COLLYHURST SOUTH MANCHESTER

PHASE 2 ENVIRONMENTAL INVESTIGATION, RISK ASSESSMENT AND REMEDIATION STRATEGY

Job Number: LKC 20 1673
Date: May 2023
Client: Far East Consortium International Ltd



INCREASING LAND VALUE

LK GROUP

LK Consult

Document Verification

Site Address	Land bound by Kingsfold Avenue, Whitley Road and Winscombe Drive, Collyhurst, Manchester, M40 7PF		
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R1	04/05/23	Update to remedial strategy based on Manchester City Council comments.	[redacted]

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EXECUTIVE SUMMARY

Site Details

Site Location:	Land bound by Kingsfold Avenue, Whitley Road and Winscombe Drive, Collyhurst, Manchester, Collyhurst, Manchester. Centred at approximate National Grid Reference 385380E, 399710N.
Site Area:	3,500m^2.
Current Land Use:	The site is currently vacant, grass covered and divided into two main parcels of land (east and west), separated by a footpath running through the centre of the site.
Proposed Development:	Residential end use including car parking and soft landscaping.
Purpose of Report:	Contamination Assessment.

Preliminary Risk Assessment

PRA Details:	Undertaken by LKC in August 2021. Ref: LKC 20 1673.
History:	Brick fields, terraced housing (1891-1966), residential low rise apartment blocks (1968-2016). Surrounding area – brick fields, works, railway, colliery, potentially infilled features.
Geology / Hydrogeology:	Glacial Till (Secondary Undifferentiated Aquifer) over Pennine Upper Coal Measures, (Secondary A Aquifer).
Mining:	Within DHRA. Separate Coal Mining Investigation Report undertaken.
Relevant Environmental Setting:	No pollution incidents recorded on site, nearest 141m NE (Category 3, 1996). No surface water or groundwater abstractions within 250m. Not within Source Protection Zone.
Preliminary Conceptual Model: PL=Pollutant Linkage	PL1 Direct Contact (Human Health): Moderate Risk (asbestos, metals, PAHs, PCBs), **Moderate** / Low Risk (hydrocarbons, organic / inorganic contaminants), PL2 Inhalation of Vapours: **Moderate** / Low Risk (volatile contaminants). PL3 Gas: High Risk (hazardous gas). PL4 Controlled waters: **Moderate** / Low Risk (mobile contaminants). PL5 Sulphate Attack: **Moderate** / Low Risk (sulphate). PL6 Water Pipelines: **Moderate** / Low Risk (organic contaminants). PL7 Phytotoxic: Low Risk (metals).
Recommendations:	Site Investigation was recommended to further assess all the above pollutant linkages.

Ground Investigation Work Undertaken

Date of Investigation:	23rd February-2nd March 2021.
Intrusive Investigation Work Undertaken:	5no. window sample boreholes (WS101-WS106). 7no. mechanically excavated trial pits (TP101-TP107). 5no. mechanically excavated trial trenches (TR101-TR110). 3no. Soakaway Tests (SA101-SA103). 2no. Cable Percussion boreholes (BH1-BH2). 4no. Rotary boreholes (RBH1-RBH4).
Monitoring Wells:	Installed in WS101-WS105 & BH1-2.
Soil Sampling:	9no. samples tested for metals, speciated PAHs, pH, sulphate, asbestos and SOM. 4no. samples tested for metals, speciated PAHs, cyanide, pH, sulphate, asbestos, phenol, TPHCWG, BTEX, VOCs, SVOCs, PCBs and SOM. 4no. samples tested for Waste Acceptance Criteria.
Groundwater Sampling:	6no groundwater samples tested for metals, speciated PAHs, cyanide, pH, sulphate, hardness, phenol, TPHCWG, BTEX.
Monitoring:	6no. gas monitoring visits over 3 months.
Insitu and Laboratory Geotechnical Testing:	In-situ testing (SPTs, hand shear vanes, pocket penetrometers DCPs, Soakaway tests). Laboratory Testing: Soil (Moisture Content, Particle Size Distributions, Liquid and Plastic Limits, Determination of Density, Oedometer, Single Stage Undrained Triaxial). Presented in a separate Geotechnical Report.

Contamination Risk Assessment and Summary

The table below shows a summary of the risk assessments undertaken for each pollutant linkage, the revised conceptual model and recommendation for either remediation and / or further investigation.

Pollutant Linkage		Risk	Recommendations
1	Contaminants posing a risk to site users future residents, site users via dermal contact, ingestion and inhalation (of soil, dust, fibres and vegetables).	**Moderate** (metals, PAHs) **Residential with private gardens**	- Remediation required. Likely to include an environmental cover system in gardens / soft landscaping areas where residential houses are present.
		Moderate / **Low** (ACM) **Residential with private gardens**	- No specific remediation for ACMs in residential with gardens area, but environmental capping layer will be placed in all gardens.
		Low (hydrocarbons) **Residential with private gardens**	- No specific remediation for hydrocarbons in residential with gardens area.
		Low (metals, PAHs, ACM, hydrocarbons) **Apartment Block**	- Nominal 150mm topsoil layer in shared soft landscaping within apartment block area.
2	Volatile contaminants posing a risk to site users future site users via the inhalation of vapours.	**Low**	- No remediation required.
3	Gas posing a risk to buildings and site users buildings and site users via the migration of gas into building causing explosion and asphyxiation.	Moderate **/ Low**	- No gas protection measures required.
4	Mobile contamination posing a risk to controlled waters via the migration through permeable strata.	Low	- No remediation required.
5	Sulphate posing a risk to building via direct contact (sulphate attack).	- Assessed in geotechnical report. Concrete classification of DS-1 AC-1s.	
7	Phytotoxic metals posing a risk to flora via root uptake.	**Very Low**	- Remediation associated with PL1 should be sufficient.

Waste Classification

The results of soil testing and a HazWaste Online assessment show that all the samples tested are classified as **NON-HAZARDOUS WASTE** and LoW code “17-05-04 - soil and stones other than those mentioned in 17 05 03” is suitable.

Soakaways

Soakaway tests failed in the clay onsite, therefore, soakaways are unlikely to be feasible for this site.

Recommendations and Remedial Strategy

The table below shows the remediation and validation requirements for the site. This information should be documented in a Site Completion Report for submission to the local authority.

Phase	PL	Remediation Requirements	Validation Requirements
Pre-Construction	**ALL**	Earthworks Inspections / Unexpected Contamination The relevant contractors should be briefed that during development works at the site should any unusual ground conditions and / or visual or olfactory evidence of contamination (including asbestos containing material) be encountered at the site, LKC and the Local Authority should be informed, and further assessment of the material may be required. Material should be stockpiled and quarantined on visqueen and covered.	Log of work undertaken including photographs. Details of any sampling undertaken and validation of any potential additional remedial work.
On / Post--Construction	**1 and 7**	Environmental Cover System As made ground is relatively deep, it is unlikely to be viable to remove the contaminated soils. Therefore, an environmental cover system is recommended. The environmental cover system should be as follows: **Private Front and Back Gardens: 600mm thick environmental cover system comprising:** **Either** 100mm physical break layer (MOT type 1 material, 20-30mm, minimal fines) and at least 500mm comprising clean inert fill and sufficient topsoil for a growing medium. **Or** geotextile membrane and at least 600mm comprising clean inert fill and sufficient topsoil for a growing medium. **Landscaping Around Apartment Block** Topsoil Growing Medium Although no contamination were at levels or in a matrix that could significantly harm key receptors in areas of landscaping around the apartment blocks, the existing made ground is not expected to be a suitable growing medium given the nature of the soil and the undesirable material present (ash and brick). A minimal topsoil cover of approximately 150mm is recommended	Measuring depth of environmental cover system using a staff and providing photographic evidence. Photographic evidence of the granular physical break or geotextile layer will also be collected. Chemical validation of imported soils: See Table 8-2.
	5	Sulphate Resistant Concrete Sulphate Resistant Concrete in line with DS-1 AC-1s may be required in localised areas.	N/A
	6	Potable Water Pipes It is recommended that a United Utilities Risk Assessment is undertaken once the location and depth of potable water pipes are known. It is likely that barrier pipe will be required.	Delivery Notes of Pipe Material. Photographs of the Installed Pipe.

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

The remediation recommended in the table above should be validated to ensure it has been carried out appropriately. This should be documented in a Completion/Validation Report and submitted to the local authority for completion.

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1 Introduction

1.1 Background

LK Consult Ltd (LKC) has been commissioned by Far East Consortium International Limited to carry out a Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy for the site at Collyhurst South, Manchester. The investigation was undertaken in support of a future planning application to develop the site for residential use.

The following work has previously been undertaken:

- Preliminary Risk Assessment and Coal Mining Risk Assessment (PRA/CMRA) report, undertaken by LKC (Ref: LKC 20 1673, dated January 2021).

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

The geotechnical assessment and coal mining risk assessment investigation will be reported under separate cover and will not be discussed in this report.

The aims of this report are also to establish the feasibility of developing this site, to demonstrate to the Local Planning Authority that in accordance with the National Planning Policy Framework (NPPF)[1] the site may be developed for a residential end use and that appropriate site investigation and risk assessment works are in place to allow conditional approval of any future planning application.

1.2 Site Details

A summary of the site details is presented in Table 1-1. Figures 1 and 2 indicate the site location and boundary. Figure 3 indicates the proposed development.

Location	Land bound by Kingsfold Avenue, Whitley Road and Winscombe Drive, Collyhurst, Manchester, Collyhurst, Manchester. Centred at approximate National Grid Reference 385380E, 399710N.
Area	3,500m^2.
Topography	Approximately 59 metres Above Ordnance Datum (AOD). The site is approximately level.
Land Use	Site The site is currently vacant, grass covered and divided into two main parcels of land (east and west), separated by a footpath running through the centre of the site. Surrounding Area Northeast: Whitley Road and vacant land. Southeast: Winscombe Drive, vacant land and railway line beyond. Southwest: Play area and sports court. Northwest: Kingsfold Avenue and residential properties.
Proposed Development	Residential end use with car parking and soft landscaping.

Table 1-1. Summary of site details.

[1] DCL (2019). "National Planning Policy Framework." Department of Communities and Local Government.

2 Previous Work

2.1 Summary of Existing Information

A PRA report (Ref: CL-602-LKC 20 1673-01, dated January 2021) has previously been undertaken by LKC and is summarised in Section 2.2-2.6.

2.2 Site History

The site history is summarised in Table 2-1.

Site Features	Location	Map Dates Present	Comments
Brick Fields	Whole Site	1848-1850	- Site forms part of a wider area annotated as 'brick fields'. - No longer annotated by 1891, potentially infilled feature.
Rows of residential terraces	NW & SE	1891-1966	- No terraces annotated by 1968 mapping.
Road	Centre	1891-1966	- Annotated as 'Francisco Street'. - Orientated in an approximately NE-SW direction across site. - No longer annotated by 1968 mapping.
Residential properties	NE, SW	1968-2016	- Aerial Photograph and Google Street View shows low rise residential apartment blocks. - All properties demolished by 2020 mapping.
Vacant Site	Whole Site	2020-present	
Surrounding Area Features	**Distance / Location**	**Map Dates Present**	**Comments**
Brick Fields	Adj to N	1848-1850	- Large area annotated as 'brick fields'. - No longer annotated by 1891 mapping. - Potentially infilled feature.
Iron Works / Engineering Works / Warehouse	Adj to W	1891-1968	- Annotated as 'Vauxhall Iron Works' on 1981 mapping. - Associated chimney (10m SW) between 1891-1893 mapping. - Annotated as 'Vauxhall Engineering Works' from 1908-1922 mapping. - Replaced by warehouse from 1949 mapping. - No longer annotated by 1877 mapping.
Engineering Works	30m SE	1891-1977	- Footprint of building present and unchanged from 1891 mapping, however unreferenced until 1908 mapping. - No longer annotated by 1985 mapping, building demolished.
Works	45m E	1891-1922	- Annotated as 'Globe Works (Machine)' on 1891 mapping.
Railway	20m SE	1848-present	- With associated sidings and embankments.
Workshop	45m SE	1848-1850	- Associated with railway. - No longer annotated by 1891 mapping.
Colliery	40m W	1849-1850	- Annotated as 'St George's Colliery'.

			- With associated engine house and 2no. coal pits.
Pond	175m NW	1848-1848	- No longer annotated by 1891 mapping. - Potentially infilled feature.
Pond	215m W	1848-1848	- No longer annotated by 1891 mapping. - Potentially infilled feature.
Moss Brook	220m NW	1848-1850	- No longer annotated by 1891 mapping. - Potentially infilled feature.
Pond	230m NW	1848-1848	- No longer annotated by 1891 mapping. - Potentially infilled feature.
Quarry	250m NW	1891-1894	- No longer annotated by 1908 mapping. - Potentially infilled feature
Colliery	40m W	1849-1850	- Annotated as 'St George's Colliery'. - With associated engine house and 2no. coal pits.

Table 2-1: Summary of significant historical features.

2.3 Environmental Setting

The environmental setting is summarised in Table 2-2.

Categories			Details
Geology	Artificial[1]		- No artificial ground is recorded onsite on 1:50,000 geological maps. - Infilled Ground is recorded across the majority of the site according to 1:10,000 geological maps, except across an area in the south west of site.
	Superficial[1]		- Till, Devensian.
	Bedrock[1,2]		- Pennine Upper Coal Measures Formation (Mudstone, Siltstone and Sandstone). - Bedrock is discussed in further detail in Section 7.
	BGS Logs[3]		- BH Ref: SJ89NE49, 164m W: made ground to 0.38mbgl, silty clay to 6.10mbgl, stiff brown clay with sand to 8.23m, hard boulder clay to 9.30mbgl, loamy sand to 9.60mbgl, hard boulder clay to 14.10mbgl, sand to 14.31mbgl, red sandstone to >19.20mbgl.
Hydro-geology[1]	Aquifer Designation	Superficial	- Secondary (Undifferentiated) Aquifer.
		Bedrock	- Secondary A Aquifer.
	Source Protection Zone (SPZ)		- Site is not within an SPZ.
	Groundwater Abstractions		- None within 250m.
Hydrology[1]	Nearest Surface Water		- 283m NW, River Irk. Flowing SSW.
	Water Quality Data		- 401m NW, River Irk – River Quality E.
	Flooding		- No risk from rivers or sea. - Limited potential for groundwater flooding to occur.
	Surface Water Abstractions		- None within 250m.
	Discharge Consents		- None with 250m. Nearest 267m NW: Operated by 'United Utilities Water Limited'. Consent to discharge public sewage (storm sewage overflow) into River Irk. Consent revoked or revised.
	Pollution Incidents		- None within 250m. Nearest 173m NW: 5th March 1996, Category 3 (Minor Incident) involving the release of crude sewage into Moston Brook.
Minerals & Mining[1,4,5]	Coal Mining		- Within a Coal Reporting Area. - Within Development High Risk Area. See Section 7.

	Surface Mineral Extractions (250m)	- 2no. within 250m. Nearest 52m N: 'Collyhurst Brickfield', opencast extraction of clay. Operations have ceased.
	Cheshire Brine Compensation District	- Not within Compensation District. - Not within Consultation Area.
	Non-Coal Mining Area	- Not within an area of conclusive metalliferous mining.
Ground Stability (onsite)[1]	Collapsible Ground	- Very low hazard.
	Compressible Ground	- No hazard.
	Ground Dissolution	- No hazard.
	Landslide	- Very low hazard.
	Running Sand	- Very low hazard.
	Shrinking / Swelling Clay	- Very low hazard.
	Surface Extractions[1]	- 2 within 250m. Nearest 52m N: 'Collyhurst Brickfield', opencast extraction of clay. Operations have ceased.
Landfill Sites[1]	Known / Registered	- 1 within 250m: 160m NW– 'Land at Fitzgeorge Street'. No data supplied.
	Potential	- 6 within 250m: - Brick field across majority of site and adjacent to north of site, potentially infilled by 1891 mapping. - Onsite recorded infilled ground, date of infilled unknown (potentially associated with brick field). - 3no. ponds 175-235m, potentially infilled by 1891 mapping. - Moss Brook 220m, potentially infilled by 1891 mapping.
Radon[1]		- Probability of <1% of homes above Action Level. No further action required.
Designated Sites[1]		- Nitrate Vulnerable Zone on site.
Contemporary Trade Directory[1]		- One within 50m. - 43m W: 'Hindle' – Printers. Currently inactive.
Fuel Station Entries[1]		- None within 100m. Nearest 225m SE: 'Impact Services Ltd'. Currently obsolete.
Unexploded Bomb Risk (UXO)[7]		- Moderate. - A Pre-Desk Study Assessment has been undertaken by Zetica which has concluded that, while prudent, a detailed desk study is not considered necessary.

Table 2-2: Summary of the environmental setting.

2.4 Site Reconnaissance

A site reconnaissance was carried out on 13th January 2021. Hand dug trial holes were undertaken in accessible areas to confirm the shallow ground conditions.

Relevant features identified on site are summarised below:

- The site is divided into two main areas.; an eastern and western parcel of land.
- A hardstanding footpath running in a northwest-southeast direction cross the centre divides the site into an eastern and western parcel of land.
- Both parcels of land currently vacant, and grass covered. The grass appears to be maintained.
- A small area of hardstanding (flags) is present in the northwest corner.
- The parcels of land are bordered by 0.70m high wooden panelled fencing, which would need to be partially removed to allow access for site investigation.

An earth mound has been placed along the perimeter of site in the east and south of eastern parcel of land on the inside of the fencing. An earth mound has been placed on the entrance to the Winscombe Drive to the southeast of site, which limits access to the parcels of land from the south.

- Concrete bollards are present at the entrance to Kingsford Avenue (northern corner of site), with a gap of approximately 1.20m width between them.
- Concrete bollards are also present in the south leading onto Winscombe Drive.
- Man hole covers are present along the footpath in the centre of site.
- Hand dug trial holes identified very sandy gravelly silty clay with abundant brick and rare ash and coal fragments to 0.30mbgl. Hand dig trial holes could not be penetrated deeper due to the presence of abundant brick.
- The site is relatively flat, and level with the surrounding area.

The surrounding area comprises:

- Northeast: Whitley Road and vacant land.
- Southeast: Winscombe Drive, vacant land and railway line beyond.
- Southwest: Play area and sports court.

2.5 Contamination Sources / Pathways and Receptors

Potential contamination sources are detailed in Table 2-3.

Source	Contaminants
Onsite former buildings	- Asbestos Containing Material (ACM). - Potentially present in made ground following demolition of former buildings and potential for backfilled basements.
Onsite made ground (general made ground infilled ground, former brick fields, possible infilled basements)	- Ash and clinker (e.g. from hearths and boilers, often historically used for site raising / levelling): Heavy metals, sulphates and PAHs. - Other unknown inorganic / organic contaminants (dependant on fill material source). - If significant depth of organic / putrescible material: Hazardous gas (principally carbon dioxide and methane).
Onsite former roads	- Bitumen and road planings.
Offsite former adjacent iron / engineering works[2]	- Typical contaminants may include heavy metals, organic and inorganic compounds, ACM, hydrocarbons, sulphates. Unlikely to significantly impact the site.
Offsite potentially infilled ground (brick field, coal pits, ponds, infilled ground, landfills) within 250m of site	- Hazardous gas (principally carbon dioxide and methane).
Underlying Pennine Upper Coal Measures	- Ground Gas (principally carbon dioxide and methane). - Probable shallow workings identified.
Surrounding offsite industries (colliery, workshop)	- Metals, inorganic compounds and organic compounds. - Not expected to be as significant as sources already identified on site and immediately adjacent.

Table 2-3: Potential contamination sources

Potential receptors are detailed in Table 2-4.

[2] Department of the Environment. Industry Profile. Metal Manufacturing, Refining and Finishing Works: Iron and Steel Works. 1995.

Receptors	
Human Health	- Future site users (including residents, visitors and site workers). - Offsite land users.
Controlled Waters	- Secondary A Aquifer (bedrock) and Secondary Undifferentiated Aquifer (superficial). - River Irk 248m NW is not considered to be a significant receptor given the distance from the site.
Buildings and structures.	
Potable water pipes.	
Flora within future gardens and landscaping.	

Table 2-4: Potential receptors

Potential pathways are detailed in Table 2-5.

Pathways		
Soil	Human Health[3] (residential land use: houses with private gardens and residential apartments)	- Ingestion of soil. - Ingestion of soil-derived indoor dust. - Ingestion of contaminated vegetables (gardens only). - Ingestion of soil attached to vegetables (gardens only). - Dermal contact with soil. - Dermal contact with soil-derived indoor dust. - Inhalation of soil-derived outdoor dust. - Inhalation of soil-derived indoor dust. - Inhalation of vapours outside. - Inhalation of vapours inside.
	- Windblown dust and fibres to adjacent receptors.	
	- Direct contact with receptors (building foundations, services).	
	- Root uptake.	
Water	- Surface run-off over impermeable surface.	
	- Infiltration into the ground, through potentially contaminated material (contamination possibly going into solution).	
	- Migration through potentially permeable strata and preferential pathways. - Superficial (Till) likely to be low permeability. - Bedrock (mudstone, siltstone, sandstone) likely to variably permeable. - Preferential pathways: services, possible shallow worked coal seams.	
Gas	- Migration through potentially permeable strata and preferential pathways. - Superficial (Till) likely to be low permeability. - Bedrock (mudstone, siltstone, sandstone) likely to variably permeable. - Preferential pathways: services, possible shallow worked coal seams.	
	- Migration into buildings (e.g. via services) and accumulation of gases in confined spaces (potentially causing explosion if methane is present).	

Table 2-5: Potential pathways

2.6 LKC Preliminary Contamination Conceptual Model

The preliminary contamination conceptual model using contaminant-pathway-receptor linkages based on guidance in LCRM[4] has been summarised in Table 2-6.

The aim of the conceptual model is to provide a preliminary assessment of the likelihood of a pollutant linkage for each potential combination of contaminant, pathway and receptor. A conceptual model can be used to make an informed decision on the

[3] EA (2008). "Updated Technical Background to the CLEA Model". Science Report – SC050021/SR3.
[4] Land Contamination Risk Management (LCRM) https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm

contamination risks associated with the site and determine what site investigation work is required.

The preliminary contamination conceptual model has identified seven generic potential pollutant linkages. Each linkage is described along with an assessment of the risk based upon guidance on probabilities and consequences outlined in CIRIA C552[5].

In order to assess the potential risk for each pollutant linkage, an assessment of the magnitude of the potential consequence (severity) of the risk occurring and the magnitude of the probability (likelihood) of the risk occurring has been considered and classified. This is based on the guidance provided in CIRIA C552 and further details including a risk matrix is provided in Appendix A.

Where LKC identified a low to very low risk, limited intrusive investigation work, a watching brief (during construction work) or no investigation work will be recommended. This will be dependent on the nature of the site and the proposed development.

Where the risk falls into the moderate/low risk, LKC will undertake an assessment to establish what category the pollutant linkage will fall into (i.e. moderate or low risk will be chosen).

Where LKC identifies a moderate or higher risk, intrusive work or precautionary remedial measures will be recommended.

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

It should be noted that there may be risk from short term exposure from contaminated soil to site workers during development work. The Preliminary Contamination Conceptual Model deals with long term exposure to key receptors associated with the future use of the site. Acute risks can be easily mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE guidance[6]) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

2.7 Recommendations

Based upon the Preliminary Contamination Conceptual Model a site investigation was recommended to assess the potential pollutant linkages further.

[5] CIRIA (2001). “Contaminated land risk assessment: A guide to good practice”. C552.
[6] HSE (1991). “Protection of Workers and the General Public During Development of Contaminated Land” London HMSO.

Pollutant Linkage	Pathway	Receptor	Contaminant (source)	Probability	Consequence	Risk	Assessment & Recommendations
PL1	- Dermal contact. - Inhalation of soil, fibres and dust. - Ingestion of soils, dust, vegetables, soil attached to vegetables. - Windblown dust.	- Future site users. - Offsite receptors.	- ACM (former buildings, potentially in made ground). - Heavy metals, PAHs (made ground, former roads, adjacent former iron/engineering works).	Likely	Medium	**Moderate**	- ACM likely given history of site and date of demolition of former structures. - Heavy metals and PAHs considered likely given site history, and potential pathway to receptors in gardens / landscaping. - **Recommendation**: Intrusive investigation required to include soil samples.
			- Petroleum Hydrocarbons and other organic / inorganic contaminants (made ground, infilled ground, former roads, adjacent former iron/engineering works)	Low Likelihood	Medium	**Moderate /** Low	- Low likelihood of hydrocarbons and other organic and inorganic contaminants given site history as limited potential infilling identified on site and no specific on site source anticipated. Possible exception is the W close to former offsite iron works / engineering works. - Moderate risk assumed at this stage (possible localised hotspots). - **Recommendation**: Intrusive investigation required. No testing required unless evidence of hydrocarbon contaminants identified in the ground.
PL2	- Inhalation of vapours. - Migration through permeable strata and preferential pathways.	- Future site users. - Offsite receptors.	- Volatile contaminants such as hydrocarbons, solvents, (made ground, made ground, former roads, infilled ground, adjacent former iron/engineering works).	Low Likelihood	Medium	**Moderate /** Low	- Low likelihood as no anticipated significant sources identified on site. - Moderate risk assumed due unknown largely composition / depth of made ground and due to sensitive nature of development (residential). Migration of volatile contaminants from adjacent offsite sources may occur. - **Recommendation**: Intrusive investigation required. Sampling required if evidence of volatile contamination identified.
PL3	- Inhalation of gas. - Migration through permeable strata and preferential pathways. - Explosion in confined spaces.	- Future site users. - Buildings. - Offsite land users.	- Ground gas: - Methane, carbon dioxide (coal measures) - Hazardous Gas: - Methane, carbon dioxide (potentially infilled features 250m of the site).	Likely	Severe	**High**	- Hazardous gas likely due to infilled ground recorded on site, and viable sources of hazardous gas within 250m. - Ground gas considered likely due to underlying geology and recorded shallow coal workings beneath site. - High risk considered appropriate given sensitive nature of development (residential). - **Recommendation**: Gas monitoring required.
PL4	- Surface run-off. - Migration through permeable strata and preferential pathways. - Perched waters migration.	- Groundwater (Secondary A and Secondary Undifferentiated Aquifer). - Surface water (No significant receptor).	- Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds (made ground, infilled ground, former road, adjacent engineering / iron works).	Low	Medium	**Moderate /** Low	- Low likelihood as limited sources of mobile contamination identified on site. - Moderate risk assumed due unknown composition / depth of made ground, and due to sensitive nature of development (residential). Migration of mobile contaminants from identified offsite sources to south and west of site of site may occur. - **Recommendation:** Intrusive investigation required. Groundwater sampling required.

Table 2-6: Preliminary Contamination Conceptual Model.

Pollutant Linkage	Pathway	Receptor	Contaminant (source)	Probability	Consequence	Risk	Assessment & Recommendations
PL5	- Sulphate attack on concrete.	- Building structure.	- Sulphate (ash potentially in made ground).	Likely	Mild	**Moderate /** Low	- Likely as ash potentially in made ground given site history, which may be in contact with concrete used in future buildings. - Moderate risk assumed at this stage. - **Recommendation**: Intrusive investigation required as part of PL1.
PL6	- Ingestion of tainted water supply.	- Future site users. - Water pipes.	- Organic contaminants such as hydrocarbons, solvents (made ground, infilled ground, foam road, adjacent engineering / iron works).	Low	Medium	**Moderate /** Low	- Low likelihood as significant contamination not anticipated at pipeline depth (0.75-1.35m). - Risk is considered moderate at this stage due to unknown depth of made ground. - **Recommendation**: Sampling required if made ground present at pipeline installation depths.
PL7	- Direct contact (plant uptake).	- Flora.	- Phytotoxic contaminants (made ground).	Likely	Minor	**Low**	- Likely as contamination considered possible given site history, which may be taken up by flora in soft landscaping / gardens. - **Recommendation**: Investigation work as part of PL1.

Table 2-6 Continued: Preliminary Contamination Conceptual Model.

3 Ground Investigation

3.1 Site Investigation Design and Methodology

In order to assess the ground conditions at the site and to investigate the potential pollutant linkages identified in the preliminary contamination conceptual model an intrusive investigation was undertaken.

The investigation was carried out on between 23rd February and 2nd March 2021 and comprised the following:

- 5no. window sample boreholes drilled to 5.45 metres below ground level (mbgl) (ref. WS101 to WS105).
- 2no. cable percussion boreholes drilled to 11.2-13.3mbgl (ref. BH1 to BH2).
- 7no. trial pits (using JCB 3CX) excavated to 2.3-3.0mbgl (ref. TP101 to TP107).
- 5no. trenches (using JCB 3CX) excavated to max. 3mbgl (ref. TR101 to TR105) to investigation possible remnant foundations.
- 3no. soakaway tests (undertaken in TP102, TP104 and TP106).
- 4no. rotary boreholes drilled to 40mbgl (ref. RBH1 to RBH4).

All site investigation locations are shown in Figure 4.

The locations were chosen to allow a good spread across the site as well as target areas of concern. Table 3-1 details the targeted and general coverage (non-targeted) site investigation locations.

Site Investigation Locations	Rationale
TR101-105	Area of historical maisonette buildings to investigation possible remnant foundations.
BH1-BH2, TP103	Area of apartment block and shared landscaping.
WS101-105, TP101-102, TP104-107	General site coverage and area of proposed residential houses/gardens.
RBH1-4	Located in targeted areas to assess the risk of instability from shallow coal mining.

Table 3-1: Summary of sampling locations.

With regards to contamination the number of site investigation points (within areas accessible) corresponds to approximately one location per 25m square centres. This is considered to be a conservative sampling density and is in line with BS10175[7] for a 'detailed investigation'.

All profile logs are provided in Appendix B and are in line with BS14688-1[8] and BS5930[9].

3.2 Well Installations

All of the boreholes were installed with monitoring wells for gas and groundwater monitoring and groundwater sampling. Monitoring wells were installed in accordance with BS10175 and CIRIA C665[10] and generally comprised approximately 1m plain pipe over a length of slotted pipe surrounded by pea gravel and sealed at the top with

[7] British Standard (2017). "Investigation of Potentially Contaminated Sites – Code of Practice." BS10175:2017.
[8] British Standards (2002) Geotechnical investigation and testing – Identification and Classification of Soil. Part 1: Identification and description. BS EN ISO 14688-1:2002.
[9] British Standard (2015). "Code of Practice for Ground Investigations". BS5930:2015.
[10] CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

bentonite and concrete. Well installation details are provided in profile logs in Appendix B.

3.3 Sampling Protocol

3.3.1 Soil Sampling (Contamination)

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation[11].

Soil was collected for onsite testing. 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 for total volatile organic compounds (TVOCs) using a PhoCheck Tiger photoionisation detector (PID). Results of the PID readings are presented on the profile logs (Appendix B). The on-site monitoring was carried out in line CIRIA C665[12] to aid in screening samples for volatile analysis.

Soil samples of approximately 500g were recovered in amber jars, amber vials for volatile analysis and plastic tubs. All the samples were labelled and stored in cool boxes prior to being collected by courier at the end of the day for delivery to the Chemtest laboratory in Newmarket 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.

Suites and Contaminants	No. Samples	Location & Depth	Justification
Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.	9	TP101 0.3-1.0m TP102 0.0-0.4m TP103 0.1-0.5m TP105 0.2-1.0m TP107 0.0-0.4m WS101 0.3-1.0m WS103 0.3-0.7m WS105 0.0-0.8m BH2 0.1-0.3m	A basic suite with a broad selection of contaminants tested on samples across the site where no significant evidence of contamination was identified (with the exception of occasional ash and coal) and no TVOCs identified from the PID tests.
Metals / metalloids, pH, water soluble sulphate, cyanide suite, phenol, TPHCWG, BTEX, MTBE, speciated PAHs, SOM and asbestos screen.	4	TP104 0.4-1.0m TP106 0.1-1.0m WS102 0.0-0.4m WS104 0.2-0.8m	Although no evidence of contamination identified, detailed suite undertaken to confirm the absence of contamination and to inform the haz-waste assessment for disposal purposes.
Waste Acceptance Criteria (WAC)	4	TP104 0.4-1.0m TP106 0.1-1.0m WS102 0.0-0.4m WS104 0.2-0.8m	To aid in waste classification.

Table 3-2. Summary of soil sample testing undertaken.

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.

[11] EA (2000). "Technical Aspects of Site Investigation. Volumes 1 & 2 Text Supplements Research and Development Technical Report." P5-065/Tr.
[12] CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

3.3.2 Water Sampling

To establish the condition of shallow groundwater LKC undertook six groundwater samples.

The groundwater samples were collected a minimum of 1 week after drilling had finished and following well development. Sample collection was undertaken using a low flow sampling pump using thin walled tubing to encourage laminar flow and minimise the potential loss of volatiles during sampling. The borehole was purged of all standing water and the sample collected from the recharged water. The sample was collected in glass and plastic bottles and a glass vial. A water meter was used to test the pH, temperature and conductivity before sampling until equilibrium conditions were met, as per BS10175[13] guidelines.

All water samples were placed in glass bottles, plastic bottles and septum topped vials and stored in ice packed cool boxes. The samples were sent to Chemtest on the same day for analysis.

Sampling was carried out in accordance with BS5930[14] and BS5667-11[15].

Many of the tests are UKAS or MCERTS accredited and further details are given in the Certificate of Analysis presented in Appendix D. Table 3-3 shows the groundwater / leachate testing undertaken.

Suites and Contaminants	No. Samples	Location	Justification
Metals / metalloids, pH, sulphate, cyanide suite, TPHCWG, BTEX, MTBE, speciated PAHs, phenol and hardness.	6	WS101 (G) WS102 (G) WS103 (G) WS104 (G) WS105 (G) BH1 (G) BH2 (G)	Detailed suite undertaken on water samples from all installed monitoring wells randomly across the site to confirm the absence of significant mobile contamination.

Table 3-3. Summary of groundwater sampling tests undertaken.
Notes:
L=Leachate Sample; G=Groundwater Sample
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.

3.4 Gas Monitoring

All the installed boreholes have been monitored for gas with six visit undertaken over a three month period.

Monitoring was undertaken using a Geotechnical Instruments GA2000 plus / GA5000 in accordance with the monitoring protocol outlined in CIRIA C665[16] (flow rate measured first). The monitoring was undertaken over a range of weather conditions (including low and falling barometric pressure and heavy rain) to demonstrate worst-case conditions.

[13] British Standard (2017). "Investigation of Potentially Contaminated Sites – Code of Practice." BS10175:2017.
[14] British Standard (2015). "Code of Practice for Ground Investigations". BS5930:2015.
[15] British Standard (2009). "Water Quality – Sampling. Part 11: Guidance on Sampling of Groundwaters". BS ISO 5667-11:2009.
[16] CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

The gas monitoring results are reproduced in full in Appendix F.

3.5 Soakaway Tests

Soakaway tests were undertaken in TP102, TP104 and TP106 in accordance with BRE Digest 365[17].

The trial pits were machine excavated to dimensions of 0.5-0.8m wide, 2.0-2.2m long and 1.2-2.0m depth. The arisings were logged in accordance with BS14688-1[18] and BS5930.

A slotted standpipe was placed vertically in the pit and gravel was backfilled into the bottom of the pit to prevent the sides falling in during water influx.

The pits were filled from a water bowser and the drop in level timed and recorded using a dipmeter inside the temporary standpipe

[17] BRE (2003) 'Soakaway Design' British Research Establishment BRE Digest 365 2003
[18] British Standards (2002). Geotechnical investigation and testing – Identification and Classification of Soil. Part 1: Identification and description. BS EN ISO 14688-1:2002.

4 Ground Conditions

4.1 Geology – Generalised Sequence

The ground conditions beneath the site comprised made ground underlain by natural slightly gravelly silty clay. A summary section of the logs is provided in Plate 4-1, with additional comments below.

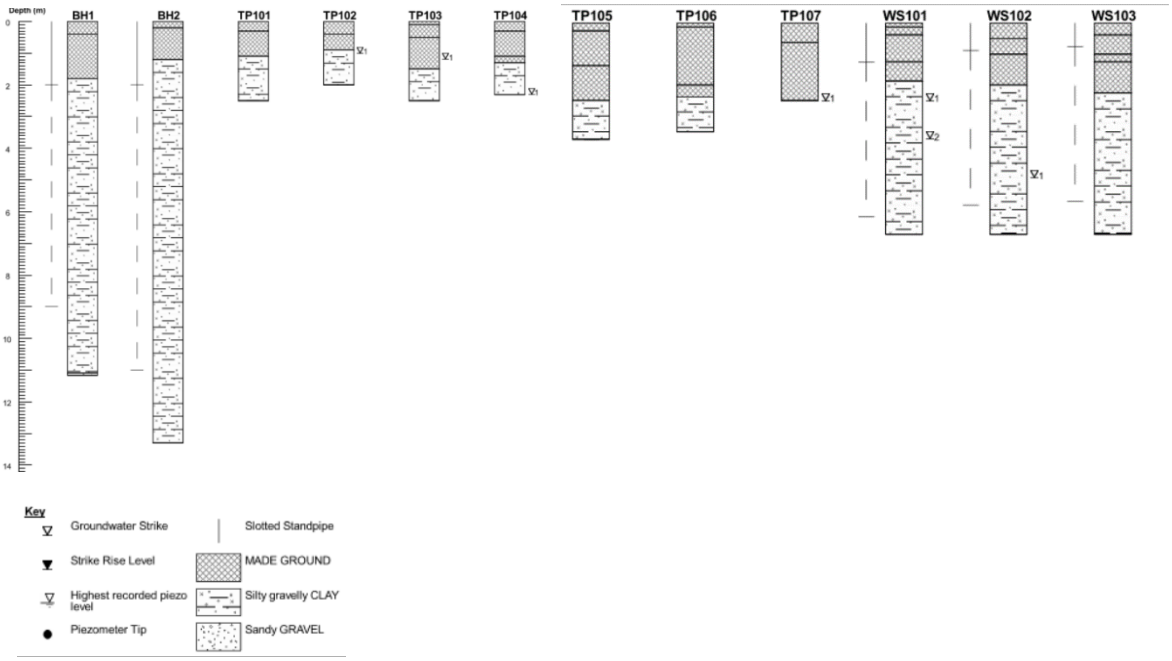


Plate 4-1: Summary of ground conditions.

