1140464	1140465	1140466	1140467	1140468	1140469	1140470	1140471	1140472	1140473	1140474	1140475	1140476
				Client Sample ID.:	405	406	327	401	331	332	323	324	335	409	410	413	414
				Sample Location:	M1A	M1A	M2	M3	M4	M4	M5	M5	M6	M7	M7	M9	M9
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.00	0.50	0.10	0.20	1.00	0.50	1.00	0.10	0.20	1.00	0.70	1.00
				Bottom Depth (m):	1.00		0.80			2.00	1.00	1.80		0.40	2.00	1.00	2.00
				Date Sampled:	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**													
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	15	14	15	16	24	7.3	30	53	11	2.1	31	20	23
pH	M	2010		4.0	8.4	8.0	9.0	8.7	10.9	11.5	9.7	7.4	10.0	10.0	8.7	8.5	11.0
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.7	0.86	1.4	0.69	15	5.2	1.4	1.7	2.7	0.56	1.6	1.3	0.88
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	12	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	4.0	5.3	2.2	7.5	7.9	15	9.0	7.0	4.2	7.9	2.4	4.3	5400
Sulphate (Total)	M	2430	%	0.010	0.021	0.052	0.15	0.10	0.60	0.22	0.19	0.84	0.10	0.035	0.55	0.26	0.20
Arsenic	M	2450	mg/kg	1.0	4.7	6.7	12	11	26	7.8	17	12	6.5	2.8	17	27	30
Cadmium	M	2450	mg/kg	0.10	0.11	0.10	0.36	0.11	1.2	0.48	0.66	0.14	0.28	0.13	15	7.9	3.5
Chromium	M	2450	mg/kg	1.0	4.5	21	17	34	1500	480	15	20	190	59	16	49	41
Molybdenum	M	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	19	4.7	< 2.0	< 2.0	< 2.0	< 2.0	5.2	5.7	3.1
Copper	M	2450	mg/kg	0.50	3.7	19	27	26	170	35	28	17	25	15	110	310	120
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.6	1.1	0.19	< 0.10	0.18	< 0.10	0.13	0.34	0.18
Nickel	M	2450	mg/kg	0.50	5.5	28	14	43	70	18	14	19	18	21	36	130	51
Lead	M	2450	mg/kg	0.50	5.6	13	65	15	640	57	220	21	26	8.8	50	230	520
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.33	< 0.20	< 0.20	2.8	0.91	0.37
Zinc	M	2450	mg/kg	0.50	15	45	62	63	540	160	87	43	110	51	230	410	720
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.79	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
TPH >C6-C10	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C10-C21	N	2670	mg/kg	1.0	< 1.0	< 1.0	6.7	< 1.0	3.9	22	< 1.0	< 1.0	12	< 1.0	< 1.0	35	120
TPH >C21-C40	N	2670	mg/kg	1.0	< 1.0	< 1.0	45	< 1.0	2.2	28	< 1.0	< 1.0	910	< 1.0	< 1.0	81	360
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	< 10	52	< 10	< 10	49	< 10	< 10	920	< 10	< 10	120	480

Results - Soil

(6921C) Arkady, Briscoe Ln, Newton Heath, Gt Man.

Client: Sub Surface																	
				Chemtest Job No.:	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194
Quotation No.:				Chemtest Sample ID.:	1140464	1140465	1140466	1140467	1140468	1140469	1140470	1140471	1140472	1140473	1140474	1140475	1140476
				Client Sample ID.:	405	406	327	401	331	332	323	324	335	409	410	413	414
				Sample Location:	M1A	M1A	M2	M3	M4	M4	M5	M5	M6	M7	M7	M9	M9
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.00	0.50	0.10	0.20	1.00	0.50	1.00	0.10	0.20	1.00	0.70	1.00
				Bottom Depth (m):	1.00		0.80			2.00	1.00	1.80		0.40	2.00	1.00	2.00
				Date Sampled:	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**													
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.58	0.87
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.42	0.32
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.41	0.99
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.35	0.73
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.80	0.72	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.4	5.3
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.14	0.31	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.55	1.3
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.25	< 0.10	1.1	0.87	0.13	< 0.10	0.42	< 0.10	0.45	3.6	11
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.31	< 0.10	1.1	0.88	0.17	< 0.10	0.39	< 0.10	0.50	3.7	11
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.89	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.8	5.4
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.75	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.6	4.8
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	2.2	6.4
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.76	2.8
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.4	6.4
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	1.1	4.7
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.29	1.1
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.95	5.1
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	4.8	2.8	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	22	68
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
PCB 28	U	2815	mg/kg	0.010											< 0.010		
PCB 52	U	2815	mg/kg	0.010											< 0.010		
PCB 90+101	U	2815	mg/kg	0.010											< 0.010		
PCB 118	U	2815	mg/kg	0.010											< 0.010		
PCB 153	U	2815	mg/kg	0.010											< 0.010		
PCB 138	U	2815	mg/kg	0.010											< 0.010		
PCB 180	U	2815	mg/kg	0.010											< 0.010		
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10											< 0.10		

Results - Soil

(6921C) Arkady, Briscoe Ln, Newton Heath, Gt Man.

Client: Sub Surface																	
				Chemtest Job No.:	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194
Quotation No.:				Chemtest Sample ID.:	1140464	1140465	1140466	1140467	1140468	1140469	1140470	1140471	1140472	1140473	1140474	1140475	1140476
				Client Sample ID.:	405	406	327	401	331	332	323	324	335	409	410	413	414
				Sample Location:	M1A	M1A	M2	M3	M4	M4	M5	M5	M6	M7	M7	M9	M9
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.00	0.50	0.10	0.20	1.00	0.50	1.00	0.10	0.20	1.00	0.70	1.00
				Bottom Depth (m):	1.00		0.80			2.00	1.00	1.80		0.40	2.00	1.00	2.00
				Date Sampled:	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**													
VOCs																	
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0						< 2.0				< 2.0		< 2.0
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10						< 10				< 10		< 10
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,1-Dichloroethene	M	2760	mg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0						< 2.0				< 2.0		< 2.0
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50						< 50				< 50		< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50						< 50				< 50		< 50
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0						< 5.0				< 5.0		< 5.0
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0						< 2.0				< 2.0		< 2.0
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0						< 2.0				< 2.0		< 2.0
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Bromobenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0						< 5.0				< 5.0		< 5.0
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0						< 5.0				< 5.0		< 5.0
Bromomethane	M	2760	µg/kg	20	< 20						< 20				< 20		< 20
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Chloroethane	U	2760	µg/kg	2.0	< 2.0						< 2.0				< 2.0		< 2.0
Chloromethane	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10						< 10				< 10		< 10
Dibromochloromethane	U	2760	µg/kg	10	< 10						< 10				< 10		< 10
Dibromomethane	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0

Results - Soil

(6921C) Arkady, Briscoe Ln, Newton Heath, Gt Man.

Client: Sub Surface																	
				Chemtest Job No.:	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194	21-04194
Quotation No.:				Chemtest Sample ID.:	1140464	1140465	1140466	1140467	1140468	1140469	1140470	1140471	1140472	1140473	1140474	1140475	1140476
				Client Sample ID.:	405	406	327	401	331	332	323	324	335	409	410	413	414
				Sample Location:	M1A	M1A	M2	M3	M4	M4	M5	M5	M6	M7	M7	M9	M9
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.50	1.00	0.50	0.10	0.20	1.00	0.50	1.00	0.10	0.20	1.00	0.70	1.00
				Bottom Depth (m):	1.00		0.80			2.00	1.00	1.80		0.40	2.00	1.00	2.00
				Date Sampled:	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21	02/02/21
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**													
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Styrene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Trans 1,2-Dichloroethene	M	2760	mg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10						< 10				< 10		< 10
Tribromomethane	U	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Trichloroethene	N	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Trichloromethane	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0						< 1.0				< 1.0		< 1.0
PFBS	SN		µg/kg	1.00	Attached								Attached				
PFPS	SN		µg/kg	1.00	Attached								Attached				
PFHxS	SN		µg/kg	1.00	Attached								Attached				
PFHpS	SN		µg/kg	1.00	Attached								Attached				
PFOS	SN		µg/kg	1.00	Attached								Attached				
PFNS	SN		µg/kg	1.00	Attached								Attached				
PFDS	SN		µg/kg	1.00	Attached								Attached				
PFUdS	SN		µg/kg	1.00	Attached								Attached				
PFDoS	SN		µg/kg	1.00	Attached								Attached				
PFBA	SN		µg/kg	3.00	Attached								Attached				
PFPeA	SN		µg/kg	1.00	Attached								Attached				
PFHxA	SN		µg/kg	2.00	Attached								Attached				
PFHpA	SN		µg/kg	1.00	Attached								Attached				
PFOA	SN		µg/kg	1.00	Attached								Attached				
PFNA	SN		µg/kg	1.00	Attached								Attached				
PFDA	SN		µg/kg	1.00	Attached								Attached				
PFUdA	SN		µg/kg	1.00	Attached								Attached				
PFDoA	SN		µg/kg	1.00	Attached								Attached				

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Chemtest
Willie Snaith Rd
Newmarket
Suffolk
CB8 7SQ

