Moorcroft Road, Wythenshawe

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

Job Number	Report Date	Client
LKC251233	**14th August 2025**	**Watson Construction Ltd**

DOCUMENT QUALITY ASSURANCE

Site Address	153 Moorcroft Road, Wythenshawe, Manchester, M23 0AE
Report Title	Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy
Job Number	LKC251233
Client	Watson Construction Ltd

Revision	0	**Date of Issue**	14/08/2025
Document Ref:	LKC251233 -B1-GI-Moorcroft Road, Wythenshawe-R0.		
Status	Final		
Written By	Liam Greenwood-Dean, Colin Wardle, Rachel Peart		
Approved By	Colin Crompton		

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	South-east of Moorcroft Road and to the south-west of Sledmoor Road, Wythenshawe. Centred at National Grid Reference 380650E 390260N.
Area	2,800m^2.
Topography	29-30 metres above ordnance datum (AOD). Site is approximately level.
Current Site Use	Disused public house (The Park) with a grassed and paved area in the north of the site. The remainder of the site comprises a hardstood car park.
Proposed Development	4 storey residential apartment with shared gardens, a hardstood car park in the south and a bike storage in the east.

Site Setting

Main Historical Features	Onsite: Orchard, field with track, nursery, public house. Surrounding Area: Hazelhurst farm, Baguley brook, ponds, electricity substation.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Glaciofluvial deposits, Devensian (sand and gravel). Secondary A Aquifer. Bedrock: Tarporley Siltstone Formation (siltstone, mudstone and sandstone). Secondary B Aquifer.
Landfills / Infilled Ground	No recorded landfills. Potentially infilled ground identified.
Site Reconnaissance	Disused public house with beer garden and landscaping. Car parking over the remainder of the site.
Recommendations	Site Investigation was recommended to further assess geo-environmental risk.

Ground Investigation Work Undertaken

Date of Investigation:	9th – 11th July 2025
Intrusive Investigation Work Undertaken:	2no. cable percussion boreholes. 5no. hand excavated trial pits. Contamination and geotechnical testing. Groundwater level monitoring.

Ground Conditions

Made Ground	Made ground between 0.20 and 0.90m depth although the extent of the made ground was not proven in HDP103 (>1.00m).
Superficial	Natural soils comprised medium dense gravelly slightly silty SAND (Glaciofluvial Sheet Deposits) to depths of between 4.10m and 4.30mbgl. The granular sand is underlain by stiff to very stiff sandy gravelly CLAY (Glacial Till) to depths of 12.20m and 13.20mbgl over medium dense gravelly silty SAND to the completion depths of the cable percussive boreholes.
Bedrock	Not encountered. Recorded by the BGS to comprise Tarporley Siltstone Formation.
Groundwater	Recorded between 2.13m and 2.20m within the shallow granular strata. A second strike was recorded within the deeper granular strata at depths of 12.20m and 13.20mbgl, confined by the cohesive Glacial Till strata above, the groundwater at this depth is under sub artesian pressure, rising to a depth of 5.00-5.10mbgl.
Obstructions	Historic structure on site will have foundations and a basement, it is considered that these should be excavated from below the proposed development footprint with the resulting void backfilled in an engineered manner.
Permeability	The shallow granular strata should return good permeability; however, given the shallow groundwater levels, infiltration is not considered a viable option for the site.

Geotechnical Assessment

Allowable Bearing Pressure	The ABC of the shallow granular strata is calculated at 100kN/m² based on in-situ tests however groundwater was recorded at depths of between 2.13-2.20mbgl. The presence of groundwater within a granular material can reduce the bearing capacity by as much as 50%. Undrained shear strength (su) within the deeper cohesive strata was recorded as 34kPa at 4.00m, increasing to 126kPa at 10.00mbgl.
Anticipated Foundation Types	Conventional strip footings on vibro granular columns; or, Deeper bored pile foundations. Subject to Structural Engineer's design.
Other Considerations	Temporary supports of excavations will be required. Detailed design should be carried out by structural engineer. Concrete Requirements DS1-AC-1. DS-1 AC-2z will be required in the vicinity of HDP103.

Contamination Risk Assessment

Pollutant Linkage		**Risk**	**Assessment**
1	Asbestos, heavy metals, PAHs, petroleum hydrocarbons.	Low	No remediation required, however made ground is not considered to be suitable in landscaped areas due to the composition and anthropogenic content. A growing medium (topsoil) of 150mm is recommended in all proposed soft landscaping areas.
	PCBs, transistor oils.	Low	
	Pesticides.	Low	
2	Naphthalene, petroleum hydrocarbons.	Low	No remediation required.
3	Hazardous / ground gas.	Moderate / Low	No remediation required.
4	Heavy metals, PAHs, petroleum hydrocarbons.	Low	No remediation required.
5	Naphthalene, petroleum hydrocarbons.	Low	No remediation required. The site will likely require standard PE piping.

PL	**Recommendation**
1	No remediation required, however made ground is not considered to be suitable in landscaped areas due to the composition and anthropogenic content. A growing medium (topsoil) of 150mm is recommended in all proposed soft landscaping areas.
2	No remediation required
3	No gas protection measures required.
4	No remediation required.
5	Potable water pipe assessment undertaken, site will likely require standard PE pipe.

Remediation Requirements
Watching brief for unexpected contamination
Grubbing out of in-ground structures
Re-use of site generated material
Stockpile management
Disposal
Control of water
Health and safety considerations
Environmental cover system
Potable water pipes
Validation of imported / site won soils
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. Well Installations 4
3.3. Sampling Protocol 4
3.4. In-situ Testing 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 10
5.6. Pavement Construction 10
5.7. Drainage 11
5.8. Concrete Durability 11
5.9. Excavations 11
5.10. Construction Activity and Inspection 11
5.11. Enabling Works 11
6. Generic Risk Assessment 13
6.1. Introduction 13
6.2. Soil Risk Assessment 13
6.3. Gas Risk Assessment 15
6.4. Controlled Water Assessment 15
6.5. Potable Water Supply (Pollutant Linkage 5) 15
6.6. Revised Contamination Conceptual Model 15
7. Waste Disposal Assessment 18
7.1. HazWaste Assessment 18
8. Summary Conclusions 19
8.1. Ground Conditions 19
8.2. Geotechnical 19
8.3. Contamination Assessment 20
9. Remediation Strategy 21
9.1. General Site Wide Remediation Works 21
9.2. Build Phase Remediation 23
9.3. Validation of Imported / Site Won Soils 23
9.4. Site Completion Report 24

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 – UU Risk Assessment Form
Appendix G – HazWaste Online Classification Report
Appendix H – 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 Moorcroft Road, Wythenshawe. The investigation was undertaken in support of a planning application to develop the site for residential end use.

The following work has previously been undertaken:

- Preliminary Risk Assessment (PRA) report, undertaken by LKC (Ref: LKC 14 1403, dated 12th August 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	South-east of Moorcroft Road and to the south-west of Sledmoor Road, Wythenshawe. Centred at National Grid Reference 380650E 390260N.
Area	2,800m^2.
Topography	29-30 metres above ordnance datum (AOD). Site is approximately level.
Current Site Use	Disused public house (The Park) with a grassed and paved area in the north of the site. The remainder of the site comprises a hardstood carpark.
Proposed Development	4 storey residential apartment with shared gardens, a hardstood car park in the south and a bike storage in the east.

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: Orchard, field with track, nursery, public house. Surrounding Area: Hazelhurst farm, Baguley brook, ponds, electricity substation.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Glaciofluvial deposits, Devensian (sand and gravel). Secondary A Aquifer. Bedrock: Tarporley Siltstone Formation (siltstone, mudstone and sandstone). Secondary B Aquifer.
Landfills / Infilled Ground	No recorded landfills. Potentially infilled ground identified.
Site Reconnaissance	Disused public house with cellar, beer garden and landscaping. Car parking over the remainder of the site. Within the cellar there is a United Utilities (UU) maintained pump for the removal of groundwater.

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	No further assessment required.
Slope Stability	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	Clay not anticipated onsite
Sulphate	Unknown sulphate content of the made ground and natural.
Road / Pavement Design	Unknown CBR values for footpath and road design should be calculated.

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 LCRM[1] 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 C552[2]. The risk matrix is provided in Appendix A.

PL	Contaminants of Concern (source)	Pathway	Receptor	Probability	Consequence	Risk	Assessment and Recommendations
1	Asbestos, heavy metals, PAHs (made ground, orchard, nursery, field, public house).	Dermal contact. Inhalation of soil, fibres, and dust. Ingestion of soils, dust. Windblown dust.	Future site users.	Likely	Medium	Moderate	Likely probability given the history of the site. There is a potential source and potential pathway to future receptors in landscaping. **Recommendation**: Intrusive investigation required to include soil sampling.
	Petroleum Hydrocarbons, PCBs, transistor oils (public house, car park, adjacent electricity substation)			Low Likelihood	Medium	Moderate / Low	Low probability given the history of the site. If a boiler house was present it may have had some leakages. Adjacent electricity substation may be a localised source of PCBs. **Recommendations:** Investigation required, testing subject to ground conditions.
	Pesticides (nursery, orchard, field)			Low Likelihood	Medium	Moderate / Low	Low probability given the history of the site. If pesticides were used likely to be detected as elevated metals. **Recommendations:** Investigation required, testing subject to ground conditions.
2	Naphthalene, petroleum hydrocarbons (made ground, public house, car park).	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users.	Low Likelihood	Medium	Moderate / Low	Low likelihood due to ash derived naphthalene not anticipated to be a significant source of naphthalene. No significant spillages or leakages of fuel / oil observed during site visit. **Recommendation**: Investigation required, testing subject to ground conditions.
3	Hazardous / ground gas: methane, carbon dioxide (made ground).	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings.	Unlikely	Severe	Moderate / Low	Unlikely probability as not significant source of hazardous or ground gas identified. Potential for made ground onsite is likely to be shallow. **Recommendations:** Gas monitoring only required if significant thickness of putrescible material encountered.
4	Heavy metals, PAHs, petroleum hydrocarbons (made ground, orchard, nursery, field, public house).	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater (Secondary A & B aquifers)	Low Likelihood	Medium	Moderate / Low	Low likelihood considering limited source of mobile contamination expected. Localised spillages / leakages of petroleum hydrocarbons should not generate a significant risk to underlying receptor. **Recommendations:** No water sampling or leaching tests required unless evidence of significant potentially mobile contamination is identified in the soil.
5	Naphthalene, petroleum hydrocarbons (made ground, public house, car park).	Permeation of pipes. Ingestion of tainted water supply.	Future site users. Water pipes.	Low Likelihood	Medium	Moderate / Low	Low probability considering limited made ground anticipated. Key source to permeation into pipework would be from naphthalene (treated as a VOC) and localised fuel oil if a boiler house was present. **Recommendations:** Sampling and analysis of soils at anticipated pipeline depths (c. 0.75-1.35mbgl). Water pipe assessment required.

Table 2-3: Preliminary Contamination Conceptual Model.

3. Ground Investigation

3.1. Site Investigation Design and Methodology

The investigation was carried out on 9th to 11th July 2025 and comprised the following:

- 2no. cable percussion boreholes drilled to 15.05-15.65mbgl (ref. CP101 to CP102).
- 5no. hand pits (using hand auger / spade) excavated to 1.00-1.20mbgl (ref. HDP101 to HDP105).

All site investigation locations are shown in Figure 3.

The locations were chosen to allow adequate assessment of ground conditions across the site within the footprint of the proposed development and surrounding area. Table 3-1 details the site investigation locations.

Site Investigation Locations	Rationale
CP101-CP102	To gain an understanding of ground conditions and groundwater depth beneath the footprint of the proposed development.
HDP101-HDP105	General site coverage and gain an understanding of the shallow ground conditions of the wider site.
HDP102	Hand dug pit undertaken to assess the potential contamination from the adjacent electricity substation.

Table 3-1: Summary of Sampling Locations.

The number of site investigation points corresponds to approximately one location per 20m square centres. This is considered to be a conservative sampling density and is in line with BS10175[3] for a 'main investigation'.

All profile logs are provided in Appendix B and are in line with BS14688-1[4] and BS5930[5].

3.2. Well Installations

One borehole (CP101) was installed with a monitoring well. The monitoring well was installed in accordance with BS10175 and CIRIA C665[6] and generally comprised approximately 1m plain pipe over a length of slotted pipe surrounded by pea gravel and sealed at the top with bentonite and concrete.

Well installation details are provided in Profile Logs in Appendix B.

3.3. Sampling Protocol

3.3.1. Soil Sampling (Contamination)

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation[7].

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 C665[8] 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 3-2 shows the soil testing undertaken.

No evidence of transistor oil or PCB contamination was noted in HDP102 to the rear of the electricity substation. Therefore laboratory testing for PCBs was not carried out in this location.

Testing	No. Samples	Justification
Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.	7	A basic suite with a broad selection of contaminants where no significant evidence of contamination was identified (except for occasional ash and coal).
Metals / metalloids, pH, water soluble sulphate, cyanide suite, phenol, TPHCWG, BTEX, MTBE, speciated PAHs, SOM and asbestos screen.	1	Although no evidence of contamination identified, detailed suite undertaken to confirm the absence of contamination and to aid in water pipeline risk assessment.

Table 3-2: 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; TPHCWG=carbon banded and aromatic/aliphatic split petroleum hydrocarbons; PAH=polycyclic aromatic hydrocarbons, BTEX=benzene, toluene, ethylbenzene, and xylenes; MTBE=Methyl tert-butyl ether, SOM=Soil Organic Matter.

3.3.2. Soil Sampling (Geotechnical)

Soil samples taken during the investigation were collected in tubs, bulk bags and sealed U100 tubes and sent to Murray Rix Laboratories and DETS for geotechnical testing.

Further details are given in the laboratory report presented in Appendix C (soils) and Appendix D (geotechnical). Table 3-3 shows the geotechnical testing undertaken.

Testing	No. Samples
Single Stage Triaxial	2
Particle Size Distribution (PSD)	2
BRE SD1 Short Suite	2

Table 3-3: Summary of Geotechnical Testing Undertaken.

3.4. In-situ Testing

3.4.1. 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 cable percussion boreholes at approximately 1m intervals.

The results are provided within Appendix B.

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 sampling locations to depths of 0.20-0.90mbgl, with the exception of HDP103 in which the depth of made ground was not proven (> 1.00mbgl). The made ground comprised gravelly silty sand with anthropogenic material such as, brick, ash, clinker, tarmacadam, concrete, ceramic, glass and coal.

4.1.2. Natural Strata

Superficial strata comprised medium dense gravelly slightly silty sand to proven depths of 4.10-4.30mbgl within the cable percussive boreholes. The thickness of superficial granular was not proven within the hand excavated trial pits.

Clay was recorded in both cable percussive boreholes to depths of 12.20-13.20mbgl.

Medium dense gravelly slightly silty sand to depths of 15.05-15.65mbgl.

4.1.3. Contamination

A slight hydrocarbon odour was noted in CP101 from 0.20-0.40mbgl with a PID reading of 15.3ppm. LKC consider this is due to fragments of the overlying tarmac strata permeating this depth and therefore is not considered to be representative of the strata.

No visual or olfactory evidence of transistor oils and hence possible PCB contamination was noted in HDP102 to the rear of the electricity substation.

4.1.4. Obstructions

No obstructions were identified within any investigation location.

4.2. Groundwater

4.2.1. Groundwater Levels

Groundwater strikes were recorded during the investigation in boreholes. This data is provided in the profile logs (Appendix B). Groundwater strikes were recorded in CP101 at 2.40mbgl rising to 2.10mbgl over 20 minutes, a second water strike was recorded at 13.00mbgl rising to 5.00mbgl after 20 minutes.

Ground water strikes recorded within CP102 at 2.60mbgl rising to 2.20mbgl after 20 minutes. A second strike was recorded within the deeper granular strata at depths of 12.20m and 13.20mbgl, confined by the cohesive Glacial Till strata above, the groundwater at this depth is under sub artesian pressure, rising to a depth of 5.00-5.10mbgl after 20 minutes.

Groundwater depth monitoring has been undertaken on 2 occasions and results are provided in Table 4-1 below.

Visit Number / Date	Groundwater depth (mbgl)	Base of borehole (mbgl)
1 – 25/07/2025	2.14	3.96
2 – 07/08/2025	2.14	3.97

Table 4-1: Summary of groundwater monitoring depths.

4.2.2. Contamination

No evidence of contamination was identified in the groundwater during investigation work or monitoring. No free phase hydrocarbons were detected.

5. Geotechnical Assessment

5.1. Proposed Development

It is understood that the proposed development will comprise a four-storey residential apartment block with associated landscaping and infrastructure.

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. At the time of investigation the site is occupied by The Park public house which includes a basement.

Given the nature of the proposed development the structure meets the criteria of Geotechnical Category 2 of Eurocode 7[9].

5.2. Summary of Ground Conditions

Ground conditions identified at the site are detailed in Section 4.1, and typically comprises made ground between 0.20 and 0.90m depth although made ground was not proven in HDP103 (>1.00m). Natural soils comprised medium dense gravelly slightly silty SAND (Glaciofluvial Sheet Deposits) to depths of between 4.10m and 4.30mbgl. The granular sand is underlain by stiff to very stiff sandy gravelly CLAY (Glacial Till) to depths of 12.20m and 13.20mbgl over medium dense gravelly silty SAND to the completion depths of the cable percussive boreholes.

There is also a partial basement / cellar to the existing building.

