

GEO-ENVIRONMENTAL AUDIT

PHASE 2 SITE INVESTIGATIONS

PHASE 3 REMEDIATION STATEMENT

PROPOSED RESIDENTIAL DEVELOPMENT
LAND ADJACENT 1 WILDHOUSE COURT
WILDHOUSE LANE
MILNROW
ROCHDALE
OL16 3UU

Author: Daniel Slattery
Client: Mr Morris
Reference: rep-tjba-morris-1 wildhouse ct-phs 2_3env-231025.docx

Revision	Date	Reason
0	October 2025	Phase 2 Site Investigations & assessment.

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1. PHASE 2 – SITE INVESTIGATION & ASSESSMENT.

1.1. Introduction.

T. J. Booth Associates have been appointed by Mr Mike Morris to undertake a Phase 2 & 3 Geo-environmental Audit for a proposed residential development on vacant Site off Wildhouse Lane in Milnrow. The Application Site is located on a vacant plot of land.

There is currently an approved planning application for residential development, reference No. 24/00835/FUL, for the: "Construction of a single bespoke two-storey detached dwelling with a double garage and associated landscaping".

The decision notice was issued in April 2025. There is no environmental condition for the Site, but the Site is to be assessed in accordance with Building Regulations (Part C).

A previous preliminary risk assessment report was undertaken by the LK Group, Job Number: LKC 21 1130, Date: March 2020. The report recommendation were as follows:

Contamination status	There is sufficient information on the potential contaminative status of the site to allow conditional approval of a planning application, based on the proposed end use detailed in the PRA.
Further assessment recommendations	Phase 2 intrusive investigation required. Phase 2 investigation to be carried out in line with current guidance, including BS10175 ⁸ , BS5930 ⁹ CIRIA C665 ¹⁰ , RB17 ¹¹ and BS8485 ¹² . Low density / exploratory investigation: 1 sample per 25-50m square centres. Plus targeted investigation locations in areas of concern (contamination and geotechnical), including northern boundary (offsite tank) and east (possible former building). To be agreed with the Local Authority.
Type of investigation work	Boreholes and / or trial pits.
PL 1, 2, 5, 6	Intrusive investigation work recommended to confirm ground conditions across the site. Testing of contaminants of concern based on preliminary conceptual model and field observations (PID tests and visual / olfactory evidence).
PL 3	Gas monitoring or precautionary gas protection measures required. If precautionary gas protection measures are opted for, type of measures to be determined once ground conditions and foundation details established.
Reporting	Information from the above can be used to carry out a contamination and geotechnical assessment and provide a remediation strategy for the site.

Table 7-4: Recommendations.

T J Booth Associates were subsequently employed to undertake environmental assessment of the Site.

This report provides a desk-based study & intrusive ground investigation based on current UK guidance for environmental investigation within the construction industry.

Principal to the assessment is the potential for contamination pollutant linkages via the Land Contamination Risk Management (LCRM) source-pathway-receptor methodology. Assessment of potential pollution linkages is primarily undertaken in strict accordance with BS 5930:2015, BS 10175:2011+A2:2017, CIRIA C665, and BS 8485:2015+A1:2019 et al.

1.2. Proposed Development.

The proposal is for redevelopment of the site for residential purposes.

It will comprise 1No residential dwelling, soft landscaped garden area, and driveway.

1.3. LK Group - Phase I Preliminary Risk Assessment.

As indicated in the introduction, a preliminary risk assessment report was undertaken by the LK Group.

The general site setting is tabulated below:

Categories (data sources)		Details
Geology ^{1,2}	Artificial	- No BGS recorded artificial.
	Superficial	- Till (diamicton).
	Bedrock	- Pennine Lower Coal Measures (mudstone, siltstone and sandstone) over majority of site. - Milnrow Sandstone at the southern boundary.
	BGS Logs (<50m)	- BH Ref: SD91SW92, 30m S: Backfill to 0.3m, Sandstone to 5.1m, Shale to 54.7, Sandstone to 76.2m (with ironstone band), Shale to 81.9m Sandstone to 87.9m.
Hydro-geology ¹	Aquifer Designation	- Superficial - Bedrock
	Source Protection Zone (SPZ)	- Secondary Undifferentiated Aquifer. - Secondary A Aquifer.
	Groundwater Abstractions (100m)	- Outer Zone (Zone 2). - None.
	Surface Water Courses (100m)	- None.
Hydrology ¹	Flooding risk	- Flood Zone 1.
	Surface Water Abstractions (100m)	- None.
	Discharge Consents	- None.
	Pollution Incidents	- None.
Minerals & Mining ^{1,3,4}	Coal Mining	- Within a Coal Reporting Area (see Appendix D for Coal Authority Mining Report). - Not within a Development High Risk Area.
	Surface Mineral Extractions (250m)	- 107m SE – Wild House, Opencast, Milnrow Sandstone, Ceased.
	Cheshire Brine Compensation District	- Not within Compensation District. - Not within Consultation Area.
	Non-Coal Mining Area	- Not within an area of conclusive metalliferous mining.
Landfill Sites (250m) ¹	Known / Registered	- 26m W: J McCormick, Wildhouse Farm. - 192m NE: M Fenton, Birchinley Farm, Wildhouse Lane, deposited waste included inert waste. Operational 1974-1988. - 196m E: Birchinley Waste Management Ltd, Birchinley Farm, deposited waste included inert waste. Operational 1988-1991. - See Plate 3-1 for locations.
	Potentially Infilled Land (non-water and water), based on Envirocheck Report	- 2no. non-water features: 92m S, 104m SE and 205m N.
	Potentially infilled sites, based on LKC historical review	- 2no. quarries and 2no. shafts: See Table 2-1.

