

Chorlton Baths, Manchester

Interim Phase 2 Geo-Environmental Investigation and Risk Assessment

Job Number: LKC241317

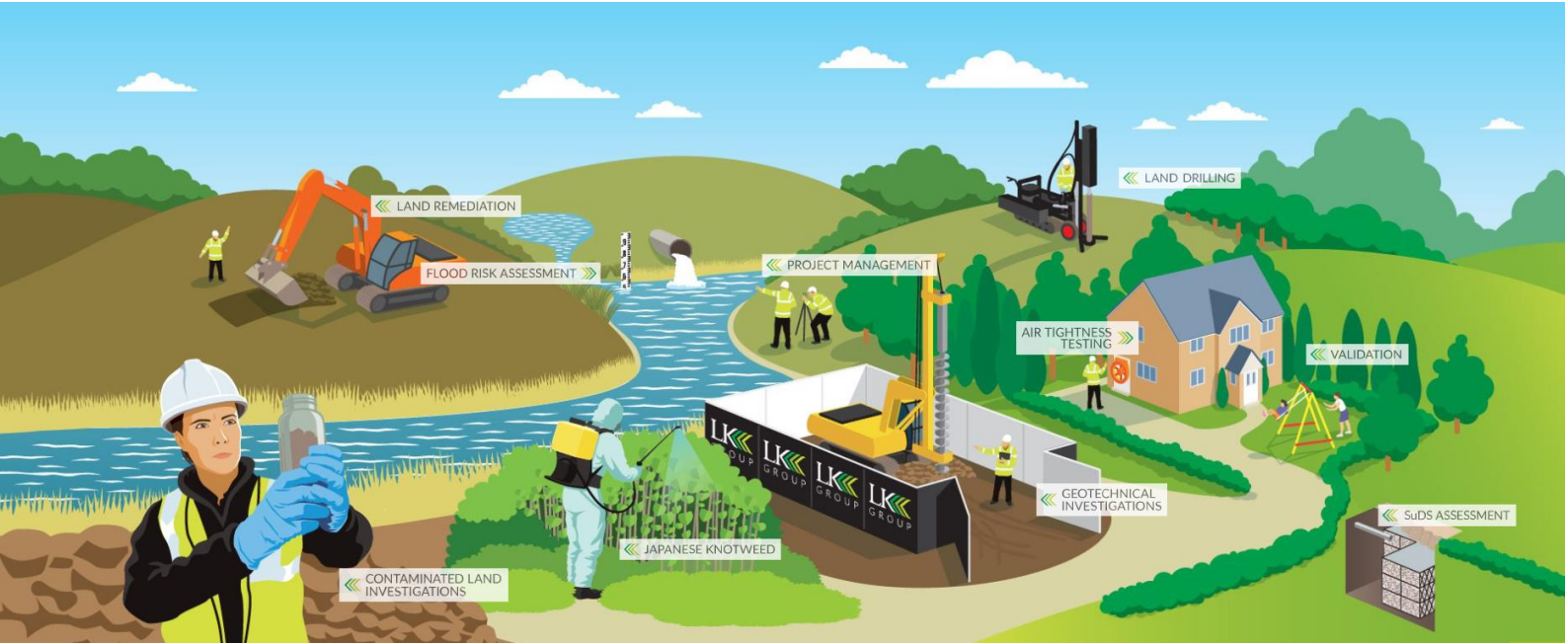
Date: October 2024

Client: Caddick Construction (NW) Ltd



INCREASING LAND VALUE

LK 
GROUP



We advise and partner with our clients to design and deliver cost-effective consultancy, contracting and project management that enhances our environment and our communities.

Ground Investigation | Land Remediation | Project Management

LK

CONSULT

» Eton Business Park, Eton Hill Rd, Radcliffe, Greater Manchester M26 2ZS
 » 0161 763 7200 » info@thelkgroup.com » www.thelkgroup.com

Company registered in England and Wales No. 06767704

DOCUMENT QUALITY ASSURANCE

Site Address	3 Cavendish Terrace, Chorlton-cum-Hardy, Manchester M21 0UA.
Report Title	Interim Phase 2 Geo-Environmental Investigation and Risk Assessment.
Job Number	LKC241317
Client	Caddick Construction (NW) Ltd

Revision	0	Date of Issue	04/10/2024
Document Ref:	LKC241317-BX-GI-Chorlton Baths, Manchester R0		
Status	Interim		
Written By	Michael Berry		
Approved By	Peter Dunn		

Revision		Date of Issue	
Document Ref:			
Status			
Written By			
Approved By			

Revision		Date of Issue	
Document Ref:			
Status			
Written By			
Approved By			

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	Former Chorlton Leisure Centre, in between Manchester Road and the South Manchester Rail Line, Chorlton-Cum-Hardy. National Grid Reference 381706E 394517N.
Area	3,400m ² .
Topography	28 metres above ordnance datum (AOD). Site is formed of two levels with the floor slab of the former building being higher than the original ground level. The base of the former swimming pool is lower than the current ground level.
Current Site Use	Former building has been demolished to slab level with material stockpiled in the centre of the site to be used as crush during the enabling works. Eastern corner of site has been stripped of surfacing and treated for Japanese Knotweed.
Proposed Development	Residential apartments including soft landscaping and car parking.

Site Setting

Main Historical Features	Onsite: Field, Public baths. Surrounding Area: Agricultural fields, marl pits (150m S), brick kilns, railway.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Glaciofluvial sheet deposits (sand and gravel). Secondary A Aquifer. Bedrock: Wilmslow Sandstone Formation (sandstone). Principle Aquifer.
Landfills / Infilled Ground	No recorded landfills or made ground within influencing distance of site.

Ground Investigation Work Undertaken

Date of Investigation:	12 th September 2024.
Intrusive Investigation Work Undertaken:	5no. mechanically excavated trial pits. Contamination and geotechnical testing.

Ground Conditions

Made Ground	Sandy gravel with brick and sandy gravel with ash, brick, concrete, tarmacadam, glass and ceramic encountered to maximum depths of 2.50mbgl.
Superficial	Gravelly sand from depths of between 0.30-1.00mbgl in the north and centre of the site. Soft to stiff sandy clay encountered in the south of the site from ground level to depths greater than 3.00mbgl.
Bedrock	Not encountered.
Groundwater	None encountered.
Obstructions	Brick floor at 1.80mbgl within TP104. Foundations of recently demolished building likely still in place.
Permeability	No soakaway tests undertaken. Natural sand deposits likely have good drainage characteristics.
Other Observations	No visual and olfactory evidence of contamination encountered.

Geotechnical Assessment

Anticipated Foundation Type	Piled foundations or Vibro Stone Columns supporting traditional shallow foundations.
Shallow Groundwater	No groundwater encountered during the investigation.

Concrete Requirements	Based on BRE Digest 2005 ¹ – DS-1 AC-1 across most of the site. DS-2 AC-2 may be required in the vicinity of TP04. Further investigation in this area may be advisable.
Services	Services – consideration to the presence of services running through the site. Services may need to be re-routed.
Temporary support of excavation	Trial pits recorded as unstable in natural sand. Open excavations likely to require support.
Plasticity this should be considered in foundation recommendations??	Consideration will need to be given to the shrink / swell of the clay strata if it is to be used as founding strata, particularly where trees/hedges are present. Foundations may need to be deepened. A medium volume change potential has been calculated for shallow clay in the south of the site.
Road / Pavement Design	A design CBR value of 2.0% should be adopted for the made ground and gravelly natural sand.
Slope Stability	No significant slopes on site. No further consideration required.

Contamination Risk Assessment

PL	Contaminant	Risk	Recommendations
1	Metals, PAHs, Petroleum hydrocarbons	Moderate	Further site investigation recommended. Remediation is soft landscaping likely.
	Asbestos	Low	No remediation recommended at this stage.
	SVOC and VOCs	Low	Further site investigation recommended. No remediation recommended at this stage.
2	Naphthalene and other volatile contaminants	Low	Further site investigation recommended. No remediation recommended at this stage.
3	Carbon dioxide, methane	Moderate	Further site investigation required. Remediation to be confirmed following further SI.
4	Groundwater (mobile contaminants)	Low	No remediation recommended at this stage..
	Surface Water: (mobile contaminants)	Low	No remediation recommended at this stage..
5	Organic contaminants.	Moderate	Utility provider risk assessment to be completed. The site will likely require barrier piping.

Further Work Requirements
Additional site investigation on completion of enabling works.

TABLE OF CONTENTS

1.	INTRODUCTION.....	1
1.1.	Background	1
2.	SUMMARY OF PREVIOUS WORK.....	2
2.1.	Previous Site Investigations	2
2.2.	Conceptual Model	2
3.	GROUND INVESTIGATION	6
3.1.	Site Investigation Scope	6
3.2.	Site Investigation Design and Methodology	6
3.3.	Sampling Protocol	6
3.4.	In-situ Testing.....	7
3.5.	Gas Monitoring	8
4.	GROUND CONDITIONS.....	9
4.1.	Geology	9
4.2.	Groundwater.....	9
5.	GEOTECHNICAL ASSESSMENT	11
5.1.	Proposed Development	11
5.2.	Summary of Ground Conditions	11
5.3.	Site Preparation	12
5.4.	Foundation Conditions and Bearing Capacity.....	12
5.5.	Ground Floor Slabs.....	13
5.6.	Pavement Construction	14
5.7.	Drainage.....	14
5.8.	Concrete Durability	14
5.9.	Excavations.....	14
5.10.	Re-Use of Materials	14
5.11.	Minerals	15
6.	GENERIC RISK ASSESSMENT.....	16
6.1.	Introduction	16
6.2.	Soil Risk Assessment	16
6.3.	Gas Risk Assessment.....	18
6.4.	Controlled Water Assessment	18
6.5.	Potable Water Supply (Pollutant Linkage 5)	19
6.6.	Revised Contamination Conceptual Model	19
7.	WASTE DISPOSAL ASSESSMENT	21
7.1.	HazWaste Assessment	21
7.2.	Waste Acceptance Criteria (WAC) Testing	21
8.	SUMMARY CONCLUSIONS	22
8.1.	Ground Conditions.....	22
8.2.	Geotechnical	22
8.3.	Contamination Assessment	22
8.4.	Waste Assessment	23
8.5.	Recommendations	24
8.6.	Further Work.....	24

FIGURES

Figure 1 – Site Location and Boundary Plan

Figure 2 – Proposed Development Plan

Figure 3 – Site Investigation Location Plan

Figure 4 – Exceedances 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 – Hazwaste Online Certificates

Appendix G – References

1. Introduction

1.1. Background

LK Consult Ltd (LKC) has been commissioned to carry out a post demolition Phase 2 Geo-Environmental Investigation and Risk Assessment for Chorlton Baths, Manchester. The investigation was undertaken in support of a planning application (136791/FO/2023) to develop the site for residential end use.

The following work has previously been undertaken:

- Phase 1 Preliminary Risk Assessment (PRA) report, undertaken by Carley and Daines and Partners Ltd (Ref: 23-B-13672/Chorlton Baths dated 6th March 2023).
- Phase 2 Geoenvironmental Report, undertaken by CC Geotechnical Ltd (Ref: CCG-C-24-14500 dated May 2024).

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

This is an interim report following demolition of buildings. A final report following further investigation once the site enabling works have been completed will be provided.

The investigation will aim to confirm the risks of the potential pollutant linkages identified in the PRA and recommend further assessment, 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	Former Chorlton Leisure Centre, in between Manchester Road and the South Manchester Rail Line, Chorlton-Cum-Hardy. National Grid Reference 381706E 394517N.
Area	3,400m ² .
Topography	28 metres above ordnance datum (AOD). Site is formed of two levels with the floor slab of the former building being higher than the original ground level. The base of the former swimming pool is lower than the current ground level.
Current Site Use	Former building has been demolished to slab level with material stockpiled in the centre of the site to be used as crush during the enabling works. Eastern corner of site has been stripped of surfacing and treated for Japanese Knotweed.
Proposed Development	Residential apartments including soft landscaping and car parking.

Table 1-1: Summary of site details.

2. Summary of Previous Work

Pertinent information has been summarised from the PRA conducted by Carley Daines and Partners Ltd in Table 2-1.

Main Historical Features	Onsite: Field, Public baths. Surrounding Area: Agricultural fields, marl pits (150m S), brick kilns, railway.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Glaciofluvial sheet deposits (sand and gravel). Secondary A Aquifer. Bedrock: Wilmslow Sandstone Formation (sandstone). Principle Aquifer.
Landfills / Infilled Ground	No recorded landfills or made ground within influencing distance of site.

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

2.1. Previous Site Investigations

Scope	2 No. Cable percussive boreholes undertaken to depths of 15.45mbgl. 2 No. Dynamic sampling boreholes undertaken to depths of 5.45mbgl. 2No. Dynamic probing undertaken between 5.00m and 10.00mbgl. 1 No. trial pit undertaken to a depth of 2.00mbgl.		
Ground Conditions	Surfacing: Tarmac to 0.10mbgl. Artificial: Loose to medium dense sands and gravels and soft sandy gravelly clay with brick, glass, ash, clinker, ceramic and coal. Superficial: Very loose to medium dense sand and gravels to depths of between 3.60m and 4.20mbgl. Soft to stiff gravelly sandy clay encountered to a maximum depth of 15.45mbgl. Bedrock: Not encountered. Groundwater: Not encountered. No visual or olfactory evidence of contamination was encountered at the site.		
Geo-Environmental Assessment	Contaminant	Elevated Results	Locations
	Heavy metals	Lead (280-370mg/kg).	TP01, BH02
	PAHs	Naphthalene (38mg/kg).	TP01
		Benzo(a)pyrene (15-180mg/kg)	TP01, WS02, BH01, BH02
	TPHs	Aromatic EC16-21 (2000mg/kg) Aromatic EC21-35 (2500 mg/kg)	TP01
	VOC/SVOC	None above screening values.	-
	Asbestos	None detected.	-
Geotechnical Assessment	Ground Gas conditions classified as CS2 based on GSV of 0.00069l/hr (6.9%) for CO ₂ . This is only based on two monitoring visits from one location.		
	Concrete Classification	AC-1s, DS-2.	
	Foundations	Piled foundations installed using CFA methods, end bearing at 15mbgl.	
	Soakaways	Soil infiltration rate of 3.72x10 ⁻⁵ m/sec.	

2.2. Conceptual Model

The contamination conceptual model in the CC Geotechnical Ltd report has been updated to be in line with LKC current risk assessment methodology (detailed below). The model is based on the contamination sources, pathways and receptors identified in the original report. LKC also consider the following should be considered:

The conceptual model is based on the future use of the site (post development), in line with proposed development scheme.

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

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

PL	Contaminants of Concern (source)	Pathway	Receptor	Probability	Consequence	Risk	Recommendation
1	PAHs, TPHs, Heavy Metals (ash, car park).	Dermal contact. Inhalation of soil, fibres, and dust. Ingestion of soils, dust. Windblown dust.	Future site users. Offsite receptors.	Likely	Medium	Moderate	Some elevated metals (lead), PAHs, and non-volatile TPH present. Further site investigation recommended. Remediation may be required in soft landscaping areas.
	Asbestos (Demolition material)			Unlikely	Medium	Low	
	SVOCs, VOCs			Unlikely	Medium	Low	
2	Naphthalene (made ground)	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users. Offsite receptors.	Likely	Medium	Moderate	Elevated naphthalene (based on old assessment criteria) in one location. recommended. Remediation may be required.
3	Hazardous / ground gas: methane, carbon dioxide (made ground, marl pit)	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings.	Unlikely	Severe	Moderate/Low	Gas monitoring required if putrescible material encountered during ground investigation.
4	Mobile contamination (made ground)	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater Surface water	Unlikely	Medium	Low	No mobile contamination encountered. No remediation recommended.
5	TPHs and PAHs (Ash, Made Ground)	Ingestion of tainted water supply.	Future site users. Water pipes.	Likely	Medium	Moderate	Elevated organic contamination encountered. Further site investigation recommended. Remediation may be required.

Table 2-2: Preliminary Contamination Conceptual Model.

3. Ground Investigation

3.1. Site Investigation Design and Methodology

The post demolition investigation was carried out on the 12th September 2024 and comprised the following:

- 5 no. trial pits (using 10t tracked machine) excavated to 1.10-3.00mbgl (ref. TP101 to TP105).

All site investigation locations are shown in Figure 3.

The locations were chosen to allow adequate assessment of ground conditions across the site. Table 3-1 details the site investigation locations.

Site Investigation Locations	Rationale
TP101-TP105	General site coverage.
TP102-TP104	In previously inaccessible areas due to buildings.

Table 3-1: Summary of Sampling Locations.

The investigation locations allow an adequate assessment of ground conditions across the site. The number of sampling points corresponds to one location per 25m square centres.

A ground investigation is recommended post enabling works to further assess the ground conditions.

All profile logs are provided in Appendix B and are in line with BS14688-1³ and BS5930⁴.

3.2. Sampling Protocol

3.2.1. Soil Sampling (Contamination)

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation⁵.

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 C665⁶ 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.

Testing	No. Samples	Justification
Metals / metalloids, pH, water soluble sulphate, cyanide suite, phenol, TPHCWG, BTEX, MTBE, speciated PAHs, SOM and asbestos screen.	4	Although no evidence of contamination identified, detailed suite undertaken to confirm the absence of contamination and to support waste classification.
Waste Acceptance Criteria (WAC)	2	Samples of representative material which may be earmarked for disposal.

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.

3.2.2. Soil Sampling (Geotechnical)

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

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

Testing	No. Samples
Moisture Condition Value	5
2.5kg Rammer	1
OMC/MDD Vibrating Hammer	4
Atterberg Limits (plasticity testing)	1
Remoulded Single Stage Triaxial	1
Particle Size Distribution (PSD)	5
BRE Suite Short	4

Table 3-3: Summary of Geotechnical Testing Undertaken.

3.2.3. Water Sampling

Groundwater sampling was not carried out as part of this investigation.

A low risk was identified in the preliminary contamination conceptual model for controlled waters (Pollutant Linkage 4) and further action was only recommended if significant soil contamination was identified on site. Based on the ground conditions encountered, LKC did not consider testing to be required. This is discussed further in Section 5.4.

3.3. In-situ Testing

3.3.1. Geotechnical Testing

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

- Shear vane tests (giving undrained shear strength) were performed in the trial pits within cohesive strata.

The results are provided within Appendix B.

3.4. Gas Monitoring

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

CC Geotechnical Ltd has undertaken gas monitoring as part of their investigation and determined the site lies in CS2 conditions. Only 2 monitoring visits have been conducted within the report provided to The LK Group. Confirmation of the ground gas monitoring results should be requested.

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

The western portion of the site is surfaced with 0.05m of tarmacadam. The swimming pool base was still present in the centre of the site with demolition rubble surrounding the feature. The south of the site is surfaced with concrete of the former floor slab.

Made ground in the south eastern corner of the site (TP105) has been stripped and removed from site during the Japanese Knotweed remediation.

Made ground was recorded in all trial pits to depths of between 0.60-2.50mbgl and comprised the following:

- Gravelly sand with brick fragments was encountered within TP102 and TP104 to depths of 2.50mbgl.
- Gravelly silty sand with ash, brick fragments, concrete fragments, tarmacadam and glass was encountered with TP101 to a depth of 1.00mbgl.

No made ground was encountered below the swimming pool (TP103).

4.1.2. Natural Strata

Two populations of superficial strata were encountered during the investigation.

- Slightly gravelly occasionally clayey sand was encountered within TP101-TP103 and TP105 from depths of between 0.30-1.00mbgl to an observed depth of 2.70mbgl.
- Firm to stiff consistency low to high strength sandy clay was encountered within TP104 and TP105 from depths of between ground level and 2.50mbgl to depths of greater than 3.00mbgl.

Bedrock was not encountered during this investigation.

4.1.3. Contamination

Except for the anthropogenic material encountered in the made ground (as described above), no further contamination was identified.

There was no visual or olfactory evidence of hydrocarbons or volatile contaminants in any locations. The PID recorded a maximum of 0.1ppm TVOC in the samples.