Attention: Chemtest Subcontracting

SOIL

CERTIFICATE OF ANALYSIS

Date of report Generation:	23 February 2021
Customer:	Chemtest
Sample Delivery Group (SDG):	210215-44
Your Reference:	21-04194
Location:	21-04194
Report No:	587810

We received 2 samples on Monday February 15, 2021 and 2 of these samples were scheduled for analysis which was completed on Tuesday February 23, 2021. 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 Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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

Validated

CERTIFICATE OF ANALYSIS

SDG:	210215-44	**Client Reference:**	21-04194	**Report Number:**	587810
Location:	21-04194	**Order Number:**	20367	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23729595	1140464	M1	0.50-1.00	02/02/2021
23729596	1140472	M6	0-10	02/02/2021

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

Validated

CERTIFICATE OF ANALYSIS

SDG:	210215-44	**Client Reference:**	21-04194	**Report Number:**	587810
Location:	21-04194	**Order Number:**	20367	**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
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)			23729595	23729596
Customer Sample Reference			1140464	1140472
AGS Reference			MIAM6	
Depth (m)			0.50 - 1.00	0.10
Container			250g Glass jar	250g Glass jar
Sample Type			S	S
PFAS Solids	All	NDPs: 0 Tests: 2	X	X
Sample description	All	NDPs: 0 Tests: 2	X	X

11:03:04 23/02/2021

Validated

CERTIFICATE OF ANALYSIS

SDG:	210215-44	**Client Reference:**	21-04194	**Report Number:**	587810
Location:	21-04194	**Order Number:**	20367	**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
23729595	1140464	MH 0-50-1.00	Light Brown	Sandy Clay	Stones	None
23729596	1140472	MG 0.10	Dark Brown	Clay	Stones	None

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 ocurring 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.

Validated

CERTIFICATE OF ANALYSIS

SDG:	210215-44	**Client Reference:**	21-04194	**Report Number:**	587810
Location:	21-04194	**Order Number:**	20367	**Superseded Report:**	

Results Legend

#	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)

Customer Sample Ref.			1140464	1140472				
			m1A	m6				
Depth (m)			0.50-1.00	0.10				
Sample Type			Soil/Solid (S)	Soil/Solid (S)				
Date Sampled			02/02/2021	02/02/2021				
Sample Time			.	.				
Date Received			15/02/2021	15/02/2021				
SDG Ref			210215-44	210215-44				
Lab Sample No.(s)			23729595	23729596				
AGS Reference								
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	13	15				
PFBA (357-22-4) Perfluoro-n-butanoic acid	<3 µg/kg	TM338	<3	<3				
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<3 µg/kg	TM338	<3	<3				
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<2 µg/kg	TM338	<2	<2				
PFBS (375-73-5) Perfluoro-1-butanesulfonate	<1 µg/kg	TM338	<1	<1				
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<1 µg/kg	TM338	<1	<1				
PFOA (335-67-1) Perfluoro-n-octanoic acid	<1 µg/kg	TM338	<1	<1				
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	<1 µg/kg	TM338	<1	<1				
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<1 µg/kg	TM338	<1	<1				
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	<1 µg/kg	TM338	<1	<1				
PFDA (335-76-2) Perfluoro-n-decanoic acid	<1 µg/kg	TM338	<1	<1				
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<1 µg/kg	TM338	<1	<1				
Branched PFOS	<1 µg/kg	TM338	<1	<1				
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<1 µg/kg	TM338	<1	<1				
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<1 µg/kg	TM338	<1	<1				
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<1 µg/kg	TM338	<1	<1				
6:2-PTS (27619-97-2)	<1 µg/kg	TM338	<1	<1				
Total PFOS	<1 µg/kg	TM338	<1	<1				

11:03:04 23/02/2021

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM338		

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Validated

CERTIFICATE OF ANALYSIS

SDG:	210215-44	**Client Reference:**	21-04194	**Report Number:**	587810
Location:	21-04194	**Order Number:**	20367	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	23729595	23729596
Customer Sample Ref.	1140464	1140472
AGS Ref.	M1A	M6
Depth	0.50-1.00	0.10
Type	Soil/Solid (S)	Soil/Solid (S)
PFAS Solids	23-Feb-2021	23-Feb-2021
Sample description	18-Feb-2021	18-Feb-2021

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 30 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. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

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.

General

17. **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.

18. **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**

19. **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 (2005), 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 are obtained from supplied bulk materials 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 (2005).

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, based on HSG 248 (2005).

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.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

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.

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

Final Report

Report No.:	21-05563-1		
Initial Date of Issue:	08-Mar-2021		
Client	Sub Surface		
Client Address:	3 Peel Street Preston Lancashire PR2 2QS		
Contact(s):	Simon Gabbatt		
Project	(6921C) Arkady Industrial Estate, Briscoe Lane, Newton Heath, Gt Manchester		
Quotation No.:		**Date Received:**	24-Feb-2021
Order No.:		**Date Instructed:**	24-Feb-2021
No. of Samples:	3		
Turnaround (Wkdays):	7	**Results Due:**	04-Mar-2021
Date Approved:	08-Mar-2021	**Subcon Results Due:**	17-Mar-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Water

(6921C) Arkady Industrial Estate, Briscoe Lane, Newton Heath, Greater Manchester

Client: Sub Surface			Chemtest Job No.:		21-05563	21-05563	21-05563
Quotation No.:			Chemtest Sample ID.:		1147391	1147392	1147393
			Client Sample ID.:		129 130 131 132	133 134 135 136	137 138 139 140
			Sample Location:		M1A	M5	M6
			Sample Type:		WATER	WATER	WATER
			Top Depth (m):		0.80	1.00	0.50
			Date Sampled:		22/02/21	22/02/21	22/02/21
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
pH	U	1010		N/A	7.9	11.6	9.3
Sulphate	U	1220	mg/l	1.0	490	44	82
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050
Sulphide	U	1325	mg/l	0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.0	2.9	2.3
Boron (Dissolved)	U	1455	µg/l	10.0	120	14	180
Cadmium (Dissolved)	U	1455	µg/l	0.12	< 0.08	0.09	< 0.08
Chromium (Dissolved)	U	1455	µg/l	0.50	22	43	20
Copper (Dissolved)	U	1455	µg/l	0.50	2.9	67	2.2
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05
Molybdenum (Dissolved)	U	1455	µg/l	0.20	4.6	1500	15
Nickel (Dissolved)	U	1455	µg/l	0.50	11	18	8.6
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	1.8	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	16	21	24
Zinc (Dissolved)	U	1455	µg/l	3.0	11	4.4	6.0
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20
TPH >C6-C10	N	1670	µg/l	0.10	< 0.10	< 0.10	< 0.10
TPH >C10-C21	N	1670	µg/l	0.10	< 0.10	< 0.10	< 0.10
TPH >C21-C40	N	1670	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030
PFAS Water Suite	SN		ng/l	1.00	See Attached		See Attached

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N–dimethyl-pphenylenediamine.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Chemtest
Willie Snaith Rd
Newmarket
Suffolk
CB8 7SQ

Attention: Chemtest Subcontracting

WATER

CERTIFICATE OF ANALYSIS

Date of report Generation:	03 March 2021
Customer:	Chemtest
Sample Delivery Group (SDG):	210225-70
Your Reference:	21-05563
Location:	Not Specified
Report No:	589015

We received 2 samples on Thursday February 25, 2021 and 2 of these samples were scheduled for analysis which was completed on Wednesday March 03, 2021. 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 Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

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

Validated

CERTIFICATE OF ANALYSIS

SDG:	210225-70	**Client Reference:**	21-05563	**Report Number:**	589015
Location:	Not Specified	**Order Number:**	20402	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23792722	1147391	M1A	0.80	22/02/2021
23792724	1147393	M6	0.50	22/02/2021

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

Validated

CERTIFICATE OF ANALYSIS

SDG:	210225-70	**Client Reference:**	21-05563	**Report Number:**	589015
Location:	Not Specified	**Order Number:**	20402	**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
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)			23792722	23792724
Customer Sample Reference			1147391	1147393
AGS Reference			M1A	M6
Depth (m)			0.80	0.50
Container			1lplastic (ALE221)	1lplastic (ALE221)
Sample Type			UNL	UNL
PFAS Liquids	All	NDPs: 0 Tests: 2	X	X

Validated

CERTIFICATE OF ANALYSIS

SDG:	210225-70	**Client Reference:**	21-05563	**Report Number:**	589015
Location:	Not Specified	**Order Number:**	20402	**Superseded Report:**	