The assessment produced a conceptual model to be considered for the site, which is tabulated below:

Pollutant Linkage	Risk	Recommendations
PL1: Contaminants (ACM, heavy metals, PAHs, petroleum hydrocarbons) posing a risk to future site users via dermal contact, ingestion and inhalation (of soil, dust, fibres and vegetables).	Moderate / Low	Low density and targeted intrusive investigation required. Soil analysis of CoC, subject to ground conditions encountered.
PL2: Volatile contaminants posing a risk to future site users via the inhalation of vapours.	Moderate / Low	Targeted intrusive investigation required. Soil analysis of CoC, subject to ground conditions encountered.
PL3: Gas (carbon dioxide and methane) posing a risk to buildings and future site users via the migration of gas into building causing explosion and asphyxiation.	Moderate	Gas monitoring or precautionary gas protection measures required.
PL4: Mobile contamination posing a risk to controlled waters via the migration through permeable strata.	Low	No further assessment required.
PL5: Sulphate posing a risk to building via direct contact (sulphate attack).	Low	Low density intrusive investigation required. Confirmatory sulphate testing.
PL6: Organic contaminants posing a risk to water pipes.	Moderate / Low	Low density and targeted intrusive investigation required. Soil analysis of CoC, subject to ground conditions encountered.
PL7: Phytotoxic metals posing a risk to flora via root uptake.	Very Low	No further assessment required.

1.3.1. Conceptual Model Summary.

The primary risks to/from the development are considered to be associated with the following:

- Potential made ground, and the potential for contaminants to affect receptors such as human (health), controlled waters, and regional aquifers.
- Moderate risks associated with anthropogenic landfill off the site, associated with former landfills within 250m.
- The report did note that radon was low, noting a risk of <1% of homes at or above the action level. However, since the report was authored, maps have been updated, and risk levels have changed.

1.4. Site Investigations.

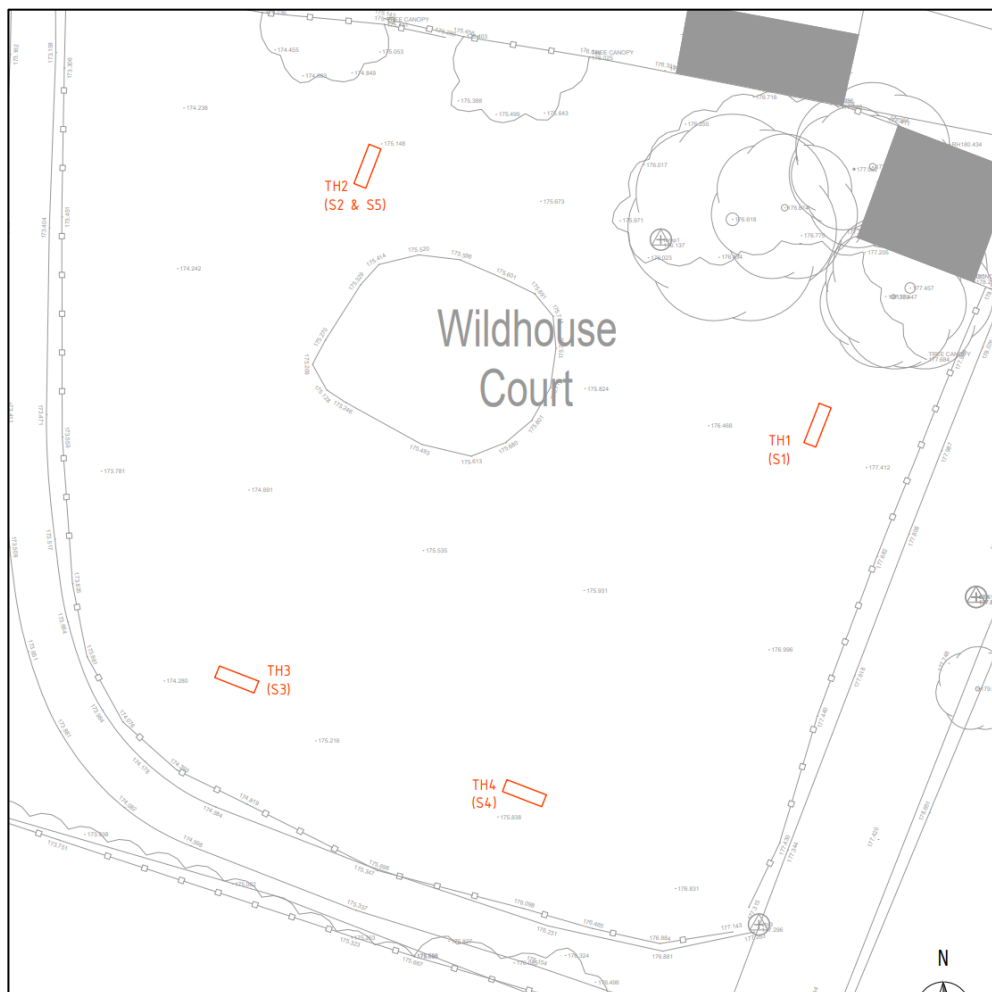
1.4.1. Investigation Summary.

Site investigations were undertaken on the 23rd October 2025 by T J Booth Associates.

The investigations comprised:

- 4No trial holes (THs 1-4) to assess ground conditions for geoenvironmental/geotechnical design purposes,
- 4No. soil samples (S1-4) to assess chemical contamination for geoenvironmental purposes.
- 1No. soil samples (S5) to assess plasticity for geotechnical purposes.

A site investigation excerpt is noted below (full plan in the Appendix):



Contamination samples (soil) were taken in the upper made ground generally representative of the upper 600mm of natural or made ground where encountered.

Samples were sealed in 1kg white plastic snap top containers & amber jars & vials and sent to Envirolab Ltd to be tested for a range of common contaminants.

1.4.2. Ground Conditions.

Trial holes revealed a general virgin SILT TOPSOIL across the site nominally 100mm thick, with a smaller area of MADE GROUND to the northwest corner around trial hole TH2 up to 600mm thick.

Beneath was generally a relatively thin brown SILT, over silty orange-brown/grey mottled slightly gravelly CLAYS.

In turn these were underlain by clayey GRAVELS/occasionally gravelly CLAY (WEATHERED BEDROCK) depending on where around the site they were excavated. Beneath was MUDSTONE BEDROCK.

No evidence of former tanks, or visual/olfactory evidence of organic/hydrocarbon contamination was noted anywhere across the Site.

Full trial hole logs can be found in the Appendix.

1.5. Final Risk Assessment.

1.5.1. Human Health Risk.

1.5.1.1. Shallow soil contamination.

The samples results have been assessed by TJ Booth Associates to common threshold comparison data for a residential end usage in the following order: Defra Category 4 Screening Levels (C4SLs) > LQM/CIEH (S4ULs) > EIC/AGS/CL:AIRE 2010.

Testing of upper site soil recorded all contaminants of concern below residential target threshold values.