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 Works[10]. This should include:

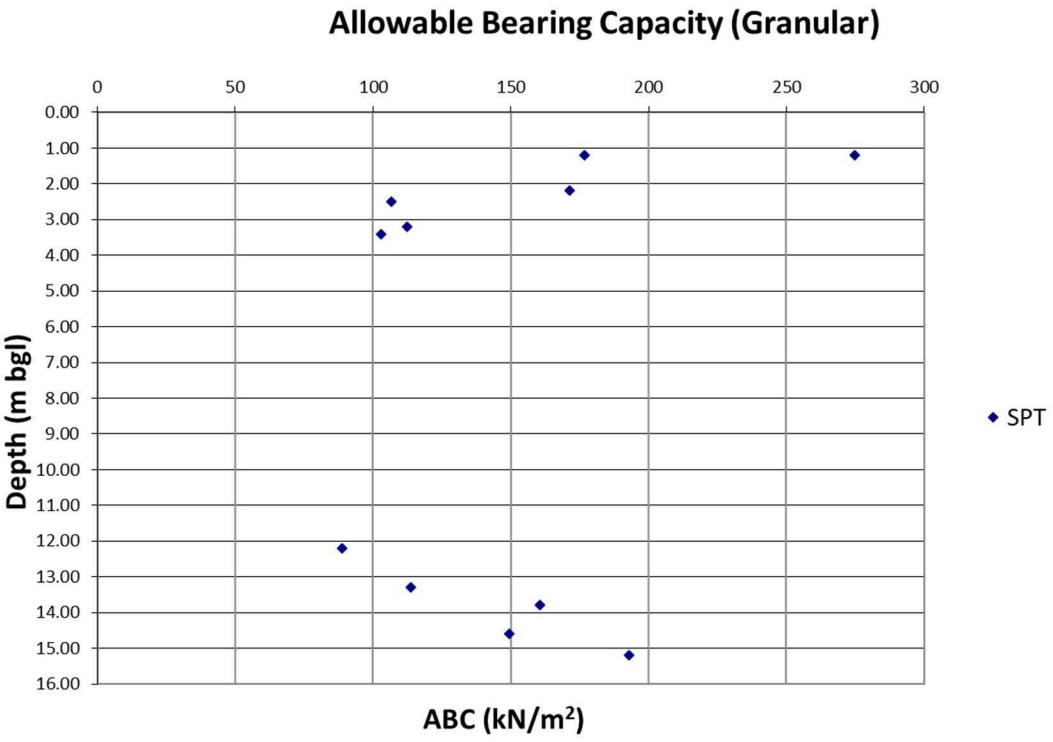
- Roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting void infilled with suitable compacted engineered fill.
- Redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill; and,
- Buried structures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

Upon demolition of the former public house (The Park) the basement will need to be suitably backfilled and due consideration must be given to the ground water levels recorded at the site within the cable percussive boreholes at depths of between 2.40m and 2.60mbgl, which rose to 2.13m - 2.20mbgl. All services (gas, water, electric) must be turned off and disconnected and a sump pump installed to remove groundwater before backfilling with compacted granular material in accordance with a suitable standard, such as Specification for Highways Works series 600.

5.4. Foundation Conditions and Bearing Capacity

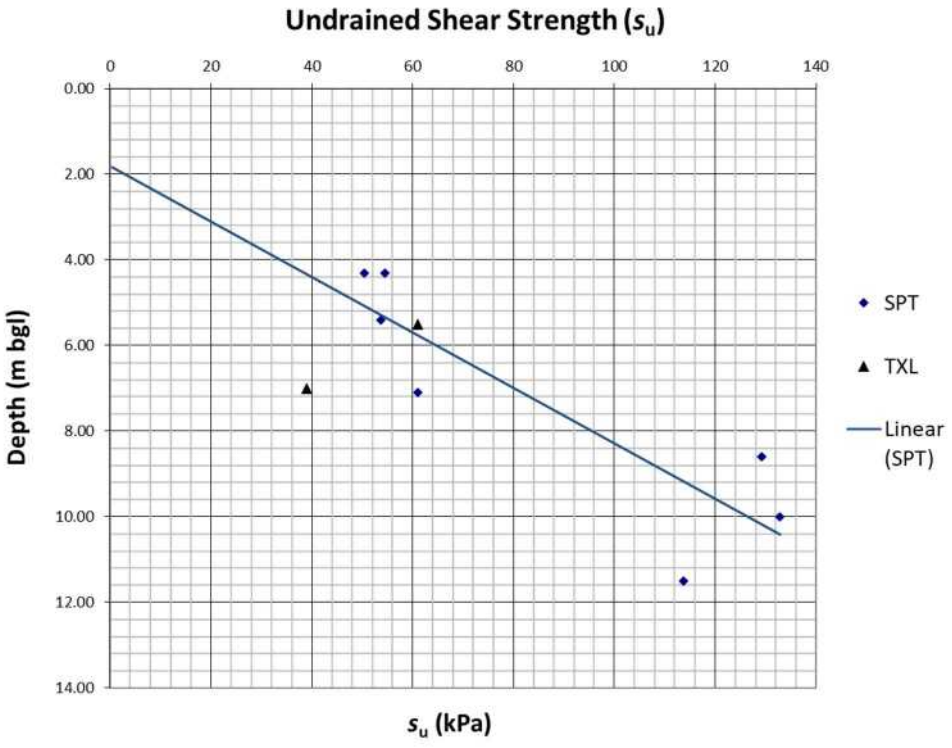
5.4.1. General

The natural granular material has been assessed using in-situ testing by SPT to obtain the Allowable Bearing Capacity (ABC) for a strip foundation. The results of the testing have been plotted against depth and is shown in Graph 5-1.



Graph 5-1: Summary of ABC Vs. Depth from In-Situ SPT Testing.

The deeper natural cohesive material has been assessed using in-situ testing by SPT and Laboratory Triaxial (TXL) testing 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 5-2.



Graph 5-2: Summary of S_u Vs. Depth from In-Situ SPT and TXL Testing.

Graph 5-1 demonstrates that the natural granular strata will return an ABC in excess of 100kN/m^2 for a strip foundation, however groundwater was recorded in the exploratory holes at a depth of 2.13-2.20mbgl, the presence of groundwater within a granular material has the potential to reduce its bearing capacity by as much as 50%.

Graph 5-2 demonstrates that the strength of the cohesive deposits typically increases with depth. A conservative s_u of 34kPa is assigned to the cohesive material from a depth of *c*. 4mbgl, increasing to 126kPa at a depth of c. 10mbgl for the natural superficial deposits.

5.4.2. Foundation Options

Ground conditions across the site will be variable, with made ground potentially in excess of 1.00mbgl (as encountered in the location of HDP103). The presence of the basement structure will require infilling and may give rise to the potential for differential settlements to occur between the natural shallow granular strata and the infill granular material.

Foundation options may include :

- Conventional strip footings on vibro granular columns.
- Deeper pile foundations.

5.4.3. Ground Improvement

The use of ground improvement techniques such as vibro granular columns will allow shallow foundations to be utilised. The vibro granular columns should provide an Allowable Bearing Capacity of around 150kN/m² but will also remove variability within the shallow strata. Specialist advice should be sought from a suitably experienced contractor regarding Allowable Bearing Capacity and settlements.

It should be noted that the stone columns provide a pathway for gas and vapour migration; however, no viable sources of such have been identified during this investigation.

5.4.4. Piled Foundations

Bored piles may be appropriate; however, it should be noted that arisings from such methods will have to be disposed of.

Within the proposed building area, it is recommended that the present hard standing and made ground is first removed down to at least 300mm bgl and replaced with a suitably compacted material to allow safe deployment of the piling rig. Any obstructions, such as old foundations, should be grubbed out at the same time to not interfere with the bored piles. It is recommended that the emplaced fill is of a granular type and is tested and rolled in line with Specification For Highways Works Series 600[11]. Plate Load and CBR Tests should be used to ensure the working platform is suitable for rig loadings. It may be possible to crush and reuse hardstanding, or excavate the existing made ground, riddle, and sort it to remove any unsuitable deleterious materials such as rags and timber, as noted in the logs.

Static load tests should be undertaken on the first few piles installed to confirm the pile design. Shaft friction in fine grained soils in generally taken as no more than 100kN/m^2, unless higher values can be proven either using pile testing, or through experience in similar ground conditions[12]. Negative skin friction imposed on the piles by the made ground needs to be considered.

Dynamic load tests may also be recommended to ensure the concrete has cured well and that there is no bulging or thinning of the pile shaft once it has been drilled.

Casing is required while drilling the piles due to the presence of sands and groundwater. This will help minimise ground disturbance and prevent collapse into the borehole causing areas of weakness.

Due to the potential for obstructions (historic foundations) and the presence of wet sand, bored piles may be appropriate. This should be discussed with a piling contractor.

For preliminary purposes the following initial pile carrying capacities have been calculated. When undertaking these preliminary calculations, the following parameters have been used:

- Modelling based on assumed strata of natural sand to 4.00mbgl, natural clay to 12.00mbgl.
- Groundwater at 2.00mbgl, within the sand.
- The natural sand is predominately medium dense so assumed to be 19.00kN/m^3, with an average angle of internal friction based on SPT results of 32°.
- Average undrained shear strength value of 60kPa within the clay (conservative Nc value of 9).
- Adhesion Factor of 0.45 for a bored pile.
- Global Factor of Safety of 3.
- Assuming no shaft friction in the made ground.
- This does not consider the potential for negative skin friction due to settlement of the mage ground.
- Settlement of pile has not been considered.

Depth (mbgl)	Pile Carrying Capacity (kN)		
	300mm dia	450mm dia	600mm dia
8	47	80	119
10	79	130	189
12	121	196	280

Table 5-1: Preliminary Pile Carrying Capacity.

The above examples are not intended to constitute any form of recommendation regarding pile size or type, but merely to illustrate the use of above ground coefficients. Pile design should be undertaken by a specialist contractor to allow them to reduce the Factor or Safety based on their extensive pile testing data and for the design of appropriate piling scheme.

Should a piled 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.

5.4.5. Foundation Recommendations

Whilst a vibro granular columns solution is viable, 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 1.0m depth of Made Ground across the site, it is considered that a suspended floor slab will be required for the proposed structures.

Should a piled solution be the preferred foundation option then a piled structure will generally have a suspended or piled floor due to potential differential settlement between the floor and the shell.

5.6. Pavement Construction

Topsoil is not suitable for use as a sub-grade. Untreated made ground is considered unsuitable as a sub-grade due to its potential variability and potentially low strength/high compressibility. It should be removed to a depth of 0.5m below formation level and sorted to remove any unsuitable or deleterious materials. The sub formation should be rolled, and suitable excavated material can then be replaced, up to formation level, in fully compacted thin layers. Any deficit should be made up with suitable imported fill compacted as above. Following this treatment an overall design CBR of 2-5% should be available, although this will require confirmation through in-situ CBR tests.

Based on the grading results of particle size distribution tests the soils are not considered frost susceptible.

5.7. Drainage

The presence of made ground in excess of 1.00mbgl at the location of HDP103 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.

The underlying shallow strata is predominantly granular; however, groundwater was recorded at shallow depths of 2.13m – 2.20mbgl. It should be noted that groundwater levels may be shallower in winter and that United Utilities have installed a pump in the pub cellar following its closure. Therefore, given the shallow groundwater levels, infiltration is not considered a viable option for the site.

5.8. Concrete Durability

Based upon the results of the chemical analyses (Appendix C), subsurface concrete should be designed in accordance with Design Sulphate Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1 across most of the site although one result obtained from HDP103 returned a ACEC of AC-2z in accordance with the recommendations provided in BRE Special Digest 1 (2005).

10no. samples were tested for pH and SO_4 with one test having a low pH value of 6.3, in accordance with BRE SD-1, the mean of the lowest 20% was taken as the characteristic value which gives the ACEC classification of AC-2z for the site. Further testing may bring this classification down to AC-1.

5.9. Excavations

The made ground and natural deposits included granular strata containing groundwater at a depth of 2.13-2.20mbgl. The short- and long-term stability of near vertically sided excavations can therefore not be guaranteed and random and sudden instability within these soils should be anticipated.

It is recommended all excavations should be supported or battered back in accordance with guidance contained in CIRIA R97[13].

5.10. 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 R97 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).

5.11. Enabling Works

It is considered that the ground will require preparation to facilitate a developable platform for the first stage of construction works.

As referenced in Section 5.3, obstacles such as foundations, floor slabs, services, basements etc. can be anticipated on site from historical land uses and it is recommended that these are grubbed out as part of a general site turnover to remove obstacles.

The enabling works should also cover activities such as undertaking site preparation works including pre commencement surveys of the site and surrounding areas, preparation of access routes and providing suitable piling mats if required, surveying the site and producing topographical plans on completion of the earthworks, as well as installation of safety signs and security fencing.

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 (LCRM[14]). 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) [15, 16].
- LQM Suitable 4 Use Levels (S4ULs) [17, 18, 19, 20].

The proposed development is for residential apartments with limited shared soft landscaping, therefore the assessment criteria for residential without plant uptake has been used.

All criteria have been generated using the CLEA V1.06 model[21] based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

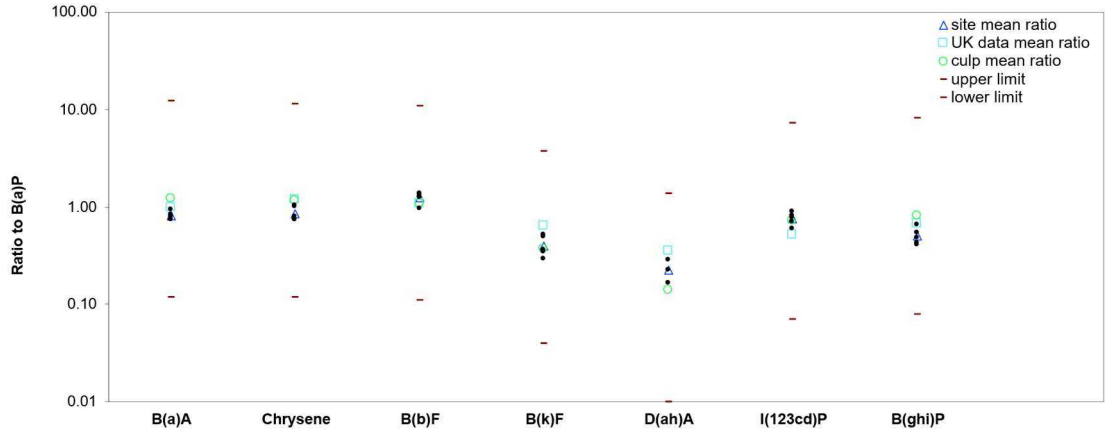
A summary of the generic assessment criteria used in this assessment is provided in Appendix E.

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[22,23] and naphthalene the most volatile and soluble[24]. 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 negligible[25]. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)[26] 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*[27], 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 8 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. Results have been compared to the relevant assessment criteria and no elevated contaminants were identified.

No asbestos was identified in any soil samples analysed.

6.2.3. Direct Contact Risk – Pollutant Linkage 1

When compared to the residential without homegrown produce assessment criteria, no elevated PAHs, metals or petroleum hydrocarbons were identified in any of the samples. Therefore, the probability of these contaminants affecting site users is considered to be unlikely. With a medium consequence, the risk is low and no remediation is required.

No evidence of transistor oil and hence PCB contamination was noted in HDP102 to the rear of the electricity substation. Therefore the probability of these contaminants affecting site users is considered to be unlikely. With a medium consequence, the risk is considered to be low and no remediation is required.

Some older, less refined pesticides may contain heavy metals as active ingredients or as contaminants. Elevated metals can therefore be used as an indicator of pesticide contamination. No elevated levels of metals were encountered in any of the samples tested. Therefore LKC consider the probability of pesticides affecting site users is considered to be unlikely, with a medium consequence, the risk is low and no remediation is required.

No asbestos was identified in any of the samples; therefore, the probability of asbestos affected site users is considered to be unlikely. With a medium consequence, the risk is low and no remediation is required.

Although no elevated levels of contamination were identified, the made ground material is not considered to be texturally suitable for use within landscaping areas due to the presence of anthropogenic material. Made ground should be removed from all proposed landscaped areas down to natural strata and levels suitably raised with clean, validated topsoil and subsoil. If removal of made ground is not possible, a nominal 150mm capping layer is required in areas of soft landscaping.

6.2.4. Risk from Inhalation of Vapours – Pollutant Linkage 2

No elevated levels of volatile contaminants were identified in any of the samples when compared to the generic assessment criteria.

A PID reading of 15.3ppm was recorded within CP101 at 0.2-0.4mbgl, this is likely to be associated with the overlying tarmacadam permeating the strata and is not considered to be representative of the strata, therefore its unlikely to pose a risk to future onsite users.

LKC therefore consider the probability of volatile contaminants 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 and only recommended gas monitoring if a significant depth of organic / putrescible material was identified.

No organic / putrescible material was encountered on site. Made ground thickness was approximately 0.50mbgl across the site with the exception of HDP103 recorded >1.00mbgl.

Given the ground conditions encountered, LKC considers the probability of gas posing a risk to site users as unlikely. The consequence is severe, which gives a moderate / low risk. Given the known ground conditions, LKC considers there to be a low risk and no further action is required with respect to Pollutant Linkage 3.

6.4. Controlled Water Assessment

The PRA identified a moderate / low risk with respect to controlled waters as no significant source of mobile contamination was anticipated. Furthermore, although Secondary A and B Aquifers are present below the site, no abstractions have been identified within influencing distance and the site is not located in a Source Protection Zone. No surface water receptors were identified within influencing distance of the site and is not considered to be a significant receptor.

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)

A United Utilities Risk Assessment (UURA) has been undertaken by LKC and is provided in Appendix F.