4.1.4. Obstructions

The following obstructions were encountered:

- TP104: Brick floor encountered between 1.80m to 1.90mbgl.

4.2. Groundwater

4.2.1. Groundwater Levels

No groundwater strikes were observed within any of the exploratory holes.

CC Geotechnical Ltd did not record any groundwater strikes within the boreholes.

5. Geotechnical Assessment

5.1. Proposed Development

It is understood that the proposed development will comprise residential apartments with associated landscaping and infrastructure.

The finished ground levels have not been provided, but it is assumed that an enabling works phase will be undertaken to provide a level platform for the development. Further investigation is proposed once enabling works are completed, at which point the geotechnical assessment will be updated.

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.

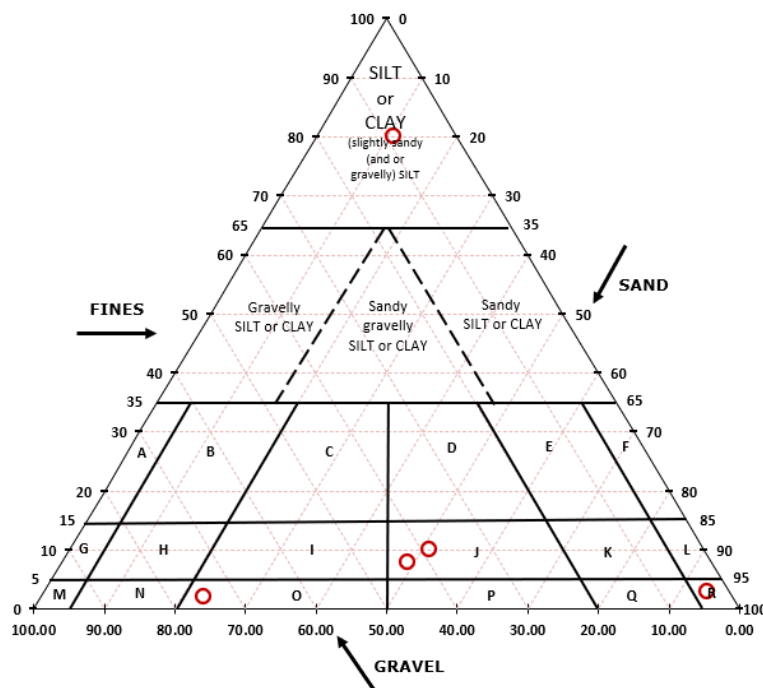
Given the nature of the proposed development the structure meets the criteria of Geotechnical Category 2 of Eurocode 7⁷.

5.2. Summary of Ground Conditions

Ground conditions identified at the site are detailed in Section 4.1, and typically comprises made ground to depths of between 0.30 - 2.50mbgl over natural granular and cohesive superficial deposits of sand and clay to the completion depths investigated.

No groundwater strikes were recorded during the investigation.

Five samples were tested for Particle Size Distribution (PSD) with the results showing that the material is predominantly granular with clay fractions of between 2-10%. One sample, logged as soft clay during the site works, returned a clay fraction of 80%. The plots of the PSD tests are shown on the ternary plot reproduced in Graph 5-1.



Graph 5-1: Ternary plot of the PSD results.

The clay sample was subjected to Atterberg Limits (plasticity) and Moisture Content testing. Results are provided in Appendix D. The clay is classified as high plasticity.

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

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 Works⁸. 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 are likely to be present under the site. These should be excavated from below the proposed development footprint with the resulting void backfilled.

The near surface soils may potentially be disturbed by weathering and site traffic. Precautions should be taken to avoid this, as excessive disturbance may result in more onerous floor slab design, road cap thickness and increased amount of site disposal etc. Based on site observations the near surface soils may require at least some treatment or reinforcing to allow safe movement of construction plant and labour. A working platform will be required for piling plant.

Japanese Knotweed has been encountered in the south-east corner of the site. This has been treated by LK Remediate. Made ground in this area has been stripped and removed from site. A separate verification report will be provided.

5.4. Foundation Conditions and Bearing Capacity

5.4.1. General

The natural cohesive material has been assessed using in-situ testing by Hand Shear Vane (HV) to obtain the undrained shear strength (s_u) of the material. The clay encountered in the south of the site (TP104 and TP105) returned HV results of between 35kPa and 75kPa. One sample was tested for undrained shear strength in triaxial compression. The results are provided in Appendix D.

5.4.2. Foundations Options

Due to the proposed development and the inherent variability of the made ground, traditional strip footings are not considered a viable option. Foundation options are therefore:

- Ground improvement by vibro stone columns; and,
- Deeper pile foundations.

5.4.3. Ground Improvement

The use of ground improvement techniques such as Vibro Stone Columns (VSC) will allow shallow foundations to be utilised with the Made Ground. The VSC should provide a bearing capacity of around 150kN/m² but will also remove variability within the Made Ground.

Specialist advice should be sought from a suitably experienced contractor with regard to whether the ground conditions are suitable, the allowable bearing capacity that can be achieved and settlements.

5.4.4. Piled Foundations

It is proposed to undertake a full site turnover which will remove and grub out any obstructions and historical foundations/infrastructure. Post site turnover works, driven pile foundations should be suitable however, due to the presence of infrastructure and historic buildings in the local area, consideration will need to be given to the effects vibrations may have on neighbouring properties should a driven pile solution be used. A bored pile solution may cause less disturbance on neighbouring properties.

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 take as no more than 100kN/m², unless higher values can be proven either using pile testing, or through experience in similar ground conditions¹⁰. 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.

Should a bored pile solution be adopted then casing will be required while drilling the piles due to the presence of sands. This will help minimise ground disturbance and prevent collapse into the borehole causing areas of weakness. Arisings from bored piles will require off-site disposal unless they can be proven suitable for reuse on site.

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.

5.5. Ground Floor Slabs

Due to the presence of substantial thickness of made ground across the site ground bearing floor slabs, whilst viable, will require detailed design to accommodate variability of the formation and account for differential settlement.

Following suitable preparation of the sub-grade, by a combination of excavation and re-compaction, a ground bearing floor slab should be suitable for the proposed structure. Floor slabs should be designed by a suitably experienced structural engineer.

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

5.6. Pavement Construction

It is understood that a site turnover is to be undertaken which will remove obstructions in the ground and that the material will not be replaced to a compaction specification. Based on this it is considered that a design CBR of less than 1% may be required to account for the disturbance from the turnover works. It is recommended that the CBR value of the strata is assessed post turn-over using on site plate tests of the formation.

Following excavation, the sub formation should be proof rolled and any soft material inspected and removed.

5.7. Drainage

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

5.8. Concrete Durability

Based upon the results of the chemical analyses (Appendix D), subsurface concrete can be designed in accordance with Design Sulphate Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1 across majority of the site in accordance with the recommendations provided in BRE Special Digest 1 (2005). DS-2 AC-2 may be required in the vicinity of TP04. Further investigation in this area is advisable. Further testing should be completed post demolition of all remaining structures.

5.9. Excavations

Some of the exploratory holes were observed to be unstable during the excavation. 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.

Due to the variability of the made ground all excavations should be supported or battered back in accordance with guidance contained in CIRIA R97¹¹.

5.10. Further Works

Post demolition of buildings still on site at the time of this phase of the investigations, it is recommended that further Site Investigation is completed to fill any gaps due to access restraints. It is recommended that the investigation includes obtaining samples for further contamination and geotechnical laboratory analysis.

It is recommended that further testing by Cone Penetration Test (CPT) is also undertaken to obtain information to assist in the design of piled or VSC foundations.

5.11. Construction Activity and Inspection

The following activities and inspections should be incorporated in to 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;
- It is considered that 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).

5.12. 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 understood that these will be 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 treatment/eradication of Japanese Knotweed, 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 (LCRM¹³). 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) ^{14, 15}.
- LQM Suitable 4 Use Levels (S4ULs) ^{16, 17, 18, 19}.

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 model²⁰ based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

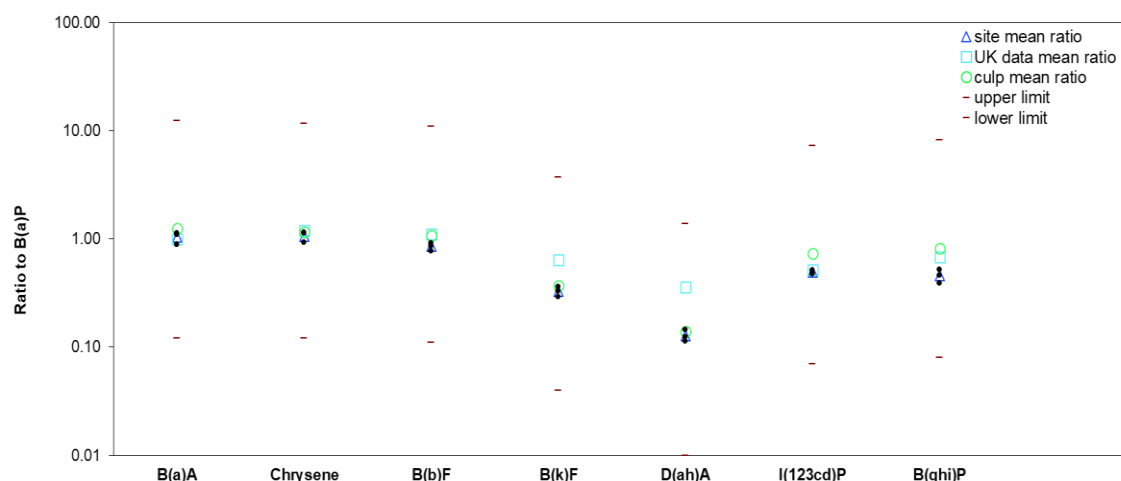
A summary of the generic assessment criteria used in this assessment is provided in Appendix E.

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^{21,22} and naphthalene the most volatile and soluble²³. 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 negligible²⁴. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)²⁵ 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.*²⁶, 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 3 samples (where values were >LOD to allow the calculation of a ratio).

Notes:

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

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

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

6.2.2. Soil Results Comparison against Assessment Criteria

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

Sample Location / Depth (mbgl)	Contaminant	Criteria, 6%	Total No. of Samples Tested	Sample Result > Criteria
TP101	Benzo(a)pyrene	5.30	4	17.50

Table 6-1: Summary of Elevated Results.

Notes:

All units in mg/kg.

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

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

No asbestos was identified in any soil samples analysed.

6.2.3. Direct Contact Risk – Pollutant Linkage 1

Elevated PAHs have been identified on site as part of this investigation. The source of the contamination is expected to the ash noted in the made ground.

CC Geotechnical Ltd encountered elevated PAHs and non-volatile TPHs within TP01, WS02, BH01 and BH02 located in the north of the site. The source is expected to be ash, coal and ‘cinders’ noted in made ground.

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

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

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

No elevated hydrocarbons were identified by The LK Group. CC Geotechnical identified elevated heavy end hydrocarbons within TP01 in the north. Therefore the probability of these contaminants posing a risk to site users is considered likely. With a medium consequence, the risk is considered to be medium, and remediation is recommended.

No elevated SVOCs or VOCs were identified by The LK Group. Therefore the probability of these contaminants posing a risk to site users is considered unlikely. With a medium consequence, the risk is considered to be low, and no remediation is recommended.

6.2.4. Risk from Inhalation of Vapours – Pollutant Linkage 2

LKC encountered no elevations of volatile contaminants within any of the samples tested. CC Geotechnical Ltd encountered elevation of naphthalene (38mg/kg) within TP01 in the north of the site. However, the assessment criteria for naphthalene has been revised since the CC Geotechnical Ltd assessment and the result is no longer considered to be elevated based on the SOM content of the sample.

No visual or olfactory evidence of volatile contaminants was identified during the investigation. The PID did not detect any significant TVOCs.

LKC consider the probability of volatile contaminants affecting site users as unlikely. The consequence is expected to be medium, giving a low risk and remediation is required.

6.3. Gas Risk Assessment

Gas monitoring was not carried out as part of this assessment. The PRA identified a low risk.

CC Geotechnical Ltd have classified the site as CS2 conditions.

The proposed enabling works will entail turn over and grubbing out of made ground on the site. It is anticipated that any significant putrescible material will be removed at this stage and material re-engineered back in.

Further investigation following enabling works is recommended to finalise the gas risk assessment. Moderate risk and CS2 is considered suitably conservative at this stage.

6.4. Controlled Water Assessment

The PRA conducted by Carley Daines and Partners Ltd identified a moderate to high risk with respect to controlled waters due to the Principal Aquifer underlying the site. No abstractions have been identified within influencing distance and the site is not located in a Source Protection Zone. Surface water is not considered to be a significant receptor.

CC Geotechnical undertook leachate testing and no leachable contaminant was above guideline criteria.

No evidence of significant mobile contamination was identified on the site by The LK Group. Although elevated PAHs were identified within the soils, the source is anticipated to be ash noted within the made ground. Contamination associated with ash and clinker is not anticipated to be mobile due to the residual crystalline nature of the matrix.

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

6.5. Potable Water Supply (Pollutant Linkage 5)

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

Elevated TPH EC10-16 and EC16-44 and VOCs (naphthalene) have been identified within the made ground of TP101 and TP104.

The probability of organic contaminants affecting potable water pipes is a likely probability. Given the consequence is considered to be medium, the risk (Pollutant Linkage 5) is anticipated to be moderate and remediation may be required.

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

6.6. Revised Contamination Conceptual Model

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

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

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

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

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

PL	Contaminants of Concern	Pathway	Receptor	Probability	Consequence	Risk	Recommendations
1	PAHs, Non-volatile TPHs, Heavy Metals.	Dermal contact. Inhalation of soil, fibres, and dust. Ingestion of soils, dust. Windblown dust.	Future site users. Offsite receptors.	Likely	Medium	Moderate	Elevated concentrations identified. Further site investigation recommended. Remediation in soft landscaping likely.
	Asbestos			Unlikely		Low	No asbestos identified. Further site investigation recommended. No remediation recommended at this stage.
	SVOCs, VOCs			Unlikely		Low	No evidence encountered during site investigation. No elevated concentration identified, Further site investigation recommended. No remediation recommended at this stage.
2	Naphthalene	Inhalation of vapours. Migration via permeable strata and preferential pathways.	Future site users. Offsite receptors.	Unlikely	Medium	Low	No elevated concentrations based on updated assessment criteria and SOM. Further site investigation recommended. No remediation recommended at this stage.
3	Hazardous / ground gas: methane, carbon dioxide	Migration via permeable strata and preferential pathways. Inhalation of gas. Explosion in confined spaces.	Future site users. Buildings.	Low likelihood	Severe	Moderate	No significant putrescible material encountered. Further site investigation recommended. CS2 protection recommended by CCG report. Recommendations to be confirmed following enabling works and further SI.
4	Mobile contamination	Surface run-off. Migration via permeable strata and preferential pathways. Perched waters migration.	Groundwater Surface water	Unlikely	Medium	Low	No significant elevated concentrations of likely mobile contamination encountered. No remediation recommended.
5	TPHs and PAHs	Ingestion of tainted water supply.	Future site users. Water pipes.	Likely	Medium	Moderate	Some elevated concentrations identified. UU risk assessment will be required. Remediation (barrier pipe) likely

Table 6-22: 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. Hazwaste online certificates are included in Appendix F.

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 following samples summarised in Table 7-1 are classified as hazardous.

Location and Depth	Contaminant	Hazard Property
TP104 0.2-1m	TPH	HP3 Flammable HP7 Carcinogenic HP11 Mutagenic

Table 7-1: Summary of Hazard Properties Based on HazWasteOnline™ Findings.

7.2. Waste Acceptance Criteria (WAC) Testing

Waste Acceptance Criteria (WAC) testing was also undertaken on 2no. samples representative of material which may be earmarked for off-site disposal. WAC test results are included in Appendix C.

The WAC limits cannot be used to assess whether a waste is non-hazardous or hazardous. It is recommended that waste assessment and WAC data is forwarded to a licensed waste disposal operator.

8. Summary Conclusions

8.1. Ground Conditions

Ground conditions are summarised in Table 8-1 below.

Made Ground	Sandy gravel with brick and sandy gravel with ash, brick, concrete, tarmacadam, glass and ceramic encountered to maximum depths of 2.50mbgl.
Superficial	Gravelly sand from depths of between 0.30-1.00mbgl in the north and centre of the site. Soft to stiff sandy clay encountered in the south of the site from ground level to depths greater than 3.00mbgl.
Bedrock	Not encountered.
Groundwater	None encountered.
Obstructions	Brick floor at 1.80mbgl within TP104. Foundations of recently demolished building likely still in place.
Other Observations	No visual and olfactory evidence of contamination encountered.

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.

Anticipated Foundation Type	Piled foundations or Vibro Stone Columns supporting traditional shallow foundations.
Shallow Groundwater	No groundwater encountered during the investigation.
Concrete Requirements	Based on BRE Digest 2005 ²⁹ – DS-1 AC-1 across most of the site. DS-2 AC-2 may be required in the vicinity of TP04. Further investigation in this area may be advisable.
Services	Services – consideration to the presence of services running through the site. Services may need to be re-routed.
Temporary support of excavation	Trial pits recorded as unstable in natural sand. Open excavations likely to require support.
Plasticity this should be considered in foundation recommendations??	Consideration will need to be given to the shrink / swell of the clay strata if it is to be used as founding strata, particularly where trees/hedges are present. Foundations may need to be deepened. A medium volume change potential has been calculated for shallow clay in the south of the site.
Road / Pavement Design	A design CBR value of <1% should be adopted for the ground post turnover of the site.
Slope Stability	No significant slopes on site. No further consideration required.

Table 8-2: 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	PAHs, Non-volatile TPHs, Heavy metals.	Moderate	Further site investigation. Remediation recommended in soft landscaping.
	Asbestos	Low	No remediation recommended at this stage.
	SVOCs and VOCs	Low	No remediation recommended at this stage.
2	Naphthalene and other volatile contaminants	Low	Further site investigation recommended.
3	Carbon dioxide, methane	Moderate	Further site investigation recommended. Remediation to be confirmed following further SI.
4	Groundwater (mobile contaminants)	Low	No remediation recommended.
	Surface Water: (mobile contaminants)	Low	No remediation recommended.
5	Organic contaminants.	Moderate	Utility provider risk assessment to be completed. The site will likely require barrier piping.

Table 8-3: Summary Risk Table.

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

8.4. Waste Assessment

The following samples summarised in Table 8-4 are classified as hazardous.

Location and Depth	Contaminant	Hazard Property
TP104 0.2-1m	TPH	HP3 Flammable HP7 Carcinogenic HP11 Mutagenic

Table 8-4: Summary of Hazard Properties Based on HazWasteOnline™ Findings.

Waste Acceptance Criteria (WAC) testing was also undertaken on 2no. samples. The WAC limits cannot be used to assess whether a waste is non-hazardous or hazardous. It is recommended that waste assessment and WAC data is forwarded to a licensed waste disposal operator.

8.5. Recommendations

The recommendations provided below are considered appropriate for the site based on the site investigation work undertaken to date. Further post demolition and enabling works site investigation is recommended to confirm remediation requirements.

A summary of remediation requirements is included in Table 8-4.

PL	Recommendation
1	Further investigation required. Environmental cover system required in soft landscaping areas.
2	Further investigation required. No specific remediation anticipated.
3	Further investigation required. Gas protection measures required based on CC Geotechnical report.
4	No remediation required.
5	Further investigation required. Potable water pipe assessment required. Barrier pipe likely.

Table 8-5: Remediation Summary.

The local authority is likely to require a standalone Build-Phase Remediation Strategy and Verification Plan in accordance with LCRM Stage 3 remediation and verification³⁰. This should be produced once details of design, contractors and installation are known.

All the remediation and validation work should be documented in a Site Completion Report. The Completion Report will be provided to satisfy the outstanding contaminated land planning condition.

A watching brief for any unexpected contamination should be maintained during groundworks, and any imported soils brought to site for use in soft landscaping should be validated to ensure they are suitable for use against the criteria detailed in Section 6.2.1. Confirmation of appropriate testing suites and verification sampling verification should be sought from the local authority.