The risk from site soils is considered mitigated.

Refer to TJ Booth Associates Soil Analysis Table and Envirolab Ltd sample certification in the appendix.

1.5.1.2. Ground Gas Risk.

1.5.1.2.1. Historic landfill & off-site infilled land.

There are 3No historic landfill Sites within 250m of the site:

- J McCormick, Wildhouse Farm, 26m west, no record of tipped waste.
- M Fenton, Birchinley Farm, 192m northeast, tipped waste is inert.
- M Fenton, Birchinley Farm, 196m east, tipped waste is inert.

The two records relating to Birchinley Farm include inert waste and thus do not pose a risk.

The subsoil beneath the Application Site is made up of CLAY above saturated WEATHERED BEDROCK, and the likelihood of gas migration is low. However, due to the close proximity of Wildhouse Farm, and the fact the deposited waste type is not known, the risk from this item cannot be mitigated completely.

1.5.1.2.2. On-site refuse tips/infilled ponds/infilled land.

None noted.

The risk is considered mitigated.

1.5.1.2.3. Radon.

The Landmark Report obtained by the LK Group indicated radon is not a risk at the Application Site. However, the maps have since been updated.

The newer radon maps put the Site within an area where 3-5% of homes are at or above the action level, and therefore there is a risk to the development.

1.5.1.2.4. Alluvium.

No pollutant linkage identified.

No alluvium in the local area.

1.5.1.3. Buildings & services.

1.5.1.3.1. Water pipes.

Virgin ground was generally noted across the Application Site, apart from approximately 600mm of MADE GROUND to the rear northwest corner. However, any potable water pipes will be routed through the front of the Site where the risk is low.

1.5.1.3.2. Sulphate.

Sulphate encountered in the soil samples was low, DS1.

1.5.2. Controlled Waters Risk.

Where soil leachate or ground/surface water sampling is undertaken, samples are assessed by TJ Booth Associates to common threshold comparison data. Groundwater samples are generally compared against the drinking water standards (UK DWI 2016 & WHO 2022), and Environment Quality Standards for Freshwater (EQS). Surface water samples are primarily compared against the against the EQS.

1.5.2.1. Groundwater.

No elevated contaminants were noted in upper topsoil.

The risk to aquifers is considered to be low.

1.5.2.2. Watercourses.

The closest watercourse is nominally 400m distant.

Risk is considered as low.

1.6. Final Conceptual Model.

POLLUTANT RISK IDENTIFIER	SOURCE	CONTAMINANT TYPE	PATHWAY	RECEPTOR	POLLUTION LINKAGE	RISK	REMEDATION MEASURES
PL1	General contaminants in upper site soil/made ground, and effects on humans/animals/ecology as a receptor.	Metals, PAHs, inorganics, organics, asbestos.	Direct ingestion, aerial ingestion, dermal contact, drinking water. Crops.	Primarily human - Site construction operatives & future residential Site occupants. Pets. Ecological systems.	Soil sampling recorded contaminants below the threshold levels.	Low risk.	NO REMEDIATION REQUIRED.
PL2	Potential for mortars/plasters and associated effects on concrete.	Sulphates.	Contact with underground structures.	Building structures /concrete.	Soil sampling recorded low levels of sulphate.	Low risk.	NO REMEDIATION REQUIRED.
PL3	Potential historic use of hazardous PSRAS chemicals & effects on PE water pipes.	Hydrocarbons, BTEX & MTBE, VOCs/SVOCs, phenols, cresols and chlorinated phenols.	Contact with water pipes/services.	Water pipes/services & human/pet end users.	No made ground in areas where pipes will be located, and therefore no risk.	Low risk.	NO REMEDIATION REQUIRED.
PL4	Hydrocarbon contaminants in upper site soil/made ground, and effects on groundwater or watercourses as a receptor.	Potential hydrocarbons.	Groundwater via potential leaching and transport of potential contaminants.	Underlying aquifer or watercourse as a receptor.	No visual or olfactory evidence of hydrocarbons noted on Site.	Very low risk.	NO REMEDIATION REQUIRED.
PL5	Geological ground gas from coal seams/workings.	CH ₄ , CO ₂ , other trace gases.	Diffusion through soil, substructures, aerial inhalation.	Human - future residential Site occupants. Explosion, suffocation.	No shafts local to the Site. Geology comprises clay which offer protection.	Very low risk.	NO REMEDIATION REQUIRED.
PL6	Geological ground gas, radon sources in Namurian deposits.	Rn.	Diffusion through soil, substructures, aerial inhalation.	Human - future residential Site occupants.	Updated maps suggest 3-5% radon risk. Standard protection measures required.	Moderate risk.	REMEDATION REQUIRED. STANDARD RADON PROTECTION MEASURES TO INCLUDE RADON RESISTANT MEMBRANE AS A MINIMUM, ALL PENETRATION SEALED.



PL7	Anthropogenic ground gas from historic/present landfill, infilled mill ponds.	CH ₄ , CO ₂ , other trace gases.	Diffusion through soil, substructures, aerial inhalation.	Human - future residential occupants. Site Explosion, suffocation.	Source cannot be confirmed by desk study, and the pathway is potentially present considering the proximity. Cannot reduce initial assessment of risk to lower category, and so precautionary gas protection measures should be included.	Moderate risk.	REMEDATION REQUIRED. CS ₂ MEASURES AS A MINIMUM. GAS PROTECTION WILL NEED TO BE INSTALLED COMPRISING A CO ₂ /CH ₄ RESISTANT MEMBRANE, LAPPED AND TAPED/WELDED, WITH ALL PENETRATIONS SEALED.
PL8	Anthropogenic ground gas sources from alluvium.	CH ₄ , CO ₂ .	Diffusion through soil, substructures, aerial inhalation.	Human - future residential occupants. Site Explosion, suffocation.	No alluvial deposits noted beneath the Site. Source missing, no pollutant linkage.	Very low risk.	NO REMEDIATION REQUIRED.

2. PHASE 3 - REMEDIATION STATEMENT.

2.1. Basic Site Details.

Full details included in the Phase 2 Site Investigation Introduction & subsequent sections.

2.2. Conceptual Model (Final) & Relevant Pollution Linkages.

Two relevant pollutant linkages that require further action/remediation to mitigate the risk, as follows:

- PL6 - Geological ground gas, radon sources in Namurian deposits.
- PL7 - Anthropogenic ground gas from historic/present landfill, infilled mill ponds.