As part of the UURA, 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 visual or olfactory evidence of contamination was identified during the site investigation

The UURA did not identify any contaminants as elevated at pipeline depth therefore the probability of organic contaminants affecting potable water pipes is unlikely, given the consequence is moderate, the risk for pollutant linkage 5 is considered to be a low risk and PE pipe is considered appropriate.

6.6. Revised Contamination Conceptual Model

The preliminary contamination conceptual model (Table 2-3) has been revised following the risk assessments undertaken in Sections 6.1-6.5. 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 1.

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	Assessment and Recommendations
1	Asbestos, heavy metals, PAHs, petroleum hydrocarbons.	Dermal contact. Inhalation of soil, fibres, and dust. Ingestion of soils, dust. Windblown dust.	Future site users.	Unlikely	Medium	Low	No elevated levels identified in any of the samples tested. **Recommendation**: No remediation required, however made ground is not considered to be suitable in landscaped areas due to the composition and anthropogenic content. A growing medium (topsoil) of 150mm is recommended in soft landscaping areas.
	PCBs, transistor oils.			Unlikely	Medium	Low	No evidence of transistor oil or PCB contamination was noted in HDP102 to the rear of the electricity substation. **Recommendations:** No remediation required.
	Pesticides.			Unlikely	Medium	Low	Elevated metals can be used as an indicator of pesticide contamination. No elevated metals identified. **Recommendations:** No remediation required.
2	Naphthalene, petroleum hydrocarbons.	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users.	Unlikely	Medium	Low	No elevated levels identified in any of the samples tested. **Recommendation**: No remediation required.
3	Hazardous / ground gas.	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings.	Unlikely	Severe	Moderate / Low	No organic / putrescible material was encountered on site. Made ground thickness was approximately 0.50mbgl across the site. **Recommendations:** No gas protection measures required.
4	Heavy metals, PAHs, petroleum hydrocarbons.	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater (Secondary A & B aquifers)	Unlikely	Medium	Low	The site investigation did not identify any significant sources of likely mobile contamination within the soils **Recommendations:** No remediation required.
5	Naphthalene, petroleum hydrocarbons.	Permeation of pipes. Ingestion of tainted water supply.	Future site users. Water pipes.	Unlikely	Medium	Low	The UURA did not identify any contaminants as elevated at pipeline depth **Recommendations:** No remediation required. PE waterpipes considered suitable.

Table 6-1: Revised Contamination Conceptual Model.

7. Waste Disposal Assessment

7.1. HazWaste Assessment

The soil contamination results as presented in Appendix C have been used to help determine the waste classification of material for off-site disposal.

As an initial screen the soil results were inputted into HazWasteOnline™. This is a web-based facility that allows an assessment waste as either hazardous or non-hazardous waste based on relevant guidance and legislation.

HazWasteOnline™. has been designed to cover, amongst other waste types, the List of Waste (LoW) code number 17 "Construction and Demolition Waste (Including Excavated Soil from Contaminated Sites)".

Where less than limits of detection (LOD) were recorded, the value of the LOD was inputted.

Where applicable, contaminants were selected based on observations during sampling, site history, ground conditions and likely species present in soils (e.g., metal oxides relating to an ash-based source).

The results show that all the samples tested are classified as non-hazardous for disposal. The HazWasteOnline™ output sheets are provided in Appendix G.

8. Summary Conclusions

8.1. Ground Conditions

Ground conditions are summarised in Table 8-1 below.

Made Ground	Made ground between 0.20 and 0.90m depth although the depth of the made ground was not proven in HDP103 (>1.00m).
Superficial	Natural soils comprised medium dense gravelly slightly silty SAND (Glaciofluvial Sheet Deposits) to depths of between 4.10m and 4.30mbgl. The SAND is underlain by stiff to very stiff sandy gravelly CLAY (Glacial Till) to depths of 12.20m and 13.20mbgl over medium dense gravelly silty SAND to the completion depths of the cable percussive boreholes.
Bedrock	Not encountered. Recorded by the BGS to comprise Tarporley Siltstone Formation.
Groundwater	Recorded between 2.13m and 2.20m within the shallow granular strata. A second strike was recorded within the deeper granular strata at depths of 12.20m and 13.20mbgl, confined by the cohesive Glacial Till strata above, the groundwater at this depth is under sub artesian pressure, rising to a depth of 5.00-5.10mbgl.
Obstructions	The structure on site has foundations and a basement, it is considered that these should be excavated from below the proposed development footprint with the resulting void backfilled
Permeability	The shallow granular strata should return good permeability; however, given the shallow groundwater levels, infiltration is not considered a viable option for the site.

Table 8-1: Summary of Ground Conditions.

8.2. Geotechnical

Geotechnical observations and conclusions are contained in Table 8-2 below, more detailed discussions are contained within Section 5.

Existing Foundations	Existing foundations and a basement structure associated with The Park public House. Existing foundations will require grubbing out and the basement structure will require grubbing out and backfilling in an engineered manner.
Allowable Bearing Pressure	The ABC of the shallow granular strata is calculated at 100kN/m^2 based on in-situ tests however groundwater was recorded at depths of between 2.13-2.20mbgl. The presence of groundwater within a granular material can reduce the bearing capacity by as much as 50%. Undrained shear strength (su) within the deeper cohesive strata was recorded as 34kPa at 4.00m, increasing to 126kPa at 10.00mbgl.
Anticipated Foundation Type	Conventional strip footings on vibro granular columns; or, Deeper bored pile foundations. Subject to Structural Engineer's design.
Shallow Groundwater	Shallow groundwater identified on the site which will present a constraint to the development. Suitable drainage should be considered in the proposed development layout. Lowering of the water table may be required to facilitate the construction work especially backfilling of the existing basement. A discharge consent to release water to existing storm water or foul water drains may be required.
Concrete Requirements	Based on BRE Digest 2005[28] – DS-1 AC-1 across most of the site. DS-1 AC-2z may be required in the vicinity of HDP103. Further investigation in this area may be advisable.

Table 8-2: Geotechnical Conclusions Table.

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; Trial pits were generally recorded as stable however made ground and shallow natural deposits contained granular material with shallow groundwater at 2.13m-2.20mbgl and the short- and long-term stability of near vertically sided excavations cannot be guaranteed.

Table 8-3 (continued): Geotechnical Conclusions Table.

8.3. Contamination Assessment

A revised contamination conceptual model has been produced by LKC which is summarised in Table 8-3 below (more detailed model provided in Section 6).

PL	Contaminant	Risk	Recommendations
1	Asbestos, heavy metals, PAHs, petroleum hydrocarbons.	Low	No remediation required, however made ground is not considered to be suitable in landscaped areas due to the composition and anthropogenic content. A growing medium (topsoil) of 150mm is recommended in all proposed soft landscaping areas.
	PCBs, transistor oils.	Low	
	Pesticides.	Low	
2	Naphthalene, petroleum hydrocarbons.	Low	No remediation required.
3	Hazardous / ground gas.	Moderate / Low	No gas protection measures required.
4	Heavy metals, PAHs, petroleum hydrocarbons.	Low	No remediation required.
5	Naphthalene, petroleum hydrocarbons.	Low	No remediation required. The site will likely require standard PE piping.

Table 8-4: Summary Risk Table.
PL=Pollutant Linkage, see Table 6-1 for details.

9. 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.

A summary of remediation requirements is included in Table 9-1.

PL	Recommendation
1	No remediation required, however made ground is not considered to be suitable in landscaped areas due to the composition and anthropogenic content. A growing medium (topsoil) of 150mm is recommended in all proposed soft landscaping areas.
2	No remediation required.
3	No gas protection measures required.
4	No remediation required.
5	Potable water pipe assessment undertaken, site will likely require standard PE pipe.

Table 9-1: Remediation Summary.

Based on the findings of the site investigation and risk assessment, no remediation is required. A watching brief for any unexpected contamination should be maintained during groundworks (refer to Section 9.1.1), and any imported soils brought to site for use in soft landscaping should be validated to ensure they are suitable for use (refer to Section 9.3).

9.1. General Site Wide Remediation Works

9.1.1. Watching Brief for Unexpected Contamination

The relevant contractors should be briefed that during demolition and 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.

9.1.2. Grubbing Out of In-ground Structures

Surface hard standing and relict features including former foundations and current foundations 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.

9.1.3. Re-use of Site Generated Material

To ensure material is compliant with appropriate waste regulations, any site won material re-used onsite should be in recourse to appropriate exemptions. A U1 and T5 exemption should be registered.

This will allow the following to be used onsite or brought in for use onsite (refer to guidance for types of waste that can be used[29]):

- 5,000 tonnes (c. 2,500m^3) treatment of crushed concrete / stone.
- 1,000 tonnes (c. 500m^3) use of non-hazardous soil.
- 5,000 tonnes (c. 2,500m^3) use of clays, sand, gravel, brick, concrete, stone etc.
- 50,000 tonnes (c. 25,000m^3) use of bituminous material to be used in roadways.

A Materials Management Plan (MMP) with recourse to the CL:AIRE Code of Practice[30] may be required if volumes exceed exemption limits. This must be registered before material movement starts onsite.

If an MMP is required, this needs to be registered by a Qualified Person (QP) and there must be 'certainty of use' for any material re-used onsite or exported to site to ensure there is no 'sham recovery'.

For all the above material will need to be tested at the rate and analytical suites presented in Table 9-2.

9.1.4. 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.

9.1.5. 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.

9.1.6. Control of Water

If significant organic contamination is present or to chase out deeper obstructions some localised excavation below the groundwater table may be required. Contingency arrangements to remove groundwater (including contaminated groundwater if encountered) from excavations/ relict structures should be allowed.

Small volumes of pumped fluids/ groundwater may be stored in appropriate, sealed tanks/containers and analysed for a range of determinants prior to disposal to suitable facility. Alternatively, a temporary discharge licence, including their requirements for treatment/ testing should be agreed with local utility providers (United Utilities) prior to start on site.

Where relict structures are found to retain fluid contaminants, they should be drained prior to removal.

9.1.7. 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 guidance[31]) should be adopted by all workers involved with site enabling and construction works.

9.2. Build Phase Remediation

9.2.1. Environmental Cover System

Although a formal capping layer is not required in landscaped areas, a nominal 150mm of topsoil is recommended due to undesirable material and nature of the made ground onsite.

9.2.2 Potable Water Pipes

It is recommended that the Water Pipeline Risk Assessment is provided to the water supply company once the location and depth of potable water pipes are known. Additional investigation and risk assessment may be required.

9.3. Validation of Imported / Site Won Soils

Chemical validation of all imported and site-won soils to be used on site in 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 9-2, based on MCC 'Guidelines to Developer' (2021) [33]. 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 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	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 9-2: 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 BS3882[34]). 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 without plant uptake criteria (as used in the contamination risk assessment in Section 6).

9.4. Site Completion Report

It is recommended that any remediation carried out on the site is validated by a third party and suitable documentary evidence provided in a Site Completion Report, such as photographs, consignment documents and analytical results. This should include as a minimum:

- Verification testing of all imported soils for soft landscaping areas.
- Validation of depth of nominal topsoil cover installed.
- Details of any unexpected contamination identified onsite, suitably risk assess and / or validated.
- Waste transfer notes for soil disposal offsite.

The Site Completion Report will assist the Local Authority in the discharge of any future relevant planning condition and will also be of use to solicitors acting on behalf of any prospective conveyancer who may have concerns over the former use of the site

Figures





Client: Watson Construction Ltd			Title: Site Location & Boundary Plan		LK CONSULT
Site: Moorcroft Road, Wythenshawe			Scale (see scale bar): 1:25,000 & 1:1,000 @ A4	Figure: 1	Revision:
Job No.: LKC251233	Drawn By: EH	Checked By: RP	Drawn: June 2025		



Extract From: TADW Architects
Drawing Ref: Proposed Site Plan, No.0010, Rev:P5 (31/07/2025)

KEY

Site Boundary

Schedule of Accommodation (2 - 4 storey building)

11no. 2B3P flats at 61m² each
24no. 1B2P flats at 50m² each

Total - 35 units

GIFA 2545m²

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

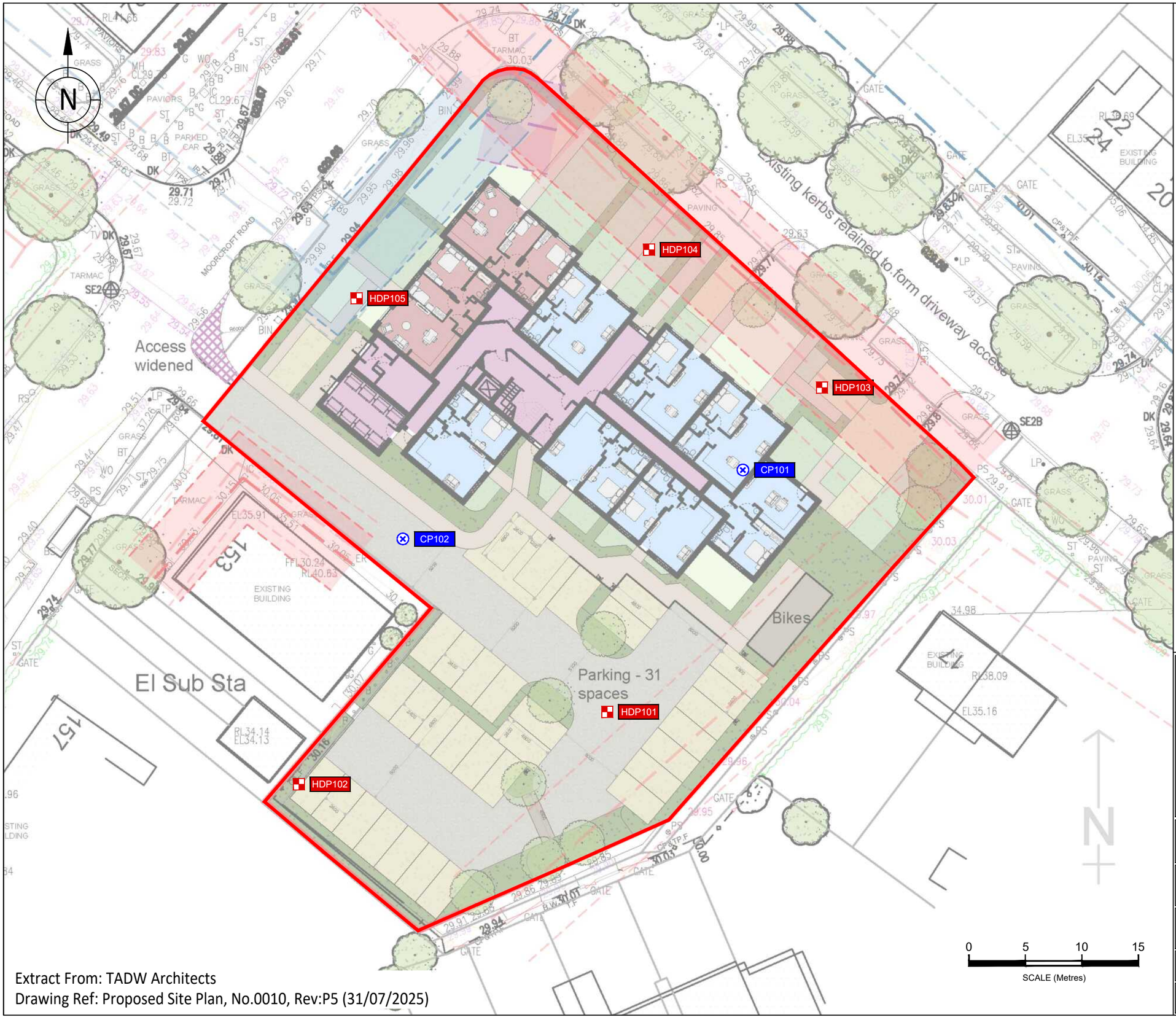
Client: Watson Construction Ltd

Site: Moorcroft Road, Wythenshawe

Title: Proposed Development Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC251233	See Scale Bar	2	A

Drawn By:	Checked By:	Drawn:
AC	RP	Aug 2025



Extract From: TADW Architects
Drawing Ref: Proposed Site Plan, No.0010, Rev:P5 (31/07/2025)

KEY

- Site Boundary
- Hand Dug Trial Pit (HDP)
- Cable Percussive Borehole (CP)

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: Watson Construction Ltd

Site: Moorcroft Road, Wythenshawe

Title: Sampling Location Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC251233	See Scale Bar	3	A

Drawn By:	Checked By:	Drawn:
AC	RP	Aug 2025

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 552[35]. It involves the classification of the:

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

Consequence (Severity)		
Classification	**Definition**	**Example**
Severe	Short term (acute) risk to human health likely to results 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 sever harm to a designated receptor is currently happening. This risk, if realised, is likely to results 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 is 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

Cable Percussion Drilling Log

LK CONSULT

Location Number: **CP101**

Project Name: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 09/07/2025
Project ID:LKC251233	Contractor: D & I Drilling Ltd	Co-ords: E380632.42 N390258.17
Equipment: Cable Percussive Drilling Rig / Shell and Auger Rig	Level: 29.76m AOD; Logged By: EH; Scale: 1:40	Page Number: Sheet 1 of 2

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Water Strikes
0.10 - 0.20	D	0.10		MADE GROUND: TARMACADAM.	29.66	
0.10 - 0.20	ES	0.20		MADE GROUND: Black sandy silty GRAVEL with frequent ash and tarmacadam fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	29.56	
0.10 - 0.20	PID=0.7ppm					
0.20	D	0.40			29.36	
0.20 - 0.40	D			MADE GROUND: Brown with slight hydrocarbon odour sandy silty GRAVEL with medium cobble content and with rare tarmacadam fragments and brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone. Cobbles are subangular to subrounded comprising sandstone.		
0.20 - 0.40	ES					
0.20 - 0.40	PID=15.3ppm					
0.40 - 1.20	D					
0.40 - 1.20	ES					
0.40 - 1.20	PID=0.7ppm					
0.80	D			Medium Dense drown gravelly slightly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone and mudstone.		
1.20 - 1.65	SPT			0.40m to 0.50mbgl - Sand becomes yellowish brown colour.		
1.20	N=18 (3,3/4,4,5,5)					
1.70 - 2.00	B					
2.50 - 2.95	SPT					
2.50	N=12 (3,4/3,3,3,3)					
3.40 - 3.85	SPT					
3.40	N=12 (2,3/3,3,3,3)					
		4.10		Stiff consistency dark brown slightly gravelly slightly sandy silty CLAY with rare coal fragments. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone and mudstone.	25.66	
4.30 - 4.75	SPT					
4.30	N=13 (2,3/4,3,3,3)					
4.80 - 5.10	D					
5.50 - 5.95	U					
6.00	D					
7.10 - 7.55	SPT					
7.10	N=15 (3,4/3,4,4,4)					

Hole Diameter		Casing Diameter		Water Strike Details			Chiselling		
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Initial Strike (m)	Time Elapsed (min)	Depth Water Value (m)	Depth Top (m)	Depth Base (m)	Duration (hh:mm)
15.00	150	15.00	150	2.40	20	2.13			

Remarks:

Broke out tarmacadam to 0.10mbgl, hand excavated trial pit to 1.20mbgl with follow on cable percussive to 15.05mbgl.
Borehole stability unknown due to 150mm casing to 15.00mbgl.
Groundwater strike at 2.40mbgl rising to 2.10mbgl after 20 minutes and 13.20mbgl rising to 5.00mbgl after 20 minutes.