Additional information on ground conditions:

- Made ground was recorded from depths of 1.2-2.0mbgl and generally consisted of gravelly, sandy silty clay with varying quantities and composition of anthropogenic inclusions such as ash, brick, clinker, plastics and metal.
- Made ground in the south of the site appeared to contain more material likely to be related to the demolition of former buildings and household waste, such as vacuum cleaner parts.
- No visual / olfactory evidence of hydrocarbons or volatile contaminants in any locations.
- In-ground structures were identified in:
- TP105: Brick wall on NW wall of trial pit between 0.20-1.70mbgl (likely to be historic basement).
- TP104: Layer of bricks at 0.30-0.40mbgl and brick wall on S wall of trial pit between 0.30-1.00mbgl. (possible former foundations or basement).

A plan showing made ground thickness across the site is shown in Figure 5.

4.2 Groundwater

4.2.1 Groundwater Levels

Groundwater strikes were recorded during the investigation in trial pits and boreholes. In addition, groundwater monitoring within the borehole wells has been undertaken on six occasions. An oil-water interface probe (approximately 1cm detection limit) was used to detect the presence of free phase hydrocarbons within each borehole.

Results are summarised in Table 4-1.

BH/TP	Water Strike Depths (mbgl)	Well Response Zone (mbgl)	No. of Monitoring Visits	Monitoring Depths (mbgl)			Evidence of Contam?
				Min	Max	Base	
WS101	2.0, 3.0	1.0-5.0 (MG/C)	6	1.15	1.46	5.0	N
WS102	4.0	0.8-4.8 (MG/C)	6	1.08	1.5	4.6	N
WS103	Dry	0.6-4.6 (MG/C)	6	0.9	1.71	4.6	N
WS104	Dry	0.8-4.8 (MG/C)	6	1.05	3.67	4.7	N
WS105	Dry	0.5-4.5 (MG/C)	6	0.7	1.05	4.5	N
BH1	Dry	2.0-9.0 (C)	6	4.4	8.72	8.8	N
BH2	Dry	2.0-11 (C)	6	2.71	3.67	10.9	N
TP101	Dry	Not installed					N
TP102	1.0						N
TP103	1.3						N
TP104	2.3						N
TP105	2.9						N
TP106	2.8						N
TP107	2.0						N

Table 4-1: Summary of water strike depths within boreholes and trial pits.
Response Zones:
MG=Made Ground; C=Clay;

4.2.2 Permeability Tests

Soakaway Tests

Soakaway tests were also carried out within clay strata at the request of the drainage engineer. The results of the soakaways are presented in Appendix G and summarised in Table 4-2.

BRE365[19] indicates that the calculation of the soil infiltration rate is made from the time taken for the water level to fall from 75% to 25% effective storage depth in each pit.

Soil infiltration rate, $f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$

Where:

V_{p75-25} = the effective storage volume of water in the trial pit between 75% and 25% effective depth.
a_{p50} = the internal surface area of the trial pit up to 50% effective depth including the base area.
t_{p75-25} = the time for the water level to fall from 75% to 25% effective depth.

Due to the slow rate at which water drained, three tests were not carried out in both locations and tests were terminated before the required effective depth. Tests were not successful in any location.

[19] BRE (2003) 'Soakaway Design' British Research Establishment BRE Digest 365 2003

TP	Test No.	Strata at Test Level	Time for outflow between 75% and 25% (mins)	Soil infiltration rate (m/s)
TP102	1	Clay	Not reached	Test Failed
TP104	1	Clay	Not reached	Test Failed
TP106	1	Clay	Not reached	Test Failed

Table 4-2: Summary of soakaway tests and permeability.

It should also be noted that soakaways are not normally allowed to be installed in made ground.

Based on the above, it is unlikely that soakaways will be feasible for this site.

5 Generic Risk Assessment

5.1 Introduction

Current good practice requires that the findings from a site investigation should be evaluated on a site-specific basis, using a risk-based approach. Risk assessment involves identification and evaluation of the hazards presented by the concentrations of contaminants measured followed by an evaluation of the risks which are associated with these hazards (LCRM[20]). Information gathered from the risk assessment has been collated in the revised contamination conceptual model in Section 5.6.

5.2 Soil Risk Assessment

5.2.1 Methodology

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

- Category 4 Screening Levels (C4SLs).
- LQM Suitable 4 Use Levels (S4ULs).
- ATRISK Soil Screening Values (SSVs) and CL:AIRE Generic Assessment Criteria (GACs).

C4SLs were published in 2013[21,22]. The change to the contaminated land guidance has changed the evaluation of risk from 'minimal' (referred to as Health Criteria values (HCVs))[23] used to generate Soil Guideline Values (SGVs) to 'low' (referred to as Lowest Level of Toxicological Concern (LLTCs)). The policy companion document and supporting letter by Defra, dated 3rd September 2014, states that C4SLs *'could be used under the planning regime, as well as within Part 2A'.* Based on these comments LKC considers the justifications and assumptions used to generate 'low' risk are suitable for the planning regime.

Where no C4SLs have been generated LKC will use the LQM S4ULs[24]. Similar assumptions and land uses to C4SLs have been used. However, toxicological information has been based on 'minimal risk' as per previous guidelines and assumptions[25,26,27,28].

If contaminants are not present as C4SLs and S4ULs then LKC will use ATRISK SSVs or CL:AIRE GACs[29]. These follow the 'minimal' risk principle and more stringent exposure parameters and will be conservative.

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

[20] Land Contamination Risk Management (LCRM) https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm
[21] Defra (2014). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Policy Companion Document."
[22] CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."
[23] EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.
[24] LQM (2014). "The LQM/CIEH S4ULs for Human Health Risk Assessment."
[25] EA (2008). "Updated Technical Background to the CLEA Model." Science Report – SC050021/SR3.
[26] EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.
[27] EA (2008). "A Review of Body Weight and Height Data used within the Contaminated Land Exposure Assessment Model (CLEA)." Project SC050021/Technical Review 1.
[28] EA (2009). "Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values." Science report SC050021/SR7.
[29] CL:AIRE (2009). "The Soil Generic Assessment Criteria for Human Health Risk Assessment."

PAHs[30,31] and naphthalene the most volatile and soluble[32]. The new C4SLs indicate B(a)P as a surrogate marker for carcinogenic PAHs, if it falls within appropriate limits, since the risk from other non-carcinogenic PAHs are considered negligible[33]. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)[34] and CL:AIRE (2013). Naphthalene will be treated separately using the LQM S4ULs.

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

An apartment block with communal soft landscaping is proposed in the eastern corner and assessment criteria for POS_{resi} will be used to assess the human health risk in this area.

All criteria have been generated using the CLEA V1.06 model[35] based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

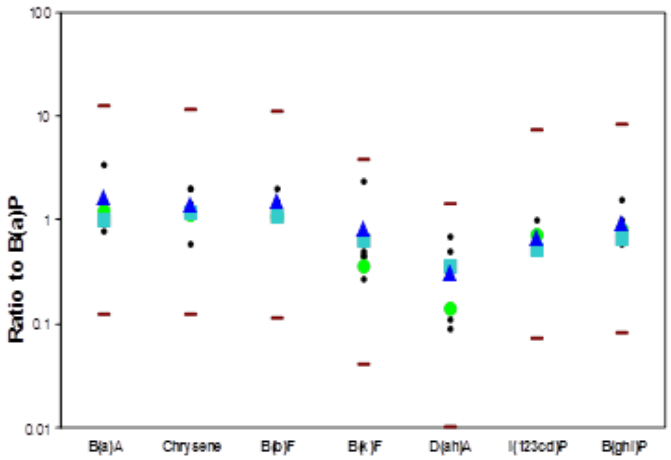
A summary of the generic assessment criteria is provided in Appendix H. ATRISK SSVs and CL:AIRE GACs were not required for this dataset and have not been included.

B(a)P as Surrogate Marker

Based on the above assumption for PAHs, LKC undertook an assessment of the 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*[36], 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 5-1 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.

[30] EA (2002). "Contaminants in Soils: Collation of Toxicological Data and Intake Values for Humans. Benzo[a]pyrene." R&D Publication TOX2.
[31] USEPA (1984). "Health Effects Assessment of Polycyclic Aromatic Hydrocarbons (PAHs). EPA 540/1-86-013."
[32] EA (2003). "Review of the Fate and Transport of Selected Contaminants in the Soil Environment." Draft technical report P5- 079/TR1.
[33] CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."
[34] HPA (2010). "HPA Contaminated Land Information Sheet: Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)." Version 3.
[35] EA (2008). "CLEA Software (Version 1.05) Handbook." Science Report – SC050021/SR4.
[36] Culp, S; Gaylor, D; Sheldon, W; Goldstein, L and Beland, F (1998). " A Comparison of Tumours Induced by Coal Tar and Benzo-a-pyrene in a 2-Year Bioassay." Carcinogenesis. **Vol 19**, no. 1, pp. 117-124.



Graph 5-1: The ratio of PAH to B(a)P in soil for all available data at the site based on 11no. 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
● = Ratio to B(a)P for all data ○ = Mean ratio to B(a)P for Culp data △ = Mean ratio to B(a)P from all data at the site
□ = Mean ratio to B(a)P for UK data presented by HPA ▬ = Upper and Lower limits (order of magnitude from Culp data)

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.

5.2.2 Soil Results Comparison against Assessment Criteria

All analysis sheets are presented in Appendix C. Elevated and pertinent results are presented in Table 5-1.

A plan showing the location of the elevated contaminants is present in Figure 6.

Contaminant	Units	No. of samples	Elevated Results	Sample Location	Criteria	Source of Criteria
Metals						
Arsenic	mg/kg	13	70	WS101 (0.3-1.0m)	37 79	C4SL (RwPU) C4SL (POS_{resi})
			38	WS102 (0.0-0.4m)		
			62	TP104 (0.4-1.0m)		
			46	TP105 (0.2-1.0m)		
			39	TP106 (0.1-1.0m)		
Lead	mg/kg	13	410	WS101 (0.3-1.0m)	200 630	C4SL (RwPU) C4SL (POS_{resi})
			220	WS102 (0.0-0.4m)		
			1,100	TP104 (0.4-1.0m)		
			530	TP105 (0.2-1.0m)		
			220	TP106 (0.1-1.0m)		
PAHs						
Benzo(a)pyrene	mg/kg	13	21	WS101 (0.3-1.0m)	5 10	C4SL (RwPU) C4SL (POS_{resi})
			6.3	WS102 (0.0-0.4m)		
			7	TP104 (0.4-1.0m)		
			10	TP105 (0.2-1.0m)		
			7	TP106 (0.1-1.0m)		
GENERAL						
pH	pH	13	Range 8.2 to 10.2			
SOM	%	7	Range 1.2 to 28			
Asbestos	N/A	13	Detected (see Table 6-2)			

Table 5-1: Summary of elevated and pertinent analytical results.

Notes:
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.
RwPU=Residential with plant uptake, POSresi=Public open space (residential).

It should be noted that a total of 10no. samples were tested from the proposed residential with private gardens area and 3no. samples were tested from the proposed apartment block with shared landscaping. All exceedences recorded were identified in samples taken from the area of the proposed residential with private gardens.

Asbestos was identified, as detailed in Table 5-2.

Sample Location	ID	Type	Total Asbestos (% wt/wt)
WS102 (0-0.4m)	Amosite	Fibres/Clumps	<0.001
TP106 (0.1-1.0m)	Chrysotile	Fibres/Clumps	0.008

Table 5-2: Details of asbestos identified.

As no significant concentrations of petroleum hydrocarbons were identified in any of the soil samples a hazard index (HI) as described by the Environment Agency[37] technical report (to examine the potential additivity of toxicological effects between the petroleum hydrocarbon fractions) has not been undertaken as part of this assessment.

5.2.3 Direct Contact Risk – Pollutant Linkage 1

Residential Housing (Proposed Gardens)

Metals and PAHs

Elevated arsenic (5 out of 10 samples), lead (5 out of 10 samples) and PAHs (5 out of 10 samples) have been identified in the residential with gardens area, given the number and location of elevated samples, the contamination is considered to be site wide in the area of the proposed residential housing with gardens.

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

Petroleum Hydrocarbons

No exceedences of relevant GAC were identified for petroleum hydrocarbons in the area of the proposed residential housing and gardens.

Asbestos

Asbestos was identified in two locations (WS102 and TP106) within the area of the residential housing and gardens. The asbestos was identified as amosite (fibres/clumps) in WS102 and chrysotile (fibres/clumps) in TP106. The source of the asbestos is likely to be from previously demolished buildings as more evidence of demolition derived material was identified in locations in the southern half of the site.

Given the number of samples containing asbestos in the soil (2 out of 10 samples in the residential with gardens area), the asbestos is considered to be relatively localised and at low quantities (<0.001% wt/wt for WS102, 0.008% wt/wt in TP106).

LKC have utilised the Joint Industry Working Group (JIWG) Decision Support Tool for receptor risk ranking of ACM onsite. This model incorporates guidance from CL:AIRE CAR-SOIL[38] and CIRIA C733[39].

[37] EA (2005). "The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils." Science Report P5-080/TR3.
[38] CL:AIRE (2016). "CAR-SOIL Controlled Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials" Industry Guidelines.
[39] CIRIA (2014). "Asbestos in Soil and Made Ground: A guide to Understanding and Managing Risks." CIRIA C733.

In this model a child of school age playing in the landscaped area for 1 hour was assumed in close proximity to the source. A medium respirable index was assumed based on the ACM identified onsite as per RIVM[40].

The assessment was carried out assuming 'low disturbance' based on ACM at a shallow depth.

For added conservatism, the model does not take into account moisture content, which can significantly reduce the potential for airborne fibre release from soil in a typical UK climate. AGS interim guidance[41], based on work by Addison et al[42], notes that the addition of 10% water to soil decreases the risk of potential fibre release by a factor of between 2 and 10. The moisture content of the soil from this area was 10-14% making fibre release unlikely.

Data from Addison *et al* shows that a sandy soil with Chrysotile fibre concentrations of 0.01%w/w (1 order of magnitude lower recorded) when agitated in a moderately aggressive way, produced between 0.01fibres/ml and no recordable fibres at moisture contents of 5% and above. It should be noted that the clearance level is 0.01f/ml.

The JWIG model output sheet is presented in Appendix K. A **very low risk** was identified to key receptors based on general worst case scenario, such as some ground disturbance.

Asbestos may affect site users in garden areas in areas of the site where residential properties with private gardens are proposed, via the inhalation of fibres. Considering limited fibre within the soil (2/10 samples), the probability is considered to be low and with a medium consequence the risk is considered moderate / low for the area of residential housing and is not considered to be widespread across the site (where present is at trace concentrations).

Additional consideration should also be given to the risk to workers and offsite receptors during groundworks and construction. This is discussed further in Section 8.

Summary of Pollutant Linkage 1 (Direct Contact) - Residential Housing (Proposed Gardens)

Based on the above assessment LKC considers at the distribution of exceedances identified, the contaminants are considered to pose a potential risk to future site users (residents) in gardens and soft landscaped areas, where made ground may be exposed / in contact with vegetables. The principal pathways are the ingestion pathways (soil, dust and vegetables) and dermal contact.

LKC considers the probability of metals and PAHs affecting site users (via ingestion and dermal contact) as likely in gardens of residential houses. Given a medium consequence, a moderate risk is considered appropriate and remediation is recommended.

[40] RIVM (2003). "Assessment of the Risks of Soil Contamination with Asbestos" CIRIA C733." RIVM Report 711701034/2003.
[41] AGS (2013). "Site Investigation Asbestos Risk Assessment." AGS Interim Guidance, Feb 2013, Ver 2.4.
[42] Addison et al (1988). "The Release of Dispersed Asbestos Fibres from Soils." Institute of Occupational Medicine Report No. TM/88/14.

LKC considers the probability of ACM affecting site users (via ingestion and dermal contact) as low in gardens of residential houses. Given a medium consequence, a moderate/low risk is given. However, based on the limited number of samples identifying asbestos and the low quantification results, LKC assume the risk to be low and no specific remediation for ACM is required. Furthermore, for added comfort there will be a clean capping layer in residential gardens to remove any direct contact pathway.

LKC considers the probability of petroleum hydrocarbons affecting site users (via ingestion and dermal contact) as unlikely in gardens of residential houses. Given a medium consequence a low risk is considered appropriate and remediation is not considered necessary for petroleum hydrocarbons.

Apartment Block (Landscaping)

Metals

No elevated metals were identified above the relevant GACs for the proposed apartment block area.

PAHs

No elevated PAHs were identified above the relevant GACs for the proposed apartment block area.

Petroleum Hydrocarbons – Heavy End (>EC 16)

No elevated petroleum hydrocarbons were identified above the relevant GACs for the proposed apartment block area.

Asbestos

No asbestos containing material or free fibres were detected in the samples analysed from the proposed apartment block area.

Summary of Pollutant Linkage 1 (Direct Contact) - Residential Apartment Blocks (Proposed Landscaping)

Based on the above assessment LKC considers the probability of metals, PAHs, ACM and petroleum hydrocarbons affecting site users (via ingestion and dermal contact) as unlikely in landscaped areas of apartment blocks. Given a medium consequence a low risk is considered appropriate and remediation is not considered necessary for these contaminants in the soft landscaping around the apartment block.

5.2.4 Risk from Inhalation of Vapours – Pollutant Linkage 2

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

LKC therefore consider the probability of volatile contaminants affecting site users as unlikely. The consequence is expected to be medium, giving a low risk and no remediation is required with respect to pollutant linkage 2.

5.3 Gas Risk Assessment

Six gas monitoring visits has been undertaken on the study site. Gas monitoring results in full are presented in Appendix F. Following guidance set out in CIRIA C665[43] and BS8485[44] peak methane and carbon dioxide concentrations have been used in the gas risk assessment. In addition, and as per guidance, flow rates were measured first.

All gas concentrations, flow, pressure and groundwater levels are shown on Table 5-3.

[43] CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.
[44] BSI (2015). "Code of Practice for the Characterisation and Remediation from Ground Gas in Affected Developments." BS8485:2015.

Boreholes	Visit	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	H_2S (ppm)	CO (ppm)	Flow (l/h)	Groundwater (mbgl)	Pressure (mb)
WS101	1	<0.1	1.0	19.3	<1	<1	<0.1	1.28	1026 (s)
	2	<0.1	1.1	18.6	<1	<1	<0.1	1.37	1021 (r)
	3	<0.1	2	18.5	<1	1	<0.1	1.46	1015 (s)
	4	<0.1	1.4	19.8	<1	1	<0.1	1.24	1001 (r)
	5	<0.1	1.8	18.7	<1	<1	<0.1	1.15	1008 (r)
	6	Unable to monitor – borehole missing.							
WS102	1	<0.1	0.4	20.3	<1	<1	<0.1	1.08	1027 (s)
	2	<0.1	3.5	9.6	<1	<1	<0.1	1.5	1021 (r)
	3	<0.1	4.1	11.2	<1	1	<0.1	1.48	1015 (s)
	4	<0.1	3.1	14.5	<1	1	<0.1	1.25	1001 (r)
	5	<0.1	4.3	10.1	<1	<1	<0.1	1.2	1008 (r)
	6	Unable to monitor – borehole missing.							
WS103	1	<0.1	1.5	11.5	<1	<1	<0.1	1.71	1025 (s)
	2	<0.1	0.6	19.4	<1	<1	<0.1	1.13	1020 (r)
	3	<0.1	1.1	18.5	<1	<1	0.1	1.26	1015 (s)
	4	<0.1	0.8	20.3	<1	1	<0.1	1.07	1001 (r)
	5	<0.1	0.9	19.9	<1	<1	<0.1	0.9	1008 (r)
	6	Unable to monitor – borehole missing.							
WS104	1	0.6	1.6	16.8	<1	<1	<0.1	2.06	1026 (s)
	2	<0.1	2.5	14.1	<1	<1	<0.1	1.72	1021 (r)
	3	<0.1	1.7	18.2	<1	1	<0.1	3.67	1015 (s)
	4	<0.1	0.4	19.9	<1	1	0.1	1.71	1001 (r)
	5	<0.1	2.6	15.8	<1	<1	<0.1	1.05	1008 (r)
	6	Unable to monitor – borehole missing.							
WS105	1	<0.1	1.3	13	<1	<1	0.1	0.85	1026 (s)
	2	<0.1	2.3	11.8	<1	<1	<0.1	0.83	1021 (r)
	3	<0.1	3.9	16.7	<1	2	0.2	1.08	1015 (s)
	4	<0.1	2.6	14.2	<1	1	<0.1	0.8	1001 (r)
	5	<0.1	3.7	9.9	<1	<1	<0.1	0.7	1008 (r)
	6	<0.1	1.6	20.0	<1	1	<0.1	1.05	1006 (f)
BH1	1	<0.1	0.8	15	<1	<1	4.2	8.72	1027 (s)
	2	<0.1	1.6	10.4	<1	1	3.6	7.71	1021 (r)
	3	<0.1	2.7	6.1	1	2	<0.1	6.51	1015 (s)
	4	<0.1	3.4	3.1	<1	1	10.3	5.47	1001 (r)
	5	<0.1	3.8	1.6	<1	<1	6.7	4.95	1007 (r)
	6	<0.1	1.8	11.6	<1	1	<0.1	4.4	1006 (f)
BH2	1	<0.1	0.4	21.4	<1	<1	0.1	2.71	1027 (s)
	2	<0.1	1.9	19.6	<1	1	<0.1	3.54	1021 (r)
	3	<0.1	2.4	14.4	1	2	<0.1	3.67	1015 (s)
	4	<0.1	2	17.7	<1	1	0.1	3.23	1001 (r)
	5	<0.1	**5.4**	10.3	<1	<1	-1.8	3.05	1006 (r)
	6	<0.1	4.2	15.2	<1	1	7.9	3.0	1007 (f)

Table 5-3: Summary of gas monitoring.

Notes:

If concentrations / flow is zero, then equipment detection limits are assumed.
Table shows peak concentrations of CH_4, CO_2, O_2, H_2S and CO.
Bold where CO_2 exceeds 5%v/v and CH_4 exceeds 1%v/v.
Atmospheric pressure (over past 24hrs): r=rising, f=falling, s=steady

The shallow wells showed negligible flow rates . However, high fluctuations occurred in the deeper cable percussive boreholes (ranging from negative, none and high

positive flows). This is a common occurrence from deeper installed wells as they are more prone to fluctuations in groundwater level and barometric pumping. Based on the other data collected and observations, the elevated flows recorded in BH1 and BH2 are considered to not be a true depiction of flow rates and LOD flow rates be used in derivation of the GSVs.

Only one elevated carbon dioxide (>5%v/v) reading was recorded; in BH2 during the fifth visit.

Carbon monoxide was >1ppm in boreholes WS8, WS9, WS10, WS14B, WS15, WS17, WS18, BH2 and BH4. The maximum concentration was recorded as 9ppm (BH2 and BH4).

Gas Screening Value

In accordance with CIRIA C665[45], a Gas Screening Value (GSV) may be calculated. Assuming worst-case scenario maximum gas concentrations and flow for each borehole have been used to calculate the GSV. The worst case GSV can be used to determine the characteristic situation (CS).

Table 5-4 shows the maximum GSV for each borehole and the appropriate characteristic situation (based on GSV only). An overall site assessment (all boreholes) has also been included (worst case values across the site).

Boreholes	Max GSV (l/hr)	CS / TL
WS101	0.002	CS1 / Green
WS102	0.0043	CS1 / Green
WS103	0.0025	CS1 / Green
WS104	0.0026	CS1 / Green
WS105	0.0078	CS1 / Green
BH1	0.0038	CS1 / Green
BH2	0.0054	CS1 / Green
All boreholes (highest value)	0.0108 (CO_2)	CS1 / Green

Table 5-4: Summary of worst-case Gas Screening Values (GSV).
Notes:
CS – Characteristic Situation; TL= Traffic Light.

In addition, in accordance with CIRIA C665, if carbon dioxide and methane are recorded above 5%v/v and 1%v/v respectively, you should **consider** upgrading the characteristic situation from CS1 to CS2.

Carbon dioxide was only recorded above 5%v/v on one occasion and LKC consider it unlikely that concentrations significantly higher than those recorded will be found on site. Taking this into account and the very low flow rates recorded, LKC consider that CS1 would be appropriate for the site.

LKC consider the probability of carbon dioxide and / or methane gas affecting site users and buildings as unlikely. Assuming a severe consequence, there is a moderate / low risk. Given the minimal gas concentrations and flow, a low risk is considered most appropriate and no remediation is required.

[45] CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

5.4 Controlled Water Assessment

LKC considers the Secondary A Aquifer as the primary receptor.

LKC have compared results above Limits of Detection (LOD). Where relevant the review of priority substances takes precedence considering threshold values for groundwater cannot be used '*as part of site-specific investigations*'. The hierarchy is as follows:

- 2016 private water supply standards (UKDWS potable)[46].
- 2001 Environment Agency Values for Environmental Quality Standards (EQS) and UK Drinking Water Standard (UKDWS)[47].
- Resource Protection Values (RPVs)[48].
- Minimal Reporting Values (MRVs).

With regards to hydrocarbon mixtures (TPHCWG) for UKDWS, LKC will use the CL:AIRE guidance on petroleum hydrocarbons in groundwater[49] based on WHO guidelines.

Elevated contaminants above limits of detection are presented in Table 5-5 below and all analysis sheets are presented in Appendix E.

Contaminant	Units	No. of samples	Elevated Result	Location	Assessment Criteria	Source of Criteria
Metals						
Manganese	µg/l	6	1,100	WS101	50	UKDWS
			780	WS103		
			230	BH2		
			65	WS102		
General						
pH	pH	6	Range 7.8 to 8.3			
Hardness	mg/l $CaCO_3$	6	Range 520 to 780			

Table 5-5: Summary of elevated groundwater test results.

Notes:
EQS (2001) and AA / MAC-EQS (2015) = surface water criteria.
UKDWS (2001, 2016) and WHO (2017) = Groundwater criteria (potable supply).
Results above LODs presented.
Comparisons are Aromatic EC6-EC7 (benzene), EC7-EC8 (toluene), EC8-EC1 (ethylbenzene and xylene).
Source Criteria values for some determinands presented as X (X) relate to permissible annual (peak) concentrations.

No free product was noted in any water samples.

Elevated manganese has been identified in four out of six samples tested for this contaminant (WS101, WS102, WS103, BH2). However, it is highly likely that the high manganese is associated with sediment in the groundwater sample (colloids), rather than true dissolved manganese, and this is not expected to pose a significant risk to controlled waters. It is well known that iron and to a lesser extent manganese exist as

[46] Statutory Instruments (2016). "The Private Water Supplies Regulation 2016." No. 614
[47] EA (2002). "Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the Environment Protection Act 1990."
[48] SEPA (2010). "Assigning Groundwater Assessment Criteria for Pollutant Inputs." WAT-PS-10-01.
[49] CL:AIRE (2017). "Petroleum Hydrocarbons in Groundwater: Guidance on Assessing Petroleum Hydrocarbons Using Existing Hydrological Risk Assessment Methodologies."

colloids which may pass through standard 0.45 micron filters[50,51], thus over estimating dissolved concentrations above theoretical solubility limits.

Based on the above, LKC considers the probability of contaminants on site affecting the Secondary A Aquifer as unlikely. Given the medium consequence, a low risk is anticipated (Pollutant Linkage 4) and no remediation is required.

5.5 Additional Risk Assessments

5.5.1 Concrete (Pollutant Linkage 5)

Based on BRE Digest 2005[52] and the results of testing in made ground and natural strata, the concrete classification would be DS-1 AC-1s.

This should be confirmed with the structural engineer.

5.5.2 Potable Water Supply (Pollutant Linkage 6)

Soil results were compared to United Utilities (UU) guidelines for the selection of potable water pipes in land potentially affected by contamination[53]. Only contaminants of concern, based on the preliminary conceptual model and ground conditions encountered, were analysed. The following contaminants were not considered to be a risk and therefore not included in the analysis suites: speciated petroleum hydrocarbons, chlorinated compounds, BTEX compounds, phenols, cresols, ethers, nitrobenzene, ketones, aldehydes and amines.

The following elevated contaminants were identified:

- Elevated TVOCs (inc. naphthalene) in made ground across the site.

It is likely that barrier pipe will be required across the site subject to the depth and location of the water pipes and in consultation with UU.

Once details of the pipeline location and depths are known a UU Risk Assessment should be undertaken.

At this stage, the probability of organic contaminants affecting potable water pipes is likely. Given the consequence is considered to be medium, the risk (pollutant linkage 6) is anticipated to be moderate risk and remediation (i.e. barrier pipe) is likely to be required (subject to further risk assessment).

5.5.3 Phytotoxicity (Pollutant Linkage 7)

Soil results were compared to phytotoxic guideline values as outlined in BS3882[54].

Elevated copper (maximum concentration 360mg/kg) was identified. The probability of phytotoxic contaminants affecting vegetation is considered to be low likelihood based on only one sample of made ground recording elevated phytotoxic contaminants. With a minor consequence, the risk (pollutant linkage 7) is anticipated to be very low. It

[50] Boult, S (1996). "Fluvial Metal Transport Near Sources of Acid Mine Drainage: Relationship of Soluble, Suspended and Deposited Material." *Mineralogical Magazine*. **60**:325-335.
[51] Kennedy, V. Zellweger, GW. Blair, FJ (1974). "Filter Pore Size Effects on the Analysis of Al, Fe, Mn and Ti in Water." Water Resources Research. **10**(4):785-790.
[52] BRE (2005). "Concrete in Aggressive Ground." Special Digest 1.
[53] UU(2011). "United Utilities Water Supplementary Guidance for the Selection of Water Pipes in Land Potentially Affected by Contamination."
[54] BS (2015). "Specifications for Topsoil and Requirements for Use." BS3882:2015.

should be noted that the remediation associated with PL1 (cover system) will reduce the risk to flora in proposed gardens..

In addition to the above, the characteristics of the made ground should also be taken into account if it is to be used as a topsoil / growing medium for flora. The material should be assessed against the parameters outlined in Table 1 of BS3882 (not included within this assessment). Made ground with undesirable material (e.g. glass, brick, metal, pottery) was noted at shallow depth in localised areas of the site / across the site. Irrespective of the contamination risk, this material should not be used as topsoil and it is recommended that a suitable topsoil cover as a growing medium be installed.

5.6 Revised Contamination Conceptual Model

The preliminary contamination conceptual model (Table 2-6) has been revised following the risk assessments undertaken in Sections 5.1-5.5. The revised contamination conceptual model follows the same methodology and guidance used in the preliminary contamination conceptual model. The risk matrix is provided in Appendix A.

The revised contamination conceptual model is presented in Table 5-6.

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

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

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

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

Further details of the remedial proposals and a remedial option appraisal are given in Section 8.

Pollutant Linkage	Pathway	Receptor	Contaminant	Probability	Consequence	Risk	Assessment
PL1	– Dermal contact. – Inhalation of soil, fibres and dust. – Ingestion of soils, dust, vegetables, soil attached to vegetables. – Windblown dust.	– Current residents. – Future residents. – Site users. – Offsite receptors.	<u>Residential with Private Gardens</u> – Arsenic, lead, B(a)P.	Likely	Medium	**Moderate**	– Likely probability as elevated metals (arsenic and lead) and PAHs identified in the made ground which could come into contact with site users in gardens / soft landscaping areas. – **Recommendation*[1]:** Remediation required. Likely to include an environmental cover system in gardens / soft landscaping areas where residential houses are present.
			<u>Residential with Private Gardens</u> -ACM	Low Likelihood	Medium	Moderate / **Low**	– Low likelihood as only 2 out 10 samples of made ground identified asbestos containing material (at trace level concentrations) and so is not considered widespread across the site – JIWG assessment for residential receptors concluded a low risk. – **Recommendation*[1]:** No specific remediation for ACM, but a clean environmental capping layer will be installed in all gardens for added protection..
			<u>Residential with Private Gardens</u> -Heavy end hydrocarbons	Unlikely	Medium	**Low**	– Unlikely probability as no elevated hydrocarbons compared to relevant GAC. -**Recommendation*[1]:** No specific remediation for hydrocarbons.
			<u>Apartment Block landscaped areas</u> -Metals, PAHs, ACM, hydrocarbons.	Unlikely	Medium	**Low**	– No elevations or ACM identified within proposed apartment block landscape areas. – **Recommendation:** Nominal 150mm topsoil layer in shared soft landscaping within apartment block area.
PL2	– Inhalation of vapours. – Migration through permeable strata and preferential pathways.	– Current residents. – Future residents. – Site users.	Volatile Contaminants: - Naphthalene	Unlikely	Medium	**Low**	– No evidence of significant volatile contamination and no exceedences of relevant GAC for volatile contaminants. – **Recommendation:** No remediation required.
PL3	– Inhalation of gas. – Migration through permeable strata and preferential pathways. – Explosion in confined spaces (methane only).	– Current residents. – Future residents. – Buildings. – Offsite land users.	Carbon dioxide and methane.	Unlikely	Severe	Moderate / **Low**	– Worst case GSVs place the site within a CS1 scenario. – Only one slightly elevated carbon dioxide reading recorded in one location. – Low risk assumed due to generally low gas concentrations and minimal flow rates. – **Recommendation:** No gas protection measures required.
PL4	– Surface Run-off. – Migration through permeable strata and preferential pathways – Perched waters migration.	– Groundwater: (Secondary A and Secondary Undifferentiated Aquifer).	Mobile contaminants: Metals and PAHs.	Unlikely	Medium	**Low**	– Only elevated manganese recorded and this is likely to be from a colloidal source rather than true dissolved phases. – **Recommendation**: No remediation required.

Table 5-6: Revised Contamination Conceptual Model.

Notes

*[1] The conceptual model only takes into consideration the future use of the site and long-term exposure. Consideration should also be given to the short-term exposure of construction workers and nearby land users to ACM containing soils during groundworks. This is discussed further in Section 8.

Pollutant Linkage	Pathway	Receptor	Contaminant	Probability	Consequence	Risk	Assessment
PL5	– Sulphate attack on concrete.	– Building structure.	– Sulphate	Assessed in geotechnical report			– No elevated sulphate or evidence of aggressive ground conditions. – **Recommendation**: Concrete classification of DC-1 AC-1s.
PL6	– Ingestion of tainted water supply.	– Future site users (via potable water).	Organic Contaminants: – Naphthalene.	Likely	Medium	**Moderate**	– Likely probability as elevated organic contaminants encountered which could permeate water pipes and contaminate water supply. – **Recommendation:** UU risk assessment should be undertaken. Barrier piping likely to be required.
PL7	– Direct Contact (plant uptake).	– Flora.	Phytotoxic Contaminants: – Zinc, copper	Low Likelihood	Minor	**Very Low**	– Localised elevated copper identified, which may be taken up by flora in soft landscaping / gardens. – **Recommendation:** Remediation associated with PL1 will be sufficient mitigation.

Table 5-6 continued: Revised Contamination Conceptual Model.

6 Waste Disposal Assessment

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

As an initial screen the soil results were inputted into Hazwaste Online™. This is a web-based facility that allows an assessment waste as either hazardous or non-hazardous waste based on relevant guidance and legislation[55, 56 ,57,58 ,59 ,60, 61, 62, 63].

Hazwaste Online™. has been designed to cover, amongst other waste types, the European Waste 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, appropriate metal species based on hazard statements/ molecular weight, site history, ground conditions and likely species present in soils were used (e.g. metal oxides relating to an ash based source).

The results show that all the samples tested are classified as **NON-HAZARDOUS WASTE** and LoW code “17-05-04 - soil and stones other than those mentioned in 17 05 03” is suitable. The Hazwaste Online™ output sheets are provided in Appendix I.

6.1 Waste Acceptance Criteria (WAC) Testing

Waste Acceptance Criteria (WAC) testing was also undertaken on 4no. samples representative of material likely to be earmarked for off-site disposal. WAC test results are included in Appendix C.

The WAC limits cannot be used to make an assessment of whether a waste is hazardous. Landfills are classified according to whether they can accept hazardous or non-hazardous wastes. Wastes can only be accepted at a landfill if they meet the WAC for that class of landfill.

With regards to non-hazardous waste, material can only be designated to an inert cell of a non-hazardous landfill based on WAC testing. With regards to hazardous waste, material can only be designated as SNRH cell within a non-hazardous landfill or hazardous landfill from WAC testing.

The above potential designation if disposed to a licenced landfill are summarised in Table 6-1. It should be noted that the licenced landfill operator would determine the designation, which may differ to this assessment.

[55] EA (2018). “Guidance on the Classification and Assessment of Waste (1st Edition v1.1)”. Technical Guidance WM3.
[56] CLP Regulation - Regulation 1272/2008/EC of 16 December 2008.
[57] 1st ATP - Regulation 790/2009/EC of 10 August 2009
[58] Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
[59] WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
[60] Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
[61] 13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
[62] POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
[63] 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Sampling Location	Soil Designation		Potential Landfill Designation			Designation
	Non-haz.	Haz.	Inert	SNRH	Haz.	
TP104 0.4-1.0m	X	-	-	X	-	Non-hazardous
TP106 0.1-1.0m	X	-	-	X	-	Non-hazardous
WS104 0.2-0.8m	X	-	-	X	-	Non-hazardous
WS102 0.0-0.4m	X	-	X	-	-	Inert landfill.

