



221-225 Droylsden Road, Manchester

Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy

Job Number
LKC241697

Report Date
9th March 2026

Client
Yaser Mehmood



www.thelkgroup.com

Ground Investigation | Land Remediation | Project Management



LK CONSULT

DOCUMENT QUALITY ASSURANCE

Site Address	221-225 Droylsden Road, Manchester M40 1NY
Report Title	Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy
Job Number	LKC241697
Client	Yaser Mehmood

Revision	0	Date of Issue	09/03/2026
Document Ref:	LKC241697-B1-GI-221-225 Droylsden Road, Manchester R0		
Status	Final		
Written By	Joe Walker		
Approved By	Paul Quimby		

DISCLAIMER

This report has been prepared by LK Consult Ltd (LKC) who have exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant, experienced in preparing reports of a similar scope.

However, to the extent that the report is based or relies upon information contained in records, reports or other materials provided to LKC, which have not been independently produced or verified, LKC gives no warranty, representation, or assurance as to the accuracy or completeness of such information.

This report is issued on the condition that LKC will not be held liable for any loss arising from ground conditions between sampling points (i.e., boreholes/trial pits/hand augers/surface samples) which have not been shown by the sampling points or related testing carried out during the investigation, nor for any loss arising from conditions below the maximum depth of the investigation. Opinions on such conditions, where given, are for general guidance only.

This report is prepared solely for the benefit of the client named above. It may not be relied upon by or submitted to a third party for their reliance for the purposes of valuation, mortgage, insurance, and regulatory approval until all invoices have been settled in full.

Those using this information in subsequent assessments or evaluations do so at their own risk.

EXECUTIVE SUMMARY

Site Details

Location	Site located adjacent east of the southern area Regent Street, off Droylsden Road, Manchester. Centred at National Grid Reference 388590E 400320N.
Area	350m ² .
Topography	86-87 metres above ordnance datum (AOD). Site is approximately level.
Current Site Use	Vacant building / domestic garage in the south-east. Hardstood ground covering the entire site comprising block paving and gravel. Site is enclosed by fencing.
Proposed Development	Erection of a two storey three bed dwelling with associated parking and soft landscaping (ref. 142426/FO/2025).

Site Setting

Main Historical Features	Onsite: Vacant Field, Residential Gardens with Unreferenced Structures (likely a shed / small domestic Garage). Surrounding Area: Ponds.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Till, Devensian (diamicton). Secondary Undifferentiated Aquifer. Bedrock: Collyhurst Sandstone Formation (sandstone). Principal Aquifer.
Landfills / Infilled Ground	No recorded landfills. Potentially infilled ground identified.
Site Reconnaissance	The site comprised a small building in the south of site, with hardstood ground across the rest of the site. Anecdotal evidence suggested the building was previously used for storage and was empty / disused at the time of the walkover. Fence panels were present through the centre of site. Site was relatively flat. Fly tipping and general litter was located throughout the site.

Ground Investigation Work Undertaken

Date of Investigation:	4 th February 2026.
Intrusive Investigation Work Undertaken:	3no. window sample boreholes. Contamination and geotechnical testing.

Ground Conditions

Made Ground	Recorded in all boreholes to depths of 0.80-1.70mbgl. The made ground comprised a paving with sand sub-base underlain by horizons of silt, clay and gravel with brick, ash and clinker.
Superficial	Comprised soft to stiff consistency slightly gravelly clay to 5.45mbgl.
Bedrock	Not encountered.
Groundwater	Not encountered. Perched water was noted in the shallow made ground in WS102.
Obstructions	Not encountered.

Geotechnical Assessment

Allowable Bearing Pressure	An undrained shear strength of 50kPa can be achieved at 2.80mbgl in the firm CLAY. This will return an ABC of 86kN/m ² .
Anticipated Foundation Type	It is considered the depth to competent ground will be too deep for traditional shallow foundations and it is considered that mini-piles will provide the most reliable and cost effective solution.
Other Considerations	Consideration of effects of trees also needs to be considered. Temporary supports of excavations may be required. Detailed design should be carried out by structural engineer. Concrete Requirements DS1-AC-1.

Contamination Risk Assessment

PL	Contaminant	Risk	Recommendations
1	Metals	Moderate	Remediation required.
	Asbestos, PAHs, TPH	Low	No remediation required.
2	Naphthalene, TPH.	Low	No remediation required.
3	Hazardous / ground gas: methane, carbon dioxide.	Moderate / Low	No remediation required.
4	PAHs, metals, TPH.	Low	No remediation required.
5	Naphthalene, TPH.	Low	Water pipelines assessment to be undertaken if any new water pipes are proposed. Barrier pipe is unlikely to be required.

Recommendations

PL	Recommendation
1	Environmental cover system required (600mm validated soil over a demarcation layer of geotextile membrane or stone) in garden areas where deeper made ground is present. For shallower areas potential to remove made ground to natural strata from garden areas and replacement with a nominal clean topsoil layer. All soil to be used as a clean capping layer will require testing to ensure it is 'suitable for use'.
2	No remediation required.
3	No remediation required.
4	No remediation required.
5	Water pipelines assessment to be undertaken if any new water pipes are proposed. Barrier pipe is unlikely to be required.
General	Watching brief for contamination within footprint of any demolished structures, such as shed.

Other Considerations

Other Considerations
Unexpected Contamination
Grubbing Out of Inground Structures
Stockpile Management
Disposal
Health and Safety Considerations

Further Work Requirements
Site Completion Report

TABLE OF CONTENTS

1.	Introduction.....	1
1.1.	Background	1
2.	Summary of Preliminary Risk Assessment (PRA)	2
2.1.	Phase 1 Preliminary Risk Assessment (PRA)	2
2.2.	Conceptual Model.....	2
3.	Ground Investigation.....	4
3.1.	Site Investigation Design and Methodology	4
3.2.	Sampling Protocol	4
3.3.	In-situ Testing	5
3.4.	Gas Monitoring	5
4.	Ground Conditions	6
4.1.	Geology	6
4.2.	Groundwater	6
5.	Geotechnical Assessment	7
5.1.	Proposed Development	7
5.2.	Summary of Ground Conditions.....	7
5.3.	Site Preparation.....	7
5.4.	Foundation Conditions and Bearing Capacity	7
5.5.	Ground Floor Slabs	9
5.6.	Drainage	9
5.7.	Concrete Durability	10
5.8.	Excavations	10
5.9.	Construction Activity and Inspection	10
6.	Generic Risk Assessment	11
6.1.	Introduction	11
6.2.	Soil Risk Assessment	11
6.3.	Gas Risk Assessment	13
6.4.	Controlled Water Assessment.....	13
6.5.	Potable Water Supply (Pollutant Linkage 5).....	14
6.6.	Revised Contamination Conceptual Model.....	14
7.	Conclusions	16
7.1.	Ground Conditions	16
7.2.	Geotechnical	16
7.3.	Contamination Assessment.....	16
8.	Recommendations and Remediation Strategy	17
8.1.	Remediation and Validation Recommendations.....	17
8.2.	Other Considerations	18
8.3.	Validation of Imported / Site Won Soils	19
8.4.	Site Completion Report.....	20

Figures

Figure 1 – Site Location and Boundary Plan

Figure 2 – Proposed Development Plan

Figure 3 – Site Investigation Location Plan

Appendices

Appendix A – Risk Matrix

Appendix B – Profile Logs

Appendix C – Certificates of Analysis (Soil)

Appendix D – Certificates of Analysis (Geotechnical)

Appendix E – Generic Assessment Criteria Values

Appendix F – References

1. Introduction

1.1. Background

LK Consult Ltd (LKC) has been commissioned to carry out a Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy for 221-225 Droylsden Road, Manchester. The investigation was undertaken in support of a planning application to develop the site for residential use.

The following work has previously been undertaken:

- Preliminary Risk Assessment (PRA) report, undertaken by LKC (Ref: LKC241697-A1-PRA-221-225 Droylsden Road, Manchester R0, dated 6th February 2025).

This investigation has been undertaken to confirm the ground conditions below the site and to allow a contamination and geotechnical assessment to be undertaken.

The investigation will aim to confirm the risks of the potential pollutant linkages identified in the PRA and recommend further assessment / remediation, as required.

A summary of the site details is presented in Table 1-1. Figure 1 indicates the site location and boundary plan. Figure 2 indicates the proposed development.

Location	Site located adjacent east of the southern area Regent Street, off Droylsden Road, Manchester. Centred at National Grid Reference 388590E 400320N.
Area	350m ² .
Topography	86-87 metres above ordnance datum (AOD). Site is approximately level.
Current Site Use	Vacant building / domestic garage in the south-east. Hardstood ground covering the entire site comprising block paving and gravel. Site is enclosed by fencing.
Proposed Development	Erection of a two storey three bed dwelling with associated parking and soft landscaping (ref. 142426/FO/2025).

Table 1-1: Summary of site details.

2. Summary of Preliminary Risk Assessment (PRA)

2.1. Phase 1 Preliminary Risk Assessment (PRA)

Pertinent information has been summarised from the PRA in Table 2-1.

Main Historical Features	Onsite: Vacant Field, Residential Gardens with Unreferenced Structures (likely a shed / small domestic Garage). Surrounding Area: Ponds.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Till, Devensian (diamicton). Secondary Undifferentiated Aquifer. Bedrock: Collyhurst Sandstone Formation (sandstone). Principal Aquifer.
Landfills / Infilled Ground	No recorded landfills.
Site Reconnaissance	The site comprised a small building in the south of site, with hardstood ground across the rest of the site. Anecdotal evidence suggested the building was previously used for storage, and was empty / disused at the time of the walkover. Fence panels were present through the centre of site. Site was relatively flat. Fly tipping and general litter was located throughout the site.

Table 2-1: Summary of site details, historical review, environmental settings, and site reconnaissance.

Table 2-2 summarises the geotechnical constraints. This has been updated to consider the previous site investigation work.

Coal Mining	Site is not within a Development High Risk Area. No further assessment required.
Slope Stability	No significant hazard identified. No further assessment required.
Made Ground	Unknown depth and constituent of made ground across the site.
Superficial	Unknown strength of soils for foundation design.
Bedrock	Unknown depth to bedrock.
Groundwater	Unknown depth and variability of groundwater.
Plasticity	Plasticity of clay deposits should be confirmed.
Sulphate	Unknown sulphate content of the made ground and natural.

Table 2-2: Summary of geotechnical constraints.

2.2. Conceptual Model

The preliminary contamination conceptual model using contaminant-pathway-receptor linkages based on guidance in LCRM² has been summarised in Table 2-3.

Each pollutant linkage is described along with an assessment of the risk based upon guidance on probabilities and consequences outlined in CIRIA C552³. The risk matrix is provided in Appendix A.

Due to the minor consequence associated with the phytotoxic effect to flora (i.e., loss of plants in a landscaping scheme), the overall risk for most sites will be very low to low. Where soils contain significant concentrations of heavy metals, in general there will other pollutant linkages (i.e., the risk to human health) that will trigger the requirement for remediation (e.g., a clean environmental cover system). As such the risk to flora associated with phytotoxic contaminants will not be considered further.

The risk to buildings associated with elevated sulphate will be considered as part of the geotechnical assessment and will not be included in the contamination risk assessment.

PL	Contaminants of Concern (source)	Pathway	Receptor	Probability	Consequence	Risk
1	Asbestos, PAHs, metals (ash made ground).	Dermal contact. Inhalation of soil, fibres, and dust. Ingestion of soils, dust, home-grown produce, soil attached to home-grown produce. Windblown dust.	Future site users. Offsite receptors.	Low Likelihood	Medium	Moderate / Low
2	Naphthalene (ash derived made ground).	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users. Offsite receptors.	Unlikely	Medium	Low
3	Hazardous / ground gas: methane, carbon dioxide (ash made ground).	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings. Offsite receptors.	Unlikely	Severe	Moderate / Low
4	PAHs, metals (ash made ground).	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater	Unlikely	Medium	Low
5	Naphthalene (ash made ground).	Ingestion of tainted water supply.	Future site users. Water pipes.	Unlikely	Medium	Low

Table 2-3: Preliminary Contamination Conceptual Model.

3. Ground Investigation

3.1. Site Investigation Design and Methodology

The investigation was carried out on 4th February 2026 and comprised the following:

- 3no. window sample boreholes drilled to 5.45 metres below ground level (mbgl) (ref. WS101 to WS103).

All site investigation locations are shown in Figure 3.

The locations were chosen to allow adequate assessment of ground conditions across the site. Areas where buildings are still present (location on site) could not be accessed.

The number of site investigation points corresponds to approximately one location per 11m square centres. This is considered to be a conservative sampling density and is in line with BS10175⁴ for a 'detailed investigation'.

All profile logs are provided in Appendix B and are in line with BS14688-1⁵ and BS5930⁶.

3.2. Sampling Protocol

3.2.1. Soil Sampling (Contamination)

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation⁷.

Soil was collected for onsite testing for total volatile organic compounds (TVOCs) using a photoionisation detector (PID) fitted with a 10.6eV lamp and moisture trap. A plastic zip bag was half filled with soil allowing a suitably sized headspace. The bag was sealed and stored for at least 20 minutes before being tested. Results of the PID readings are presented on the profile logs (Appendix B). The onsite monitoring was carried out in line CIRIA C665⁸ to aid in screening samples for volatile analysis.

Soil samples of approximately 500g were recovered in amber jars and plastic tubs. All the samples were sent to DETS laboratory for chemical testing.

Many of the contamination tests are UKAS or MCERTS accredited and further details are given in the Certificate of Analysis presented in Appendix C. Table 3-1 shows the soil testing undertaken.

Testing	No. Samples	Justification
Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.	4	A basic suite with a broad selection of contaminants where no significant evidence of contamination was identified (except for occasional brick, ash and coal).

Table 3-1: Summary of Soil Testing.

Notes:

If asbestos present during screen identification and quantification will be undertaken.

Metal/metalloids=arsenic, cadmium, chromium, (total and hexavalent), copper, lead, mercury, nickel, selenium, vanadium, zinc, and boron;

PAH=polycyclic aromatic hydrocarbons, BTEX=benzene, toluene, ethylbenzene, and xylenes; SOM=Soil Organic Matter.