Cable Percussion Drilling Log

LK CONSULT

Location Number: **CP101**

Project Name: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 09/07/2025
Project ID:LKC251233	Contractor: D & I Drilling Ltd	Co-ords: E380632.42 N390258.17
Equipment: Cable Percussive Drilling Rig / Shell and Auger Rig	Level: 29.76m AOD; Logged By: EH; Scale: 1:40	Page Number: Sheet 2 of 2

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Water Strikes
8.50 - 8.95	U			Stiff consistency dark brown slightly gravelly slightly sandy silty CLAY with rare coal fragments. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone and mudstone.		
9.00	D					
10.00 - 10.45 10.00	D N=33 (4,5/6,9,9,9)					
11.50 - 11.95 11.50	SPT N=30 (5,6/7,7,8,8)					
		13.20			16.56	
13.30 - 13.75 13.30	SPT N=16 (3,3/4,4,4,4)			Medium dense light brown gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.		
14.60 - 15.05 14.60	SPT N=22 (3,4/5,5,6,6)					
		15.05		End of Borehole at 15.05m	14.71	

Hole Diameter		Casing Diameter		Water Strike Details			Chiselling		
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Initial Strike (m)	Time Elapsed (min)	Depth Water Value (m)	Depth Top (m)	Depth Base (m)	Duration (hh:mm)
15.00	150	15.00	150	13.20	20	5.00			

Remarks:

Broke out tarmacadam to 0.10mbgl, hand excavated trial pit to 1.20mbgl with follow on cable percussive to 15.05mbgl.
Borehole stability unknown due to 150mm casing to 15.00mbgl.
Groundwater strike at 2.40mbgl rising to 2.10mbgl after 20 minutes and 13.20mbgl rising to 5.00mbgl after 20 minutes.

Cable Percussion Drilling Log

LK CONSULT

Location Number: **CP102**

Project Name: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 10/07/2025
Project ID:LKC251233	Contractor: D & I Drilling Ltd	Co-ords: E380662.47 N390264.29
Equipment: Cable Percussive Drilling Rig / Shell and Auger Rig	Level: 29.66m AOD; Logged By: LGD; Scale: 1:40	Page Number: Sheet 1 of 3

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Water Strikes
0.00 - 0.05	D	0.05		MADE GROUND: TARMACADAM.	29.61	
0.05 - 0.20	D			MADE GROUND: Black very gravelly slightly silty SAND with abundent ash, occassional clinker, brick fragments, tarmacadam fragments and rare concrete fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.		
0.05 - 0.20	ES					
0.05 - 0.20	PID=0.0ppm					
0.20	D	0.50		Medium dense light brown gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	29.16	
0.50 - 1.00	D					
0.50 - 1.00	ES					
0.50 - 1.00	PID=0.0ppm					
0.70	D					
1.20 - 1.65	SPT					
1.20	N=28 (5,7/7,7,7,7)					
1.70 - 2.00	B					
2.20 - 2.65	SPT					
2.20	N=19 (3,4/4,5,5,5)					
3.20 - 3.65	SPT					
3.20	N=13 (4,4/5,3,3,2)					
4.30 - 4.75	SPT	4.30		Stiff to very stiff consistency dark brown slightly gravelly slightly sandy silty CLAY with rare coal fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone and mudstone.	25.36	
4.30	N=12 (4,4/3,3,3,3)					
5.40 - 5.85	SPT					
5.40	N=13 (3,3/4,3,3,3)					
6.00 - 6.30	B					
7.00 - 7.45	U					
7.50	D					

1 2 3 4 5 6 7

Hole Diameter		Casing Diameter		Water Strike Details			Chiselling		
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Initial Strike (m)	Time Elapsed (min)	Depth Water Value (m)	Depth Top (m)	Depth Base (m)	Duration (hh:mm)
15.00	150	15.00	150	2.60	20	2.20			

Remarks:

Broke out tarmacadam to 0.05mbgl, hand excavated trial pit to 1.20mbgl with follow on cable percussive to 15.65mbgl.
Water strike at 2.60mbgl rising to 2.20mbgl after 20 minutes and 12.2mbgl rising to 5.10mbgl after 20 minutes.
Stability of borehole unknown due to 150mm casing to 15.00mbgl.

LK CONSULT

Cable Percussion Drilling Log

Location Number: **CP102**

Project Name: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 10/07/2025
Project ID:LKC251233	Contractor: D & I Drilling Ltd	Co-ords: E380662.47 N390264.29
Equipment: Cable Percussive Drilling Rig / Shell and Auger Rig	Level: 29.66m AOD / Logged By: LGD / Scale: 1:40	Page Number: Sheet 2 of 3

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Water Strikes
				Stiff to very stiff consistency dark brown slightly gravelly slightly sandy silty CLAY with rare coal fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone and mudstone.		
8.60 - 9.05 8.60	SPT N=32 (4,5/7,8,8,9)					
9.00 - 9.30	B					
10.00 - 10.65	U					
10.50	D					
12.20 - 12.65 12.20	SPT N=12 (2,3/3,3,3,3)	12.20		Medium dense light brown gravelly slightly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	17.46	
12.70 - 13.00	B					
13.80 - 14.25 13.80	SPT N=23 (4,5/5,6,6,6)					
15.20 - 15.65 15.20	SPT N=29 (6,7/8,8,7,6)					

8 9 10 11 12 13 14 15

Hole Diameter		Casing Diameter		Water Strike Details			Chiselling		
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Initial Strike (m)	Time Elapsed (min)	Depth Water Value (m)	Depth Top (m)	Depth Base (m)	Duration (hh:mm)
15.00	150	15.00	150	12.20	20	5.10			

Remarks:

Broke out tarmacadam to 0.05mbgl, hand excavated trial pit to 1.20mbgl with follow on cable percussive to 15.65mbgl.
Water strike at 2.60mbgl rising to 2.20mbgl after 20 minutes and 12.2mbgl rising to 5.10mbgl after 20 minutes.
Stability of borehole unknown due to 150mm casing to 15.00mbgl.

LK CONSULT

Cable Percussion Drilling Log

Location Number: **CP102**

Project Name: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 10/07/2025
Project ID:LKC251233	Contractor: D & I Drilling Ltd	Co-ords: E380662.47 N390264.29
Equipment: Cable Percussive Drilling Rig / Shell and Auger Rig	Level: 29.66m AOD / Logged By: LGD / Scale: 1:40	Page Number: Sheet 3 of 3

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)	Water Strikes
		15.65		Medium dense light brown gravelly slightly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	14.01	
				End of Borehole at 15.65m		

16 17 18 19 20 21 22

Hole Diameter		Casing Diameter		Water Strike Details			Chiselling		
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Initial Strike (m)	Time Elapsed (min)	Depth Water Value (m)	Depth Top (m)	Depth Base (m)	Duration (hh:mm)
15.00	150	15.00	150						

Remarks:

Broke out tarmacadam to 0.05mbgl, hand excavated trial pit to 1.20mbgl with follow on cable percussive to 15.65mbgl.
Water strike at 2.60mbgl rising to 2.20mbgl after 20 minutes and 12.2mbgl rising to 5.10mbgl after 20 minutes.
Stability of borehole unknown due to 150mm casing to 15.00mbgl.

LK CONSULT

Trial Pit Log

Location Number: **HDP101**

Project: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 10/07/2025
Project No. : LKC251233	Contractor: LKC	Co-ords: E380650.48 N390242.92
Equipment: Hand Excavation Tools	Level: 29.74m AOD / Logged By: EH / Scale: 1:10	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.05 - 0.35 0.05 - 0.35 0.05 - 0.35	D ES PID=0.0ppm	0.05		MADE GROUND: TARMACADAM.	29.69
				MADE GROUND: Brownish black gravelly slightly silty SAND with frequent ash, clinker, rare brick fragments and tarmacadam fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone. 0.20 to 0.35mbgl - Frequent sandstone cobbles noted.	
0.35 - 0.50 0.35 - 0.50 0.35 - 0.50	D ES PID=0.0ppm	0.35		MADE GROUND: Dark brown slightly gravelly silty SAND with rare ash, clinker and brick fragments. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising of sandstone.	29.39
0.50 - 1.05 0.50 - 1.05 0.50 - 1.05	D ES PID=0.0ppm	0.50		Light brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising of sandstone.	29.24
		1.05		End of Trial Pit at 1.05m	28.69

0.5
1.0
1.5
2.0



Pit Dimensions			Pit Stability
Length (m)	Width (m)	Depth (m)	Stable
0.30	0.30	1.05	

Remarks:

Hand excavated trail pit to 1.05mbgl.
Trial pit dry and stable.
Trial pit terminated at 1.05mbgl due to cobble.

LK CONSULT

Trial Pit Log

Location Number: **HDP102**

Project: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 10/07/2025
Project No. : LKC251233	Contractor: LKC	Co-ords: E380623.25 N390236.54
Equipment: Hand Excavation Tools	Level 29.87m AOD / Logged By LGD / Scale 1:10	Page Number Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.05 - 0.20 0.05 - 0.20 0.05 - 0.20	D ES PID=0.1ppm	0.05		MADE GROUND: TARMACADAM.	29.82
				MADE GROUND: Light brown very gravelly slightly silty SAND with frequent brick and concrete fragments. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone.	
0.20 - 1.10 0.20 - 1.10 0.20 - 1.10	D ES PID=0.0ppm	0.20		Light brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising sandstone.	29.67
		1.10		End of Trial Pit at 1.10m	28.77

0.5
1.0
1.5
2.0



Pit Dimensions			Pit Stability
Length (m)	Width (m)	Depth (m)	Stable
0.30	0.30	1.10	

Remarks:

Hand excavated trial pit to 1.10mbgl.
Trial pit dry and stable.
Trial pit terminated due to cobble at 1.10mbgl.

LK CONSULT

Trial Pit Log

Location Number: **HDP103**

Project: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 10/07/2025
Project No. : LKC251233	Contractor: LKC	Co-ords: E380669.46 N390271.58
Equipment: Hand Excavation Tools	Level: 29.82m AOD / Logged By: LGD / Scale: 1:10	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.00 - 0.20 0.00 - 0.20 0.00 - 0.20	D ES PID=0.1ppm			MADE GROUND: Dark brown slightly gravelly sandy SILT with frequent rootlets, rare clinker and brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	
0.20 - 1.00 0.20 - 1.00 0.20 - 1.00	D ES PID=0.0ppm	0.20		MADE GROUND: Dark brown cobbley gravelly slightly silty SAND with occasional brick fragments, concrete fragments, rare glass fragments and ceramic fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	29.62
		1.00		End of Trial Pit at 1.00m	28.82

0.5
1.0
1.5
2.0



Pit Dimensions			Pit Stability
Length (m)	Width (m)	Depth (m)	Stable
0.30	0.30	1.00	

Remarks:

Hand excavated trial pit to 1.00mbgl.
Trial pit dry and stable.
Trial pit terminated due to cobble at 1.00mbgl

LK CONSULT

Trial Pit Log

Location Number: **HDP104**

Project: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 10/07/2025
Project No. : LKC251233	Contractor: LKC	Co-ords: E380654.24 N390283.77
Equipment: Hand Excavation Tools	Level: 29.84m AOD / Logged By: LGD / Scale: 1:10	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description		Level (m)
0.00 - 0.20 0.00 - 0.20 0.00 - 0.20	D ES PID=0.0ppm			MADE GROUND: Dark brown gravelly sandy SILT with frequent rootlets and rare brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.		
0.20 - 0.50 0.20 - 0.50 0.20 - 0.50	ES ES PID=0.0ppm	0.20		MADE GROUND: Dark brown gravelly silty SAND with occasional brick fragments, rare concrete fragments, ceramic fragments, glass fragments and coal fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.		29.64
0.50 - 1.00 0.50 - 1.00 0.50 - 1.00	D ES PID=0.0ppm	0.50		Light brown gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	0.5	29.34
		1.00		End of Trial Pit at 1.00m	1.0	28.84
					1.5	
					2.0	



Pit Dimensions			Pit Stability
Length (m)	Width (m)	Depth (m)	Stable
0.30	0.30	1.00	

Remarks:

Hand excavated trial pit to 1.00mbgl.
Trial pit dry and stable.
Trial pit terminated due to cobble at 1.00mbgl.

LK CONSULT

Trial Pit Log

Location Number: **HDP105**

Project: Moorcroft Road, Wythenshawe	Client: Watson Construction Ltd	Date: 10/07/2025
Project No. : LKC251233	Contractor: LKC	Co-ords: E380628.32 N390279.54
Equipment: Hand Excavation Tools	Level: 30.22m AOD / Logged By: LGD / Scale: 1:10	Page Number: Sheet 1 of 1

Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description	Level (m)
0.00 - 0.50 0.00 - 0.50 0.00 - 0.50	D ES PID=0.0ppm			MADE GROUND: Dark brown gravelly silty SAND with frequent rootlets, rare ash and brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	
0.90 - 1.20 0.90 - 1.20 0.90 - 1.20	D ES PID=0.0ppm	0.90		Light brown gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone.	29.32
		1.20		End of Trial Pit at 1.20m	29.02

0.5
1.0
1.5
2.0



Pit Dimensions			Pit Stability
Length (m)	Width (m)	Depth (m)	Stable
0.30	0.30	1.20	

Remarks:

Hand excavated trial pit to 1.20mbgl.
Trial pit dry and stable.