Table 6-1: Summary of Waste Acceptance Criteria classification.

Two WAC samples from the site fail the inert waste landfill criteria due to elevated TOC concentrations. Environment Agency[64] guidance includes a potential derogation to allow soils up to two times the TOC limits to be deposited at landfills for inert waste in certain circumstances.

Landfill operators wishing to pursue this approach will need to apply to vary their permit. The application must be waste-specific and must specify what limit of TOC is being applied for. It must include a risk assessment considering whether the landfill is designed such that it can cope with any gas and/or leachate that may be produced as a result of accepting this waste.

The producer will need to make a case for an increased TOC up to 2 x the WAC limit. If the 2 x TOC limit is used for material represented by the samples tested in TP106 (0.1-1.0m) and WS104 (0.2-0.8m), this should be suitable for inert landfill. The material tested in TP104 (0.4-1.0m) contained frequent ash which is the likely cause of the elevated TOC and this would not be suitable for inert landfill even with the 2 x TOC limit. Therefore, it can be assumed that made ground from other areas of the site with high ash content would also be unsuitable for disposal to an inert landfill.

[64] EA 2010 “Waste Acceptance at Landfills” Guidance on Waste Acceptance Procedures and Criteria.

7 Conclusions

A revised contamination conceptual model has been produced by LKC which is summarised in Table 7-1 below (more detailed model provided in Section 5). Where a moderate / low risk was identified, the assumed risk at this stage has been shown.

Pollutant Linkage		Risk	Recommendations
1	Contaminants posing a risk to site users future residents, site users via dermal contact, ingestion and inhalation (of soil, dust, fibres and vegetables).	**Moderate** (metals, PAHs) **Residential with private gardens**	- Remediation required. Likely to include an environmental cover system in gardens / soft landscaping areas where residential houses are present.
		Moderate / **Low** (ACM) **Residential with private gardens**	- No specific remediation for ACMs in residential with gardens area, but environmental capping layer will be placed in all gardens.
		Low (hydrocarbons) **Residential with private gardens**	- No specific remediation for hydrocarbons in residential with gardens area.
		Low (metals, PAHs, ACM, hydrocarbons) **Apartment Block**	- Nominal 150mm topsoil layer in shared soft landscaping within apartment block area.
2	Volatile contaminants posing a risk to site users future site users via the inhalation of vapours.	**Low**	- No remediation required.
3	Gas posing a risk to buildings and site users buildings and site users via the migration of gas into building causing explosion and asphyxiation.	Moderate **/ Low**	- No gas protection measures required.
4	Mobile contamination posing a risk to controlled waters via the migration through permeable strata.	Low	- No remediation required.
5	Sulphate posing a risk to building via direct contact (sulphate attack).	- Assessed in geotechnical report. Concrete classification of DS-1 AC-1s.	
7	Phytotoxic metals posing a risk to flora via root uptake.	**Very Low**	- Remediation associated with PL1 should be sufficient.

Table 7-1: Summary Risk Table.

Remedial recommendations are presented in Section 8.

Waste Classification

The results of soil testing and a HazWaste Online assessment show that all the samples tested are classified as **NON-HAZARDOUS WASTE** and LoW code "17-05-04 - soil and stones other than those mentioned in 17 05 03" is suitable.

Soakaways

Soakaway tests failed in the clay onsite, therefore, soakaways are unlikely to be feasible for this site.

8 Recommendations and Remedial Strategy

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

8.1 Remediation and Validation Recommendations

Table 8-1 details the further works and remedial recommendations / requirements. The table shows work required post-demolition of building(s), pre-construction (i.e. during earthworks) and during / post construction.

Figure 6 shows the areas requiring specific remediation.

Phase	PL	Remediation Requirements	Validation Requirements
Pre-Construction	**ALL**	Earthworks Inspections / Unexpected Contamination The relevant contractors should be briefed that during development works at the site should any unusual ground conditions and / or visual or olfactory evidence of contamination (including asbestos containing material) be encountered at the site, LKC and the Local Authority should be informed, and further assessment of the material may be required. Material should be stockpiled and quarantined on visqueen and covered.	Log of work undertaken including photographs. Details of any sampling undertaken and validation of any potential additional remedial work.
On / Post--Construction	**1 and 7**	Environmental Cover System As made ground is relatively deep, it is unlikely to be viable to remove the contaminated soils. Therefore, an environmental cover system is recommended. The environmental cover system should be as follows: **Private Front and Back Gardens: 600mm thick environmental cover system comprising:** **Either** 100mm physical break layer (MOT type 1 material, 20-30mm, minimal fines) and at least 500mm comprising clean inert fill and sufficient topsoil for a growing medium. **Or** geotextile membrane and at least 600mm comprising clean inert fill and sufficient topsoil for a growing medium. The subsoil layer can be replaced by additional topsoil. A diagram of a typical environmental cover system is shown in Appendix J. **Landscaping Around Apartment Block** Topsoil Growing Medium Although no contamination were at levels or in a matrix that could significantly harm key receptors in areas of landscaping around the apartment blocks, the existing made ground is not expected to be a suitable growing medium given the nature of the soil and the undesirable material present (ash and brick). A minimal topsoil cover of approximately 150mm is recommended	Measuring depth of environmental cover system using a staff and providing photographic evidence. Photographic evidence of the granular physical break or geotextile layer will also be collected. Chemical validation of imported soils: See Table 8-2.
	5	Sulphate Resistant Concrete Sulphate Resistant Concrete in line with DS-1 AC-1s may be required in localised areas.	N/A
	6	Potable Water Pipes It is recommended that a United Utilities Risk Assessment is undertaken once the location and depth of potable water pipes are known. It is likely that barrier pipe will be required.	Delivery Notes of Pipe Material. Photographs of the Installed Pipe.

Table 8-1: Remediation and validation requirements
Notes: See Table 5-5 for pollutant linkage (PL) details.

Other Considerations
Grubbing Out of In-Ground Structures It is recommended that in-ground structures are grubbed out as part of the groundworks
Re-use of site won material (LKC understand site levels will be reduced so may not be required) To ensure material is compliant with appropriate waste regulations, any site won material re-used onsite should be in recourse to appropriate exemptions. A U1 and T5 exemption should be registered. This will allow the following to be used onsite or brought in for use onsite (refer to guidance for types of waste that can be used): 5,000 tonnes (*c.* 2,500m^3) treatment of crushed concrete / stone. 1,000 tonnes (*c.* 500^3) use of non-hazardous soil. 5,000 tonnes (*c.* 2,500m^3) use of clays, sand, gravel, brick, concrete, stone etc. 50,000 tonnes (*c.* 25,000m^3) use of bitumous material to be used in roadways. A Materials Management Plan (MMP) with recourse to the CL:AIRE Code of Practice may be required if volumes exceed exemption limits. This must be registered **before** material movement starts onsite. If an MMP is required, this needs to be registered by a Qualified Person (QP) and there must be 'certainty of use' for any material re-used onsite or exported to site to ensure there is no 'sham recovery'. For all the above material will need to be tested at the rate and analytical suites presented in Table 8-3.
Asbestos Due to the presence of localised asbestos containing material, it is recommended that additional precautions are taken during site clearance, earthworks and construction in the areas of concern. The presence of asbestos in the made ground at the site presents a potential risk of generation of airborne fibres if this material is disturbed, such as for excavations to construct new foundations. A JIWG assessment was undertaken for ground workers during the development works and the risk was concluded as **very low**. This is presented in Appendix K. The work is deemed to be non-licensed work from the JIWG assessment and control measures such as awareness training for all site staff, provision of suitable personal and respiratory protective equipment, localised/manual dust suppression and decontamination facilities are recommended. With regards to any cement bound asbestos encountered during the ground works, this can be handpicked, doubled bagged and disposed of appropriately to a licenced landfill. Guidance on removing asbestos cement is described in HSE (2012). If ACM is identified in soil arisings then soil should be placed directly into covered skips and disposed of at a suitable licenced landfill, after further testing to quantify the extent of asbestos contamination of the soils. It should be considered that blue asbestos is notifiable (if present) and must be removed by a licenced contractor.
Health and Safety Considerations In working with, removing or treating any contaminating material it is important that any potential risks associated with the actual site works are mitigated by good environmental management of the site during the remedial phases. Standard health and safety precautions (as per HSE guidance[65]) should be adopted by all workers involved with site enabling and construction works.
Piling in Contaminated Land It is understood that the building will be piled. This may provide a preferential pathway for contaminants to the Secondary B Aquifer. Once the method of piling has been determined, good practice for the drilling of piles on contaminated sites should be adhered to, such as guidance provided by the Environment Agency.

8.2 Validation of Subsoil / Topsoil

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

[65] HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land" London HMSO.

A summary of the required imported material sampling requirements is presented in Table 8-2, based on MCC 'Guidelines to Developer' (2016). However, LKC consider no testing, but proof of provenance is sufficient for natural, virgin, quarried material. Ideally, the material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site. However, where this is not possible then material imported should be segregated based on source and soil type. Validation samples should be taken prior to placement in gardens / soft landscaping to ensure suitability for use.

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

Table 8-2: Sampling requirements for imported soils.

Notes:

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

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

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

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

In addition, it should be ensured that the matrix of the topsoil is suitable as a growing medium and no undesirable material is present (in line with BS3882[66]). LKC advise this information is provided by the supplier before material is imported onto site.

Imported material to be used in gardens will be compared against residential with plant uptake criteria (as used in the contamination risk assessment (Section 5-1). Appropriate remedial target criteria are presented in Appendix I.

8.3 Site Completion Report

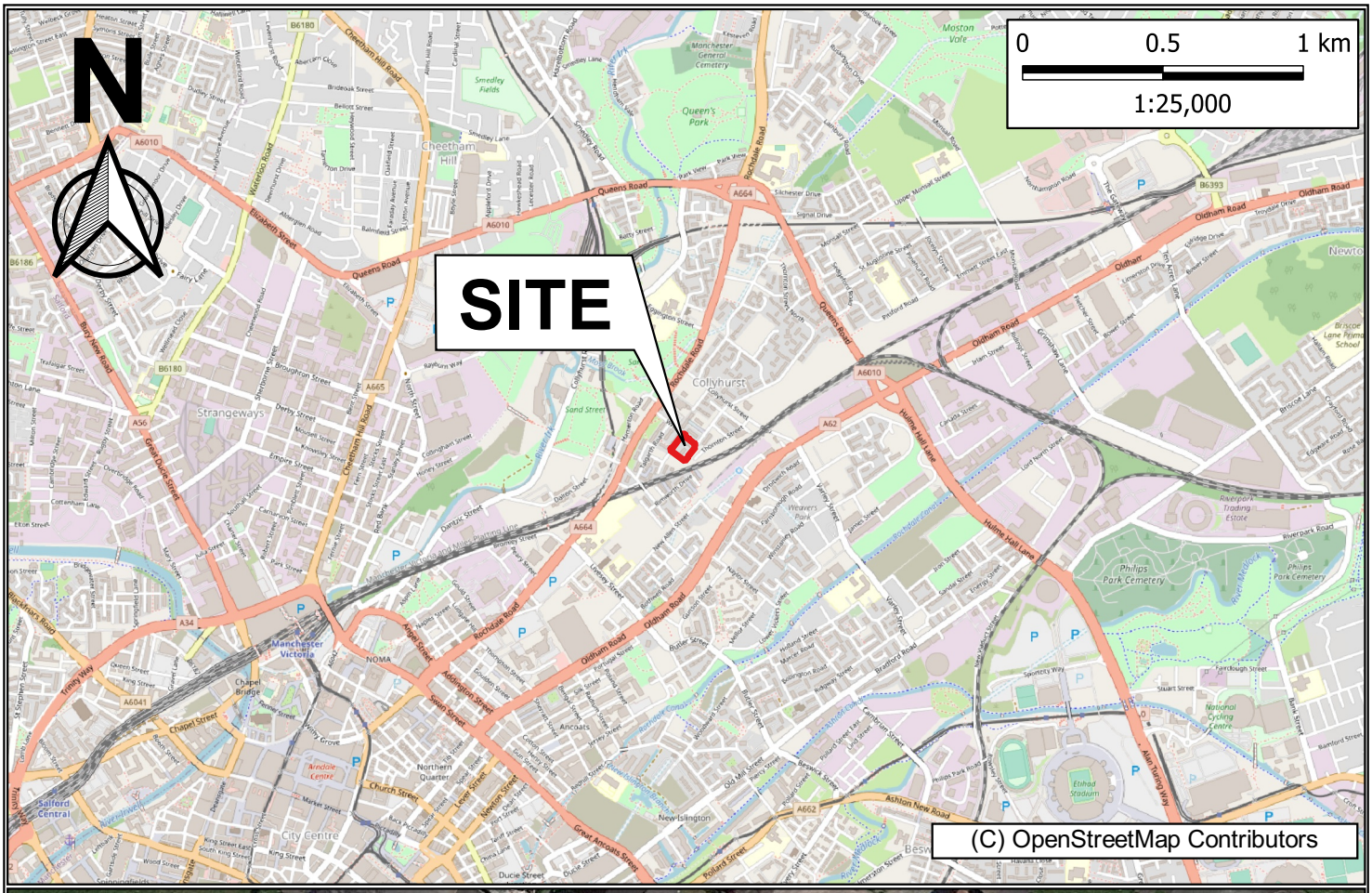
It is recommended that any remediation carried out on the site is validated by a third party and suitable documentary evidence provided in a Site Completion Report, such as photographs, consignment documents and analytical results. At this stage, this is likely to include as a minimum:

- Provision of waste transfer documents.
- Environmental capping layer: Validation of environmental cover system (gardens only).
- Verification testing of all imported soil for garden and soft landscaping areas.
- Information on the installation of protective pipes and / or sterile trenches.
- Details of any unexpected contamination identified onsite, suitably risk assessed and / or validated.

[66] BS (2015). "Specifications for Topsoil and Requirements for use." BS3882:2015.

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

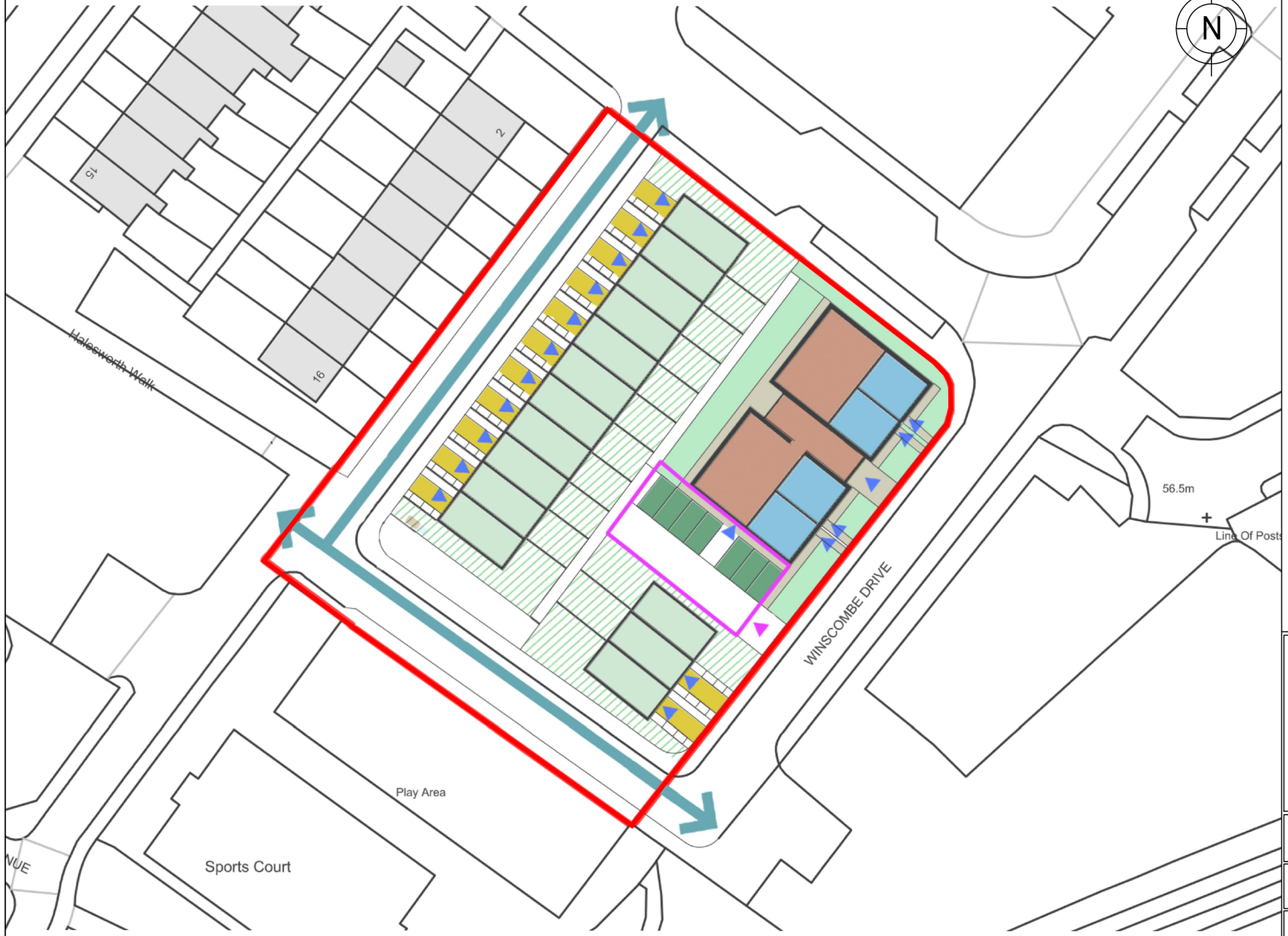
Figures





Client: Far East Consortium International Ltd		Title: Site Location & Boundary Plan	
Site: Collyhurst South Alternate Site, Manchester			
Job No.: LKC 20 1673	Drawn By: HM	Checked By: CH	Drawn: May 2021
Scale (see scale bar): 1:25,000 & 1:1,250 @ A4	Figure: 1	Revision:	

LK GROUP



KEY

- Site Boundary
- Entrance
- Vehicle Movement
- Townhouse Parking
- Apartment Parking
- 3B5P Townhouse
- 3B6P Duplex
- Apartment Core
- Green Amenity Space
- Townhouse Gardens
- Secure Parking
- Gated Entrance

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.

0 20

SCALE (Metres)

Extract from: Plan Supplied by Client
Drawing Ref: 7.7 Proposed Site Layout Plan - South Collyhurst

LK CONSULT LIMITED

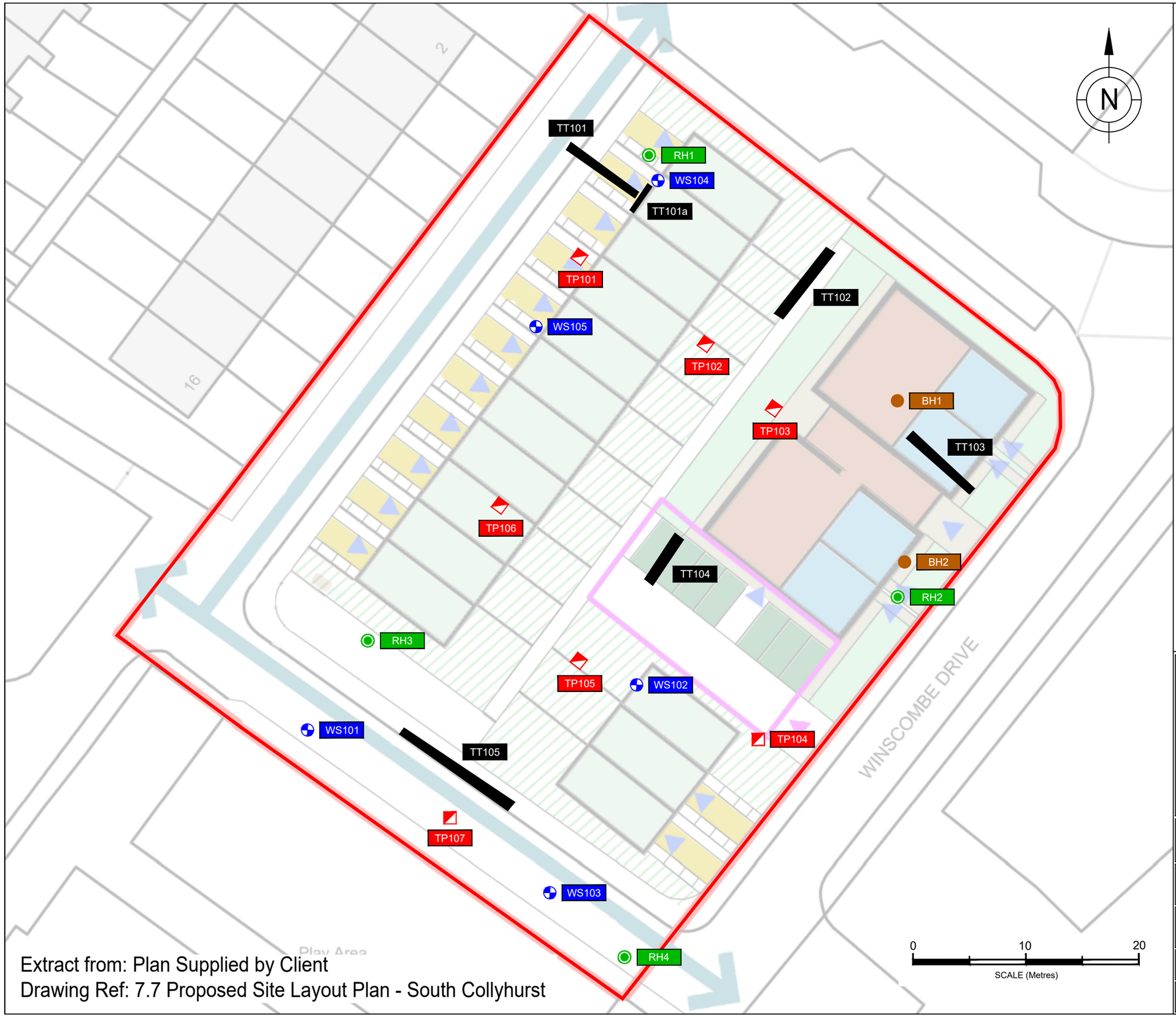
Client: Far East Consortium International Limited

Site: Collyhurst South Alternate Site

Title: Proposed Development Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 20 1120	1:500 @ A3	2	

Drawn By:	Checked By:	Drawn:
AC	HM	Jan 2021



Extract from: Plan Supplied by Client
Drawing Ref: 7.7 Proposed Site Layout Plan - South Collyhurst

KEY

- Site Boundary
- Window Sample Borehole (WS)
- Trial Pit (TP)
- Rotary Borehole (RH)
- Borehole (BH)
- Trial Trench (TT)

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.

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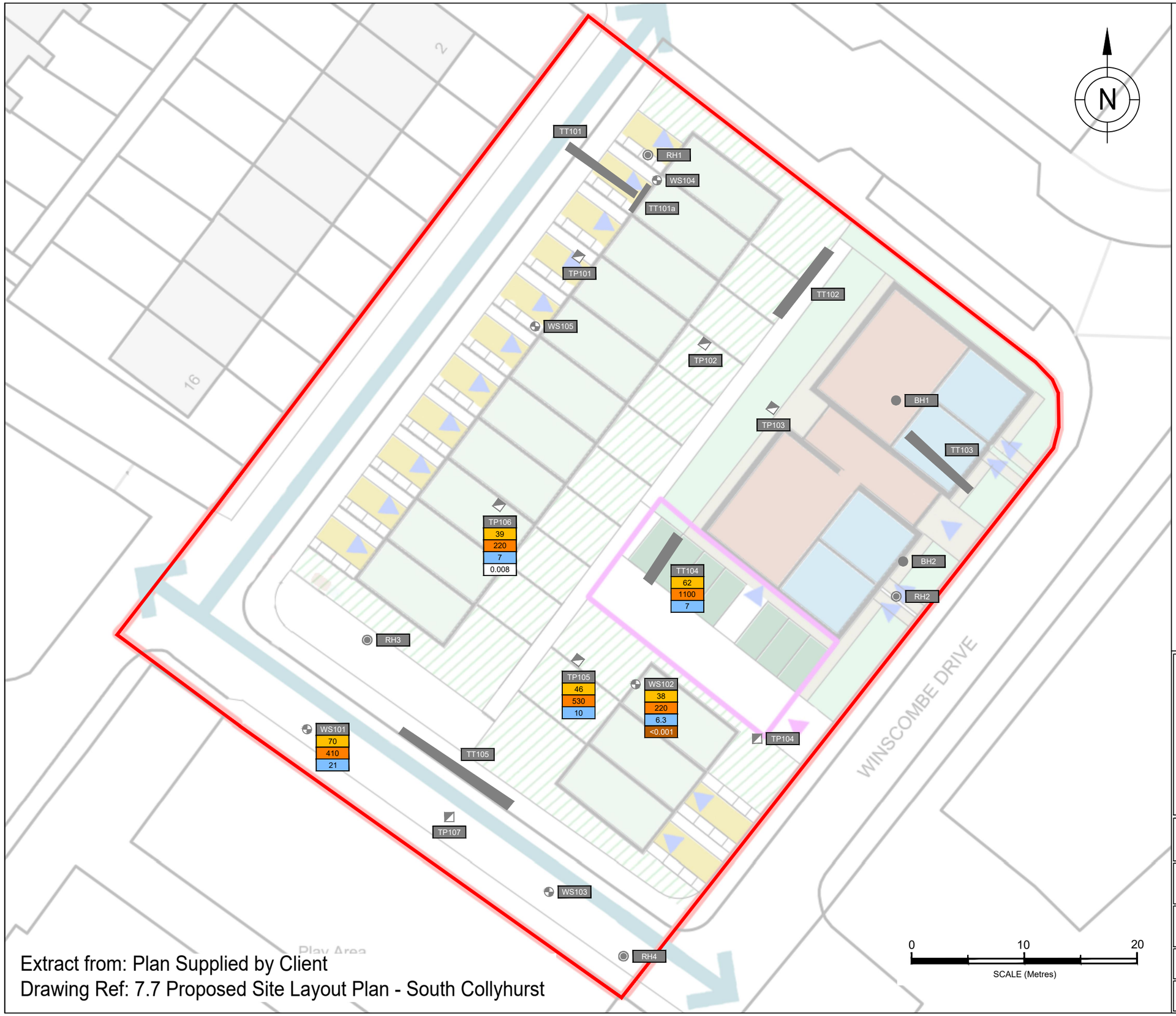
Client: Far East Consortium International Limited

Site: Collyhurst South Alternate Site

Title: Site Investigation Location Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 20 1673	See Scale Bar	4	

Drawn By:	Checked By:	Drawn:
AC	CH	Mar 2021



Extract from: Plan Supplied by Client
Drawing Ref: 7.7 Proposed Site Layout Plan - South Collyhurst

KEY

- Site Boundary
- Window Sample Borehole (WS)
- Trial Pit (TP)
- Rotary Borehole (RH)
- Borehole (BH)
- Trial Trench (TT)

Exceedances
(number in box = GAC)

- mg/kg — Arsenic (As)
- mg/kg — Lead (Pb)
- mg/kg — Benzo(a)Pyrene (B(a)P)
- % — Asbestos-Containing Material (ACM) - Amosite
- % — Asbestos-Containing Material (ACM) - Chrysotile

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.

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Client: Far East Consortium International Limited

Site: Collyhurst South Alternate Site

Title: Elevated Contaminants Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 20 1673	See Scale Bar	5	

Drawn By:	Checked By:	Drawn:
AC	CH	Mar 2021



KEY

Site Boundary

Remediation Zones

Cover System Required (600mm Front Gardens, 600mm Rear Gardens)

No Cover System Required in Soft Landscaping. 150mm Nominal Topsoil Layer Recommended.

0 10 20

SCALE (Metres)

Extract from: Plan Supplied by Client
Drawing Ref: 7.7 Proposed Site Layout Plan - South Collyhurst

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

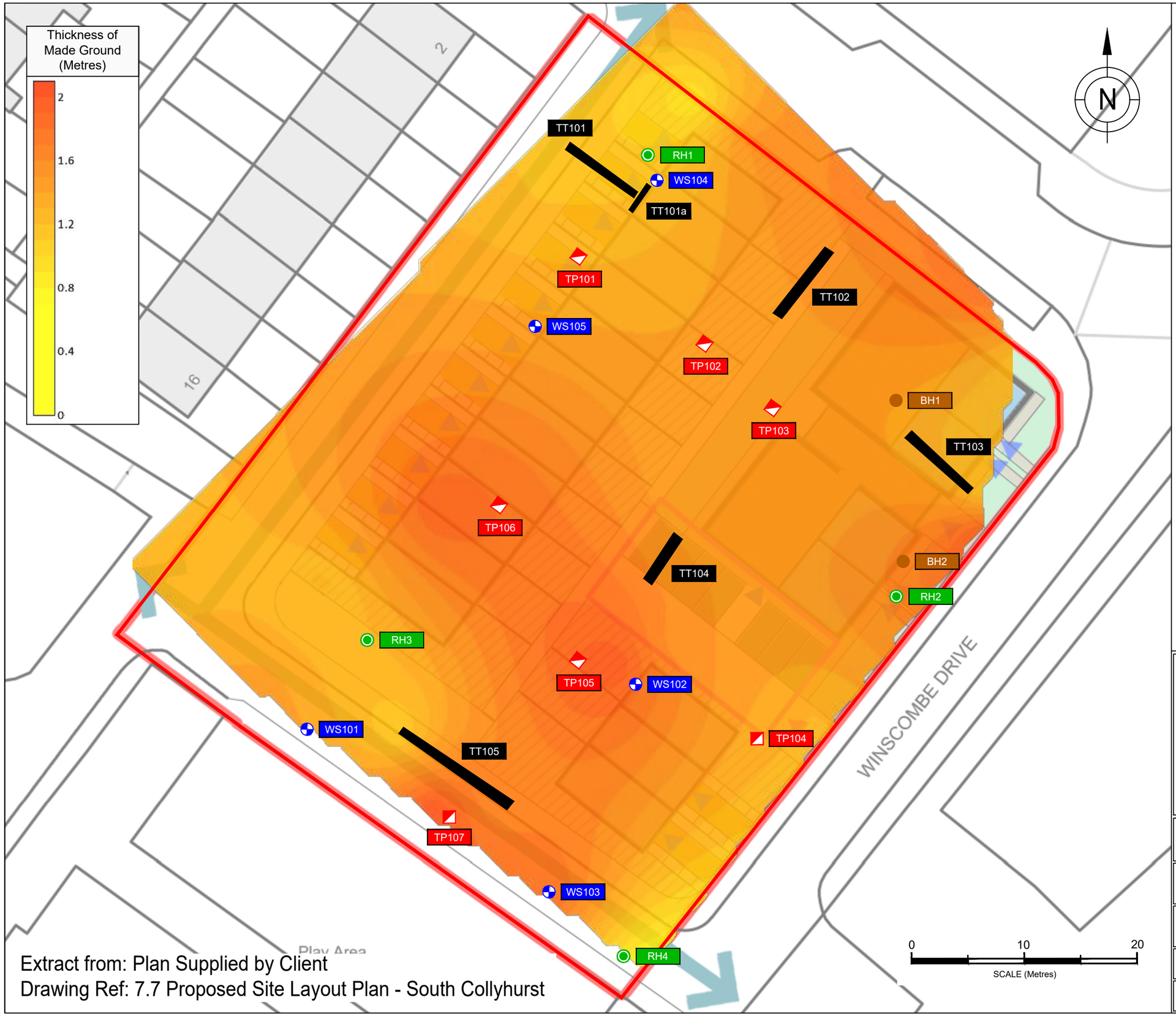
Client: Far East Consortium International Limited

Site: Collyhurst South Alternate Site

Title: Remediation Zoning Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 20 1673	See Scale Bar	6	

Drawn By:	Checked By:	Drawn:
AC	CH	Mar 2021



Extract from: Plan Supplied by Client
Drawing Ref: 7.7 Proposed Site Layout Plan - South Collyhurst

KEY

- Site Boundary
- Window Sample Borehole (WS)
- Trial Pit (TP)
- Rotary Borehole (RH)
- Borehole (BH)
- Trial Trench (TT)

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: Far East Consortium International Limited

Site: Collyhurst South Alternate Site

Title: Made Ground Thickness Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 20 1673	See Scale Bar	7	

Drawn By:	Checked By:	Drawn:
AC	CH	Mar 2021

Appendix A

Risk Matrix

Risk Evaluation

The method for risk evaluation is a qualitative method of interpreting the output from the risk estimation stage of the assessment, based on CIRIA 552[67]. It involves the classification of the:

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

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

Table A. Classification of Consequence

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

Table B. Classification of Probability.

[67] CIRIA C552 (2001) Contaminated Land Risk Assessment - A Guide to Good Practice.

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

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

Table C. Comparison of Consequence against Probability

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

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

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

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

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

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

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

Appendix B

Profile Logs

LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Borehole Number** **BH1**
Boring Method Cable Percussion	**Casing Diameter**	**Ground Level (mOD)** 56.72	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385404.7 E 399719.9 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	D1					(0.80)	MADE GROUND: Dark brown gravelly sandy silty CLAY with occasional brick fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprising sandstone.			
0.80	D2				54.12	0.80				
1.20-1.65 1.20-1.65	SPT N=8 X3			2,2/2,2,2,2		(1.00)	MADE GROUND: Black gravelly silty SAND with frequent ash, brick fragments, oyster shells, occasional clay inclusions, whole bricks, pottery fragments, clinker and rare metal fragments. Sand is fine to coarse. Gravel is fine to coarse and angular to subangular comprising mudstone.			
1.50	D4									
					53.12	1.80	Firm to stiff consistency grey and brown mottled slightly gravelly silty CLAY. Gravel is fine to coarse and subangular comprising sandstone and mudstone.			
2.20-2.65 2.20-2.65	SPT N=17 X5			3,3/4,4,4,5						
3.30-3.75	U6									
3.80 3.80-4.10	D7 B8									
4.30-4.75 4.30-4.75	SPT N=20 X9			4,5/5,5,5,5						
5.20-5.65 5.20-5.65	SPT N=22 X10			4,5/5,5,6,6						
						(9.30)				
6.70-7.15	U11									
7.20 7.30-7.60	D12 B13									

Remarks
Borehole dry.

Scale (approx)	Logged By
1:40	JH

Figure No.
LKC 20 1673.BH1

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Borehole Number** **BH1**
Boring Method Cable Percussion	**Casing Diameter**	**Ground Level (mOD)** 56.72	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385404.7 E 399719.9 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
8.10-8.55 8.10-8.50	SPT N=20 X14			3,3/4,4,6,6						
9.60-10.05 9.60-10.05	SPT N=23 X15			3,4/5,6,6,6						
10.50-10.95	U16									
11.00 11.10-11.17 11.10-11.17	D17 SPT 25*/30 50/40 X18			25/50	43.82 43.75	11.10 11.17	Brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse and angular to subangular comprising sandstone (probable sandstone cobble). Complete at 11.17m			

Remarks
Borehole dry.

Scale (approx)	Logged By
1:40	JH

Figure No.
LKC 20 1673.BH1

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Borehole Number** **BH2**
Boring Method Cable Percussion	**Casing Diameter**	**Ground Level (mOD)** 56.63	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385404.1 E 399705.6 N	**Dates** 26/02/2021	**Project Contractor** D&I	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	D1				55.03	(0.40) 0.40	MADE GROUND: Dark grey brown slightly gravelly sandy silty CLAY with rare brick fragments and rootlets. Sand is fine to medium. Gravel is fine to medium and subangular comprising sandstone.			
0.80	D2					(0.80)	MADE GROUND: Dark grey gravelly silty SAND with frequent ash, brick fragments, oyster shells, rare plastic. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising sandstone and mudstone.			
1.20-1.65 1.20-1.65	SPT N=18 X3			3,4/4,4,5,5	54.23	1.20	Stiff consistency brown and grey mottled slightly gravelly silty CLAY with rare coal fragments. Gravel is fine to medium and subangular to rounded comprising sandstone, mudstone and quartzite.			
							Rare rootlets			
2.30-2.75	U4									
2.80	D5									
3.30-3.75 3.30-3.75	SPT N=20 X6			3,4/4,5,5,6						
4.40-4.85 4.40-4.85	SPT N=22 X7			4,4/5,5,6,6			No grey mottled below 4.50mbgl.			
5.50-5.95	U8									
6.00	D9									
7.00-7.45 7.00-7.45	SPT N=27 X10			4,5/7,6,7,7		(12.10)				

Remarks
Borehole dry.

Scale (approx)	Logged By
1:40	JH

Figure No.
LKC 20 1673.BH2

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Borehole Number** **BH2**
Boring Method Cable Percussion	**Casing Diameter**	**Ground Level (mOD)** 56.63	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385404.1 E 399705.6 N	**Dates** 26/02/2021	**Project Contractor** D&I	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
8.50-8.80	U11									
9.00	D12									
10.10-10.55	SPT N=27			5,6/6,7,7,7						
10.10-10.55	X13									
11.30-11.50	SPT 25*/95 50/105			20,5/36,14						
11.30-11.55	X14									
11.60	D15									
12.30-12.51	SPT 25*/95 50/115			18,7/28,22						
12.30-12.50	X16									
13.00-13.30	SPT 50/150			8,13/20,22,8						
13.00-13.30	X17									
					42.13	13.30	Complete at 13.32m			

Remarks
Borehole dry.
Chiselling from 11.30m to 13.00m for 1.5 hours.