8.6. Further Work

Additional site investigation work is recommended upon completion of the enabling works.

Recommendations are provided in Table 8-6.

Further Assessment Recommendations	Watching brief during construction work (groundworks). Post enabling works investigation to be carried out in line with current guidance, including BS10175 ³¹ , BS5930 ³² CIRIA C665 ³³ , RB17 ³⁴ and BS8485 ³⁵ . Targeted investigation locations in areas of concern (contamination and geotechnical).
Type of Investigation Work	Boreholes and / or trial pits. CPT Boreholes.
PL 1, 2, 5	Intrusive investigation work recommended to confirm ground conditions across the site. Testing of contaminants of concern based on preliminary conceptual model and field observations (PID tests and visual / olfactory evidence).
PL 3	Choose an item. Precautionary gas protection measures: type of measures to be determined once ground conditions established. Choose an item.
PL 4	No further assessment required.

Reporting	Information from the above can be used to carry out a contamination and geotechnical assessment and provide a remediation strategy for the site.
Importation of Soils	Any topsoil or subsoil brought on to the site for use in gardens / soft landscaping should be suitably chemically validated prior to its use on site, according to Local Authority guidance.
Unexpected Contamination	If unexpected contamination is identified during groundworks, further assessment will be required.

Table 8-6: Recommendations.

Figures



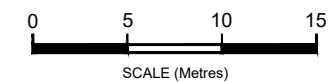
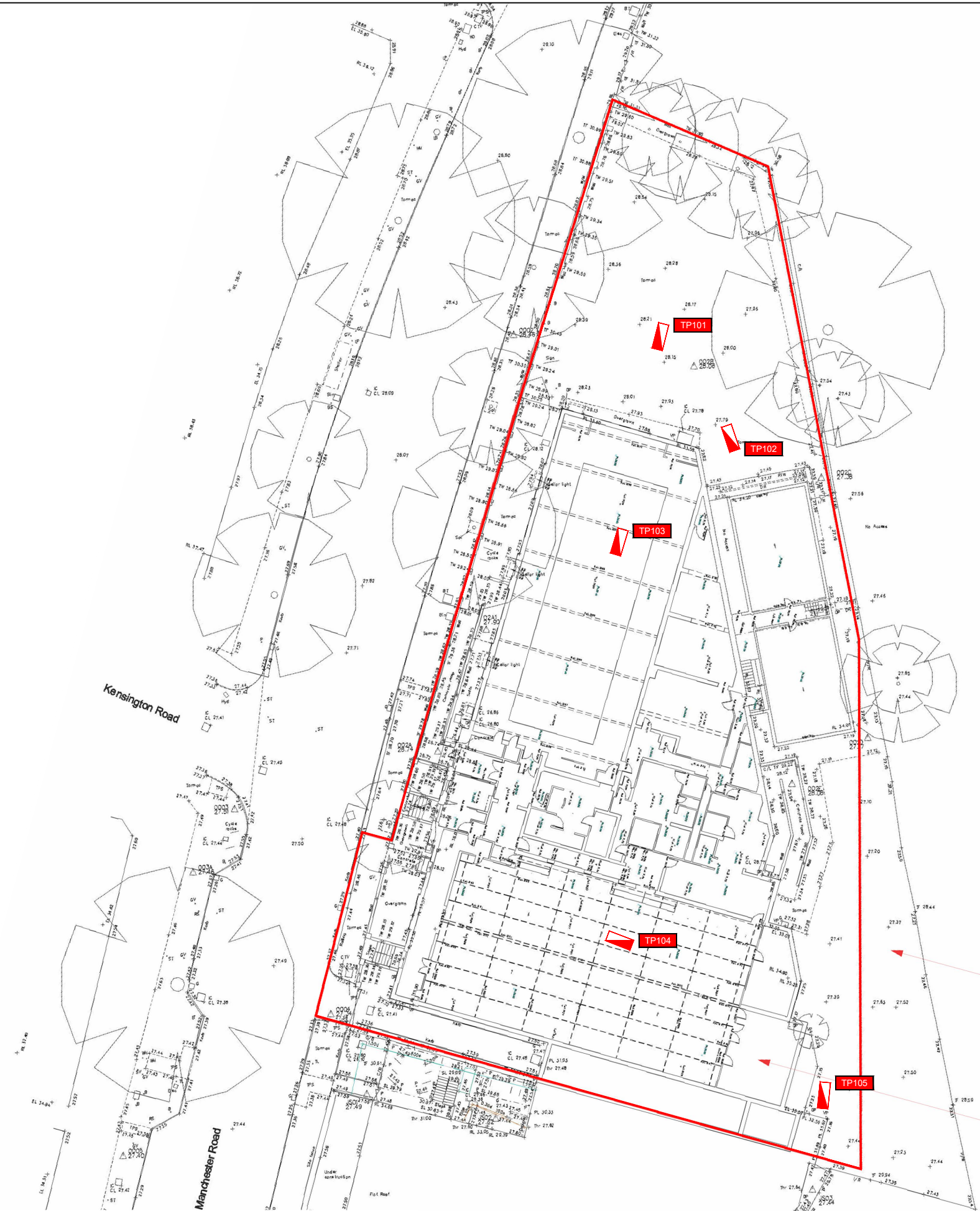
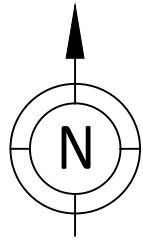
KEY

- Site Boundary
- Root Protection Area
- Approx retained tree canopy line
- Existing tree removed where hatched in red
- Works to crown
- Proposed tree
- Refer to Tree Survey and reports by Lally Tree Management
- Application Site Boundary

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

LK CONSULT LIMITED

Client: Caddick Construction (NW) Ltd			
Site: Chorlton Baths, Manchester			
Title: Proposed Development Plan			
Job No.: LKC241317	Scale (See Scale Bar): See Scale Bar	Figure: 2	Revision:
Drawn By: AC	Checked By: MB	Drawn: Oct 2024	



KEY

-  Site Boundary
-  Trial Pit (TP)

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



Client:
Caddick Construction (NW) Ltd

Site:
Chorlton Baths, Manchester

Title:
Exploratory Hole Location Plan

Job No.: LKC241317	Scale (See Scale Bar): See Scale Bar	Figure: 3	Revision:
Drawn By: AC	Checked By: MB	Drawn: Oct 2024	



KEY

- Site Boundary
- Trial Pit (TP)

CCG Site Investigation Locations, April 2024:

- Window Sample Borehole (WS)
- Trial Pit (TP)
- Cable Percussive Borehole (CBH)

CONTAMINANTS:

- Lead (Pb) (>200mg/kg)
- Benzo(a)Pyrene (BaP) (>5.3mg/kg)

ADDITIONAL MAPPING:

Extract From: Buttress
Drawing Ref: Proposed Site Plan, No.04100,
Rev:P04 (07/08/2023)

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



Client:
Caddick Construction (NW) Ltd

Site:
Chorlton Baths, Manchester

Title:
Exceedances Location Plan

Job No.: LK241317	Scale (See Scale Bar): See Scale Bar	Figure: 4	Revision:
Drawn By: AC	Checked By: MB	Drawn: Oct 2024	

Extract From: Buttress
Drawing Ref: Topographical Plan, No.01104, Rev:P01 (31/03/2023)

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 552³⁶. It involves the classification of the:

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

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

Table A. Classification of Consequence

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

Table B. Classification of Probability.

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

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

Table C. Comparison of Consequence against Probability

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

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

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

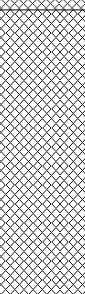
Where a very low risk is identified no specific remediation is required.

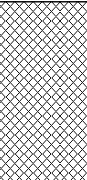
Where a low risk is identified, some form of remediation may be required depending on the pollutant linkage, the type and concentration of contaminants present and the proposed development.

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

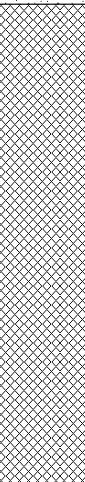
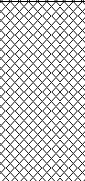
Where LKC identifies a moderate or higher risk, remediation or further investigation work is recommended.

Appendix B – Profile Logs

		Trial Pit Log				Location Number: TP101						
Project: Chorlton Baths			Client: Caddick Construction (NW) Ltd			Date: 12/09/2024						
Project No. : LKC241317			Contractor: LKC									
Equipment: Excavator: 9 Tonne Tracked			Level		Logged By MB		Scale 1:25		Page Number Sheet 1 of 1			
Depth (m)		Samples / Tests		Depth (m)		Legend		Stratum Description			Level (m)	
0.05 - 1.00 0.05 - 1.00		B ES		0.05				MADE GROUND: Tarmacadam. MADE GROUND: Dark grey gravelly silty SAND with frequent ash, brick fragments, occasional whole bricks, concrete fragments, tarmacadam and rare glass. Sand is fine to coarse. Gravel is fine to coarse, angular comprising sandstone.			0.5	
1.00 - 2.00 1.00 - 2.00		B ES		1.00				Light brown slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subrounded comprising quartzite and sandstone.			1.0	
				2.30				End of Trial Pit at 2.30m			2.5	
											3.0	
											3.5	
											4.0	
											4.5	
											5.0	
		Pit Dimensions						Pit Stability				
		Length (m)		Width (m)		Depth (m)		Unstable				
		2.10		2.10		2.30						
		Remarks: Trial pit dry. Trial pit terminated at 2.30mbgl due to reaching target depth.										

		Trial Pit Log				Location Number: TP102								
Project: Chorlton Baths			Client: Caddick Construction (NW) Ltd			Date: 12/09/2024								
Project No. : LKC241317			Contractor: LKC											
Equipment: Excavator: 9 Tonne Tracked			Level		Logged By MB		Scale 1:25		Page Number Sheet 1 of 1					
Depth (m)		Samples / Tests		Depth (m)		Legend		Stratum Description					Level (m)	
0.00 - 0.60 0.00 - 0.60		B ES		0.60				MADE GROUND: Brown gravelly SAND with occasional brick fragments. . Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising quartzite.			0.5			
0.60 - 1.50 0.60 - 1.50		B ES		0.60				Light brown slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subrounded comprising quartzite and sandstone.			1.0			
1.50 - 2.50		B		2.70				End of Trial Pit at 2.70m			1.5			
											2.0			
											2.5			
											3.0			
											3.5			
											4.0			
											4.5			
											5.0			
		Pit Dimensions						Pit Stability						
		Length (m)		Width (m)		Depth (m)		Unstable						
		3.10		2.10		2.70								
		Remarks:												
Trial pit dry.														
Trial pit terminated at 2.70mbgl due to reaching target depth.														

		Trial Pit Log					Location Number: TP103	
Project: Chorlton Baths			Client: Caddick Construction (NW) Ltd			Date: 12/09/2024		
Project No. : LKC241317			Contractor: LKC					
Equipment: Excavator: 9 Tonne Tracked			Level	Logged By MB	Scale 1:25	Page Number Sheet 1 of 1		
Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description				Level (m)
0.30 - 1.00 0.30 - 1.00	B ES	0.05		MADE GROUND: Floor tiles.				
			MADE GROUND: Concrete.					
0.30 - 1.00		0.30		Light brown slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subrounded comprising quartzite and sandstone.			0.5	
					1.0			
1.00 - 2.00	B						1.5	
				2.0				
		2.50		End of Trial Pit at 2.50m			2.5	
							3.0	
							3.5	
							4.0	
							4.5	
							5.0	
			Pit Dimensions			Pit Stability		
			Length (m)	Width (m)	Depth (m)	Unstable		
			2.60	2.00	2.50			
			Remarks: Trial pit dry. Trial pit terminated at 2.50m due to continued collapse in sand.					

LKCONSULT		Trial Pit Log				Location Number: TP104	
Project: Chorlton Baths			Client: Caddick Construction (NW) Ltd		Date: 12/09/2024		
Project No. : LKC241317			Contractor: LKC				
Equipment: Excavator: 9 Tonne Tracked			Level	Logged By MB	Scale 1:25	Page Number Sheet 1 of 1	
Depth (m)	Samples / Tests	Depth (m)	Legend	Stratum Description			Level (m)
0.20 - 1.00 0.20 - 1.00	B ES	0.20		MADE GROUND: Concrete.			
				MADE GROUND: Brown gravelly SAND with brick fragments, whole brick, concrete fragments and rare tarmacadam. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising quartzite.		0.5	
		1.80		MADE GROUND: Yellow brick floor.			1.0
		1.90		MADE GROUND: Brown gravelly SAND with brick fragments, whole brick, concrete fragments and rare tarmacadam. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded comprising quartzite.		2.0	
2.50 - 3.00 2.50 - 3.00 2.60	B ES SV=35.00kPa	2.50		Firm consistency low strength brown sandy CLAY. Sand is fine to coarse.		2.5	
		3.00		End of Trial Pit at 3.00m		3.0	
						3.5	
						4.0	
						4.5	
						5.0	
			Pit Dimensions			Pit Stability	
			Length (m)	Width (m)	Depth (m)	Unstable in made ground	
			2.40	1.50	3.00		
			Remarks:				
			Trial pit dry.				
			Trial pit terminated at 3.00mbgl due to reaching target depth.				

LKCONSULT		Trial Pit Log				Location Number: TP105	
Project: Chorlton Baths		Client: Caddick Construction (NW) Ltd		Date: 12/09/2024			
Project No. : LKC241317		Contractor: LKC					
Equipment: Excavator: 9 Tonne Tracked		Level	Logged By MB	Scale 1:25	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 0.10	B ES SV=62.00kPa			Stiff consistency medium to high strength light brown very sandy CLAY. Sand is fine to coarse.			
0.50	SV=75.00kPa					0.5	
0.70 - 1.00	B	0.70		Brown grey gravelly clayey SAND. Sand is fine to coarse. Gravel is fine to coarse, subrounded comprising quartzite.		1.0	
		1.10		End of Trial Pit at 1.10m		1.5	
						2.0	
						2.5	
						3.0	
						3.5	
						4.0	
						4.5	
						5.0	
			Pit Dimensions			Pit Stability	
			Length (m)	Width (m)	Depth (m)	Stable	
			1.50	1.00	1.10		
			Remarks:				
Trial pit dry. Made ground stripped during knotweed remediation. Current ground level approximately 0.70m lower than original ground level. Trial pit terminated at 1.10mbgl due to reaching target strata.							

Appendix C – Certificates of Analysis (Soil)



Michael Berry
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: 24-10916

Site Reference: Chorlton Baths

Project / Job Ref: LKC241317

Order No: PO000360

Sample Receipt Date: 17/09/2024

Sample Scheduled Date: 17/09/2024

Report Issue Number: 1

Reporting Date: 24/09/2024

Authorised by:

Steve Knight
Customer Support 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.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.



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: 24-10916	~Date Sampled	12/09/24	12/09/24	12/09/24	12/09/24	12/09/24
LK Consult Limited	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Chorlton Baths	~TP / BH No	TP101	TP101	TP102	TP102	TP103
~Project / Job Ref: LKC241317	~Additional Refs	ES	ES	ES	ES	ES
~Order No: PO000360	~Depth (m)	0.05 - 1.00	1.00 - 2.00	0.00 - 0.60	0.60 - 1.50	0.30 - 1.00
Reporting Date: 24/09/2024	DETS Sample No	738523	738524	738525	738526	738527

Determinand	Unit	RL	Accreditation	(n)			
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.8	8.4	7.8	8.1
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	169	< 10	61	< 10
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.17	< 0.01	0.06	< 0.01
Organic Matter (SOM)	%	< 0.1	MCERTS	7.3	5.6	0.6	0.6
W/S Chloride (2:1)	mg/kg	< 1	MCERTS	11	4	6	6
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS	5.7	2.1	2.8	2.8
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3
Water Soluble Nitrate (2:1) as NO ₃	mg/l	< 1.5	MCERTS	< 1.5	< 1.5	< 1.5	< 1.5
Arsenic (As)	mg/kg	< 2	MCERTS	23	20	3	3
W/S Boron	mg/kg	< 1	NONE	1.1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.5	< 0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	14	12	7	7
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	105	59	7	7
Lead (Pb)	mg/kg	< 3	MCERTS	212	141	6	6
W/S Magnesium	mg/l	< 0.1	NONE	0.3	0.6	0.8	0.8
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	30	14	9	9
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	44	23	8	8
Zinc (Zn)	mg/kg	< 3	MCERTS	148	78	27	27
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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: 24-10916	~Date Sampled	12/09/24	12/09/24		
LK Consult Limited	~Time Sampled	None Supplied	None Supplied		
~Site Reference: Chorlton Baths	~TP / BH No	TP104	TP104		
~Project / Job Ref: LKC241317	~Additional Refs	ES	ES		
~Order No: PO000360	~Depth (m)	0.20 - 1.00	2.50 - 3.00		
Reporting Date: 24/09/2024	DETS Sample No	738528	738529		

Determinand	Unit	RL	Accreditation	(n)				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected				
pH	pH Units	N/a	MCERTS	9.8	5.3			
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	487	835			
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.49	0.84			
Organic Matter (SOM)	%	< 0.1	MCERTS	5				
W/S Chloride (2:1)	mg/kg	< 1	MCERTS		53			
W/S Chloride (2:1)	mg/l	< 0.5	MCERTS		26.4			
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	< 3	MCERTS		1330			
Water Soluble Nitrate (2:1) as NO ₃	mg/l	< 1.5	MCERTS		666			
Arsenic (As)	mg/kg	< 2	MCERTS	5				
W/S Boron	mg/kg	< 1	NONE	< 1				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3				
Chromium (Cr)	mg/kg	< 2	MCERTS	9				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	9				
Lead (Pb)	mg/kg	< 3	MCERTS	26				
W/S Magnesium	mg/l	< 0.1	NONE		28			
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	8				
Selenium (Se)	mg/kg	< 2	MCERTS	< 2				
Vanadium (V)	mg/kg	< 1	MCERTS	14				
Zinc (Zn)	mg/kg	< 3	MCERTS	36				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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



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: 24-10916	~Date Sampled	12/09/24	12/09/24	12/09/24	12/09/24
LK Consult Limited	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Chorlton Baths	~TP / BH No	TP101	TP102	TP103	TP104
~Project / Job Ref: LKC241317	~Additional Refs	ES	ES	ES	ES
~Order No: PO000360	~Depth (m)	0.05 - 1.00	0.00 - 0.60	0.30 - 1.00	0.20 - 1.00
Reporting Date: 24/09/2024	DETS Sample No	738523	738525	738527	738528

Determinand	Unit	RL	Accreditation	(n)	(n)
Naphthalene	mg/kg	< 0.1	MCERTS	0.83	0.28
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	0.12
Acenaphthene	mg/kg	< 0.1	MCERTS	6.68	0.58
Fluorene	mg/kg	< 0.1	MCERTS	4.19	0.54
Phenanthrene	mg/kg	< 0.1	MCERTS	37.30	4.91
Anthracene	mg/kg	< 0.1	MCERTS	7.65	0.91
Fluoranthene	mg/kg	< 0.1	MCERTS	46.30	7.73
Pyrene	mg/kg	< 0.1	MCERTS	42.40	9.32
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	19.30	4.15
Chrysene	mg/kg	< 0.1	MCERTS	19.70	5.32
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	16.10	3.61
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	5.75	1.36
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	17.50	4.66
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	8.42	2.40
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	1.99	0.58
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	6.83	2.14
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	241	48.6

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

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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: 24-10916	~Date Sampled	12/09/24	12/09/24	12/09/24	12/09/24
LK Consult Limited	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Chorlton Baths	~TP / BH No	TP101	TP102	TP103	TP104
~Project / Job Ref: LKC241317	~Additional Refs	ES	ES	ES	ES
~Order No: PO000360	~Depth (m)	0.05 - 1.00	0.00 - 0.60	0.30 - 1.00	0.20 - 1.00
Reporting Date: 24/09/2024	DETS Sample No	738523	738525	738527	738528