Appendix C – Certificates of Analysis (Soil)

Normec DETS

UKAS TESTING
4480

Rachel Peart
LK Consult Limited
Unit 29 Eton Business Park
Eton Hill Road
Manchester
M26 2ZS

Normec DETS Limited
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 25-06600

Site Reference:	Moorcroft Road, Wythenshawe
Project / Job Ref:	LKC251233
Order No:	PO-C001566
Sample Receipt Date:	15/07/2025
Sample Scheduled Date:	15/07/2025
Report Issue Number:	1
Reporting Date:	21/07/2025

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 25-06600	**~Date Sampled**	09/07/25	09/07/25	10/07/25	10/07/25	10/07/25
LK Consult Limited	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Moorcroft Road, Wythenshawe	**~TP / BH No**	CP101	CP102	HDP101	HDP102	HDP103
~Project / Job Ref: LKC251233	**~Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: PO-C001566	**~Depth (m)**	0.20 - 0.40	0.05 - 0.20	0.35 - 0.50	0.05 - 0.20	0.00 - 0.20
Reporting Date: 21/07/2025	**DETS Sample No**	782973	782974	782975	782976	782977

Determinand	Unit	RL	Accreditation				(n)	
Asbestos Screen [S]	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.6	7.5	7.1	7.6	7.2
Total Cyanide	mg/kg	< 1	NONE					
Free Cyanide	mg/kg	< 1	NONE					
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	19	13	< 10	42	313
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.02	0.01	< 0.01	0.04	0.31
Organic Matter (SOM)	%	< 0.1	MCERTS	4.7	0.8	5.8	6.7	5.2
Arsenic (As)	mg/kg	< 2	MCERTS	10	< 2	8	3	11
W/S Boron	mg/kg	< 1	NONE					
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.2	< 0.2	< 0.2	0.6	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	5	6	7	6	11
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	29	5	16	6	39
Lead (Pb)	mg/kg	< 3	MCERTS	54	5	34	11	60
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	10	5	7	4	11
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	11	7	10	17	19
Zinc (Zn)	mg/kg	< 3	MCERTS	40	10	20	45	52
Total Phenols (monohydric)	mg/kg	< 2	NONE					

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 25-06600	**~Date Sampled**	10/07/25	10/07/25	10/07/25		
LK Consult Limited	**~Time Sampled**	None Supplied	None Supplied	None Supplied		
~Site Reference: Moorcroft Road, Wythenshawe	**~TP / BH No**	HDP103	HDP104	HDP105		
~Project / Job Ref: LKC251233	**~Additional Refs**	None Supplied	None Supplied	None Supplied		
~Order No: PO-C001566	**~Depth (m)**	0.20 - 1.00	0.20 - 0.50	0.00 - 0.50		
Reporting Date: 21/07/2025	**DETS Sample No**	782978	782979	782980		

Determinand	Unit	RL	Accreditation		(n)	(n)		
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	6.3	7.8	6.7		
Total Cyanide	mg/kg	< 1	NONE			< 1		
Free Cyanide	mg/kg	< 1	NONE			< 1		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	16	< 10	< 10		
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.02	< 0.01	< 0.01		
Organic Matter (SOM)	%	< 0.1	MCERTS	3.9	3.8	4.3		
Arsenic (As)	mg/kg	< 2	MCERTS	12	9	13		
W/S Boron	mg/kg	< 1	NONE			< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	0.6	0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	12	15	12		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	58	73	51		
Lead (Pb)	mg/kg	< 3	MCERTS	85	137	81		
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	17	13	14		
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Vanadium (V)	mg/kg	< 1	MCERTS	19	21	19		
Zinc (Zn)	mg/kg	< 3	MCERTS	103	189	67		
Total Phenols (monohydric)	mg/kg	< 2	NONE			< 2		

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 25-06600	**~Date Sampled**	09/07/25	09/07/25	10/07/25	10/07/25	10/07/25
LK Consult Limited	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Moorcroft Road, Wythenshawe	**~TP / BH No**	CP101	CP102	HDP101	HDP102	HDP103
~Project / Job Ref: LKC251233	**~Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: PO-C001566	**~Depth (m)**	0.20 - 0.40	0.05 - 0.20	0.35 - 0.50	0.05 - 0.20	0.00 - 0.20
Reporting Date: 21/07/2025	**DETS Sample No**	782973	782974	782975	782976	782977

Determinand	Unit	RL	Accreditation				(n)	
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.58	< 0.1	0.67	< 0.1	0.29
Anthracene	mg/kg	< 0.1	MCERTS	0.13	< 0.1	0.27	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	1.09	< 0.1	1.78	0.23	0.78
Pyrene	mg/kg	< 0.1	MCERTS	1.08	< 0.1	1.66	0.45	0.71
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.77	< 0.1	0.98	0.20	0.43
Chrysene	mg/kg	< 0.1	MCERTS	0.65	< 0.1	0.98	0.22	0.42
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.02	< 0.1	1.28	0.32	0.73
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.24	< 0.1	0.46	< 0.1	0.30
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.82	< 0.1	1.31	0.32	0.57
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.58	< 0.1	0.79	0.30	0.52
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.22	< 0.1	0.13
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.35	< 0.1	0.54	0.18	0.31
**Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	7.3	< 1.6	10.9	2.2	5.2

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 25-06600	**~Date Sampled**	10/07/25	10/07/25	10/07/25		
LK Consult Limited	**~Time Sampled**	None Supplied	None Supplied	None Supplied		
~Site Reference: Moorcroft Road, Wythenshawe	**~TP / BH No**	HDP103	HDP104	HDP105		
~Project / Job Ref: LKC251233	**~Additional Refs**	None Supplied	None Supplied	None Supplied		
~Order No: PO-C001566	**~Depth (m)**	0.20 - 1.00	0.20 - 0.50	0.00 - 0.50		
Reporting Date: 21/07/2025	**DETS Sample No**	782978	782979	782980		

Determinand	Unit	RL	Accreditation		(n)	(n)		
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	0.28	< 0.1	0.30		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	0.71	0.20	0.71		
Pyrene	mg/kg	< 0.1	MCERTS	0.63	0.15	0.70		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.28	0.11	0.51		
Chrysene	mg/kg	< 0.1	MCERTS	0.34	< 0.1	0.64		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.46	0.17	0.85		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.12	< 0.1	0.31		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.33	< 0.1	0.63		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.26	< 0.1	0.52		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.18		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.16	< 0.1	0.42		
**Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	3.6	< 1.6	5.8		

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 25-06600	**~Date Sampled**	10/07/25				
LK Consult Limited	**~Time Sampled**	None Supplied				
~Site Reference: Moorcroft Road, Wythenshawe	**~TP / BH No**	HDP105				
~Project / Job Ref: LKC251233	**~Additional Refs**	None Supplied				
~Order No: PO-C001566	**~Depth (m)**	0.00 - 0.50				
Reporting Date: 21/07/2025	**DETS Sample No**	782980				

Determinand	Unit	RL	Accreditation	(n)				
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2				
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3				
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10				
Aliphatic >C34 - C44 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10				
Aliphatic (C5 - C44) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2				
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2				
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2				
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3				
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	16				
Aromatic >C35 - C44 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10				
Aromatic (C5 - C44) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21				
Total >C5 - C44 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42				

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 25-06600	**~Date Sampled**	10/07/25				
LK Consult Limited	**~Time Sampled**	None Supplied				
~Site Reference: Moorcroft Road, Wythenshawe	**~TP / BH No**	HDP105				
~Project / Job Ref: LKC251233	**~Additional Refs**	None Supplied				
~Order No: PO-C001566	**~Depth (m)**	0.00 - 0.50				
Reporting Date: 21/07/2025	**DETS Sample No**	782980				

Determinand	Unit	RL	Accreditation	(n)				
Benzene : HS_1D_MS	µg/kg	< 2	MCERTS	< 2				
Toluene : HS_1D_MS	µg/kg	< 5	MCERTS	< 5				
Ethylbenzene : HS_1D_MS	µg/kg	< 2	MCERTS	< 2				
p & m-xylene : HS_1D_MS	µg/kg	< 2	MCERTS	< 2				
o-xylene : HS_1D_MS	µg/kg	< 2	MCERTS	< 2				
MTBE : HS_1D_MS	µg/kg	< 5	MCERTS	< 5				

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 25-06600	
LK Consult Limited	
~Site Reference: Moorcroft Road, Wythenshawe	
~Project / Job Ref: LKC251233	
~Order No: PO-C001566	
Reporting Date: 21/07/2025	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
782973	CP101	None Supplied	0.20 - 0.40	10.2	Brown sandy loam with stones
782974	CP102	None Supplied	0.05 - 0.20	8.7	Brown sandy clay with stones
782975	HDP101	None Supplied	0.35 - 0.50	18.1	Brown sandy clay with stones
782976	HDP102	None Supplied	0.05 - 0.20	2	Brown sandy gravel with stones and brick
782977	HDP103	None Supplied	0.00 - 0.20	12.4	Brown sandy loam with stones and vegetation
782978	HDP103	None Supplied	0.20 - 1.00	8.2	Brown sandy loam with stones
782979	HDP104	None Supplied	0.20 - 0.50	8.2	Brown sandy gravel with stones
782980	HDP105	None Supplied	0.00 - 0.50	7.6	Brown sandy gravel with stones and vegetation

Moisture content is part of procedure E003 & is not an accredited test

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 25-06600
LK Consult Limited
~Site Reference: Moorcroft Road, Wythenshawe
~Project / Job Ref: LKC251233
~Order No: PO-C001566
Reporting Date: 21/07/2025

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

List of HWOL Acronyms and Operators
DETS Report No: 25-06600
LK Consult Limited
~Site Reference: Moorcroft Road, Wythenshawe
~Project / Job Ref: LKC251233
~Order No: PO-C001566
Reporting Date: 21/07/2025

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
~	Sample details provided by customer and can affect the validity of results

Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH - Aliphatic >C34 - C44 - raw data - EH_CU_1D_AL
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C34 - C44 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C35 - C44 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C44 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Certificate Key

Symbol	Description
F	Filtered sample
UF	Unfiltered sample
D	Dried sample
AR	As received sample
RL	Reporting limit
~	Sample details provided by customer and can affect the validity of results
M/S	Missing Sample
*	The Dutch 10 PAH compounds consist of Naphthalene, Anthracene,Phenanthrene, Fluoranthene, Benz(a)anthracene, Chrysene, Benzo(k) fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, and Indeno(1,2,3-cd)pyrene
**	Total EPA-16 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(ghi)perylene.
***	Total WAC-17 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz (a,h)anthracene, Benzo(ghi)perylene and Coronene.
n	Please note that we are MCERTS soil accredited (UK soils only) for sand, loam, and clay, and UKAS accredited for groundwater, tap water, surface water, and generated leachates. Other matrices are outside our scope of accreditation.
S	Subcontracted analysis
M	MCERTS accredited test
U	UKAS accredited test

Normec DETS

UKAS TESTING 4480

Rachel Peart
LK Consult Limited
Unit 29 Eton Business Park
Eton Hill Road
Manchester
M26 2ZS

Normec DETS Limited
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 25-06612

Site Reference:	Moorcroft Road, Wythenshawe
Project / Job Ref:	LKC251233
Order No:	PO-C001566
Sample Receipt Date:	16/07/2025
Sample Scheduled Date:	16/07/2025
Report Issue Number:	1
Reporting Date:	22/07/2025

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

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.

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 25-06612	**~Date Sampled**	10/07/25	10/07/25			
LK Consult Limited	**~Time Sampled**	None Supplied	None Supplied			
~Site Reference: Moorcroft Road, Wythenshawe	**~TP / BH No**	CP102	CP102			
~Project / Job Ref: LKC251233	**~Additional Refs**	None Supplied	None Supplied			
~Order No: PO-C001566	**~Depth (m)**	1.70 - 2.00	6.00 - 6.30			
Reporting Date: 22/07/2025	**DETS Sample No**	783023	783024			

Determinand	**Unit**	**RL**	**Accreditation**	(n)				
pH	pH Units	N/a	**MCERTS**	8.2	8.2			
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**	< 200	227			
Total Sulphate as SO_4	%	< 0.02	**MCERTS**	< 0.02	0.02			
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	< 10	16			
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	< 0.01	0.02			
Total Sulphur	%	< 0.02	NONE	< 0.02	0.05			
Ammonium as NH_4	mg/kg	< 0.5	**MCERTS**	< 0.5	13.6			
Ammonium as NH_4	mg/l	< 0.05	**MCERTS**	< 0.05	1.36			
W/S Chloride (2:1)	mg/kg	< 1	**MCERTS**	11	10			
W/S Chloride (2:1)	mg/l	< 0.5	**MCERTS**	5.6	4.8			
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	**MCERTS**	< 3	< 3			
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	**MCERTS**	< 1.5	< 1.5			
W/S Magnesium	mg/l	< 0.1	NONE	1.1	2			

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 25-06612	
LK Consult Limited	
~Site Reference: Moorcroft Road, Wythenshawe	
~Project / Job Ref: LKC251233	
~Order No: PO-C001566	
Reporting Date: 22/07/2025	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
783023	CP102	None Supplied	1.70 - 2.00	1.9	Brown sandy gravel with stones and concrete
783024	CP102	None Supplied	6.00 - 6.30	16.4	Light brown clay

Moisture content is part of procedure E003 & is not an accredited test

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 25-06612
LK Consult Limited
~Site Reference: Moorcroft Road, Wythenshawe
~Project / Job Ref: LKC251233
~Order No: PO-C001566
Reporting Date: 22/07/2025

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

List of HWOL Acronyms and Operators
DETS Report No: 25-06612
LK Consult Limited
~Site Reference: Moorcroft Road, Wythenshawe
~Project / Job Ref: LKC251233
~Order No: PO-C001566
Reporting Date: 22/07/2025

Acronym	**Description**
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
~	Sample details provided by customer and can affect the validity of results

Det - Acronym

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Certificate Key

Symbol	Description
F	Filtered sample
UF	Unfiltered sample
D	Dried sample
AR	As received sample
RL	Reporting limit
~	Sample details provided by customer and can affect the validity of results
M/S	Missing Sample
*	The Dutch 10 PAH compounds consist of Naphthalene, Anthracene,Phenanthrene, Fluoranthene, Benz(a)anthracene, Chrysene, Benzo(k) fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, and Indeno(1,2,3-cd)pyrene
**	Total EPA-16 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(ghi)perylene.
***	Total WAC-17 PAHs consist of the following polycyclic aromatic hydrocarbons: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz (a,h)anthracene, Benzo(ghi)perylene and Coronene.
n	Please note that we are MCERTS soil accredited (UK soils only) for sand, loam, and clay, and UKAS accredited for groundwater, tap water, surface water, and generated leachates. Other matrices are outside our scope of accreditation.
M	MCERTS accredited test
U	UKAS accredited test

Appendix D – Certificates of Analysis (Geotechnical)

MURRAY RIX
CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client LK Consult Ltd

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

Contract LKC 25 1233 -
Moorcroft Road, Wythenshawe

Job Number MRN 25007/88
Date of Issue 04 August 2025

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.

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

M U R R A Y R I X
ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

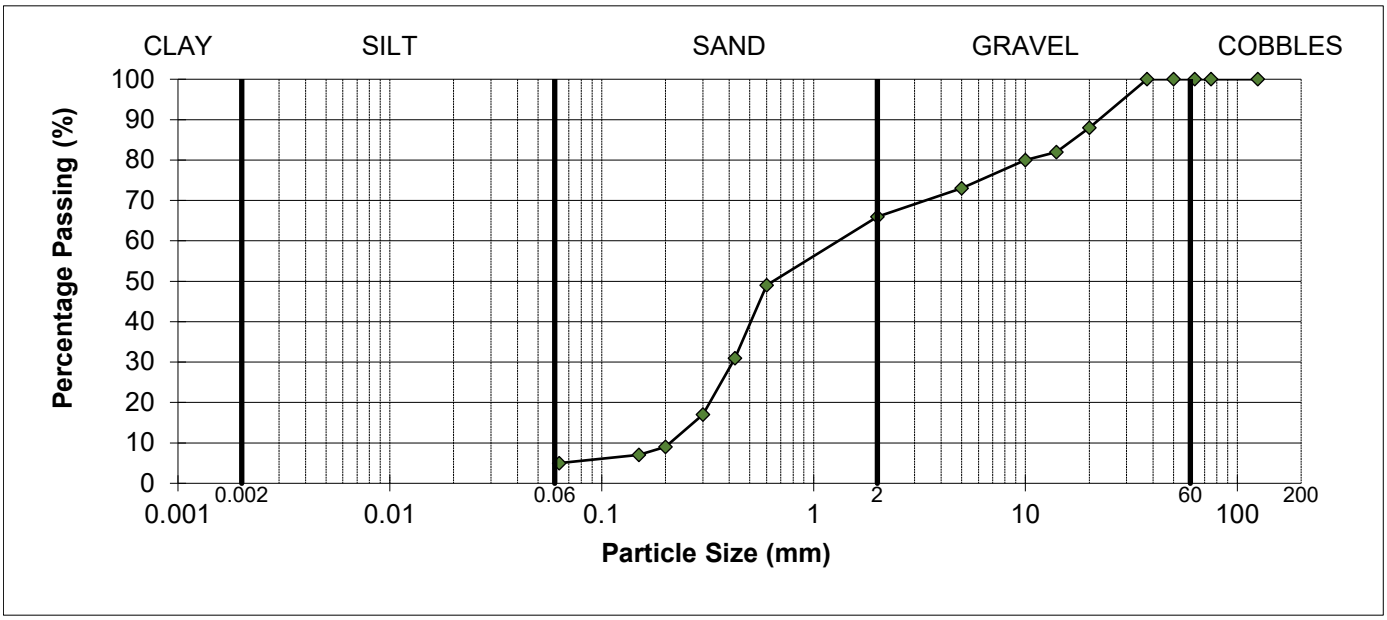
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 25 1233 - Moorcroft Road, Wythenshawe
JOB NUMBER	MRN 25007/88

SAMPLE LABEL	CP101 1.7-2.0m B	DATE SAMPLED	09, 10, 11-Jul-25
LAB SAMPLE No	5130502	DATE RECEIVED	16-Jul-25
DATE TESTED	18-Jul-25	SAMPLED BY	Client

MATERIAL	Brown silty very gravelly SAND
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	73	
75	100		2	66	
63	100		0.6	49	
50	100		0.425	31	
37.5	100		0.3	17	
20	88		0.2	9	
14	82		0.15	7	
10	80		0.063	5	