Scale (approx)	Logged By
1:40	JH

Figure No.
LKC 20 1673.BH2

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** TP101	
Excavation Method Mechanically excavated trial pit to 2.50mbgl.	**Dimensions**	**Ground Level (mOD)** 56.71	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385368 E 399742 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	ES1				(0.30)	MADE GROUND: Dark grey sandity silty CLAY with frequent rootlets, rare brick fragments and plastic. Sand is fine to medium.		
				56.41	0.30			
0.30-1.00	ES2				(0.80)	MADE GROUND: Brown very gravelly sandy CLAY with occasional brick fragments and ash. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising mudstone and sandstone.		
				55.61	1.10			
1.20-1.50	ES3					Stiff consistency medium to high strength grey and brown mottled slightly gravelly silty CLAY with rare coal fragments. Gravel is fine to medium and subrounded to subangular comprising sandstone and quartzite.		
1.50 1.50-2.00	SV 70kPa B4				(1.40)			
2.00	SV 75kPa							
2.50	SV 82kPa			54.21	2.50			
						Complete at 2.50m		



Remarks

Trial pit dry and stable.
Location accurate to 5.00-8.00m.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TP101

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** **TP102**
Excavation Method Mechanically excavated trial pit to 2.00mbgl.	**Dimensions**	**Ground Level (mOD)** 56.74	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385383.4 E 399733.9 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.40	ES1				(0.40)	MADE GROUND: Dark greyish brown slightly gravelly sandy silty CLAY with occasional rootlets, rare glass, plastic and brick fragments. Sand is fine to medium. Gravel is fine to medium and subrounded to subangular comprising quartzite and mudstone.		
0.40-1.00	ES2			56.34	0.40			
1.00	SV 68kPa				(0.50)	MADE GROUND: Greyish brown very gravelly very silty SAND with frequent brick fragments, rare glass, ash, metal and pottery fragments. Sand is fine to coarse. Gravel is fine to medium and subangular to angular comprising sandstone and mudstone.		
1.00-2.00	ESB3		Water strike(1) at 1.00m.	55.84	0.90			▽1
					(1.10)	Stiff consistency medium to high strength grey and brown mottled slightly gravelly silty CLAY with rare rootlets and coal fragments. Gravel is fine to medium and subrounded comprising mudstone and quartzite. Seep of water at 1.00mbgl.		
2.00	SV 110kPa			54.74	2.00			
						Complete at 2.00m		



Remarks

Seep of water at 1.00mbgl.
Trial pit stable.
Follow on soakaway test undertaken.
Location accurate to 5.00-8.00m.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TP102

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** **TP103**	
Excavation Method Mechanically excavated trial pit to 2.50mbgl.	**Dimensions**	**Ground Level (mOD)** 56.71	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385386.8 E 399731.1 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				56.61	0.10	MADE GROUND: Dark grey slightly gravelly sandy silty CLAY with occasional rootlets. Sand is fine to medium. Gravel is fine to medium and subrounded to angular comprising sandstone and quartzite.		
0.10-0.50	ES1				(0.40)			
				56.21	0.50	MADE GROUND: Dark greyish brown sandy clayey GRAVEL with frequent brick fragments, occasional coal fragments, rootlets, and rare wood fragments. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded comprising mudstone and quartzite.		
0.50-1.00	ESLB2				(1.00)			
			Water strike(1) at 1.20m.			MADE GROUND: Grey gravelly sandy silty CLAY with frequent brick fragments, rare pottery fragments, ash and concrete fragments. Sand is fine to medium. Gravel is fine to medium and subrounded to angular comprising sandstone, mudstone and quartzite. Slow inflow of water at 1.20mbgl.		▽1
1.50	SV 82kPa			55.21	1.50			
1.50-2.00	ESB3					Stiff consistency high strength grey and brown mottled slightly gravelly silty CLAY with rare rootlets. Gravel is fine to medium and subrounded comprising quartzite.		
					(1.00)			
2.50	SV 110kPa			54.21	2.50			
						Complete at 2.50m		



Remarks

Slow inflow of water at 1.20mbgl.
Trial pit stable.
Location accurate to 5.00-8.00m.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TP103

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com		**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** **TP104**
Excavation Method Mechanically excavated trial pit to 2.30mbgl.	**Dimensions**	**Ground Level (mOD)** 56.59	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385391.8 E 399689.9 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Grey brown slightly gravelly sandy silty CLAY with occasional rootlets and rare glass. Sand is fine to medium		
				56.29	0.30			
0.40-1.00	ESLB1				(0.80)	MADE GROUND: Black gravelly silty SAND with frequent ash, brick fragments, oyster shells, occasional clay inclusions, whole bricks, pottery fragments, clinker and rare metal fragments. Sand is fine to coarse. Gravel is fine to coarse and angular to subangular comprising mudstone. Layer of bricks at 0.30-0.40mbgl. Brick wall on S wall of trial pit between 0.30-1.00mbgl.		
				55.49	1.10			
1.10-1.30	ESB2				(0.20)			
1.30-2.30 1.50	ESB3 SV 106kPa			55.29	1.30	MADE GROUND: Dark grey gravelly sandy silty organic CLAY with occasional pottery fragments, oyster fragments, rare plastic and organic material. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising sandstone and mudstone.		
					(1.00)	Stiff to very stiff consistency high strength brown and grey mottled slightly gravelly silty CLAY with rare coal fragments. Gravel is fine to medium and subangular comprising mudstone.		
2.00	SV 112kPa							
			Water strike(1) at 2.30m.	54.29	2.30	Slow inflow of water at 2.30mbgl.		▽1
						Complete at 2.30m		



Remarks

Slow inflow of water at 2.30mbgl.
Trial pit stable.
Follow on soakaway test undertaken.
Location accurate to 5.00-8.00m.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TP104

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** **TP105**
Excavation Method Mechanically excavated trial pit to 3.00mbgl.	**Dimensions**	**Ground Level (mOD)** 56.51	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385377.6 E 399693.2 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				56.31	(0.20) 0.20	MADE GROUND: Greyish brown sandy silty CLAY with frequent rootlets. Sand is fine to medium.		
0.20-1.00	ESB1				(0.90)	MADE GROUND: Dark grey to black gravelly silty SAND with frequent ash, oyster sells, occasional clinker, bricks (whole and fragments), rare wood fragments, timber, glass, metal fragments. Sand is fine to coarse. Gravel is fine to coarse and angular to subrounded comprising mudstone and quartzite. Brick wall on NW wall of trial pit between 0.20-1.70mbgl.		
1.10-1.50	ESB2			55.41	1.10	MADE GROUND: Dark grey and orangish brown mottled gravelly sandy silty CLAY with slight organic odour, occasional brick fragments, ash, clinker, oyster shells, rare organic material, metal fragments. Sand is fine to medium. Gravel is fine to coarse and angular to subangular comprising sandstone and mudstone.		
2.00 2.00-2.90	SV 30kPa ESB3				(0.90)			
2.50	SV 88kPa			54.51	2.00	Firm to stiff consistency low to high strength grey and brown mottled silty CLAY with rare rootlets and coal fragments. Gravel is fine to medium and subangular comprising mudstone. Becoming stiffer consistency with depth.		
					(1.00)	Stiff consistency below 2.50mbgl.		
3.00	SV 82kPa			53.51	3.00	Moderate inflow of water at 2.90mbgl.		
						Complete at 3.00m		



Remarks

Moderate inflow of water at 2.90mbgl.
Trial pit stable.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TP105

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** **TP106**
Excavation Method Mechanically excavated trial pit to 2.80mbgl.	**Dimensions**	**Ground Level (mOD)** 56.67	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Observed measurements) 385364.5 E 399704.3 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-1.00	ES1			56.57	0.10	MADE GROUND: Dark grey brown slightly gravelly sandy silty CLAY with frequent rootlets. Sand is fine to medium. Gravel is fine to medium and subrounded comprising quartzite.		
					(1.50)	MADE GROUND: Grey brown very gravelly very sandy silty CLAY with occasional brick fragments, concrete fragments, rare whole bricks, clinker, pottery fragments and plastic. Sand is fine to medium. Gravel is fine to coarse and rounded to subangular comprising mudstone, sandstone and quartzite.		
1.60 1.60-1.90	SV 78kPa ES2			55.07	1.60 (0.30)	MADE GROUND: Light yellowish brown slightly clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse and subangular comprising limestone and sandstone.		
2.00 2.00-2.80	SV 92kPa ESB3			54.77	1.90	Stiff consistency high strength blueish grey and brown mottled slightly gravelly silty CLAY with rare rootlets. Gravel is fine to medium and subrounded comprising mudstone and quartzite.		
2.60	SV 112kPa				(0.90)			
				53.87	2.80	Slow inflow of water at 2.80mbgl.		
						Complete at 2.80m		



Remarks

Slow inflow of water at 2.80mbgl.
Trial pit stable.
Location accurate to 5.00-8.00m.
Follow on soakaway test.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TP106

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** **TP107**
Excavation Method Mechanically excavated trial pit to 2.00mbgl.	**Dimensions**	**Ground Level (mOD)** 56.57	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Observed measurements) 385364.4 E 399682.9 N	**Dates** 25/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.40	ES1				(0.50)	MADE GROUND: Greyish brown sandy silty CLAY with occasional brick fragments, rare plastic (vaccum cleaner plastic parts). Sand is fine to medium.		
						Layer of black plastic bin liner bags at 0.40mbgl.		
0.50-1.00	ESLB2			56.07	0.50	MADE GROUND Light yellow SAND and GRAVEL with occasional brick fragments and rare plastic. Sand is fine to coarse. Gravel is fine to coarse and subangular comprising limestone and sandstone.		
						Trial pit collapsing from 0.60mbgl.		
					(1.50)			
			Water strike(1) at 2.00m.	54.57	2.00	Slow inflow of water at 2.00mbgl.		▽1
						Complete at 2.00m		



Remarks

Trial pit terminated at 2.00mbgl due to trial pit collapsing at 0.60mbgl (unstable).
Slow inflow of water at 2.00mbgl.
Location accurate to 5.00-8.00mbgl.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TP107

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** TT101	
Excavation Method Mechanically excavated trial trench to 1.50mbgl.	**Dimensions** 0.70m x 6.50m x 1.50m	**Ground Level (mOD)** 56.78	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385371 E 399745 N	**Dates** 02/03/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Dark grey sandy silty CLAY with occasional brick fragments and rare whole bricks. Sand is fine to medium.		
				56.48	0.30			
					(0.30)	MADE GROUND: Dark grey sandy silty GRAVEL with occasional brick fragments and concrete fragments. Sand is fine to medium. Gravel is fine to coarse, subangular to angular comprising sandstone and mudstone.		
				56.18	0.60			
					(0.70)	MADE GROUND: Dark grey and brown gravelly sandy silty CLAY with rare organic material, brick fragments. Sand is fine to medium. Gravel is fine to coarse, subangular to angular comprising sandstone and mudstone. Drained encased in concrete encountered at 0.60mbgl.		
				55.48	1.30			
					(0.20)	Firm to stiff consistency brown slightly gravelly silty CLAY with rare grey mottling. Gravel is fine to medium and subangular comprising mudstone.		
				55.28	1.50	Complete at 1.50m		



Remarks

No evidence of foundations encountered.
Trial trench dry and stable.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TT101

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** TT101A	
Excavation Method Mechanically excavated trial trench to 1.30mbgl.	**Dimensions** 0.60m x 4.00m x 1.30m	**Ground Level (mOD)** 56.00	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385377 E 399744 N	**Dates** 02/03/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND: Dark grey sandy silty CLAY with occasional brick fragments, rare plastic. Sand is fine to medium.		
				55.70	0.30			
					(0.70)	MADE GROUND: Yellow and brown mottled slightly gravelly sandy CLAY with occasional brick fragments, rare concrete fragments. Sand is fine to medium. Gravel is fine to coarse, subangular to angular comprising sandstone and mudstone. MADE GROUND shallowest on northern side of trial pit to maximum depth of 0.60mbgl.		
				55.00	1.00			
					(0.30)	Firm consistency brown and grey mottled silty CLAY. MADE GROUND becoming deeper towards southern side of trial pit to maximum depth of 1.00mbgl.		
				54.70	1.30			
						Complete at 1.30m		



Remarks

Trial trench dry and stable.
No evidence of foundations encountered.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TT101A

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com		**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** **TT102**
Excavation Method Mechanically excavated trial trench to 1.60mbgl.	**Dimensions** 0.70m x 6.00m x 1.60m	**Ground Level (mOD)** 56.73	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385394 E 399739 N	**Dates** 02/03/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				56.53	(0.20) 0.20	MADE GROUND: Dark grey silty CLAY with occasional brick fragments.		
				56.23	(0.30) 0.50	MADE GROUND: Black sandy silty GRAVEL with frequent brick fragments, occasional concrete fragments, rare ash. Sand is fine to medium. Gravel is fine to coarse, subangular to angular comprising sandstone and mudstone.		
				55.33	(0.90) 1.40	MADE GROUND: Dark grey gravelly sandy silty CLAY with occasional brick fragments, ash, rare metal fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprisng mudstone and sandstone. Possible gravel drain at 1.00mgbl. Seep of water at 1.00mbgl.		
				55.13	(0.20) 1.60	Firm to stiff consistency brown and grey mottled silty CLAY.		
						Complete at 1.60m		



Remarks

Trial trench stable.
No evidence of foundations encountered.
Seep of water at 1.00mbgl.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TT102

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com		**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** **TT103**
Excavation Method Mechanically excavated trial trench to 1.60mbgl.	**Dimensions** 0.70m x 5.00m x 1.50m **Ground Level (mOD)** 56.70	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385380 E 399716 N **Dates** 02/03/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	MADE GROUND: Dark greyish brown slightly gravelly sandy silty CLAY with occasional rootlets, rare glass, plastic and brick fragments. Sand is fine to medium. Gravel is fine to medium and subrounded to subangular comprising quartzite and mudstone.		
				56.30	0.40			
					(0.80)	MADE GROUND: Dark grey gravelly silty SAND with frequent ash, brick fragments, rare glass and plastic fragments. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising sandstone and mudstone. Drain encased in concrete at 0.40mbgl.		
				55.50	1.20			
					(0.40)	Stiff consistency greyish brown silty CLAY.		
				55.10	1.60	Seep of water a		
						Complete at 1.60m		



Remarks

No evidence of foundations encountered.
Trial pit dry and stable.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TT103

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** TT104	
Excavation Method Mechnically excavated trial trench to 2.00mbgl.	**Dimensions** 0.70m x 4.00m x 1.50m	**Ground Level (mOD)** 56.45	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location 385383 E 399705.4 N	**Dates** 02/03/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				56.25	(0.20) 0.20	MADE GROUND: Dark grey silty CLAY with occasional brick fragments.		
				55.95	(0.30) 0.50	MADE GROUND: Black sandy silty GRAVEL with frequent brick fragments, occasional concrete fragments, rare ash. Sand is fine to medium. Gravel is fine to coarse, subangular to angular comprising sandstone and mudstone.		
					(0.90)	MADE GROUND: Dark grey gravelly sandy silty CLAY with occasional brick fragments, ash, rare metal fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprisng mudstone and sandstone. Possible redundant service (wire) at 0.90mbgl.		
				55.05	1.40	Firm to stiff consistency brown and grey mottled silty CLAY.		
					(0.60)			
				54.45	2.00	Complete at 2.00m		



Remarks

No evidence of foundations encountered.
Trial trench dry and stable.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TT104

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LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Trial Pit Number** TT105	
Excavation Method Mechanically excavated trial trench to 2.00mbgl.	**Dimensions** 0.6m x 9.0m x 2.0m	**Ground Level (mOD)** 56.59	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385367 E 399696 N	**Dates** 02/03/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	MADE GROUND: Greyish brown sandy silty CLAY with occasional brick fragments, concrete fragments. Sand is fine to medium.		
				56.09	0.50			
					(1.10)	MADE GROUND: Black gravelly silty SAND with frequent brick fragments, occasional pottery fragments, coal fragments, rare oyster shells. Sand is fine to medium. Gravel is fine to medium, angular to subangular comprising mudstone and quartzite. SE end of trench 0.60-1.60m MADE GROUND Light yellow SAND and GRAVEL with occasional brick fragments and rare plastic. Sand is fine to coarse. Gravel is fine to coarse and subangular comprising limestone and sandstone. MADE GROUND recorded to maximum depth of 1.10mbgl on NW end of trench. Becoming deeper towards SE.		
				54.99	1.60			
					(0.40)	Firm to stiff consistency brown and grey mottled slightly gravelly silty CLAY.		
				54.59	2.00	Complete at 2.00m		



Remarks

No evidence of foundations encountered.
Trial trench dry and stable.

Scale (approx)	Logged By	Figure No.
1:40	HM	LKC 20 1673.TT105

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Number** **WS101**
Excavation Method Drive-in Windowless Sample driven to 5.45mbgl.	**Dimensions**	**Ground Level (mOD)** 56.74	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385351.8 E 399690.7 N	**Dates** 23/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
				56.64	(0.10) 0.10	MADE GROUND: Dark grey slightly gravelly sandy silty CLAY with frequent rootlets, occasional brick fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.			
0.30-1.00	ES1			56.44	(0.20) 0.30				
					(0.70)	MADE GROUND: Black gravelly silty SAND with frequent brick fragments, occasional pottery fragments, coal fragments, rare oyster shells. Sand is fine to medium. Gravel is fine to medium, angular to subangular comprising mudstone and quartzite.			
1.20-1.65 1.20-1.50	SPT N=2 ES2		1,0/1,0,0,1	55.74	1.00 (0.50)	MADE GROUND: Dark greyish brown very gravelly clayey SAND with variable clay content frequent oyster shells, brick fragments, occasional clinker, blue-glazed pottery fragments, rootlets and rare tarmacadam fragments. Sand is fine to coarse. Gravel is fine to medium and subangular to angular comprising mudstone.			
1.70-2.00	ESB3			55.24	1.50				
2.00 2.00-2.45 2.00-2.45	PP 159.41kPa X4 SPT N=22		Water strike(1) at 2.00m. 4,4/5,5,5,7			MADE GROUND: Brown and dark grey mottled gravelly sandy silty CLAY with frequent brick fragments, rare ash, clinker, pottery fragments, wood fragments. Sand is fine to medium. Gravel is fine to medium, subangular comprising mudstone. Layer of organic CLAY with frequent organic material between 1.40-1.45mbgl.		▽1	
2.50-3.00	B5								
3.00 3.00-3.45 3.00-3.45	PP 141.01kPa X6 SPT N=26		Water strike(2) at 3.00m. 6,6/6,6,7,7			Stiff to very stiff consistency high strength to very high strength brown and grey mottled slightly gravelly silty CLAY with rare coal fragments. Gravel is fine to medium and subangular to subrounded comprising mudstone and quartzite. No grey mottling below 3.00mbgl.		▽2	
					(3.95)				
4.00 4.00-4.45 4.00-4.45	PP 104.23kPa SPT N=21 X7		3,4/5,5,5,6			Stiff consistency below 4.00mbgl.			
5.00 5.00-5.45 5.00-5.45	PP 85.83kPa SPT N=19 X8		3,3/3,4,6,6						
				51.29	5.45	Complete at 5.45m			

Remarks
Groundwater strikes at 2.00mbgl and 3.00mbgl.
Borehole stable.
Location acurate to 5.00-8.00m.

Scale (approx)	**Logged By**
1:40	HM

Figure No.
LKC 20 1673.WS101

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Number** **WS102**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Windowless Sample driven to 5.45mbgl.		56.53	Far East Consortium International Ltd	LKC 20 1673
	Location (Handheld GPS) 385381 E 399694.7 N	**Dates** 23/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.40	ES1				(0.40)	MADE GROUND: Light greyish brown very gravelly very sandy silty CLAY with frequent rootlets, brick fragments and occasional concrete fragments. Sand is fine to medium. Gravel is fine to coarse, subrounded to subangular comprising sandstone and mudstone			
0.40-0.80	ES2			56.13	0.40				
0.80-1.60	ESB3			55.73	(0.40) 0.80	MADE GROUND: Brown slightly silty gravelly SAND with frequent brick fragments, occasional ash and rare coal fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising sandstone and mudstone.			
1.20-1.65	SPT N=2		1,0/1,0,0,1		(0.80)	MADE GROUND: Dark brown and grey gravelly sandy silty CLAY with orange mottling, frequent ash, clinker, oyster shells, rare pottery and wood fragments. Sand is fine to medium. Gravel is fine to medium, angular to subangular comprising sandstone and mudstone.			
1.70-2.00	ESB4			54.93	1.60				
2.00 2.00-2.45 2.00-2.45	PP 118.54kPa SPT N=14 X5		3,3/3,3,4,4			Stiff consistency high strength brown and grey mottled slightly gravelly silty CLAY with rare rootlets and coal fragments. Gravel is fine to medium, subrounded to subangular comprising mudstone and quartzite. Organic material and slight organic odour between 1.60-1.70mbgl.			
3.00 3.00-3.45 3.00-3.45	PP 110.36kPa SPT N=16 X6		3,4/4,4,4,4			No grey mottling or rootlets below 3.00mbgl.			
4.00 4.00-4.45 4.00-4.45	PP 128.76kPa X7 SPT N=19		Water strike(1) at 4.00m. 4,4/4,4,5,6		(3.85)			▽1	
5.00 5.00-5.45 5.00-5.45	PP 110.36kPa SPT N=20 X8		3,4/4,4,6,6						
				51.08	5.45	Complete at 5.45m			

Remarks
Groundwater strike at 4.00mbgl.
Borehole stable.
Location accurate to 5.00-8.00m.

Scale (approx)	**Logged By**
1:40	HM

Figure No.
LKC 20 1673.WS102

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Number** **WS103**
Excavation Method Drive-in Windowless Sample driven to 5.45mbgl.	**Dimensions**	**Ground Level (mOD)** 56.54	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location (Handheld GPS) 385373.3 E 399676.3 N	**Dates** 23/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.30	ES1				(0.30)	MADE GROUND: Greyish brown gravelly sandy silty CLAY with occasional brick fragments, rare foil and rootlets. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.			
0.30-0.70	ES2			56.24	0.30				
					(0.50)	MADE GROUND: Grey SAND and GRAVEL with rare brick and pottery fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular comprising sandstone and limestone. Becoming brown with depth.			
0.80-1.00	ES3			55.74	0.80				
1.00-1.80	ESB4			55.54	(0.20) 1.00				
1.20-1.65	SPT N=2		1,0/0,1,0,1			MADE GROUND: Dark brown and orange mottled slightly gravelly very sandy CLAY with occasional ash, coal fragments and rare brick fragments. Sand is fine to medium. Gravel is fine to medium, angular to subrounded comprising mudstone and quartzite.			
					(0.80)				
1.80-2.00	ESB5			54.74	1.80	MADE GROUND: Grey to black slightly gravelly sandy silty organic CLAY with frequent rootlets, organic material, rare oyster shells, ash, brick fragments and slight organic odour. Sand is fine to medium. Gravel is fine to medium, subangular to angular comprising mudstone.			
2.00	PP 134.89kPa								
2.00-2.45	SPT N=18		3,3/4,4,5,5						
2.00-2.45	X6								
						Stiff consistency high strength brown and grey mottled slightly gravelly silty CLAY with rare rootlets and coal fragments. Gavel is fine to medium and subrounded comprising quartzite and mudstone.			
3.00	PP 110.36kPa								
3.00-3.45	SPT N=20		3,4/5,5,5,5						
3.00-3.45	X7					Layer of organic material between 3.00-3.10mbgl.			
					(3.65)				
4.00	PP 116.49kPa								
4.00-4.45	SPT N=17		3,3/3,4,5,5						
4.00-4.45	X8					No grey mottling or rootlets below 4.00mbgl.			
5.00	PP 104.23kPa								
5.00-5.45	SPT N=20		3,4/4,5,5,6						
5.00-5.45	X9								
				51.09	5.45	Complete at 5.45m			

Remarks

Scale (approx)	Logged By
1:40	HM

Figure No.
LKC 20 1673.WS103

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Number** **WS104**
Excavation Method Drive-in Windowless Sample driven to 5.45mbgl.	**Dimensions**	**Ground Level (mOD)** 56.81	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location 385382.8 E 399729.4 N	**Dates** 23/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20-0.80	ES1				(1.20)	MADE GROUND: Greyish brown slightly gravelly very sandy silty CLAY with frequent brick fragments, occasional clinker, ash, coal fragments and rare whole bricks. Sand is fine to medium. Gravel is fine to coarse, subangular to angular comprising sandstone and mudstone.			
1.20-1.65 1.20-1.60 1.20-1.65	SPT N=12 ES2 X3		1,2/2,3,3,4	55.61	1.20	Possible concrete in poor condition at 1.10-1.20mbgl recovered as cream fine to coarse silty GRAVEL.			
1.70-2.00	B4					Stiff to very stiff consistency high strength brown slightly gravelly silty CLAY with rare grey mottling. Gravel is fine to medium and subangular comprising mudstone.			
2.00 2.00-2.45 2.00-2.45	PP 98.1kPa SPT N=15 X5		3,3/3,4,4,4						
2.70-3.00	B6								
3.00 3.00-3.45 3.00-3.45	PP 128.78kPa SPT N=19 X7		4,4/4,5,5,5		(4.25)				
4.00 4.00-4.45 4.00-4.45	PP 98.1kPa SPT N=17 X8		4,4/4,4,4,5						
5.00 5.00-5.45 5.00-5.45	PP 134.89kPa SPT N=23 X9		4,4/4,3,7,9						
				51.36	5.45	Complete at 5.45m			

Remarks
Borehole dry and stable.
Location accurate to 5.00-8.00m.

Scale (approx)	**Logged By**
1:40	HM

Figure No.
LKC 20 1673.WS104

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LK GROUP	**LK CONSULT LTD** Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com	**Site** Collyhurst South Alternate Site, Manchester	**Number** **WS105**
Excavation Method Drive-in Windowless Sample driven to 5.45mbgl.	**Dimensions**	**Ground Level (mOD)** 56.66	**Client** Far East Consortium International Ltd	**Job Number** LKC 20 1673
	Location 385372 E 399726.4 N	**Dates** 01/02/2021	**Project Contractor** D&I	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.80	ES1				(0.80)	MADE GROUND: Dark grey gravelly very sandy silty CLAY with occasional brick fragments, occasional whole bricks, rare ash, clinker and concrete fragments. Sand is fine to medium. Gravel is fine to medium and angular to subangular comprising sandstone and mudstone.			
				55.86	0.80				
1.00-1.20	ES2				(0.40)	MADE GROUND: Dark brown and orange mottled gravelly silty SAND with frequent ash, clinker, coal fragments and occasional clay inclusions. Sand is fine to coarse. Gravel is fine to medium and angular to subangular comprising mudstone.			
1.20-1.65 1.20-1.50	SPT N=9 ES3		2,2/2,2,2,3	55.46	1.20	Stiff consistency high strength brown and grey mottled slightly gravelly silty CLAY with rare coal fragments. Gravel is fine to medium and subrounded to subangular comprising mudstone and quartzite. Less grey mottling with depth.			
1.70-2.00	B4								
2.00 2.00-2.45 2.00-2.45	PP 98.1kPa SPT N=17 X5		3,3/3,4,5,5						
2.50-3.00	B6								
3.00 3.00-3.45 3.00-3.45	PP 134.89kPa SPT N=21 X7		3,3/4,5,6,6		(4.25)				
4.00 4.00-4.45 4.00-4.45	PP 104.23kPa SPT N=21 X8		4,4/4,5,6,6			No grey mottling below 4.00mbgl.			
5.00 5.00-5.45 5.00-5.45	PP 98.1kPa SPT N=19 X9		3,3/4,4,5,6						
				51.21	5.45	Complete at 5.45m			

Remarks
Borehole dry and stable.
Location accurate to 5.00-8.00m.

Scale (approx)	**Logged By**
1:40	HM

Figure No.
LKC 20 1673.WS105

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Appendix C

Certificates of Analysis – Soil

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

Final Report

Report No.:	21-05796-1
Initial Date of Issue:	11-Mar-2021
Client	LK Consult
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS
Contact(s):	Chris Hughes Contaminated Land
Project	LKC 20 1673 Collyhurst South Alternate Site

Quotation No.:		**Date Received:**	25-Feb-2021
Order No.:	738423	**Date Instructed:**	05-Mar-2021
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	11-Mar-2021
Date Approved:	11-Mar-2021		

Approved By:

[redacted]

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site

Client: LK Consult		**Chemtest Job No.:**			21-05796	21-05796	21-05796	21-05796	21-05796	21-05796
Quotation No.:		**Chemtest Sample ID.:**			1148525	1148528	1148531	1148533	1148537	1148539
Order No.: 738423		Client Sample Ref.:			WS101	WS102	WS102	WS103	WS104	WS105
		Client Sample ID.:			ES1	ES1	ES4	ES2	ES1	ES1
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.3	0	1.7	0.3	0.2	0
		Bottom Depth (m):			1	0.4	2	0.7	0.8	0.8
		Date Sampled:			23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021
		Asbestos Lab:			COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	Fibres/Clumps		-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	Amosite		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	Stereo Microscopy		-	-	-
Asbestos by Gravimetry	U	2192	%	0.001		<0.001				
Total Asbestos	U	2192	%	0.001		<0.001				
Moisture	N	2030	%	0.020	23	13	17	8.1	20	22
Soil Colour	N	2040		N/A	Black	Black	Black	Brown	Brown	Black
Other Material	N	2040		N/A	Wood	Stones	None	Stones	Stones	Roots
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Sand	Clay	Clay
Chromatogram (TPH)	N			N/A		See Attached			See Attached	
pH	M	2010		4.0	8.6	10.2	8.9	9.9	8.7	8.4
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		1.1			0.42	
Magnesium (Water Soluble)	N	2120	g/l	0.010			< 0.010			
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.15	0.024	0.017	0.20	0.014	< 0.010
Chloride (Water Soluble)	M	2220	g/l	0.010			0.016			
Nitrate (Water Soluble)	N	2220	g/l	0.010			< 0.010			
Cyanide (Free)	M	2300	mg/kg	0.50		< 0.50			< 0.50	
Cyanide (Total)	M	2300	mg/kg	0.50		< 0.50			< 0.50	
Arsenic	M	2450	mg/kg	1.0	70	38		16	21	16
Cadmium	M	2450	mg/kg	0.10	0.23	0.58		0.28	0.29	0.29
Chromium	M	2450	mg/kg	1.0	30	31		12	22	18
Copper	M	2450	mg/kg	0.50	160	86		24	100	53
Mercury	M	2450	mg/kg	0.10	1.5	0.61		0.10	0.53	0.69
Nickel	M	2450	mg/kg	0.50	40	30		11	28	21
Lead	M	2450	mg/kg	0.50	410	220		41	89	82
Selenium	M	2450	mg/kg	0.20	0.36	< 0.20		< 0.20	0.25	0.47
Vanadium	U	2450	mg/kg	5.0	37	27		15	29	23
Zinc	M	2450	mg/kg	0.50	160	130		41	81	70
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	19	4.3		1.2	6.4	6.7
Diesel Present	N	2670		N/A		False			False	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		< 1.0			< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		< 1.0			< 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0			< 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		< 1.0			< 1.0	

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site

Client: LK Consult			**Chemtest Job No.:**		21-05796	21-05796	21-05796	21-05796	21-05796	21-05796
Quotation No.:			**Chemtest Sample ID.:**		1148525	1148528	1148531	1148533	1148537	1148539
Order No.: 738423			Client Sample Ref.:		WS101	WS102	WS102	WS103	WS104	WS105
			Client Sample ID.:		ES1	ES1	ES4	ES2	ES1	ES1
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0	1.7	0.3	0.2	0
			Bottom Depth (m):		1	0.4	2	0.7	0.8	0.8
			Date Sampled:		23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0			< 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0		< 1.0			< 1.0	
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0		50			< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0			< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		50			< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		< 1.0			< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		< 1.0			< 1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0		< 1.0			< 1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0		< 1.0			< 1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0		< 1.0			< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		38			< 1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0		380			< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		< 1.0			< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		420			< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		470			< 10	
Benzene	M	2760	µg/kg	1.0		< 1.0			< 1.0	
Toluene	M	2760	µg/kg	1.0		< 1.0			< 1.0	
Ethylbenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0	
m & p-Xylene	M	2760	µg/kg	1.0		< 1.0			< 1.0	
o-Xylene	M	2760	µg/kg	1.0		< 1.0			< 1.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0			< 1.0	
Naphthalene	M	2800	mg/kg	0.10	1.4	0.70		< 0.10	< 0.10	0.63
Acenaphthylene	N	2800	mg/kg	0.10	2.2	0.27		< 0.10	< 0.10	0.20
Acenaphthene	M	2800	mg/kg	0.10	1.7	0.83		< 0.10	< 0.10	0.27
Fluorene	M	2800	mg/kg	0.10	2.6	0.67		< 0.10	< 0.10	0.25
Phenanthrene	M	2800	mg/kg	0.10	29	5.6		1.8	1.5	2.0
Anthracene	M	2800	mg/kg	0.10	6.4	1.5		0.46	0.46	0.52
Fluoranthene	M	2800	mg/kg	0.10	38	11		3.4	2.8	3.3
Pyrene	M	2800	mg/kg	0.10	41	10		3.0	2.6	3.6
Benzo[a]anthracene	M	2800	mg/kg	0.10	20	5.1		1.3	1.3	1.8
Chrysene	M	2800	mg/kg	0.10	21	4.9		1.4	1.3	1.8
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	23	7.2		2.1	1.7	2.3
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	8.5	3.0		0.54	0.54	0.88
Benzo[a]pyrene	M	2800	mg/kg	0.10	21	6.3		1.6	1.4	2.1
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	12	4.2		< 0.10	0.93	1.4
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	2.5	0.71		< 0.10	0.14	0.31
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	11	3.8		< 0.10	0.86	1.3

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site

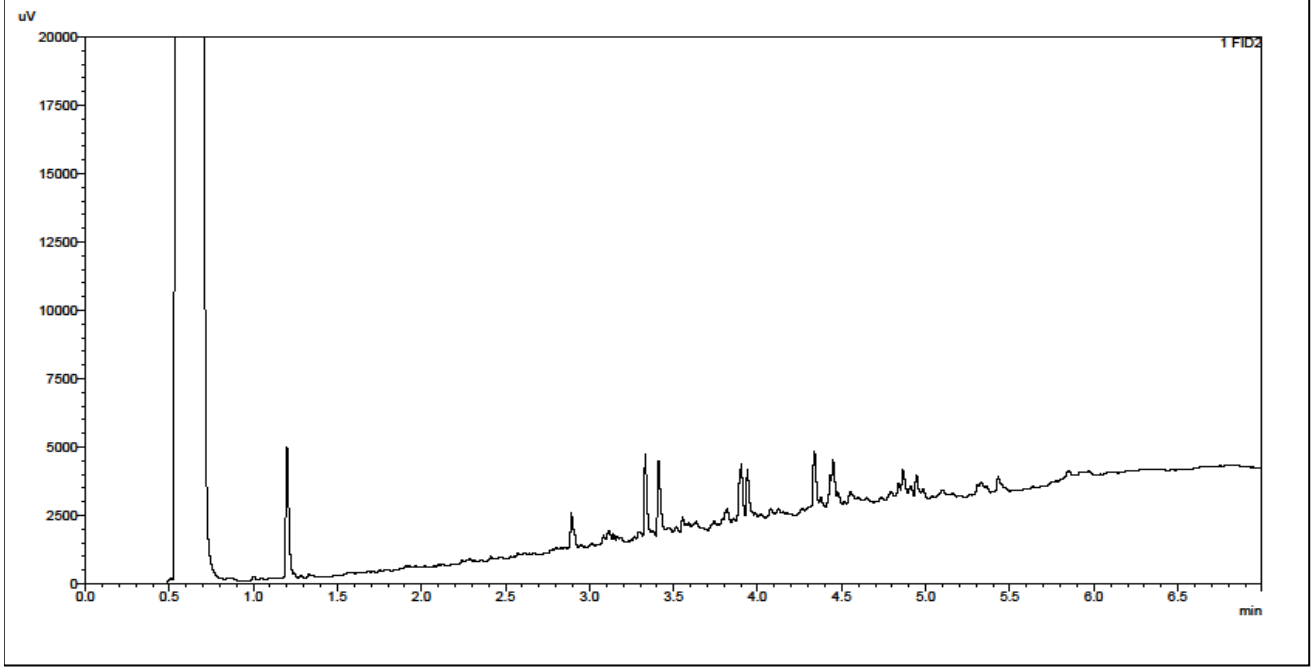
Client: LK Consult			**Chemtest Job No.:**		21-05796	21-05796	21-05796	21-05796	21-05796	21-05796
Quotation No.:			**Chemtest Sample ID.:**		1148525	1148528	1148531	1148533	1148537	1148539
Order No.: 738423			Client Sample Ref.:		WS101	WS102	WS102	WS103	WS104	WS105
			Client Sample ID.:		ES1	ES1	ES4	ES2	ES1	ES1
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.3	0	1.7	0.3	0.2	0
			Bottom Depth (m):		1	0.4	2	0.7	0.8	0.8
			Date Sampled:		23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021	23-Feb-2021
			Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Total Of 16 PAH's	N	2800	mg/kg	2.0	240	66		16	16	23
Total Phenols	M	2920	mg/kg	0.30		< 0.30			< 0.30	

TPH Chromatogram on Soil Sample: 1148528

<Sample Information>

Sample Name : 1148528 21-05796
Data Filename : 08 March 2021_08032021_1148528 21-05796_026.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 88
Date Acquired : 08/03/2021 19:47:37
Date Processed : 08/03/2021