Determinand	Unit	RL	Accreditation	(n)		(n)	
Aliphatic >C5 - C6 : HS 1D MS AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS 1D MS AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH CU 1D AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH CU 1D AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH CU 1D AL	mg/kg	< 3	MCERTS	4	< 3	< 3	5
Aliphatic >C16 - C21 : EH CU 1D AL	mg/kg	< 3	MCERTS	4	8	< 3	60
Aliphatic >C21 - C34 : EH CU 1D AL	mg/kg	< 10	MCERTS	12	73	< 10	647
Aliphatic >C34 - C44 : EH CU 1D AL	mg/kg	< 10	NONE	< 10	< 10	< 10	177
Aliphatic (C5 - C44) : HS 1D MS+EH CU 1D AL	mg/kg	< 21	NONE	< 21	81	< 21	888
Aromatic >C5 - C7 : HS 1D MS AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS 1D MS AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH CU 1D AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH CU 1D AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH CU 1D AR	mg/kg	< 2	MCERTS	41	6	< 2	2
Aromatic >C16 - C21 : EH CU 1D AR	mg/kg	< 3	MCERTS	254	58	< 3	61
Aromatic >C21 - C35 : EH CU 1D AR	mg/kg	< 10	MCERTS	276	200	< 10	639
Aromatic >C35 - C44 : EH CU 1D AR	mg/kg	< 10	NONE	13	34	< 10	168
Aromatic (C5 - C44) : HS 1D MS+EH CU 1D AR	mg/kg	< 21	NONE	584	299	< 21	870
Total >C5 - C44 : HS 1D MS+EH CU 1D Tot al	mg/kg	< 42	NONE	604	380	< 42	1759

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

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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: 24-10916	~Date Sampled	12/09/24	12/09/24	12/09/24	12/09/24
LK Consult Limited	~Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Chorlton Baths	~TP / BH No	TP101	TP102	TP103	TP104
~Project / Job Ref: LKC241317	~Additional Refs	ES	ES	ES	ES
~Order No: PO000360	~Depth (m)	0.05 - 1.00	0.00 - 0.60	0.30 - 1.00	0.20 - 1.00
Reporting Date: 24/09/2024	DETS Sample No	738523	738525	738527	738528

Determinand	Unit	RL	Accreditation	(n)	(n)
Benzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2
Toluene : HS 1D MS	ug/kg	< 5	MCERTS	< 5	< 5
Ethylbenzene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2
p & m-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2
o-xylene : HS 1D MS	ug/kg	< 2	MCERTS	< 2	< 2
MTBE : HS 1D MS	ug/kg	< 5	MCERTS	< 5	< 5

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

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation



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



Waste Acceptance Criteria Analytical Certificate																																							
DETS Report No: 24-10916		~Date Sampled	12/09/24		<table border="1"> <thead> <tr> <th colspan="3">Landfill Waste Acceptance Criteria Limits</th> </tr> <tr> <th>Inert Waste Landfill</th> <th>Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill</th> <th>Hazardous Waste Landfill</th> </tr> </thead> <tbody> <tr> <td>3%</td> <td>5%</td> <td>6%</td> </tr> <tr> <td>--</td> <td>--</td> <td>10%</td> </tr> <tr> <td>6</td> <td>--</td> <td>--</td> </tr> <tr> <td>1</td> <td>--</td> <td>--</td> </tr> <tr> <td>500</td> <td>--</td> <td>--</td> </tr> <tr> <td>100</td> <td>--</td> <td>--</td> </tr> <tr> <td>--</td> <td>>6</td> <td>--</td> </tr> <tr> <td>--</td> <td>To be evaluated</td> <td>To be evaluated</td> </tr> </tbody> </table>					Landfill Waste Acceptance Criteria Limits			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	3%	5%	6%	--	--	10%	6	--	--	1	--	--	500	--	--	100	--	--	--	>6	--	--	To be evaluated	To be evaluated
Landfill Waste Acceptance Criteria Limits																																							
Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill																																					
3%	5%	6%																																					
--	--	10%																																					
6	--	--																																					
1	--	--																																					
500	--	--																																					
100	--	--																																					
--	>6	--																																					
--	To be evaluated	To be evaluated																																					
LK Consult Limited		~Time Sampled	None Supplied																																				
~Site Reference: Chorlton Baths		~TP / BH No	TP104																																				
~Project / Job Ref: LKC241317		~Additional Refs	ES																																				
~Order No: PO000360		~Depth (m)	0.20 - 1.00																																				
Reporting Date: 24/09/2024		DETS Sample No	738528																																				
Determinand	Unit	MDL																																					
TOC ^{MU}	%	< 0.1	2.9																																				
Loss on Ignition ^{MU}	%	< 0.01	3.60																																				
BTEX ^{MU}	mg/kg	< 0.05	< 0.05																																				
Sum of PCBs	mg/kg	< 0.1	< 0.1																																				
Mineral Oil ^{MU}	mg/kg	< 10	866																																				
Total PAH ^{MU}	mg/kg	< 1.7	30.3																																				
pH ^{MU}	pH Units	N/a	9.8																																				
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	1.4																																				
Eluate Analysis			2:1 mg/l	8:1 mg/l		Cumulative 10:1 * mg/kg	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)																																
Arsenic ^U		0.0028	0.0038		0.068	0.5	2	25																															
Barium ^U		0.0388	0.0149		0.289	20	100	300																															
Cadmium ^U		< 0.0002	< 0.0002		< 0.002	0.04	1	5																															
Chromium ^U		0.0166	0.0027		0.060	0.5	10	70																															
Copper ^U		0.0171	0.0043		0.089	2	50	100																															
Mercury ^U		< 0.00004	< 0.00004		< 0.0004	0.01	0.2	2																															
Molybdenum ^U		0.0117	0.0012		0.030	0.5	10	30																															
Nickel ^U		0.0020	0.0005		0.0108	0.4	10	40																															
Lead ^U		< 0.0002	0.0005		0.008	0.5	10	50																															
Antimony ^U		< 0.0002	< 0.0002		< 0.002	0.06	0.7	5																															
Selenium ^U		0.0015	0.0003		0.0058	0.1	0.5	7																															
Zinc ^U		0.018	0.003		0.06	4	50	200																															
Chloride ^U		33	2		65	800	15000	25000																															
Fluoride ^U		< 0.5	< 0.5		< 1	10	150	500																															
Sulphate ^U		155	27		599	1000	20000	50000																															
TDS		296	48		1072	4000	60000	100000																															
Phenol Index ^U		< 0.01	< 0.01		< 0.5	1	-	-																															
DOC ^U		35	12		237	500	800	1000																															
Leach Test Information																																							
Sample Mass (kg)			0.09																																				
Dry Matter (%)			92.9																																				
Moisture (%)			7.6																																				
Stage 1																																							
Volume Eluate L2 (litres)			0.17																																				
Filtered Eluate VE1 (litres)			0.07																																				
Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion Stated limits are for guidance only and Normec DETS Limited cannot be held responsible for any discrepancies with current legislation M Denotes MCERTS accredited test U Denotes ISO17025 accredited test ~Sample details provided by customer and can affect the validity of results * DETS are accredited for the testing of leachate and not the leachate preparation stage which is unaccredited																																							



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: 24-10916	
LK Consult Limited	
~Site Reference: Chorlton Baths	
~Project / Job Ref: LKC241317	
~Order No: PO000360	
Reporting Date: 24/09/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
738523	TP101	ES	0.05 - 1.00	11.1	Black loamy sand with stones and concrete
738524	TP101	ES	1.00 - 2.00	8.8	Brown sandy clay with stones
738525	TP102	ES	0.00 - 0.60	11	Black loamy sand with stones
738526	TP102	ES	0.60 - 1.50	5.7	Light brown sandy clay with stones
738527	TP103	ES	0.30 - 1.00	5.4	Light brown sand with stones
738528	TP104	ES	0.20 - 1.00	6.5	Brown sandy gravel with stones and concrete
738529	TP104	ES	2.50 - 3.00	31.8	Light brown clay

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

Insufficient Sample ^{1/s}

Unsuitable Sample ^{u/s}

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



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: 24-10916	
LK Consult Limited	
~Site Reference: Chorlton Baths	
~Project / Job Ref: LKC241317	
~Order No: PO000360	
Reporting Date: 24/09/2024	

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

D Dried

AR As Received

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



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



Water Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 24-10916	
LK Consult Limited	
~Site Reference: Chorlton Baths	
~Project / Job Ref: LKC241317	
~Order No: PO000360	
Reporting Date: 24/09/2024	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	F	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	UF	Biological Oxygen Demand (BOD)	Determination using BOD sensors measuring the change of pressure	E133
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detection	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	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 liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	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 liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCS	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

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



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: 24-10916

LK Consult Limited

~Site Reference: Chorlton Baths

~Project / Job Ref: LKC241317

~Order No: PO000360

Reporting Date: 24/09/2024

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
Mineral Oil (C10 - C40) (BS EN 12457-3) - EH_CU_1D_AL
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
Total BTEX (BS EN 12457-3) - HS_1D_MS_Total
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

Parameter	Matrix Type	Expanded Uncertainty Measurement	Unit
TOC	Soil	12.2	%
Loss on Ignition	Soil	22.9	%
BTEX	Soil	11.2	%
Sum of PCBs	Soil	43.4	%
Mineral Oil	Soil	9.0	%
Total PAH	Soil	18.5	%
pH	Soil	0.335	Units
Acid Neutralisation Capacity	Soil	18.0	%
Clay Content	Soil	15.0	%
Silt Content	Soil	14.0	%
Sand Content	Soil	13.0	%
Loss on Ignition	Soil	22.9	%
pH	Soil	0.335	Units
Carbonate	Soil	12.0	%
Total Nitrogen	Soil	12.0	%
Phosphorus (Extractable)	Soil	24.0	%
Potassium (Extractable)	Soil	20.0	%
Magnesium (Extractable)	Soil	26.0	%
Zinc	Soil	21.6	%
Copper	Soil	18.2	%
Nickel	Soil	24.3	%
Available Sodium	Soil	23.0	%
Available Calcium	Soil	23.0	%
Electrical Conductivity	Soil	10.0	%

Appendix D – Certificates of Analysis (Geotechnical)

TEST REPORT

Client LK Consult Ltd

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

Contract LKC 24 1317 -
Chorlton Baths

Job Number MRN 24076/96
Date of Issue 01 October 2024
Page 1 of 18

Approved Signatories

S J Hutchings, O P Davies

Notes

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



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

Also at: London: 020 8523 1999

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

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

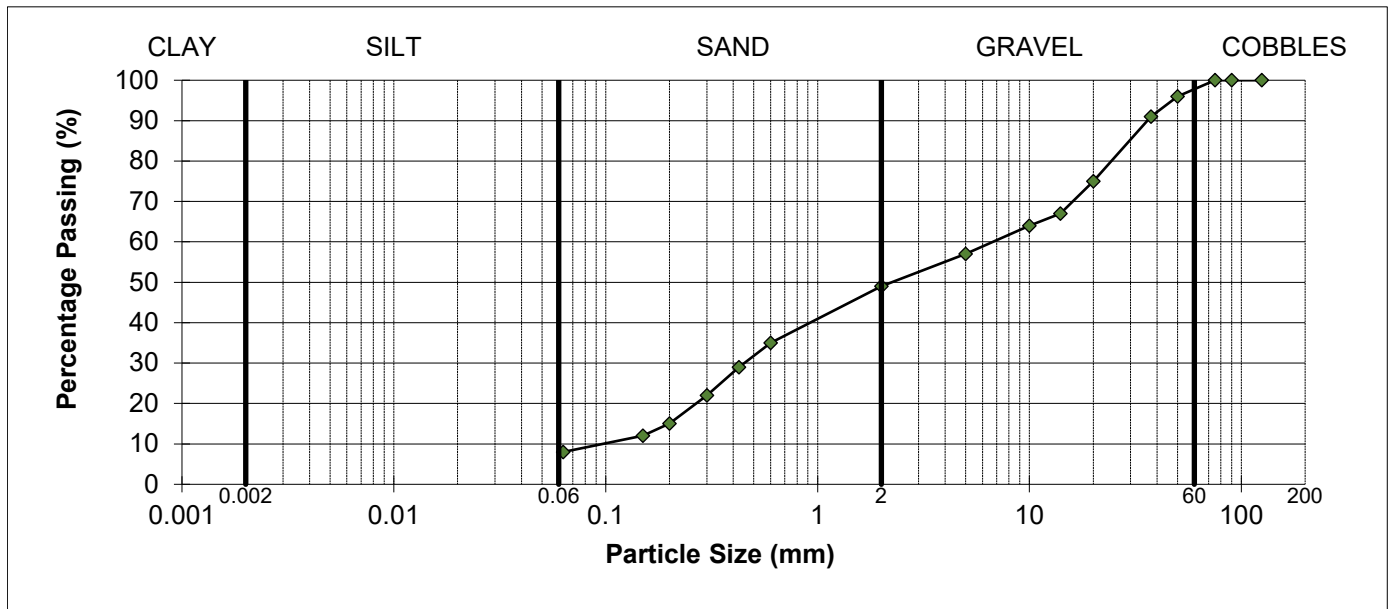
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP101 0.1-1 B	DATE SAMPLED	12-Sep-24
LAB SAMPLE No	554901	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black silty SAND & GRAVEL
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	57	
90	100		2	49	
75	100		0.6	35	
50	96		0.425	29	
37.5	91		0.3	22	
20	75		0.2	15	
14	67		0.15	12	
10	64		0.063	8	



REMARKS

As received water content = 11.1%

SIGNED



NAME

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

DATE

01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

MOISTURE CONDITION VALUE

BS 1377-2:2022 Cl. 13

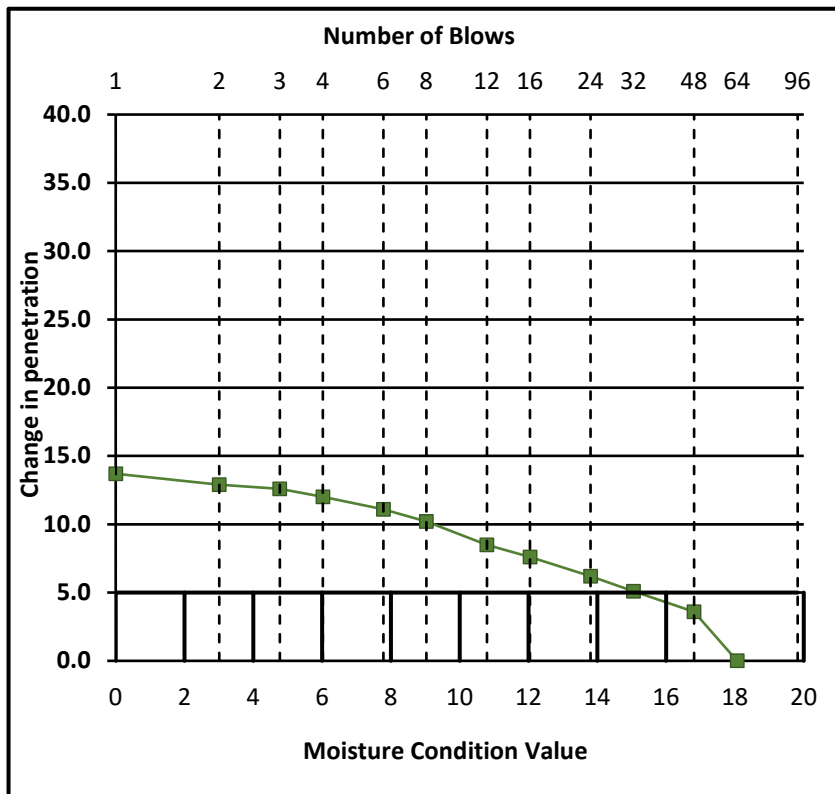
DETERMINATION OF WATER CONTENT - BS EN ISO 17892-1:2014+A1:2022

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP101 0.1-1 B	DATE SAMPLED	12-Sep-24
LAB SAMPLE No	554901	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black silty SAND & GRAVEL
ADVISED SOURCE	Site Investigation Sample
INTERPRETATION OF TEST CURVE	Straight line through 5mm change in penetration
PROPORTION LARGER THAN 20mm	25%

Total number of blows (n)	Penetration (mm)	Change in penetration n to 4 n (mm)
1	99.2	13.7
2	92.2	12.9
3	88.3	12.6
4	85.5	12.0
6	81.8	11.1
8	79.3	10.2
12	75.7	8.5
16	73.5	7.6
24	70.7	6.2
32	69.1	5.1
48	67.2	3.6
64	65.9	
96	64.5	
128	64.0	
192	63.6	
256		



MOISTURE CONDITION VALUE	15.0
WATER CONTENT	14.2 %

REMARKS

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

DATE 01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP VIBRATING HAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

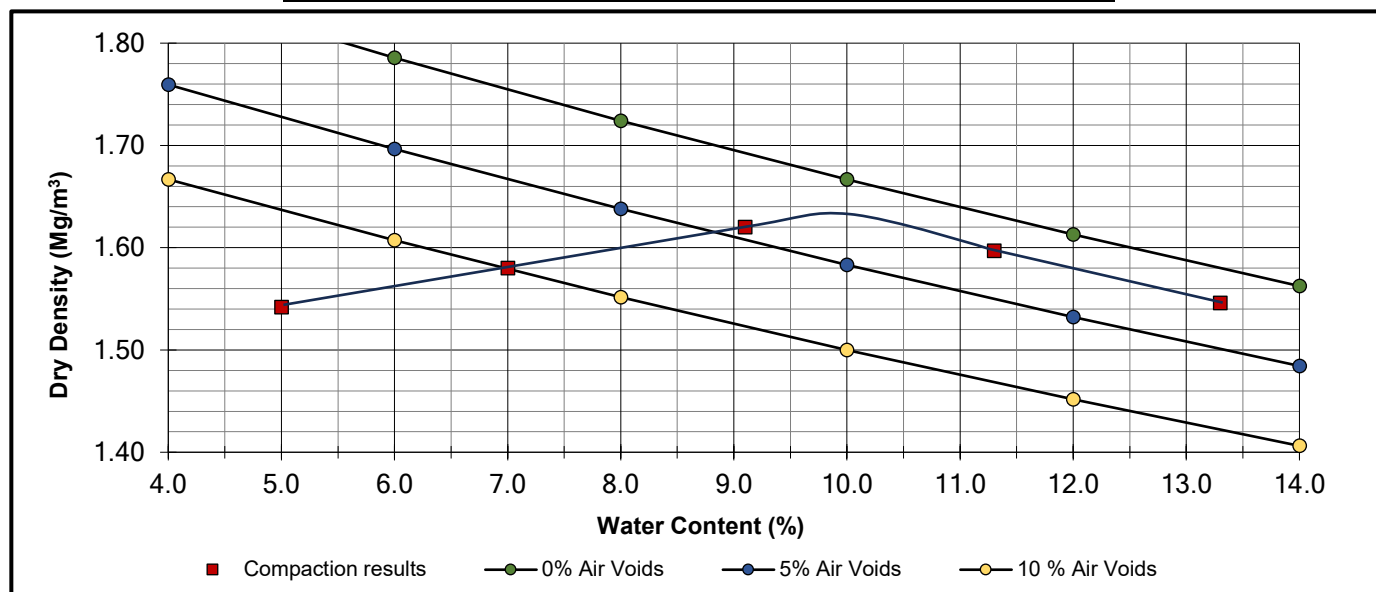
CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP101 0.1-1 B	DATE SAMPLED	12-Sep-24
SAMPLE NUMBER	554901	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black silty SAND & GRAVEL
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	9 %	GRADING ZONE	Zone 5
RETAINED 20mm	25 %	PARTICLE DENSITY	2.00 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	5.0	1.542
2	7.0	1.580
3	9.1	1.620
4	11.3	1.597
5	13.3	1.546



OPTIMUM WATER CONTENT	9.9	(%)
MAXIMUM DRY DENSITY	1.63	(Mg/m ³)