3.2.2. Soil Sampling (Geotechnical)

Soil samples taken during the investigation were collected in tubs / bulk bags and sent to Murray Rix Laboratories / DETS for geotechnical testing.

Further details are given in the laboratory report presented in Appendix D. Table 3-2 shows the geotechnical testing undertaken.

Testing	No. Samples
Atterberg Limits (plasticity testing)	3

Table 3-2: Summary of Geotechnical Testing Undertaken.

3.3. In-situ Testing

3.3.1. Geotechnical Testing

In-situ geotechnical tests were performed in the boreholes to further characterise the sub-soil conditions. The following tests were undertaken:

- Standard Penetration Tests (SPTs) were performed in the window sample boreholes at approximately 1m intervals.
- Pocket penetrometer tests (giving undrained shear strength) were performed in the window sample boreholes within cohesive strata.

Shear vanes tests /pocket penetrometer tests were not always possible due to the friable or gravel rich nature of some of the clay deposits.

The results are provided within Appendix B.

3.4. Gas Monitoring

Gas monitoring was not carried out as part of this investigation.

A moderate / low risk was identified in the preliminary contamination conceptual model for gas (Pollutant Linkage 3) and further action was only recommended if significant organic / putrescible material was identified on site. Based on the ground conditions encountered, LKC did not consider gas monitoring to be required. This is discussed further in Section 6.3.

4. Ground Conditions

4.1. Geology

The ground conditions beneath the site are summarised below. Logs are provided in Appendix B.

4.1.1. Made Ground

Made ground was recorded in all boreholes to depths of 0.80-1.70mbgl. The made ground comprised a paving with sand sub-base to 0.20-0.25mbgl, underlain by various made grounds, shown below in Table 4-1.

Made Ground	Depth Present (mbgl)		
	WS101	WS102	WS103
Dark greyish black with organic odour gravelly sandy clayey SILT with brick, ash and clinker.	N/A	0.15-0.30	N/A
Grey and brown gravelly sandy silty CLAY with brick fragments	N/A	0.30-0.45	N/A
Dark grey sandy silty GRAVEL with brick, ash and clinker.	0.25-0.60	0.45-0.75	0.20-1.00 (layer of concrete & sandstone fragments 1.00-1.20mbgl)
Dark greyish black with organic odour gravelly sandy clayey SILT with brick, ash and clinker.	0.60-0.80	0.75-1.30	1.20-1.70

Table 4-1: Summary of onsite made ground.

4.1.2. Natural Strata

Superficial strata was underlying the made ground in all site investigation locations, and comprised soft to stiff consistency slightly gravelly clay to 5.45mbgl.

Bedrock was not encountered

4.1.3. Contamination

There was no visual / olfactory evidence of hydrocarbons or volatile contaminants in any locations. The PID recorded a maximum of 0.2ppm TVOC in the samples.

4.1.4. Obstructions

No obstructions were identified within any investigation location.

4.2. Groundwater

There were no groundwater strikes recorded during the investigation in any of the boreholes. Perched water was noted in the shallow made ground in WS102. No evidence of significant mobile contamination was identified in the perched water.

5. Geotechnical Assessment

5.1. Proposed Development

It is understood that the proposed development will comprise a two storey residential dwelling with associated landscaping and infrastructure. Details of the proposed loadings are not known and therefore a line loading of 75kN/m has been assumed for preliminary assessment purposes only.

The finished ground levels have not been provided, and it is therefore anticipated that they will not vary significantly from current levels. However, should the development proposals or finished levels be altered then the comments/recommendations in this section may require revising.

The depths of any underground engineering works (sewers etc.) are unknown and therefore have not been considered in the following assessment. Any such works should be designed so as not to influence, or compromise, proposed or existing foundations or ground stability.

It is anticipated that some enabling works may be required to create a level developable platform.

Given the nature of the proposed development the structure meets the criteria of Geotechnical Category 1 of Eurocode 7⁹.

5.2. Summary of Ground Conditions

Ground conditions identified at the site are detailed in Section 4.1 and typically comprises made ground to between 0.80m-1.70mbgl over natural cohesive superficial deposits of clay to the completion depths investigated.

5.3. Site Preparation

The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the Specification for Highway Works¹⁰. This should include:

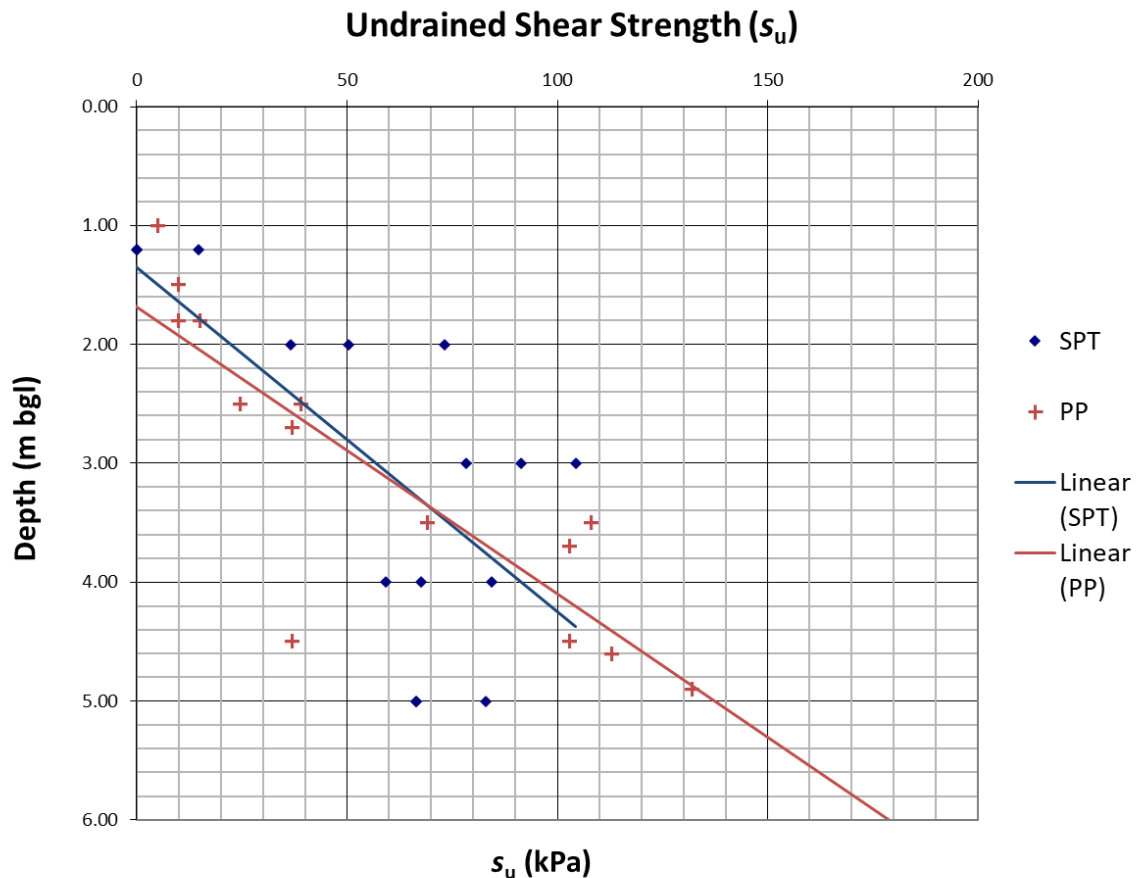
- Roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting void infilled with suitable compacted engineered fill.
- Redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill; and,
- Buried structures and old foundations may be encountered on site. These should be excavated from below the proposed development footprint with the resulting void backfilled.

The near surface soils may potentially be disturbed by weathering and site traffic. Precautions should be taken to avoid this, as excessive disturbance may result in more onerous floor slab design and increased amount of site disposal etc.

5.4. Foundation Conditions and Bearing Capacity

5.4.1. General

The natural cohesive material has been assessed using in-situ testing by SPT, Super Heavy Dynamic Probing and Pocket Penetrometer (PP) to obtain the undrained shear strength (s_u) of the material. The results of the testing have been plotted against depth and is shown in Graph 5-1.



Graph 5-1: Summary of s_u Vs. Depth from In-Situ SPT and PP Testing.

Graph 5-1 demonstrates that the strength of the cohesive deposits typically increases with depth, with the results of the SPTs and PP testing correlating well.

A conservative s_u of 50kPa is assigned to the cohesive material from a depth of c. 2.80mbgl for the natural superficial deposits.

5.4.2. Plasticity

Clay samples were subjected to Atterberg Limits (plasticity) and Moisture Content testing. Results are provided in Appendix D.

The clay is classified as medium plasticity.

The modified plasticity index as detailed in Chapter 4.2-D5 of the NHBC standards (modified plasticity index = plasticity index x % less than 425 μ m sieve / 100%) characterises the clay as having a medium volume change potential.

5.4.3. Foundations Options

The made ground and very soft shallow clays are not suitable for a founding material due to the inherent variability of the material. Foundation options are therefore:

- Deep strip foundations into the underlying Glacial Till.
- Mini-pile foundations.

These options are discussed in the following Sections.

5.4.4. Strip Foundations

Deep strip foundations should be constructed at least 150mm into the underlying stiff clay at 2.80mbgl. At this depth an Allowable Bearing Capacity of 86kN/m² has been calculated using a Factor of Safety of 3 and an undrained shear strength of 50kN/m² taken from Graph 5-1.

Foundations deeper than 2.50m will require specialist structural engineer design, with 2.50 to 3.00m being the practical depth of strip foundations.

Atterberg Limit determinations, summarised in Section 5.4.2, show the clay to be of medium plasticity and as such the sides of the foundations may require protection using clay board or similar.

Foundation depths should take account of the presence of existing and proposed trees with foundations deepened locally in accordance with relevant guidance, such as that proposed by NHBC Standards for a clay of medium plasticity and a modified plasticity index of medium volume change potential. It is understood that the current site use does not include the presence of trees however it would be prudent to future proof the development against the presence of trees at neighbouring properties by taking account of the soil plasticity.

5.4.5. Piled Foundations

As an alternative, consideration may be given to the use of mini-piled foundations to transfer loadings through any deep made ground / poor ground conditions and bear within the firm to stiff Glacial Till Clay at depths encountered below 2.80mbgl.

Use of mini piles will reduce the amount of spoil generated from foundation trenches requiring offsite disposal, along with the amount of concrete required for the development.

Up to 1.70m of made ground has been recorded within the exploratory holes and consideration must be given to the potential for negative skin friction to influence the piles.

Pile design should be undertaken by a specialist contractor to allow them to reduce the Factor of Safety based on their extensive pile testing data.

Should a pile foundation solution be the preferred option, then warranty providers such as the NHBC or LABC, may require further information on ground conditions to a minimum of 5m below the base of the pile.

5.4.6. Foundation Recommendations

Deep strip foundations below 2.5m depth are generally not economic and it is considered that a piling solution will provide the most reliable and cost-effective option for the site.

5.5. Ground Floor Slabs

Warranty providers such as NHBC will require suspended floor slabs where Made Ground is in excess of 600mm. Due to the presence of varying thickness' up to 1.70m depth of Made Ground across the site, it is considered that a suspended floor slab will be required for the proposed structure.

Where suspended floor slabs are employed ventilation of the under-floor void will be required to address condensation issues. This would also assist in the mitigation of potential gas ingress issues.

5.6. Drainage

The presence of substantial depths of made ground across the site may result in settlement. It is therefore recommended that drain runs are designed using steeper gradients and flexible joints to allow for some differential settlement.

5.7. Concrete Durability

Based upon the results of the chemical analyses (Appendix D), subsurface concrete can be designed in accordance with Design Sulphate Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1 in accordance with the recommendations provided in BRE Special Digest 1 (2005).

5.8. Excavations

Site observations indicated that excavations should be feasible in the near surface with normal plant. It is anticipated that any obstructions will be grubbed out during the reduced level dig for the sub structure works.

5.9. Construction Activity and Inspection

The following activities and inspections should be incorporated into the site works:

- Due to the variability of the soils at the site it is recommended that sufficient allowance is made for the inspection of formation and sub formations to foundations and pavement construction.
- Excavations where access is required should be subject to a risk assessment from a competent person and where appropriate mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97¹⁸ utilised.
- De-watering may be required, especially following periods of heavy rainfall. Removal of surface water and water within trenches should be possible with conventional sump pumping. Discharge of any water should be agreed with the relevant regulatory body and be undertaken under a trade effluent discharge, where required. Measures to remove silt and suspended solids may be required, and consideration should be given to provision of space for settling tanks or an attenuation pond.
- Where access to confined spaces is required appropriate mitigation measures should be addressed within the Construction Stage Health and Safety Plan. Particular account should be taken of the gas results.
- The presence of potential contamination and mitigation measures should be addressed as part of the Construction Stage Health and Safety Plan and should include measures to design out the risks, reduce their impact and finally the use of Personnel Protective Equipment (PPE).

6. Generic Risk Assessment

6.1. Introduction

Current good practice requires that the findings from a site investigation should be evaluated on a site-specific basis, using a risk-based approach. Risk assessment involves identification and evaluation of the hazards presented by the concentrations of contaminants measured followed by an evaluation of the risks which are associated with these hazards (LCRM¹⁹). Information gathered from the risk assessment has been collated in the revised contamination conceptual model in Section 6.6.

6.2. Soil Risk Assessment

6.2.1. Methodology

With regards to the soil risk assessment LKC will use the following hierarchy:

- Category 4 Screening Levels (C4SLs) ^{20, 21}.
- LQM Suitable 4 Use Levels (S4ULs) ^{22, 23, 24, 25}.

The proposed development is for residential houses with gardens, therefore the assessment criteria for residential with plant uptake has been used.