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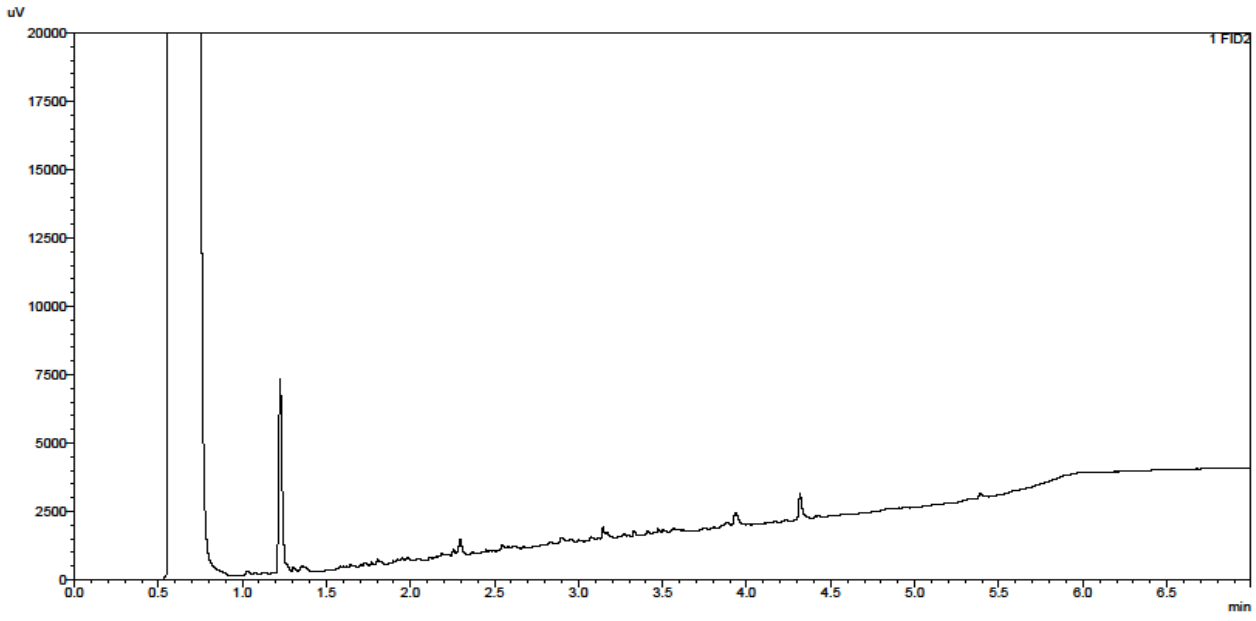


TPH Chromatogram on Soil Sample: 1148537

<Sample Information>

Sample Name : 1148537 21-05796
Data Filename : 05 March 2021_05032021_1148537 21-05796_122.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 136
Date Acquired : 06/03/2021 05:53:54
Date Processed : 06/03/2021

<Chromatogram>



TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
21-05796	1148528	S		WS102	ES1	0	No	PAH
21-05796	1148537	S		WS104	ES1	0.2	No	N/A

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememrnt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

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

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

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

Final Report

Report No.:	21-06369-1
Initial Date of Issue:	11-Mar-2021
Client	LK Consult
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS
Contact(s):	Chris Hughes Contaminated Land
Project	LKC 20 1673 Collyhurst South Alternate Site, Manchester

Quotation No.:		**Date Received:**	02-Mar-2021
Order No.:	738423	**Date Instructed:**	05-Mar-2021
No. of Samples:	9		
Turnaround (Wkdays):	5	**Results Due:**	11-Mar-2021
Date Approved:	11-Mar-2021		

Approved By:

[redacted]

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

Client: LK Consult		**Chemtest Job No.:**			21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369
Quotation No.:		**Chemtest Sample ID.:**			1151588	1151589	1151590	1151593	1151596	1151599	1151602	1151604	1151605
Order No.: 738423		Client Sample Ref.:			TP101	TP101	TP102	TP103	TP104	TP105	TP106	TP106	TP107
		Client Sample ID.:			ES2	ES3	ES1	ES1	ES1	ES1	ES1	ES3	ES1
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.30	1.20	0.00	0.10	0.40	0.20	0.10	2.00	0.00
		Bottom Depth (m):			1.00	1.50	0.40	0.50	1.00	1.00	1.00	2.80	0.40
		Date Sampled:			25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
		Asbestos Lab:			COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-		-	-	-	-	Fibres/Clumps		-
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile		No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-		-	-	-	-	Stereo Microscopy		-
Asbestos by Gravimetry	U	2192	%	0.001							0.008		
Total Asbestos	U	2192	%	0.001							0.008		
Moisture	N	2030	%	0.020	18	15	21	16	25	22	13	16	22
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	None	None	Stones	Stones	Stones	Stones	None	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Sand	Sand	Clay	Clay	Sand	Clay
Chromatogram (TPH)	N			N/A					See Attached		See Attached		
pH	M	2010		4.0	8.4	8.5	8.2	8.3	8.2	8.2	8.4	8.5	8.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40					0.69		0.73		
Magnesium (Water Soluble)	N	2120	g/l	0.010		0.010						< 0.010	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.075	0.047	0.030	0.020	0.051	0.060	0.028	< 0.010	0.081
Chloride (Water Soluble)	M	2220	g/l	0.010		< 0.010						< 0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010		< 0.010						< 0.010	
Cyanide (Free)	M	2300	mg/kg	0.50					< 0.50		< 0.50		
Cyanide (Total)	M	2300	mg/kg	0.50					1.7		< 0.50		
Arsenic	M	2450	mg/kg	1.0	22		15	20	62	46	39		21
Cadmium	M	2450	mg/kg	0.10	0.59		0.27	0.48	0.17	0.32	0.50		0.88
Chromium	M	2450	mg/kg	1.0	22		21	18	25	31	25		31
Copper	M	2450	mg/kg	0.50	61		33	57	370	160	69		58
Mercury	M	2450	mg/kg	0.10	0.27		0.49	1.1	6.3	2.3	0.54		0.57
Nickel	M	2450	mg/kg	0.50	28		18	20	45	38	24		24
Lead	M	2450	mg/kg	0.50	160		66	180	1100	530	220		130
Selenium	M	2450	mg/kg	0.20	< 0.20		0.45	< 0.20	0.92	0.75	< 0.20		< 0.20
Vanadium	U	2450	mg/kg	5.0	29		26	25	44	37	25		25
Zinc	M	2450	mg/kg	0.50	68		57	100	130	170	120		140
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50
Organic Matter	M	2625	%	0.40	7.9		4.3	5.3	28	15	3.1		5.7
Diesel Present	N	2670		N/A					False		False		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0					< 1.0		< 1.0		

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

Client: LK Consult		**Chemtest Job No.:**			21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369
Quotation No.:		**Chemtest Sample ID.:**			1151588	1151589	1151590	1151593	1151596	1151599	1151602	1151604	1151605
Order No.: 738423		Client Sample Ref.:			TP101	TP101	TP102	TP103	TP104	TP105	TP106	TP106	TP107
		Client Sample ID.:			ES2	ES3	ES1	ES1	ES1	ES1	ES1	ES3	ES1
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.30	1.20	0.00	0.10	0.40	0.20	0.10	2.00	0.00
		Bottom Depth (m):			1.00	1.50	0.40	0.50	1.00	1.00	1.00	2.80	0.40
		Date Sampled:			25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
		Asbestos Lab:			COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0					7.8		< 1.0		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0					42		50		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0					49		50		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0					15		< 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0					64		31		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0					340		260		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0					420		290		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0					470		340		
Benzene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
Toluene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
Ethylbenzene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
m & p-Xylene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
o-Xylene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0					< 1.0		< 1.0		
Naphthalene	M	2800	mg/kg	0.10	< 0.10		< 0.10	0.64	1.5	1.4	0.60		0.45
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10		< 0.10	0.20	0.96	0.90	0.61		0.26
Acenaphthene	M	2800	mg/kg	0.10	< 0.10		< 0.10	0.39	1.2	1.7	0.81		0.42
Fluorene	M	2800	mg/kg	0.10	< 0.10		< 0.10	0.35	1.7	2.2	0.82		0.41
Phenanthrene	M	2800	mg/kg	0.10	1.2		0.39	2.9	12	16	8.6		3.9
Anthracene	M	2800	mg/kg	0.10	0.39		< 0.10	0.57	3.1	4.0	2.2		0.97
Fluoranthene	M	2800	mg/kg	0.10	2.0		0.71	4.3	15	20	15		7.1
Pyrene	M	2800	mg/kg	0.10	2.1		0.60	3.9	15	20	13		6.3
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.3		0.22	1.9	6.9	9.0	6.5		3.1
Chrysene	M	2800	mg/kg	0.10	1.1		0.28	1.8	7.1	9.2	6.1		3.1
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.5		< 0.10	2.5	7.5	9.9	7.5		3.8
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.55		< 0.10	0.72	2.8	3.8	3.3		1.5
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.3		< 0.10	2.1	7.3	9.8	6.5		3.6
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.80		< 0.10	1.3	4.1	5.7	4.3		2.1

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

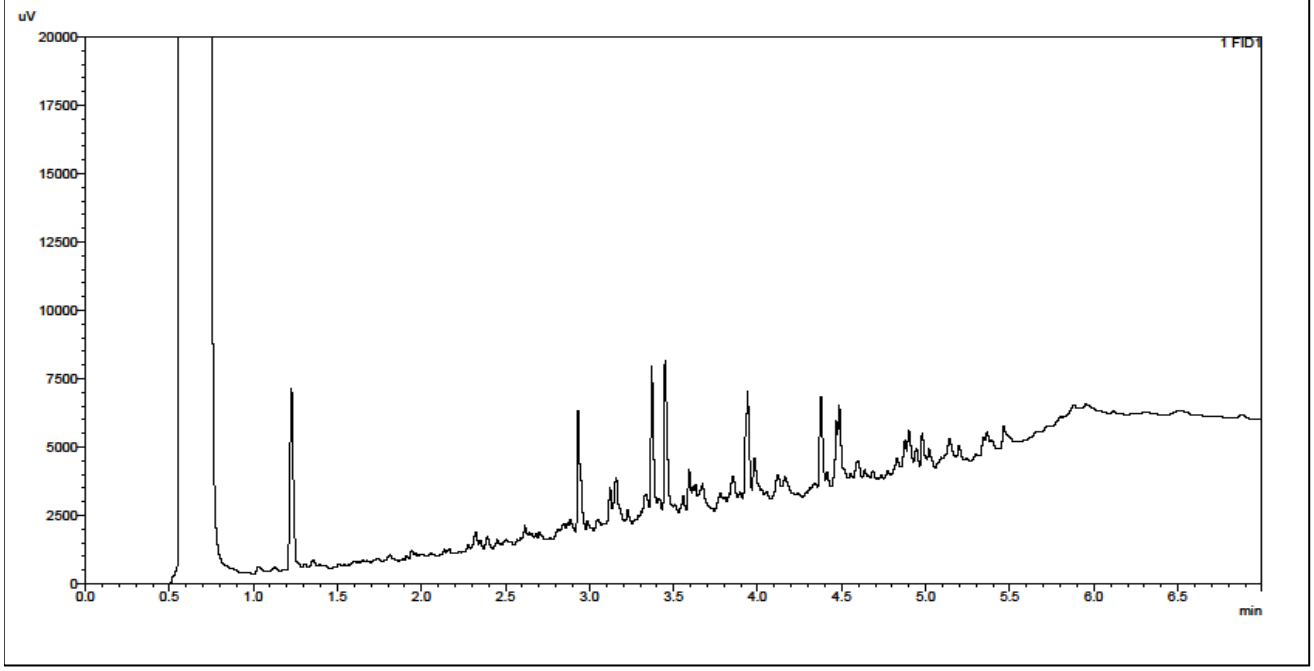
Client: LK Consult			**Chemtest Job No.:**		21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369
Quotation No.:			**Chemtest Sample ID.:**		1151588	1151589	1151590	1151593	1151596	1151599	1151602	1151604	1151605
Order No.: 738423			Client Sample Ref.:		TP101	TP101	TP102	TP103	TP104	TP105	TP106	TP106	TP107
			Client Sample ID.:		ES2	ES3	ES1	ES1	ES1	ES1	ES1	ES3	ES1
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.20	0.00	0.10	0.40	0.20	0.10	2.00	0.00
			Bottom Depth (m):		1.00	1.50	0.40	0.50	1.00	1.00	1.00	2.80	0.40
			Date Sampled:		25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.14		< 0.10	0.22	0.88	1.0	0.76		0.41
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.73		< 0.10	1.2	3.9	5.3	3.7		2.0
Total Of 16 PAH's	N	2800	mg/kg	2.0	13		2.2	25	91	120	80		39
Total Phenols	M	2920	mg/kg	0.30					< 0.30		< 0.30		

TPH Chromatogram on Soil Sample: 1151596

<Sample Information>

Sample Name : 1151596 21-06369
Data Filename : 08 March 2021_08032021_1151596 21-06369_039.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 20
Date Acquired : 08/03/2021 17:55:49
Date Processed : 08/03/2021

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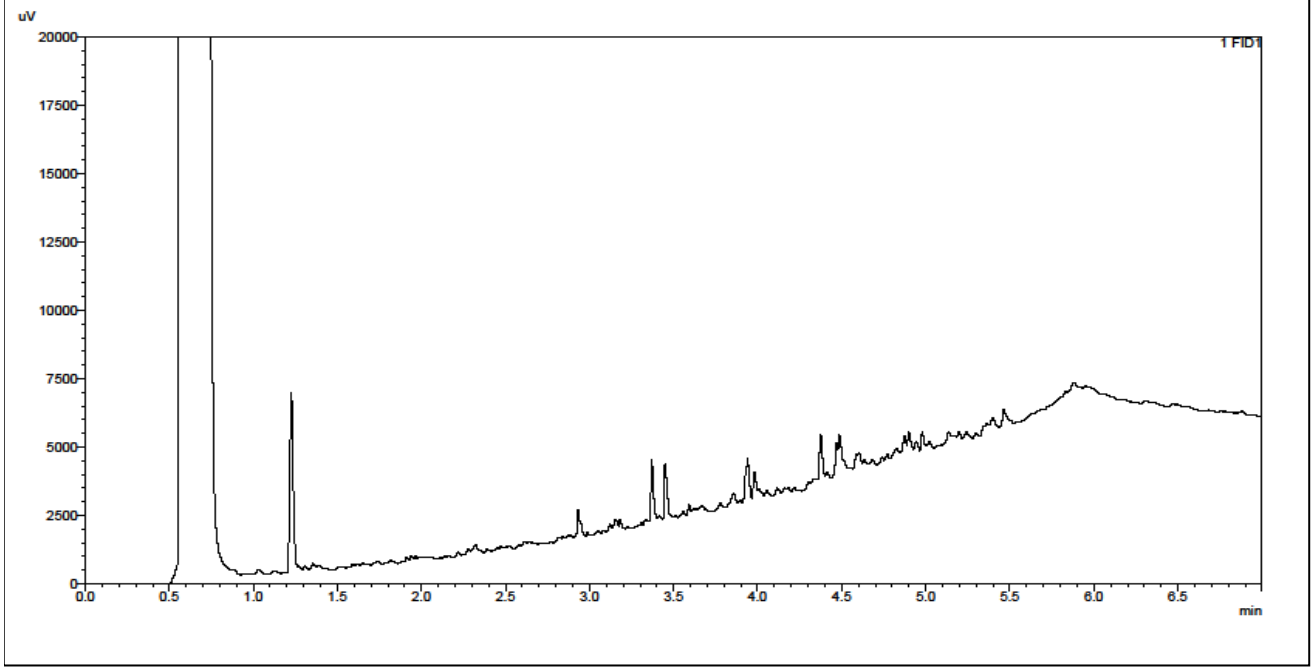


TPH Chromatogram on Soil Sample: 1151602

<Sample Information>

Sample Name : 1151602 21-06369
Data Filename : 08 March 2021_08032021_1151602 21-06369_041.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 21
Date Acquired : 08/03/2021 18:08:30
Date Processed : 08/03/2021

<Chromatogram>



TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
21-06369	1151596	S		TP104	ES1	0.40	No	PAH
21-06369	1151602	S		TP106	ES1	0.10	No	PAH

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememrnt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

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

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

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

Amended Report

Report No.:	21-06369-3		
Initial Date of Issue:	11-Mar-2021	**Date of Re-Issue:**	22-Mar-2021
Client	LK Consult		
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS		
Contact(s):	Chris Hughes Contaminated Land		
Project	LKC 20 1673 Collyhurst South Alternate Site, Manchester		
Quotation No.:		**Date Received:**	02-Mar-2021
Order No.:	738423	**Date Instructed:**	05-Mar-2021
No. of Samples:	10		
Turnaround (Wkdays):	13	**Results Due:**	23-Mar-2021
Date Approved:	22-Mar-2021		
Approved By:	[redacted]		
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

Client: LK Consult			**Chemtest Job No.:**		21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369
Quotation No.:			**Chemtest Sample ID.:**		1151588	1151589	1151590	1151593	1151596	1151599	1151602	1151604	1151605
Order No.: 738423			Client Sample Ref.:		TP101	TP101	TP102	TP103	TP104	TP105	TP106	TP106	TP107
			Client Sample ID.:		TP101 ES2	TP101 ES3	TP102 ES1	TP103 ES1	TP104 ES1	TP105 ES1	TP106 ES1	TP106 ES3	TP107 ES1
			Sample Location:										
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.20	0.00	0.10	0.40	0.20	0.10	2.00	0.00
			Bottom Depth (m):		1.00	1.50	0.40	0.50	1.00	1.00	1.00	2.80	0.40
			Date Sampled:		25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-		-	-	-	-	Fibres/Clumps		-
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile		No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-		-	-	-	-	Stereo Microscopy		-
Asbestos by Gravimetry	U	2192	%	0.001							0.008		
Total Asbestos	U	2192	%	0.001							0.008		
Moisture	N	2030	%	0.020	18	15	21	16	25	22	13	16	22
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	None	None	Stones	Stones	Stones	Stones	None	Stones
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Sand	Sand	Clay	Clay	Sand	Clay
Chromatogram (TPH)	N			N/A					See Attached		See Attached		
pH	M	2010		4.0	8.4	8.5	8.2	8.3	8.2	8.2	8.4	8.5	8.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40					0.69		0.73		
Magnesium (Water Soluble)	N	2120	g/l	0.010		0.010						< 0.010	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.075	0.047	0.030	0.020	0.051	0.060	0.028	< 0.010	0.081
Chloride (Water Soluble)	M	2220	g/l	0.010		< 0.010						< 0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010		< 0.010						< 0.010	
Cyanide (Free)	M	2300	mg/kg	0.50					< 0.50		< 0.50		
Cyanide (Total)	M	2300	mg/kg	0.50					1.7		< 0.50		
Arsenic	M	2450	mg/kg	1.0	22		15	20	62	46	39		21
Cadmium	M	2450	mg/kg	0.10	0.59		0.27	0.48	0.17	0.32	0.50		0.88
Chromium	M	2450	mg/kg	1.0	22		21	18	25	31	25		31
Copper	M	2450	mg/kg	0.50	61		33	57	370	160	69		58
Mercury	M	2450	mg/kg	0.10	0.27		0.49	1.1	6.3	2.3	0.54		0.57
Nickel	M	2450	mg/kg	0.50	28		18	20	45	38	24		24
Lead	M	2450	mg/kg	0.50	160		66	180	1100	530	220		130
Selenium	M	2450	mg/kg	0.20	< 0.20		0.45	< 0.20	0.92	0.75	< 0.20		< 0.20
Vanadium	U	2450	mg/kg	5.0	29		26	25	44	37	25		25
Zinc	M	2450	mg/kg	0.50	68		57	100	130	170	120		140
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50
Organic Matter	M	2625	%	0.40	7.9		4.3	5.3	28	15	3.1		5.7
Diesel Present	N	2670		N/A					False		False		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0					< 1.0		< 1.0		

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

Client: LK Consult			**Chemtest Job No.:**		21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369
Quotation No.:			**Chemtest Sample ID.:**		1151588	1151589	1151590	1151593	1151596	1151599	1151602	1151604	1151605
Order No.: 738423			Client Sample Ref.:		TP101	TP101	TP102	TP103	TP104	TP105	TP106	TP106	TP107
			Client Sample ID.:		TP101 ES2	TP101 ES3	TP102 ES1	TP103 ES1	TP104 ES1	TP105 ES1	TP106 ES1	TP106 ES3	TP107 ES1
			Sample Location:										
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.20	0.00	0.10	0.40	0.20	0.10	2.00	0.00
			Bottom Depth (m):		1.00	1.50	0.40	0.50	1.00	1.00	1.00	2.80	0.40
			Date Sampled:		25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0					7.8		< 1.0		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0					42		50		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0					49		50		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0					< 1.0		< 1.0		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0					15		< 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0					64		31		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0					340		260		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0					< 1.0		< 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0					420		290		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0					470		340		
Benzene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
Toluene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
Ethylbenzene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
m & p-Xylene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
o-Xylene	M	2760	µg/kg	1.0					< 1.0		< 1.0		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0					< 1.0		< 1.0		
Naphthalene	M	2800	mg/kg	0.10	< 0.10		< 0.10	0.64	1.5	1.4	0.60		0.45
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10		< 0.10	0.20	0.96	0.90	0.61		0.26
Acenaphthene	M	2800	mg/kg	0.10	< 0.10		< 0.10	0.39	1.2	1.7	0.81		0.42
Fluorene	M	2800	mg/kg	0.10	< 0.10		< 0.10	0.35	1.7	2.2	0.82		0.41
Phenanthrene	M	2800	mg/kg	0.10	1.2		0.39	2.9	12	16	8.6		3.9
Anthracene	M	2800	mg/kg	0.10	0.39		< 0.10	0.57	3.1	4.0	2.2		0.97
Fluoranthene	M	2800	mg/kg	0.10	2.0		0.71	4.3	15	20	15		7.1
Pyrene	M	2800	mg/kg	0.10	2.1		0.60	3.9	15	20	13		6.3
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.3		0.22	1.9	6.9	9.0	6.5		3.1
Chrysene	M	2800	mg/kg	0.10	1.1		0.28	1.8	7.1	9.2	6.1		3.1
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.5		< 0.10	2.5	7.5	9.9	7.5		3.8
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.55		< 0.10	0.72	2.8	3.8	3.3		1.5

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

Client: LK Consult			**Chemtest Job No.:**		21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369	21-06369
Quotation No.:			**Chemtest Sample ID.:**		1151588	1151589	1151590	1151593	1151596	1151599	1151602	1151604	1151605
Order No.: 738423			Client Sample Ref.:		TP101	TP101	TP102	TP103	TP104	TP105	TP106	TP106	TP107
			Client Sample ID.:		TP101 ES2	TP101 ES3	TP102 ES1	TP103 ES1	TP104 ES1	TP105 ES1	TP106 ES1	TP106 ES3	TP107 ES1
			Sample Location:										
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	1.20	0.00	0.10	0.40	0.20	0.10	2.00	0.00
			Bottom Depth (m):		1.00	1.50	0.40	0.50	1.00	1.00	1.00	2.80	0.40
			Date Sampled:		25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021	25-Feb-2021
			Asbestos Lab:		COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.3		< 0.10	2.1	7.3	9.8	6.5		3.6
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.80		< 0.10	1.3	4.1	5.7	4.3		2.1
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.14		< 0.10	0.22	0.88	1.0	0.76		0.41
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.73		< 0.10	1.2	3.9	5.3	3.7		2.0
Total Of 16 PAH's	N	2800	mg/kg	2.0	13		2.2	25	91	120	80		39
Total Phenols	M	2920	mg/kg	0.30					< 0.30		< 0.30		

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

Client: LK Consult			**Chemtest Job No.:**		21-06369
Quotation No.:			**Chemtest Sample ID.:**		1151619
Order No.: 738423			Client Sample Ref.:		ES1
			Client Sample ID.:		CP2 ES1
			Sample Location:		CP2
			Sample Type:		SOIL
			Top Depth (m):		0.10
			Bottom Depth (m):		0.30
			Date Sampled:		26-Feb-2021
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-
Asbestos by Gravimetry	U	2192	%	0.001	
Total Asbestos	U	2192	%	0.001	
Moisture	N	2030	%	0.020	19
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Sand
Chromatogram (TPH)	N			N/A	
pH	M	2010		4.0	7.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	
Magnesium (Water Soluble)	N	2120	g/l	0.010	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.080
Chloride (Water Soluble)	M	2220	g/l	0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010	
Cyanide (Free)	M	2300	mg/kg	0.50	
Cyanide (Total)	M	2300	mg/kg	0.50	
Arsenic	M	2450	mg/kg	1.0	30
Cadmium	M	2450	mg/kg	0.10	0.31
Chromium	M	2450	mg/kg	1.0	22
Copper	M	2450	mg/kg	0.50	90
Mercury	M	2450	mg/kg	0.10	2.5
Nickel	M	2450	mg/kg	0.50	28
Lead	M	2450	mg/kg	0.50	470
Selenium	M	2450	mg/kg	0.20	0.63
Vanadium	U	2450	mg/kg	5.0	35
Zinc	M	2450	mg/kg	0.50	130
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	M	2625	%	0.40	12
Diesel Present	N	2670		N/A	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

Client: LK Consult			**Chemtest Job No.:**		21-06369
Quotation No.:			**Chemtest Sample ID.:**		1151619
Order No.: 738423			Client Sample Ref.:		ES1
			Client Sample ID.:		CP2 ES1
			Sample Location:		CP2
			Sample Type:		SOIL
			Top Depth (m):		0.10
			Bottom Depth (m):		0.30
			Date Sampled:		26-Feb-2021
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	
Benzene	M	2760	µg/kg	1.0	
Toluene	M	2760	µg/kg	1.0	
Ethylbenzene	M	2760	µg/kg	1.0	
m & p-Xylene	M	2760	µg/kg	1.0	
o-Xylene	M	2760	µg/kg	1.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	
Naphthalene	M	2800	mg/kg	0.10	0.18
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	0.13
Phenanthrene	M	2800	mg/kg	0.10	1.3
Anthracene	M	2800	mg/kg	0.10	0.33
Fluoranthene	M	2800	mg/kg	0.10	2.2
Pyrene	M	2800	mg/kg	0.10	2.2
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.2
Chrysene	M	2800	mg/kg	0.10	1.2
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.5
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.52

Results - Soil

Project: LKC 20 1673 Collyhurst South Alternate Site, Manchester

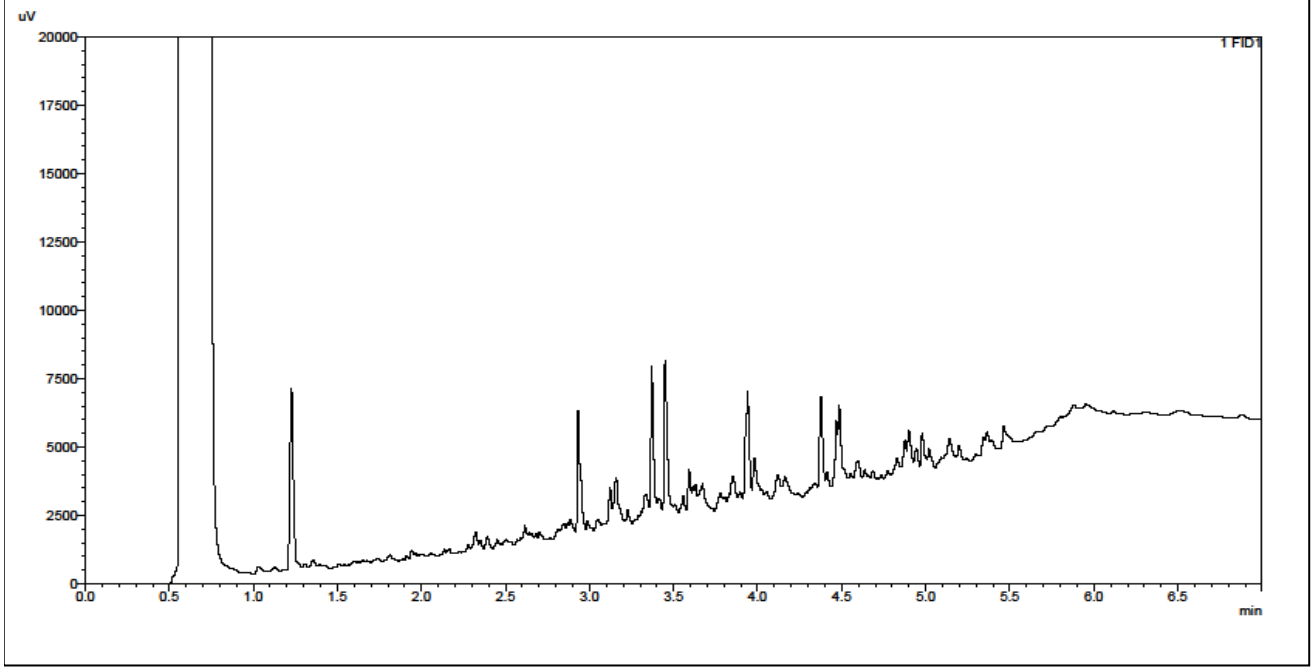
Client: LK Consult			**Chemtest Job No.:**		21-06369
Quotation No.:			**Chemtest Sample ID.:**		1151619
Order No.: 738423			Client Sample Ref.:		ES1
			Client Sample ID.:		CP2 ES1
			Sample Location:		CP2
			Sample Type:		SOIL
			Top Depth (m):		0.10
			Bottom Depth (m):		0.30
			Date Sampled:		26-Feb-2021
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.3
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.85
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.18
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.75
Total Of 16 PAH's	N	2800	mg/kg	2.0	14
Total Phenols	M	2920	mg/kg	0.30	

TPH Chromatogram on Soil Sample: 1151596

<Sample Information>

Sample Name : 1151596 21-06369
Data Filename : 08 March 2021_08032021_1151596 21-06369_039.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 20
Date Acquired : 08/03/2021 17:55:49
Date Processed : 08/03/2021

<Chromatogram>

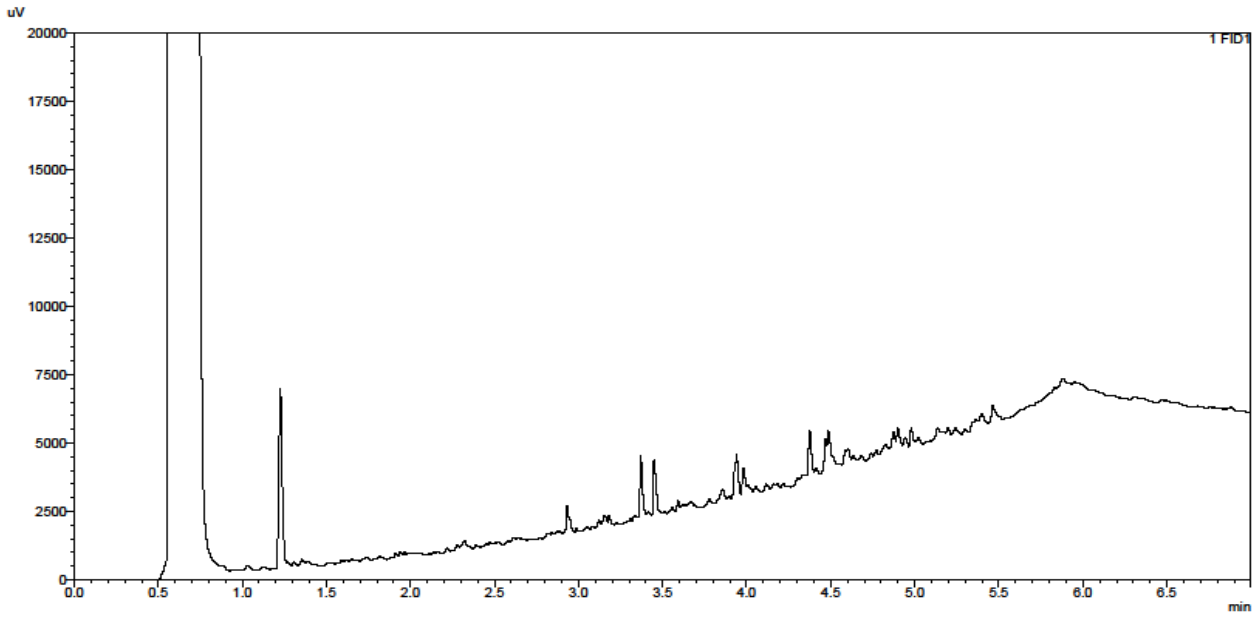


TPH Chromatogram on Soil Sample: 1151602

<Sample Information>

Sample Name : 1151602 21-06369
Data Filename : 08 March 2021_08032021_1151602 21-06369_041.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 21
Date Acquired : 08/03/2021 18:08:30
Date Processed : 08/03/2021

<Chromatogram>



TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
21-06369	1151596	S		TP104	TP104 ES1	0.40	No	PAH
21-06369	1151602	S		TP106	TP106 ES1	0.10	No	PAH

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememrnt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

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

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

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

Final Report

Report No.:	21-06957-1
Initial Date of Issue:	15-Mar-2021
Client	LK Consult
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS
Contact(s):	Chris Hughes Contaminated Land
Project	LKC 20 1673 Collyhurst South Alternate Site

Quotation No.:		**Date Received:**	05-Mar-2021
Order No.:	738423	**Date Instructed:**	05-Mar-2021
No. of Samples:	2		
Turnaround (Wkdays):	7	**Results Due:**	15-Mar-2021
Date Approved:	15-Mar-2021		

Approved By:

[redacted]

Details: Glynn Harvey, Technical Manager

Results - 2 Stage WAC

Project: LKC 20 1673 Collyhurst South Alternate Site

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-06957								
Chemtest Sample ID:	1154447								
Sample Ref:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	ES1								
Sample Location:	WS102								
Top Depth(m):	0.00								
Bottom Depth(m):	0.40								
Sampling Date:	23-Feb-2021								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			1.9	3	5	6
Loss On Ignition	2610	M	%			4.8	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			270	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			130	100	--	--
pH	2010	M				8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.020	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0070	0.011	0.013	0.11	0.5	2	25
Barium	1455	U	0.029	0.030	0.053	0.29	20	100	300
Cadmium	1455	U	< 0.00012	< 0.00012	< 0.0012	< 0.0012	0.04	1	5
Chromium	1455	U	0.0017	0.0011	0.0032	0.011	0.5	10	70
Copper	1455	U	0.0039	0.0066	0.0071	0.0021	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.017	0.0041	0.030	0.047	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	0.0039	< 0.0005	0.037	0.5	10	50
Antimony	1455	U	0.0031	0.0013	0.0057	0.014	0.06	0.7	5
Selenium	1455	U	0.0005	< 0.0005	0.0010	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200
Chloride	1220	U	5.2	1.8	< 10	20	800	15000	25000
Fluoride	1220	U	1.0	0.44	1.8	4.6	10	150	500
Sulphate	1220	U	44	8.4	81	100	1000	20000	50000
Total Dissolved Solids	1020	N	130	72	240	740	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	5.7	3.3	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	12

Leachate Test Information	
Leachant volume 1st extract/l	0.300
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.095

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: LKC 20 1673 Collyhurst South Alternate Site

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-06957								
Chemtest Sample ID:	1154448								
Sample Ref:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	ES1								
Sample Location:	WS104								
Top Depth(m):	0.20								
Bottom Depth(m):	0.80								
Sampling Date:	23-Feb-2021								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			5.0	3	5	6
Loss On Ignition	2610	M	%			9.3	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			21	100	--	--
pH	2010	M				8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.016	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0024	0.0034	0.0049	0.033	0.5	2	25
Barium	1455	U	0.037	0.025	0.076	0.27	20	100	300
Cadmium	1455	U	< 0.00012	< 0.00012	< 0.0012	< 0.0012	0.04	1	5
Chromium	1455	U	0.0019	0.0009	0.0039	0.010	0.5	10	70
Copper	1455	U	0.0040	0.0098	0.0083	0.0047	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.033	0.014	0.069	0.16	0.5	10	30
Nickel	1455	U	< 0.0005	0.0006	< 0.0005	0.0053	0.4	10	40
Lead	1455	U	< 0.0005	0.0005	< 0.0005	0.0045	0.5	10	50
Antimony	1455	U	0.0020	0.0010	0.0041	0.011	0.06	0.7	5
Selenium	1455	U	0.0012	0.0008	0.0024	0.0085	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.4	2.3	< 10	22	800	15000	25000
Fluoride	1220	U	1.6	1.0	3.3	11	10	150	500
Sulphate	1220	U	17	4.7	35	62	1000	20000	50000
Total Dissolved Solids	1020	N	140	78	280	850	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	8.4	3.9	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	20

Leachate Test Information	
Leachant volume 1st extract/l	0.324
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.204

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
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N	Unaccredited
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N/E	not evaluated
<	"less than"
>	"greater than"
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All results are expressed on a dry weight basis

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

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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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

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

Final Report

Report No.:	21-06963-1
Initial Date of Issue:	15-Mar-2021
Client	LK Consult
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS
Contact(s):	Chris Hughes Contaminated Land
Project	LKC 20 1673 Collyhurst South Alternate Site

Quotation No.:		**Date Received:**	05-Mar-2021
Order No.:	738423	**Date Instructed:**	05-Mar-2021
No. of Samples:	2		
Turnaround (Wkdays):	7	**Results Due:**	15-Mar-2021
Date Approved:	15-Mar-2021		

Approved By:

[redacted]