2.3. Recommendations:

2.3.1. Made ground/soil.

Included for ease of reference.

All soil samples tested contaminants below the threshold for action, and thus site soils are considered suitable for the proposed end use.

No further action is required.

2.3.2. Ground gas risk.

Due to the requirement for radon protection measures, and well as the potential for a pollutant linkage due to the unknown landfill to the north, it is proposed to include for gas protection measures up to CS2 level in the foundations which will protect against radon and CH₄/CO₂.

CS2 gas protection measures can be provided to comply with a minimum score of 3.5 (from at least two sources) and in accordance with BS8485:2019, as follows:

CS3 GAS PROTECTIVE MEASURES		BS8485:2019 score
FOUNDATION TYPE: raft.		required: 3.5
SLAB	Ground bearing raft.	1.5
MEMBRANE	Reinforced gas membrane comprising <40ml/day/m ² CH ₄ transmission rate, >0.4mm thick. All joints and penetrations sealed to manufacturers details & specifications.	2

Should a raft not be used in the design, the gas protection measure will need to be updated.

2.4. Verification (Phase 4 requirements).

Verification may be required for Planning or Building Control/Building Regulations submission.

Should this be required, it will need to be undertaken by suitably qualified consultants and comprise the following:

- Imported soil source material.
- Characterisation & suitability of material.
- Soil sampling should be undertaken as per YALPAG Guidelines as per the following ratios:
 - Virgin quarried materials, 1-2 samples to confirm inert nature.
 - Crushed hardcore, stone, brick, min 1 sample per 500cum.
 - Greenfield/manufactured, generally 1 sample per 250cum (min 3 samples).
 - Brownfield, generally 1 sample per 50cum (min 6 samples).
- Samples should be tested for the following contamination suites: metals, inorganics, PAH USEPA16 speciated, and asbestos screening. Defra Category 4 Screening Levels (C4SLs) > LQM/CIEH (S4ULs) > EIC/AGS/CL:AIRE 2010; for use in a residential end use setting.

- Photographic evidence of soil verification depth.
- Photographic evidence of gas protection measures.
- Reporting.

2.4.1. Watching Brief.

During the demolition/construction phase of development, and during any ground works thereafter; care should be taken to identify any suspected ground contamination (visual or olfactory) not previously identified, and managed as follows:

- Should any suspected contamination be encountered, the suspect area should be isolated, professional advice sought, and the LPA informed as required.
- Suspected material should undergo testing to identify any contaminants present by suitably qualified personnel in accord with current best practice & guidelines, and risk-assessed to current published data suitable for the proposed end use.
- Should any hazardous contamination be identified, a method for its removal should be produced in line with current best practice & regulations, tailored to the type of contamination present, and agreed with the LPA.
- Should any general low-level contamination be identified, it should be carefully removed & stockpiled separate to on-site soils i.e. on hard-standing or temporary barrier membrane to avoid contamination to the remainder of the site.
- Contaminated material should be disposed of to a suitably licenced landfill site identified by testing certs & contaminants.
- Details of any such operations should be included within a final validation/completion report as normal procedure.

2.5. Preliminary Geotechnical Assessment.

Geotechnical plastic/liquid limit testing of the upper CLAY (generally orange-brown/grey mottled) was undertaken (approx 1m depth in TH2), to BS1377 : PART 2 : 1990. The sample was noted as a silty CLAY with a Plasticity Index of 17%. The % passing 425um test sieve was 97%. In accord with NHBC guidelines, the Modified Plasticity Index (I_p) of the clay soil is: $17 \times 0.97 = 16.49\%$, indicating a LOW PLASTICITY CLAY.

NHBC guidance indicates min depth for low plasticity CLAY is 0.75m bGL.

Beneath the low plasticity CLAY, was generally a WEATHERED BEDROCK comprising clayey GRAVELS (THs2-4)/occasionally very gravelly CLAY (TH1).

The client has suggested a raft type foundation which will require specialist geotechnical design in due course, and will mitigate against the effects of tree proximity & potential heave.

2.6. Additional Notes.

This report should be submitted to the LPA for condition discharge prior to construction.

We trust that the above clear, but should you require further advice please contact the undersigned.



Signed.....  .

D.S. Slattery BSc (Hons).

T J Booth Associates.

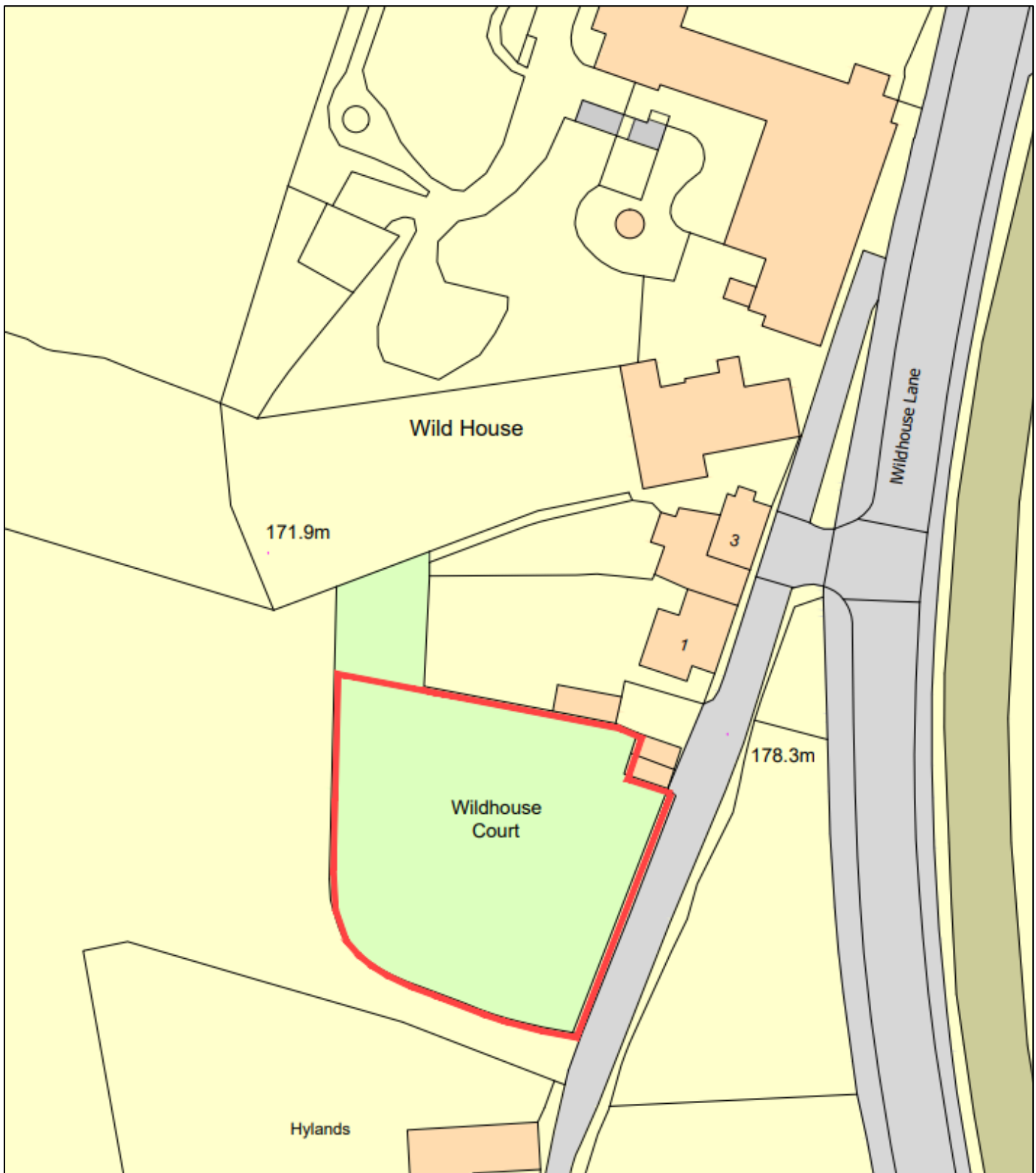
Authorised...  .