All criteria have been generated using the CLEA V1.06 model²⁶ based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

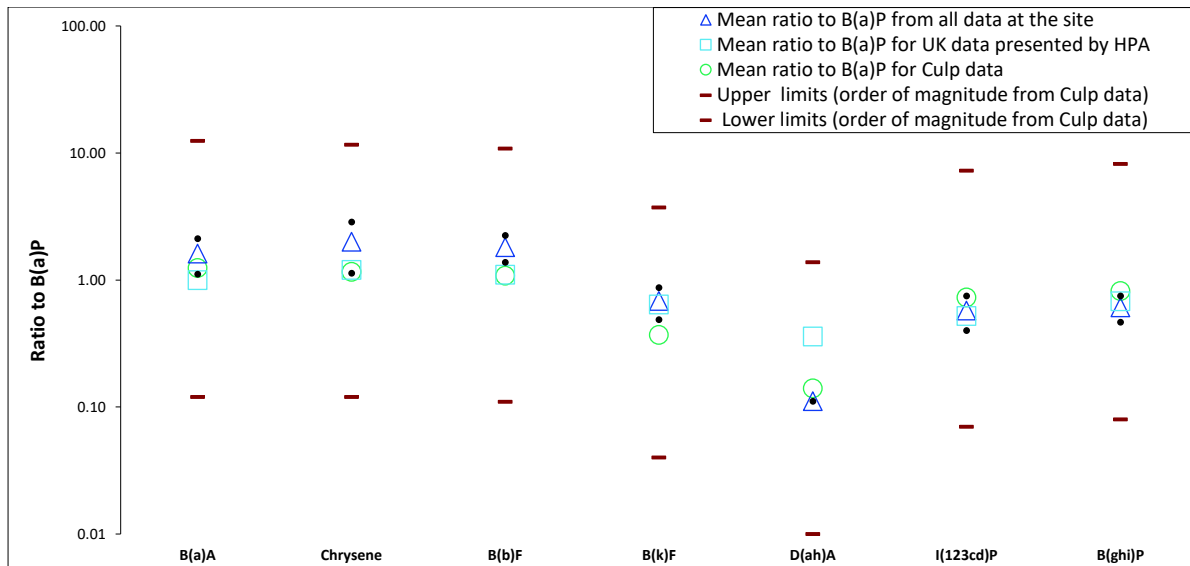
A summary of the generic assessment criteria used in this assessment is provided in Appendix E.

B(a)P as Surrogate Marker

LKC consider the main risk drivers for PAHs are benzo(a)pyrene (B(a)P) and naphthalene. This is due to B(a)P possibly being a carcinogen and most toxic of the PAHs^{27,28} and naphthalene the most volatile and soluble²⁹. The C4SLs indicate B(a)P as a surrogate marker for carcinogenic PAHs, if it falls within appropriate limits, since the risk from other non-carcinogenic PAHs are considered negligible³⁰. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)³¹ and CL:AIRE (2013). Naphthalene will be treated separately using the LQM S4ULs.

LKC undertook an assessment of the PAH data for the site with regards to using B(a)P as a surrogate marker for carcinogenic PAHs as per HPA and CL:AIRE guidelines. The primary toxicological study related to Culp *et.al*³², which was based on coal tar mixtures (>80,000mg/kg of total PAHs) fed in food to mice over a two-year carcinogenicity study.

Graph 6-1 summarises the study site data with respect to how the ratios of carcinogenic PAHs relate to B(a)P, within the confidence limits provided in the HPA document.



Graph 6-1: The ratio of PAH to B(a)P in soil for all available data at the site based on 2 samples (where values were >LOD to allow the calculation of a ratio).

Notes:

B(a)P=Benzo(a)pyrene; D(ah)A=Dibenzo(ah)anthracene; B(a)A=Benzo(a)anthracene; B(b)F=Benzo(b)fluoranthene; B(k)F=Benzo(k)fluoranthene; I(123cd)P=Indeno(123cd)pyrene; B(ghi)P=Benzo(ghi)perylene.

All the data points that could be used to calculate ratios fall inside the upper or lower limits.

Based on this distribution of data LKC considers B(a)P can be used as a surrogate marker for carcinogenic PAHs and the C4SL criteria is suitable for this dataset.

6.2.2. Soil Results Comparison against Assessment Criteria

All analysis sheets are presented in Appendix C. All the data has been compared to relevant assessment criteria and elevated results are presented in Table 6-1.

Sample Location / Depth (mbgl)	Contaminant	Criteria	Total No. of Samples Tested	Sample Result > Criteria
WS102 / 0.15-0.30	Arsenic	37	4	38
WS103 / 0.20-0.80				39
WS102 / 0.15-0.30	Lead	200	4	450
WS103 / 0.20-0.80				500

Table 6-1: Summary of Elevated Results.

Notes:

All units in mg/kg.

Only results that exceeded assessment criteria have been shown and results from all depths are noted.

Results have been compared to the nearest appropriate SOM for the assessment criteria hierarchy described in Section 6.2.

6.2.3. Direct Contact Risk – Pollutant Linkage 1

Elevated metals (arsenic and lead) have been identified on site. Given the number and location of elevated samples, the contamination is likely to be site wide.

The source of the contamination is expected to the brick, ash and clinker noted in the made ground.

At the concentrations identified, the contaminants are considered to pose a potential risk to future site users (residents) in gardens and soft landscaped areas, where made ground may be exposed / in contact with homegrown produce. The principal pathways are the ingestion pathways (soil, dust, and homegrown produce) and dermal contact.

The probability of metal contamination affecting site users is likely. With a medium consequence, the risk is considered to be moderate, and remediation is recommended.

No asbestos was identified in any of the samples; therefore, the probability of asbestos affecting site users is considered to be unlikely. With a medium consequence, the risk is moderate / low. At this stage, a low risk is assumed (as no asbestos identified) and remediation is not required. However, as a precaution, construction workers should be and vigilant for any suspected ACM during groundworks (discussed further in Section 7.2).

No elevated PAHs were identified, therefore the probability of these contaminants posing a risk to site users is considered unlikely. With a medium consequence, the risk is considered to be low, and no remediation is recommended.

6.2.4. Risk from Inhalation of Vapours – Pollutant Linkage 2

No visual / olfactory evidence of volatile contaminants was identified during the investigation. The PID did not detect any significant TVOCs. Confirmatory soil analysis did not detect any naphthalene above detection limits.

LKC therefore consider the probability of naphthalene affecting site users as unlikely. The consequence is expected to be medium, giving a low risk and no remediation is required.

6.3. Gas Risk Assessment

Gas monitoring was not carried out as part of this assessment. The PRA identified a moderate / low risk, due to the likely absence of deep made ground on site, and the lack of significant infilled features in close proximity to site.

NHBC-N94³⁴ states that any made ground soils are not inherently a significant source of hazardous ground gas. To be a risk of hazardous gas they require available degradable material (such as wood, timber, food waste and vegetable matter) to be a risk of gas generation, as well as stating that any fill materials require significant depth for significant gas generation. Furthermore, BS8485³⁵ Figure 6 also describes “made ground with low degradable organic content (e.g. up to 5% organic materials such as pieces of wood, pieces of paper, rags, etc. with a high proportion of ash and no food or other easily degradable waste)” as “very low generation potential”.

There is no evidence of >5% of such material within the logs and therefore the ground on site is unlikely to be a significant gas source.

LKC therefore confirm the probability of gas affecting receptors is unlikely. With a severe consequence, the risk is moderate to low. Given the low concentrations of gas and low flow, LKC consider a low risk would be appropriate.

6.4. Controlled Water Assessment

The PRA identified a low risk with respect to controlled waters as no significant source of mobile contamination was anticipated. Furthermore, although a Principal Aquifer is present below the site, no abstractions have been identified within influencing distance and the site is not located in a Source Protection Zone. The surface water is not considered to be a significant receptor.

No evidence of significant mobile contamination was identified on the site. Although elevated metals were identified within the soils, the source is anticipated to be the brick, ash and clinker noted within the made ground. Contamination associated with these materials is not anticipated to be mobile due to the residual crystalline nature of their matrix.

The site investigation did not identify any significant sources of likely mobile contamination within the soils. This confirms an unlikely probability of onsite contamination affecting controlled waters. With a medium consequence the risk is anticipated to be low, and no remediation is required.

6.5. Potable Water Supply (Pollutant Linkage 5)

Soil results were compared to United Utilities (UU) guidelines for the selection of potable water pipes in land potentially affected by contamination. Only contaminants of concern, based on the preliminary conceptual model and ground conditions encountered, were analysed.

No elevated VOCs (based on naphthalene only) have been identified. Therefore, the probability of organic contaminants affecting potable water pipes is unlikely. Given the consequence is considered to be medium, the risk (Pollutant Linkage 5) is anticipated to be low risk and no remediation is likely to be required.

Once details of the pipeline location and depths are known a UU Water Pipe Risk Assessment in line with the utility provider should be undertaken to confirm the most appropriate pipework for potable water.

6.6. Revised Contamination Conceptual Model

The preliminary contamination conceptual model (Table 2-3) has been revised following the risk assessments undertaken in Sections 6.1-6.4. The revised contamination conceptual model follows the same methodology and guidance used in the preliminary contamination conceptual model. The risk matrix is provided in Appendix A.

The revised contamination conceptual model is presented in Table 6-2.

Where a very low risk or low risk is identified no specific remediation is required.

Where there is a moderate / low risk is identified, some form of remediation may be required depending on the pollutant linkage, the type and concentration of contaminants present and the proposed development.

Where LKC identifies a moderate or higher risk, remediation or further investigation work is recommended.

PL	Contaminants of Concern (source)	Pathway	Receptor	Probability	Consequence	Risk	Recommendations
1	Metals (ash, clinker and brick)	Dermal contact. Inhalation of soil, fibres, and dust. Ingestion of soils, dust, home-grown produce, soil attached to home-grown produce. Windblown dust.	Future site users.	Likely	Medium	Moderate	Remediation required.
	Asbestos, PAHs, TPH			Unlikely	Medium	Low	No remediation required.
2	Naphthalene, TPH	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users.	Unlikely	Medium	Low	No remediation required.
3	Hazardous / ground gas: methane, carbon dioxide.	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings.	Unlikely	Severe	Moderate / Low	No remediation required.
4	PAHs, metals, TPH.	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater	Unlikely	Medium	Low	No remediation required.
5	Naphthalene, TPH.	Ingestion of tainted water supply.	Future site users. Water pipes.	Unlikely	Medium	Low	Water pipelines assessment to be undertaken if any new water pipes are proposed. Barrier pipe is unlikely to be required.

Table 6-2: Revised Contamination Conceptual Model.

7. Conclusions

7.1. Ground Conditions

Ground conditions are summarised in Table 7-1 below.

Made Ground	Recorded in all boreholes to depths of 0.80-1.70mbgl. The made ground comprised a paving with sand sub-base underlain by horizons of silt, clay and gravel with brick, ash and clinker.
Superficial	Comprised soft to stiff consistency slightly gravelly clay to 5.45mbgl.
Bedrock	Not encountered.
Groundwater	Not encountered. Perched water was noted in the shallow made ground in WS102.
Obstructions	Not encountered.

Table 7-1: Summary of Ground Conditions.

7.2. Geotechnical

Geotechnical observations and conclusions are contained in Table 7-2 below, more detailed discussions are contained within Section 5.

Allowable Bearing Pressure	An undrained shear strength of 50kPa can be achieved at 2.80mbgl in the firm CLAY. This will return an ABC of 86kN/m ² .
Anticipated Foundation Type	It is considered the depth to competent ground will be too deep for traditional shallow foundations and it is considered that mini-piles will provide the most reliable and cost effective solution.
Plasticity	Consideration will need to be given to the shrink / swell of the clay strata if it is to be used as founding strata, particularly where trees/hedges are present. Foundations may need to be deepened. A medium volume change potential has been calculated for the site.
Shallow Groundwater	Groundwater was not recorded during the site investigation works.
Concrete Requirements	Based on BRE Digest 2005 ³⁶ – DS-1 AC-1 recommended.
Services	Services – consideration to the presence of services running through the site. Services may need to be re-routed.
Temporary support of excavation	May be required; however, exploratory holes were generally recorded as stable.

Table 7-2: Geotechnical Conclusions Table.

7.3. Contamination Assessment

A revised contamination conceptual model has been produced by LKC which is summarised in Table 7-3 below (more detailed model provided in Section 6).

PL	Contaminant	Risk	Recommendations
1	Metals	Moderate	Remediation required.
	Asbestos, PAHs, TPH	Low	No remediation required.
2	Naphthalene, TPH.	Low	No remediation required.
3	Hazardous / ground gas: methane, carbon dioxide.	Moderate / Low	No remediation required.
4	PAHs, metals, TPH.	Low	No remediation required.
5	Naphthalene, TPH.	Low	Water pipelines assessment to be undertaken if any new water pipes are proposed. Barrier pipe is unlikely to be required.

Table 7-3: Summary Risk Table.

PL=Pollutant Linkage, see Table 6-2 for details.

8. Recommendations and Remediation Strategy

The recommendations/requirements provided below are considered appropriate for the site based on the site investigation work undertaken. LKC should stress that no remediation, enabling works or designing works should take place until Regulatory approval has been obtained.

The local authority may require a standalone Build-Phase Remediation Strategy and Verification Plan in accordance with LCRM Stage 3 remediation and verification³⁸. This should be produced once details of design, contractors and installation are known.

A summary of remediation requirements is included in Table 8-1.

PL	Recommendation
1	Environmental cover system required in soft landscaping and garden areas where deeper made ground is present. For shallower areas potential to remove made ground to natural strata from soft landscaping and garden areas and replacement with a nominal clean topsoil layer. All soil to be used as a clean capping layer will require testing to ensure it is 'suitable for use'.
2	No remediation required.
3	No remediation required.
4	No remediation required.
5	Water pipelines assessment to be undertaken if any new water pipes are proposed. Barrier pipe is unlikely to be required.
General	Watching brief for contamination within footprint of any demolished structures, such as shed.

Table 8-1: Remediation Summary.

8.1. Remediation and Validation Recommendations

8.1.1. Environmental Cover System OR Removal of Made Ground from Garden Areas (PL1)

Environmental Cover system

In gardens and soft landscaping areas, an environmental cover system will be required and should comprise 600mm depth in private gardens. The environmental cover system should be constructed as shown in Plate 8-1.