REMARKS
As received water content = 13.6%

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 04-Aug-25

M U R R A Y R I X

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

UKAS TESTING 1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

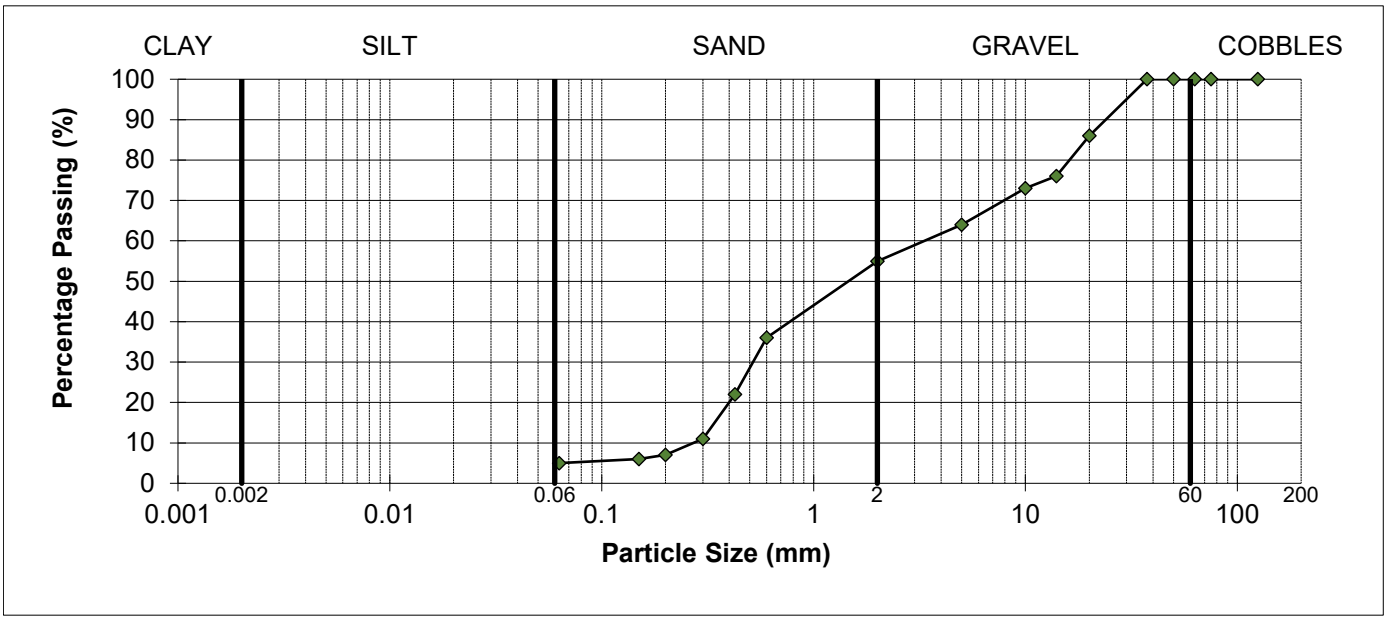
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 25 1233 - Moorcroft Road, Wythenshawe
JOB NUMBER	MRN 25007/88

SAMPLE LABEL	CP102 1.7-2.0m B	DATE SAMPLED	09, 10, 11-Jul-25
LAB SAMPLE No	5130504	DATE RECEIVED	16-Jul-25
DATE TESTED	18-Jul-25	SAMPLED BY	Client

MATERIAL	Brown silty SAND & GRAVEL
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	64	
75	100		2	55	
63	100		0.6	36	
50	100		0.425	22	
37.5	100		0.3	11	
20	86		0.2	7	
14	76		0.15	6	
10	73		0.063	5	



REMARKS
As received water content = 13.6%

SIGNED

NAME O.P. Davies BA (Hons) (Director / Head of Laboratory) DATE 04-Aug-25

MURRAY RIX

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

UKAS TESTING 1580

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

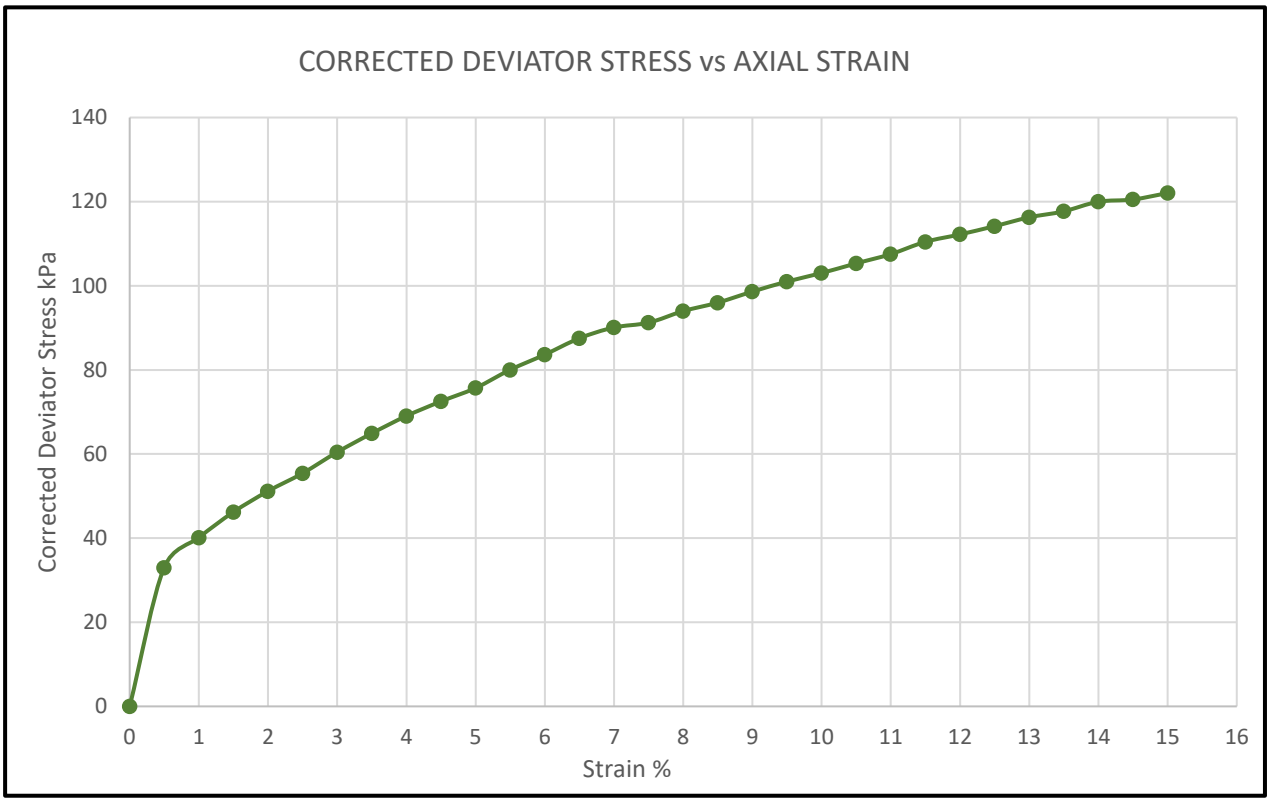
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 25 1233 - Moorcroft Road, Wythenshawe
JOB NUMBER	MRN 25007/88

SAMPLE LABEL	CP101 5.5-5.95m U	**DATE SAMPLED**	09, 10, 11-Jul-25
LAB SAMPLE No.	5130501	**DATE RECEIVED**	16-Jul-25
DATE TESTED	21-Jul-25	**SAMPLED BY**	Client
MATERIAL	Brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample		

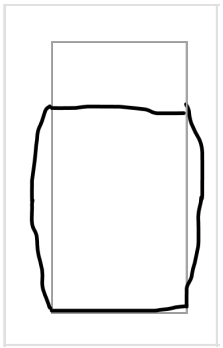
INITIAL CONDITIONS

Specimen Location	Sample Length (mm)	340	Specimen depth from top of Sample (mm)	20
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	201	Specimen Water Content (%)	25.7
	Specimen Diameter (mm)	100	Specimen Bulk Density (Mg/m3)	2.09
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.66
	Membrane Correction	3.39		



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
65	15.0	2.0	122	61

Remarks/Abnormalities

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

Signed

Date 04 August 2025

MURRAY RIX

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

UKAS TESTING 1580

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

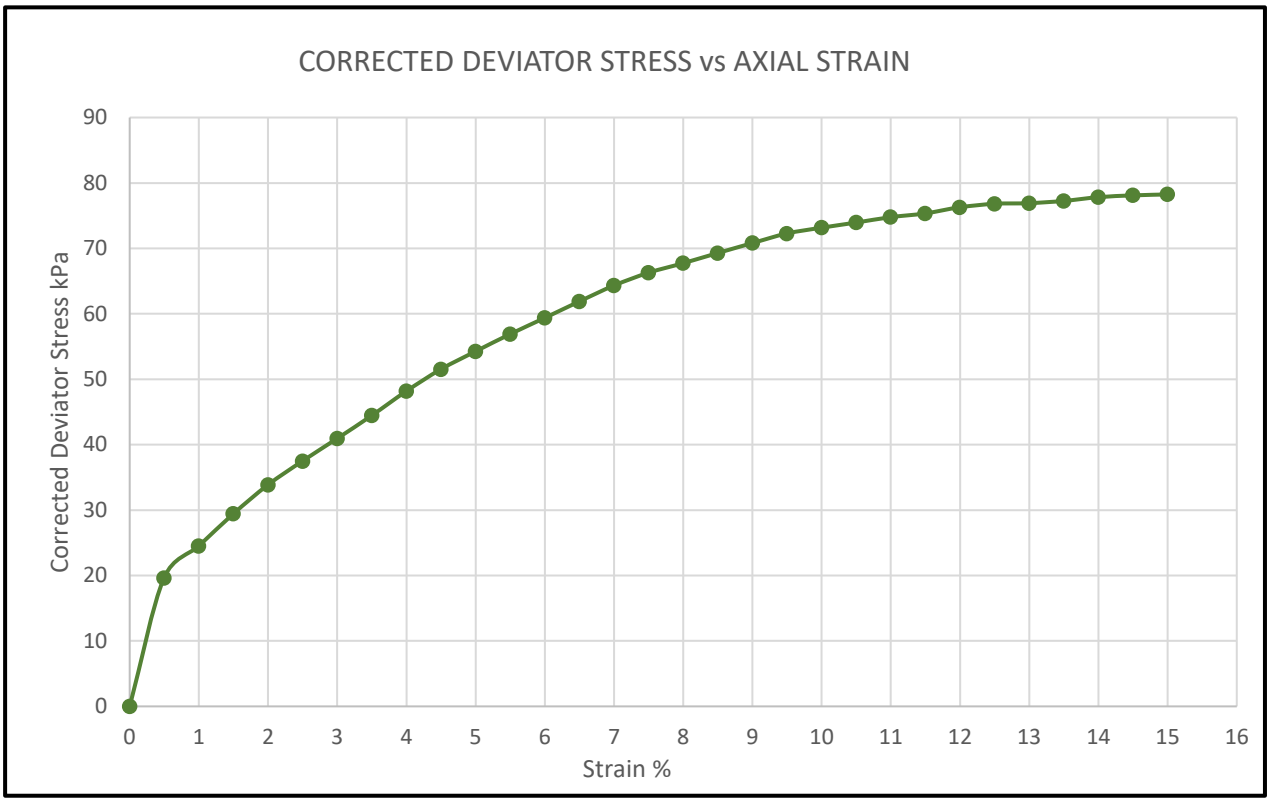
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 25 1233 - Moorcroft Road, Wythenshawe
JOB NUMBER	MRN 25007/88

SAMPLE LABEL	CP102 7.0-7.45m U	**DATE SAMPLED**	09, 10, 11-Jul-25
LAB SAMPLE No.	5130503	**DATE RECEIVED**	16-Jul-25
DATE TESTED	21-Jul-25	**SAMPLED BY**	Client
MATERIAL	Brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample		

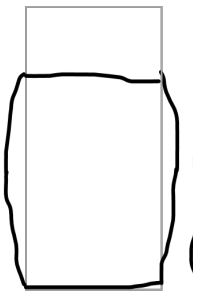
INITIAL CONDITIONS

Specimen Location 	Sample Length (mm)	340	Specimen depth from top of Sample (mm)	20
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	200	Specimen Water Content (%)	29.4
	Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.05
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.58
	Membrane Correction	3.39		



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
75	15.0	2.0	78	39

Remarks/Abnormalities

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

Signed 

Date 04 August 2025

Appendix E – Generic Assessment Criteria Values

Generic Assessment Criteria Values

	Contaminant	SOM	Res +	Res -	Allot.	Comm.	POSresi	POSpark	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 (2015 update)	N/A	130	180	53	980	230	800	LQM S4UL
	Selenium	N/A	250	430	88	12,000	1,100	1,800	LQM S4UL
	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
Polycyclic Aromatic Hydrocarbons (PAHs)	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	1,600*	11,000*	8,400*	DEFRA C4SL
		2.5%	36	36	130	3,700*	15,000*	17,00*	DEFRA C4SL
		6%	85	85	200	8,400*	1,200*	1,900*	DEFRA 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.	POSresi	POSpark	Source
BTEX Compounds	Benzene	1%	0.87	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
	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)	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 Hydroc	**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)	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%	110,000f	110,000f	270,000 f	1,800,000f	250,000 f	490,000 f	LQM S4UL
	EC>35-44	6%	110,000f	110,000f	270,000 f	1,800,000f	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	370f	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)	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%	930f	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

	Contaminant	SOM	Res +	Res -	Allot.	Comm.	POSresi	POSpark	Source
Chloalkanes and Alkenes & Explosives	1,2 Dichloroethane (DCA)	1%	0.0071	0.0092	0.0046	0.67	29	21	LQM S4UL
		2.5%	0.0110	0.0130	0.0083	0.97	29	24	LQM S4UL
		6%	0.0190	0.0230	0.0160	1.7	29	28	LQM S4UL
	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-Trinitritoluene (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.	POSresi	POSpark	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 (potenitally use if free product identified, although highly conservative)
*=naphthalene C4SL exceeds the CLEA calculated soil saturation concentration (76 mg kg-1 for 1% SOM,
183 mg kg-1 for 2.5% SOM and 432 mg kg-1 for 6% SOM)
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 – UU Risk Assessment Form

Supplementary guidance for the selection of water pipes in land potentially affected by contamination

United Utilities
Water for the North West

Introduction

In January 2011, UK Water Industry Research (UKWIR) published "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21; the 'UKWIR Guidance'). Its aim is to ensure that the correct materials are selected for water pipes and components to be used below ground in brownfield sites to protect the quality of drinking water whilst taking into account the service life of the water distribution system. It supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 "Laying Pipes in Contaminated Land" which has been withdrawn.

The UKWIR Guidance is for use by developers, self-lay organisations, water companies and consultants when planning, designing and constructing water mains and/or services in brownfield sites. It defines brownfield sites as "land or premises that have previously been used or developed. They may also be vacant or derelict. However, they are not necessarily contaminated." The UKWIR Guidance states that it does not apply to greenfield sites; however, we consider this supplementary guidance and the relevant sections of the UKWIR guidance as being equally suitable for application to those greenfield sites considered to be potentially affected by contamination. Where greenfield sites are not affected by contamination a preliminary risk assessment (see below) will suffice.

The UKWIR Guidance also states that there should be no departure from its provisions *"except where formally approved by the Water Company, such departure being technically justifiable or representing advances in knowledge or product development"*.

We have adopted the UKWIR Guidance in principle and produced this company specific supplementary guidance (the 'UUW Guidance') which includes the Risk Assessment for Water Pipes (the 'RA').

This guidance does not cover operative safety, health exposure modelling or accidental pipe damage.

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

Any application for new water supplies to a development (construction of new properties, or renovation or conversion of existing buildings) in land potentially affected by contamination shall include a completed RA.

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication "Model Procedures for the Management of Land Contamination" (ref: CLR11) that sets out whether the land through which the pipes are to be laid may be affected by contamination. The application of the source, pathway, receptor concept will be an integral part of any pipeline risk assessment. For each potential source (the contamination) and each potential receptor (the water pipe), consideration shall be given to whether a potential pathway between source and receptor exists, or may exist in the future, linking the two. There are normally only three pathways by which contamination may come into contact with water pipes. These are direct contact with the soil or backfill, an excessive vapour phase or a contaminated groundwater regime. If none of these conditions exist on site (adopting the source, pathway, receptor concept) then it is likely that extended and/or targeted soil testing will not be required and a simple risk assessment will suffice. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. The testing requirements are as described in the following section.

The signatories of the Water Supply Application Form and the RA must ensure that all assessments of land condition have been carried out in accordance with applicable current standards and guidelines by or under the direction of a suitably qualified competent person.

We require the competent person to be a) a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or b) a Specialist in Land Condition (SiLC) with appropriate geo-environmental experience.

How to contact us about the information in this leaflet



DeveloperServicesWater@uuplc.co.uk



0345 072 6067
Opening hours:
8am-5pm Mon to Thurs
8am-4.30pm Fri

Testing Requirements

The soil, rock and if appropriate groundwater tests that are required on all sites where the potential for organic contamination has been identified in the desk study and where water pipes are proposed to be laid must be accredited by United Kingdom Accreditation Service (UKAS) as a minimum and where commercially available the Environment Agency's Monitoring Certification Service (MCERTS). These accredited tests should be undertaken for:

Banded hydrocarbons EC5-EC10, EC10-EC16, EC16-EC40 (Total aliphatic and aromatic hydrocarbons for each banding may be summed). Aliphatic/aromatic fractionation and subsequent banding may be required should a more detailed site specific risk assessment be undertaken. The bandings have been amended to take into account readily available laboratory tests. The equivalent carbon number (EC) is used to assess petroleum hydrocarbon mixtures rather than the actual number of carbon atoms in the molecule in line with guidance issued by the Environment Agency (2005).

Volatile organic compounds (VOCs) (method by head space or purge & trap GCMS) with tentative identification of compounds greater than 20µg/kg. The method used should be capable of detecting a wide range of compounds listed in US EPA Method 8260C or similar. The method should include analysis of naphthalene.

BTEX (Benzene, toluene, ethyl benzene and xylenes) plus MTBE (Methyl-tertiary butyl ether) (by head space GCMS)

Semi-Volatile Organic Compounds (SVOCs) (method by GCMS) with tentative identification of compounds greater than 20µg/kg The method used should be capable of detecting the compounds listed in US EPA Method 8270D or similar. The total concentration of SVOCs excludes polycyclic aromatic hydrocarbons, ethers, nitrobenzene, ketones, aldehydes, phenols, cresols and chlorinated phenols. Phenols, cresols and chlorinated phenols which are detected by the SVOC analysis are given their own assessment criteria.

We do not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in the RA below replaces Table 3.1 of the UKWIR Guidance.

Where previous site uses include the use, storage, treatment, disposal or manufacture of any of the following, appropriate testing for these substances will be required:

- Ethers, nitrobenzene, ketones, aldehydes and amines. Note that the presence of amines on any site at the proposed pipe depth +/- 1.0m precludes the use of polyethylene. The methods of analysis and method of calculation of total concentrations of these compounds will need to be agreed with UUW.