Results Legend

#	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)

Customer Sample Ref.			1147391	1147393				
			MIA	M6				
Depth (m)			0.80	0.50				
Sample Type			Unspecified Liquid (UNL)	Unspecified Liquid (UNL)				
Date Sampled			22/02/2021	22/02/2021				
Sample Time			.	.				
Date Received			25/02/2021	25/02/2021				
SDG Ref			210225-70	210225-70				
Lab Sample No.(s)			23792722	23792724				
AGS Reference								
Component	**LOD/Units**	**Method**						
PFBA (357-22-4) Perfluoro-n-butanoic acid	<2 ng/l	TM337	10.7	<7				
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	<1 ng/l	TM337	20.3	<2.5				
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	<1 ng/l	TM337	28.4	3.74				
PFBS (375-73-5) Perfluoro-1-butanesulfonate	<1 ng/l	TM337	<1	<1				
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	<1 ng/l	TM337	29.1	11				
6:2PTS (27619-97-2) Perfluoro-octane sulfonate 6:2	<1 ng/l	TM337	7.24	3.03				
PFOA (335-67-1) Perfluoro-n-octanoic acid	<0.65 ng/l	TM337	14.6	6.65				
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	<1 ng/l	TM337	2.87	4.16				
PFNA (375-95-1) Perfluoro-n-nonanoic acid	<1 ng/l	TM337	<1	1.48				
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	<1 ng/l	TM337	1.39	1.07				
PFDA (335-76-2) Perfluoro-n-decanoic acid	<1 ng/l	TM337	<1	1.49				
Linear PFOS(1763-23-1) Perfluoro-1-octanesulfonate	<0.65 ng/l	TM337	48.2	36.5				
Branched PFOS	<1 ng/l	TM337	41.4	26.7				
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	<1 ng/l	TM337	<1	<1				
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	<1 ng/l	TM337	<1	<1				
PFOSA (754-91-6) Perfluoro-octanesulfonamide	<2 ng/l	TM337	<2	<2				
PFDS (335-73-3) Perfluoro-1-decanesulfonate	<1 ng/l	TM337	<1	<1				
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	<1 ng/l	TM337	<1	<1				
Total PFOS	<1 ng/l	TM337	89.6	63.2				

12:47:17 03/03/2021

Table of Results - Appendix

Method No	Reference	Description
TM337	PFAS In Clean Water Matrices	Analysis of perfluoroalkylsulfonates and perfluorocarboxylic acids in clean water matrices

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

Validated

CERTIFICATE OF ANALYSIS

SDG:	210225-70	**Client Reference:**	21-05563	**Report Number:**	589015
Location:	Not Specified	**Order Number:**	20402	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	23792722	23792724
Customer Sample Ref.	1147391	1147393
AGS Ref.	M1A	M6
Depth	0.80	0.50
Type	Unspecified Liq	Unspecified Liq
PFAS Liquids	03-Mar-2021	03-Mar-2021

12:47:17 03/03/2021

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 30 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. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

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.

General

17. **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.

18. **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**

19. **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 (2005), 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 are obtained from supplied bulk materials 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 (2005).

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, based on HSG 248 (2005).

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.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil (2017).*

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	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M1

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.70	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	02/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					63.57	(0.13) 0.13	MADE GROUND: reinforced concrete.		
				02/02/2021:DRY	63.43	(0.14) 0.27	MADE GROUND: blue insulation board. .... at 0.27m : apparent electric cable		
							Complete at 0.27m		

Remarks
Cored concrete and hand dug inspection pit from GL to 0.27m to check for services.
Descriptions based on Foreman drillers records to 0.27m.
M1 abandoned at 0.27m, backfilled with arisings and moved to M1A.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M1

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SUB SURFACE

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

Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M1A

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.70	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	02/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					63.60	(0.10) 0.10	MADE GROUND: reinforced concrete.			
					63.45	(0.15) 0.25	MADE GROUND: blue insulation board .... at 0.25m : blue membrane			
					63.27	(0.18) 0.43	MADE GROUND: concrete.			
0.50-1.00	B					(0.47)	MADE GROUND: grey slightly sandy fine to coarse gravel sized fragments of stone and brick with low cobble sized fragments of brick.			
					62.80	0.90 (0.10)	Soft brown silty CLAY.			
1.00-2.00 1.00-2.00	B C			1.00m to 2.00m - 0% recovery	62.70	1.00	Stiff dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone, quartz and coal.			
2.00-3.00	C			2.00m to 3.00m - 80% recovery		(2.00)				
3.00-4.00	C			3.00m to 4.00m - 10% recovery	60.70	3.00	Soft brown slightly gravelly silty CLAY. Gravel is fine to coarse siltstone.			
						(1.00)				
				02/02/2021:DRY	59.70	4.00	Complete at 4.00m			

Remarks
Concrete cored and hand dug inspection pit from GL to 1.00m to check for services.
Descriptions based on Foreman drillers records to 0.50m
C = Plastic lined core sample
Core diameter : 84mm to 2.00m, 74mm to 3.00m and 64mm to 4.00m
On completion installed a 50mm dia hdpe slotted gas monitoring standpipe with a gas valve and a 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 GL.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M01A

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SUB SURFACE

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

Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M2

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.65	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	01/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.35)	MADE GROUND: reinforced concrete.		
					63.30	0.35 (0.10)	MADE GROUND: grey gravel sized fragments of stone.		
					63.20	0.45	MADE GROUND: concrete.		
0.50-1.00	B				63.15	0.50 (0.30)	MADE GROUND: dark grey ashy silty sandy fine to coarse gravel sized fragments of stone, brick, slag and concrete with low cobble sized fragments of concrete.		
					62.85	0.80	Stiff dark brown and occasional grey mottled slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone, quartz, coal and occasional sandstone.		
1.00-2.00	C			1.00m to 2.00m - 85% recovery					
2.00-3.00	C			2.00m to 3.00m - 93% recovery		(3.20)	.... from 2.00m : thinly laminated		
3.00-4.00	C			3.00m to 4.00m - 74% recovery					
				01/02/2021:DRY	59.65	4.00	Complete at 4.00m		

Remarks
Cored concrete and hand dug inspection pit from GL to 1.00m to check for services.
Descriptions based on Foreman drillers records to 0.50m
C = Plastic lined core sample
Core diameter : 74mm to 2.00m, 64mm to 3.00m and 54mm to 4.00m
On completion backfilled with gravel sized fragments of stone.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M2

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M3

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.80	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	02/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.15)	MADE GROUND: reinforced concrete.		
0.10-0.60	B				63.65	0.15	Stiff dark brown and occasional grey mottled slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone, siltstone, quartz and coal.		
1.00-2.00	C			1.00m to 2.00m - 88% recovery			.... from 1.00m to 3.30m : thinly laminated		
2.00-3.00	C			2.00m to 3.00m - 82% recovery		(3.85)			
3.00-4.00	C			3.00m to 4.00m - 70% recovery					
				02/02/2021:DRY	59.80	4.00	Complete at 4.00m		

Remarks
Cored concrete and hand dug inspection pit from GL to 1.00m to check for services.
Descriptions based on foreman driller records to 0.10m and 0.60m to 1.00m
C = Plastic lined core sample
Core diameter : 74mm to 2.00m, 64mm to 3.00m and 54mm to 4.00m
On completion backfilled with gravel sized fragments of stone.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M3

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M4

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.55	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	01/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.15)	MADE GROUND: reinforced concrete.		
0.20-0.50	B				63.40	0.15	MADE GROUND: brown silty sandy fine to coarse gravel sized fragments of brick, stone, clinker and concrete.		
						(0.85)			
1.00-2.00	C			1.00m to 2.00m - 100% recovery	62.55	1.00	MADE GROUND: brown and grey fine to coarse sand. Gravel sized fragments are fine to medium slag.		
					62.35	1.20	MADE GROUND: soft dark grey slightly organic slightly gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse brick and stone (organic odour).		
					62.20	1.35	Firm becoming stiff dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium siltstone and quartz.		
2.00-3.00	C			2.00m to3.00m - 18% recovery			.... from 2.00m : stiff		
						(2.65)			
3.00-4.00	C			3.00m to 00m - 30% recovery			.... from 3.00m : thinly laminated		
				01/02/2021:DRY	59.55	4.00	Complete at 4.00m		

Remarks
Cored concrete and hand dug inspection pit from GL to 1.00m to check for services.
Descriptions based on Foreman drillers records to 0.20m and 0.50m to 1.00m
C = Plastic lined core sample
Core diameter : 74mm to 2.00m, 64mm to 3.00m and 54mm to 4.00m
On completion backfilled with gravel sized fragments of stone.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M4

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M5

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.70	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	01/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.38)	MADE GROUND: reinforced concrete.			
					63.32	0.38	MADE GROUND: firm brown gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse brick, slag, stone and concrete.			
0.50-1.00	B					(0.62)				
1.00-2.00	C			1.00m to 2.00m - 100% recovery	62.70	1.00	MADE GROUND: orangish brown slightly sandy fine to coarse gravel sized fragments of brick with low cobble sized fragments of brick.			
						(0.20)				
					62.50	1.20	MADE GROUND: soft orangish brown and grey mottled gravelly sandy silty clay with occasional rootlets. Gravel sized fragments are fine to coarse brick.			
						(0.10)				
					62.40	1.30	MADE GROUND: soft grey and black mottled slightly gravelly slightly sandy silty clay with some rootlets. Gravel sized fragments are fine to medium slag. (Organic odour).			
						(0.40)				
					62.00	1.70	Firm becoming stiff thinly laminated dark brown and occasional grey mottled slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium siltstone, sandstone, quartz and coal.			
2.00-3.00	C			2.00m to 3.00m - 80% recovery			.... from 2.00m : stiff			
						(2.30)				
3.00-4.00	C			3.00m to 4.00m - 85% recovery						
				01/02/2021:DRY	59.70	4.00	Complete at 4.00m			