Either (physical break layer)			Or (geotextile membrane)		
600mm rear gardens. (minimum)	Chemically validated TOPSOIL ¹		600mm rear gardens. (minimum)	Chemically validated TOPSOIL ¹	
	Chemically validated SUBSOIL			Chemically validated SUBSOIL	
	100mm (minimum) PHYSICAL BREAK LAYER ²			GEOTEXTILE MEMBRANE (at base of subsoil)	
Existing MADE GROUND					

Plate 8-1: Typical Environmental Cover System Construction.

Notes:

Hardstood Areas – No Remediation Required.

¹NHBC recommend 100mm minimum topsoil depth.

²Gravel break layer, minimal fines.

Where there are TPO's in influencing distance of environmental cover systems it is likely the arboriculture officer may only allow a 100mm clean cover system over a geotextile membrane.

Validation of environmental cover soils will be required and should include measuring depth using a staff and providing photographic evidence. Photographic evidence of the granular physical break or geotextile layer should also be collected.

Chemical validation of imported soils is required, details are included in Section 8.3.

Removal of Made Ground

If an environmental cover system is chosen not to be installed, then instead, made ground within proposed garden areas should be excavated and removed down to natural, uncontaminated soils. Once natural strata are exposed, the area should be backfilled with clean, validated subsoil and topsoil suitable for residential use.

8.1.2. Potable Water Pipe Remediation (PL5)

It is recommended that a Water Pipeline Assessment³⁹ is undertaken once the location and depth of potable water pipes are known. It is unlikely that barrier pipe will be required.

Validation of pipeline installation should include delivery notes of pipe materials, photographs of installed pipe and confirmation of connections.

8.2. Other Considerations

8.2.1. Unexpected Contamination

The relevant contractors should be briefed that during development works at the site should any unusual ground conditions and / or visual or olfactory evidence of contamination (including asbestos containing material) be encountered at the site, LKC and the Local Authority should be informed, and further assessment of the material may be required.

Impacted soils should be placed on an impermeable surface to await further assessment, treatment, or removal from site (this may be subject to chemical testing to confirm suitable waste facility). The work should be done under the supervision and instruction of an environmental consultant.

To determine that significantly impacted soils have been removed, verification samples will be collected from the base and sides of the excavation. If all impacted ground cannot be removed and contamination remains on the ground, further remediation may need to be considered.

Validation requirements should include a log of work undertaken, including photographs and details of any sampling undertaken and validation of any potential additional remedial work.

8.2.2. Grubbing Out of In-ground Structures

Surface hard standing and relict features including former foundations and current foundation can be expected across the site wide. It is recommended that in-ground structures are grubbed out as part of the groundworks.

Hard materials can be used to generate suitable aggregates for re-use on site as part of engineered made ground and/ or construction platforms (subject to geo-environmental testing and client design specifications). Suitable materials derived from grubbing-up should be stored in a location on site, to be agreed with the Engineer, prior to crushing. Any unsuitable materials should be removed to a suitably licensed landfill site.

8.2.3. Stockpile Management

Stockpiled material should be suitably managed. Material should be segregated by type and source. For example, construction / demolition arisings, site won subsoil. Stockpiles may also require covering to minimise the generation of vapours, fibres, dust, and possible nuisance to adjacent receptors, and to prevent rainwater ingress. The source of each stockpile should be recorded and appropriate validation testing for re-use or potential offsite disposal should be undertaken as required.

8.2.4. Disposal

Material required to be removed from site should be undertaken under an appropriate duty of care and the results of chemical analysis should be provided to a licensed landfill for confirmation of waste classification.

Waste records such as disposal tickets and waste carrier licences should be provided in the Site Completion Report. Photographic evidence of removal and waste removal tickets should be retained and included in the validation report.

8.2.5. Health and Safety Considerations

In working with, removing, or treating any contaminating material it is important that any potential risks associated with the actual site works are mitigated by good environmental management of the site during the remedial phases. Standard health and safety precautions (as per HSE guidance⁴⁰) should be adopted by all workers involved with site enabling and construction works.

8.3. Validation of Imported / Site Won Soils

Chemical validation of all imported and site-won soils to be used on site in gardens and soft landscaping areas should be undertaken. Imported soils should be accompanied by a certificate of analysis and source details.

A summary of the required imported material sampling requirements is presented in Table 8-2, based on MCC 'Guidelines to Developer' (2021)⁴¹. LKC consider no testing, but proof of provenance is sufficient for natural, virgin, quarried material.

Ideally, the material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site. Where this is not possible then material imported should be segregated based on source and soil type. Validation samples should be taken prior to placement in gardens / soft landscaping to ensure suitability for use.

Material Type	Source	Suite of Analysis	Sampling Rate (min. 3 per source)		
			Garden	Landscape	Other *
Topsoil / subsoil / Fill material	Greenfield / natural site won	Suite A	200m ³	200m ³	200m ³
	Remediated / Site-won	Suite A / B dependent upon original SI	100m ³	150m ³	200m ³
	Brownfield / Unknown	Suite B	50m ³	150m ³	200m ³
Quarried Fill	First Generation i.e., quarried sand (subsoil) or stone (break layer)	No testing is required.	Certification of material provenance is required.		

Table 8-2: Sampling Requirements for Imported and Site Won Soils.

Notes:

Suite A - Heavy metals, pH, water soluble sulphate, speciated PAH, soil organic matter and asbestos screen.

Suite B - Heavy metals, pH, water soluble sulphate, speciated PAH, phenol, total and free cyanide, soil organic matter, asbestos screen, banded petroleum hydrocarbons (TPH CWG), BTEX, MTBE.

*Other assumed to be stone / 6F2 / mass fill etc.

Any soil with visual or olfactory evidence of hydrocarbons should be rejected.

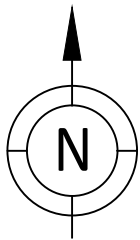
In addition, it should be ensured that the matrix of the topsoil is suitable as a growing medium and no undesirable material is present (in line with BS3882⁴²). LKC advise this information is provided by the supplier before material is imported onto site.

Imported material to be used in gardens will be compared against residential with plant uptake criteria (as used in the contamination risk assessment in Section 6).

8.4. Site Completion Report

All remediation and validation work should be documented in a Site Completion Report. The Site Completion Report will allow discharge of relevant planning conditions.

Figures



KEY

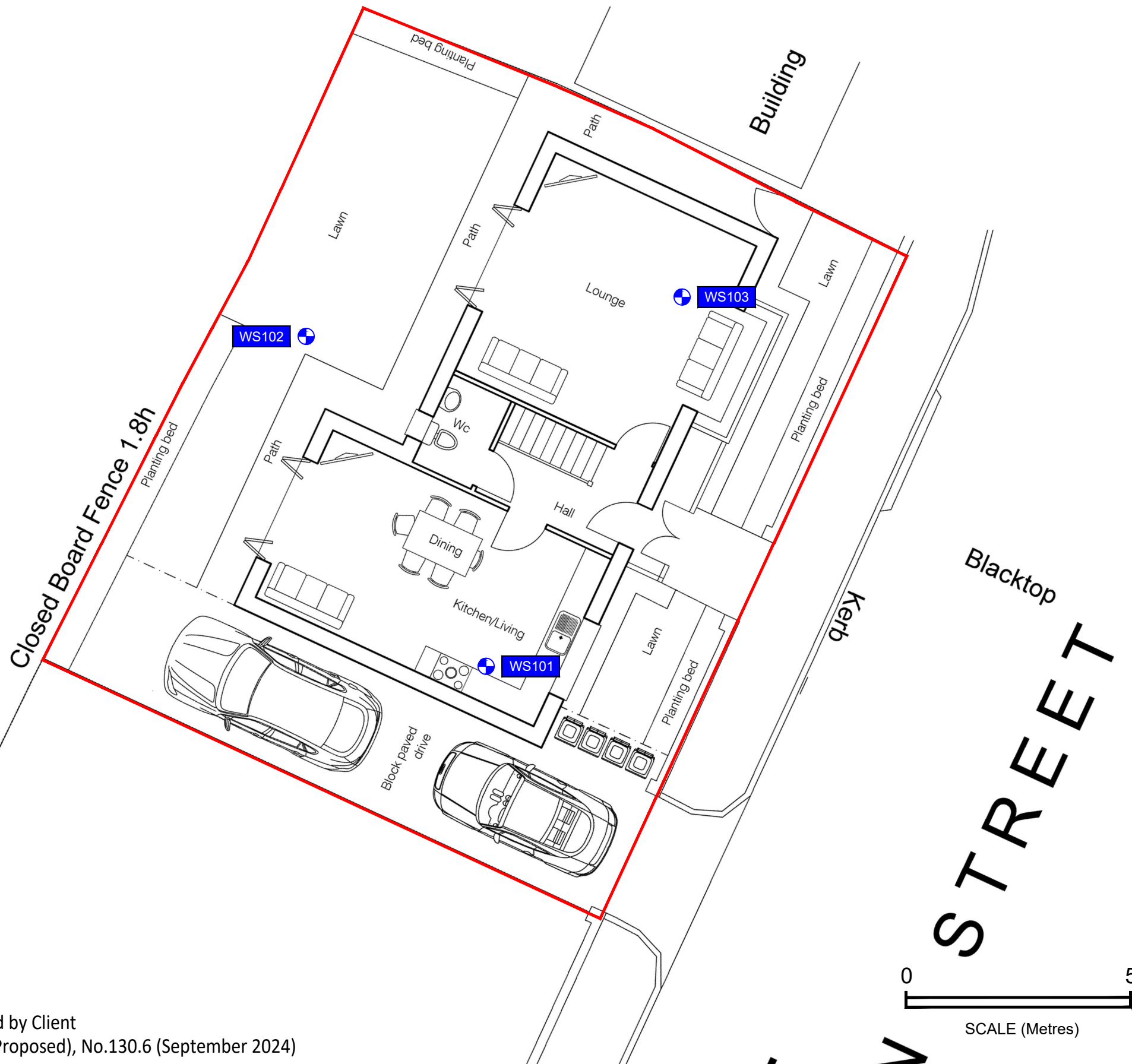
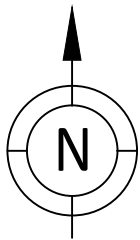
 Site Boundary

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.



Client:		Yaser Mehmood	
Site:		221-225 Droylsden Road, Manchester	
Title:		Proposed Development Plan	
Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC241697	1:100 @ A3	2	
Drawn By:	Checked By:		
AC	JW		
	Drawn:		
	Feb 2025		

Extract From: Plan Supplied by Client
Drawing Ref: Site Plan (as Proposed), No.130.6 (September 2024)



Extract From: Plan Supplied by Client
Drawing Ref: Site Plan (as Proposed), No.130.6 (September 2024)

KEY

-  Site Boundary
-  Window Sample Borehole (WS)

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.



LK CONSULT

Client:				Yaser Mehmood			
Site:				221-225 Droylsden Road, Manchester			
Title:				Site Investigation Location Plan			
Job No.:	LKC241697	Scale (See Scale Bar):	1:100 @ A3	Figure:	3	Revision:	
Drawn By:	AC	Checked By:	AP	Drawn:	Feb 2026		

Appendix A – Risk Matrix

RISK EVALUATION

The method for risk evaluation is a qualitative method of interpreting the output from the risk estimation stage of the assessment, based on CIRIA 552⁴³. It involves the classification of the:

- Magnitude of the potential consequence (severity) of the risk occurring (Table A).
- Magnitude of the probability (likelihood) of the risk occurring (Table B).

Consequence (Severity)		
Classification	Definition	Example
Severe	Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short term risk of pollution (note: water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings/properties. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definition of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High Concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled waters. Explosion, causing building collapse (can also equate to short term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ('significant harm' as defined in DETR, 2000). Pollution of sensitive water resources (note Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of a contaminant from site exceed generic, or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer (Principal and Secondary). Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures, and services ('significant harm' as defined in DETR, 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g., foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable damage to buildings, structures, and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discoloration of concrete.

Table A. Classification of Consequence

Probability (Likelihood)	
Classification	Definition
High Likelihood	There is a pollutant linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollutant linkage, and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollutant linkage, and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place and is less likely in the shorter term.
Unlikely	There is a pollutant linkage, but circumstances are such that it is improbable that an event would occur in the very long term.

Table B. Classification of Probability.

These classifications are then compared to indicate the risk presented by each pollutant linkage (Table C). It is important that this classification is only applied where there is a possibility (which can range from high likelihood to unlikely) of a pollutant linkage existing.

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table C. Comparison of Consequence against Probability

Once the risk has been determined the corresponding action can be assessed (Table D).

Risk	Action Required
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Table D. Description of the Classification and Likely Action Required.

Where a very low risk is identified no specific remediation is required.

Where a low risk is identified, some form of remediation may be required depending on the pollutant linkage, the type and concentration of contaminants present and the proposed development.

Where there is a moderate/low risk identified, an assessment will be undertaken to establish what category the pollutant linkage will fall into.

Where LKC identifies a moderate or higher risk, remediation or further investigation work is recommended.