Details: Glynn Harvey, Technical Manager

Results - 2 Stage WAC

Project: LKC 20 1673 Collyhurst South Alternate Site

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-06963								
Chemtest Sample ID:	1154470								
Sample Ref:							**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	ES1								
Sample Location:	TP104								
Top Depth(m):	0.40								
Bottom Depth(m):	1.00								
Sampling Date:	25-Feb-2021								
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			17	3	5	6
Loss On Ignition	2610	M	%			15	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			280	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			57	100	--	--
pH	2010	M				8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.025	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0021	0.0016	0.0040	0.016	0.5	2	25
Barium	1455	U	0.054	0.041	0.10	0.42	20	100	300
Cadmium	1455	U	< 0.00012	< 0.00012	< 0.0012	< 0.0012	0.04	1	5
Chromium	1455	U	0.0006	0.0012	0.0012	0.012	0.5	10	70
Copper	1455	U	0.0058	0.0057	0.011	0.0037	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.029	0.025	0.056	0.25	0.5	10	30
Nickel	1455	U	0.0005	0.0024	0.0010	0.022	0.4	10	40
Lead	1455	U	0.0017	0.0026	0.0032	0.025	0.5	10	50
Antimony	1455	U	0.0088	0.0056	0.017	0.058	0.06	0.7	5
Selenium	1455	U	0.0010	< 0.0005	0.0019	0.0006	0.1	0.5	7
Zinc	1455	U	0.003	0.033	0.006	0.31	4	50	200
Chloride	1220	U	1.6	3.2	< 10	31	800	15000	25000
Fluoride	1220	U	0.83	0.94	1.6	9.2	10	150	500
Sulphate	1220	U	75	27	140	300	1000	20000	50000
Total Dissolved Solids	1020	N	260	130	500	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	8.2	4.3	< 50	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	26

Leachate Test Information	
Leachant volume 1st extract/l	0.289
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.113

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: LKC 20 1673 Collyhurst South Alternate Site

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	21-06963								
Chemtest Sample ID:	1154471								
Sample Ref:									
Sample ID:	ES1								
Sample Location:	TP106								
Top Depth(m):	0.10								
Bottom Depth(m):	1.00								
Sampling Date:	25-Feb-2021								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			3.6	3	5	6
Loss On Ignition	2610	M	%			6.0	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			410	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			370	100	--	--
pH	2010	M				9.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.025	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0078	0.011	0.015	0.11	0.5	2	25
Barium	1455	U	0.045	0.029	0.089	0.30	20	100	300
Cadmium	1455	U	< 0.00012	< 0.00012	< 0.0012	< 0.0012	0.04	1	5
Chromium	1455	U	0.0014	0.0011	0.0028	0.011	0.5	10	70
Copper	1455	U	0.0099	0.0078	0.020	0.0041	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.041	0.0089	0.081	0.10	0.5	10	30
Nickel	1455	U	0.0015	0.0008	0.0029	0.0079	0.4	10	40
Lead	1455	U	0.0012	0.0024	0.0023	0.024	0.5	10	50
Antimony	1455	U	0.0079	0.0035	0.016	0.037	0.06	0.7	5
Selenium	1455	U	0.0007	0.0006	0.0014	0.0057	0.1	0.5	7
Zinc	1455	U	0.006	< 0.003	0.013	< 0.003	4	50	200
Chloride	1220	U	3.8	1.6	< 10	17	800	15000	25000
Fluoride	1220	U	1.3	0.75	2.6	7.7	10	150	500
Sulphate	1220	U	110	26	220	300	1000	20000	50000
Total Dissolved Solids	1020	N	250	100	490	1100	4000	60000	100000
Phenol Index	1920	U	0.041	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	12	4.7	< 50	50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	15

Leachate Test Information	
Leachant volume 1st extract/l	0.320
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.073

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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

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

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Appendix D

Certificates of Analysis – Groundwater

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

Final Report

Report No.:	21-10588-1
Initial Date of Issue:	12-Apr-2021
Client	LK Consult
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS
Contact(s):	Chris Hughes Contaminated Land
Project	LKC 20 1673 Collyhurst South Alternate Site

Quotation No.:		**Date Received:**	01-Apr-2021
Order No.:	738529	**Date Instructed:**	06-Apr-2021
No. of Samples:	6		
Turnaround (Wkdays):	5	**Results Due:**	12-Apr-2021
Date Approved:	12-Apr-2021		

Approved By:

[redacted]

Details: Glynn Harvey, Technical Manager

Results - Water

Project: LKC 20 1673 Collyhurst South Alternate Site

Client: LK Consult		**Chemtest Job No.:**			21-10588	21-10588	21-10588	21-10588	21-10588	21-10588
Quotation No.:		**Chemtest Sample ID.:**			1171505	1171506	1171507	1171508	1171509	1171510
Order No.: 738529		Client Sample Ref.:			GW	GW	GW	GW	GW	GW
		Client Sample ID.:			WS101	WS103	WS104	WS105	BH2	WS102
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER
		Date Sampled:			30-Mar-2021	30-Mar-2021	30-Mar-2021	30-Mar-2021	30-Mar-2021	30-Mar-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Diesel Present	N	1670		N/A	False	False	False	False	False	False
pH	U	1010		N/A	8.1	7.9	8.3	8.0	8.1	7.8
Sulphate	U	1220	mg/l	1.0	24	110	160	110	31	71
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium	U	1455	mg/l	2.00	140	250	96	140	83	110
Total Hardness as CaCO3	U	1270	mg/l	15	610	780	670	660	560	520
Arsenic (Dissolved)	U	1455	µg/l	0.20	1.3	1.6	0.67	0.75	0.99	0.97
Boron (Dissolved)	U	1455	µg/l	10.0	280	490	200	210	170	150
Cadmium (Dissolved)	U	1455	µg/l	0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Chromium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	2.1	< 0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	µg/l	0.50	3.1	3.1	3.5	1.9	1.7	4.1
Manganese (Dissolved)	U	1455	µg/l	0.50	1100	780	26	11	230	65
Nickel (Dissolved)	U	1455	µg/l	0.50	3.7	1.8	1.8	1.6	1.4	2.8
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	0.56	< 0.50	27	8.4	14	2.2
Vanadium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	0.55	< 0.50	0.70
Zinc (Dissolved)	U	1455	µg/l	3.0	3.8	5.8	3.4	< 3.0	< 3.0	3.4
Mercury Low Level	U	1460	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chromium (Hexavalent)	U	1490	µg/l	20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20	[B] < 20
Dissolved Organic Carbon	U	1610	mg/l	2.0	8.0	5.3	4.6	5.6	5.0	5.3
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Results - Water

Project: LKC 20 1673 Collyhurst South Alternate Site

Client: LK Consult		**Chemtest Job No.:**			21-10588	21-10588	21-10588	21-10588	21-10588	21-10588
Quotation No.:		**Chemtest Sample ID.:**			1171505	1171506	1171507	1171508	1171509	1171510
Order No.: 738529		Client Sample Ref.:			GW	GW	GW	GW	GW	GW
		Client Sample ID.:			WS101	WS103	WS104	WS105	BH2	WS102
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER
		Date Sampled:			30-Mar-2021	30-Mar-2021	30-Mar-2021	30-Mar-2021	30-Mar-2021	30-Mar-2021
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	U	1760	µg/l	1.0	35	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	2.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	2.8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	4.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	N	1800	µg/l	0.010	1.3	0.76	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Pyrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	µg/l	0.20	1.3	0.76	< 0.20	< 0.20	< 0.20	< 0.20
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	0.042

TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
21-10588	1171505	W		GW	WS101		No	N/A
21-10588	1171506	W		GW	WS103		No	N/A
21-10588	1171507	W		GW	WS104		No	N/A
21-10588	1171508	W		GW	WS105		No	N/A
21-10588	1171509	W		GW	BH2		No	N/A
21-10588	1171510	W		GW	WS102		No	N/A

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1171505	GW	WS101		30-Mar-2021	B	Coloured Winchester 1000ml
1171505	GW	WS101		30-Mar-2021	B	EPA Vial 40ml
1171505	GW	WS101		30-Mar-2021	B	Plastic Bottle 1000ml
1171506	GW	WS103		30-Mar-2021	B	Coloured Winchester 1000ml
1171506	GW	WS103		30-Mar-2021	B	EPA Vial 40ml
1171506	GW	WS103		30-Mar-2021	B	Plastic Bottle 1000ml
1171507	GW	WS104		30-Mar-2021	B	Coloured Winchester 1000ml
1171507	GW	WS104		30-Mar-2021	B	EPA Vial 40ml
1171508	GW	WS105		30-Mar-2021	B	Coloured Winchester 1000ml
1171508	GW	WS105		30-Mar-2021	B	EPA Vial 40ml
1171508	GW	WS105		30-Mar-2021	B	Plastic Bottle 1000ml
1171509	GW	BH2		30-Mar-2021	B	Coloured Winchester 1000ml
1171509	GW	BH2		30-Mar-2021	B	EPA Vial 40ml
1171509	GW	BH2		30-Mar-2021	B	Plastic Bottle 1000ml
1171510	GW	WS102		30-Mar-2021	B	Coloured Winchester 1000ml
1171510	GW	WS102		30-Mar-2021	B	EPA Vial 40ml
1171510	GW	WS102		30-Mar-2021	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

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SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
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U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
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LOD	Limit of detection

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None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Appendix E

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 20 1673 - Collyhurst South Alternate Site, Manchester
Job Number	MRN 4066/56
Date of Issue	25 March 2021
Page	**1 of 14**

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. This does not, however, guarantee the balance of the materials from which the tested samples have been taken to be of equal quality.

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

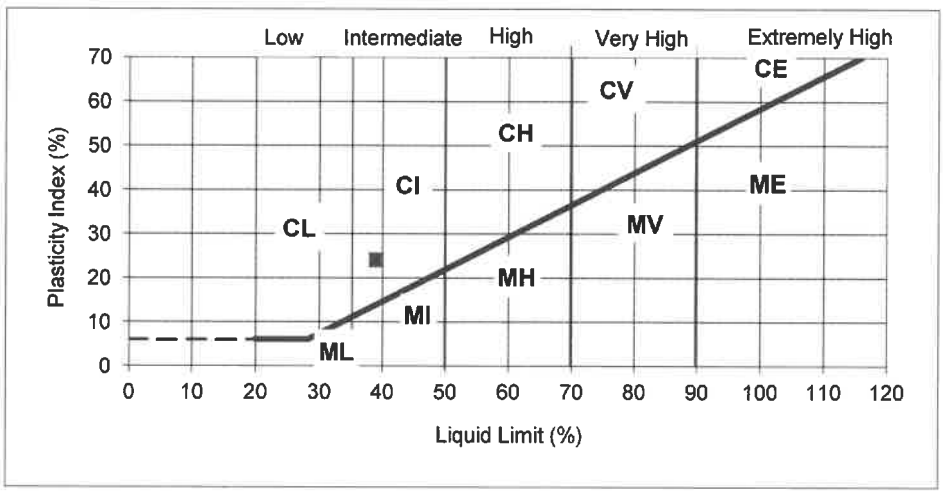
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	TP102 B3 1.0-2.0m	DATE SAMPLED	Not advised
SAMPLE No.	96898	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18	39	15	24	96



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

MURRAY RIX

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

TEST CERTIFICATE

ONE POINT COMPACTION 2.5 kg RAMMER
BS1377: PART 4: 1990

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

DATE SAMPLED	Not advised	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	ADVISED SOURCE	Site Investigation Sample

Sample Number	Site Mark	Material	Moisture Content (%)	Bulk Density (Mg/m3)
96899	TP104 B1 (0.4-1.0m)	MADE GROUND: Brown silty sandy CLAY with rare gravel	27	1.66
96900	TP105 B2 1.1-1.5m	Soft brown silty sandy CLAY with rare gravel	35	1.72

REMARKS/ABNORMALITIES

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 25-Mar-21

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

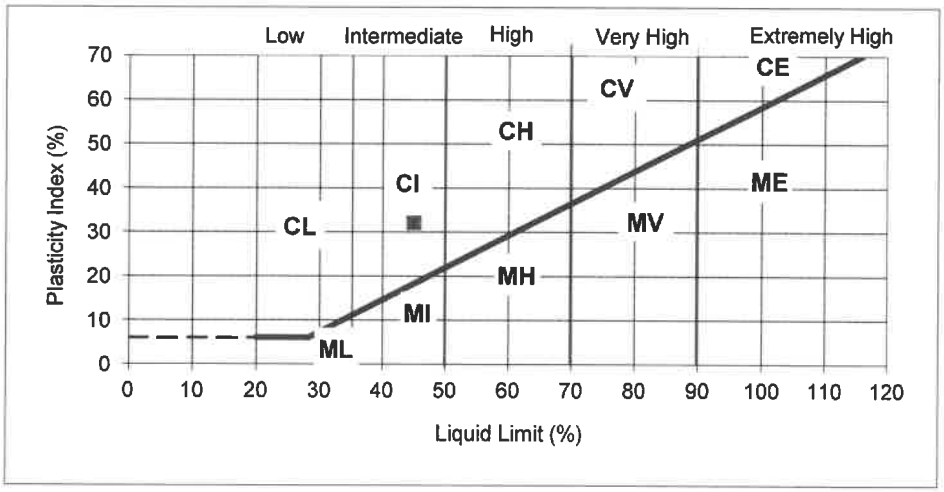
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	TP105 B2 1.1-1.5m	DATE SAMPLED	Not advised
SAMPLE No.	96900	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Soft brown silty sandy CLAY with organic matter
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
35	45	13	32	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

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

UKAS TESTING
1580

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

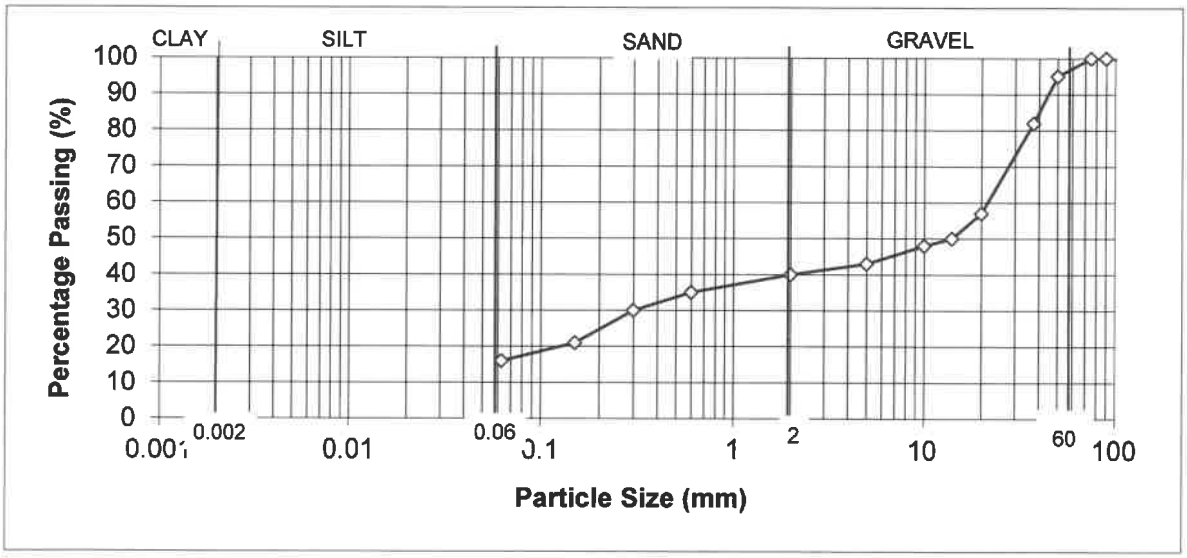
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	TP107 B2 0.5-1.0m	DATE SAMPLED	Not advised
LAB SAMPLE No	96901	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Grey clay bound silty sandy GRAVEL
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	48	
90	100		5	43	
75	100		2	40	
50	95		0.6	35	
37.5	82		0.3	30	
20	57		0.15	21	
14	50		0.063	16	



REMARKS
As received moisture content = 10%

SIGNED [redacted]

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 25-Mar-21

MURRAY RIX

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

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3

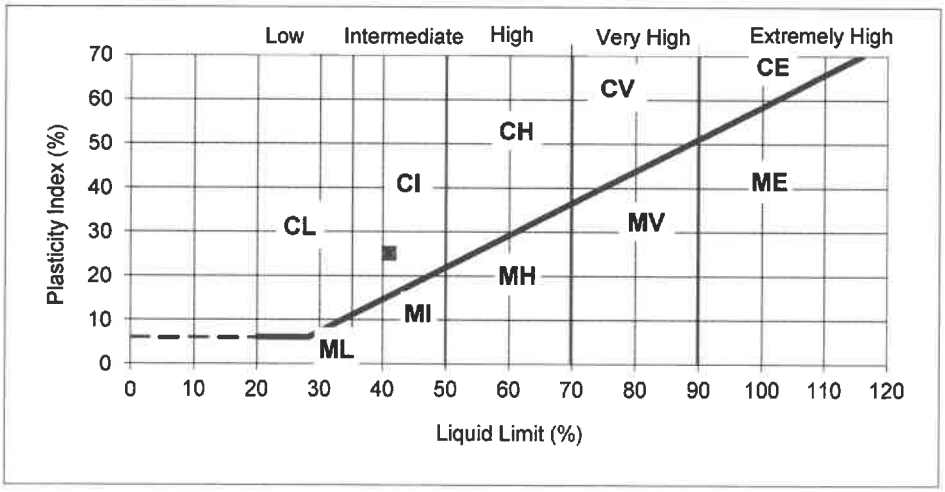
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	WS101 B3 1.7-2.0m	DATE SAMPLED	Not advised
SAMPLE No.	96902	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
20	41	16	25	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

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

UKAS TESTING
1580

TEST CERTIFICATE

MOISTURE CONTENT DETERMINATION
BS 1377 : PART 2 : 1990 (OVEN DRY)

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 – Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

DATE SAMPLED	Not advised	SAMPLED BY	Client
DATE TESTED	12 March 2021	DATE RECEIVED	09 March 2021

Sample No	Site Reference	Material	Sample Location	Moisture Content %
96902A	WS101 5.0-5.45m	Stiff brown silty sandy CLAY with rare gravel	As site reference	18
96907	WS103 X8 1.2-1.65m	Stiff brown silty sandy CLAY with occasional gravel	As site reference	19
96909	WS104 X8 4.-4.45m	Stiff brown silty sandy CLAY with rare gravel	As site reference	19
96912	WS105 X8 4.0-4.45m	Stiff brown silty sandy CLAY with rare gravel	As site reference	19

REMARKS

SIGNED [redacted]

NAME [illegible] Davies BA (Hons)
(Laboratory Manager)

DATE 25 March 2021

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

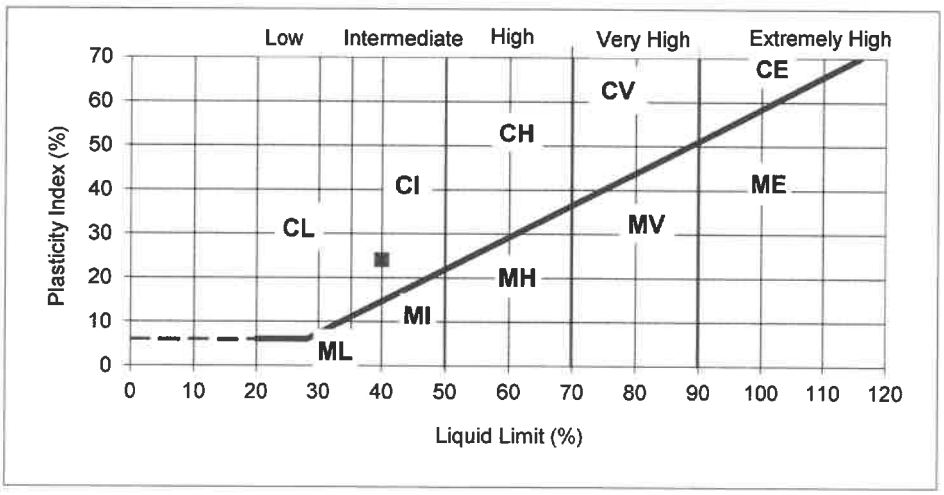
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	WS102 B4 1.7-2.0m	DATE SAMPLED	Not advised
SAMPLE No.	96903	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
21	40	16	24	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

MURRAY RIX

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

UKAS TESTING 1580

TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3

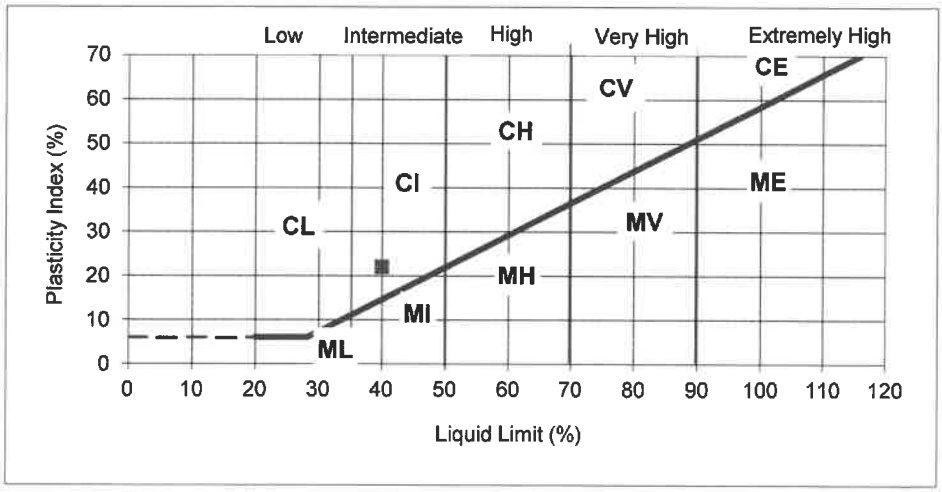
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	WS102 X5 2.0-2.45m	DATE SAMPLED	Not advised
SAMPLE No.	96904	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
21	40	18	22	99



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

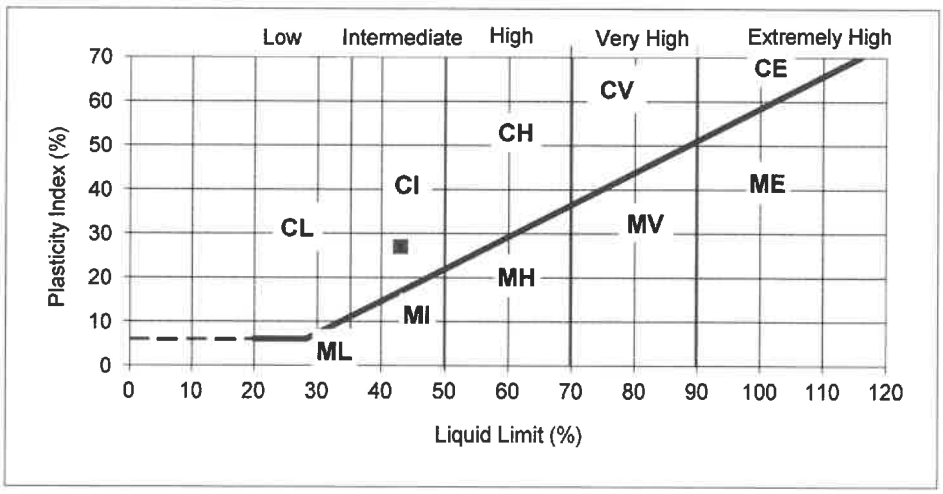
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	WS103 B5 1.8-2.0m	DATE SAMPLED	Not advised
SAMPLE No.	96905	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
19	43	16	27	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

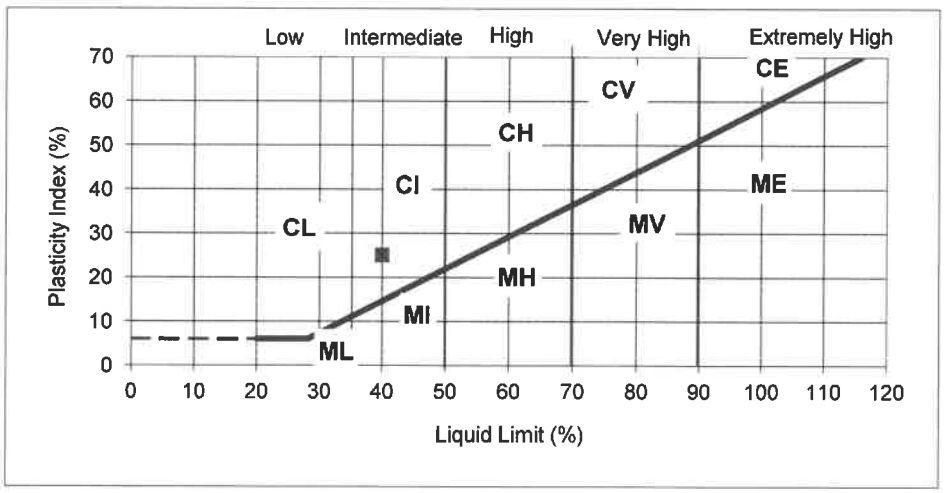
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	WS103 X6 2.0-2.45m	DATE SAMPLED	Not advised
SAMPLE No.	96906	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
19	40	15	25	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

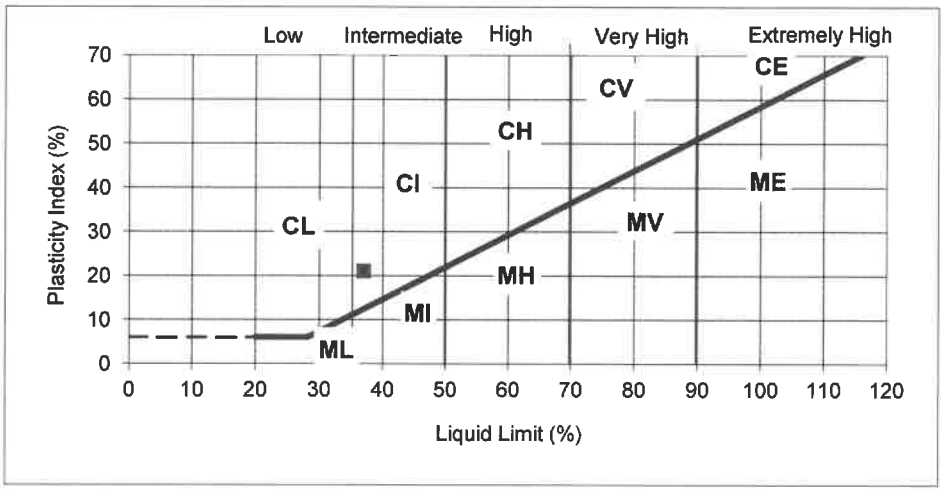
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	WS104 X3 1.2-1.65m	DATE SAMPLED	Not advised
SAMPLE No.	96908	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
20	37	16	21	98



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

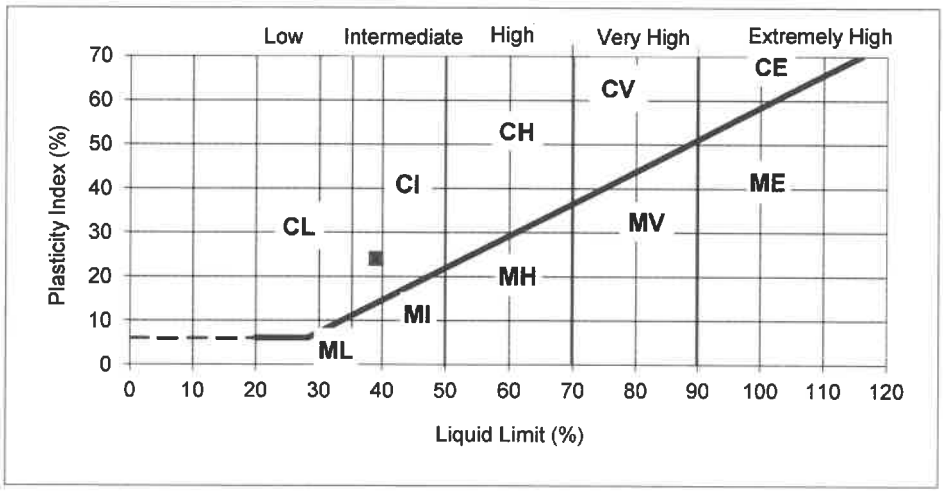
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	WS105 B4 1.7-2.0m	DATE SAMPLED	Not advised
SAMPLE No.	96910	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
21	39	15	24	100



REMARKS
Sample tested in natural condition

SIGNE[redacted]

NAME O.P. Davies BA (Hons) (Laboratory Manager) DATE 25-Mar-21

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

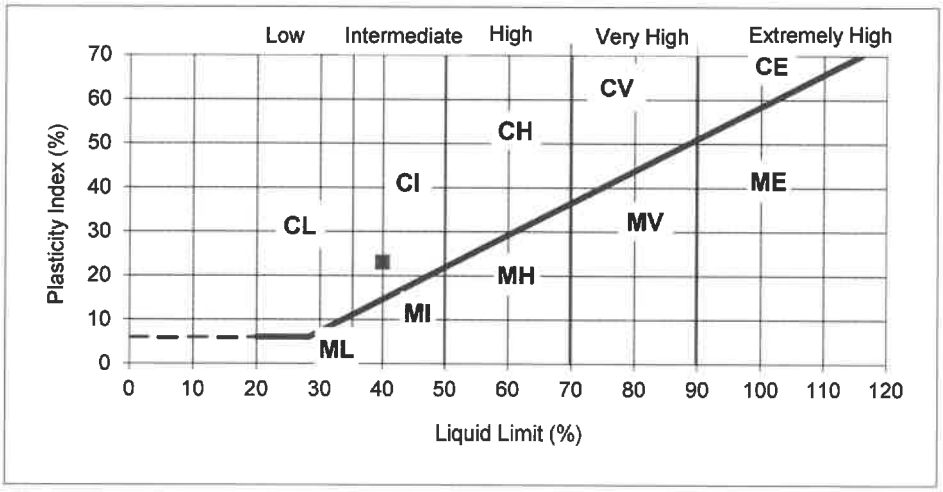
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/56

SAMPLE LABEL	WS105 B6 2.5-3.0m	DATE SAMPLED	Not advised
SAMPLE No.	96911	DATE RECEIVED	09-Mar-21
DATE TESTED	12-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
19	40	17	23	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 25-Mar-21
(Laboratory Manager)

MURRAY RIX
CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING

TEST REPORT

Client	LK Consult Ltd
Address	Unit 29 Eton Business Park Eton Hill Road Radcliffe Greater Manchester M26 2ZS
Contract	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
Job Number	MRN 4066/55
Date of Issue	25 March 2021
Page	**1 of 14**

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. This does not, however, guarantee the balance of the materials from which the tested samples have been taken to be of equal quality.

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3

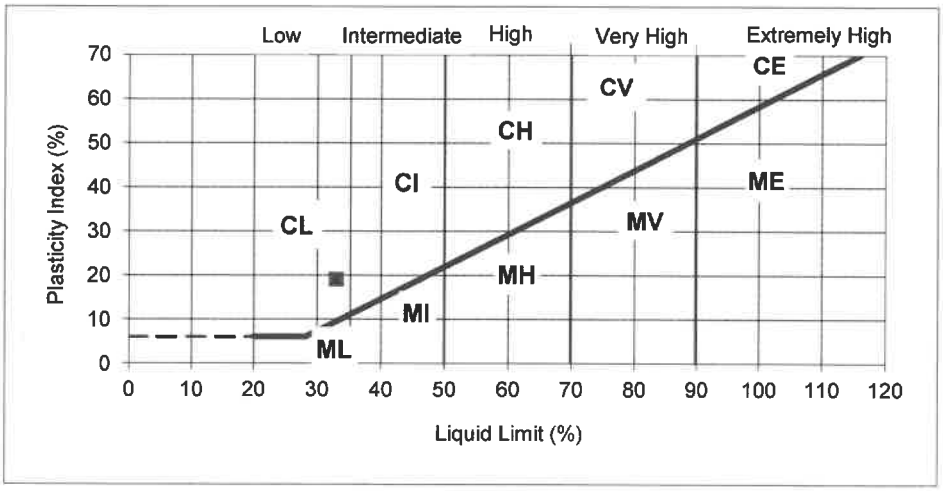
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH1 B2 0.8m	DATE SAMPLED	Not advised
SAMPLE No.	96886	DATE RECEIVED	09-Mar-21
DATE TESTED	10-Mar-21	SAMPLED BY	Client

MATERIAL	MADE GROUND: Firm brown silty sandy CLAY with frequent gravel
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
22	33	14	19	57



REMARKS
Sample tested after wet sieving

SIGNED [redacted]

NAME O.P. Davies BA (Hons) DATE 24-Mar-21
(Laboratory Manager)

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

UKAS TESTING 1580

TEST CERTIFICATE

MOISTURE CONTENT DETERMINATION
BS 1377 : PART 2 : 1990 (OVEN DRY)

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 – Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

DATE SAMPLED	Not advised	SAMPLED BY	Client
DATE TESTED	12 March 2021	DATE RECEIVED	09 March 2021

Sample No	Site Reference	Material	Sample Location	Moisture Content %
96887	BH1 D4 1.5m	MADE GROUND: Stiff brown silty sandy CLAY with rare gravel of brick	As site reference	24
96895	BH2 SPT7 4.4-4.85m	Firm to stiff brown silty sandy CLAY with rare gravel	As site reference	23

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24 March 2021

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

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

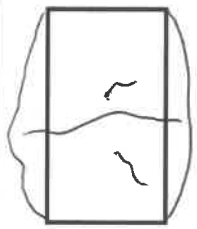
CLIENT	LK Consult Ltd
SITE	LKC 20 1673 – Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH1 D7 3.3-3.75m	DATE SAMPLED	Not advised
LAB SAMPLE No	96888	DATE RECEIVED	09 March 2021
DATE TESTED	19 March 2021	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	193	mm
SPECIMEN DIAMETER	102	mm
MOISTURE CONTENT OF SAMPLE	21	%
BULK DENSITY	2.13	Mg/m^3
DRY DENSITY	1.76	Mg/m^3
DEPTH OF TOP OF SPECIMEN	3.50	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.4	mm

SPECIMEN AT FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
70	20	1.49	272.3	136

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24 March 2021

MURRAY RIX

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

TEST CERTIFICATE

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

BS 1377 : PART 5 : Clause 3 : 1990

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH1 U6 3.3-3.75m	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	96888	**DATE RECEIVED**	09-Mar-21
DATE TESTED	16-Mar-21	**SAMPLED BY**	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

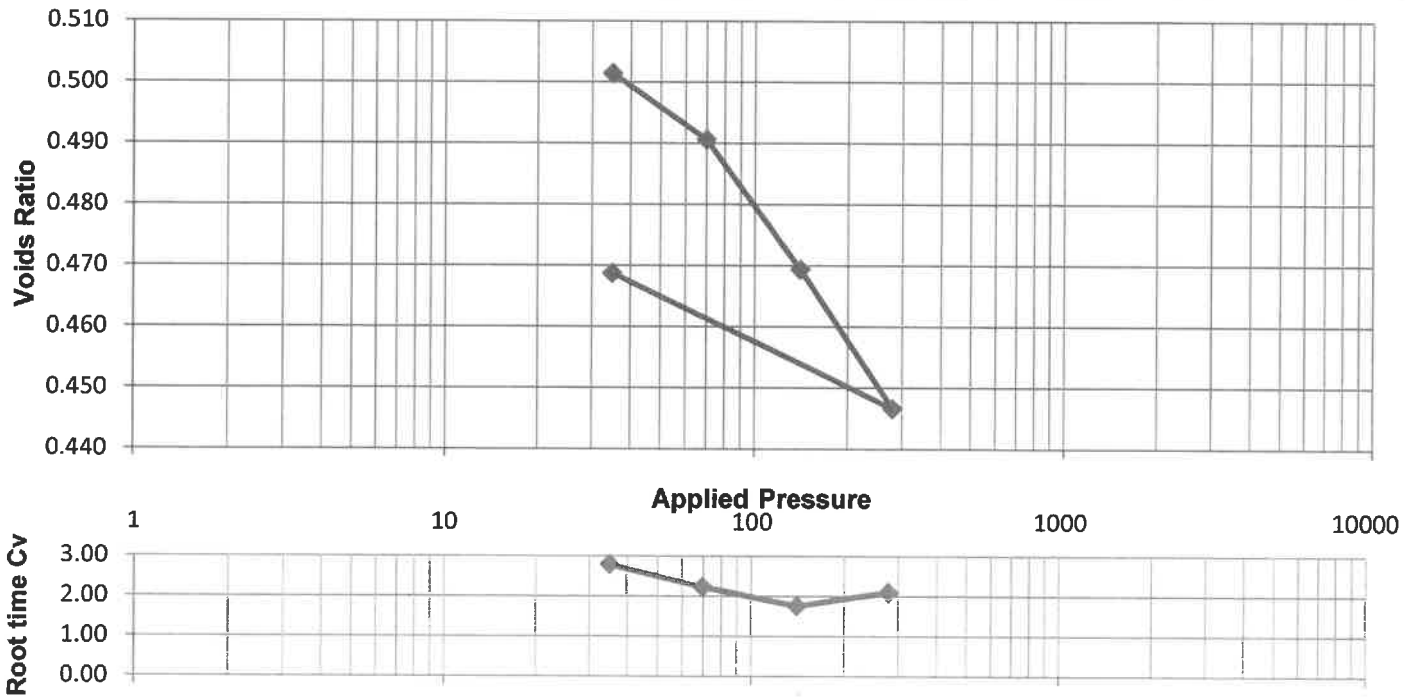
Specimen Location 

Sample Length (mm)	400	Specimen depth from top of Sample (mm)	100
Sample Orientation	Vertical	Specimen Condition	Undisturbed

INITIAL CONDITIONS

Height	20.0	mm	Particle density	2.68	Ass
Diameter	75.0	mm	Initial void ratio	0.52	
Weight wet	188.9	g	Deg. of sat.	109	%
Moist. cont.	21	%	Swell. press.	5	kN/m2
Bulk Density	2.14	Mg/m3	Dry density	1.77	Mg/m3