Remarks
Cored concrete and hand dug inspection pit from GL to 1.00m to check for services.
Descriptions based on Foreman drillers records to 0.50m.
C = Plastic lined core sample
Core diameter : 84mm to 2.00m, 74mm to 3.00m and 64mm to 4.00m
On completion installed a 50mm dia hdpe slotted gas monitoring standpipe with a gas valve and a gravel surround to 4.00m, a Bentonite seal from 1.00n to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M5

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M6

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.60	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	01/01/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					63.55	0.05	MADE GROUND: bituminous macadam surfacing.			
					63.50	0.10	MADE GROUND: red gravel sized fragments of brick.			
0.10-0.50	B					(0.40)	MADE GROUND: soft brown slightly gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse brick, stone and concrete.			
					63.10	0.50	MADE GROUND: brown silty sandy fine to coarse gravel sized fragments of stone, brick and slag.			
0.50-1.00	B					(0.30)				
					62.80	0.80	Stiff dark brown and occasional black mottled slightly gravelly silty CLAY with low siltstone cobbles. Gravel is subangular to subrounded fine to coarse siltstone and coal. (Organic odour).			
1.00-2.00	C			1.00m to 2.00m - 80% recovery		(0.50)				
					62.30	1.30	Stiff thinly laminated brown slightly gravelly silty CLAY. Gravel is subangular to rounded fine to coarse siltstone, quartz and coal.			
						(0.70)				
					61.60	2.00	Soft to firm dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone and quartz.			
2.00-3.00	C			2.00m to 3.00m - 100% recover		(0.30)				
					61.30	2.30	Stiff thinly laminated dark brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse quartz, siltstone and coal.			
3.00-4.00	C			3.00m to 4.00m - 90% recovery		(1.70)				
				01/02/2021:DRY	59.60	4.00	Complete at 4.00m			

Remarks
Cored bituminous macadam surfacing and hand dug inspection pit from GL to 1.00m to check for services.
Descriptions based on Foreman drillers records to 0.60m
C = Plastic lined core sample
Core diameter : 74mm to 3.00m and 64mm to 4.00m
On completion installed a 50mm dia hdpe slotted gas monitoring standpipe with a gas valve and a 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 GL.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M6

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M7

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.50	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	02/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.17)	MADE GROUND: reinforced concrete.		
					63.33	0.17			
0.20-0.40	B				63.30	0.20	MADE GROUND: pinkish white foam.		
						(0.20)	MADE GROUND: grey silty sandy fine to coarse gravel sized fragment of stone, concrete and brick.		
					63.10	0.40	MADE GROUND: concrete.		
						(0.40)			
					62.70	0.80	MADE GROUND: very soft dark grey and black mottled slightly gravelly slightly sandy silty clay with some rootlets. Gravel sized fragments are fine to medium brick and slag (organic odour).		
						(0.30)			
1.00-2.00	C			1.00m to 2.00m - 100% recovery	62.40	1.10	MADE GROUND: black slightly silty sandy fine to coarse gravel sized fragments of slag.		
						(0.45)			
					61.95	1.55	MADE GROUND: very soft dark grey gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse slag and stone.		
						(0.10)			
					61.85	1.65	MADE GROUND: very soft grey becoming soft dark brown and black mottled gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse stone, plastic and concrete (organic odour).		
2.00-3.00	C			2.00m to 3.00m - 75% recovery		(0.80)			
					61.05	2.45	Stiff dark brown thinly laminated slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone and coal.		
3.00-4.00	C			3.00m to 4.00m - 40% recovery		(1.55)			
				02/02/2021:DRY	59.50	4.00	Complete at 4.00m		

Remarks
Cored concrete and hand dug inspection pit from GL to 1.00m to check for services.
Descriptions based on Foreman drillers records to 0.20m and 0.40m to 1.00m
C = Plastic lined core sample
Core diameter : 84mm to 2.00m and 74mm to 4.00m
On completion backfilled with gravel sized fragments of stone.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M07

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M8

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.50	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	02/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				02/02/2021:DRY	63.30	(0.20) 0.20	MADE GROUND: reinforced concrete. .... at 0.20m : abandoned		
							Complete at 0.20m		

Remarks
Cored concrete from GL to 0.20m and encounetered a second layer of concrete, abandoned and backfilled with arisings.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M8

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	M9

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE		63.50	CASSEL & FLETCHER CONSTRUCTION LIMITED	6921C
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	02/02/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.17)	MADE GROUND: reinforced concrete.			
					63.33	0.17	MADE GROUND: pinkish white foam.			
					63.30	0.20				
					63.25	0.25	MADE GROUND: grey gravel sized fragments of stone.			
						(0.25)				
					63.00	0.50	MADE GROUND: concrete.			
0.70-1.00	B					(0.50)	MADE GROUND: soft brown and dark grey mottled gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse brick, slag and sandstone.			
1.00-2.00 1.00-2.00	B C			1.00m to 2.00m - 0% recovery	62.50	1.00	MADE GROUND: soft grey and black mottled gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse stone and brick.			
						(0.30)				
					62.20	1.30	MADE GROUND: stiff dark brown slightly gravelly silty clay. Gravel sized fragments are fine to coarse stone and brick.			
						(0.70)				
2.00-3.00	C			2.;00m to 3.00m - 100% recovery	61.50	2.00	MADE GROUND: dark grey and black mottled slightly silty sandy gravel sized fragments of slag and brick.			
						(0.40)				
					61.10	2.40	MADE GROUND: firm brown and black mottled slightly sandy silty clay with pockets of black organic material.			
						(0.10)				
					61.00	2.50				
					60.95	2.55	Soft black slightly sandy fibrous PEAT.			
3.00-4.00	C			3.00m to 4.00m = 40% recovery			Stiff dark brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular slightly to subrounded fine to medium siltstone and sandstone.			
						(1.45)				
				02/02/2021:DRY	59.50	4.00	Complete at 4.00m			

Remarks
Cored concrete and hand dug inspection pit from GL to 1.00m to check for services.
Descriptions based on Foreman drillers reocrds to 0.70m
C = Plastic lined core sample
Core diameter : 84mm to 2.00m, 74mm to 3.00m and 64mm to 4.00m
On completion backfilled with gravel to 3.50m and installed a 50mm dia hdpe slotted gas monitoring standpipe with a gas valve and a gravel surround to 3.50m, a Bentonite seal from 1.00m to 0.20m and a concreted in lockable steel protective cover from 0.20m to GL.

Scale (approx)	Logged By
1:25	BSP/SJ

Figure No. 6921C.M9

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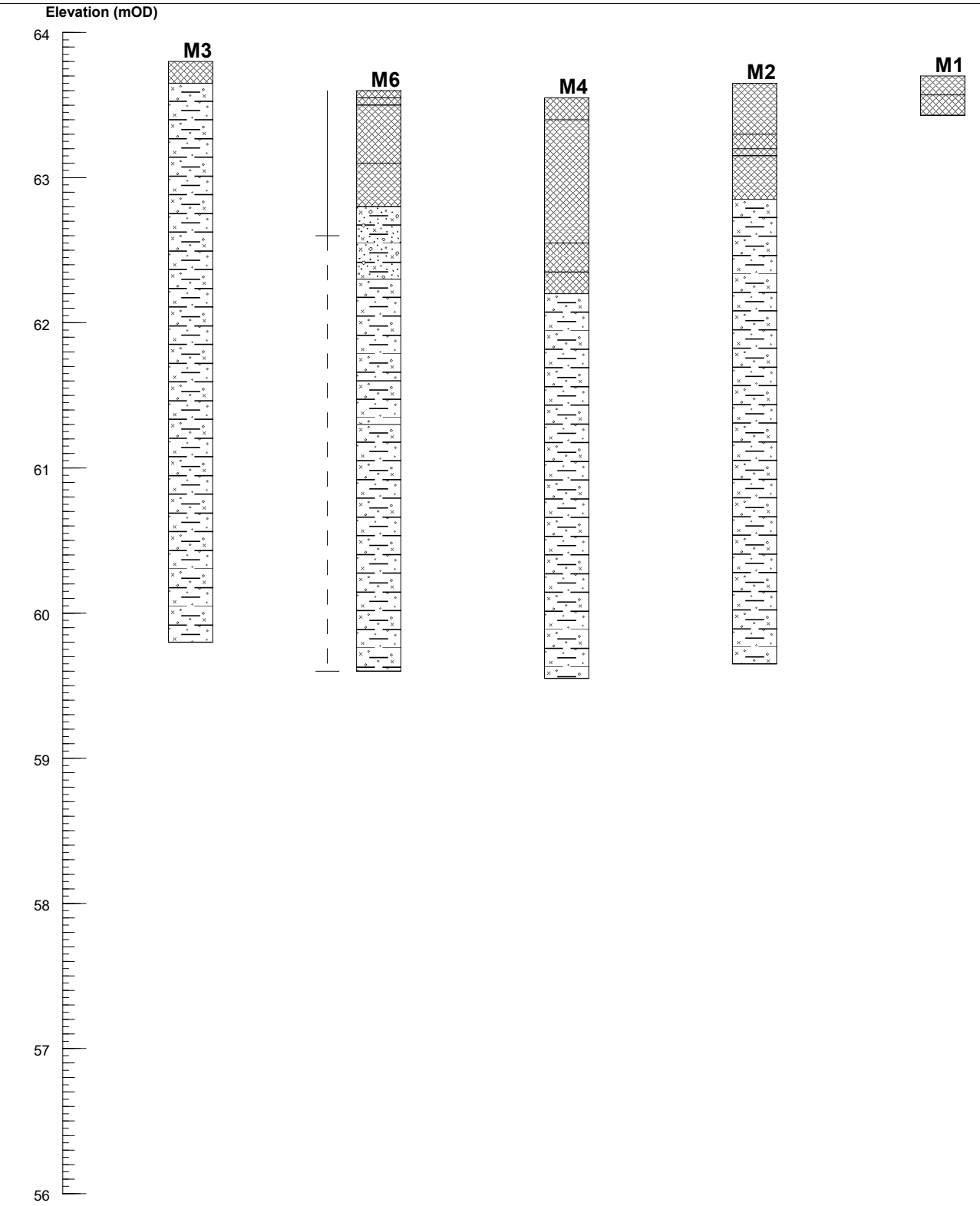