Appendix B – Profile Logs



LK CONSULT

Window Sample Borehole Log

Location Number:
WS101

Project Name: 221-225 Droylsden Road, Manchester

Client: Yaser Mehmood

Date: 04/02/2026

Project No. : LKC241697

Contractor: D & I Drilling Ltd

Equipment: Window Sample Rig: Competitor Dart

Level

Logged By
AP

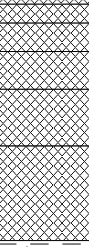
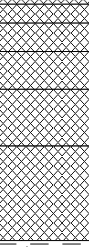
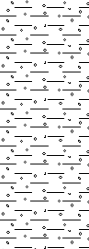
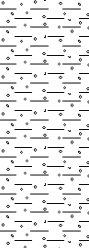
Scale
1:40

Page Number
Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description		Level (m)
0.05-0.25	PID=0.0ppm	0.05		MADE GROUND: Paving slabs.		
0.25-0.60	ES	0.25		MADE GROUND: Light brown slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone. (Probable sub-base)		
0.60-0.80	PID=0.0ppm	0.60		MADE GROUND: Dark grey sandy slightly silty GRAVEL with frequent brick fragments, occasional whole bricks, ash and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising anthropogenic material.		
0.80-1.20	D	0.80		MADE GROUND: Black with slight organic odour gravelly sandy clayey SILT with occasional brick fragments, ash and clinker. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded comprising anthropogenic material and sandstone.	1	
1.00-2.00	D			Soft consistency extremely low strength light grey with slight organic odour slightly gravelly silty CLAY with rare rootlets. Gravel is fine to coarse, subangular to subrounded comprising sandstone.		
1.00	PP=4.9kPa					
1.20-1.65	D					
1.20-1.65	N=3 (0,0/0,1,1,1)					
1.80	PP=9.8kPa					
2.00-2.50	D				2	
2.00-2.45	N=8 (2,1/2,2,2,2)					
		2.30		Soft to stiff consistency low to high strength brown slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded comprising sandstone and mudstone.		
2.50	PP=24.5kPa					
3.00-3.45	N=18 (2,3/4,4,5,5)				3	
3.50	PP=107.9kPa					
4.00-4.45	D				4	
4.00-4.45	N=20 (3,4/4,5,5,6)					
4.60	PP=112.8kPa					
4.90	PP=132.4kPa				5	
5.00-5.45	D					
5.00-5.45	N=16 (4,4/4,4,4,4)					
		5.45		End of Borehole at 5.45m		
					6	
					7	
					8	

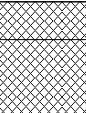
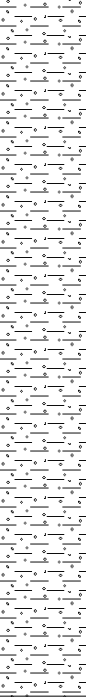
Remarks:

 LK CONSULT		Window Sample Borehole Log				Location Number: WS102	
Project Name: 221-225 Droylsden Road, Manchester			Client: Yaser Mehmood		Date: 04/02/2026		
Project No. : LKC241697			Contractor: D & I Drilling Ltd				
Equipment: Window Sample Rig: Competitor Dart			Level	Logged By AP	Scale 1:40	Page Number Sheet 1 of 1	

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description		Level (m)		
0.15-0.30	ES	0.05		MADE GROUND: Paving slabs.		1		
0.15-0.30	PID=0.0ppm	0.15		MADE GROUND: Light brown slightly gravelly SAND. Sand is fine to coarse.				
0.30-0.50	ES	0.30		Gravel is fine to coarse, subangular to subrounded comprising sandstone.				
0.30-0.50	PID=0.0ppm	0.50		(Probable sub-base)				
0.50-0.80	ES	0.80		MADE GROUND: Dark grey with slightly organic odour gravelly sandy clayey SILT with occasional brick fragments ash and clinker. Sand is fine to coarse.				
0.50-0.80	PID=0.0ppm			Gravel is fine to coarse, subangular to subrounded comprising anthropogenic materials and sandstone.				
0.80-1.30	ES			MADE GROUND: Grey with brown mottling firm consistency gravelly sandy silty CLAY with rare brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising anthropogenic material, sandstone and mudstone.				
0.80-1.30	PID=0.0ppm							
1.20-1.65	N=0 (1,0/0,0,0,0)	1.30					MADE GROUND: Black sandy silty GRAVEL with occasional ash and clinker and rare brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising anthropogenic material and sandstone.	2
1.30-2.00	D						MADE GROUND: Dark brown slightly sandy SILT with low organic odour and rare brick fragments. Sand is fine to coarse.	
1.50	PP=9.8kPa		Soft to firm consistency low to medium strength grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded, comprising sandstone and mudstone.					
2.00-2.45	D							
2.00-2.45	N=16 (0,4/4,4,4,4)							
2.50	PP=39.2kPa							
3.00-3.45	D							
3.00	N=24 (3,4/5,6,6,7)							
3.50	PP=68.7kPa							
4.00-4.45	D		5.45			MADE GROUND: Dark brown slightly sandy SILT with low organic odour and rare brick fragments. Sand is fine to coarse.	3	
4.00	N=16 (4,4/4,4,4,4)	Soft to firm consistency low to medium strength grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded, comprising sandstone and mudstone.						
4.50	PP=36.8kPa							
5.00-5.45	D							
5.00	N=20 (4,4/5,5,5,5)							
End of Borehole at 5.45m				4				
				5				
				6				
					7			
				8				

Remarks:

 LK CONSULT		Window Sample Borehole Log				Location Number: WS103	
Project Name: 221-225 Droylsden Road, Manchester			Client: Yaser Mehmood		Date: 04/02/2026		
Project No. : LKC241697			Contractor: D & I Drilling Ltd				
Equipment: Window Sample Rig: Competitor Dart			Level	Logged By AP	Scale 1:40	Page Number Sheet 1 of 1	

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description		Level (m)
0.20-0.80 0.20-0.80	ES PID=0.0ppm	0.20		MADE GROUND: Light brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone. (Probable MOT) 0.10m to 0.20mbgl - Layer of whole bricks noted, underlain by plastic membrane. MADE GROUND: Sandy slightly silty GRAVEL with frequent brick fragments and occasional bricks, ash and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising anthropogenic materials.		
1.00-1.20 1.00-1.20 1.20-1.70 1.20-1.70 1.20-1.65	ES PID=0.0ppm ES PID=0.0ppm N=0 (2,1/0,0,0,0)	1.00 1.20		MADE GROUND: Light grey sandy GRAVEL with frequent concrete fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising anthropogenic material and sandstone. MADE GROUND: Dark brown gravelly sandy clayey SILT with occasional brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising anthropogenic material and sandstone.	1	
1.80 2.00-2.45 2.00-2.45	PP=14.7kPa D N=11 (2,2/2,3,3,3)	1.70		Soft to stiff consistency very low to high strength grey slightly gravelly CLAY. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	2	
2.70 3.00-3.45 3.00-3.45	PP=36.8kPa D N=21 (4,5/5,5,5,6)				3	
3.70 4.00-5.00 4.00-4.45	PP=103.0kPa D N=14 (2,2/3,3,4,4)				4	
4.50 5.00-5.45 5.00-5.45	PP=103.0kPa D N=16 (4,4/4,4,4,4)				5	
		5.45			6	
					7	
				End of Borehole at 5.45m	8	

Remarks:

Appendix C – Certificates of Analysis (Soil)

Certificate of Analysis

Certificate Number 26-02928

Issued: 24-Feb-26

Client LK Consult Limited
Unit 29
Eton Business Park
Eton Hill Road
Radcliffe
Manchester
M26 2ZS

Our Reference 26-02928

Client Reference ~ LKC241697

Order No ~ PO-C002432

Contract Title ~ 221-225 Droylsden Road, Manchester

Description 4 Soil samples.

Date Received 09-Feb-26

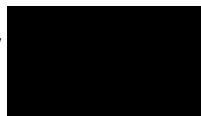
Date Started 09-Feb-26

Date Completed 24-Feb-26

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Reyhan Irfan
Operations Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 26-02928

Client Ref ~ LKC241697

Contract Title ~ 221-225 Droylsden Road, Manchester

Lab No	2638405	2638406	2638407	2638408
Sample ID ~	WS102	WS102	WS103	WS103
Depth ~	0.15-0.30	0.30-0.50	0.20-0.80	1.20-1.70
Other ID ~				
Sample Type ~	ES	ES	ES	ES
Sampling Date ~	04/02/2026	04/02/2026	04/02/2026	04/02/2026
Sampling Time ~	n/s	n/s	n/s	n/s

Test	Method	LOD	Units				
Preparation							
Moisture Content	DETSC 1004	0.1	%	22	18	18	34
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg	38	9.0	39	11
Cadmium	DETSC 2301#	0.1	mg/kg	0.9	0.2	0.7	0.1
Chromium	DETSC 2301#	0.15	mg/kg	20	26	29	16
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	170	52	130	45
Lead	DETSC 2301#	0.3	mg/kg	450	38	500	89
Mercury	DETSC 2325#	0.05	mg/kg	0.75	0.07	0.22	0.14
Nickel	DETSC 2301#	1	mg/kg	28	37	37	27
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	46	32	41	32
Zinc	DETSC 2301#	1	mg/kg	250	170	180	69
Inorganics							
pH	DETSC 2008#		pH	6.7	7.4	7.5	7.3
Organic matter	DETSC 2002#	0.1	%	7.0	1.7	5.4	7.6
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	40	67	230	36
PAHs							
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03	0.08	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.04	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.39	< 0.03	0.73	0.06
Anthracene	DETSC 3303	0.03	mg/kg	0.05	< 0.03	0.11	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.66	< 0.03	1.4	0.09
Pyrene	DETSC 3303#	0.03	mg/kg	0.62	< 0.03	1.3	0.08
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.17	< 0.03	0.50	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.23	< 0.03	0.51	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.18	< 0.03	0.62	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.07	< 0.03	0.22	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.08	< 0.03	0.45	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03	0.18	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.05	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03	0.21	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	2.6	< 0.10	6.5	0.22

Summary of Asbestos Analysis Soil Samples

Our Ref 26-02928

Client Ref ~ LKC241697

Contract Title ~ 221-225 Droylsden Road, Manchester

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2638405	WS102 0.15-0.30	SOIL	NAD	none	Vicky Convery
2638406	WS102 0.30-0.50	SOIL	NAD	none	Vicky Convery
2638407	WS103 0.20-0.80	SOIL	NAD	none	Vicky Convery
2638408	WS103 1.20-1.70	SOIL	NAD	none	Vicky Convery

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 26-02928
 Client Ref ~ LKC241697
 Contract ~ 221-225 Droylsden Road, Manchester

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2638405	WS102 0.15-0.30 SOIL	04/02/26	GJ 250ml, GJ 60ml, PT 1L		
2638406	WS102 0.30-0.50 SOIL	04/02/26	GJ 250ml, GJ 60ml, PT 1L		
2638407	WS103 0.20-0.80 SOIL	04/02/26	GJ 250ml, GJ 60ml, PT 1L		
2638408	WS103 1.20-1.70 SOIL	04/02/26	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
 Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
 The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
 Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:

~ Sample details are provided by the client and can affect the validity of the results
 * -not accredited.
 # -MCERTS (accreditation only applies if report carries the MCERTS logo).
 \$ -subcontracted.
 n/s -not supplied.
 I/S -insufficient sample.
 U/S -unsuitable sample.
 t/f -to follow.
 nd -not detected.

End of Report Ver 25.10.03

Certificate of Analysis

Certificate Number 26-03257

Issued: 20-Feb-26

Client LK Consult Limited
Unit 29
Eton Business Park
Eton Hill Road
Radcliffe
Manchester
M26 2ZS

Our Reference 26-03257

Client Reference ~ LKC241697

Order No ~ PO-C002432

Contract Title ~ 221-225 Droylsden Road, Manchester

Description 2 Soil samples.

Date Received 12-Feb-26

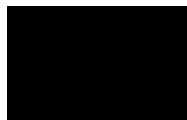
Date Started 12-Feb-26

Date Completed 20-Feb-26

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Reyhan Irfan
Operations Manager



2139

Sample Deviations present. See Deviation Table Section for details.

Normec DETS Limited

Unit 2, Park Road Industrial Estate South, Consett, Co Durham, DH8 5PY
Tel: 01207 582333 • email: info-dets@normecgroup.com • normecdets.com

Summary of Chemical Analysis Soil Samples

Our Ref 26-03257

Client Ref ~ LKC241697

Contract Title ~ 221-225 Droylsden Road, Manchester

Lab No	2640447	2640448
Sample ID ~	WS103	WS101
Depth ~	0.50-1.50	1.00-2.00
Other ID ~		
Sample Type ~	ES	ES
Sampling Date ~	04/02/2026	04/02/2026
Sampling Time ~	n/s	n/s

Test	Method	LOD	Units		
Metals					
Magnesium Aqueous Extract (2:1)	DETSC 2076*	10	mg/l	< 10	< 10
Inorganics					
pH	DETSC 2008#		pH	7.1	7.5
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	6.8	1.6
Nitrate Aqueous Extract as NO3 (2:1)	DETSC 2055	1	mg/l	2.1	< 1.0
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	30	13

Information in Support of the Analytical Results

Our Ref 26-03257
 Client Ref ~ LKC241697
 Contract ~ 221-225 Droylsden Road, Manchester

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2640447	WS103 0.50-1.50 SOIL	04/02/26	PT 1L	pH + Conductivity (7 days)	
2640448	WS101 1.00-2.00 SOIL	04/02/26	PT 1L	pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:

~ Sample details are provided by the client and can affect the validity of the results

* -not accredited.

-MCERTS (accreditation only applies if report carries the MCERTS logo).

\$ -subcontracted.

n/s -not supplied.

I/S -insufficient sample.

U/S -unsuitable sample.

t/f -to follow.

nd -not detected.