REMARKS

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

SIGNED

DATE 01-Oct-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

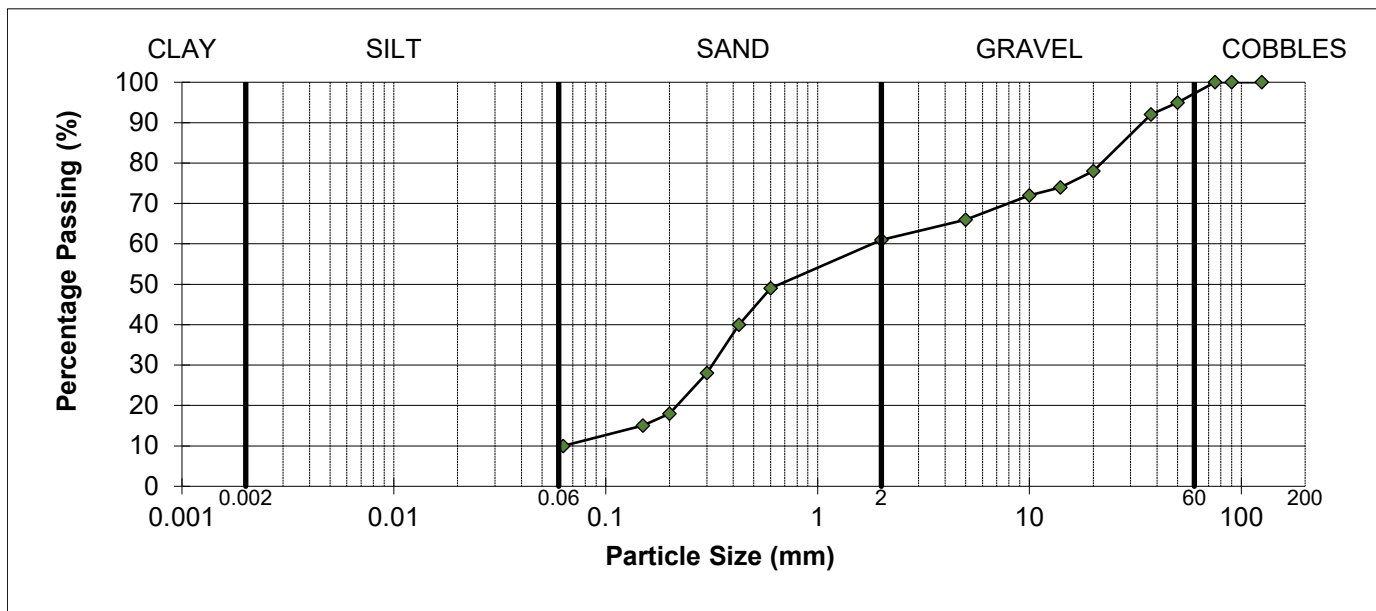
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP102 0-0.6 B	DATE SAMPLED	12-Sep-24
LAB SAMPLE No	554903	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black silty SAND & GRAVEL
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	66	
90	100		2	61	
75	100		0.6	49	
50	95		0.425	40	
37.5	92		0.3	28	
20	78		0.2	18	
14	74		0.15	15	
10	72		0.063	10	



REMARKS

As received water content = 12.1%

SIGNED



NAME

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

DATE

01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

MOISTURE CONDITION VALUE

BS 1377-2:2022 Cl. 13

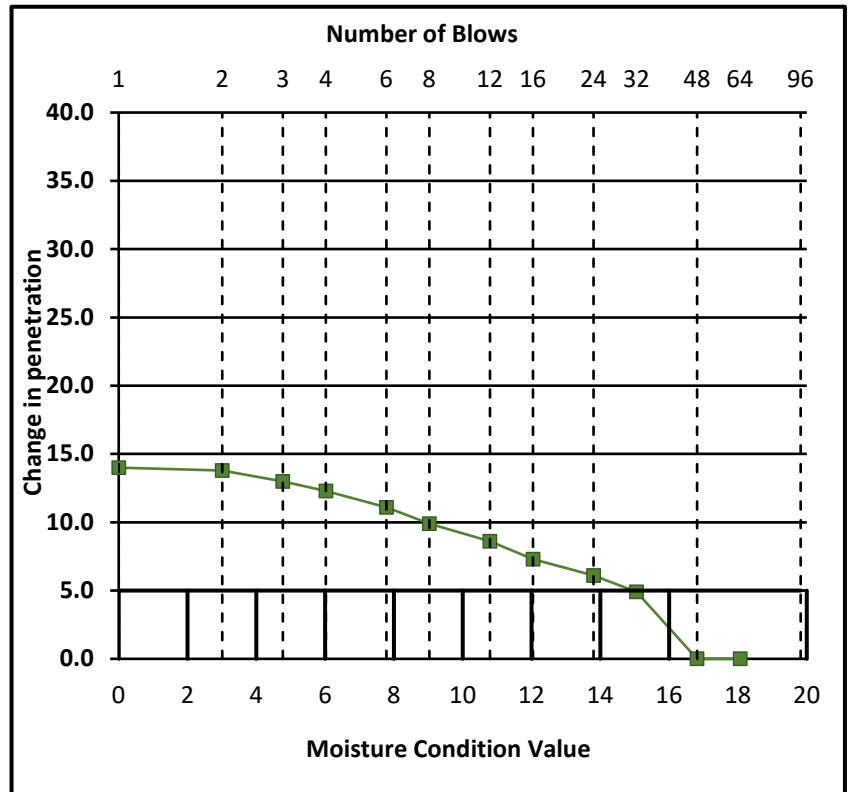
DETERMINATION OF WATER CONTENT - BS EN ISO 17892-1:2014+A1:2022

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP102 0-0.6 B	DATE SAMPLED	12-Sep-24
LAB SAMPLE No	554903	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black silty SAND & GRAVEL
ADVISED SOURCE	Site Investigation Sample
INTERPRETATION OF TEST CURVE	Straight line through 5mm change in penetration
PROPORTION LARGER THAN 20mm	22%

Total number of blows (n)	Penetration (mm)	Change in penetration n to 4 n (mm)
1	98.9	14.0
2	92.0	13.8
3	87.9	13.0
4	84.9	12.3
6	81.1	11.1
8	78.2	9.9
12	74.9	8.6
16	72.6	7.3
24	70.0	6.1
32	68.3	4.9
48	66.3	
64	65.3	
96	63.9	
128	63.4	
192		
256		



MOISTURE CONDITION VALUE	15.0
WATER CONTENT	12.7 %

REMARKS

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

DATE 01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP VIBRATING HAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

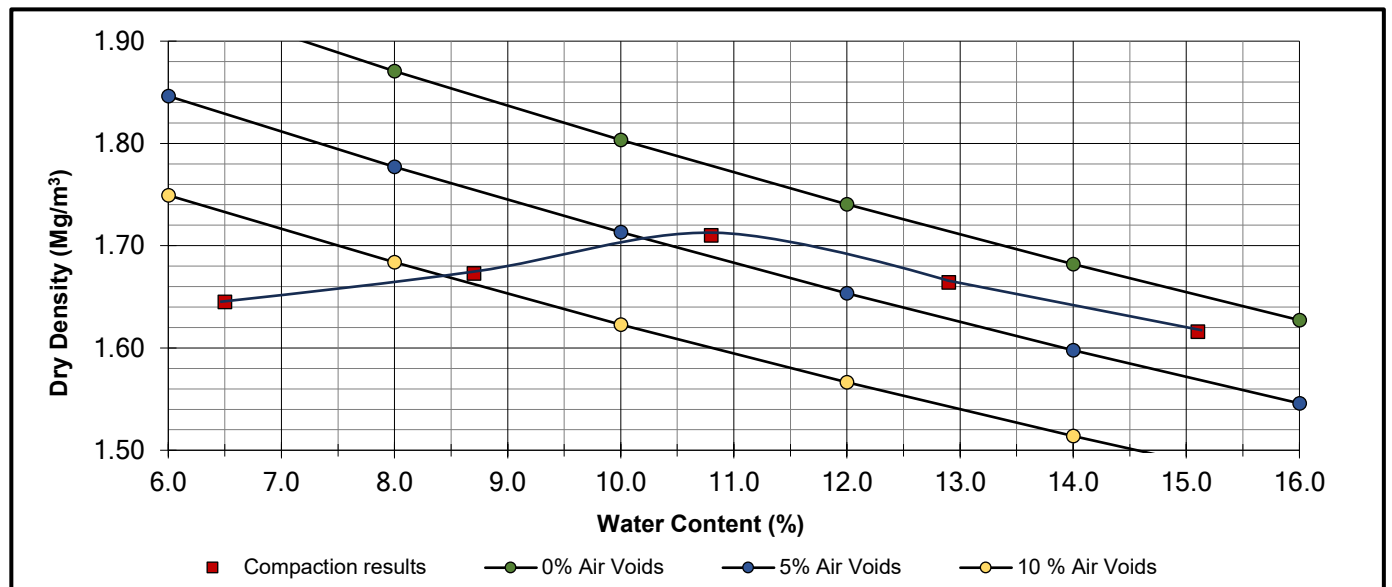
CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP102 0-0.6 B	DATE SAMPLED	12-Sep-24
SAMPLE NUMBER	554903	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black silty SAND & GRAVEL
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	8 %	GRADING ZONE	Zone 5
RETAINED 20mm	22 %	PARTICLE DENSITY	2.20 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	6.5	1.645
2	8.7	1.673
3	10.8	1.710
4	12.9	1.664
5	15.1	1.616



OPTIMUM WATER CONTENT	11 (%)
MAXIMUM DRY DENSITY	1.71 (Mg/m ³)

REMARKS

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

SIGNED

DATE 01-Oct-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

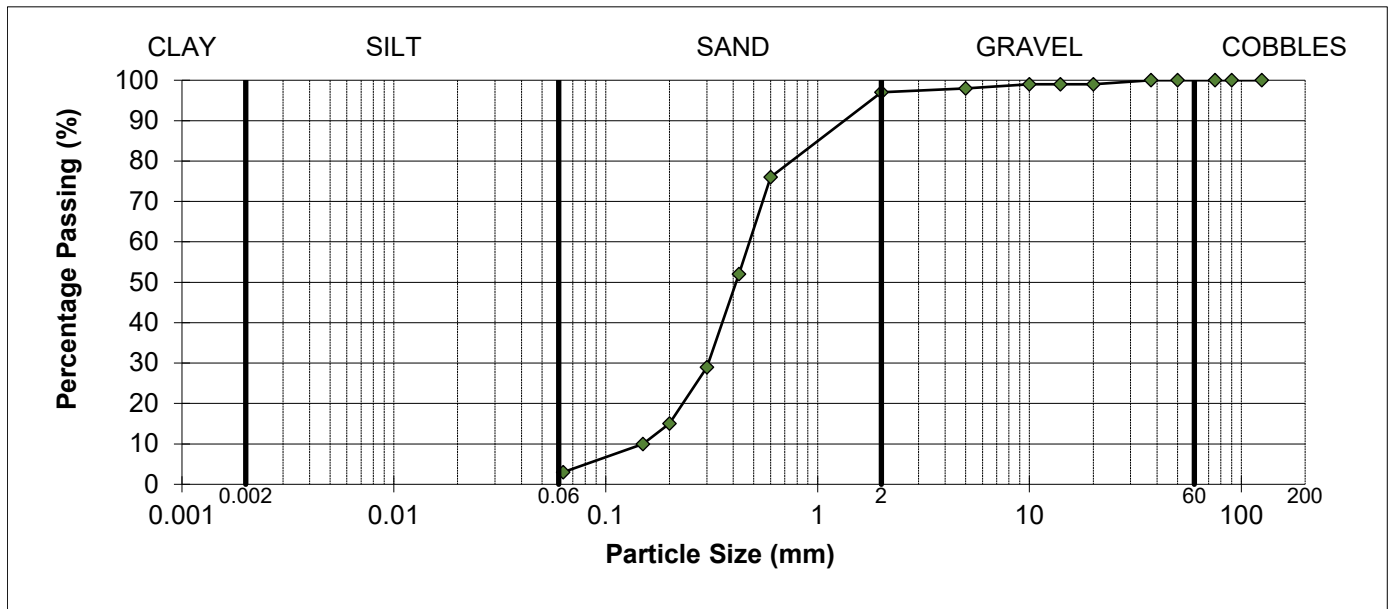
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP103 1-2 B	DATE SAMPLED	12-Sep-24
LAB SAMPLE No	554907	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Brown slightly gravelly SAND
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	98	
90	100		2	97	
75	100		0.6	76	
50	100		0.425	52	
37.5	100		0.3	29	
20	99		0.2	15	
14	99		0.15	10	
10	99		0.063	3	



REMARKS

As received water content = 4.0%

SIGNED



NAME

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

DATE

01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

MOISTURE CONDITION VALUE

BS 1377-2:2022 Cl. 13

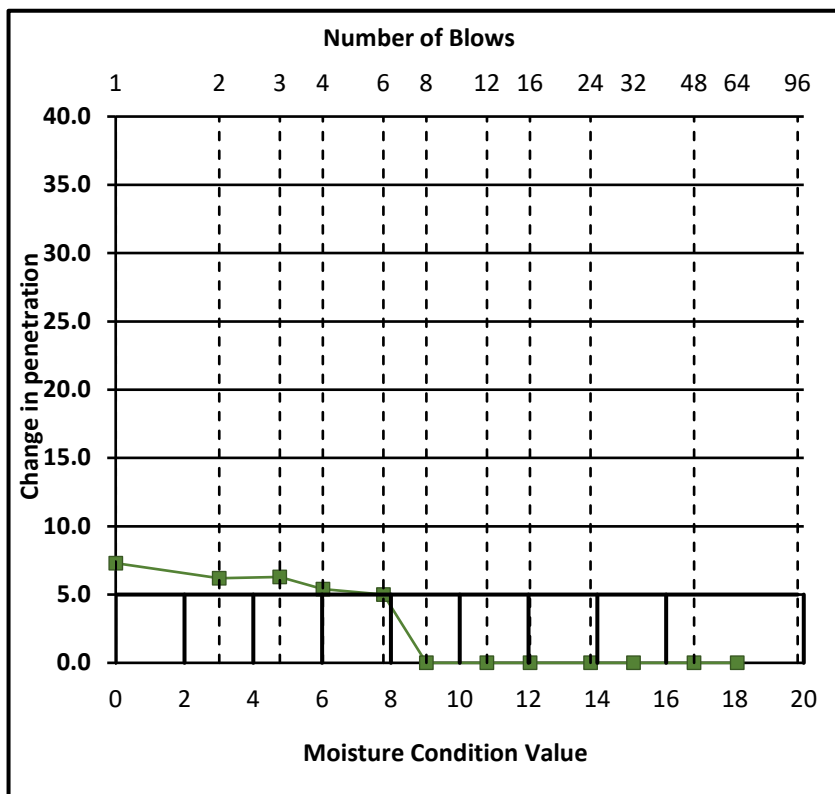
DETERMINATION OF WATER CONTENT - BS EN ISO 17892-1:2014+A1:2022

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP103 1-2 B	DATE SAMPLED	12-Sep-24
LAB SAMPLE No	554907	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Brown slightly gravelly SAND
ADVISED SOURCE	Site Investigation Sample
INTERPRETATION OF TEST CURVE	Straight line through 5mm change in penetration
PROPORTION LARGER THAN 20mm	1%

Total number of blows (n)	Penetration (mm)	Change in penetration n to 4 n (mm)
1	93.9	7.3
2	90.6	6.2
3	88.9	6.3
4	86.6	5.4
6	85.7	5.0
8	84.4	
12	82.6	
16	81.2	
24	80.7	
32		
48		
64		
96		
128		
192		
256		



MOISTURE CONDITION VALUE	7.8
WATER CONTENT	4.2 %

REMARKS

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

DATE 01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP VIBRATING HAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

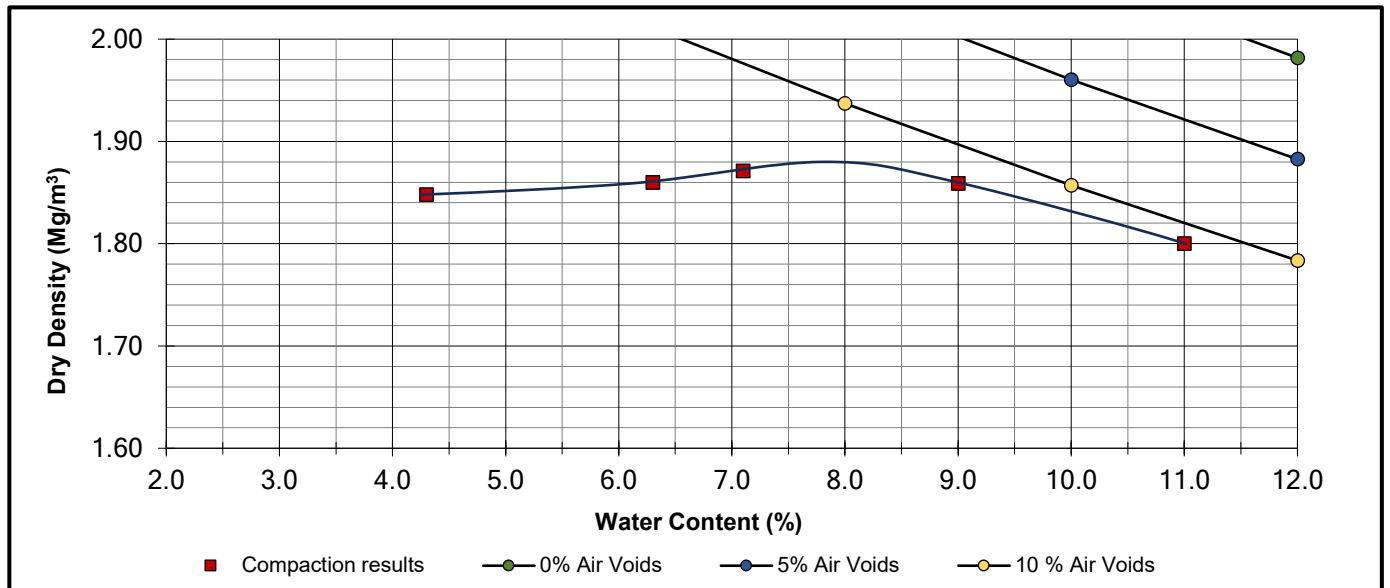
CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP103 1-2 B	DATE SAMPLED	12-Sep-24
SAMPLE NUMBER	554907	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Brown slightly gravelly SAND
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	0 %	GRADING ZONE	Zone 2
RETAINED 20mm	1 %	PARTICLE DENSITY	2.60 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	4.3	1.848
2	6.3	1.860
3	7.1	1.871
4	9.0	1.859
5	11.0	1.800



OPTIMUM WATER CONTENT	7.9	(%)
MAXIMUM DRY DENSITY	1.88	(Mg/m ³)