To comply with the testing requirements, the suites of tests that are required on all brownfield sites where wrapped steel, wrapped ductile iron or copper pipes are to be laid as minimum must include:

- pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

Where required a sufficient number of test results should be obtained from the material in which the pipes are to be laid. CLAIRE/CIEH 2008 "Guidance on comparing soil contamination data with a critical concentration" may be used, where appropriate, to justify the number of soil samples tested; however, this statistical model should not be used on heterogeneous materials or used to average test results from different types of materials.

Further guidance on representative sampling is contained within BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites, the Department of the Environment's Contaminated Land Research Report "Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4; 1994) and the Environment Agency's "Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination" (ref: R&D Technical Report P5-066/TR; 2000).

Where remediation has been carried out on the site, the test results obtained from validation samples will be used in the assessment. Where a horizontal capping system has been or will be employed using materials spread across a site, sufficient samples will need to be taken to characterise the capping material used and the results presented to UUW. However, the sufficiency of sampling on the horizontal capping system, in which the pipeline will be placed, may be assessed on the basis of the source, quantity and type of materials used.

Detection Limits

Only positive concentrations, ie those above the limit of detection should be used in summation of VOC and SVOC (or other test groups of compounds ie phenols, cresols and chlorinated phenols). Laboratory methods shall provide a minimum limit of detection of 10µg/kg for each individual VOC or SVOC (or other test groups of compounds) quantitatively detected in accordance with the methods described above. For tentatively identified compounds (TICs), only those compounds with a concentration of 20µg/kg or greater shall be used in the summation of VOC and SVOC (or other test groups of compounds).

Protective Measures

Where polyethylene, ductile iron, steel or copper pipes are to be laid on a brownfield site or other land potentially affected by contamination (whether or not it has been remediated) and where the concentrations exceed the generic guideline values set out in Table 1 of the RA, the developer shall provide either:

a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or

b) more suitable pipe materials; or

c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

Liquid free phase product (e.g. oil or free solvent layers) shall not remain in the ground or groundwater in the vicinity of water pipes, whether barrier pipe or any other pipe materials are used.

When designing pipe routes on land potentially affected by contamination, new preferential contamination pathways along the route of new water pipes shall not be created. Particular measures may be required to prevent the possible migration of contamination through pipe bedding and into controlled waters.

References

BS10175: 2011
"Investigation of Potentially Contaminated Sites Code of Practice"

CLAIRE/CIEH
"Guidance on comparing soil contamination data with a critical concentration" 2008

Department of the Environment Contaminated Land Research Report
"Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4) 1994

Environment Agency
"Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination"
(ref: R&D Technical Report P5-066/TR) 2000

Environment Agency
"Model Procedures for the Management of Land Contamination" (ref: CLR11), 2004

Environment Agency P5-080/TR3
"The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils", 2005

UK Water Industry Research (UKWIR)
"Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21) January 2011

Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03
"Laying Pipes in Contaminated Land" 2002

Frequently asked questions

Why has UUW published supplementary guidance to the 'UKWIR Guidance for the Selection of Water Pipes to be used in Brownfield Sites'?

UUW agrees with the UKWIR Guidance in principle; we have published supplementary guidance to clarify some of the areas in which it will operate.

Does the UKWIR Guidance only apply to 'brownfield sites'?

Yes, the UKWIR Guidance does apply to brownfield sites; in addition United Utilities Water will apply this guidance and the UUW supplementary guidance to any greenfield sites which are potentially affected by contamination.

Who is responsible for completing/ signing the Risk Assessment for Water Pipes (RA)?

This may be the Developer, the Developers representative, or the competent person directing the land assessment. The signatory of the Risk Assessment for Water Pipes (RA) must ensure that all land assessments have been carried out in accordance with current standards and guidelines by or under the direction of a suitably qualified competent person. For water supply applications on land potentially affected by contamination, UUW requires the competent person to be either a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or a Specialist in Land Condition (SiLC). This level of competency is intended to promote good practice and high professional standards and is no greater than that required for planning purposes by Local Authorities.

Do we need to agree the number and location of soil samples with the Water Company as indicated by the UKWIR guidance following the Preliminary Risk Assessment (PRA)?

Where a preliminary risk assessment (PRA) highlights the need for a site investigation UUW considers it is a responsibility of the qualified competent person directing the land assessment to determine the location and frequency of sampling. UUW's role would be to confirm that the appropriate choice of pipe material has been made on the basis of the information provided.

What do we do if the pipe route is not known when the Site Investigation report is commissioned?

Where the route of the pipe is not known at the site investigation stage, then any resultant pipe selection needs to take account of any contamination found on the site. Consideration should be given to identifying the route and depth of the pipeline at the site investigation stage to avoid unnecessary testing.

Is it acceptable not to undertake a site investigation and specify the use of barrier pipe which seems to be suitable for all conditions?

Not all brownfield land is contaminated, and because of that a default to barrier pipe is not an acceptable approach to UUW, due to the possibility of higher installation and future maintenance costs. The approach as to whether a site investigation is needed should be risk based. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the ground materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials.

Examples where defaulting to barrier pipe would not be acceptable:

- Where a capping layer (non-contaminated) is introduced within which the pipes will be installed.
- Sites with a potential low risk for contamination.
- Where liquid free phase product (e.g. oil or free solvent layers) is in the ground or groundwater in the vicinity of water pipes.
- Where the route of the pipe could be diverted to another suitable location free from contamination.

Are UUW employees who will assess the Design Proposals for contaminated sites suitably qualified?

It is the role of the Developer's suitably qualified competent person to deal with or direct the assessment of land. UUW's role is to assess the Risk Assessment for Water Pipes and supporting Site Assessment Report (SAR) which is provided with any new water supply application (ie. it has been provided in the correct format, proposals for pipe selection are included, the methodology is in line with the UKWIR Guidance and UUW Supplementary Guidance, it has been directed by a suitably qualified competent person etc.). If UUW do need to provide assistance or information in deciding pipe materials then the assessment would be carried out under the direction of a suitably qualified competent person.

What happens to existing PE that is in the ground under the "old" guidelines?

The latest UKWIR guidance and UUW's supplementary guidance are intended to be used to decide what pipe materials will be used for new water mains and services. It will have no effect for developers with regard to any parts of UUW's existing network.

Will the Developer be required to submit a fully completed Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, for both the option of a mains requisition application and the option of a self-lay application?

Yes, UUW expect the 'Developer', as defined in UUW Supplementary Guidance, to submit a Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, in respect of any water pipes being installed on the development irrespective of who is to install them.

Does Table 1 in UUW's Risk Assessment for Water Pipes (RA) replace any of the tables to be completed in the Site Assessment Report (SAR) as required in the UKWIR Guidance?

UUW does not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in UUW's RA replaces Table 3.1 of the UKWIR Guidance.

Have any other Water Companies adopted the UKWIR Guidance yet?

You will need to contact the water company concerned if you are intending to install water pipes outside UUW's licensed area.

United Utilities
Water for the North West

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
Registered in England and Wales. Registered Number 2366678.

LRA1A-11/19v0

11/19/SD/8483f-1

Risk assessment for water pipes (RA)

United Utilities
Water for the North West

The risk assessment for water pipes will help you choose appropriate materials for your development. We are happy to deal with a risk assessment for water pipes in advance of any formal application for a new water supply.

If you need any help completing the form please call us on **0345 072 6067.**

Section 1: Development details	
Development name *(if it has one)*	
Development address	The Park, Moorcroft Road, Wythenshawe, M23 0AE
OS Grid reference *(mid point)*	380650E 390260N
Developer's name	Watson Construction Ltd
UUW reference number *(for UU use only)*	

Please provide details below of the current and historical use of the site and adjacent sites.

If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.

Orchard present to the north of site from 1877 to 1911 no longer present on 1922 mapping, Fields and nursery are present to the south and centre of site from 1877 to 1955 mapping, no longer present on 1956 mapping. Site is then vacant until 1966, The Park public house is then present from 1967 mapping to 2025 mapping.

Offsite features include Hazelhurst farm (building) located adjacent to the east of site no longer present on 1956 mapping, Baguley Brook culvert was culverted on 1956 mapping the culvert is still present on 2025 mapping, 2no. ponds are present 210m & 230m south, ponds are potentially infilled and no longer present on 1956 mapping, Electrical substation is present to the south-west adjacent to site still present on 2025 mapping.

See Section 2 of the Phase 1 Preliminary Risk Assessment undetaken by The LK Group (Report Ref: LKC251233-A1-PRA-Moorcroft Road, Wythenshawe R0. Dated: August 2025.

Section 2: Preliminary risk assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	☑ Yes ☐ No

If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

N/A

Section 3: Intrusive site investigation

Have you completed any intrusive site investigation?	☑ Yes ☐ No
Have you completed any none intrusive site investigation?	☐ Yes ☑ No
Date(s) when the site investigation(s) undertaken	09 07 2025 to 11 07 2025
At what level has groundwater been encountered?	2.14 metres below ground level or ☐ Not encountered

Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing.

If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.

SVOCs, cresols, ethers, nitrobenzene, ketones, aldehydes and amines not tested as source not identified.

If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE. Please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

N/A

Section 4: Site remediation

Please provide details below of any site remediation (which may include a change in site levels) already completed.

If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.

N/A

Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☐ Yes ☑ No ☐ N/A

Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection.

If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.

N/A

Section 5: Final use of site

Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection.

If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.

Residential development therefore no chemical or fuel storage anticipated.

What water pipe materials are intended to be used on site?	☑ PE ☐ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B Other *(please specify):* x

Section 6: Additional information

Please use the section below to provide any additional details to support your intended pipe selection.

Proposed water pipe route is entering site from Moorcroft road in the north of the site. Water pipe will primarily be within natural strata.

Section 7: Risk assessor

Name and relevant qualifications of person directing the risk assessment for water pipes	Colin Crompton CEnv IES
Name and address of risk assessor's company	LK Consult Ltd, Unit 29 Eton Hill Business Park, Eton Hill Road, Radcliffe, Manchester, M26 2ZS
Date risk assessment performed	13 08 2025

Section 8: Declaration

I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and UUW's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information.
I understand that failure to supply any of the required information may delay my application being processed.

Name	Colin Crompton	Company	LK Consult Ltd
Telephone	0161 763 7200	Date	13 MM YYYY

Please email the completed form and supporting information to **DeveloperServicesWater@uuplc.co.uk** or post to us at United Utilities Water, Developer Services, Second floor Grasmere House, Lingley Mere, Warrington WA5 3LP.

United Utilities
Water for the North West

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
Registered in England and Wales. Registered Number 2366678.

Table 1 - Pipe selection risk assessment summary (PSRAS)

1. Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2. If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below?	☑ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

All concentrations in mg/kg

Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth *See Note [2]*	Maximum site concentration *See Note [3]*	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	0.1	Y	<LOD	<LOD	N/A
Total BTEX & MTBE		0.1	Pass	0.002-0.005	Y	<LOD	<LOD	N/A
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	-	-	-	-	-
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	0.01-2	N	<LOD	<LOD	N/A
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	2-3	Y	<LOD	<LOD	N/A
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	3-10	Y	16 HDP105	16 HDP105	N/A
Phenols* (from SVOC analysis)		2	Pass	2	N	<LOD	<LOD	N/A
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	-	-	-	-	-
Ethers*	Only where identified	0.5	Pass	-	-	-	-	-
Nitrobenzene*		0.5	Pass	-	-	-	-	-
Ketones*		0.5	Pass	-	-	-	-	-
Aldehydes*		0.5	Pass	-	-	-	-	-
Amines		Fail	Pass	-	-	-	-	-
Corrosive	Conductivity, Redox and pH	Pass	*See Note [1]*	N/A	Y	-	6.3-7.8	N/A

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.

Appendix G – HazWaste Online Classification Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

MY3D9-6OMHL-U1RN4

Report is invalid if pages are removed.

Job name

LKC251233

Description/Comments

Project

LKC251233

Site

Morrocroft Road, Wynthenshawe

Classified by

Name:
Peter Dunn
Company:
LK Group
Date:
11 Aug 2025 07:02 GMT
Telephone:
0161 763 7200

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: -

Course	Date
Hazardous Waste Classification	26 Mar 2015 *
Most recent 3 year Refresher	02 Aug 2022
3 year Refresher overdue	-

* training course booked

Purpose of classification

2 - Material Characterisation

Address of the waste

The Park, Moorcroft Road, Wythenshawe, Manchester **Post Code** M23 0AE

SIC for the process giving rise to the waste

Description of industry/producer giving rise to the waste

Development of brownfield land

Description of the specific process, sub-process and/or activity that created the waste

construction

Description of the waste

made ground

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CP101-0.20 - 0.40-09/07/2025	0.20 - 0.40	Non Hazardous		3
2	CP102-0.05 - 0.20-09/07/2025	0.05 - 0.20	Non Hazardous		5
3	HDP101-0.35 - 0.50-10/07/2025	0.35 - 0.50	Non Hazardous		7
4	HDP102-0.05 - 0.20-10/07/2025	0.05 - 0.20	Non Hazardous		9
5	HDP103-0.00 - 0.20-10/07/2025	0.00 - 0.20	Non Hazardous		11
6	HDP103-0.20 - 1.00-10/07/2025	0.20 - 1.00	Non Hazardous		13
7	HDP104-0.20 - 0.50-10/07/2025	0.20 - 0.50	Non Hazardous		15
8	HDP105-0.00 - 0.50-10/07/2025	0.00 - 0.50	Non Hazardous		17

Related documents

#	Name	Description
1	25-06600.1.hwol	DETS South .hwol file used to populate the Job
2	LK SUITE 1 - 5	waste stream template used to create this Job

Report

Created by: Peter Dunn

Created date: 11 Aug 2025 07:02 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	20
Appendix B: Rationale for selection of metal species	21
Appendix C: Version	22

Classification of sample: CP101-0.20 - 0.40-09/07/2025

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CP101-0.20 - 0.40-09/07/2025
Sample Depth:
0.20 - 0.40 m
Moisture content:
10.2%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	11.857	mg/kg	0.00119 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2	mg/kg	1.142	0.205	mg/kg	0.0000205 %	✓	
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		5	mg/kg	1.462	6.562	mg/kg	0.000656 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		29	mg/kg	1.126	29.32	mg/kg	0.00293 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
6	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		10	mg/kg	1.273	11.428	mg/kg	0.00114 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	54	mg/kg		48.492	mg/kg	0.00485 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<2	mg/kg	1.405	<2.81	mg/kg	<0.000281 %		<**LOD**
9	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		11	mg/kg	1.785	17.634	mg/kg	0.00176 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		40	mg/kg	1.245	44.71	mg/kg	0.00447 %	✓	
11	chromium in Cr(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<**LOD**
12	pH			PH		7.6	pH		7.6	pH	7.6 pH		
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
14	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15	•	acenaphthene	201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
16	•	fluorene	201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
17	•	phenanthrene	201-581-5	85-01-8		0.58	mg/kg		0.521	mg/kg	0.0000521 %	✓	
18	•	anthracene	204-371-1	120-12-7		0.13	mg/kg		0.117	mg/kg	0.0000117 %	✓	
19	•	fluoranthene	205-912-4	206-44-0		1.09	mg/kg		0.979	mg/kg	0.0000979 %	✓	
20	•	pyrene	204-927-3	129-00-0		1.08	mg/kg		0.97	mg/kg	0.000097 %	✓	
21		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.77	mg/kg		0.691	mg/kg	0.0000691 %	✓	
22		chrysene	601-048-00-0	205-923-4	218-01-9	0.65	mg/kg		0.584	mg/kg	0.0000584 %	✓	
23		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	1.02	mg/kg		0.916	mg/kg	0.0000916 %	✓	
24		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.24	mg/kg		0.216	mg/kg	0.0000216 %	✓	
25		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.82	mg/kg		0.736	mg/kg	0.0000736 %	✓	
26	•	indeno[123-cd]pyrene	205-893-2	193-39-5		0.58	mg/kg		0.521	mg/kg	0.0000521 %	✓	
27		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
28	•	benzo[ghi]perylene	205-883-8	191-24-2		0.35	mg/kg		0.314	mg/kg	0.0000314 %	✓	
										Total:	0.0177 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP102-0.05 - 0.20-09/07/2025

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CP102-0.05 - 0.20-09/07/2025
Sample Depth:
0.05 - 0.20 m
Moisture content:
8.7%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.7% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<2	mg/kg	1.32	<2.641	mg/kg	<0.000264 %		<LOD
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		6	mg/kg	1.462	8.006	mg/kg	0.000801 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		5	mg/kg	1.126	5.14	mg/kg	0.000514 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<LOD
6	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		5	mg/kg	1.273	5.809	mg/kg	0.000581 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	5	mg/kg		4.565	mg/kg	0.000457 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<2	mg/kg	1.405	<2.81	mg/kg	<0.000281 %		<LOD
9	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		7	mg/kg	1.785	11.409	mg/kg	0.00114 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		10	mg/kg	1.245	11.364	mg/kg	0.00114 %	✓	
11	chromium in Cr(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<LOD
12	pH			PH		7.5	pH		7.5	pH	7.5 pH		
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
14	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
										Total:	0.00463 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HDP101-0.35 - 0.50-10/07/2025