Key

- Groundwater Strike
- Strike Rise Level
- Highest recorded piezo level
- Piezometer Tip
- Slotted Standpipe
- MADE GROUND
- Silty gravelly CLAY
- Silty sandy gravelly CLAY
- Silty sandy gravelly cobbly CLAY
- Sandy PEAT

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Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	25/03/2021		1/2	6921C
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
CASSEL & FLETCHER CONSTRUCTION LIMITED			1:40[V]	6921C.1

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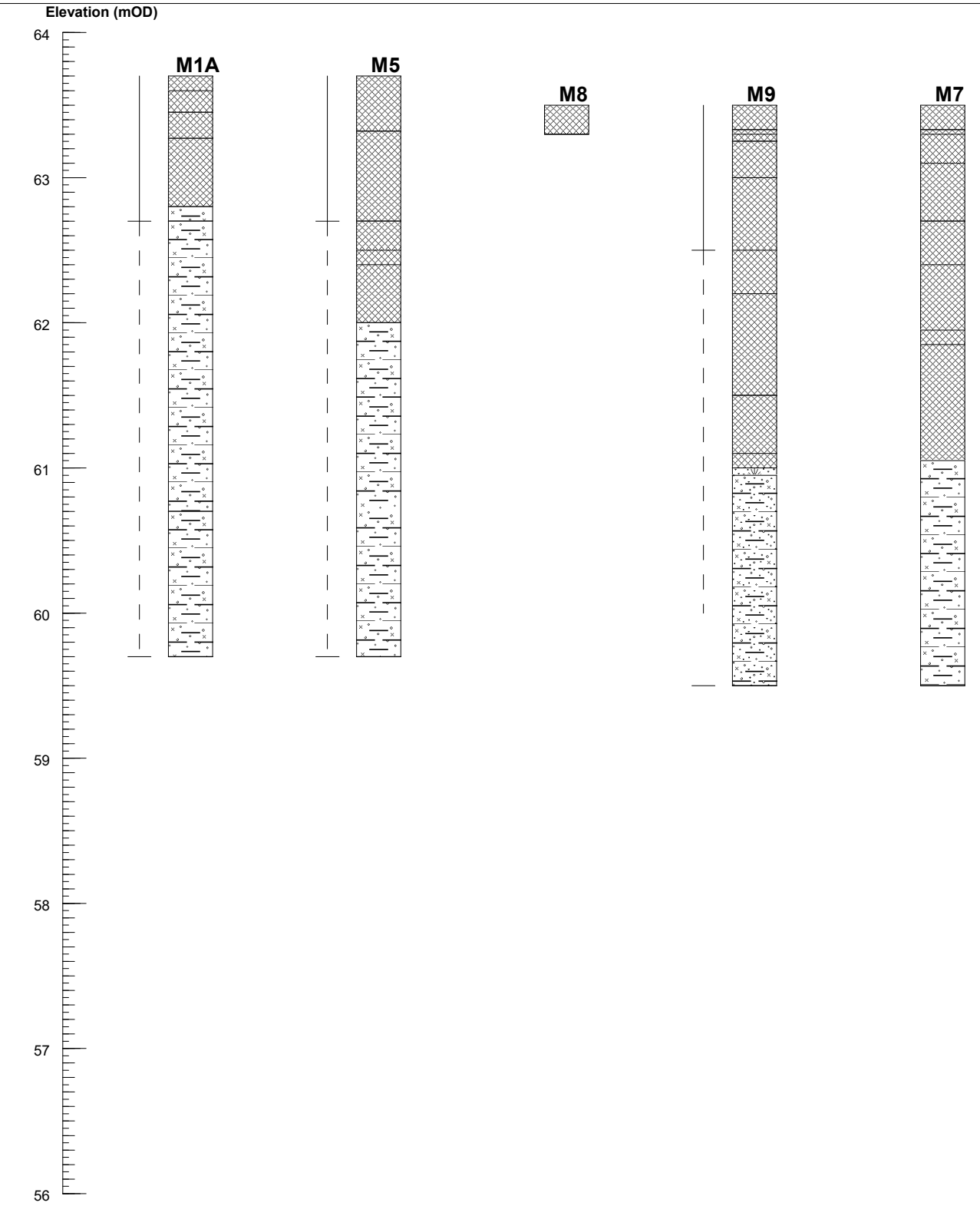

Key

- Groundwater Strike
- Strike Rise Level
- Highest recorded piezo level
- Piezometer Tip
- Slotted Standpipe
- MADE GROUND
- Silty gravelly CLAY
- Silty sandy gravelly CLAY
- Silty sandy gravelly cobbly CLAY
- Sandy PEAT

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Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER.	25/03/2021		2/2	6921C
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
CASSEL & FLETCHER CONSTRUCTION LIMITED			1:40[V]	6921C.1

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	M1B

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE			CASSEL & FLETCHER CONSTRUCTION LIMITED	6921E
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	16/07/2021		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	CC					(0.50)	MADE GROUND: concrete surfacing (driller's description).			
0.50-0.80	B					0.50 (0.30)	MADE GROUND: soft light grey gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse stone, clinker, glass and tile.			
0.80-1.20	B					0.80 (0.40)	MADE GROUND: soft dark brown gravelly slightly sandy clayey silt with occasional pockets of clay and low cobble sized fragments of stone. Gravel sized fragments are fine to coarse stone, brick and tile. (Topsoil).			
1.20-2.00	C			1.20m to 2.00m - 100% recovery		1.20 (1.30)	MADE GROUND: black ashy slightly clayey silty sandy fine to coarse gravel sized fragments of stone, brick, concrete and coal with occasional pockets of clay. (Hydrocarbon odour).			
2.00-3.00	C			Water Inflow(1) at 2.00m. 2.00m to 3.00m - 80% recovery					∇1	
3.00-4.00 3.00-4.00	B C			3.00m to 4.00m - 0% recovery		2.50 (1.50)	Stiff dark brown and occasional grey mottled slightly gravelly silty CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse siltstone and quartz.			
				16/07/2021:		4.00	Complete at 4.00m			

Remarks
Hand dug inspection pit from 0.50m to 1.20m to check for services.
C = Plastic lined core sample CC = Concrete Core
Core diameter : 84mm to 2.00m and 74mm to 3.00m
On completion backfilled with arisings and installed a 50mm dia slotted standpipe with a gas valve and a 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 GL.

Scale (approx)	Logged By
1:25	PM/SJ

Figure No. 6921E.M1B

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	M5A

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
HAND DUG			CASSEL & FLETCHER CONSTRUCTION LIMITED	6921E
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	16/07/2021		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	CC					(0.40)	MADE GROUND: concrete surfacing (driller's description).			
0.40-0.70	B					0.40 (0.30)	MADE GROUND: soft to firm brown slightly gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse brick, tile and stone.			
0.70-1.20	B					0.70	Stiff dark brown and occasional grey mottled slightly gravelly slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone, coal and quartz.			
1.20-2.00	C			1.20m to 2.00m - 100% recovery						
2.00-3.00	C			2.00m to 3.00m - 90% recovery		(3.30)				
3.00-4.00	C			3.00m to 4.00m - 80% recovery						
				16/07/2021:DRY		4.00	Complete at 4.00m			

Remarks
Hand dug inspection pit from 0.40m to 1.20m to check for services.
C = Plastic lined core sample CC = Concrete Core
Core diameter : 84mm to 2.00m, 74mm to 3.00m and 64mm to 4.00m
On completion backfilled with arisings and installed a 50mm dia slotted standpipe with a gas valve and a 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 GL.