REMARKS

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

SIGNED

DATE 01-Oct-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

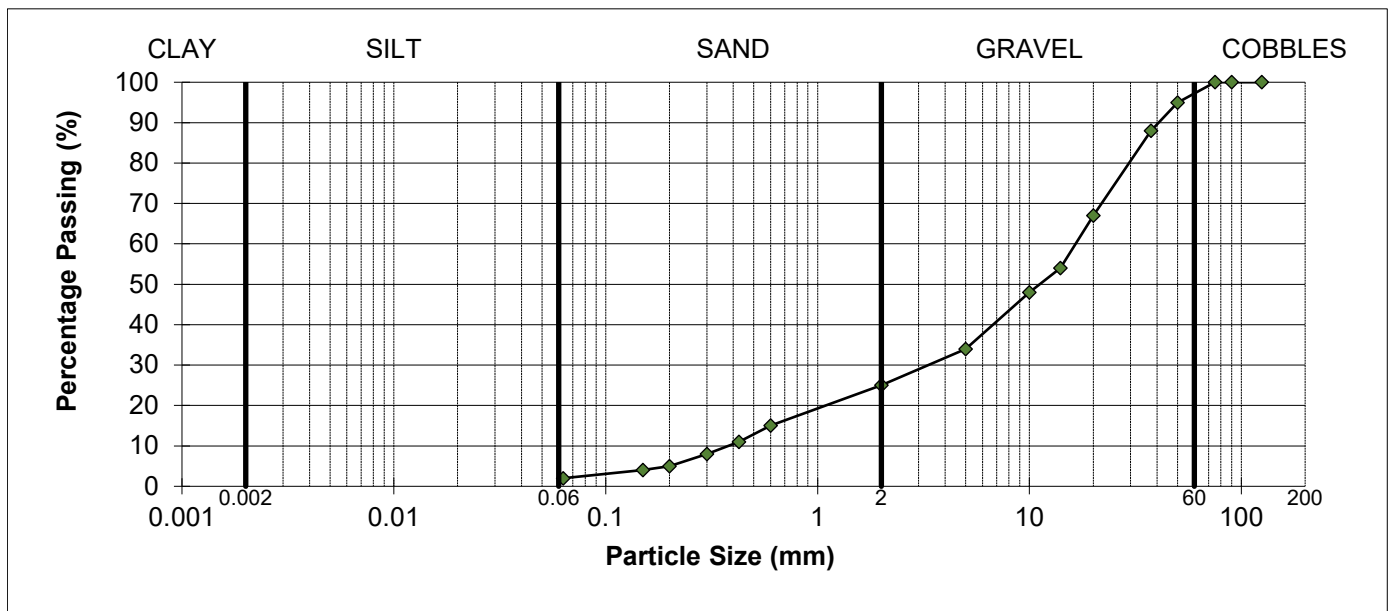
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP104 B 0.2-1 B	DATE SAMPLED	12-Sep-24
LAB SAMPLE No	554908	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black slightly silty sandy GRAVEL
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	34	
90	100		2	25	
75	100		0.6	15	
50	95		0.425	11	
37.5	88		0.3	8	
20	67		0.2	5	
14	54		0.15	4	
10	48		0.063	2	



REMARKS

As received water content = 5.3%

SIGNED



NAME

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

DATE

01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

MOISTURE CONDITION VALUE

BS 1377-2:2022 Cl. 13

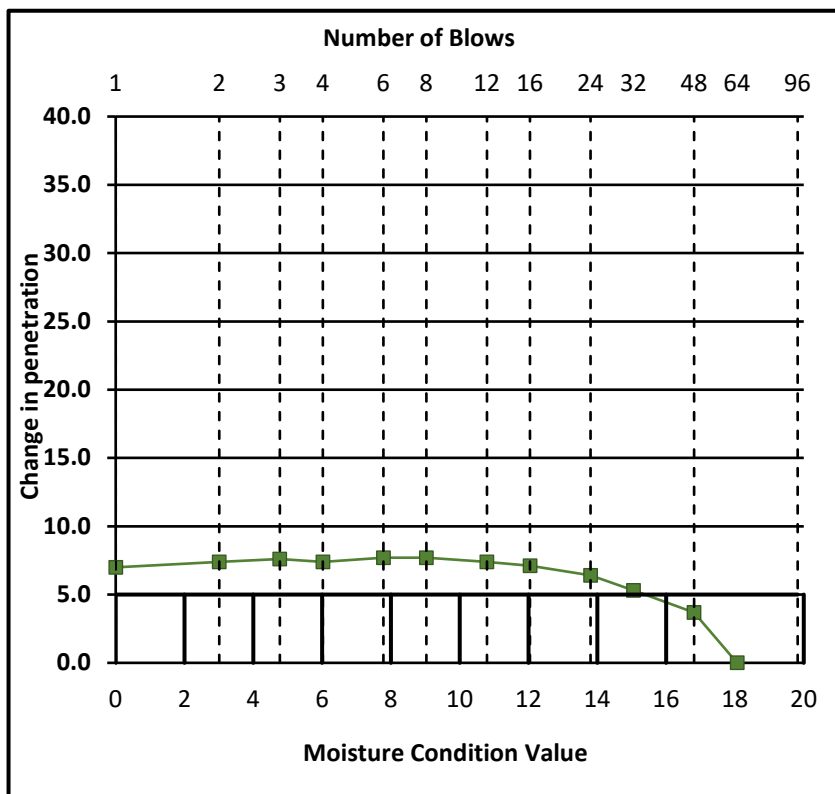
DETERMINATION OF WATER CONTENT - BS EN ISO 17892-1:2014+A1:2022

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP104 B 0.2-1 B	DATE SAMPLED	12-Sep-24
LAB SAMPLE No	554908	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black slightly silty sandy GRAVEL
ADVISED SOURCE	Site Investigation Sample
INTERPRETATION OF TEST CURVE	Straight line through 5mm change in penetration
PROPORTION LARGER THAN 20mm	33%

Total number of blows (n)	Penetration (mm)	Change in penetration n to 4 n (mm)
1	81.9	7.0
2	78.7	7.4
3	76.6	7.6
4	74.9	7.4
6	72.8	7.7
8	71.3	7.7
12	69.0	7.4
16	67.5	7.1
24	65.1	6.4
32	63.6	5.3
48	61.6	3.7
64	60.4	
96	58.7	
128	58.3	
192	57.9	
256		



MOISTURE CONDITION VALUE	7.8
WATER CONTENT	8.9 %

REMARKS

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

DATE 01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP VIBRATING HAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

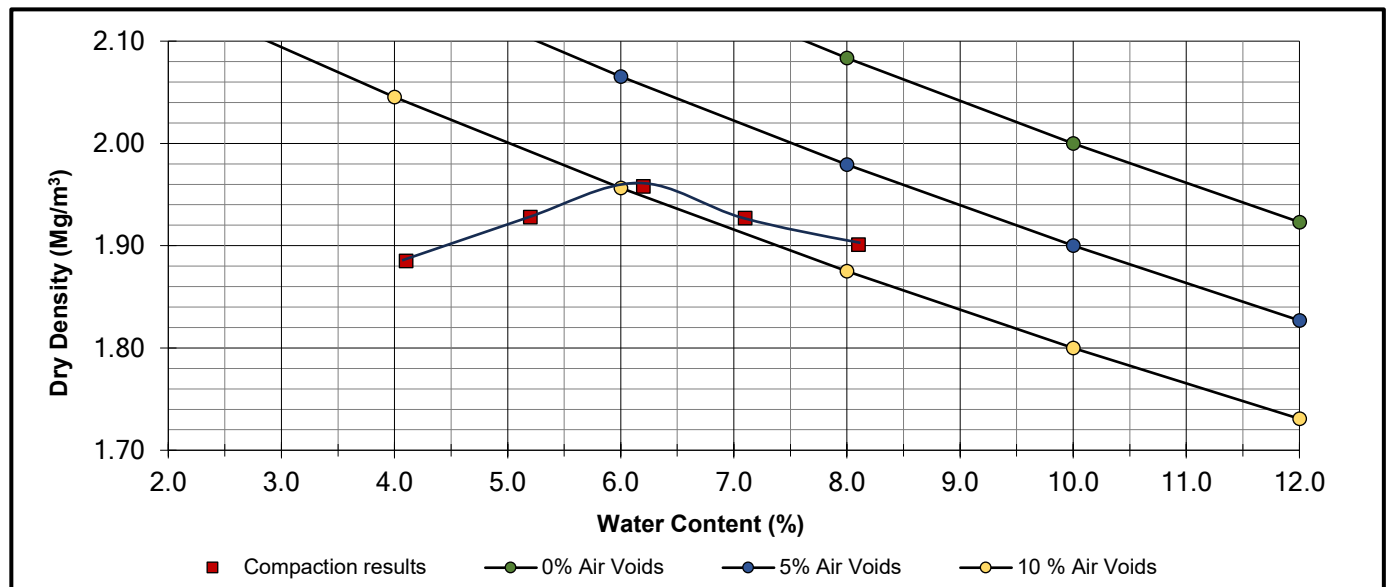
CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP104 B 0.2-1 B	DATE SAMPLED	12-Sep-24
SAMPLE NUMBER	554908	DATE RECEIVED	12-Sep-24
DATE TESTED	19-Sep-24	SAMPLED BY	Client

MATERIAL	Black slightly silty sandy GRAVEL
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	12 %	GRADING ZONE	Zone X
RETAINED 20mm	33 %	PARTICLE DENSITY	2.50 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	4.1	1.885
2	5.2	1.928
3	6.2	1.958
4	7.1	1.927
5	8.1	1.901



OPTIMUM WATER CONTENT	6.1	(%)
MAXIMUM DRY DENSITY	1.94	(Mg/m ³)

REMARKS

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

SIGNED

DATE 01-Oct-24

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

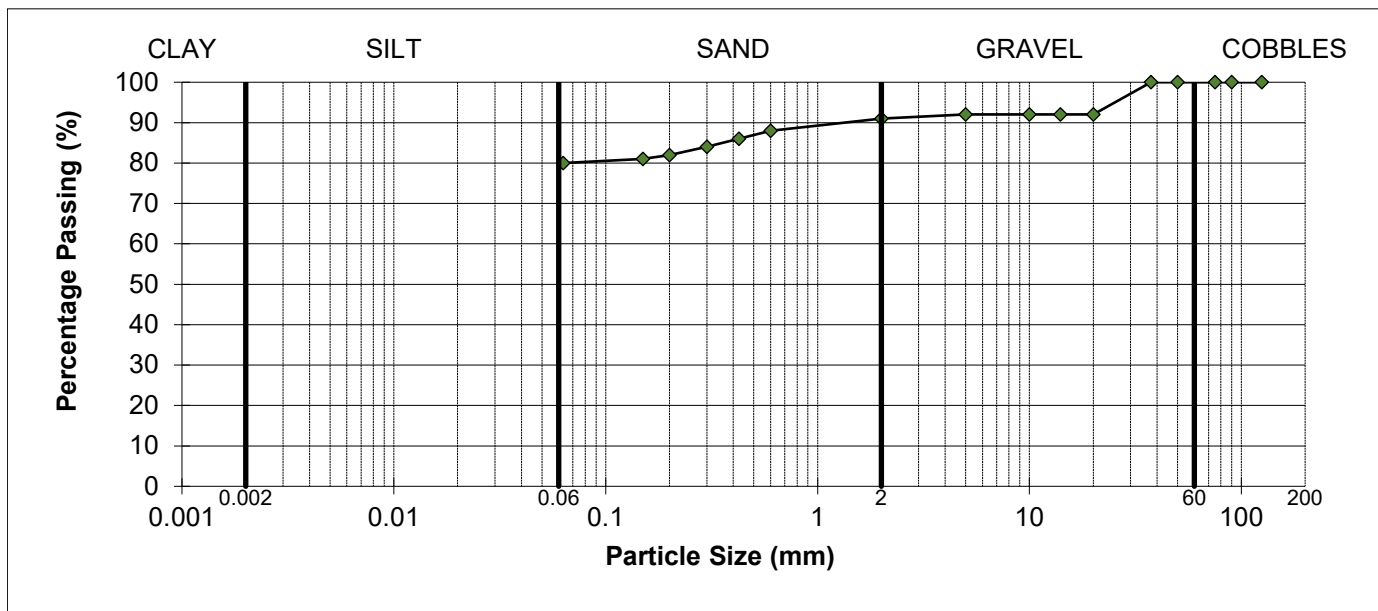
Determination of Water Content in accordance with BS EN ISO 17892-1:2014+A1:2022 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP104 2.5-3 B	DATE SAMPLED	29-Aug-24
LAB SAMPLE No	554909	DATE RECEIVED	04-Sep-24
DATE TESTED	05-Sep-24	SAMPLED BY	Client

MATERIAL	Light grey brown silty slightly sandy slightly gravelly CLAY
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		5	92	
90	100		2	91	
75	100		0.6	88	
50	100		0.425	86	
37.5	100		0.3	84	
20	92		0.2	82	
14	92		0.15	81	
10	92		0.063	80	



REMARKS

As received water content = 41.3%

SIGNED



NAME

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

DATE

01-Oct-24

MURRAY RIX

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

**TEST CERTIFICATE**

MOISTURE CONDITION VALUE

BS 1377-2:2022 Cl. 13

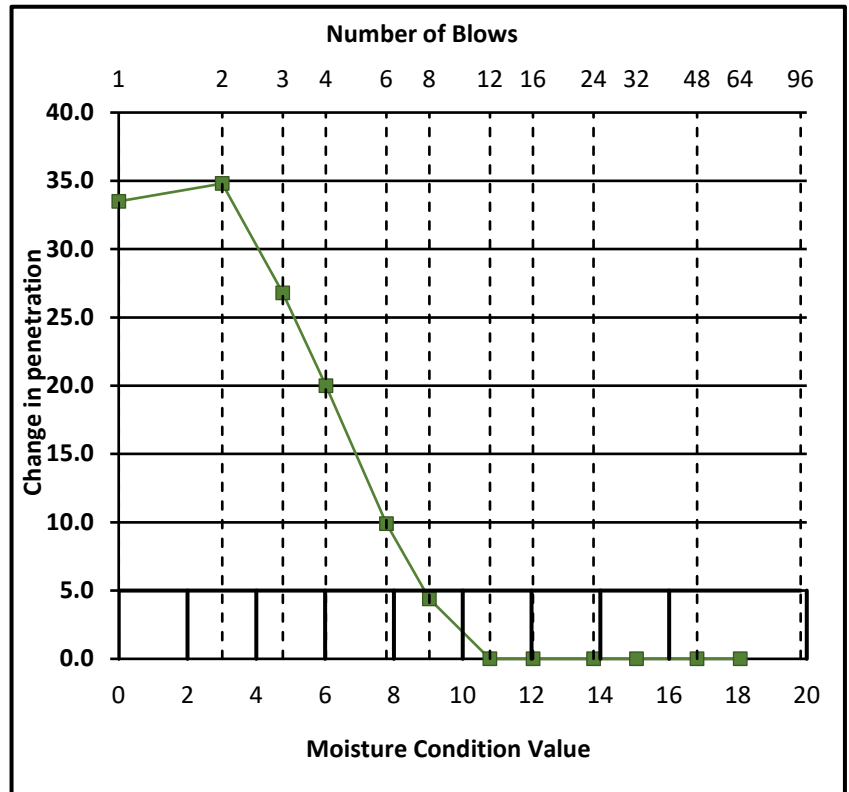
DETERMINATION OF WATER CONTENT - BS EN ISO 17892-1:2014+A1:2022

CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP104 2.5-3 B	DATE SAMPLED	29-Aug-24
LAB SAMPLE No	554909	DATE RECEIVED	04-Sep-24
DATE TESTED	05-Sep-24	SAMPLED BY	Client

MATERIAL	Light grey brown silty slightly sandy slightly gravelly CLAY
ADVISED SOURCE	Site Investigation Sample
INTERPRETATION OF TEST CURVE	Straight line through 5mm change in penetration
PROPORTION LARGER THAN 20mm	8%

Total number of blows (n)	Penetration (mm)	Change in penetration n to 4 n (mm)
1	133.3	33.5
2	117.4	34.8
3	106.9	26.8
4	99.8	20.0
6	88.9	9.9
8	82.6	4.4
12	80.1	
16	79.8	
24	79.0	
32	78.2	
48		
64		
96		
128		
192		
256		



MOISTURE CONDITION VALUE	8.8
WATER CONTENT	41.3 %

REMARKS

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

DATE 01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A2:2022 Clause 5.3 (30° FALL CONE) 1 POINT METHOD

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

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

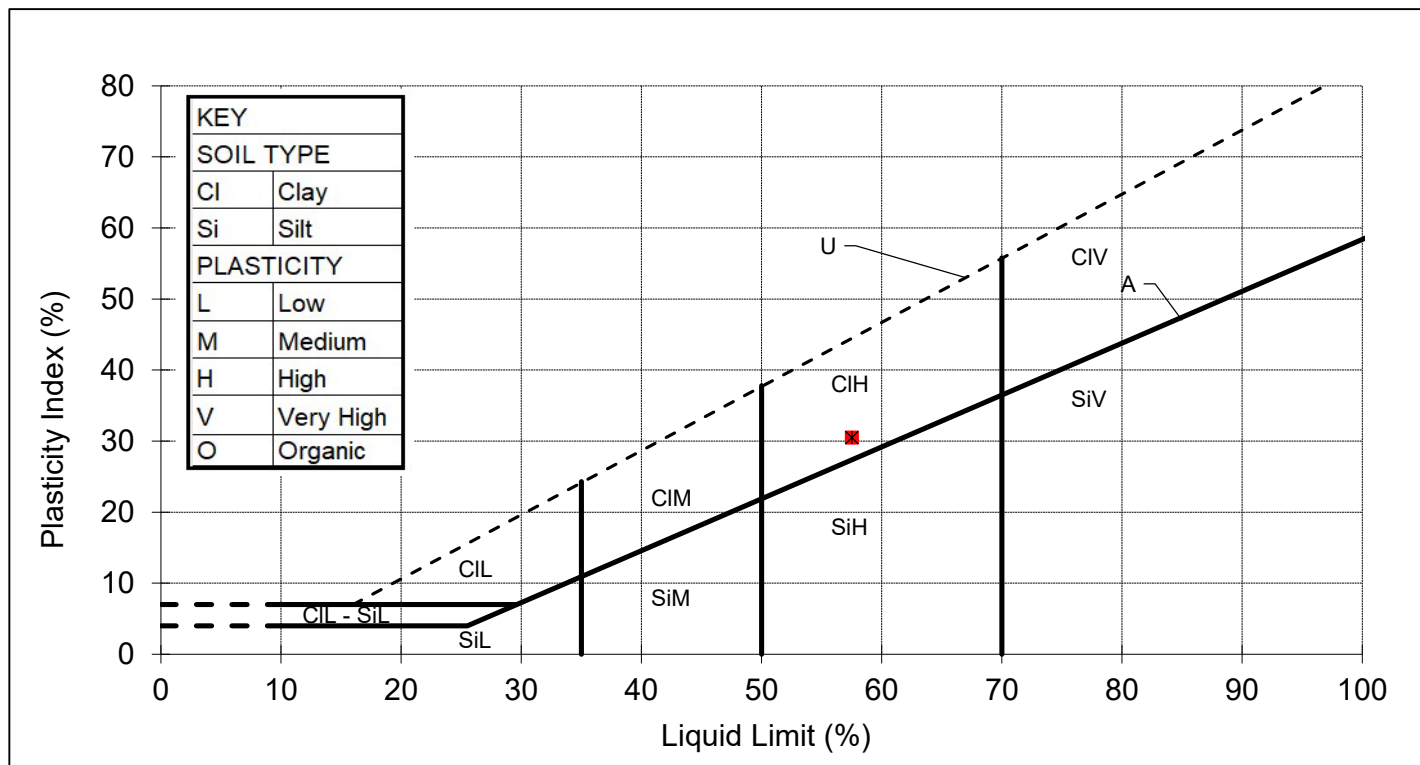
CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP104 2.5-3 B	DATE SAMPLED	29-Aug-24
SAMPLE No.	554909	DATE RECEIVED	04-Sep-24
DATE TESTED	05-Sep-24	SAMPLED BY	Client

MATERIAL	Light grey brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	Site Investigation Sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Water Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	57.5	1.003	
Determination 2 (avg)	19.7	57.2		

Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
41.3	58	27	31	86



REMARKS

SIGNED

NAME

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

DATE

01-Oct-24

MURRAY RIX

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



TEST CERTIFICATE

DRY DENSITY/WATER CONTENT RELATIONSHIP 2.5kg RAMMER

BS 1377-2:2022 Cl.11

PARTICLE DENSITY METHOD BS 1377-2:2022 Cl.9.2

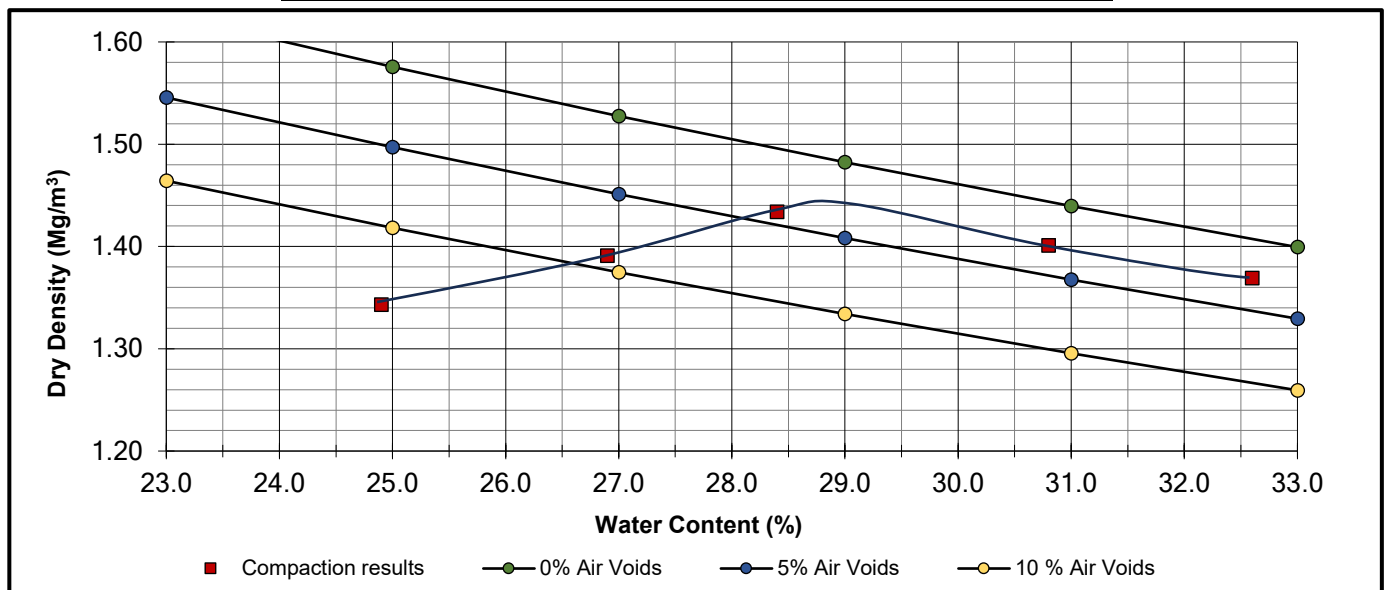
CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP104 2.5-3 B	DATE SAMPLED	29-Aug-24
SAMPLE NUMBER	554909	DATE RECEIVED	04-Sep-24
DATE TESTED	05-Sep-24	SAMPLED BY	Client

MATERIAL	Light grey brown silty slightly sandy slightly gravelly CLAY
ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried / Separate Batches

RETAINED 37.5mm	0 %	GRADING ZONE	Zone 3
RETAINED 20mm	8 %	PARTICLE DENSITY	2.60 Mg/m ³ (Assumed)

POINT NUMBER	WATER CONTENT (%)	DRY DENSITY (Mg/m ³)
1	24.9	1.343
2	26.9	1.391
3	28.4	1.434
4	30.8	1.401
5	32.6	1.369



OPTIMUM WATER CONTENT	29 (%)
MAXIMUM DRY DENSITY	1.44 (Mg/m ³)

REMARKS

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

SIGNED

DATE 01-Oct-24

MURRAY RIX

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

**TEST CERTIFICATE**

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377-7:1990 & Specification For Highway Works Clause 633

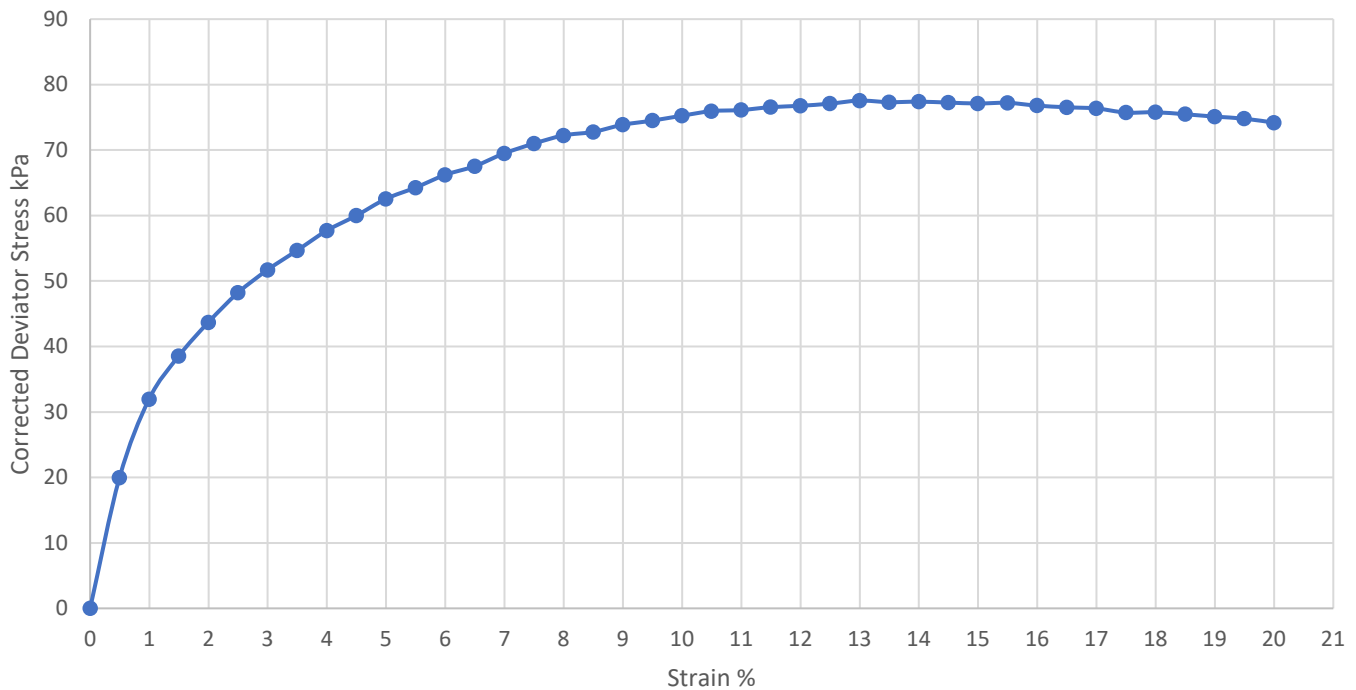
CLIENT	LK Consult Ltd
SITE	LKC 24 1317 - Chorlton Baths
JOB NUMBER	MRN 24076/96

SAMPLE LABEL	TP104 2.5-3 B	DATE SAMPLED	29-Aug-24
LAB SAMPLE No.	554909	DATE RECEIVED	04-Sep-24
DATE TESTED	05-Sep-24	SAMPLED BY	Client
MATERIAL	Light grey brown silty slightly sandy slightly gravelly CLAY		
ADVISED SOURCE	As client & site above		

INITIAL CONDITIONS

Specimen Location	Sample Preparation	2.5kg Rammer	Sample Moisture Content at Preparation	As received
	Retained 20mm (%)	8	Specimen Condition	Recompacted
	Specimen Length (mm)	200	Specimen Moisture Content (%)	22.4
	Specimen Diameter (mm)	100	Specimen Bulk Density (Mg/m3)	1.62
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.32
	Membrane Correction	4.53		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN



Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
200	13.0	1.0	78	39

Remarks/Abnormalities

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

Signed

Date 01 October 2024

Appendix E – Generic Assessment Criteria Values

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS ^{resi}	POS ^{park}	Source
Metals	Inorganic Arsenic	N/A	37	40	49	640	79	168	DEFRA C4SL
	Beryllium	N/A	1.7	1.7	35	12	2.2	63	LQM S4UL
	Boron	N/A	290	11,000	45	240,000	21,000	46,000	LQM S4UL
	Cadmium	N/A	26	149	4.9	410	220	880	DEFRA C4SL
	Chromium (III)	N/A	910	910	18,000	8,600	1,500	33,000	LQM S4UL
	Chromium (VI)	N/A	21.0	21.0	170.0	49	23.0	250	DEFRA C4SL
	Copper	N/A	2,400	7,100	520	68,000	12,000	44,000	LQM S4UL
	Lead	N/A	200	310	80	2,330	630	1,300	DEFRA C4SL
	Elemental Mercury	N/A	1.2	1.2	21	58 (25.8) ^{vap}	16	30 (25.8) ^{vap}	LQM S4UL
	Inorganic Mercury	N/A	40	56	19	1,100	120	240	LQM S4UL
	Methylmercury	N/A	11	15	6.0	320	40	68	LQM S4UL
	Nickel (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.	POS ^{res} i	POS ^{park}	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) vap	LQM S4UL
	Ethylbenzene	1%	47	83	16	5,700 (518) vap	24,000	17,000 (518) vap	LQM S4UL
		2.5%	110	190	39	13,000 (1,220) vap	24,000	22,000 (1,220) vap	LQM S4UL
		6%	260	440	91	27,000 (2,840) vap	25,000	27,000 (2,840) vap	LQM S4UL
	o-xylene	1%	60	88	28	6,600 (478) sol	41,000	17,000 (478) sol	LQM S4UL
		2.5%	140	210	67	15,000 (1,120) sol	42,000	24,000 (1,120) sol	LQM S4UL
		6%	330	480	160	33,000 (2,620) sol	43,000	33,000 (2,620) sol	LQM S4UL
	m-xylene	1%	59	82	31	6,200 (625) vap	41,000	17,000 (625) vap	LQM S4UL
		2.5%	140	190	74	14,000 (1,470) vap	42,000	24,000 (1,470) vap	LQM S4UL
		6%	320	450	170	31,000 (3,460) vap	43,000	32,000 (3,460) vap	LQM S4UL
	p-xylene	1%	56	79	29	5,900 (576) sol	41,000	17,000 (576) sol	LQM S4UL
		2.5%	130	180	69	14,000 (1,350) sol	42,000	23,000 (1,350) sol	LQM S4UL
		6%	310	430	160	30,000 (3,170) sol	43,000	31,000 (3,170) sol	LQM S4UL
Petroleum 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%	110,000 f	110,000 f	270,000 f	1,800,000 f	250,000 f	490,000 f	LQM S4UL
	EC>35-44	6%	110,000 f	110,000 f	270,000 f	1,800,000 f	250,000 f	490,000 f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	1%	70	370	13	26,000 (1,220) sol	56,000	76,000 (1,220) sol	LQM S4UL
	EC>7-8(toluene)	1%	130	860	22	56,000 (869) vap	56,000	87,000 (869) vap	LQM S4UL
	EC>8-10	1%	34	47	8.6	3,500 (613) vap	5,000	7,200 (613) vap	LQM S4UL
	EC>10-12	1%	74	250	13	16,000 (364) sol	5,000	9,200 (364) sol	LQM S4UL
	EC>12-16	1%	140	1,800	23	36,000 (169) sol	5,100	10,000	LQM S4UL
	EC>16-21	1%	260 f	1,900 f	46 f	28,000 f	3,800 f	7,600 f	LQM S4UL
	EC>21-35	1%	1,100 f	1,900 f	370 f	28,000 f	3,800 f	7,800 f	LQM S4UL
	EC>35-44	1%	1,100 f	1,900 f	370 f	28,000 f	3,800 f	7,800 f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	2.5%	140	690	27	46,000 (2,260) sol	56,000	84,000 (2,260) sol	LQM S4UL
	EC>7-8(toluene)	2.5%	290	1,800	51	110,000 (1,920) sol	56,000	95,000 (1,920) sol	LQM S4UL
	EC>8-10	2.5%	83	110	21	8,100 (1,500) vap	5,000	8,500 (1,500) vap	LQM S4UL
	EC>10-12	2.5%	180	590	31	28,000 (899) sol	5,000	9,700 (899) sol	LQM S4UL
	EC>12-16	2.5%	330	2,300 (419) sol	57	37,000	5,100	10,000	LQM S4UL
	EC>16-21	2.5%	540 f	1,900 f	110 f	28,000 f	3,800 f	7,700 f	LQM S4UL
	EC>21-35	2.5%	1,500 f	1,900 f	820 f	28,000 f	3,800 f	7,800 f	LQM S4UL
	EC>35-44	2.5%	1,500 f	1,900 f	820 f	28,000 f	3,800 f	7,800 f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	6%	300	1,400	57	86,000 (4,710) sol	56,000	92,000 (4,710) sol	LQM S4UL
	EC>7-8(toluene)	6%	660	3,900	120	180,000 (4,360) vap	56,000	100,000 (4,360)	LQM S4UL
	EC>8-10	6%	190	270	51	17,000 (3,580) vap	5,000	9,300 (3,580) vap	LQM S4UL
	EC>10-12	6%	380	1,200	4	34,000 (2,150) sol	5,000	10,000	LQM S4UL
	EC>12-16	6%	660	2,500	130	38,000	5,100	10,000	LQM S4UL
	EC>16-21	6%	930 f	1,900 f	260 f	28,000 f	3,800 f	7,800 f	LQM S4UL
	EC>21-35	6%	1,700 f	1,900 f	1,600 f	28,000 f	3,800 f	7,900 f	LQM S4UL
	EC>35-44	6%	1,700 f	1,900 f	1,600 f	28,000 f	3,800 f	7,900 f	LQM S4UL
	Aliphatic +Aromatic >EC44	1%	1,600 f	1,900 f	1,200 f	28,000 f	3,800 f	7,800 f	LQM S4UL
		2.5%	1,800 f	1,900 f	2,100 f	28,000 f	3,800 f	7,800 f	LQM S4UL
		6%	1,900 f	1,900 f	3,000 f	28,000 f	3,800 f	7,900 f	LQM S4UL

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS ^{resi}	POS ^{park}	Source
Chloalkanes and Alkenes & Explosives	1,2 Dichloroethane (DCA)	1%	0.0071	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-Trinitrotoluene (TNT)	1%	1.6	65	0.24	1,000	130	260	LQM S4UL
		2.5%	3.7	66	0.58	1,000	130	270	LQM S4UL
		6%	8.1	66	1.4	1,000	130	270	LQM S4UL
	RDX	1%	120	13,000	17	210,000	26,000	49,000 (18.7) ^{sol}	LQM S4UL
		2.5%	250	13,000	38	210,000	26,000	51,000	LQM S4UL
		6%	540	13,000	85	210,000	27,000	53,000	LQM S4UL
	HMX	1%	5.7	6,700	0.86	110,000	13,000	23,000 (0.35) ^{vap}	LQM S4UL
		2.5%	13	6,700	1.9	110,000	13,000	23,000 (0.39) ^{vap}	LQM S4UL
		6%	26	6,700	3.9	110,000	13,000	24,000 (0.48) ^{vap}	LQM S4UL
Pesticides	Aldrin	1%	5.7	7.3	3.2	170	18	30	LQM S4UL
		2.5%	6.6	7.4	6.1	170	18	31	LQM S4UL
		6%	7.1	7.5	9.8	170	18	31	LQM S4UL
	Dieldrin	1%	0.97	7.0	0.17	170	18	30	LQM S4UL
		2.5%	2.0	7.3	0.41	170	18	30	LQM S4UL
		6%	3.5	7.4	0.96	170	18	31	LQM S4UL
	Atrazine	1%	3.3	610	0.5	9,300	1,200	2,300	LQM S4UL
		2.5%	7.8	620	1.2	9,400	1,200	2,400	LQM S4UL
		6%	17.4	620	2.7	9,400	1,200	2,400	LQM S4UL
	Dichlorvos	1%	3.2E-02	6.4	4.9E-03	140	16	26	LQM S4UL
		2.5%	6.6E-02	6.5	1.0E-02	140	16	26	LQM S4UL
		6%	0.14	6.6	2.2E-02	140	16	27	LQM S4UL
	Endosulfanns (2 isomers)	1%	7.4	160 (3.0E-03) ^{vap}	1.2	5,600 (3.0E-03) ^{vap}	1,200	2,300	LQM S4UL
		2.5%	18	280 (7.0E-03) ^{vap}	2.9	7,400 (7.0E-03) ^{vap}	1,200	2,400	LQM S4UL
		6%	41	410 (1.6E-02) ^{vap}	6.8	8,400 (1.6E-02) ^{vap}	1,200	2,500	LQM S4UL
	Hexachlorocyclohexane (3 isomers), inc Lindane	1%	8.5E-02	3.7	1.3E-02	65	8.1	15	LQM S4UL
		2.5%	0.2	3.8	3.2E-02	65	8.1	15	LQM S4UL
		6%	0.46	3.8	7.7E-02	65	8.1	16	LQM S4UL
Chlorobenzenes	Chlorobenzene	1%	0.46	0.46	5.9	56	11,000	1,300 (675) ^{sol}	LQM S4UL
		2.5%	1.0	1.0	14	130	13,000	2,000 (1,520) ^{sol}	LQM S4UL
		6%	2.4	2.4	32	290	14,000	2,900	LQM S4UL
	Dichlorobenzenes (3 isomers)	1%	23	24	94	2,000 (571) ^{sol}	90,000	24,000 (571) ^{sol}	LQM S4UL
		2.5%	55	57	230	4,800 (1,370) ^{sol}	95,000	36,000 (1,370) ^{sol}	LQM S4UL
		6%	130	130	540	11,000 (3,240) ^{sol}	98,000	51,000 (3,270) ^{sol}	LQM S4UL
	Trichlorobenzenes (3 isomers)	1%	2.6	2.6	55	220	15,000	1,700 (318) ^{vap}	LQM S4UL
		2.5%	6.4	6.4	140	530	17,000	2,600 (786) ^{vap}	LQM S4UL
		6%	15	15	320	1,300	19,000	4,000 (1,880) ^{vap}	LQM S4UL
	Tetrachlorobenzenes (3 isomers)	1%	0.66	0.75	0.38	49 (39.4) ^{vap}	78	110 (39) ^{vap}	LQM S4UL
		2.5%	1.6	1.9	0.90	120 (98.1) ^{vap}	79	120	LQM S4UL
		6%	3.7	4.3	2.2	240 (235) ^{vap}	79	130	LQM S4UL
	Pentachlorobenzene	1%	5.8	19	1.2	640 (43.0) ^{sol}	100	190	LQM S4UL
		2.5%	12	30	3.1	770 (107) ^{sol}	100	190	LQM S4UL
		6%	22	38	7.0	830	100	190	LQM S4UL
	Hexachlorobenzene	1%	1.8 (0.20) ^{vap}	4.1 (0.20) ^{vap}	0.47	110 (0.20) ^{vap}	16	30	LQM S4UL
		2.5%	3.3 (0.50) ^{vap}	5.7 (0.50) ^{vap}	1.1	120	16	30	LQM S4UL
		6%	4.9	6.7 (1.2) ^{vap}	2.5	120	16	30	LQM S4UL

Generic Assessment Criteria Values

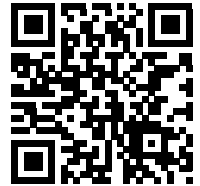
Contaminant		SOM	Res +	Res -	Allot.	Comm.	^{POS} resi	^{POS} park	Source
Chlorophenol	Chlorophenols (4 congeners)	1%	0.87 ^g	94	0.13 ^g	3,500	620	1,100	LQM S4UL
		2.5%	2.0	150	0.30	4,000	620	1,100	LQM S4UL
		6%	4.5	210	0.70	4,300	620	1,100	LQM S4UL
	Pentachlorophenol	1%	0.22	27 (16.4) ^{vap}	3.0E-02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

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:

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



RWAPQ-QWGVMS13LD

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

Job name

LKC241317

Description/Comments

Project

LKC241317

Site

Chorlton Baths

Classified by

Name: **Peter Dunn**
Date: **03 Oct 2024 14:58 GMT**
Telephone: **0161 763 7200**
Company: **LK Group**

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:

CERTIFIED

Course

Hazardous Waste Classification
Most recent 3 year Refresher

Date

26 Mar 2015 *
02 Aug 2022

Next 3 year Refresher due by Aug 2025
* training course booked

Purpose of classification

2 - Material Characterisation

Address of the waste

3 Cavendish Terrace, Chorlton-cum-Hardy, Manchester

Post Code **M21 0UA**

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

Soil

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP101-0.05 - 1.00-12/09/2024	0.05 - 1.00	Non Hazardous		3
2	TP102-0.00 - 0.60-12/09/2024	0.00 - 0.60	Non Hazardous		6
3	TP103-0.30 - 1.00-12/09/2024	0.30 - 1.00	Non Hazardous		9
4	TP104-0.20 - 1.00-12/09/2024	0.20 - 1.00	Hazardous	HP 3(i), HP 7, HP 11	12

Related documents

#	Name	Description
1	24-10916.1.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: 03 Oct 2024 14:58 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	15
Appendix B: Rationale for selection of metal species	16
Appendix C: Version	17

Classification of sample: TP101-0.05 - 1.00-12/09/2024

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

Sample details

Sample name:	LoW Code:
TP101-0.05 - 1.00-12/09/2024	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.05 - 1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11.1%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11.1% Wet Weight Moisture Correction applied (MC)

#		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								
1		arsenic { arsenic trioxide }			23	mg/kg	1.32	26.997	mg/kg	0.0027 %	✓	
		033-003-00-0	215-481-4	1327-53-3								
2		cadmium { cadmium oxide }			0.5	mg/kg	1.142	0.508	mg/kg	0.0000508 %	✓	
		048-002-00-0	215-146-2	1306-19-0								
3		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }			14	mg/kg	1.462	18.191	mg/kg	0.00182 %	✓	
			215-160-9	1308-38-9								
4		copper { dicopper oxide; copper (I) oxide }			105	mg/kg	1.126	105.096	mg/kg	0.0105 %	✓	
		029-002-00-X	215-270-7	1317-39-1								
5		mercury { mercury dichloride }			<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7								
6		nickel { nickel(II) oxide (nickel monoxide) }			30	mg/kg	1.273	33.94	mg/kg	0.00339 %	✓	
		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		lead {  lead compounds with the exception of those specified elsewhere in this Annex }			212	mg/kg		188.468	mg/kg	0.0188 %	✓	
		082-001-00-6										
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }			<2	mg/kg	1.405	<2.81	mg/kg	<0.000281 %		<LOD
		034-002-00-8										
9		vanadium { divanadium pentaoxide; vanadium pentoxide }			44	mg/kg	1.785	69.829	mg/kg	0.00698 %	✓	
		023-001-00-8	215-239-8	1314-62-1								
10		zinc { zinc oxide }			148	mg/kg	1.245	163.77	mg/kg	0.0164 %	✓	
		030-013-00-7	215-222-5	1314-13-2								
11		chromium in chromium(VI) compounds { chromium(VI) oxide }			<2	mg/kg	1.923	<3.846	mg/kg	<0.000385 %		<LOD
		024-001-00-0	215-607-8	1333-82-0								
12		boron { diboron trioxide }			1.1	mg/kg	3.22	3.149	mg/kg	0.000315 %	✓	
		005-008-00-8	215-125-8	1303-86-2								
13		TPH (C6 to C40) petroleum group			604	mg/kg		536.956	mg/kg	0.0537 %	✓	
				TPH								

#	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				7.8 pH		7.8 pH	7.8 pH			
			PH								
21	naphthalene				0.83 mg/kg		0.738 mg/kg	0.0000738 %		✓	
	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				6.68 mg/kg		5.939 mg/kg	0.000594 %		✓	
		201-469-6	83-32-9								
24	fluorene				4.19 mg/kg		3.725 mg/kg	0.000372 %		✓	
		201-695-5	86-73-7								
25	phenanthrene				37.3 mg/kg		33.16 mg/kg	0.00332 %		✓	
		201-581-5	85-01-8								
26	anthracene				7.65 mg/kg		6.801 mg/kg	0.00068 %		✓	
		204-371-1	120-12-7								
27	fluoranthene				46.3 mg/kg		41.161 mg/kg	0.00412 %		✓	
		205-912-4	206-44-0								
28	pyrene				42.4 mg/kg		37.694 mg/kg	0.00377 %		✓	
		204-927-3	129-00-0								
29	benzo[a]anthracene				19.3 mg/kg		17.158 mg/kg	0.00172 %		✓	
	601-033-00-9	200-280-6	56-55-3								
30	chrysene				19.7 mg/kg		17.513 mg/kg	0.00175 %		✓	
	601-048-00-0	205-923-4	218-01-9								
31	benzo[b]fluoranthene				16.1 mg/kg		14.313 mg/kg	0.00143 %		✓	
	601-034-00-4	205-911-9	205-99-2								
32	benzo[k]fluoranthene				5.75 mg/kg		5.112 mg/kg	0.000511 %		✓	
	601-036-00-5	205-916-6	207-08-9								
33	benzo[a]pyrene; benzo[def]chrysene				17.5 mg/kg		15.558 mg/kg	0.00156 %		✓	
	601-032-00-3	200-028-5	50-32-8								
34	indeno[123-cd]pyrene				8.42 mg/kg		7.485 mg/kg	0.000749 %		✓	
		205-893-2	193-39-5								
35	dibenz[a,h]anthracene				1.99 mg/kg		1.769 mg/kg	0.000177 %		✓	
	601-041-00-2	200-181-8	53-70-3								
36	benzo[ghi]perylene				6.83 mg/kg		6.072 mg/kg	0.000607 %		✓	
		205-883-8	191-24-2								
37	polychlorobiphenyls; PCB				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	602-039-00-4	215-648-1	1336-36-3								
38	monohydric phenols				<2 mg/kg		<2 mg/kg	<0.0002 %			<LOD
			P1186								
Total:									0.137 %		

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 Determinand - 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

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: Concentrations at less than 1.0% are "unlikely to be flammable". Flammability of soils is unlikely to result in a hazardous classification in soils (AGS Waste Classification – A Practitioner's Guide).

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0537%)

Classification of sample: TP102-0.00 - 0.60-12/09/2024

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

Sample details

Sample name:	LoW Code:
TP102-0.00 - 0.60-12/09/2024	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.00 - 0.60 m	
Moisture content:	
11%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#	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							
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	20 mg/kg	1.32	23.502 mg/kg	0.00235 %	✓	
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 chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		12 mg/kg	1.462	15.609 mg/kg	0.00156 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	59 mg/kg	1.126	59.12 mg/kg	0.00591 %	✓	
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	15.857 mg/kg	0.00159 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			141 mg/kg		125.49 mg/kg	0.0125 %	✓	
8	selenium { selenium compounds with the exception of cadmium selenosulfide 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	23 mg/kg	1.785	36.543 mg/kg	0.00365 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	78 mg/kg	1.245	86.408 mg/kg	0.00864 %	✓	
11	chromium in chromium(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		380 mg/kg		338.2 mg/kg	0.0338 %	✓	

#	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				7.8 pH		7.8 pH	7.8 pH		
			P186							
21	naphthalene				0.28 mg/kg		0.249 mg/kg	0.0000249 %	✓	
	601-052-00-2	202-049-5	91-20-3							
22	acenaphthylene				0.12 mg/kg		0.107 mg/kg	0.0000107 %	✓	
		205-917-1	208-96-8							
23	acenaphthene				0.58 mg/kg		0.516 mg/kg	0.0000516 %	✓	
		201-469-6	83-32-9							
24	fluorene				0.54 mg/kg		0.481 mg/kg	0.0000481 %	✓	
		201-695-5	86-73-7							
25	phenanthrene				4.91 mg/kg		4.37 mg/kg	0.000437 %	✓	
		201-581-5	85-01-8							
26	anthracene				0.91 mg/kg		0.81 mg/kg	0.000081 %	✓	
		204-371-1	120-12-7							
27	fluoranthene				7.73 mg/kg		6.88 mg/kg	0.000688 %	✓	
		205-912-4	206-44-0							
28	pyrene				9.32 mg/kg		8.295 mg/kg	0.000829 %	✓	
		204-927-3	129-00-0							
29	benzo[a]anthracene				4.15 mg/kg		3.694 mg/kg	0.000369 %	✓	
	601-033-00-9	200-280-6	56-55-3							
30	chrysene				5.32 mg/kg		4.735 mg/kg	0.000473 %	✓	
	601-048-00-0	205-923-4	218-01-9							
31	benzo[b]fluoranthene				3.61 mg/kg		3.213 mg/kg	0.000321 %	✓	
	601-034-00-4	205-911-9	205-99-2							
32	benzo[k]fluoranthene				1.36 mg/kg		1.21 mg/kg	0.000121 %	✓	
	601-036-00-5	205-916-6	207-08-9							
33	benzo[a]pyrene; benzo[def]chrysene				4.66 mg/kg		4.147 mg/kg	0.000415 %	✓	
	601-032-00-3	200-028-5	50-32-8							
34	indeno[123-cd]pyrene				2.4 mg/kg		2.136 mg/kg	0.000214 %	✓	
		205-893-2	193-39-5							
35	dibenz[a,h]anthracene				0.58 mg/kg		0.516 mg/kg	0.0000516 %	✓	
	601-041-00-2	200-181-8	53-70-3							
36	benzo[ghi]perylene				2.14 mg/kg		1.905 mg/kg	0.00019 %	✓	
		205-883-8	191-24-2							
37	monohydric phenols				<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
			P1186							
Total:								0.0759 %		

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 Determinand - 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

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: Concentrations at less than 1.0% are "unlikely to be flammable". Flammability of soils is unlikely to result in a hazardous classification in soils (AGS Waste Classification – A Practitioner's Guide).

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0338%)

Classification of sample: TP103-0.30 - 1.00-12/09/2024

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

Sample details

Sample name:	LoW Code:
TP103-0.30 - 1.00-12/09/2024	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30 - 1.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
5.4%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 5.4% Wet Weight Moisture Correction applied (MC)

#		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							
1		arsenic { arsenic trioxide }				3 mg/kg	1.32	3.747 mg/kg	0.000375 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
2		cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
		048-002-00-0	215-146-2	1306-19-0							
3		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				7 mg/kg	1.462	9.678 mg/kg	0.000968 %	✓	
			215-160-9	1308-38-9							
4		copper { dicopper oxide; copper (I) oxide }				7 mg/kg	1.126	7.456 mg/kg	0.000746 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
5		mercury { mercury dichloride }				<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
6		nickel { nickel(II) oxide (nickel monoxide) }				9 mg/kg	1.273	10.835 mg/kg	0.00108 %	✓	
		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		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	6 mg/kg		5.676 mg/kg	0.000568 %	✓	
		082-001-00-6									
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<2 mg/kg	1.405	<2.81 mg/kg	<0.000281 %		<LOD
		034-002-00-8									
9		vanadium { divanadium pentaoxide; vanadium pentoxide }				8 mg/kg	1.785	13.51 mg/kg	0.00135 %	✓	
		023-001-00-8	215-239-8	1314-62-1							
10		zinc { zinc oxide }				27 mg/kg	1.245	31.792 mg/kg	0.00318 %	✓	
		030-013-00-7	215-222-5	1314-13-2							
11		chromium in chromium(VI) compounds { chromium(VI) oxide }				<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %		<LOD
		024-001-00-0	215-607-8	1333-82-0							
12		boron { diboron trioxide }				<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<LOD
		005-008-00-8	215-125-8	1303-86-2							
13		TPH (C6 to C40) petroleum group				<42 mg/kg		<42 mg/kg	<0.0042 %		<LOD
				TPH							

#	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 603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
15	benzene 601-020-00-8	200-753-7	71-43-2		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %			<LOD
16	toluene 601-021-00-3	203-625-9	108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
17	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %			<LOD
18	xylene 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]		<0.004 mg/kg		<0.004 mg/kg	<0.0000004 %			<LOD
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 } 006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
20	pH PH				7.7 pH		7.7 pH	7.7 pH			
21	naphthalene 601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
22	acenaphthylene 205-917-1	208-96-8			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
23	acenaphthene 201-469-6	83-32-9			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
24	fluorene 201-695-5	86-73-7			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
25	phenanthrene 201-581-5	85-01-8			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
26	anthracene 204-371-1	120-12-7			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
27	fluoranthene 205-912-4	206-44-0			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
28	pyrene 204-927-3	129-00-0			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
29	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
30	chrysene 601-048-00-0	205-923-4	218-01-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
31	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
32	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
33	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
34	indeno[123-cd]pyrene 205-893-2	193-39-5			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
35	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
36	benzo[ghi]perylene 205-883-8	191-24-2			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
37	monohydric phenols P1186				<2 mg/kg		<2 mg/kg	<0.0002 %			<LOD
Total:									0.0142 %		

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 Determinand - 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: TP104-0.20 - 1.00-12/09/2024

 **Hazardous Waste**
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:	LoW Code:	
TP104-0.20 - 1.00-12/09/2024	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
0.20 - 1.00 m		
Moisture content:		
6.5%		
(wet weight correction)		

Hazard properties

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.164%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.164%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.164%)

Determinands

Moisture content: 6.5% Wet Weight Moisture Correction applied (MC)

#	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							
1	arsenic { arsenic trioxide }				5 mg/kg	1.32	6.173 mg/kg	0.000617 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.32 mg/kg	0.000032 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				9 mg/kg	1.462	12.299 mg/kg	0.00123 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				9 mg/kg	1.126	9.474 mg/kg	0.000947 %	✓	
	029-002-00-X	215-270-7	1317-39-1							

#	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								
5	mercury { mercury dichloride }				<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel(II) oxide (nickel monoxide) }				8 mg/kg	1.273	9.519 mg/kg	0.000952 %	✓		
	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	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	26 mg/kg		24.31 mg/kg	0.00243 %	✓		
	082-001-00-6										
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<2 mg/kg	1.405	<2.81 mg/kg	<0.000281 %			<LOD
	034-002-00-8										
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				14 mg/kg	1.785	23.368 mg/kg	0.00234 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
10	zinc { zinc oxide }				36 mg/kg	1.245	41.897 mg/kg	0.00419 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<2 mg/kg	1.923	<3.846 mg/kg	<0.000385 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
12	boron { diboron trioxide }				<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %			<LOD
	005-008-00-8	215-125-8	1303-86-2								
13	TPH (C6 to C40) petroleum group				1759 mg/kg		1644.665 mg/kg	0.164 %	✓		
			TPH								
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				9.8 pH		9.8 pH	9.8 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				0.16 mg/kg		0.15 mg/kg	0.000015 %	✓		
		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				3.79 mg/kg		3.544 mg/kg	0.000354 %	✓		
		201-581-5	85-01-8								
26	anthracene				0.57 mg/kg		0.533 mg/kg	0.0000533 %	✓		
		204-371-1	120-12-7								
27	fluoranthene				5.21 mg/kg		4.871 mg/kg	0.000487 %	✓		
		205-912-4	206-44-0								
28	pyrene				4.5 mg/kg		4.208 mg/kg	0.000421 %	✓		
		204-927-3	129-00-0								

#	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							
29	benzo[a]anthracene				3.36 mg/kg		3.142 mg/kg	0.000314 %	✓	
	601-033-00-9	200-280-6	56-55-3							
30	chrysene				2.74 mg/kg		2.562 mg/kg	0.000256 %	✓	
	601-048-00-0	205-923-4	218-01-9							
31	benzo[b]fluoranthene				2.56 mg/kg		2.394 mg/kg	0.000239 %	✓	
	601-034-00-4	205-911-9	205-99-2							
32	benzo[k]fluoranthene				1.08 mg/kg		1.01 mg/kg	0.000101 %	✓	
	601-036-00-5	205-916-6	207-08-9							
33	benzo[a]pyrene; benzo[def]chrysene				2.97 mg/kg		2.777 mg/kg	0.000278 %	✓	
	601-032-00-3	200-028-5	50-32-8							
34	indeno[123-cd]pyrene				1.42 mg/kg		1.328 mg/kg	0.000133 %	✓	
		205-893-2	193-39-5							
35	dibenz[a,h]anthracene				0.43 mg/kg		0.402 mg/kg	0.0000402 %	✓	
	601-041-00-2	200-181-8	53-70-3							
36	benzo[ghi]perylene				1.55 mg/kg		1.449 mg/kg	0.000145 %	✓	
		205-883-8	191-24-2							
37	polychlorobiphenyls; PCB				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
38	monohydric phenols				<2 mg/kg		<2 mg/kg	<0.0002 %		<LOD
			P1186							
Total:								0.182 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - 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

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C"

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%) because: Concentrations at less than 1.0% are "unlikely to be flammable". Flammability of soils is unlikely to result in a hazardous classification in soils (AGS Waste Classification – A Practitioner's Guide).

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.164%)

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

• TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

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

• 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

■ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

GB MCL index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **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 chromium(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 sulposelenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulposelenide 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 chromium(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: 2024.271.6257.11459 (29 Sep 2024)

HazWasteOnline Database: 2024.271.6257.11459 (29 Sep 2024)

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

Appendix G – References

- ¹ Building Research Establishment (BRE), June 2005, "Concrete in Aggressive Ground", SD1.
- ³ 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.
- ⁴ The British Standards Institution (BSI Standards), May 2020, "Code of practice for ground investigations", BS 5930:2015+A1:2020.
- ⁵ Environment Agency, 2000, "Technical Aspects of Site Investigation", Technical Report P5-065/TR, Volumes I and II, Text Supplements.
- ⁶ CIRIA, December 2007, "Assessing risks posed by hazardous ground gases to buildings", C665.
- ⁷ 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.
- ⁸ Highways England, 1998, "Specification for Highway Works. Site clearance", Volume 1, Series 200.
- ¹⁰ J. Burland, T. Chapman, H. Skinner and M. Brown, February 2012, "ICE Manual of Geotechnical Engineering", Chapter 54, Single Piles.
- ¹¹ CIRIA, 2001, "Trenching practice", REP R 97, 2nd Edition.
- ¹³ Environment Agency, October 2020, "Land contamination risk management (LCRM). How to assess and manage the risks from land contamination".
- ¹⁴ DEFRA, December 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Policy Companion Document.
- ¹⁵ CL:AIRE, September 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Final Project Report (Revision 2).
- ¹⁶ Environment Agency, January 2009, "Updated technical background to the CLEA model", Science Report SC050021/SR3.
- ¹⁷ Environment Agency, January 2009, "Human health toxicological assessment of contaminants in soil", Science Report - Final SC050021/SR2.
- ¹⁸ 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.
- ¹⁹ Environment Agency, November 2008, "Compilation of data for priority organic pollutants for derivation of Soil Guideline Values", Science Report SC050021/SR7.
- ²⁰ Environment Agency, September 2009, "CLEA Software (Version 1.05) Handbook", Science Report SC050021/SR4.
- ²¹ Environment Agency, April 2002, "Contaminants in soils: collation of toxicological data and intake values for humans. Benzo(a)pyrene", TOX2.
- ²² U.S. Environmental Protection Agency, September 1984, "Health Effects Assessment for Polycyclic Aromatic Hydrocarbons (PAHs)", EPA/540/1-86/013.
- ²³ Environment Agency, September 2003, "Review of the Fate and Transport of Selected Contaminants in the Soil Environment", Draft Technical Report P5-079/TR1.
- ²⁴ CL:AIRE, September 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Final Project Report (Revision 2).
- ²⁵ Public Health England, September 2017, "Contaminated land information sheet: risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs)".
- ²⁶ 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.
- ²⁹ Building Research Establishment (BRE), June 2005, "Concrete in Aggressive Ground", SD1.
- ³⁰ Environment Agency, April 2021, "Land contamination risk management (LCRM). Stage 3 remediation and verification".
- ³¹ The British Standards Institution (BSI), December 2017, "Investigation of potentially contaminated sites. Code of practice - Code of practice", BS 10175:2011+A2:2017.
- ³² The British Standards Institution (BSI), May 2020, "Code of practice for ground investigations", BS 5930:2015+A1:2020.
- ³³ CIRIA, December 2007, "Assessing risks posed by hazardous ground gases to buildings", C665.
- ³⁴ CL:AIRE, November 2012, "A Pragmatic Approach to Ground Gas Risk Assessment", RB 17.
- ³⁵ The British Standards Institution (BSI), January 2019, "Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings", BS 8485:2015+A1:2019.
- ³⁶ 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



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