T J Booth BSc (Hons), C. Eng. C. Env. MICE.

T J Booth Associates.

3. APPENDIX A: FIGURES.

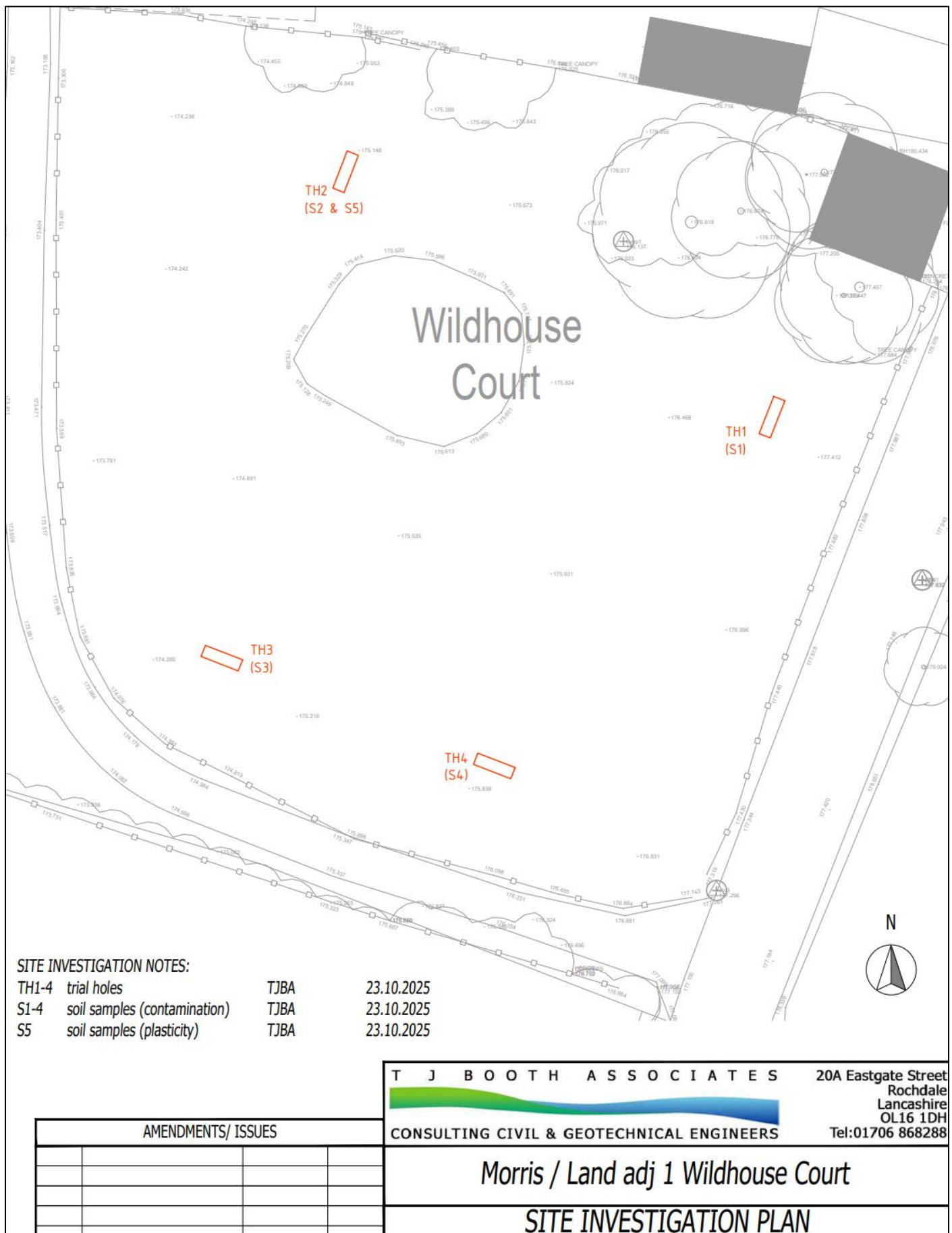
3.1. Location Plan.