End of Report Ver 25.10.03

Appendix D – Certificates of Analysis (Geotechnical)

TEST REPORT

Client LK Consult Ltd

Address Unit 29 Eton Business Park
Eton Hill Road
Radcliffe
Greater Manchester
M26 2ZS

Contract LKC 24 1697 -
221-225 Droylsden Road, Manchester

Job Number MRN 26004/12
Date of Issue 06 March 2026
Page 1 of 4

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

Murray Rix is the trading name of Murray Rix (Northern) Limited. Registered in England 2878361

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

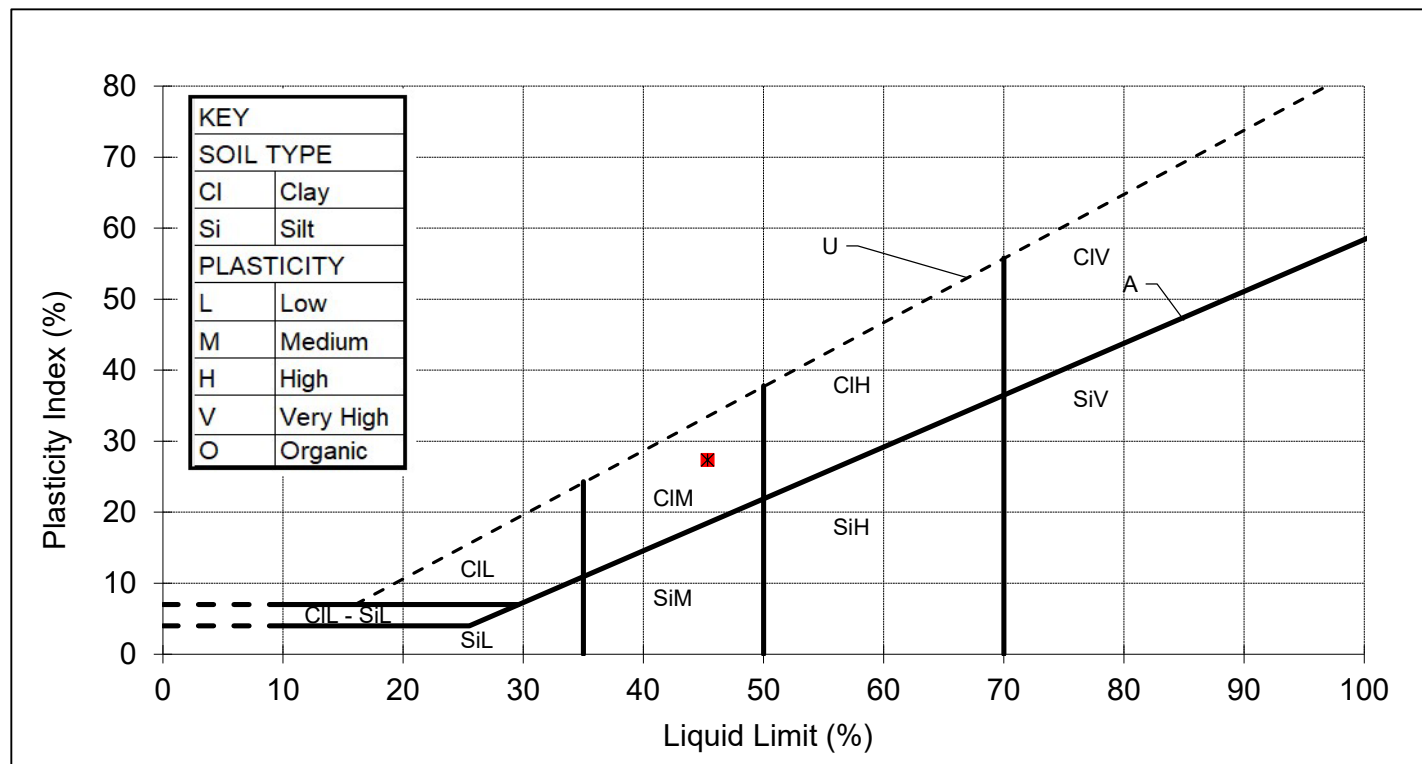
CLIENT	LK Consult Ltd
SITE	LKC 24 1697 - 221-225 Droylsden Road, Manchester
JOB NUMBER	MRN 26004/12

SAMPLE LABEL	WS101 0.8-1.2m	DATE SAMPLED	21-Jan-26
SAMPLE No.	6027801	DATE RECEIVED	28-Jan-26
DATE TESTED	19-Feb-26	SAMPLED BY	Client

MATERIAL	Grey dark brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
PRE TREATMENT	As received	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	45.4	0.998	
Determination 2 (avg)	20.2	45.4		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
39.4	45	18	27	92



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

06-Mar-26

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

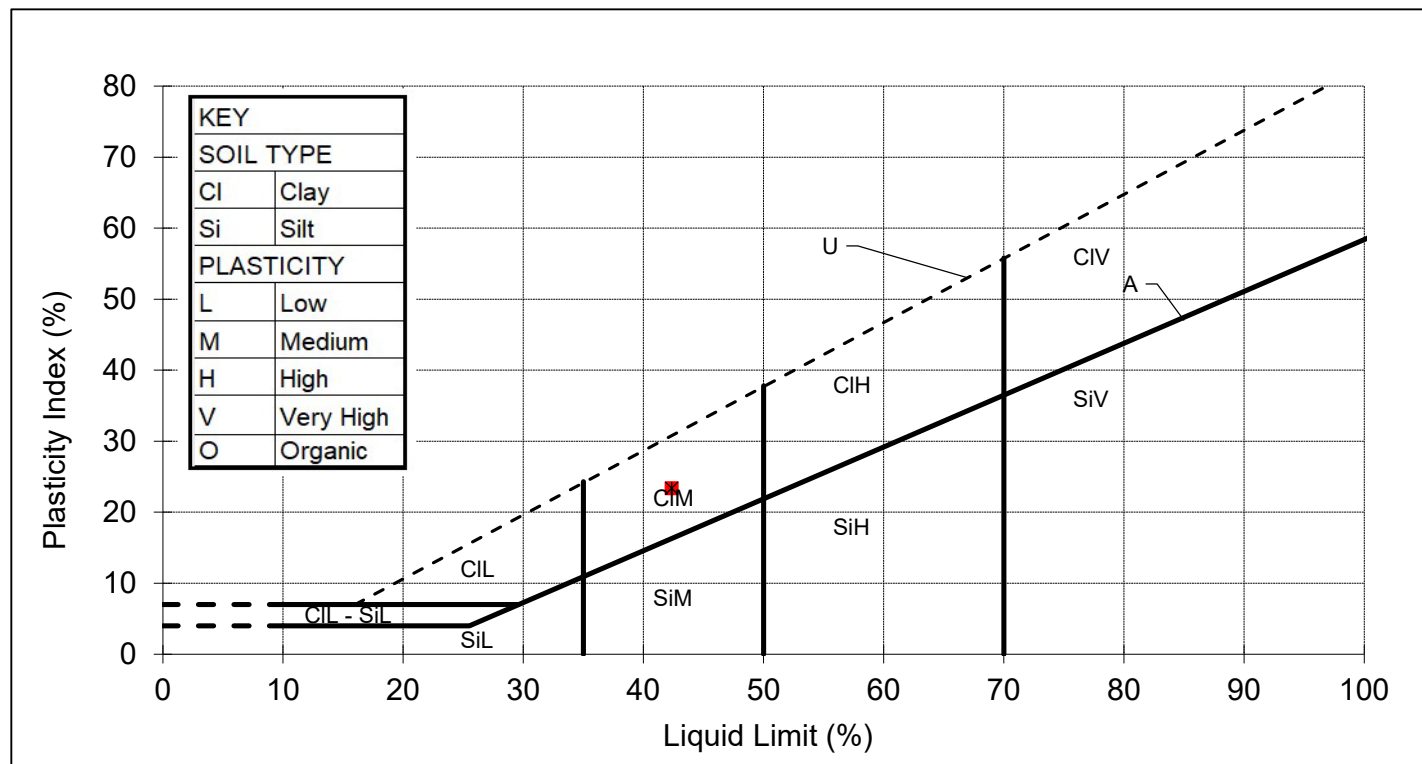
CLIENT	LK Consult Ltd
SITE	LKC 24 1697 - 221-225 Droylsden Road, Manchester
JOB NUMBER	MRN 26004/12

SAMPLE LABEL	WS103 2.0-2.45m	DATE SAMPLED	21-Jan-26
SAMPLE No.	6027802	DATE RECEIVED	28-Jan-26
DATE TESTED	19-Feb-26	SAMPLED BY	Client

MATERIAL	Dark brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
PRE TREATMENT	As received	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	19.8	42.1	1.007	
Determination 2 (avg)	19.5	42.0		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
26.9	42	19	23	94



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

06-Mar-26

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

PLASTIC LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014+A1:2022

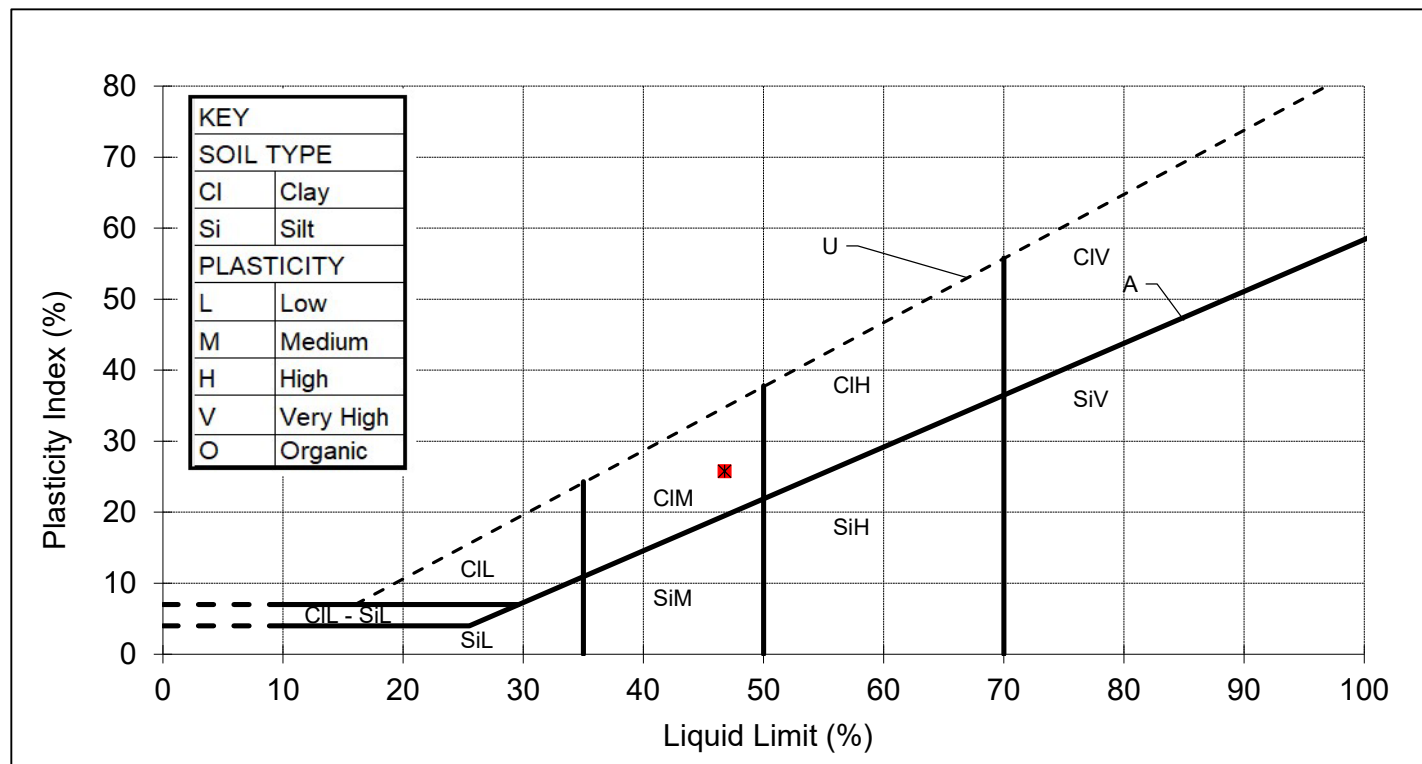
CLIENT	LK Consult Ltd
SITE	LKC 24 1697 - 221-225 Droylsden Road, Manchester
JOB NUMBER	MRN 26004/12

SAMPLE LABEL	WS101 1.5-2.0m	DATE SAMPLED	21-Jan-26
SAMPLE No.	6027803	DATE RECEIVED	28-Jan-26
DATE TESTED	19-Feb-26	SAMPLED BY	Client

MATERIAL	Dark brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
PRE TREATMENT	As received	% RET. 425um BY	Wet Sieved

Test Readings mm (average)	Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	46.7	
Determination 2 (avg)	20.0	46.8	

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
27.1	47	21	26	91



REMARKS

SIGNED

NAME

O.P. Davies BA (Hons)
(Director / Head of Laboratory)