Scale (approx)	Logged By
1:25	PM/SJ

Figure No. 6921E.M5A

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SUB SURFACE

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

Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	M6A

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE			CASSEL & FLETCHER CONSTRUCTION LIMITED	6921E
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	16/07/2021		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	CC					(0.50)	MADE GROUND: concrete surfacing (driller's description).			
0.50-1.20	B					0.50	MADE GROUND: light grey slightly silty clayey fine to coarse gravel sized fragments of stone with low cobble sized fragments of stone.			
1.20-2.00 1.20-2.00	B C			Water Inflow(1) at 1.20m. 1.20m to 2.00m - 0% recovery		(1.50)			∇1	
2.00-3.00 2.00-3.00	B C			2.00m to 3.00m - 0% recovery		2.00	Firm dark brown and occasional grey mottled slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse siltstone and coal.			
3.00-4.00	C			3.00m to 4.00m - 65% recovery		(2.00)				
				16/07/2021:		4.00	Complete at 4.00m			

Remarks
Hand dug inspection pit from 0.50m to 1.20m to check for services.
C = Plastic lined core sample CC = Concrete Core
Core diameter : 64mm to 4.00m
On completion backfilled with arisings and installed a 50mm dia slotted standpipe with a gas valve and a 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 GL.

Scale (approx)	Logged By
1:25	PM/SJ

Figure No. 6921E.M6A

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Site	Borehole Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	M9A

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
MINI PERCUSSIVE			CASSEL & FLETCHER CONSTRUCTION LIMITED	6921E
	Location	**Dates**	**Engineer**	**Sheet**
	AS PLAN	16/07/2021		1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.10	BC					(0.10) 0.10	MADE GROUND: bituminous macadam surfacing (driller's description).			
0.10-0.50	B					(0.40)	MADE GROUND: firm dark brown slightly gravelly slightly sandy silty clay. Gravel sized fragments are fine to coarse brick, stone and tile.			
0.50-1.20	B					0.50	Firm becoming stiff dark brown and occasional grey mottled slightly gravelly silty CLAY with occasional bands of sand. Gravel is subangular to subrounded fine to coarse siltstone, coal and quartz.			
1.20-2.00	C			1.20m to 2.00m - 100% recovery						
2.00-3.00	C			2.00m to 3.00m - 100% recovery		(3.50)				
3.00-4.00	C			3.00m to 4.00m - 100% recovery			.... at 3.00m to 4.00m : occasional bands of sand			
				16/07/2021:		4.00	Complete at 4.00m			

Remarks
Hand dug inspection pit from 0.10m to 1.20m to check for services.
C = Plastic lined core sample BC = Bituminous Macadam Core
Core diameter : 82mm to 2.00m, 72mm to 3.00m and 64mm to 4.00m
On completion backfilled with arisings and installed a 50mm dia slotted standpipe with a gas valve and a 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 GL.
Obstruction at 3.00m blocking deeper pipe installation.

Scale (approx)	Logged By
1:25	PM/SJ

Figure No. 6921E.M9A

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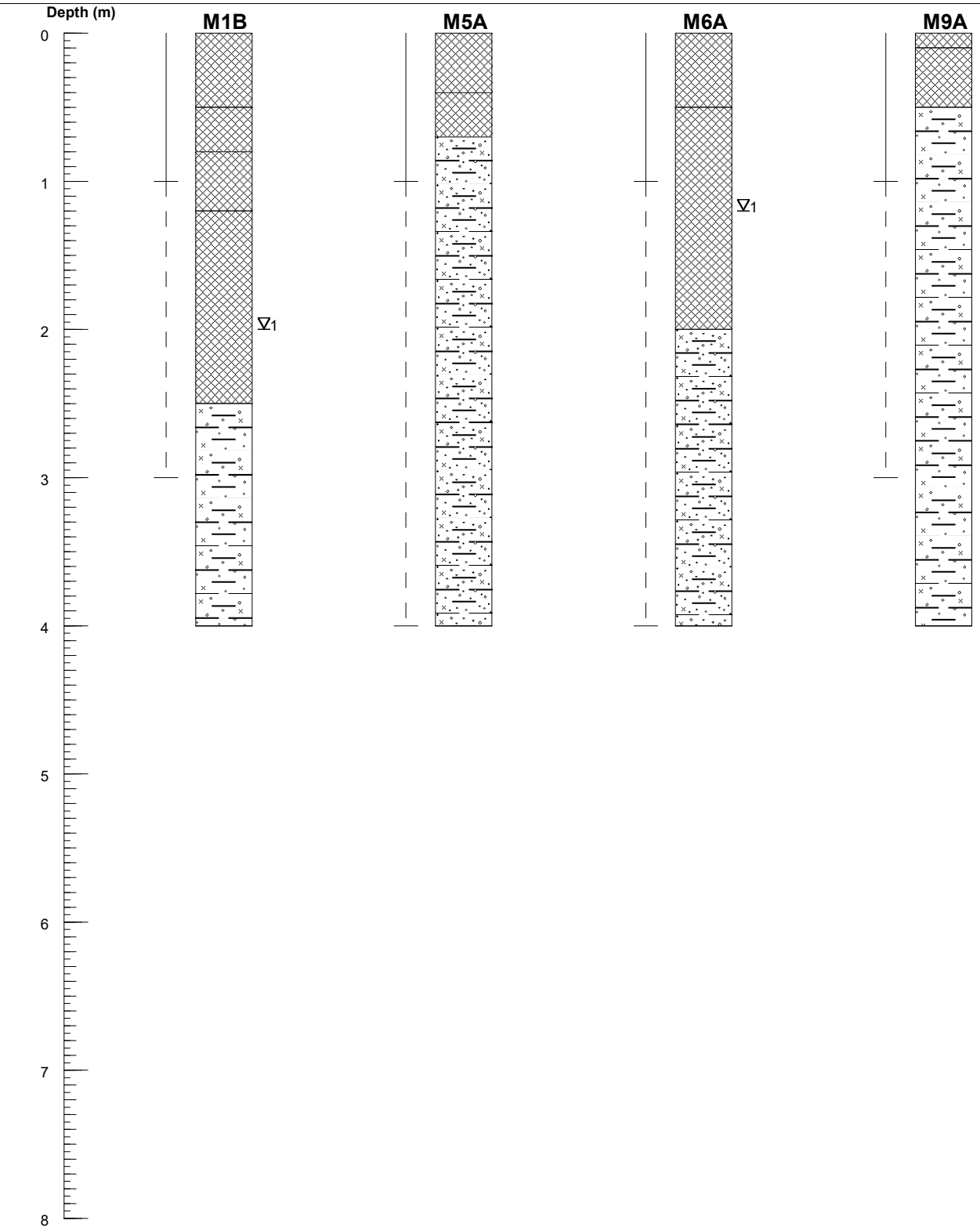

Key

- Groundwater Strike
- Strike Rise Level
- Highest recorded piezo level
- Piezometer Tip
- Slotted Standpipe
- MADE GROUND
- Silty gravelly CLAY
- Silty sandy gravelly CLAY

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Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	06/10/2021		1/1	6921E
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
CASSEL & FLETCHER CONSTRUCTION LIMITED			1:40[V]	6921E.1

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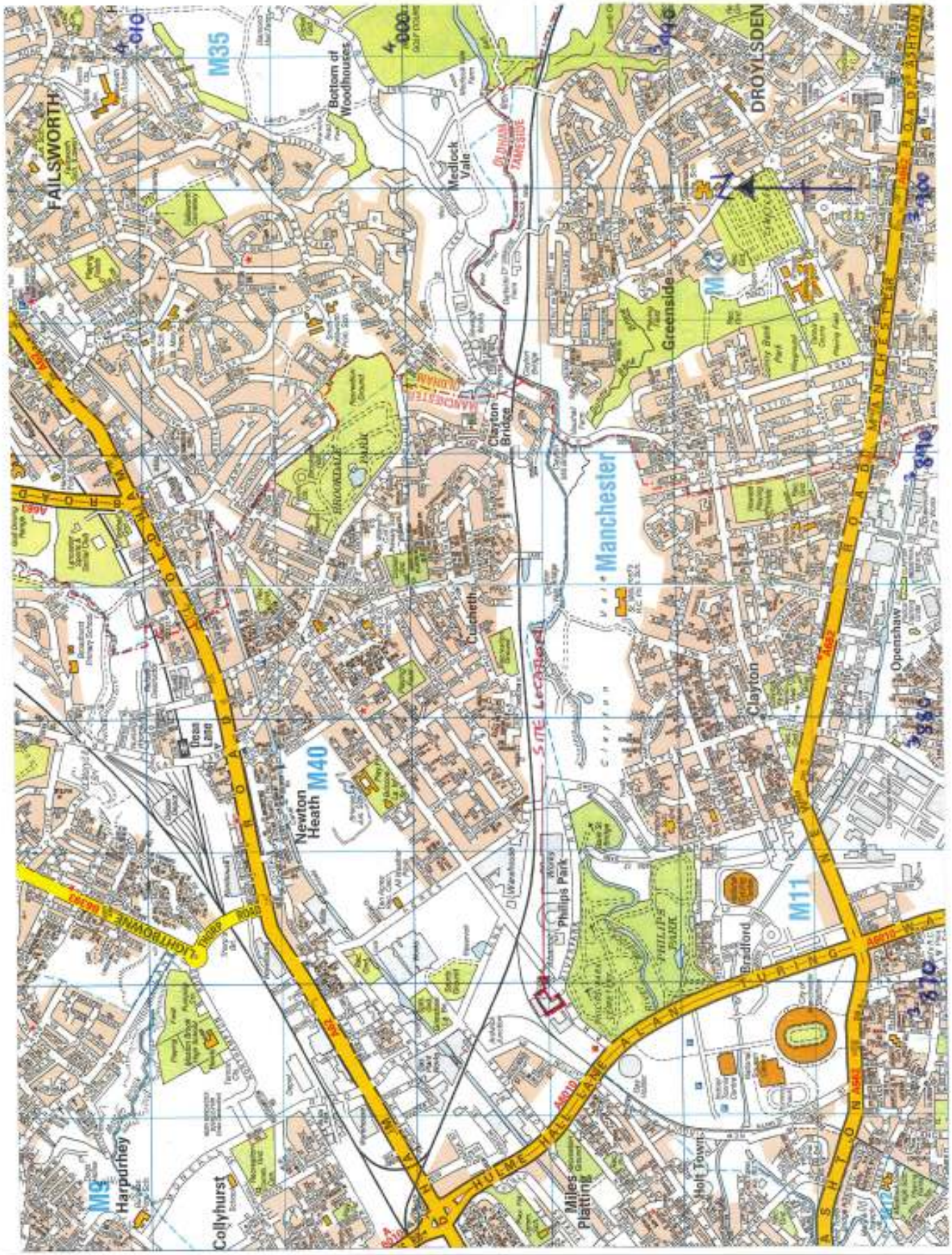
FIGURES