3.2. Proposed Development.



3.3. Site Investigation Plan.



3.4. TJBA Trial Hol Logs.

Trial pit reference TH1				Sheet 1 of 1
Water	Reduced Level (m)	Legend	Depth (m)	Description
	177.15			
	177.05	x - x - x	0.10	Brown clayey SILT (topsoil). (S1)
	176.80	X X X X	(0.25) 0.35	Stiff orange-brown, grey mottled silty gravelly CLAY.
	176.25	X o X o o X o X X o X o	(0.55) 0.90	Stiff grey-brown very gravelly CLAY (WEATHERED BEDROCK). Gravel is mudstone/shale.
	175.95	X X X X	(0.30) 1.20	Grey-brown MUDSTONE (BEDROCK)
				Trial pit ends

Not shown to scale

Additional notes:



Trial pit reference TH2				Sheet 1 of 1
Water	Reduced Level (m)	Legend	Depth (m)	Description
	175.15			
	174.55	X X X X X X	(0.60) 0.60	Very dark brown very slightly gravelly silty/clayey MADE GROUND (topsoil). Gravel is occasional brick, coal, slate & sandstone (S2)
	174.15	- - - - - -	(0.40) 1.00	Stiff orange-brown becoming brown CLAY
	173.65	- x - x - x - x - x - x - x -	(0.50) 1.50	Stiff brown silty CLAY becoming gravelly with occasional sandstone boulders. (S5)
<u>v</u>	173.60	X - X - - X - X - X - X -	(0.70)	Medium dense to dense brown-grey clayey GRAVEL (WEATHERED BEDROCK). Gravel is mudstone/shale (wet).
	172.95	- X - X -	2.20	
	172.85	X X	2.30	Grey-brown MUDSTONE (BEDROCK)
				Trial pit ends

Not shown to scale

Additional notes:



Trial pit reference TH3

Sheet 1 of 1

Water	Reduced Level (m)	Legend	Depth (m)	Description
	174.60			
	174.50	x - x - x	0.10	Brown clayey SILT (topsoil). (S3)
	174.20	X X X X	(0.30) 0.40	Soft to firm brown very slightly gravelly SILT. Gravel is reworked coal.
v	173.40	X o X o o X o X	(0.80)	Firm to stiff orange-brown, grey mottled very gravelly CLAY. Gravel is mudstone/shale.
	173.40	X o X o o X o X	1.20	
	172.90	X - X - - X - X - X - X -	(0.50) 1.70	Medium dense to dense brown-grey clayey GRAVEL (WEATHERED BEDROCK). Gravel is mudstone/shale.
	172.80	X X	1.80	Brown-grey MUDSTONE (BEDROCK).
				Trial pit ends

Not shown to scale

Additional notes:



Trial pit reference TH4

Sheet 1 of 1

Water	Reduced Level (m)	Legend	Depth (m)	Description
	175.80			
	175.70	x - x - x	0.10	Brown clayey SILT (topsoil). (S4)
	175.50	X X	0.30	Soft to firm light brown SILT.
		- - -	(0.50)	Firm to stiff yellow-brown very gravelly CLAY with occasional cobbles. Gravel/cobbles are sandstone.
	175.00	- - -	0.80	
		X X	(0.65)	Stiff brown silty, very gravelly CLAY. Gravel is mudstone/shale.
		X X		
	174.35	X X	1.45	
		X - X -	(0.35)	Medium dense to dense brown slightly clayey GRAVEL (WEATHERED BEDROCK).
	174.00	- X - X -	1.80	
				Trial pit ends

Not shown to scale

Additional notes:



3.5. TJBA Soil Analysis.

CLIENT/SITE:		Morris - Land adjacent 1 Wildhouse Court, Milnrow.						
SAMPLE TYPE:		SOILS						
SAMPLING DATE:		23-Oct-25						
Contaminant		No	Max	Mean	t 95	RESIDENTIAL (with or without plant uptake)		
							Pass/Fail	Comment
METAL	Arsenic	4	14	7	13.25	37	PASS	
METAL	Boron	4	1	1	1	290	PASS	
METAL	Cadmium	4	1	1	1	22	PASS	
METAL	Chromium as Cr(III)	4	22	20.50	21.85	910	PASS	
METAL	Chromium as Cr(VI)	4	1	1	1	21	PASS	
METAL	Copper	4	55	33.75	51.55	2400	PASS	
METAL	Lead	4	190	79.25	170.65	200	PASS	
METAL	Mercury (inorganic)	4	0.17	0.17	0.17	40	PASS	
METAL	Nickel	4	17	15.25	16.85	130	PASS	
METAL	Selenium	4	1	1	1	250	PASS	
METAL	Zinc as Zn	4	62	56	61.55	3700	PASS	
INORGANIC	Cyanide (Total)	4	1	1	1	34	PASS	
INORGANIC	Sulphate (Total) as SO ₄	4	0.092	0.06675	0.08855	0.24	PASS	
INORGANIC	Sulphide	4	5	5	5	250	PASS	
INORGANIC	pH	4	5.35	4.8025	5.3125	6 to 8	ACIDIC	
INORGANIC	Sulphur (Elemental)	4	13	7	11.8	100	PASS	
INORGANIC	Asbestos Identification	4	0	0	0	0	PASS	
ORGANIC	SOM	4	11.3	7.7725	11.135			
PAH	acenaphthene	4	0.09	0.03	0.078	1100	PASS	
PAH	acenaphthylene	4	0.01	0.01	0.01	920	PASS	
PAH	anthracene	4	0.32	0.095	0.275	11000	PASS	
PAH	benzo[a]anthracene	4	0.58	0.18	0.502	13	PASS	
PAH	benzo[a]pyrene (BaP)	4	0.61	0.1925	0.5305	5	PASS	
PAH	benzo[b]fluoranthene	4	0.96	0.295	0.834	3.7	PASS	
PAH	benzo[g,h,i]perylene	4	0.38	0.14	0.335	350	PASS	
PAH	benzo[k]fluoranthene	4	0.33	0.135	0.291	100	PASS	
PAH	chrysene	4	0.95	0.2825	0.8165	27	PASS	
PAH	dibenz[ah]anthracene	4	0.07	0.0475	0.0655	0.3	PASS	
PAH	fluoranthene	4	1.87	0.5475	1.6105	890	PASS	
PAH	fluorene	4	0.07	0.025	0.061	860	PASS	
PAH	indeno[123-cd]pyrene	4	0.53	0.1725	0.4655	41	PASS	
PAH	napthalene	4	0.03	0.03	0.03	13	PASS	
PAH	phenanthrene	4	0.98	0.2875	0.845	440	PASS	
PAH	pyrene	4	1.53	0.46	1.3215	2000	PASS	
Comments Key								
Asbestos: A=amosite (brown), CH=chrysotile (white), CR=crocidolite (blue)								