Load No.	Applied Pressure kPa	Sample Height mm	Void Ratio	Mv m2/MN	Temp °C	Cv t90 root m2/yr	Cv t50 log m2/yr
1	35	19.78	0.501	0.26	20	2.79	2.20
2	70	19.64	0.491	0.21	20	2.23	1.62
3	140	19.36	0.469	0.21	20	1.76	1.19
4	280	19.06	0.447	0.11	20	2.10	1.78
5	35	19.35	0.469	0.06	20		
6							
7							



Remarks/Abnormalities

Name O.P Davies BA (Hons) (Laboratory Manager)

Signed [redacted]

Date 25 March 2021

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

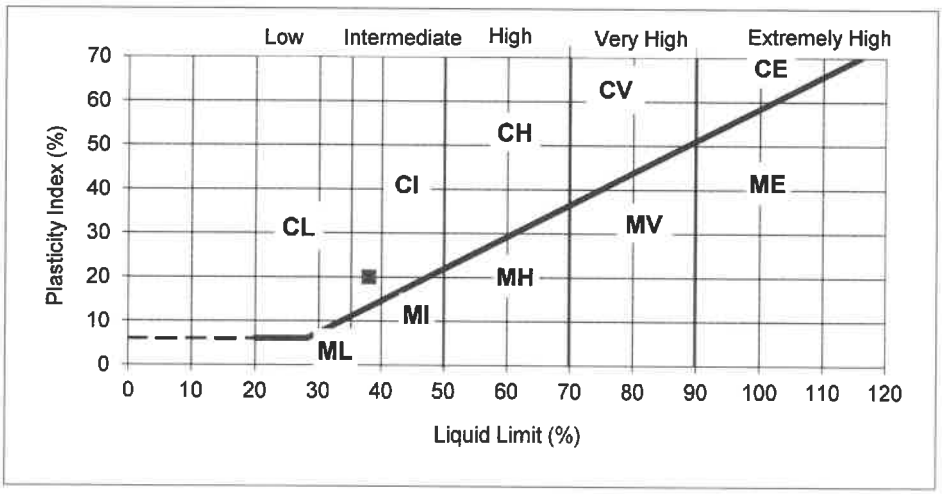
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH1 D7 3.8m	DATE SAMPLED	Not advised
SAMPLE No.	96889	DATE RECEIVED	09-Mar-21
DATE TESTED	10-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
20	38	18	20	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24-Mar-21

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

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

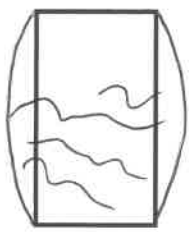
CLIENT	LK Consult Ltd
SITE	LKC 20 1673 – Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH1 U11 6.7-7.15m	DATE SAMPLED	Not advised
LAB SAMPLE No	96890	DATE RECEIVED	09 March 2021
DATE TESTED	17 March 2021	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	202	mm
SPECIMEN DIAMETER	103	mm
MOISTURE CONTENT OF SAMPLE	21	%
BULK DENSITY	2.14	Mg/m^3
DRY DENSITY	1.77	Mg/m^3
DEPTH OF TOP OF SPECIMEN	6.80	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.4	mm

SPECIMEN AT FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
140	20	1.49	199.9	100

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24 March 2021

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

TEST CERTIFICATE

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES
BS 1377 : PART 5 : Clause 3 : 1990

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH1 U11 6.7-7.15m	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	96890	**DATE RECEIVED**	09-Mar-21
DATE TESTED	16-Mar-21	**SAMPLED BY**	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

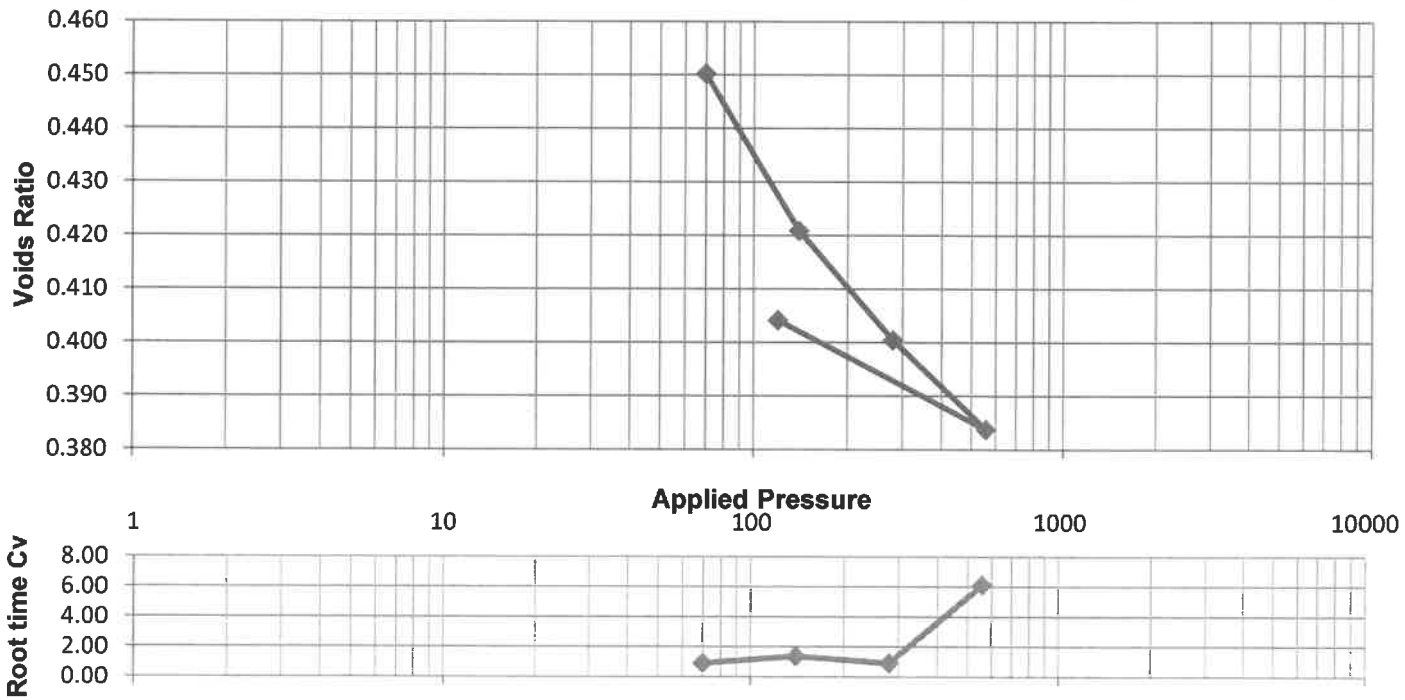
Specimen Location 

Sample Length (mm)	400	Specimen depth from top of Sample (mm)	50
Sample Orientation	Vertical	Specimen Condition	Undisturbed

INITIAL CONDITIONS

Height	20.0	mm	Particle density	2.68	Ass
Diameter	75.0	mm	Initial void ratio	0.48	
Weight wet	191.9	g	Deg. of sat.	111	%
Moist. cont.	20	%	Swell. press.	5	kN/m2
Bulk Density	2.17	Mg/m3	Dry density	1.81	Mg/m3

Load No.	Applied Pressure kPa	Sample Height mm	Void Ratio	Mv m2/MN	Temp °C	Cv t90 root m2/yr	Cv t50 log m2/yr
1	70	19.59	0.450	0.27	20	0.92	0.90
2	140	19.19	0.421	0.29	20	1.37	1.24
3	280	18.91	0.400	0.10	20	0.91	1.89
4	560	18.69	0.384	0.04	20	6.14	5.94
5	120	18.96	0.404	0.03	20		
6							
7							



Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed [redacted]

Date 25 March 2021

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

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

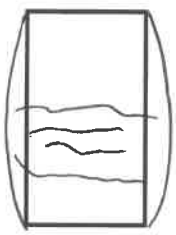
CLIENT	LK Consult Ltd
SITE	LKC 20 1673 – Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH1 U16 10.5-10.95m	DATE SAMPLED	Not advised
LAB SAMPLE No	96891	DATE RECEIVED	09 March 2021
DATE TESTED	19 March 2021	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	203	mm
SPECIMEN DIAMETER	101	mm
MOISTURE CONTENT OF SAMPLE	16	%
BULK DENSITY	2.14	Mg/m^3
DRY DENSITY	1.84	Mg/m^3
DEPTH OF TOP OF SPECIMEN	10.6	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.4	mm

SPECIMEN AT FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
215	20	1.49	344.6	172

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24 March 2021

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

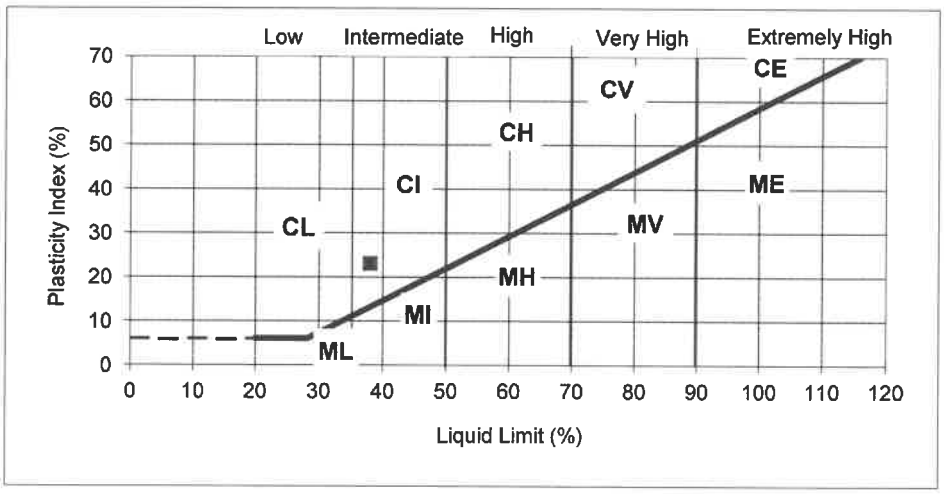
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH2 SPT3 1.2-1.65m	DATE SAMPLED	Not advised
SAMPLE No.	96892	DATE RECEIVED	09-Mar-21
DATE TESTED	10-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
19	38	15	23	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24-Mar-21

MURRAY RIX

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

UKAS TESTING
1580

TEST CERTIFICATE

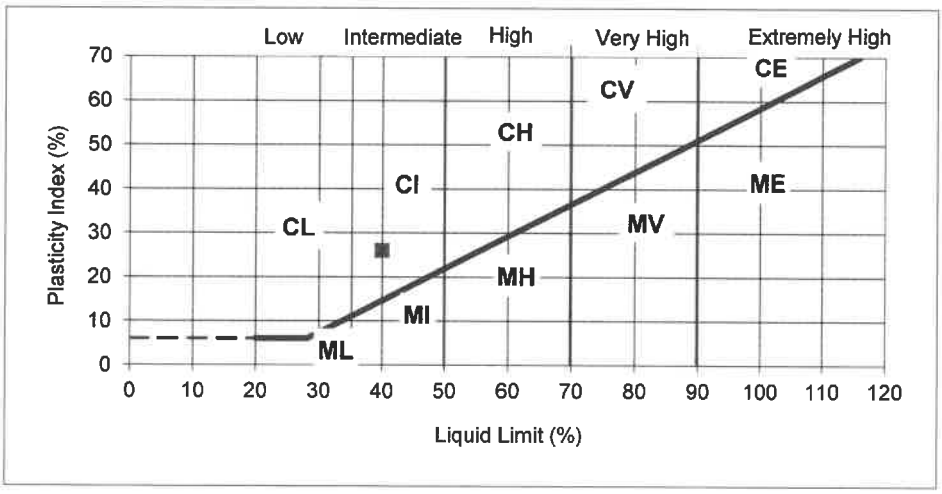
LIQUID AND PLASTIC LIMIT
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH2 SPT6 3.3-3.75m	DATE SAMPLED	Not advised
SAMPLE No.	96893	DATE RECEIVED	09-Mar-21
DATE TESTED	10-Mar-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
20	40	14	26	100



REMARKS
Sample tested in natural condition

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24-Mar-21

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

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

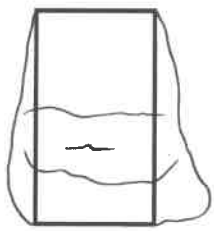
CLIENT	LK Consult Ltd
SITE	LKC 20 1673 – Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH2 U8 5.5-5.95m	DATE SAMPLED	Not advised
LAB SAMPLE No	96896	DATE RECEIVED	09 March 2021
DATE TESTED	19 March 2021	SAMPLED BY	Client

MATERIAL	Firm brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	203	mm
SPECIMEN DIAMETER	101	mm
MOISTURE CONTENT OF SAMPLE	20	%
BULK DENSITY	2.09	Mg/m^3
DRY DENSITY	1.74	Mg/m^3
DEPTH OF TOP OF SPECIMEN	5.60	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.4	mm

SPECIMEN AT FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
115	20	1.49	121.1	61

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24 March 2021

MURRAY RIX

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

TEST CERTIFICATE

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES
BS 1377 : PART 5 : Clause 3 : 1990

CLIENT	LK Consult Ltd
SITE	LKC 20 1673 - Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH2 U8 5.5-5.95m	**DATE SAMPLED**	Not advised
LAB SAMPLE No.	96896	**DATE RECEIVED**	09-Mar-21
DATE TESTED	16-Mar-21	**SAMPLED BY**	Client
MATERIAL	Firm brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

Specimen Location

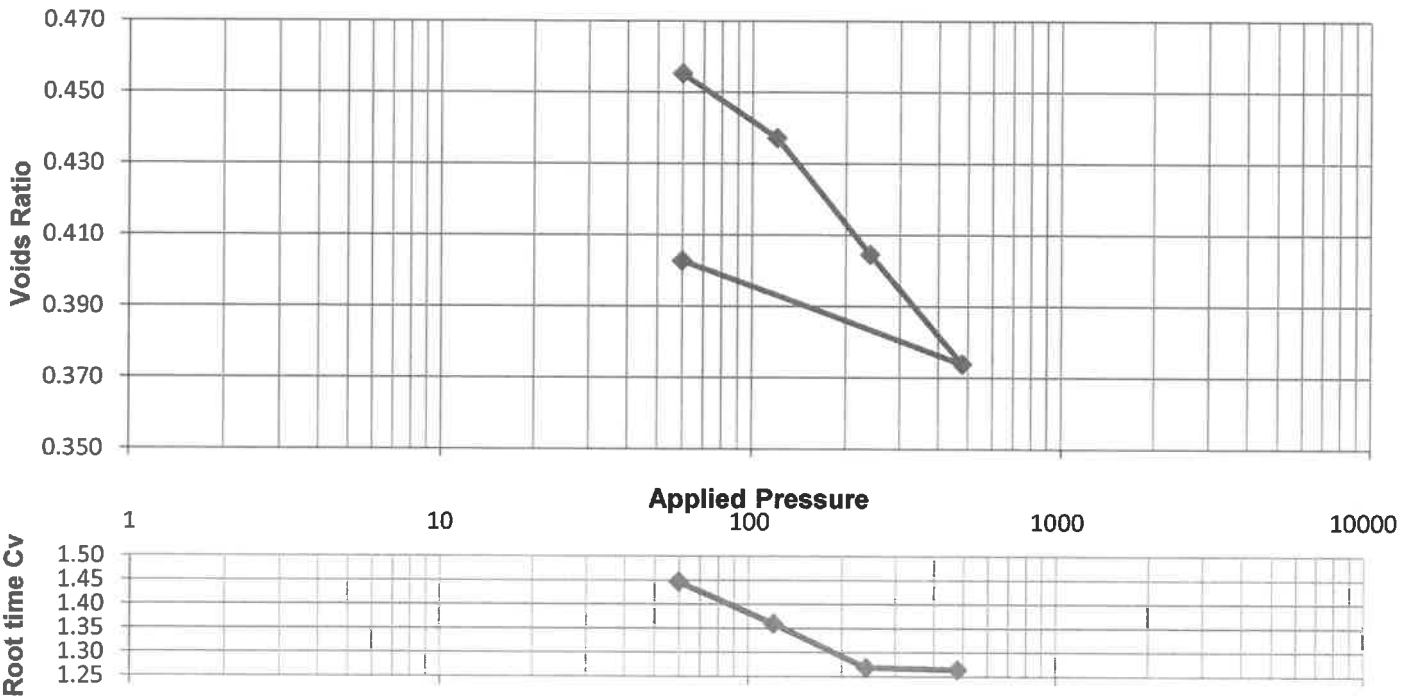


Sample Length (mm)	400	Specimen depth from top of Sample (mm)	300
Sample Orientation	Vertical	Specimen Condition	Undisturbed

INITIAL CONDITIONS

Height	20.0	mm	Particle density	2.68	Ass
Diameter	75.0	mm	Initial void ratio	0.50	
Weight wet	191.5	g	Deg. of sat.	114	%
Moist. cont.	21	%	Swell. press.	5	kN/m2
Bulk Density	2.17	Mg/m3	Dry density	1.79	Mg/m3

Load No.	Applied Pressure kPa	Sample Height mm	Void Ratio	Mv m2/MN	Temp °C	Cv t90 root m2/yr	Cv t50 log m2/yr
1	60	19.40	0.455	0.47	20	1.45	1.14
2	120	19.16	0.437	0.21	20	1.36	1.34
3	240	18.73	0.405	0.19	20	1.27	1.00
4	480	18.32	0.374	0.09	20	1.26	1.17
5	60	18.70	0.403	0.05	20		
6							
7							



Remarks/Abnormalities

Name O.P Davies BA (Hons)
(Laboratory Manager)

Signed [redacted]

Date 25 March 2021

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

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

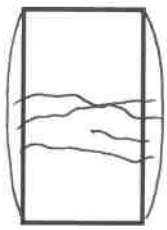
CLIENT	LK Consult Ltd
SITE	LKC 20 1673 – Collyhurst South Alternate Site, Manchester
JOB NUMBER	MRN 4066/55

SAMPLE LABEL	BH2 U11 8.5-8.8m	DATE SAMPLED	Not advised
LAB SAMPLE No	96897	DATE RECEIVED	09 March 2021
DATE TESTED	19 March 2021	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	202	mm
SPECIMEN DIAMETER	102	mm
MOISTURE CONTENT OF SAMPLE	15	%
BULK DENSITY	2.23	Mg/m^3
DRY DENSITY	1.94	Mg/m^3
DEPTH OF TOP OF SPECIMEN	8.55	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.4	mm

SPECIMEN AT FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
170	20	1.49	258.9	129

REMARKS

SIGNED [redacted]

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 24 March 2021

Appendix F

Gas Monitoring Results

LK CONSULT LTD

GAS MONITORING RECORD

Site	Collyhurst Alternative Site
Job Number	LKC 20 1673
Date	18.03.2021
Engineer	NJ
Visit	1 of 6

Equipment[1]		
Instrument	**Serial Number**	**Comments**
Gas Analyser GA5000	G502417	Serviced, calibrated, gas checked.
Geotech Dipmeter	79864	Operating normally.

Atmospheric / Ground Conditions	
Atmospheric pressure trend onsite	Steady
Atmospheric pressure (prev 24hrs)	Steady
Weather Conditions	Overcast
Ground Conditions	Moderate

Borehole ID	Date & Time	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	Peak CH_4 (%v/v)	Peak CO_2 (%v/v)	% LEL[2]	CO Pod (ppm)	H_2S Pod (ppm)	Balance (%)	Barometric Pressure (mb)	Internal Flow[3] (l/hr)	Standing water level (mbgl)	Installation base depth (mbgl)	Notes
WS101	18.03.2021 8.48am	0	1	19.3	0	1	0	0	0	79.8	1026	0	1.28	4.45	CO Peak = 2ppm
WS102	18.03.2021 9.55am	0	1.5	11.5	0	1.5	0	0	0	87	1025	0	1.71	4.45	CO Peak=3ppm.
WS103	18.03.2021 8.57am	0	0.4	20.3	0	0.4	0	0	0	79.3	1027	0	1.08	4.29	
WS104	18.03.2021 10.05am	0.6	1.6	16.8	0.6	1.6	12	0	0	81.7	1026	0	2.06	4.54	CO Peak=1ppm.
WS105	18.03.2021 10.29am	0	1.3	13	0	1.7	0	0	0	85	1026	0.1	0.85	4.48	CO peak=1ppm.
BH1	18.03.2021 10.12am	0	0.8	15	0	0.8	0	0	0	84.2	1027	4.2	8.72	10.95	Peak flow=4.4l/hr.
BH2	18.03.2021 10.19am	0	0.4	21.4	0	0.4	0	0	0	78.2	1027	0.1	2.71	11.38	CO Peak=9ppm.

ABBREVIATIONS	
ND	Not detected
NR	Not recorded
UR	Unable to record
OS	Off recordable scale
N/A	Not applicable
ppm	Parts per million
mb	Millibars
l/hr	Litres per hour
mbgl	Metres below ground level
LEL	Lower explosive limit in air

NOTES

All monitoring is carried out in line with LK Consult Ltd procedures, with reference to CIRIA C665.

[1]Equipment is serviced and checked as recommended by the manufacturer. Refer to calibration records and service certificates.

[2]CH4 is explosive between the range of 5-15%v/v. 100% lower explosive limit is equal to 5%v/v CH4.

[3]Flow readings are based on a 1 minute average value where flow is detected (equipment range of +/- 12 ltr/hr).

LK CONSULT LTD

GAS MONITORING RECORD

Site	Collyhurst South Alternative Site
Job Number	LKC 20 1673
Date	30/03/2021
Engineer	RW
Visit	2 of 6

Equipment[1]		
Instrument	**Serial Number**	**Comments**
Gas Analyser GA5000	G502417	Serviced, calibrated, gas checked.
Blue Dipmeter	1	Operating normally.

Atmospheric / Ground Conditions	
Atmospheric pressure trend onsite	Rising then steady
Atmospheric pressure (prev 24hrs)	Rising
Weather Conditions	Clear, warm, still
Ground Conditions	Dry

Borehole ID	**Date & Time**	**CH_4 (%v/v)**	**CO_2 (%v/v)**	**O_2 (%v/v)**	**Peak CH_4 (%v/v)**	**Peak CO_2 (%v/v)**	**% LEL[2]**	**CO Pod (ppm)**	**H_2S Pod (ppm)**	**Balance (%)**	**Barometric Pressure (mb)**	**Internal Flow[3] (l/hr)**	**Standing water level (mbgl)**	**Installation base depth (mbgl)**	**Notes**
BH1	30/03/2021 13:18	0	1.6	10.4	0	1.6	0	1	0	88	1021	3.6	7.71	10.17	Peak flow= 3.9l/hr. CO Steady=1ppm
BH2	30/03/2021 13:26	0	0.9	19.6	0	1.9	0	1	0	79.5	1021	0	3.54	11.04	CO Steady=1ppm
WS101	30/03/2021 12:46	0	1.1	18.6	0	1.1	0	0	0	80.3	1021	0	1.37	4.46	CO Steady=0ppm.
WS102	30/03/2021 12:53	0	3.3	9.6	0	3.5	0	0	0	87.1	1021	0	1.5	4.45	CO Steady=0ppm.
WS103	30/03/2021 12:38	0	0.6	19.4	0	0.6	0	0	0	80	1020	0	1.13	4.3	CO Steady=0ppm.
WS104	30/03/2021 13:09	0	2.4	14.1	0	2.5	0	0	0	83.5	1021	0	1.72	4.54	CO Steady=0ppm.
WS105	30/03/2021 13:01	0	2.3	11.8	0	2.3	0	0	0	85.9	1021	0	0.83	4.48	CO Steady=0ppm.

ABBREVIATIONS	
ND	Not detected
NR	Not recorded
UR	Unable to record
OS	Off recordable scale
N/A	Not applicable
ppm	Parts per million
mb	Millibars
l/hr	Litres per hour
mbgl	Metres below ground level
LEL	Lower explosive limit in air

NOTES

All monitoring is carried out in line with LK Consult Ltd procedures, with reference to CIRIA C665.

[1]Equipment is serviced and checked as recommended by the manufacturer. Refer to calibration records and service certificates.

[2]CH4 is explosive between the range of 5-15%v/v. 100% lower explosive limit is equal to 5%v/v CH4.

[3]Flow readings are based on a 1 minute average value where flow is detected (equipment range of +/- 12 ltr/hr).

LK CONSULT LTD

GAS MONITORING RECORD

Site	Collyhurst South, Manchester
Job Number	LKC 20 1673
Date	19/04/2021
Engineer	FP NJ
Visit	3 of 6

Equipment[1]		
Instrument	**Serial Number**	**Comments**
Gas Analyser GA5000	G502417	Serviced, calibrated, gas checked.
Blue Geotech Dipmeter	1	Operating normally.

Atmospheric / Ground Conditions	
Atmospheric pressure trend onsite	Steady then rising
Atmospheric pressure (prev 24hrs)	Steady then falling
Weather Conditions	Sunny, Clear, Hot
Ground Conditions	Dry

Borehole ID	**Date & Time**	**CH_4 (%v/v)**	**CO_2 (%v/v)**	**O_2 (%v/v)**	**Peak CH_4 (%v/v)**	**Peak CO_2 (%v/v)**	**% LEL[2]**	**CO Pod (ppm)**	**H_2S Pod (ppm)**	**Balance (%)**	**Barometric Pressure (mb)**	**Internal Flow[3] (l/hr)**	**Standing water level (mbgl)**	**Installation base depth (mbgl)**	**Notes**
WS101	19/04/2021 12:31	0	2	18.5	0	2	0	1	0	79.5	1015	0	1.46	4.45	CO Steady = 0
WS102	19/04/2021 12:39	0	4.1	11.2	0	3.9	0	1	0	84.5	1015	0	1.48	4.45	CO Steady = 0
WS103	19/04/2021 12:49	0	1	18.5.	0	1.1	0	0	0	80.4	1015	0.1	1.26	4.28	
WS104	19/04/2021 13:15	0	1.7	18.2	0	1.7	0	1	0	80.2	1016	0	3.67	4.52	CO Steady = 0
WS105	19/04/2021 13:30	0	3.9	16.7	0	3.9	0	2	0	79.4	1016	0.2	1.08	4.48	CO Steady = 0
BH1	19/04/2021 13:07	0	2.7	6.1	0	2.7	0	2	1	91.2	1015	0	6.51	9.27	CO Steady = 1
BH2	19/04/2021 12:57	0	2.4	14.4	0	3.6	0	2	1	81.6	1015	0	3.67	4.52	CO Steady = 1

ABBREVIATIONS	
ND	Not detected
NR	Not recorded
UR	Unable to record
OS	Off recordable scale
N/A	Not applicable
ppm	Parts per million
mb	Millibars
l/hr	Litres per hour
mbgl	Metres below ground level
LEL	Lower explosive limit in air

NOTES

All monitoring is carried out in line with LK Consult Ltd procedures, with reference to CIRIA C665.

[1]Equipment is serviced and checked as recommended by the manufacturer. Refer to calibration records and service certificates.

[2]CH4 is explosive between the range of 5-15%v/v. 100% lower explosive limit is equal to 5%v/v CH4.

[3]Flow readings are based on a 1 minute average value where flow is detected (equipment range of +/- 12 ltr/hr).

LK CONSULT LTD

GAS MONITORING RECORD

Site	Collyhurst South, Manchester
Job Number	LKC 20 1673
Date	19/04/2021
Engineer	FP
Visit	4 of 6

Equipment[1]		
Instrument	**Serial Number**	**Comments**
Gas Analyser GA5000	G502417	Serviced, calibrated, gas checked.
Blue Geotech Dipmeter	1	Operating normally.

Atmospheric / Ground Conditions	
Atmospheric pressure trend onsite	Rising
Atmospheric pressure (prev 24hrs)	Rising then steady
Weather Conditions	Overcast, Cool, Slight Breeze
Ground Conditions	Wet

Borehole ID	**Date & Time**	**CH_4 (%v/v)**	**CO_2 (%v/v)**	**O_2 (%v/v)**	**Peak CH_4 (%v/v)**	**Peak CO_2 (%v/v)**	**% LEL[2]**	**CO Pod (ppm)**	**H_2S Pod (ppm)**	**Balance (%)**	**Barometric Pressure (mb)**	**Internal Flow[3] (l/hr)**	**Standing water level (mbgl)**	**Installation base depth (mbgl)**	**Notes**
WS101	11.05.2021	0	1.4	19.8	0	1.4	1	1	0	78.8	1001	0	1.24	4.45	
WS102	11.05.2021	0	3.1	14.5	0	3.1	2	1	0	82.5	1001	0	1.25	4.45	
WS103	11.05.2021	0	0.8	20.3	0	0.8	0	1	0	78.9	1000	0	1.07	4.28	
WS104	11.05.2021	0	0.4	19.9	0	0.8	6	1	0	79.9	1001	0.1	1.71	4.53	
WS105	11.05.2021	0	2	14.2	0	2.6	5	1	0	84.7	1001	0	0.8	4.48	
BH1	11.05.2021	0	3.4	3.1	0	3.4	4	1	0	93.4	1001	10.3	5.47	9.28	Top of the stand pipe flooded.
BH2	11.05.2021	0	1.8	17.7	0	2	3	1	0	80.6	1001	0.1	3.23	10.48	

ABBREVIATIONS	
ND	Not detected
NR	Not recorded
UR	Unable to record
OS	Off recordable scale
N/A	Not applicable
ppm	Parts per million
mb	Millibars
l/hr	Litres per hour
mbgl	Metres below ground level
LEL	Lower explosive limit in air

NOTES

All monitoring is carried out in line with LK Consult Ltd procedures, with reference to CIRIA C665.

[1]Equipment is serviced and checked as recommended by the manufacturer. Refer to calibration records and service certificates.

[2]CH4 is explosive between the range of 5-15%v/v. 100% lower explosive limit is equal to 5%v/v CH4.

[3]Flow readings are based on a 1 minute average value where flow is detected (equipment range of +/- 12 ltr/hr).

LK CONSULT LTD

GAS MONITORING RECORD

Site	Collyhurst South, Manchester
Job Number	LKC 20 1673
Date	25.05.2021
Engineer	MW
Visit	5 of 6

Equipment[1]		
Instrument	**Serial Number**	**Comments**
Gas Analyser GA5000	G502417	Serviced, calibrated, gas checked.
Geotech Dipmeter	81318	Operating normally.

Atmospheric / Ground Conditions	
Atmospheric pressure trend onsite	Rising then steady
Atmospheric pressure (prev 24hrs)	Rising
Weather Conditions	Overcast, Still, Dry
Ground Conditions	Damp

Borehole ID	Date & Time	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	Peak CH_4 (%v/v)	Peak CO_2 (%v/v)	% LEL[2]	CO Pod (ppm)	H_2S Pod (ppm)	Balance (%)	Barometric Pressure (mb)	Internal Flow[3] (l/hr)	Standing water level (mbgl)	Installation base depth (mbgl)	Notes
BH1	25/05/2021 12:25	0	3.8	1.6	0	3.8	0	0	0	94.6	1007	6.7	4.95	9.25	Peak CO=0ppm, steady=0ppm.
BH2	25/05/2021 12:16	0	5.4	10.3	0	5.4	0	0	0	84.3	1006	-1.8	3.05	10.5	Peak CO=0ppm, steady=0ppm.
WS101	25/05/2021 13:07	0	1.8	18.7	0	1.8	0	0	0	79.5	1008	0	1.15	4.35	Peak CO=1ppm, steady=0ppm.
WS102	25/05/2021 12:52	0	4.3	10.1	0	4.3	0	0	0	85.6	1008	0	1.2	4.25	Peak CO=0ppm, steady=0ppm.
WS103	25/05/2021 13:00	0	0.9	19.9	0	0.9	0	0	0	79.2	1008	0	0.9	4.15	Peak CO=0ppm, steady=0ppm.
WS104	25/05/2021 12:35	0	2.6	15.8	0	2.6	0	0	0	81.6	1008	0	1.05	4.45	Peak CO=0ppm, steady=0ppm.
WS106	25/05/2021 12:43	0	3.7	9.9	0	3.7	0	0	0	86.4	1008	0	0.7	4.35	Peak CO=0ppm, steady=0ppm.

ABBREVIATIONS	
ND	Not detected
NR	Not recorded
UR	Unable to record
OS	Off recordable scale
N/A	Not applicable
ppm	Parts per million
mb	Millibars
l/hr	Litres per hour
mbgl	Metres below ground level
LEL	Lower explosive limit in air

NOTES

All monitoring is carried out in line with LK Consult Ltd procedures, with reference to CIRIA C665.

[1]Equipment is serviced and checked as recommended by the manufacturer. Refer to calibration records and service certificates.

[2]CH4 is explosive between the range of 5-15%v/v. 100% lower explosive limit is equal to 5%v/v CH4.

[3]Flow readings are based on a 1 minute average value where flow is detected (equipment range of +/- 12 ltr/hr).

LK CONSULT LTD

GAS MONITORING RECORD

Site	Collyhurst South, Manchester
Job Number	LKC 20 1673
Date	17.06.2021
Engineer	MW
Visit	6 of 6

Equipment[1]		
Instrument	**Serial Number**	**Comments**
Gas Analyser GA5000	G502417	Serviced, calibrated, gas checked.
Geotech Dipmeter	81318	Operating normally.

Atmospheric / Ground Conditions	
Atmospheric pressure trend onsite	Rising
Atmospheric pressure (prev 24hrs)	Variable
Weather Conditions	Dry, Still
Ground Conditions	Dry

Borehole ID	Date & Time	CH_4 (%v/v)	CO_2 (%v/v)	O_2 (%v/v)	Peak CH_4 (%v/v)	Peak CO_2 (%v/v)	% LEL[2]	CO Pod (ppm)	H_2S Pod (ppm)	Balance (%)	Barometric Pressure (mb)	Internal Flow[3] (l/hr)	Standing water level (mbgl)	Installation base depth (mbgl)	Notes
BH1	17/06/2021 13:32	0	1.8	11.6	0	2	0	1	0	86.6	1006	0	4.4	9.3	Peak CO=4ppm, steady=1ppm. PID=0.3ppm.
BH2	17/06/2021 14:04	0	2.4	15.2	0	4.2	0	1	0	82.4	1007	7.9	3	10.55	Peak CO=2ppm, steady=1ppm. PID=0.3ppm.
WS105	17/06/2021 13:56	0	1.6	20	0	1.7	0	1	0	78.4	1006	0	1.05	4.35	Peak CO=2ppm, steady=1ppm. PID=0.1ppm.

ABBREVIATIONS	
ND	Not detected
NR	Not recorded
UR	Unable to record
OS	Off recordable scale
N/A	Not applicable
ppm	Parts per million
mb	Millibars
l/hr	Litres per hour
mbgl	Metres below ground level
LEL	Lower explosive limit in air

NOTES

All monitoring is carried out in line with LK Consult Ltd procedures, with reference to CIRIA C665.

[1]Equipment is serviced and checked as recommended by the manufacturer. Refer to calibration records and service certificates.

[2]CH4 is explosive between the range of 5-15%v/v. 100% lower explosive limit is equal to 5%v/v CH4.

[3]Flow readings are based on a 1 minute average value where flow is detected (equipment range of +/- 12 ltr/hr).