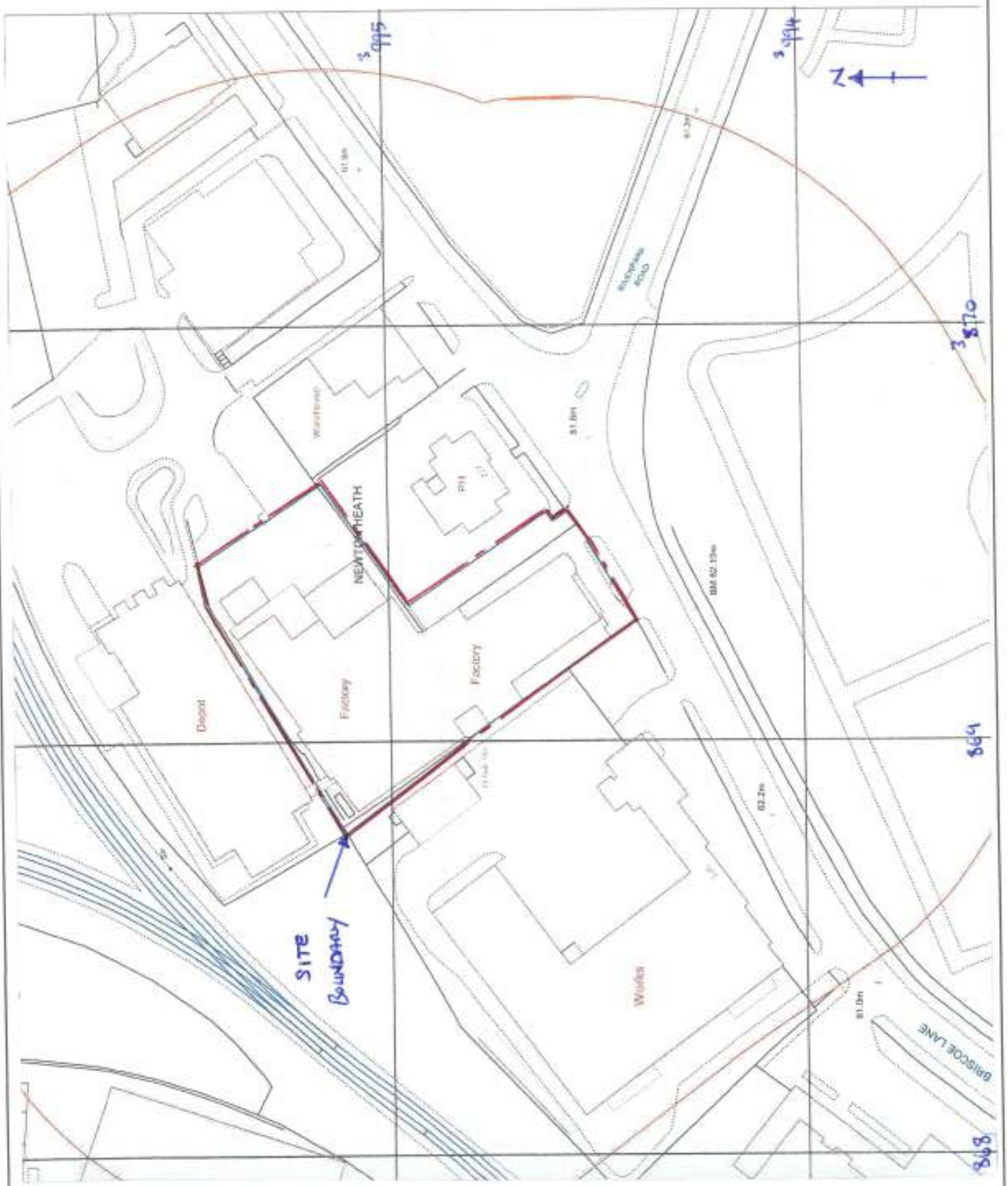
SUB SURFACE

SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS

3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907

Site Location Plan

Site	Date Drawn	Date Checked	Sheet	Job No.
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	03-Apr-20		1 / 1	6921A
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
CASSEL & FLETCHER CONSTRUCTION LIMITED	AJP		1:20,000	1