3.6. Testing Certificates.



FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 25/12200
Issue Number: 1
Date: 12 November, 2025

Client: T J Booth Associates
20a East Gate Street
Rochdale
Rochdale
Greater Manchester
UK
OL16 1DH

Project Manager: Daniel Slattery
Project Name: Morris - 1 Wildhouse In, Milnrow, OL16 3UU
Project Ref: N/A
Order No: N/A
Date Samples Received: 27/10/25
Date Instructions Received: 27/10/25
Date Analysis Completed: 12/11/25

Approved by:



Gemma Berrisford
Deputy Client Services Supervisor





Envirolab Job Number: 25/12200

Client Project Name: Morris - 1 Wildhouse In, Milnrow,
OL16 3UU

Client Project Ref: N/A

Lab Sample ID	25/12200/1	25/12200/2	25/12200/3	25/12200/4	25/12200/5			Units	Limit of Detection	Method ref
Client Sample No	S1	S2	S3	S4	S5					
Client Sample ID	TH1	TH2	TH3	TH4	TH2					
Depth to Top	0.00	0.00	0.00	0.00	0.90					
Depth To Bottom	0.10	0.60	0.10	0.10						
Date Sampled	23-Oct-25	23-Oct-25	23-Oct-25	23-Oct-25	23-Oct-25					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL					
Sample Matrix Code	5AE	4AE	4AE	4AE						
% Stones >10mm _A	<0.1	1.0	0.1	<0.1	-			% w/w	0.1	A-T-044
pH _D ^{MF}	5.35	4.40	4.36	5.10	-			pH	0.01	A-T-031s
Sulphate (acid soluble) _D ^{MF}	370	920	690	690	-			mg/kg	200	A-T-028s
Cyanide (total) _A ^{MF}	<1	<1	<1	<1	-			mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	<0.2	<0.2	-			mg/kg	0.2	A-T-050s
Sulphide _A	<5	<5	<5	<5	-			mg/kg	5	A-T-043-s
Sulphur (elemental) _D ^{MF}	<5	13	<5	<5	-			mg/kg	5	A-T-029s
Organic Matter _D ^{MF}	4.25	10.2	5.34	11.3	-			% w/w	0.14	A-T-032s
Arsenic _D ^{MF}	2	14	3	9	-			mg/kg	1	A-T-024s
Boron (water soluble) _D ^{MF}	<1.0	<1.0	<1.0	<1.0	-			mg/kg	1	A-T-027s
Cadmium _D	<1.0	<1.0	<1.0	<1.0	-			mg/kg	1	A-T-024s
Copper _D ^{MF}	25	55	23	32	-			mg/kg	1	A-T-024s
Chromium _D ^{MF}	22	21	21	18	-			mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	-			mg/kg	1	A-T-040s
Lead _D ^{MF}	31	190	35	61	-			mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	<0.17	-			mg/kg	0.17	A-T-024s
Nickel _D ^{MF}	17	16	13	15	-			mg/kg	1	A-T-024s
Selenium _D ^{MF}	<1	<1	<1	<1	-			mg/kg	1	A-T-024s
Zinc _D ^{MF}	58	59	45	62	-			mg/kg	1	A-T-024s
(1.02) Item 2.4.4 Point Liquid & Plastic Limit by Cone Penetrometer _A ⁸	-	-	-	-	Appended					Subcon IFA
(1.01) Item 1a Moisture Content of Soil (Oven Dried Method) _A ⁸	-	-	-	-	Appended					Subcon IFA



Envirolab Job Number: 25/12200

Client Project Name: Morris - 1 Wildhouse In, Milnrow,
OL16 3UU

Client Project Ref: N/A

Lab Sample ID	25/12200/1	25/12200/2	25/12200/3	25/12200/4	25/12200/5			Units	Limit of Detection	Method ref
Client Sample No	S1	S2	S3	S4	S5					
Client Sample ID	TH1	TH2	TH3	TH4	TH2					
Depth to Top	0.00	0.00	0.00	0.00	0.90					
Depth To Bottom	0.10	0.60	0.10	0.10						
Date Sampled	23-Oct-25	23-Oct-25	23-Oct-25	23-Oct-25	23-Oct-25					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL					
Sample Matrix Code	5AE	4AE	4AE	4AE						
Asbestos in Soil (inc. matrix)										
Asbestos in soil ₀ ⁹	NAD	NAD	NAD	NAD	-					A-T-045
Asbestos Matrix (visual) ₀	-	-	-	-	-					A-T-045
Asbestos Matrix (microscope) ₀	-	-	-	-	-					A-T-045
Asbestos ACM - Suitable for Water Absorption Test? ₀	N/A	N/A	N/A	N/A	-					A-T-045



Envirolab Job Number: 25/12200

Client Project Name: Morris - 1 Wildhouse In, Milnrow,
OL16 3UU

Client Project Ref: N/A

Lab Sample ID	25/12200/1	25/12200/2	25/12200/3	25/12200/4	25/12200/5			Units	Limit of Detection	Method ref
Client Sample No	S1	S2	S3	S4	S5					
Client Sample ID	TH1	TH2	TH3	TH4	TH2					
Depth to Top	0.00	0.00	0.00	0.00	0.90					
Depth To Bottom	0.10	0.60	0.10	0.10						
Date Sampled	23-Oct-25	23-Oct-25	23-Oct-25	23-Oct-25	23-Oct-25					
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL					
Sample Matrix Code	5AE	4AE	4AE	4AE						
PAH-16MS										
Acenaphthene _A ^{MS}	<0.01	0.09	<0.01	<0.01	-			mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{MS}	<0.01	0.01	<0.01	<0.01	-			mg/kg	0.01	A-T-019s
Anthracene _A ^{MS}	<0.02	0.32	<0.02	<0.02	-			mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{MS}	<0.04	0.58	<0.04	0.06	-			mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{MS}	<0.04	0.61	<0.04	0.08	-			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{MS}	<0.05	0.96	<0.05	0.12	-			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{MS}	<0.05	0.38	<0.05	0.08	-			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{MS}	<0.07	0.33	<0.07	<0.07	-			mg/kg	0.07	A-T-019s
Chrysene _A ^{MS}	<0.06	0.95	<0.06	<0.06	-			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{MS}	<0.04	0.07	<0.04	<0.04	-			mg/kg	0.04	A-T-019s
Fluoranthene _A ^{MS}	0.10	1.87	<0.08	0.14	-			mg/kg	0.08	A-T-019s
Fluorene _A ^{MS}	<0.01	0.07	<0.01	<0.01	-			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{MS}	<0.03	0.53	<0.03	0.10	-			mg/kg	0.03	A-T-019s
Naphthalene _A ^{MS}	<0.03	<0.03	<0.03	<0.03	-			mg/kg	0.03	A-T-019s
Phenanthrene _A ^{MS}	0.06	0.98	<0.03	0.08	-			mg/kg	0.03	A-T-019s
Pyrene _A ^{MS}	0.10	1.53	<0.07	0.14	-			mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{MS}	0.26	9.28	<0.08	0.80	-			mg/kg	0.01	A-T-019s