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
HDP101-0.35 - 0.50-10/07/2025
Sample Depth:
0.35 - 0.50 m
Moisture content:
18.1%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8 mg/kg	1.32	8.651 mg/kg	0.000865 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		7 mg/kg	1.462	8.379 mg/kg	0.000838 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.126	14.754 mg/kg	0.00148 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
6	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		7 mg/kg	1.273	7.296 mg/kg	0.00073 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	34 mg/kg		27.846 mg/kg	0.00278 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<2 mg/kg	1.405	<2.81 mg/kg	<0.000281 %		<**LOD**
9	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		10 mg/kg	1.785	14.621 mg/kg	0.00146 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		20 mg/kg	1.245	20.388 mg/kg	0.00204 %	✓	
11	chromium in Cr(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
12	pH			PH		7.1 pH		7.1 pH	7.1 pH		
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
14	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
17		phenanthrene				0.67	mg/kg		0.549	mg/kg	0.0000549 %	✓	
			201-581-5	85-01-8									
18		anthracene				0.27	mg/kg		0.221	mg/kg	0.0000221 %	✓	
			204-371-1	120-12-7									
19		fluoranthene				1.78	mg/kg		1.458	mg/kg	0.000146 %	✓	
			205-912-4	206-44-0									
20		pyrene				1.66	mg/kg		1.36	mg/kg	0.000136 %	✓	
			204-927-3	129-00-0									
21		benzo[a]anthracene				0.98	mg/kg		0.803	mg/kg	0.0000803 %	✓	
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				0.98	mg/kg		0.803	mg/kg	0.0000803 %	✓	
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				1.28	mg/kg		1.048	mg/kg	0.000105 %	✓	
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				0.46	mg/kg		0.377	mg/kg	0.0000377 %	✓	
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				1.31	mg/kg		1.073	mg/kg	0.000107 %	✓	
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				0.79	mg/kg		0.647	mg/kg	0.0000647 %	✓	
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				0.22	mg/kg		0.18	mg/kg	0.000018 %	✓	
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				0.54	mg/kg		0.442	mg/kg	0.0000442 %	✓	
			205-883-8	191-24-2									
										Total:	0.0111 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HDP102-0.05 - 0.20-10/07/2025

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
HDP102-0.05 - 0.20-10/07/2025
Sample Depth:
0.05 - 0.20 m
Moisture content:
2%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 2% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		3 mg/kg	1.32	3.882 mg/kg	0.000388 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.6 mg/kg	1.142	0.672 mg/kg	0.0000672 %	✓	
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		6 mg/kg	1.462	8.594 mg/kg	0.000859 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6 mg/kg	1.126	6.62 mg/kg	0.000662 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
6	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		4 mg/kg	1.273	4.989 mg/kg	0.000499 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	11 mg/kg		10.78 mg/kg	0.00108 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<2 mg/kg	1.405	<2.81 mg/kg	<0.000281 %		<**LOD**
9	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		17 mg/kg	1.785	29.741 mg/kg	0.00297 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		45 mg/kg	1.245	54.892 mg/kg	0.00549 %	✓	
11	chromium in Cr(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
12	pH			PH		7.6 pH		7.6 pH	7.6 pH		
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
14	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
19		fluoranthene				0.23	mg/kg		0.225	mg/kg	0.0000225 %	✓	
			205-912-4	206-44-0									
20		pyrene				0.45	mg/kg		0.441	mg/kg	0.0000441 %	✓	
			204-927-3	129-00-0									
21		benzo[a]anthracene				0.2	mg/kg		0.196	mg/kg	0.0000196 %	✓	
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				0.22	mg/kg		0.216	mg/kg	0.0000216 %	✓	
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				0.32	mg/kg		0.314	mg/kg	0.0000314 %	✓	
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				0.32	mg/kg		0.314	mg/kg	0.0000314 %	✓	
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				0.3	mg/kg		0.294	mg/kg	0.0000294 %	✓	
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				0.18	mg/kg		0.176	mg/kg	0.0000176 %	✓	
			205-883-8	191-24-2									
										Total:	0.0122 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HDP103-0.00 - 0.20-10/07/2025

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
HDP103-0.00 - 0.20-10/07/2025
Sample Depth:
0.00 - 0.20 m
Moisture content:
12.4%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12.4% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	12.723	mg/kg	0.00127 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<**LOD**
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11	mg/kg	1.462	14.084	mg/kg	0.00141 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		39	mg/kg	1.126	38.465	mg/kg	0.00385 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
6	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		11	mg/kg	1.273	12.263	mg/kg	0.00123 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	60	mg/kg		52.56	mg/kg	0.00526 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<2	mg/kg	1.405	<2.81	mg/kg	<0.000281 %		<**LOD**
9	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		19	mg/kg	1.785	29.713	mg/kg	0.00297 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		52	mg/kg	1.245	56.699	mg/kg	0.00567 %	✓	
11	chromium in Cr(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<**LOD**
12	pH			PH		7.2	pH		7.2	pH	7.2 pH		
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
14	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
17		phenanthrene				0.29	mg/kg		0.254	mg/kg	0.0000254 %	✓	
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
19		fluoranthene				0.78	mg/kg		0.683	mg/kg	0.0000683 %	✓	
			205-912-4	206-44-0									
20		pyrene				0.71	mg/kg		0.622	mg/kg	0.0000622 %	✓	
			204-927-3	129-00-0									
21		benzo[a]anthracene				0.43	mg/kg		0.377	mg/kg	0.0000377 %	✓	
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				0.42	mg/kg		0.368	mg/kg	0.0000368 %	✓	
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				0.73	mg/kg		0.639	mg/kg	0.0000639 %	✓	
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				0.3	mg/kg		0.263	mg/kg	0.0000263 %	✓	
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				0.57	mg/kg		0.499	mg/kg	0.0000499 %	✓	
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				0.52	mg/kg		0.456	mg/kg	0.0000456 %	✓	
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				0.13	mg/kg		0.114	mg/kg	0.0000114 %	✓	
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				0.31	mg/kg		0.272	mg/kg	0.0000272 %	✓	
			205-883-8	191-24-2									
										Total:	0.0221 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HDP103-0.20 - 1.00-10/07/2025

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
HDP103-0.20 - 1.00-10/07/2025
Sample Depth:
0.20 - 1.00 m
Moisture content:
8.2%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	14.545	mg/kg	0.00145 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3	mg/kg	1.142	0.315	mg/kg	0.0000315 %	✓	
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12	mg/kg	1.462	16.1	mg/kg	0.00161 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		58	mg/kg	1.126	59.947	mg/kg	0.00599 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
6	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		17	mg/kg	1.273	19.86	mg/kg	0.00199 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	85	mg/kg		78.03	mg/kg	0.0078 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<2	mg/kg	1.405	<2.81	mg/kg	<0.000281 %		<**LOD**
9	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		19	mg/kg	1.785	31.137	mg/kg	0.00311 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		103	mg/kg	1.245	117.693	mg/kg	0.0118 %	✓	
11	chromium in Cr(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<**LOD**
12	pH			PH		6.3	pH		6.3	pH	6.3 pH		
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
14	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
17		phenanthrene				0.28	mg/kg		0.257	mg/kg	0.0000257 %	✓	
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
19		fluoranthene				0.71	mg/kg		0.652	mg/kg	0.0000652 %	✓	
			205-912-4	206-44-0									
20		pyrene				0.63	mg/kg		0.578	mg/kg	0.0000578 %	✓	
			204-927-3	129-00-0									
21		benzo[a]anthracene				0.28	mg/kg		0.257	mg/kg	0.0000257 %	✓	
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				0.34	mg/kg		0.312	mg/kg	0.0000312 %	✓	
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				0.46	mg/kg		0.422	mg/kg	0.0000422 %	✓	
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				0.12	mg/kg		0.11	mg/kg	0.000011 %	✓	
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				0.33	mg/kg		0.303	mg/kg	0.0000303 %	✓	
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				0.26	mg/kg		0.239	mg/kg	0.0000239 %	✓	
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				0.16	mg/kg		0.147	mg/kg	0.0000147 %	✓	
			205-883-8	191-24-2									
										Total:	0.0341 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HDP104-0.20 - 0.50-10/07/2025

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
HDP104-0.20 - 0.50-10/07/2025
Sample Depth:
0.20 - 0.50 m
Moisture content:
8.2%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9	mg/kg	1.32	10.909	mg/kg	0.00109 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.6	mg/kg	1.142	0.629	mg/kg	0.0000629 %	✓	
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15	mg/kg	1.462	20.126	mg/kg	0.00201 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		73	mg/kg	1.126	75.45	mg/kg	0.00755 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
6	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		13	mg/kg	1.273	15.187	mg/kg	0.00152 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	137	mg/kg		125.766	mg/kg	0.0126 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<2	mg/kg	1.405	<2.81	mg/kg	<0.000281 %		<**LOD**
9	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		21	mg/kg	1.785	34.415	mg/kg	0.00344 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		189	mg/kg	1.245	215.96	mg/kg	0.0216 %	✓	
11	chromium in Cr(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<**LOD**
12	pH			PH		7.8	pH		7.8	pH	7.8 pH		
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
14	acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
19		fluoranthene				0.2	mg/kg		0.184	mg/kg	0.0000184 %	✓	
			205-912-4	206-44-0									
20		pyrene				0.15	mg/kg		0.138	mg/kg	0.0000138 %	✓	
			204-927-3	129-00-0									
21		benzo[a]anthracene				0.11	mg/kg		0.101	mg/kg	0.0000101 %	✓	
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				0.17	mg/kg		0.156	mg/kg	0.0000156 %	✓	
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
										Total:	0.0499 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HDP105-0.00 - 0.50-10/07/2025

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
HDP105-0.00 - 0.50-10/07/2025
Sample Depth:
0.00 - 0.50 m
Moisture content:
7.6%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13 mg/kg	1.32	15.86 mg/kg	0.00159 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.2 mg/kg	1.142	0.211 mg/kg	0.0000211 %	✓	
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12 mg/kg	1.462	16.206 mg/kg	0.00162 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		51 mg/kg	1.126	53.056 mg/kg	0.00531 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
6	nickel { nickel(II) oxide (nickel monoxide) }	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]		14 mg/kg	1.273	16.462 mg/kg	0.00165 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	81 mg/kg		74.844 mg/kg	0.00748 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<2 mg/kg	1.405	<2.81 mg/kg	<0.000281 %		<**LOD**
9	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		19 mg/kg	1.785	31.341 mg/kg	0.00313 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2		67 mg/kg	1.245	77.058 mg/kg	0.00771 %	✓	
11	chromium in Cr(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<**LOD**
12	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
13	TPH (C6 to C40) petroleum group			TPH		<42 mg/kg		<42 mg/kg	<0.0042 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
15		benzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
16		toluene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
17		ethylbenzene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		xylene				<0.004	mg/kg		<0.004	mg/kg	<0.0000004 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
20		pH				6.7	pH		6.7	pH	6.7 pH		
				PH									
21		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
22		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
23		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
24		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
25		phenanthrene				0.3	mg/kg		0.277	mg/kg	0.0000277 %	✓	
			201-581-5	85-01-8									
26		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
27		fluoranthene				0.71	mg/kg		0.656	mg/kg	0.0000656 %	✓	
			205-912-4	206-44-0									
28		pyrene				0.7	mg/kg		0.647	mg/kg	0.0000647 %	✓	
			204-927-3	129-00-0									
29		benzo[a]anthracene				0.51	mg/kg		0.471	mg/kg	0.0000471 %	✓	
		601-033-00-9	200-280-6	56-55-3									
30		chrysene				0.64	mg/kg		0.591	mg/kg	0.0000591 %	✓	
		601-048-00-0	205-923-4	218-01-9									
31		benzo[b]fluoranthene				0.85	mg/kg		0.785	mg/kg	0.0000785 %	✓	
		601-034-00-4	205-911-9	205-99-2									
32		benzo[k]fluoranthene				0.31	mg/kg		0.286	mg/kg	0.0000286 %	✓	
		601-036-00-5	205-916-6	207-08-9									
33		benzo[a]pyrene; benzo[def]chrysene				0.63	mg/kg		0.582	mg/kg	0.0000582 %	✓	
		601-032-00-3	200-028-5	50-32-8									
34		indeno[123-cd]pyrene				0.52	mg/kg		0.48	mg/kg	0.000048 %	✓	
			205-893-2	193-39-5									
35		dibenz[a,h]anthracene				0.18	mg/kg		0.166	mg/kg	0.0000166 %	✓	
		601-041-00-2	200-181-8	53-70-3									
36		benzo[ghi]perylene				0.42	mg/kg		0.388	mg/kg	0.0000388 %	✓	
			205-883-8	191-24-2									
37		monohydric phenols				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
				P1186									
										Total:	0.029 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

- **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **lead compounds with the exception of those specified elsewhere in this Annex**

GB MCL index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

- **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

- **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

- **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

- **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Unknown Oil

Hazard statements taken from WM3 1st Edition 2015
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

- **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

- **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **monohydric phenols** (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
Data source: CLP combined data
Data source date: 26 Mar 2019
Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 <= conc. < 3 % , Eye Irrit. 2; H319 1 <= conc. < 3 % , Aquatic Chronic 2; H411

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides.

chromium in Cr(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel(II) oxide (nickel monoxide)}

Worst case compound based on absence of CrVI and assumed metal oxides from a combustion, ash based source.

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case compound based on absence of CrVI and assumed metal oxides from a combustion, ash based source.

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

vanadium {divanadium pentaoxide; vanadium pentoxide}

Most conservative species.

zinc {zinc oxide}

Worst case compound based on absence of CrVI and assumed metal oxides from a combustion, ash based source.

chromium in Cr(VI) compounds {chromium(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

boron {diboron trioxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass.

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide]

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2025.213.6734.12217 (02 Aug 2025)
HazWasteOnline Database: 2025.213.6734.12217 (02 Aug 2025)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021
GB MCL List v2.0 - version 2.0 of 20th October 2023
GB MCL List v3.0 - version 3.0 of 11th January 2024
GB MCL List v4.0 - version 4.0 of 2nd March 2024
GB MCL List v5.0 - version 5.0 of 26th June 2024
GB MCL List v6.0 - version 6.0 of 15th February 2025

Appendix H – References

[1] Environment Agency, October 2020, "Land contamination risk management (LCRM). How to assess and manage the risks from land contamination".
[2] CIRIA, January 2001, "Contaminated land risk assessment. A guide to good practice", C552.
[3] The British Standards Institution (BSI Standards), December 2017, "Investigation of potentially contaminated sites - Code of practice", BS 10175:2011+A2:2017.
[4] 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.
[5] The British Standards Institution (BSI Standards), May 2020, "Code of practice for ground investigations", BS 5930:2015+A1:2020.
[6] CIRIA, December 2007, "Assessing risks posed by hazardous ground gases to buildings", C665.
[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.
[11] Highways England, 2016, "Specification for Highways Works. Earthworks", Volume 1, Series 600.
[12] J. Burland, T. Chapman, H. Skinner and M. Brown, February 2012, "ICE Manual of Geotechnical Engineering", Chapter 54, Single Piles.
[13] CIRIA, 2001, "Trenching practice", REP R 97, 2nd Edition.
[14] Environment Agency, October 2020, "Land contamination risk management (LCRM). How to assess and manage the risks from land contamination".
[15] DEFRA, December 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Policy Companion Document.
[16] CL:AIRE, September 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Final Project Report (Revision 2).
[17] Environment Agency, January 2009, "Updated technical background to the CLEA model", Science Report SC050021/SR3.
[18] Environment Agency, January 2009, "Human health toxicological assessment of contaminants in soil", Science Report - Final SC050021/SR2.
[19] 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.
[20] Environment Agency, November 2008, "Compilation of data for priority organic pollutants for derivation of Soil Guideline Values", Science Report SC050021/SR7.
[21] Environment Agency, September 2009, "CLEA Software (Version 1.05) Handbook", Science Report SC050021/SR4.
[22] Environment Agency, April 2002, "Contaminants in soils: collation of toxicological data and intake values for humans. Benzo(a)pyrene", TOX2.
[23] U.S. Environmental Protection Agency, September 1984, "Health Effects Assessment for Polycyclic Aromatic Hydrocarbons (PAHs)", EPA/540/1-86/013.
[24] Environment Agency, September 2003, "Review of the Fate and Transport of Selected Contaminants in the Soil Environment", Draft Technical Report P5-079/TR1.
[25] CL:AIRE, September 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Final Project Report (Revision 2).
[26] Public Health England, September 2017, "Contaminated land information sheet: risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs)".
[27] 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.
[28] Building Research Establishment (BRE), June 2005, "Concrete in Aggressive Ground", SD1.
[29] Environment Agency, February 2016, "Register or renew waste exemptions".
[30] CL:AIRE, March 2011, "The Definition of Waste: Development Industry Code of Practice", Version 2.
[31] Health & Safety Executive, 1991, "Protection of Workers and the General Public during the Development of Contaminated Land".
[33] Yorkshire and Lincolnshire Pollution Advisory Group, June 2021, "Verification Requirements for Cover Systems: Technical Guidance for Developers, Landowners and Consultants", Version 4.1.
[34] The British Standards Institution (BSI Standards), April 2015, "Specification for topsoil", BS 3882:2015 - TC.
[35] 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

t: 0161 763 7200
e: info@thelkgroup.com

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

t : 01793 987 390
e : info@thelkgroup.com

Glasgow
Wright Business Centre
1 Lonmay Road
Glasgow
G33 4EL

t: 0141 773 6269
e: info@thelkgroup.com

Liverpool
Unit 10
12 Jordan Street
Baltic Triangle
Liverpool
L1 0BP

t: 0161 763 7200
e: info@thelkgroup.com

LK GROUP

- Geotechnical
- Contaminated
- SuDS & Flood Risk
- Project Management
- Land Remediation
- Land Drilling
- Japanese Knotweed
- Air Tightness Testing