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SUB SURFACE
SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS
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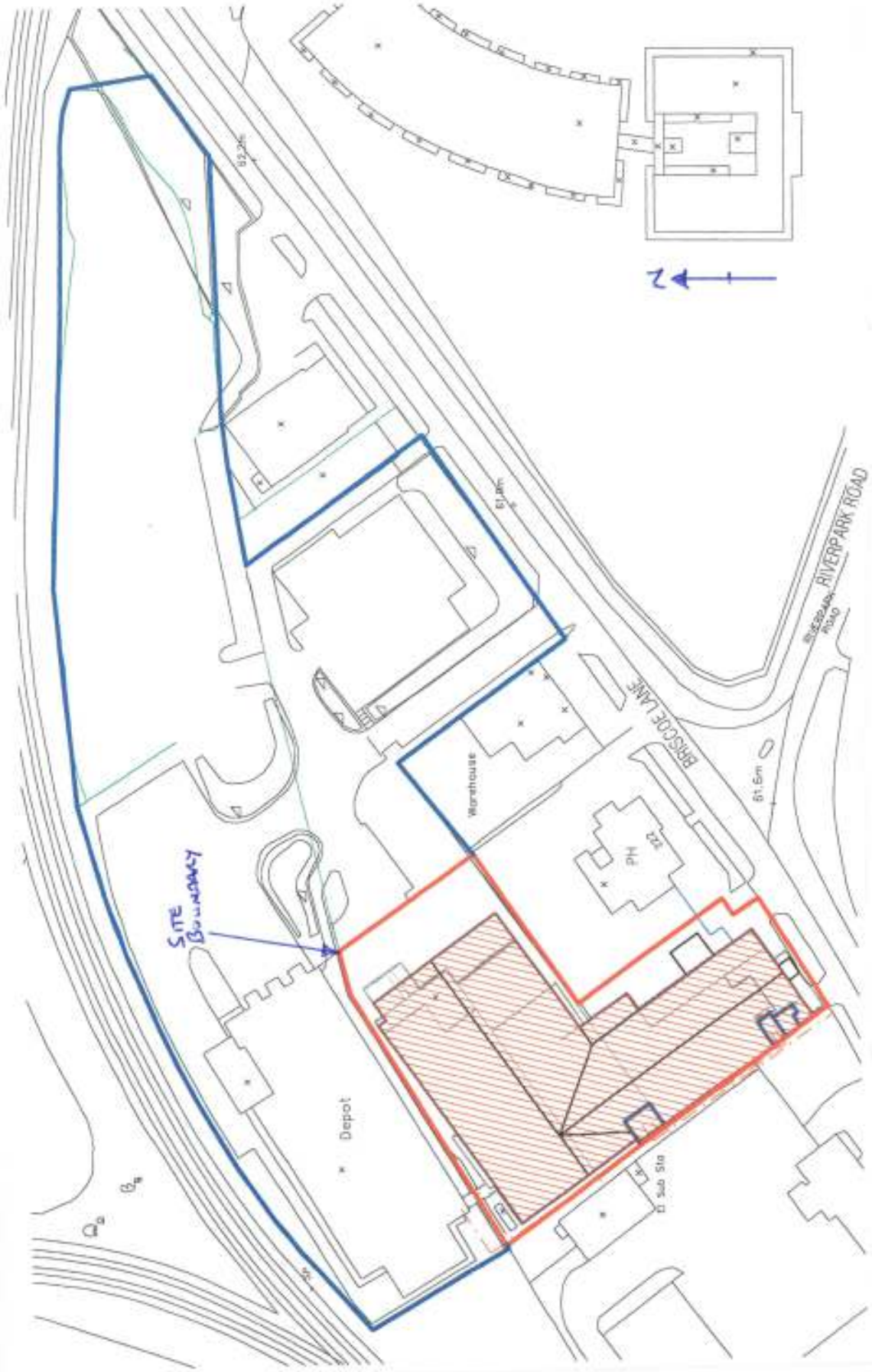
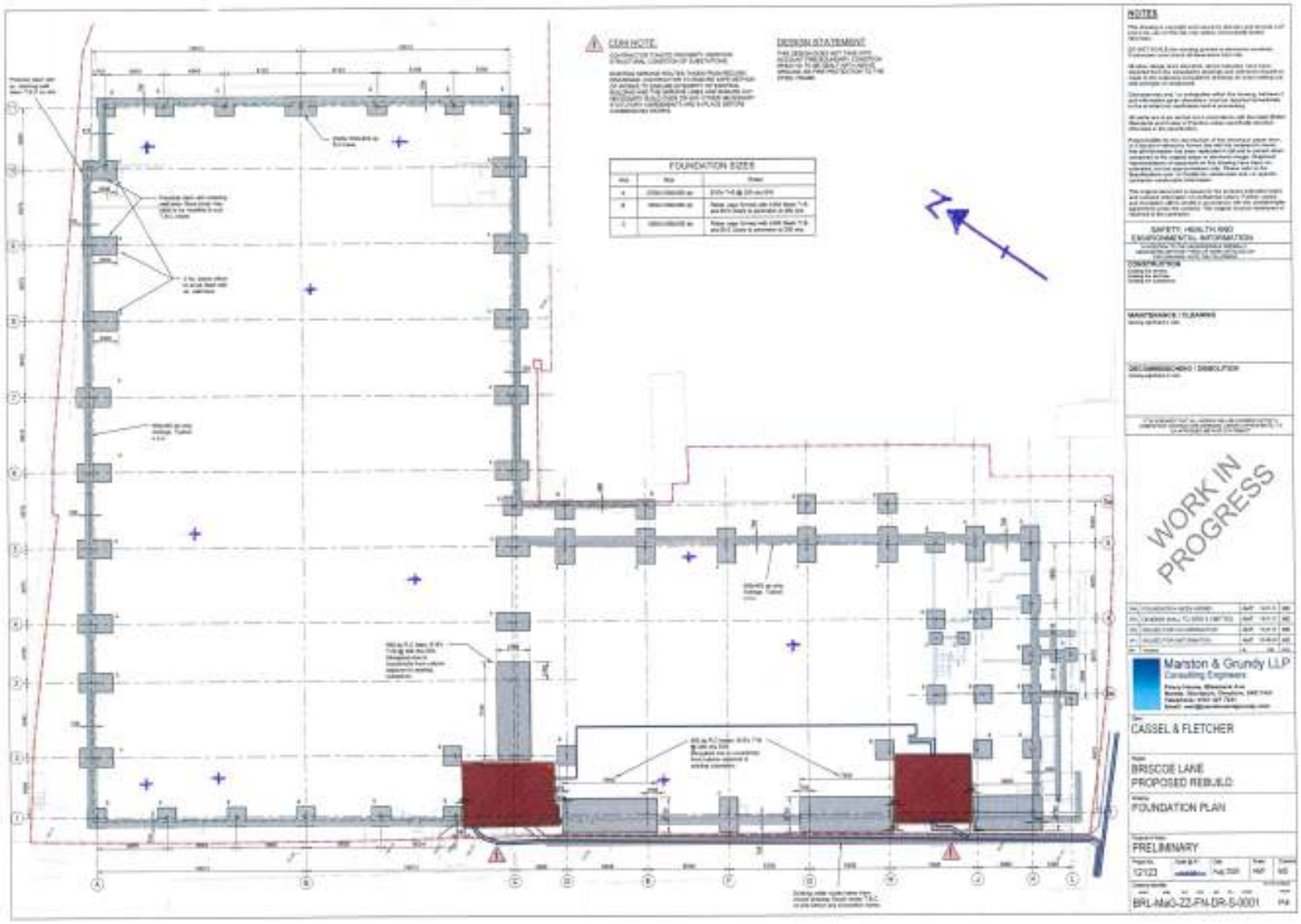
Site Boundary Plan

Site	Date Drawn	Date Checked	Sheet	Job No.
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	03-Apr-20		1 / 1	6921A
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
CASSEL & FLETCHER CONSTRUCTION LIMITED	AJP		1:1,250	2



SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Proposed Development Layout Plan			
Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	Date Drawn 03-Apr-20	Date Checked	Sheet 1 / 1	Job No. 6921A
Client CASSEL & FLETCHER CONSTRUCTION LIMITED	Drawn By AJP	Checked By	Scale 1:1,250	Figure No. 3



Proposed Foundation Layout Plan

Date Drawn	11-Mar-21	Date Checked	
Drawn By	AJP	Checked By	
Sheet	1 / 1	Job No.	6921C
Scale	1:500	Figure No.	4

SUB SURFACE
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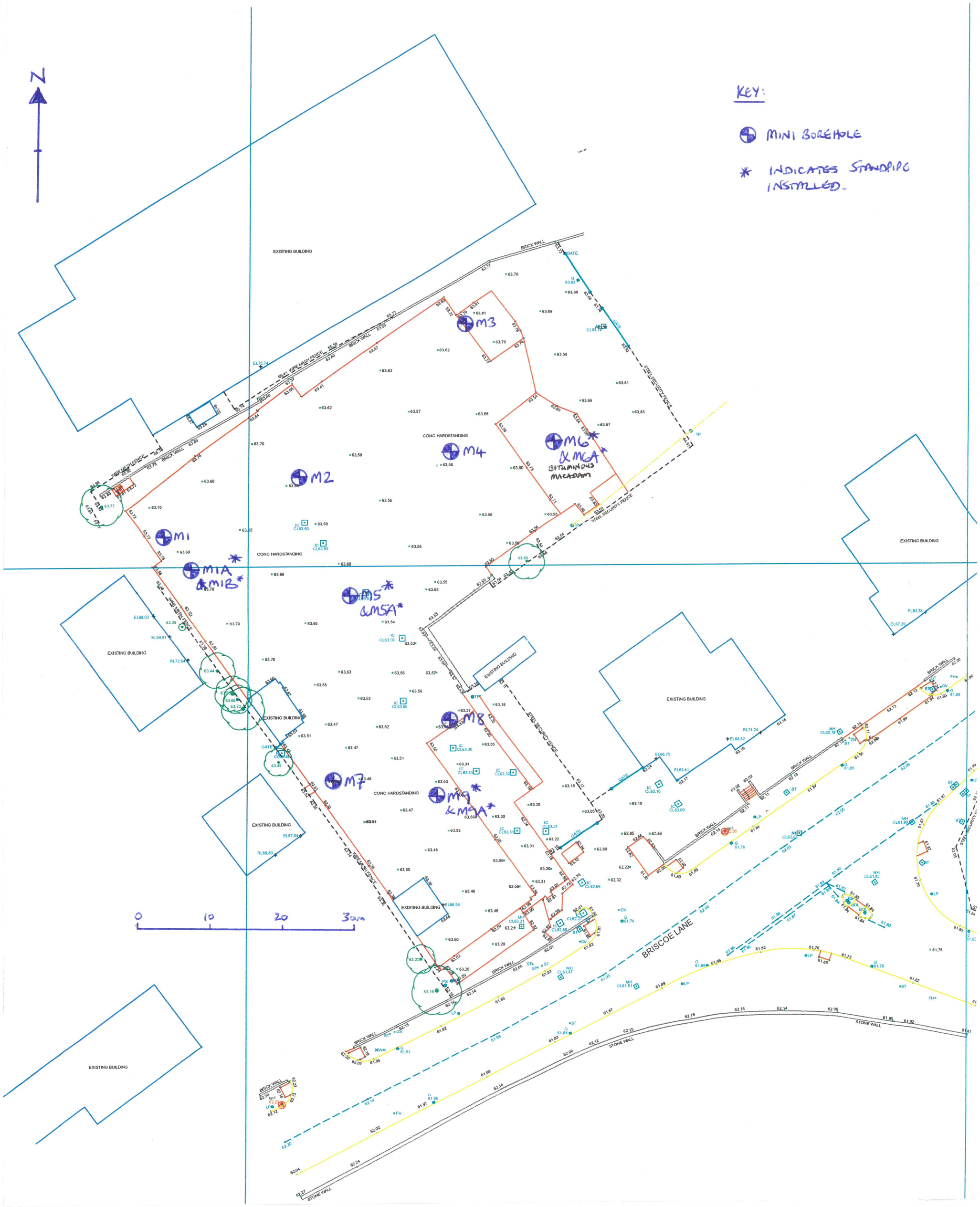
Site
ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER

Client
CASSEL & FLETCHER CONSTRUCTION LIMITED



SUB SURFACE SITE INVESTIGATION AND SPECIALIST GEOTECHNICAL CONSULTANTS 3 Peel Street, Preston, PR2 2QS. Tel. (01772) 561135 Fax (01772) 204907	Exploratory Hole Location Plan			
Site ARKADY INDUSTRIAL ESTATE, BRISCOE LANE, NEWTON HEATH, GREATER MANCHESTER	Date Drawn 07-Oct-21	Date Checked	Sheet 1 / 1	Job No. 6921F
Client CASSEL & FLETCHER CONSTRUCTION LIMITED	Drawn By AJP	Checked By	Scale 1:500 (at A3)	Figure No. 5