Report Notes

General

- This report shall not be reproduced, except in full, without written approval from Envirolab.
- The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client and can affect the validity of results.
- The results reported herein relate only to the material supplied to the laboratory.
- The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **four weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.
- Analytical results reflect the quality of the sample at the time of analysis only.
- Opinions and Interpretations expressed are outside our scope of accreditation.
- A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
- If a sample is outside of the calibration range or affected by interferences then it may need diluting. This will result in the limit of detection (LOD) being raised.
- Subcontracted Analysis: Please see the appended report for any deviations, current LODs and accreditation status of the test.

Key

Superscript "#"	Accredited to ISO 17025
Superscript "M"	Accredited to MCertS
Superscript "U"	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript "A"	Analysis performed on as-received Sample
Subscript "D"	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript "D" on Asbestos	Analysis performed on a dried aliquot of sample provided.
Subscript "A"	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
Trace	Asbestos found not suitable for Gravimetric Quantification – not enough to accurately weigh.
N/A	Not applicable

Asbestos

Identification: Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis
"Trace Asbestos Identified" will be reported if there is not enough present to verify the type.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs

Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.

Soil Chemical Analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as "% stones >10mm".

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH by method A-T-007:

For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only.
Results "with Clean up" indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:

EPH CWG results have humics mathematically subtracted through instrument calculation.

Where these humic substances have been identified in any IDs from "TPH CWG with clean up" please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Please contact your client manager if you require any further information.



Envirolab Deviating Samples Report

Hattersley Science & Technology Park, Stockport Road, Hattersley, SK14 3QU
Tel. 0161 368 4921 email. ask@envirolab.co.uk

Client: T J Booth Associates, 20a East Gate Street, Rochdale, Rochdale, Greater Manchester, UK, OL16 1DH
Project: Morris - 1 Wildhouse In, Milnrow, OL16 3UU
Clients Project No: N/A

Project No: 25/12200
Date Received: 27/10/2025 (am)
Cool Box Temperatures (°C): 10.1

NO DEVIATIONS IDENTIFIED

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

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Envirolab Analysis Dates

Lab Sample ID	25/12200/1	25/12200/2	25/12200/3	25/12200/4	25/12200/5
Client Sample No	S1	S2	S3	S4	S5
Client Sample ID/Depth	TH1 0.00-0.10m	TH2 0.00-0.60m	TH3 0.00-0.10m	TH4 0.00-0.10m	TH2 0.90m
Date Sampled	23/10/25	23/10/25	23/10/25	23/10/25	23/10/25
A-T-019s	30/10/2025	30/10/2025	30/10/2025	30/10/2025	
A-T-024s	06/11/2025	06/11/2025	06/11/2025	06/11/2025	
A-T-027s	04/11/2025	04/11/2025	04/11/2025	04/11/2025	
A-T-028s	05/11/2025	05/11/2025	05/11/2025	05/11/2025	
A-T-029s	04/11/2025	04/11/2025	04/11/2025	04/11/2025	
A-T-031s	04/11/2025	04/11/2025	04/11/2025	04/11/2025	
A-T-032s	05/11/2025	05/11/2025	05/11/2025	05/11/2025	
A-T-040s	04/11/2025	04/11/2025	04/11/2025	04/11/2025	
A-T-042sTCN	30/10/2025	30/10/2025	30/10/2025	30/10/2025	
A-T-043-s	03/11/2025	03/11/2025	03/11/2025	03/11/2025	
A-T-044	30/10/2025	30/10/2025	30/10/2025	30/10/2025	
A-T-045	30/10/2025	30/10/2025	30/10/2025	30/10/2025	
A-T-050s	04/11/2025	04/11/2025	04/11/2025	04/11/2025	

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

End of Report

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Unit 4, Faraday Close, Pattinson North Industrial Estate, Washington, NE38 8QJ Tel: 0191 482 8500
 washington@ianfarmer.co.uk www.ianfarmer.co.uk

Envirolab
 Envi Ltd
 Housesteads, Off Stockport Road
 Hattersley
 SK14 3QU

F.A.O.

Final Test Report - 2282740 / 1

Site: Morris/Wildhouse Lane

Job Number: 2282740

Originating Client: Envirolab

Originating Reference: 25/12200

Date Sampled: 23/10/2025

Date Scheduled: 30/10/2025

Date Testing Started: 05/11/2025

Date Testing Finished: 11/11/2025

Previous Reports	Amendments	Date Issued

Amendments:

Authorised By:

Tim Robinson
 Quality Supervisor

Report Issue Date: 12/11/2025

Page. 1



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2282740 / 1

Job Number: 2282740

Page: 2

Borehole / Trial Pit	Depth (m)	Sample	Natural Moisture Content %	Natural - Stones removed by hand Sieved - Washed on 425 µm sieve			Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Class	Description / Remarks
				Natural / Sieved	Percentage Passing %	Moisture Content %						
TH2	0.90	D	28	Natural	97	29	49	32	17	-0.19	MI	Brown CLAY/SILT



18/12/25



Final Test Report - 2282740 / 1

Site: Morris/Wildhouse Lane

Job Number: 2282740

Originating Client: Envirolab

All opinions and interpretations contained within this report are outside of our Scope of Accreditation.

This test report shall not be reproduced, except in full and only with the written permission of Ian Farmer Associates Ltd.

Samples will be retained for 28 days from date of issue of the final test report before being disposed of, unless we receive written instruction to the contrary.

Report End

Report Issue Date: 12/11/2025

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4. APPENDIX B: PHOTOS.