DATE

06-Mar-26

Appendix E – Generic Assessment Criteria Values

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}	Source
Metals	Inorganic Arsenic	N/A	37	40	49	640	79	168	DEFRA C4SL
	Beryllium	N/A	1.7	1.7	35	12	2.2	63	LQM S4UL
	Boron	N/A	290	11,000	45	240,000	21,000	46,000	LQM S4UL
	Cadmium	N/A	26	149	4.9	410	220	880	DEFRA C4SL
	Chromium (III)	N/A	910	910	18,000	8,600	1,500	33,000	LQM S4UL
	Chromium (VI)	N/A	21.0	21.0	170.0	49	23.0	250	DEFRA C4SL
	Copper	N/A	2,400	7,100	520	68,000	12,000	44,000	LQM S4UL
	Lead	N/A	200	310	80	2,330	630	1,300	DEFRA C4SL
	Elemental Mercury	N/A	1.2	1.2	21	58 (25.8) ^{vap}	16	30 (25.8) ^{vap}	LQM S4UL
	Inorganic Mercury	N/A	40	56	19	1,100	120	240	LQM S4UL
	Methylmercury	N/A	11	15	6.0	320	40	68	LQM S4UL
	Nickel	N/A	130	180	53	980	230	800	LQM S4UL
	Selenium	N/A	250	430	88	12,000	1,100	1,800	LQM S4UL
Polycyclic Aromatic Hydrocarbons (PAHs)	Vanadium	N/A	410	1,200	91	9,000	2,000	5,000	LQM S4UL
	Zinc	N/A	3,700	40,000	620	730,000	81,000	170,000	LQM S4UL
	Acenaphthene	1%	210	3,000 (57.1) ^{sol}	34	84,000 (57.0) ^{sol}	15,000	29,000	LQM S4UL
		2.5%	510	4,700 (141) ^{sol}	85	97,000 (141) ^{sol}	15,000	30,000	LQM S4UL
		6%	1,100	6,000 (336) ^{sol}	200	100,000	15,000	30,000	LQM S4UL
	Acenaphthylene	1%	170	2,900 (86.1) ^{sol}	28	83,000 (86.1) ^{sol}	15,000	29,000	LQM S4UL
		2.5%	420	4,600 (212) ^{sol}	69	97,000 (212) ^{sol}	15,000	30,000	LQM S4UL
		6%	920	6,000 (506) ^{sol}	160	100,000	15,000	30,000	LQM S4UL
	Anthracene	1%	2,400	31,000 (1.17) ^{vap}	380	520,000	74,000	150,000	LQM S4UL
		2.5%	5,400	35,000	950	540,000	74,000	150,000	LQM S4UL
		6%	11,000	37,000	2,200	540,000	74,000	150,000	LQM S4UL
	Benz(a)anthracene	1%	7.2	11	2.9	170	29	49	LQM S4UL
		2.5%	11	14	6.5	170	29	56	LQM S4UL
		6%	13	15	13	180	29	62	LQM S4UL
	Benzo(a)pyrene (only)	1%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
		2.5%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
		6%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
	Benzo(a)pyrene (surrogate marker Coal Tar)	1%	0.8	1.2	0.32	15	2.2	4	LQM S4UL
		2.5%	1.0	1.2	0.67	15	2.2	5	LQM S4UL
		6%	1.1	1.2	1.20	15	2.2	5	LQM S4UL
	Benzo(b)fluoranthene	1%	2.6	3.9	0.99	44	7.1	13	LQM S4UL
		2.5%	3.3	4.0	2.1	44	7.2	15	LQM S4UL
		6%	3.7	4.0	3.9	45	7.2	16	LQM S4UL
	Benzo(ghi)perylene	1%	320	360	290	3,900	640	1,400	LQM S4UL
		2.5%	340	360	470	4,000	640	1,500	LQM S4UL
		6%	350	360	640	4,000	640	1,600	LQM S4UL
	Benzo(k)fluoranthene	1%	77	110	37	1,200	190	370	LQM S4UL
		2.5%	93	110	75	1,200	190	410	LQM S4UL
		6%	100	110	130	1,200	190	440	LQM S4UL
	Chrysene	1%	15	30	4.1	350	57	93	LQM S4UL
		2.5%	22	31	9.4	350	57	110	LQM S4UL
		6%	27	32	19	350	57	120	LQM S4UL
	Dibenzo(ah)anthracene	1%	0.24	0.31	0.14	3.5	0.57	1.1	LQM S4UL
		2.5%	0.28	0.32	0.27	3.6	0.58	1.3	LQM S4UL
		6%	0.3	0.32	0.43	3.6	0.58	1.4	LQM S4UL
	Fluoranthene	1%	280	1,500	52	23,000	3,100	6,300	LQM S4UL
		2.5%	560	1,600	130	23,000	3,100	6,300	LQM S4UL
		6%	890	1,600	290	23,000	3,100	6,400	LQM S4UL
	Fluorene	1%	170	2,800 (36.0) ^{sol}	27	63,000 (30.9) ^{sol}	9,900	20,000	LQM S4UL
		2.5%	400	3,800 (76.5) ^{sol}	67	68,000	9,900	20,000	LQM S4UL
		6%	860	4,500 (183) ^{sol}	160	71,000	9,900	20,000	LQM S4UL
	Indeno(123-cd)pyrene	1%	27	45	9.5	500	82	150	LQM S4UL
		2.5%	36	46	21	510	82	170	LQM S4UL
		6%	41	46	39	510	82	180	LQM S4UL
	Naphthalene	1%	15	15	65	1600 f	11000 f	800 f	C4SL
		2.5%	36	36	130	3700 f	15000 f	1200 f	C4SL
		6%	85	85	200	8400 f	17000 f	1900 f	C4SL
	Phenanthrene	1%	95	1,300 (36.0) ^{sol}	15	22,000	3,100	6,200	LQM S4UL
		2.5%	220	1,500	38	22,000	3,100	6,200	LQM S4UL
		6%	440	1,500	90	22,000	3,100	6,300	LQM S4UL
	Pyrene	1%	620	3,700	110	54,000	7,400	15,000	LQM S4UL
		2.5%	1,200	3,800	270	54,000	7,400	15,000	LQM S4UL
		6%	2,000	3,800	620	54,000	7,400	15,000	LQM S4UL
	Coal Tar (B(a)P as surrogate marker)	1%	0.79	1.2	0.32	15	2.2	4.4	LQM S4UL
		2.5%	0.98	1.2	0.67	15	2.2	4.7	LQM S4UL
		6%	1.1	1.2	1.2	15	2.2	4.8	LQM S4UL

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}	Source
BTEx Compounds	Benzene	1%	0.087	0.38	0.017	27	72	90	LQM S4UL
		2.5%	0.17	0.70	0.034	47	72	100	LQM S4UL
		6%	0.37	1.4	0.075	90	73	110	LQM S4UL
		6%	0.87	3.3	0.180	98	140	230	C4SL
	Toluene	1%	130	880 (869) ^{vap}	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}	LQM S4UL
		2.5%	290	1,900	51	110,000 (1,920) ^{vap}	56,000	95,000 (1,920) ^{vap}	LQM S4UL
		6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}	LQM S4UL
	Ethylbenzene	1%	47	83	16	5,700 (518) ^{vap}	24,000	17,000 (518) ^{vap}	LQM S4UL
		2.5%	110	190	39	13,000 (1,220) ^{vap}	24,000	22,000 (1,220) ^{vap}	LQM S4UL
		6%	260	440	91	27,000 (2,840) ^{vap}	25,000	27,000 (2,840) ^{vap}	LQM S4UL
	o-xylene	1%	60	88	28	6,600 (478) ^{sol}	41,000	17,000 (478) ^{sol}	LQM S4UL
		2.5%	140	210	67	15,000 (1,120) ^{sol}	42,000	24,000 (1,120) ^{sol}	LQM S4UL
		6%	330	480	160	33,000 (2,620) ^{sol}	43,000	33,000 (2,620) ^{sol}	LQM S4UL
	m-xylene	1%	59	82	31	6,200 (625) ^{vap}	41,000	17,000 (625) ^{vap}	LQM S4UL
		2.5%	140	190	74	14,000 (1,470) ^{vap}	42,000	24,000 (1,470) ^{vap}	LQM S4UL
		6%	320	450	170	31,000 (3,460) ^{vap}	43,000	32,000 (3,460) ^{vap}	LQM S4UL
	p-xylene	1%	56	79	29	5,900 (576) ^{sol}	41,000	17,000 (576) ^{sol}	LQM S4UL
		2.5%	130	180	69	14,000 (1,350) ^{sol}	42,000	23,000 (1,350) ^{sol}	LQM S4UL
		6%	310	430	160	30,000 (3,170) ^{sol}	43,000	31,000 (3,170) ^{sol}	LQM S4UL
Petroleum Hydrocarbons	Aliphatic								
	EC 5-6	1%	42	42	730	3,200 (304) ^{sol}	570,000(304) ^{sol}	95,000 (304) ^{sol}	LQM S4UL
	EC>6-8	1%	100	100	2,300	7,800 (144) ^{sol}	600,000	150,000 (144) ^{sol}	LQM S4UL
	EC>8-10	1%	27	27	320	2,000 (78) ^{sol}	13,000	14,000 (78) ^{vap}	LQM S4UL
	EC>10-12	1%	130 (48) ^{vap}	130 (48) ^{vap}	2,200	9,700 (48) ^{sol}	13,000	21,000 (48) ^{vap}	LQM S4UL
	EC>12-16	1%	1,100 (24) ^{sol}	1,100 (24) ^{sol}	11,000	59,000 (24) ^{sol}	13,000	25,000 (24) ^{sol}	LQM S4UL
	EC>16-35	1%	65,000 (8.48)	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f	LQM S4UL
	EC>35-44	1%	65,000 (8.48)	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f	LQM S4UL
	Aliphatic								
	EC 5-6	2.5%	78	78	1,700	5,900 (558) ^{sol}	590,000	130,000 (558) ^{sol}	LQM S4UL
	EC>6-8	2.5%	230	230	5,600	17,000 (322) ^{sol}	610,000	220,000 (322) ^{sol}	LQM S4UL
	EC>8-10	2.5%	65	65	770	4,800 (190) ^{vap}	13,000	18,000 (190) ^{vap}	LQM S4UL
	EC>10-12	2.5%	330 (118) ^{vap}	330 (118) ^{vap}	4,400	23,000 (118) ^{vap}	13,000	23,000 (118) ^{vap}	LQM S4UL
	EC>12-16	2.5%	2,400 (59) ^{sol}	2,400 (59) ^{sol}	13,000	82,000 (59) ^{sol}	13,000	25,000 (59) ^{sol}	LQM S4UL
	EC>16-35	2.5%	92,000 (21)	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f	LQM S4UL
	EC>35-44	2.5%	92,000 (21)	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f	LQM S4UL
	Aliphatic								
	EC 5-6	6%	160	160	3,900	12,000 (1,150) ^{sol}	600,000	180,000 (1,150) ^{sol}	LQM S4UL
	EC>6-8	6%	530	530	13,000	40,000 (736) ^{sol}	620,000	320,000 (736) ^{sol}	LQM S4UL
	EC>8-10	6%	150	150	1,700	11,000 (451) ^{vap}	13,000	21,000 (451) ^{vap}	LQM S4UL
	EC>10-12	6%	760 (283) ^{vap}	760 (283) ^{vap}	7,300	47,000 (283) ^{vap}	13,000	24,000 (283) ^{vap}	LQM S4UL
	EC>12-16	6%	4,300 (142) ^{sol}	4,400 (142) ^{sol}	13,000	90,000 (142) ^{sol}	13,000	26,000 (142) ^{sol}	LQM S4UL
	EC>16-35	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f	LQM S4UL
	EC>35-44	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	1%	70	370	13	26,000 (1,220) ^{sol}	56,000	76,000 (1,220) ^{sol}	LQM S4UL
	EC>7-8(toluene)	1%	130	860	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}	LQM S4UL
	EC>8-10	1%	34	47	8.6	3,500 (613) ^{vap}	5,000	7,200 (613) ^{vap}	LQM S4UL
	EC>10-12	1%	74	250	13	16,000 (364) ^{sol}	5,000	9,200 (364) ^{sol}	LQM S4UL
	EC>12-16	1%	140	1,800	23	36,000 (169) ^{sol}	5,100	10,000	LQM S4UL
	EC>16-21	1%	260 ^f	1,900 ^f	46 ^f	28,000 ^f	3,800 ^f	7,600 ^f	LQM S4UL
	EC>21-35	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	EC>35-44	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	2.5%	140	690	27	46,000 (2,260) ^{sol}	56,000	84,000 (2,260) ^{sol}	LQM S4UL
	EC>7-8(toluene)	2.5%	290	1,800	51	110,000 (1,920) ^{sol}	56,000	95,000 (1,920) ^{sol}	LQM S4UL
	EC>8-10	2.5%	83	110	21	8,100 (1,500) ^{vap}	5,000	8,500 (1,500) ^{vap}	LQM S4UL
	EC>10-12	2.5%	180	590	31	28,000 (899) ^{sol}	5,000	9,700 (899) ^{sol}	LQM S4UL
	EC>12-16	2.5%	330	2,300 (419) ^{sol}	57	37,000	5,100	10,000	LQM S4UL
	EC>16-21	2.5%	540 ^f	1,900 ^f	110 ^f	28,000 ^f	3,800 ^f	7,700 ^f	LQM S4UL
	EC>21-35	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	EC>35-44	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	6%	300	1,400	57	86,000 (4,710) ^{sol}	56,000	92,000 (4,710) ^{sol}	LQM S4UL
	EC>7-8(toluene)	6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}	LQM S4UL
	EC>8-10	6%	190	270	51	17,000 (3,580) ^{vap}	5,000	9,300 (3,580) ^{vap}	LQM S4UL
	EC>10-12	6%	380	1,200	4	34,000 (2,150) ^{sol}	5,000	10,000	LQM S4UL
	EC>12-16	6%	660	2,500	130	38,000	5,100	10,000	LQM S4UL
	EC>16-21	6%	930 ^f	1,900 ^f	260 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	EC>21-35	6%	1,700 ^f	1,900 ^f	1,600 ^f	28,000 ^f	3,800 ^f	7,900 ^f	LQM S4UL
	EC>35-44	6%	1,700 ^f	1,900 ^f	1,600 ^f	28,000 ^f	3,800 ^f	7,900 ^f	LQM S4UL
	Aliphatic +Aromatic >EC44	1%	1,600 ^f	1,900 ^f	1,200 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
		2.5%	1,800 ^f	1,900 ^f	2,100 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
		6%	1,900 ^f	1,900 ^f	3,000 ^f	28,000 ^f	3,800 ^f	7,900 ^f	LQM S4UL

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}	Source
Chloalkanes and Alkenes & Explosives	1,2 Dichloroethane (DCA)	1%	0.11	0.16	0.05	12.0	300	300	DEFRA C4SL
		2.5%	0.18	0.24	0.10	17.0	310	330	DEFRA C4SL
		6%	0.31	0.41	0.19	29.0	310	330	DEFRA C4SL
	1,1,1 Trichloroethane (TCA)	1%	8.8	9.0	48	660	140,000	57,000 (1,425) ^{vap}	LQM S4UL
		2.5%	18	18	110	1,300	140,000	76,000 (2,915) ^{vap}	LQM S4UL
		6%	39	40	240	3,000	140,000	100,000 (6,392)	LQM S4UL
	1,1,2,2-Tetrachloroethanes (PCA)	1%	1.6	3.9	0.41	270	1,400	1,800	LQM S4UL
		2.5%	3.4	8.0	0.89	550	1,400	2,100	LQM S4UL
		6%	7.5	17	2.0	1,100	1,400	2,300	LQM S4UL
	1,1,1,2-Tetrachloroethanes (PCA)	1%	1.2	1.5	0.79	110	1,400	1,500	LQM S4UL
		2.5%	2.8	3.5	1.9	250	1,400	1,800	LQM S4UL
		6%	6.4	8.2	4.4	560	1,400	2,100	LQM S4UL
	Tetrachloroethene (PCE)	1%	0.31	0.32	2.00	24	3,200	1400	DEFRA C4SL
		2.5%	0.70	0.71	4.8	55	3,300	1900	DEFRA C4SL
		6%	1.60	1.60	11.0	130	3,400	2,500	DEFRA C4SL
	Tetrachloromethane (carbon tetrachloride)	1%	0.03	0.03	0.45	2.9	890	190	LQM S4UL
		2.5%	0.06	0.06	1.0	6.3	920	270	LQM S4UL
		6%	0.13	0.13	2.4	14	950	400	LQM S4UL
	Trichloroethene (TCE)	1%	0.009	0.010	0.032	0.7	76.0	41.0	DEFRA C4SL
		2.5%	0.020	0.020	0.072	1.5	78.0	51.0	DEFRA C4SL
		6%	0.043	0.045	0.160	3.4	79.0	69.0	DEFRA C4SL
	cis 1,2-dichloroethene	1%	0.46	0.50	0.890	38	3,800	2,000	DEFRA C4SL
		2.5%	0.78	0.84	1.70	64	3,800	2,400	DEFRA C4SL
		6%	1.50	1.60	3.60	120	3,900	3,100	DEFRA C4SL
	Trichloromethane (chloroform)	1%	0.91	1.2	0.42	99	2,500	2,600	LQM S4UL
		2.5%	1.7	2.1	0.83	170	2,500	2,800	LQM S4UL
		6%	3.4	4.2	1.7	350	2,500	3,100	LQM S4UL
	Trans-1,2 Dichloroethene	1%	0.9	0.9	3.7	69	13,000	5,600	DEFRA C4SL
		2.5%	1.6	1.7	7.5	120	13,000	7,000	DEFRA C4SL
		6%	3.3	3.4	16.0	260	13,000	9,100	DEFRA C4SL
	Chloroethene (vinyl chloride)	1%	0.006	0.015	0.0017	1.1E+00	7.8	18.0	DEFRA C4SL
		2.5%	0.010	0.019	0.0031	1.4E+00	7.8	19.0	DEFRA C4SL
		6%	0.017	0.029	0.0058	2.20	7.8	19.0	DEFRA C4SL
	2,4,6-Trinitrotoluene (TNT)	1%	1.6	65	0.24	1,000	130	260	LQM S4UL
		2.5%	3.7	66	0.58	1,000	130	270	LQM S4UL
		6%	8.1	66	1.4	1,000	130	270	LQM S4UL
	RDX	1%	120	13,000	17	210,000	26,000	49,000 (18.7) ^{sol}	LQM S4UL
		2.5%	250	13,000	38	210,000	26,000	51,000	LQM S4UL
		6%	540	13,000	85	210,000	27,000	53,000	LQM S4UL
	HMX	1%	5.7	6,700	0.86	110,000	13,000	23,000 (0.35) ^{vap}	LQM S4UL
		2.5%	13	6,700	1.9	110,000	13,000	23,000 (0.39) ^{vap}	LQM S4UL
		6%	26	6,700	3.9	110,000	13,000	24,000 (0.48) ^{vap}	LQM S4UL
Pesticides	Aldrin	1%	5.7	7.3	3.2	170	18	30	LQM S4UL
		2.5%	6.6	7.4	6.1	170	18	31	LQM S4UL
		6%	7.1	7.5	9.8	170	18	31	LQM S4UL
	Dieldrin	1%	0.97	7.0	0.17	170	18	30	LQM S4UL
		2.5%	2.0	7.3	0.41	170	18	30	LQM S4UL
		6%	3.5	7.4	0.96	170	18	31	LQM S4UL
	Atrazine	1%	3.3	610	0.5	9,300	1,200	2,300	LQM S4UL
		2.5%	7.8	620	1.2	9,400	1,200	2,400	LQM S4UL
		6%	17.4	620	2.7	9,400	1,200	2,400	LQM S4UL
	Dichlorvos	1%	3.2E-02	6.4	4.9E-03	140	16	26	LQM S4UL
		2.5%	6.6E-02	6.5	1.0E-02	140	16	26	LQM S4UL
		6%	0.14	6.6	2.2E-02	140	16	27	LQM S4UL
	Endosulfanns (2 isomers)	1%	7.4	160 (3.0E-03) ^{vap}	1.2	5,600 (3.0E-03) ^{vap}	1,200	2,300	LQM S4UL
		2.5%	18	280 (7.0E-03) ^{vap}	2.9	7,400 (7.0E-03) ^{vap}	1,200	2,400	LQM S4UL
		6%	41	410 (1.6E-02) ^{vap}	6.8	8,400 (1.6E-02) ^{vap}	1,200	2,500	LQM S4UL
	Hexachlorocyclohexane (3 isomers), inc Lindane	1%	8.5E-02	3.7	1.3E-02	65	8.1	15	LQM S4UL
		2.5%	0.2	3.8	3.2E-02	65	8.1	15	LQM S4UL
		6%	0.46	3.8	7.7E-02	65	8.1	16	LQM S4UL
Chlorobenzenes	Chlorobenzene	1%	0.46	0.46	5.9	56	11,000	1,300 (675) ^{sol}	LQM S4UL
		2.5%	1.0	1.0	14	130	13,000	2,000 (1,520) ^{sol}	LQM S4UL
		6%	2.4	2.4	32	290	14,000	2,900	LQM S4UL
	Dichlorobenzenes (3 isomers)	1%	23	24	94	2,000 (571) ^{sol}	90,000	24,000 (571) ^{sol}	LQM S4UL
		2.5%	55	57	230	4,800 (1,370) ^{sol}	95,000	36,000 (1,370) ^{sol}	LQM S4UL
		6%	130	130	540	11,000 (3,240) ^{sol}	98,000	51,000 (3,270) ^{sol}	LQM S4UL
	Trichlorobenzenes (3 isomers)	1%	2.6	2.6	55	220	15,000	1,700 (318) ^{vap}	LQM S4UL
		2.5%	6.4	6.4	140	530	17,000	2,600 (786) ^{vap}	LQM S4UL
		6%	15	15	320	1,300	19,000	4,000 (1,880) ^{vap}	LQM S4UL
	Tetrachlorobenzenes (3 isomers)	1%	0.66	0.75	0.38	49 (39.4) ^{vap}	78	110 (39) ^{vap}	LQM S4UL
		2.5%	1.6	1.9	0.90	120 (98.1) ^{vap}	79	120	LQM S4UL
		6%	3.7	4.3	2.2	240 (235) ^{vap}	79	130	LQM S4UL
	Pentachlorobenzene	1%	5.8	19	1.2	640 (43.0) ^{sol}	100	190	LQM S4UL
		2.5%	12	30	3.1	770 (107) ^{sol}	100	190	LQM S4UL
		6%	22	38	7.0	830	100	190	LQM S4UL
	Hexachlorobenzene	1%	1.8 (0.20) ^{vap}	4.1 (0.20) ^{vap}	0.47	110 (0.20) ^{vap}	16	30	LQM S4UL
		2.5%	3.3 (0.50) ^{vap}	5.7 (0.50) ^{vap}	1.1	120	16	30	LQM S4UL
		6%	4.9	6.7 (1.2) ^{vap}	2.5	120	16	30	LQM S4UL

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}	Source
Chlorophenol	Chlorophenols (4 congeners)	1%	0.87 ^g	94	0.13 ^g	3,500	620	1,100	LQM S4UL
		2.5%	2.0	150	0.30	4,000	620	1,100	LQM S4UL
		6%	4.5	210	0.70	4,300	620	1,100	LQM S4UL
	Pentachlorophenol	1%	0.22	27 (16.4) ^{vap}	3.0E-02	400	60	110	LQM S4UL
		2.5%	0.52	29	8.0E-02	400	60	120	LQM S4UL
		6%	1.2	31	0.19	400	60	120	LQM S4UL
Others	Carbon Disulphide	1%	0.14	0.14	4.8	11	11,000	1,300	LQM S4UL
		2.5%	0.29	0.29	10	22	11,000	1,900	LQM S4UL
		6%	0.62	0.62	23	47	11,000	2,700	LQM S4UL
	Hexachlorobutadiene	1%	0.29	0.32	0.25	31	25	48	LQM S4UL
		2.5%	0.7	0.78	0.61	66	25	50	LQM S4UL
		6%	1.6	1.8	1.4	120	25	51	LQM S4UL
	Phenol	1%	120	440 (460)	23	440 ^{dir} (26,000)	440 ^{dir} (10,000)	440 ^{dir} (7,600)	LQM S4UL
		2.5%	200	690	42	690 ^{dir} (30,000)	690 ^{dir} (10,000)	690 ^{dir} (8,300)	LQM S4UL
		6%	380	1,200	83	1,300 ^{dir} (34,000)	1,300 ^{dir} (10,000)	1,300 ^{dir} (9,300)	LQM S4UL

sol/vap = solubility/vapour limit (potentially use if free product identified, although highly conservative)
f=naphthalene is based on comparison of inhalation exposure with TDI(inhal) for localised effect
f = oral, dermal and inhalation exposures compared to oral HCV
dir = S4ULs based on threshold protective of direct skin contact with phenol)brackets long term exposure for illustration purposes)
g = derived based on 2,3,4-tetrachlorophenol

Appendix F – References

- ² Environment Agency, October 2020, "Land contamination risk management (LCRM). How to assess and manage the risks from land contamination".
- ³ CIRIA, January 2001, "Contaminated land risk assessment. A guide to good practice", C552.
- ⁴ The British Standards Institution (BSI Standards), December 2017, "Investigation of potentially contaminated sites - Code of practice", BS 10175:2011+A2:2017.
- ⁵ The British Standards Institution (BSI Standards), March 2018, "Geotechnical investigation and testing. Identification and classification of soil - Part 1: Identification and description", BS EN ISO 14688-1:2018.
- ⁶ The British Standards Institution (BSI Standards), May 2020, "Code of practice for ground investigations", BS 5930:2015+A1:2020.
- ⁷ Environment Agency, 2000, "Technical Aspects of Site Investigation", Technical Report P5-065/TR, Volumes I and II, Text Supplements.
- ⁸ CIRIA, December 2007, "Assessing risks posed by hazardous ground gases to buildings", C665.
- ⁹ European Commission, 2004 & 2007, "Eurocode 7: Geotechnical Design – Part 1 – General rules" & "Part 2: Ground investigation and testing", EN 1997-1:2004 & EN 1997-2:2007.
- ¹⁰ Highways England, 1998, "Specification for Highway Works. Site clearance", Volume 1, Series 200.
- ¹⁸ CIRIA, 2001, "Trenching practice", REP R 97, 2nd Edition.
- ¹⁹ Environment Agency, October 2020, "Land contamination risk management (LCRM). How to assess and manage the risks from land contamination".
- ²⁰ DEFRA, December 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Policy Companion Document.
- ²¹ CL:AIRE, September 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Final Project Report (Revision 2).
- ²² Environment Agency, January 2009, "Updated technical background to the CLEA model", Science Report SC050021/SR3.
- ²³ Environment Agency, January 2009, "Human health toxicological assessment of contaminants in soil", Science Report - Final SC050021/SR2.
- ²⁴ Environment Agency, January 2009, "A review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA)", Project SC050021/Final Technical Review 1.
- ²⁵ Environment Agency, November 2008, "Compilation of data for priority organic pollutants for derivation of Soil Guideline Values", Science Report SC050021/SR7.
- ²⁶ Environment Agency, September 2009, "CLEA Software (Version 1.05) Handbook", Science Report SC050021/SR4.
- ²⁷ Environment Agency, April 2002, "Contaminants in soils: collation of toxicological data and intake values for humans. Benzo(a)pyrene", TOX2.
- ²⁸ U.S. Environmental Protection Agency, September 1984, "Health Effects Assessment for Polycyclic Aromatic Hydrocarbons (PAHs)", EPA/540/1-86/013.
- ²⁹ Environment Agency, September 2003, "Review of the Fate and Transport of Selected Contaminants in the Soil Environment", Draft Technical Report P5-079/TR1.
- ³⁰ CL:AIRE, September 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Final Project Report (Revision 2).
- ³¹ Public Health England, September 2017, "Contaminated land information sheet: risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs)".
- ³² Culp S.J., Gaylor D.W., Sheldon W.G., Goldstein L.S., Beland F.A. , January 1998, "A comparison of the tumors induced by coal tar and benzo[a]pyrene in a 2-year bioassay", Carcinogenesis, Volume 19, P117-124.
- ³⁴ Hazardous ground gas - an essential guide for Housebuilders (2023) N94- Hazardous ground gas- an essential guide for housebuilders. Available at: <https://www.nhbc.co.uk/foundation/hazardous-ground-gas>.
- ³⁵ BS(2013) "Guidance on the Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs)". BS8576:2013.
- ³⁶ Building Research Establishment (BRE), June 2005, "Concrete in Aggressive Ground", SD1.
- ³⁸ Environment Agency, April 2021, "Land contamination risk management (LCRM). Stage 3 remediation and verification".
- ³⁹ UK Water Industry Research Limited, 2010, "Guidance for the Selection of Water Supply Pipes to be Used in Brownfield Sites", Report Ref. No.: 10/WM/03/21.
- ⁴⁰ Health & Safety Executive, 1991, "Protection of Workers and the General Public during the Development of Contaminated Land".
- ⁴¹ Yorkshire and Lincolnshire Pollution Advisory Group, June 2021, "Verification Requirements for Cover Systems: Technical Guidance for Developers, Landowners and Consultants", Version 4.1.
- ⁴² The British Standards Institution (BSI Standards), April 2015, "Specification for topsoil", BS 3882:2015 - TC.
- ⁴³ CIRIA, January 2001, "Contaminated land risk assessment. A guide to good practice", C552.

Based across the UK with
offices in Manchester, Liverpool,
Swindon and Glasgow.

Manchester (Head Office)

Unit 29
Eton Business Park
Eton Hill Rd, Radcliffe
M26 2ZS

0161 763 7200
info@thelkgroup.com

Manchester (Ancoats Office)

84 Silk Street
Ancoats
Manchester
M4 6BJ

0161 763 7200
info@thelkgroup.com

Glasgow

Wright Business Centre
1 Lonmay Road
Glasgow
G33 4EL

0141 773 6269
info@thelkgroup.com

Swindon

39 Bowman House Business Centre
Bowman Court
Whitehill Lane
Royal Wootton Bassett
Swindon
SN4 7DB

01793 987390
info@thelkgroup.com



LK GROUP