Appendix G

Soakaway Test Results

LK GROUP

LK CONSULT LTD
Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com

Soakaway Test (BRE Digest 365)

Site : Collyhurst South Alternate Site, Manchester

Client : Far East Consortium International Ltd

Project Contractor : LKC

Job Number LKC 20 1673

Sheet 1 / 3

Location	Date	Level	Location
TP102	25/02/2021	56.00 mOD	E: 385383 N: 399734

Pit Width (m)	0.70
Pit Depth (m)	2.00
Pit Length (m)	2.00

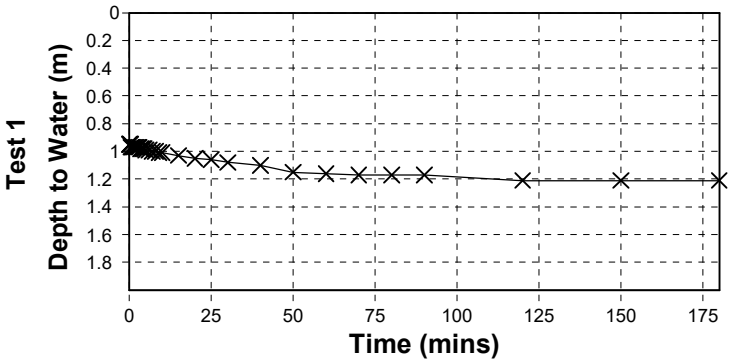
Soil type at test level	Clay.
Groundwater	1.0mbgl.
Drain discharge depth	
Sidewall stability	Stable.
Stone filled or open pit	Stone filled

	1
Effective depth (m)	1.05
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

Remarks

* Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

Elapsed time (mins)	Depth to Water Test 1
0	0.95
0.083	0.95
0.167	0.95
0.333	0.95
0.5	0.97
0.667	0.97
0.833	0.97
1	0.97
1.5	0.97
2	0.97
2.5	0.97
3	0.97
3.5	0.98
4	0.98
4.5	0.98
5	0.99
6	0.99
7	1.00
8	1.00
9	1.01
10	1.01
15	1.03
20	1.05
25	1.06
30	1.08
40	1.10
50	1.15
60	1.16
70	1.17
80	1.17
90	1.17
120	1.21
150	1.21
180	1.21



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LK GROUP

LK CONSULT LTD
Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com

Soakaway Test (BRE Digest 365)

Site : Collyhurst South Alternate Site, Manchester

Client : Far East Consortium International Ltd

Project Contractor : LKC

Job Number LKC 20 1673

Sheet 2 / 3

Location	Date	Level	Location
TP104	25/02/2021	56.00 mOD	E: 385392 N: 399690

Pit Width (m)	0.70
Pit Depth (m)	2.30
Pit Length (m)	2.00

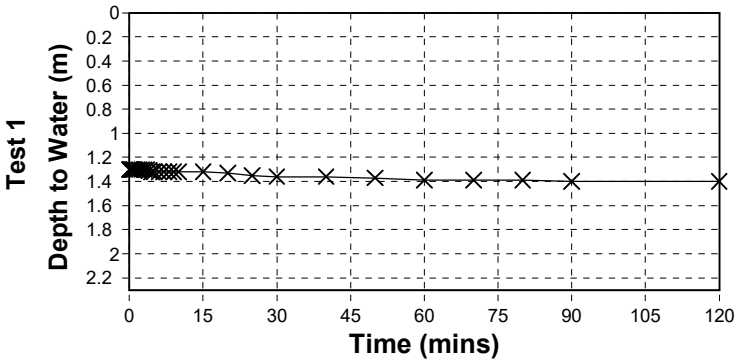
Soil type at test level	Clay.
Groundwater	2.3mbgl
Drain discharge depth	
Sidewall stability	Stable.
Stone filled or open pit	Stone filled

	1
Effective depth (m)	1.00
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

Remarks

* Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

Elapsed time (mins)	Depth to Water Test 1
0	1.30
0.083	1.30
0.167	1.30
0.333	1.30
0.5	1.30
0.667	1.30
0.833	1.30
1	1.30
1.5	1.30
2	1.30
2.5	1.30
3	1.30
3.5	1.30
4	1.31
4.5	1.32
5	1.32
6	1.32
7	1.32
8	1.32
9	1.32
10	1.32
15	1.32
20	1.33
25	1.35
30	1.36
40	1.36
50	1.37
60	1.39
70	1.39
80	1.39
90	1.40
120	1.40



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LK CONSULT LTD
Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com

Soakaway Test (BRE Digest 365)

Site : Collyhurst South Alternate Site, Manchester

Client : Far East Consortium International Ltd

Project Contractor : LKC

Job Number LKC 20 1673

Sheet 3 / 3

Location	Date	Level	Location
TP106	25/02/2021	56.00 mOD	E: 385365 N: 399704

Pit Width (m)	0.70
Pit Depth (m)	2.80
Pit Length (m)	2.00

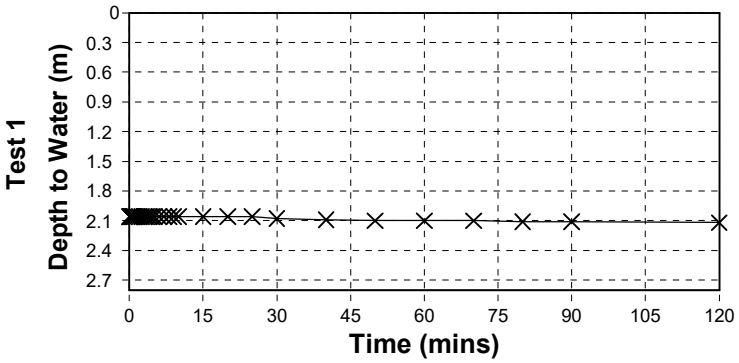
Soil type at test level	Clay.
Groundwater	None.
Drain discharge depth	
Sidewall stability	Stable.
Stone filled or open pit	Stone filled

	1
Effective depth (m)	0.74
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

Remarks

* Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

Elapsed time (mins)	Depth to Water Test 1
0	2.06
0.083	2.06
0.167	2.06
0.333	2.06
0.5	2.06
0.667	2.06
0.833	2.06
1	2.06
1.5	2.06
2	2.06
2.5	2.06
3	2.06
3.5	2.06
4	2.06
4.5	2.06
5	2.06
6	2.06
7	2.06
8	2.06
9	2.06
10	2.06
15	2.06
20	2.06
25	2.06
30	2.08
40	2.09
50	2.10
60	2.10
70	2.10
80	2.11
90	2.11
120	2.12



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Appendix H

Generic Assessment Criteria Values

CATEGORY 4 SCREENING LEVELS

Substance	Residential (with home-grown produce)	Residential (without home-grown produce)	Allotments	Commercial	Public Open Space 1	Public Open Space 2
Arsenic	37 mg/kg	40 mg/kg	49 mg/kg	640 mg/kg	79 mg/kg	170 mg/kg
Benzene	0.87 mg/kg	3.3 mg/kg	0.18 mg/kg	98 mg/kg	140 mg/kg	230 mg/kg
Benzo(a)pyrene	5.0 mg/kg	5.3 mg/kg	5.7 mg/kg	77 mg/kg	10 mg/kg	21 mg/kg
Cadmium	22 mg/kg	150 mg/kg	3.9 mg/kg	410 mg/kg	220 mg/kg	880 mg/kg
Chromium VI	21 mg/kg	21 mg/kg	170 mg/kg	49 mg/kg	21 mg/kg	250 mg/kg
Lead	200 mg/kg	310 mg/kg	80 mg/kg	2300 mg/kg	630 mg/kg	1300 mg/kg
Tetrachlorethene (PCE) – 1% SOM	0.31 mg/kg	0.32 mg/kg	2.0 mg/kg	24 mg/kg	3,200 mg/kg	1,400 mg/kg
Tetrachlorethene (PCE) – 2.5% SOM	0.70 mg/kg	0.71 mg/kg	4.8 mg/kg	55 mg/kg	3,300 mg/kg	1,900 mg/kg
Tetrachlorethene (PCE) – 6% SOM	1.6 mg/kg	1.6 mg/kg	11 mg/kg	130 mg/kg	3,400 mg/kg	2,500 mg/kg
Trichlorethene (TCE) – 1% SOM	0.0093 mg/kg	0.0097 mg/kg	0.032 mg/kg	0.73 mg/kg	76 mg/kg	41 mg/kg
Trichlorethene (TCE) – 2.5% SOM	0.020 mg/kg	0.020 mg/kg	0.072 mg/kg	1.5 mg/kg	78 mg/kg	54 mg/kg
Trichlorethene (TCE) – 6% SOM	0.043 mg/kg	0.045 mg/kg	0.16 mg/kg	3.4 mg/kg	79 mg/kg	69 mg/kg
Vinyl Chloride (VC) – 1%SOM	0.0064 mg/kg	0.015 mg/kg	0.0017 mg/kg	1.1 mg/kg	7.8 mg/kg	18 mg/kg
Vinyl Chloride (VC) – 2.5%SOM	0.010 mg/kg	0.019 mg/kg	0.0031 mg/kg	1.4 mg/kg	7.8 mg/kg	19 mg/kg
Vinyl Chloride (VC) – 6%SOM	0.017 mg/kg	0.029 mg/kg	0.0058 mg/kg	2.2 mg/kg	7.8 mg/kg	19 mg/kg

Summary Table for the Generic Assessment Criteria for Human Health Risk Assessment Land Quality Management (LQM) S4ULs.

All GAC are based on sandy loam soils with a pH 7.

	Contaminant	SOM	LQM Generic Assessment Criteria (mg/kg) Dry weight soil					
			Res +	Res -	Allot.	Comm.	POS_{resi}	POS_{park}
Metals	Inorganic Arsenic	6%	37	40	43	640	79	170
	Beryllium	6%	1.7	1.7	35	12	2.2	63
	Boron	6%	290	11,000	45	240,000	21,000	46,000
	Cadmium	6%	11	85	1.9	190	120	532
	Chromium (III)	6%	910	910	18,000	8,600	1,500	33,000
	Chromium (VI)	6%	6.0	6.0	1.8	33	7.7	220
	Copper	6%	2,400	7,100	520	68,000	12,000	44,000
	Elemental Mercury	6%	1.2	1.2	21	58 (25.8) ^{vap}	16	30 (25.8) ^{vap}
	Inorganic Mercury	6%	40	56	19	1,100	120	240
	Methylmercury	6%	11	15	6.0	320	40	68
	Nickel	6%	180	180	230	980	230	3,400
	Selenium	6%	250	430	88	12,000	1,100	1,800
	Vanadium	6%	410	1,200	91	9,000	2,000	5,000
	Zinc	6%	3,700	40,000	620	730,000	81,000	170,000
BTEX Compounds	Benzene	1%	0.087	0.38	0.017	27	72	90
		2.5%	0.17	0.70	0.034	47	72	100
		6%	0.37	1.4	0.075	90	73	110
	Toluene	1%	130	880 (869) ^{vap}	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}
		2.5%	290	1,900	51	110,000 (1,920) ^{vap}	56,000	95,000 (1,920) ^{vap}
		6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}
	Ethylbenzene	1%	47	83	16	5,700 (518) ^{vap}	24,000	17,000 (518) ^{vap}
		2.5%	110	190	39	13,000 (1,220) ^{vap}	24,000	22,000 (1,220) ^{vap}
		6%	260	440	91	27,000 (2,840) ^{vap}	25,000	27,000 (2,840) ^{vap}
	o-xylene	1%	60	88	28	6,600 (478) ^{sol}	41,000	17,000 (478) ^{sol}
		2.5%	140	210	67	15,000 (1,120) ^{sol}	42,000	24,000 (1,120) ^{sol}
		6%	330	480	160	33,000 (2,620) ^{sol}	43,000	33,000 (2,620) ^{sol}
	m-xylene	1%	59	82	31	6,200 (625) ^{vap}	41,000	17,000 (625) ^{vap}
		2.5%	140	190	74	14,000 (1,470) ^{vap}	42,000	24,000 (1,470) ^{vap}
		6%	320	450	170	31,000 (3,460) ^{vap}	43,000	32,000 (3,460) ^{vap}
	p-xylene	1%	56	79	29	5,900 (576) ^{sol}	41,000	17,000 (576) ^{sol}
		2.5%	130	180	69	14,000 (1,350) ^{sol}	42,000	23,000 (1,350) ^{sol}
		6%	310	430	160	30,000 (3,170) ^{sol}	43,000	31,000 (3,170) ^{sol}

NOTES

$^{Sol / vap}$ = solubility / vapour limit (potentially use if free product identified, although highly conservative).

f = oral, dermal and inhalation exposures compared to oral HCV.

All GAC are based on sandy loam soils with a pH 7.

	Contaminant	SOM	LQM Generic Assessment Criteria (mg/kg) Dry weight soil					
			Res +	Res -	Allot.	Comm.	POS_{resi}	POS_{park}
Polycyclic Aromatic Hydrocarbons (PAHs)	Acenaphthene	1%	210	3,000 (57.1) ^{sol}	34	84,000 (57.0) ^{sol}	15,000	29,000
		2.5%	510	4,700 (141) ^{sol}	85	97,000 (141) ^{sol}	15,000	30,000
		6%	1,100	6,000 (336) ^{sol}	200	100,000	15,000	30,000
	Acenaphthylene	1%	170	2,900 (86.1) ^{sol}	28	83,000 (86.1) ^{sol}	15,000	29,000
		2.5%	420	4,600 (212) ^{sol}	69	97,000 (212) ^{sol}	15,000	30,000
		6%	920	6,000 (506) ^{sol}	160	100,000	15,000	30,000
	Anthracene	1%	2,400	31,000 (1.17) ^{vap}	380	520,000	74,000	150,000
		2.5%	5,400	35,000	950	540,000	74,000	150,000
		6%	11,000	37,000	2,200	540,000	74,000	150,000
	Benz(a)anthracene	1%	7.2	11	2.9	170	29	49
		2.5%	11	14	6.5	170	29	56
		6%	13	15	13	180	29	62
	Benzo(a)pyrene (only)	1%	2.2	3.2	0.97	35	5.7	11
		2.5%	2.7	3.2	2.0	35	5.7	12
		6%	3.0	3.2	3.5	36	5.7	13
	Benzo(b)fluoranthene	1%	2.6	3.9	0.99	44	7.1	13
		2.5%	3.3	4.0	2.1	44	7.2	15
		6%	3.7	4.0	3.9	45	7.2	16
	Benzo(ghi)perylene	1%	320	360	290	3,900	640	1,400
		2.5%	340	360	470	4,000	640	1,500
		6%	350	360	640	4,000	640	1,600
	Benzo(k)fluoranthene	1%	77	110	37	1,200	190	370
		2.5%	93	110	75	1,200	190	410
		6%	100	110	130	1,200	190	440
	Chrysene	1%	15	30	4.1	350	57	93
		2.5%	22	31	9.4	350	57	110
		6%	27	32	19	350	57	120
	Dibenzo(ah)anthracene	1%	0.24	0.31	0.14	3.5	0.57	1.1
		2.5%	0.28	0.32	0.27	3.6	0.58	1.3
		6%	0.3	0.32	0.43	3.6	0.58	1.4
	Fluoranthene	1%	280	1,500	52	23,000	3,100	6,300
		2.5%	560	1,600	130	23,000	3,100	6,300
		6%	890	1,600	290	23,000	3,100	6,400
	Fluorene	1%	170	2,800 (36.0) ^{sol}	27	63,000 (30.9) ^{sol}	9,900	20,000
		2.5%	400	3,800 (76.5) ^{sol}	67	68,000	9,900	20,000
		6%	860	4,500 (183) ^{sol}	160	71,000	9,900	20,000
	Indeno(123-cd)pyrene	1%	27	45	9.5	500	82	150
		2.5%	36	46	21	510	82	170
		6%	41	46	39	510	82	180
	Naphthalene	1%	2.3 ^{f}	2.3 ^{f}	4.1 ^{f}	190 ^{f} (76.4) ^{sol}	4,900 ^{f}	1,200 ^{f} (76.4) ^{sol}
		2.5%	5.6 ^{f}	5.6 ^{f}	10 ^{f}	460 ^{f} (183) ^{sol}	4,900 ^{f}	1,900 ^{f} (183) ^{sol}
		6%	13 ^{f}	13 ^{f}	24 ^{f}	1,100 ^{f} (432) ^{sol}	4,900 ^{f}	3,000
	Phenanthrene	1%	95	1,300 (36.0) ^{sol}	15	22,000	3,100	6,200
		2.5%	220	1,500	38	22,000	3,100	6,200
		6%	440	1,500	90	22,000	3,100	6,300
	Pyrene	1%	620	3,700	110	54,000	7,400	15,000
		2.5%	1,200	3,800	270	54,000	7,400	15,000
		6%	2,000	3,800	620	54,000	7,400	15,000
	Coal Tar (B(a)P as surrogate marker)	1%	0.79	1.2	0.32	15	2.2	4.4
		2.5%	0.98	1.2	0.67	15	2.2	4.7
		6%	1.1	1.2	1.2	15	2.2	4.8

NOTES

$^{sol / vap}$ = solubility / vapour limit (potentially use if free product identified, although highly conservative).

f = naphthalene is based on comparison of inhalation exposure with TDI_{inhal} for localised effect.

All GAC are based on sandy loam soils with a pH 7.

LQM Generic Assessment Criteria (mg/kg) Dry weight soil

	Contaminant	SOM	Res +	Res -	Allot.	Comm.	POS_{resi}	POS_{park}
Petroleum Hydrocarbons	**Aliphatic**							
	EC 5-6	1%	42	42	730	3,200 (304) ^{sol}	570,000(304)^{sol}	95,000 (304) ^{sol}
	EC>6-8	1%	100	100	2,300	7,800 (144) ^{sol}	600,000	150,000 (144) ^{sol}
	EC>8-10	1%	27	27	320	2,000 (78) ^{sol}	13,000	14,000 (78) ^{vap}
	EC>10-12	1%	130 (48) ^{vap}	130 (48) ^{vap}	2,200	9,700 (48) ^{sol}	13,000	21,000 (48) ^{vap}
	EC>12-16	1%	1,100 (24) ^{sol}	1,100 (24) ^{sol}	11,000	59,000 (24) ^{sol}	13,000	25,000 (24) ^{sol}
	EC>16-35	1%	65,000 (8.48) ^{f,sol}	65,000 (8.48) ^{f,sol}	260,000 ^{f}	160,000 ^{f}	250,000 ^{f}	450,000 ^{f}
	EC>35-44	1%	65,000 (8.48) ^{f,sol}	65,000 (8.48) ^{f,sol}	260,000 ^{f}	160,000 ^{f}	250,000 ^{f}	450,000 ^{f}
	Aliphatic							
	EC 5-6	2.5%	78	78	1,700	5,900 (558) ^{sol}	590,000	130,000 (558) ^{sol}
	EC>6-8	2.5%	230	230	5,600	17,000 (322) ^{sol}	610,000	220,000 (322) ^{sol}
	EC>8-10	2.5%	65	65	770	4,800 (190) ^{vap}	13,000	18,000 (190) ^{vap}
	EC>10-12	2.5%	330 (118) ^{vap}	330 (118) ^{vap}	4,400	23,000 (118) ^{vap}	13,000	23,000 (118) ^{vap}
	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}
	EC>16-35	2.5%	92,000 (21) ^{f,sol}	92,000 (21) ^{f,sol}	270,000 ^{f}	1,700,000 ^{f}	250,000 ^{f}	480,000 ^{f}
	EC>35-44	2.5%	92,000 (21) ^{f,sol}	92,000 (21) ^{f,sol}	270,000 ^{f}	1,700,000 ^{f}	250,000 ^{f}	480,000 ^{f}
	Aliphatic							
	EC 5-6	6%	160	160	3,900	12,000 (1,150) ^{sol}	600,000	180,000 (1,150) ^{sol}
	EC>6-8	6%	530	530	13,000	40,000 (736) ^{sol}	620,000	320,000 (736) ^{sol}
	EC>8-10	6%	150	150	1,700	11,000 (451) ^{vap}	13,000	21,000 (451) ^{vap}
	EC>10-12	6%	760 (283) ^{vap}	760 (283) ^{vap}	7,300	47,000 (283) ^{vap}	13,000	24,000 (283) ^{vap}
	EC>12-16	6%	4,300 (142) ^{sol}	4,400 (142) ^{sol}	13,000	90,000 (142) ^{sol}	13,000	26,000 (142) ^{sol}
	EC>16-35	6%	110,000^{f}	110,000^{f}	270,000 ^{f}	1,800,000^{f}	250,000 ^{f}	490,000 ^{f}
	EC>35-44	6%	110,000^{f}	110,000^{f}	270,000 ^{f}	1,800,000^{f}	250,000 ^{f}	490,000 ^{f}
	Aromatic							
	EC5-7(benzene as non-threshold)	1%	70	370	13	26,000 (1,220) ^{sol}	56,000	76,000 (1,220) ^{sol}
	EC>7-8(toluene)	1%	130	860	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}
	EC>8-10	1%	34	47	8.6	3,500 (613) ^{vap}	5,000	7,200 (613) ^{vap}
	EC>10-12	1%	74	250	13	16,000 (364) ^{sol}	5,000	9,200 (364) ^{sol}
	EC>12-16	1%	140	1,800	23	36,000 (169) ^{sol}	5,100	10,000
	EC>16-21	1%	260 ^{f}	1,900 ^{f}	46 ^{f}	28,000 ^{f}	3,800 ^{f}	7,600 ^{f}
	EC>21-35	1%	1,100 ^{f}	1,900 ^{f}	370 ^{f}	28,000 ^{f}	3,800 ^{f}	7,800 ^{f}
	EC>35-44	1%	1,100 ^{f}	1,900 ^{f}	370^{f}	28,000 ^{f}	3,800 ^{f}	7,800 ^{f}
	Aromatic							
	EC5-7(benzene as non-threshold)	2.5%	140	690	27	46,000 (2,260) ^{sol}	56,000	84,000 (2,260) ^{sol}
	EC>7-8(toluene)	2.5%	290	1,800	51	110,000 (1,920) ^{sol}	56,000	95,000 (1,920) ^{sol}
	EC>8-10	2.5%	83	110	21	8,100 (1,500) ^{vap}	5,000	8,500 (1,500) ^{vap}
	EC>10-12	2.5%	180	590	31	28,000 (899) ^{sol}	5,000	9,700 (899) ^{sol}
	EC>12-16	2.5%	330	2,300 (419) ^{sol}	57	37,000	5,100	10,000
	EC>16-21	2.5%	540 ^{f}	1,900 ^{f}	110 ^{f}	28,000 ^{f}	3,800 ^{f}	7,700 ^{f}
	EC>21-35	2.5%	1,500 ^{f}	1,900 ^{f}	820 ^{f}	28,000 ^{f}	3,800 ^{f}	7,800 ^{f}
	EC>35-44	2.5%	1,500 ^{f}	1,900 ^{f}	820 ^{f}	28,000 ^{f}	3,800 ^{f}	7,800 ^{f}
	Aromatic							
	EC5-7(benzene as non-threshold)	6%	300	1,400	57	86,000 (4,710) ^{sol}	56,000	92,000 (4,710) ^{sol}
	EC>7-8(toluene)	6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}
	EC>8-10	6%	190	270	51	17,000 (3,580) ^{vap}	5,000	9,300 (3,580) ^{vap}
	EC>10-12	6%	380	1,200	4	34,000 (2,150) ^{sol}	5,000	10,000
	EC>12-16	6%	660	2,500	130	38,000	5,100	10,000
	EC>16-21	6%	930^{f}	1,900 ^{f}	260 ^{f}	28,000 ^{f}	3,800 ^{f}	7,800 ^{f}
	EC>21-35	6%	1,700 ^{f}	1,900 ^{f}	1,600 ^{f}	28,000 ^{f}	3,800 ^{f}	7,900 ^{f}
	EC>35-44	6%	1,700 ^{f}	1,900 ^{f}	1,600 ^{f}	28,000 ^{f}	3,800 ^{f}	7,900 ^{f}
	Aliphatic +Aromatic >EC44	1%	1,600 ^{f}	1,900 ^{f}	1,200 ^{f}	28,000 ^{f}	3,800 ^{f}	7,800 ^{f}
		2.5%	1,800 ^{f}	1,900 ^{f}	2,100 ^{f}	28,000 ^{f}	3,800 ^{f}	7,800 ^{f}
		6%	1,900 ^{f}	1,900 ^{f}	3,000 ^{f}	28,000 ^{f}	3,800 ^{f}	7,900 ^{f}

NOTES

$^{Sol\ /\ vap}$ = solubility / vapour limit (potentially use if free product identified, although highly conservative).

f = oral, dermal and inhalation exposures compared to oral HCV.

All GAC are based on sandy loam soils with a pH 7.

	Contaminant	SOM	LQM Generic Assessment Criteria (mg/kg) Dry weight soil: Res +	Res -	Allot.	Comm.	POS_{resi}	POS_{park}
Chloalkanes and Alkenes & Explosives	1,2 Dichloroethane (DCA)	1%	7.1E-03	9.2E-03	4.6E-03	0.67	29	21
		2.5%	1.1E-02	1.3E-02	8.3E-03	0.97	29	24
		6%	1.9E-02	2.3E-02	1.6E-02	1.7	29	28
	1,1,1 Trichloroethane (TCA)	1%	8.8	9.0	48	660	140,000	57,000 (1,425) vap
		2.5%	18	18	110	1,300	140,000	76,000 (2,915) vap
		6%	39	40	240	3,000	140,000	100,000 (6,392) vap
	1,1,2,2-Tetrachloroethanes (PCA)	1%	1.6	3.9	0.41	270	1,400	1,800
		2.5%	3.4	8.0	0.89	550	1,400	2,100
		6%	7.5	17	2.0	1,100	1,400	2,300
	1,1,1,2-Tetrachloroethanes (PCA)	1%	1.2	1.5	0.79	110	1,400	1,500
		2.5%	2.8	3.5	1.9	250	1,400	1,800
		6%	6.4	8.2	4.4	560	1,400	2,100
	Tetrachloroethene (PCE)	1%	0.18	0.18	0.65	19	1,400	810 (424) sol
		2.5%	0.39	0.40	1.5	42	1,400	1,100 (951) sol
		6%	0.90	0.92	3.6	95	1,400	1,500
	Tetrachloromethane (carbon tetrachloride)	1%	2.6E-02	2.6E-02	0.45	2.9	890	190
		2.5%	5.6E-02	5.6E-02	1.0	6.3	920	270
		6%	0.13	0.13	2.4	14	950	400
	Trichloroethene (TCE)	1%	1.6E-02	1.7E-02	4.1E-02	1.2	120	70
		2.5%	3.4E-02	3.6E-02	9.1E-02	2.6	120	91
		6%	7.5E-02	8.0E-02	0.21	5.7	120	120
	Trichloromethane (chloroform)	1%	0.91	1.2	0.42	99	2,500	2,600
		2.5%	1.7	2.1	0.83	170	2,500	2,800
		6%	3.4	4.2	1.7	350	2,500	3,100
	Chloroethene (vinyl chloride)	1%	6.4E-04	7.7E-04	5.5E-04	5.9E-02	3.5	4.8
		2.5%	8.7E-04	1.0E-03	1.0E-03	7.7E-02	3.5	5.0
		6%	1.4E-03	1.5E-03	1.8E-03	0.12	3.5	5.4
	2,4,6-Trinitritoluene (TNT)	1%	1.6	65	0.24	1,000	130	260
		2.5%	3.7	66	0.58	1,000	130	270
		6%	8.1	66	1.4	1,000	130	270
	RDX	1%	120	13,000	17	210,000	26,000	49,000 (18.7) sol
		2.5%	250	13,000	38	210,000	26,000	51,000
		6%	540	13,000	85	210,000	27,000	53,000
	HMX	1%	5.7	6,700	0.86	110,000	13,000	23,000 (0.35) vap
		2.5%	13	6,700	1.9	110,000	13,000	23,000 (0.39) vap
		6%	26	6,700	3.9	110,000	13,000	24,000 (0.48) vap
Pesticides	Aldrin	1%	5.7	7.3	3.2	170	18	30
		2.5%	6.6	7.4	6.1	170	18	31
		6%	7.1	7.5	9.8	170	18	31
	Dieldrin	1%	0.97	7.0	0.17	170	18	30
		2.5%	2.0	7.3	0.41	170	18	30
		6%	3.5	7.4	0.96	170	18	31
	Atrazine	1%	3.3	610	0.5	9,300	1,200	2,300
		2.5%	7.8	620	1.2	9,400	1,200	2,400
		6%	17.4	620	2.7	9,400	1,200	2,400
	Dichlorvos	1%	3.2E-02	6.4	4.9E-03	140	16	26
		2.5%	6.6E-02	6.5	1.0E-02	140	16	26
		6%	0.14	6.6	2.2E-02	140	16	27
	Endosulfanns (2 isomers)	1%	7.4	160 (3.0E-03) vap	1.2	5,600 (3.0E-03) vap	1,200	2,300
		2.5%	18	280 (7.0E-03) vap	2.9	7,400 (7.0E-03) vap	1,200	2,400
		6%	41	410 (1.6E-02) vap	6.8	8,400 (1.6E-02) vap	1,200	2,500
	Hexachlorocyclohexane (3 isomers), inc Lindane	1%	8.5E-02	3.7	1.3E-02	65	8.1	15
		2.5%	0.2	3.8	3.2E-02	65	8.1	15
		6%	0.46	3.8	7.7E-02	65	8.1	16

NOTES

Sol / vap = solubility / vapour limit (potentially use if free product identified, although highly conservative).

All GAC are based on sandy loam soils with a pH 7.

	Contaminant	SOM	LQM Generic Assessment Criteria (mg/kg) Dry weight soil					
			Res +	Res -	Allot.	Comm.	POS_{resi}	POS_{park}
Chlorobenzenes	Chlorobenzene	1%	0.46	0.46	5.9	56	11,000	1,300 (675) ^{sol}
		2.5%	1.0	1.0	14	130	13,000	2,000 (1,520) ^{sol}
		6%	2.4	2.4	32	290	14,000	2,900
	Dichlorobenzenes (3 isomers)	1%	23	24	94	2,000 (571) ^{sol}	90,000	24,000 (571) ^{sol}
		2.5%	55	57	230	4,800 (1,370) ^{sol}	95,000	36,000 (1,370) ^{sol}
		6%	130	130	540	11,000 (3,240) ^{sol}	98,000	51,000 (3,270) ^{sol}
	Trichlorobenzenes (3 isomers)	1%	2.6	2.6	55	220	15,000	1,700 (318) ^{vap}
		2.5%	6.4	6.4	140	530	17,000	2,600 (786) ^{vap}
		6%	15	15	320	1,300	19,000	4,000 (1,880) ^{vap}
	Tetrachlorobenzenes (3 isomers)	1%	0.66	0.75	0.38	49 (39.4) ^{vap}	78	110 (39) ^{vap}
		2.5%	1.6	1.9	0.90	120 (98.1) ^{vap}	79	120
		6%	3.7	4.3	2.2	240 (235) ^{vap}	79	130
	Pentachlorobenzene	1%	5.8	19	1.2	640 (43.0) ^{sol}	100	190
		2.5%	12	30	3.1	770 (107) ^{sol}	100	190
		6%	22	38	7.0	830	100	190
	Hexachlorobenzene	1%	1.8 (0.20) ^{vap}	4.1 (0.20) ^{vap}	0.47	110 (0.20) ^{vap}	16	30
		2.5%	3.3 (0.50) ^{vap}	5.7 (0.50) ^{vap}	1.1	120	16	30
		6%	4.9	6.7 (1.2) ^{vap}	2.5	120	16	30
Chlorophenol	Chlorophenols (4 congeners)	1%	0.87 ^{g}	94	0.13 ^{g}	3,500	620	1,100
		2.5%	2.0	150	0.30	4,000	620	1,100
		6%	4.5	210	0.70	4,300	620	1,100
	Pentachlorophenol	1%	0.22	27 (16.4) ^{vap}	3.0E-02	400	60	110
		2.5%	0.52	29	8.0E-02	400	60	120
		6%	1.2	31	0.19	400	60	120
Others	Carbon Disulphide	1%	0.14	0.14	4.8	11	11,000	1,300
		2.5%	0.29	0.29	10	22	11,000	1,900
		6%	0.62	0.62	23	47	11,000	2,700
	Hexachlorobutadiene	1%	0.29	0.32	0.25	31	25	48
		2.5%	0.7	0.78	0.61	66	25	50
		6%	1.6	1.8	1.4	120	25	51
	Phenol	1%	280	750	66	760 ^{dir} (31,000)	760 ^{dir} (11,000)	760 ^{dir} (8,600)
		2.5%	550	1,300	140	1,500 ^{dir} (35,000)	1,500 ^{dir} (11,000)	1,500 ^{dir} (9,700)
		6%	1,100	2,300	280	3,200 ^{dir} (37,000)	3,200 ^{dir} (11,000)	3,200 ^{dir} (11,000)

NOTES

$^{Sol / vap}$ = solubility / vapour limit (potentially use if free product identified, although highly conservative).

^{dir} = S4uls based on threshold protective of direct skin contact with phenol (brackets long term exposure for illustration purposes).

^{g} = derived based on 2,3,4,6-tetrachlorophenol.

Appendix I

HazWaste Online Classification Report

Waste Classification Report

7KDGR-LJZRM-68ZNM

Job name

LKC 20 1673

Description/Comments

Project

LKC 20 1673

Site

Collyhurst South Alternate Site

Related Documents

#	Name	Description
1	HWOL_21-06369-20210316 125412.hwol	.hwol file used to create the Job
2	HWOL_21-05796-20210316 125114.hwol	.hwol file used to create the Job

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name:
Peter Dunn
Date:
16 Mar 2021 16:35 GMT
Telephone:
0161 763 7200

Company:
LK Group
Unit 29, Eton Business Park
Eton Hill Rd, Radcliffe
Manchester
M26 2ZS

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	17 Sep 2019
Advanced Hazardous Waste Classification	18 Sep 2019

Report

Created by: Peter Dunn
Created date: 16 Mar 2021 16:35 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP101 ES2-25/02/2021-0.30	0.30-1.00	Non Hazardous		3
2	TP101 ES3-25/02/2021-1.20	1.20-1.50	Non Hazardous		5
3	TP102 ES1-25/02/2021-0.00	0.00-0.40	Non Hazardous		6
4	TP103 ES1-25/02/2021-0.10	0.10-0.50	Non Hazardous		8
5	TP104 ES1-25/02/2021-0.40	0.40-1.00	Non Hazardous		10
6	TP105 ES1-25/02/2021-0.20	0.20-1.00	Non Hazardous		13
7	TP106 ES1-25/02/2021-0.10	0.10-1.00	Non Hazardous		15
8	TP106 ES3-25/02/2021-2.00	2.00-2.80	Non Hazardous		18
9	TP107 ES1-25/02/2021-0.00	0.00-0.40	Non Hazardous		19
10	WS101 ES1-23/02/2021-0.3	0.3-1	Non Hazardous		21
11	WS102 ES1-23/02/2021-0	0-0.4	Non Hazardous		23

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
12	WS102 ES4-23/02/2021-1.7	1.7-2	Non Hazardous		26
13	WS103 ES2-23/02/2021-0.3	0.3-0.7	Non Hazardous		27
14	WS104 ES1-23/02/2021-0.2	0.2-0.8	Non Hazardous		29
15	WS105 ES1-23/02/2021-0	0-0.8	Non Hazardous		32

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Appendix B: Rationale for selection of metal species	35
Appendix C: Version	36

Classification of sample: TP101 ES2-25/02/2021-0.30

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

Sample details

Sample Name:
TP101 ES2-25/02/2021-0.30
Sample Depth:
0.30-1.00 m
Moisture content:
18%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		22 mg/kg	1.32	23.819 mg/kg	0.00238 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.59 mg/kg	1.142	0.553 mg/kg	0.0000553 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22 mg/kg	1.462	26.366 mg/kg	0.00264 %	✓	
4	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		61 mg/kg	1.126	56.317 mg/kg	0.00563 %	✓	
6	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	160 mg/kg	1.56	204.648 mg/kg	0.0131 %	✓	
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.27 mg/kg	1.353	0.3 mg/kg	0.00003 %	✓	
8	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		28 mg/kg	2.976	68.335 mg/kg	0.00683 %	✓	
9	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<**LOD**
10	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		68 mg/kg	2.774	154.686 mg/kg	0.0155 %	✓	
11	pH			PH		8.4 pH		8.4 pH	8.4 pH		
12	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
13	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
14	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
16		phenanthrene		201-581-5	85-01-8		1.2	mg/kg		0.984	mg/kg	0.0000984 %	✓	
17		anthracene		204-371-1	120-12-7		0.39	mg/kg		0.32	mg/kg	0.000032 %	✓	
18		fluoranthene		205-912-4	206-44-0		2	mg/kg		1.64	mg/kg	0.000164 %	✓	
19		pyrene		204-927-3	129-00-0		2.1	mg/kg		1.722	mg/kg	0.000172 %	✓	
20		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.3	mg/kg		1.066	mg/kg	0.000107 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		1.1	mg/kg		0.902	mg/kg	0.0000902 %	✓	
22		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.5	mg/kg		1.23	mg/kg	0.000123 %	✓	
23		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.55	mg/kg		0.451	mg/kg	0.0000451 %	✓	
24		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.3	mg/kg		1.066	mg/kg	0.000107 %	✓	
25		indeno[123-cd]pyrene		205-893-2	193-39-5		0.8	mg/kg		0.656	mg/kg	0.0000656 %	✓	
26		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.14	mg/kg		0.115	mg/kg	0.0000115 %	✓	
27		benzo[ghi]perylene		205-883-8	191-24-2		0.73	mg/kg		0.599	mg/kg	0.0000599 %	✓	
28		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		29	mg/kg	1.785	42.452	mg/kg	0.00425 %	✓	
											Total:	0.0517 %		

Key

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

Classification of sample: TP101 ES3-25/02/2021-1.20

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

Sample details

Sample Name:
TP101 ES3-25/02/2021-1.20
Sample Depth:
1.20-1.50 m
Moisture content:
15%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1		pH		PH		8.5 pH		8.5 pH	8.5 pH		
								Total:	0%		

Key

	User supplied data
	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP102 ES1-25/02/2021-0.00

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

Sample details

Sample Name:
TP102 ES1-25/02/2021-0.00
Sample Depth:
0.00-0.40 m
Moisture content:
21%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 21% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	arsenic { arsenic trioxide }		15 mg/kg	1.32	15.646 mg/kg	0.00156 %	✓	
	033-003-00-0 / 215-481-4 / 1327-53-3							
2	cadmium { cadmium oxide }		0.27 mg/kg	1.142	0.244 mg/kg	0.0000244 %	✓	
	048-002-00-0 / 215-146-2 / 1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		21 mg/kg	1.462	24.247 mg/kg	0.00242 %	✓	
	/ 215-160-9 / 1308-38-9							
4	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }		<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
	024-017-00-8 / /							
5	copper { dicopper oxide; copper (I) oxide }		33 mg/kg	1.126	29.352 mg/kg	0.00294 %	✓	
	029-002-00-X / 215-270-7 / 1317-39-1							
6	lead { lead chromate }	1	66 mg/kg	1.56	81.329 mg/kg	0.00521 %	✓	
	082-004-00-2 / 231-846-0 / 7758-97-6							
7	mercury { mercury dichloride }		0.49 mg/kg	1.353	0.524 mg/kg	0.0000524 %	✓	
	080-010-00-X / 231-299-8 / 7487-94-7							
8	nickel { nickel chromate }		18 mg/kg	2.976	42.322 mg/kg	0.00423 %	✓	
	028-035-00-7 / 238-766-5 / 14721-18-7							
9	selenium { nickel selenate }		0.45 mg/kg	2.554	0.908 mg/kg	0.0000908 %	✓	
	028-031-00-5 / 239-125-2 / 15060-62-5							
10	zinc { zinc chromate }		57 mg/kg	2.774	124.92 mg/kg	0.0125 %	✓	
	024-007-00-3 / 236-878-9 / 13530-65-9							
11	pH		8.2 pH		8.2 pH	8.2 pH		
	/ / PH							
12	naphthalene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2 / 202-049-5 / 91-20-3							
13	acenaphthylene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	/ 205-917-1 / 208-96-8							
14	acenaphthene		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	/ 201-469-6 / 83-32-9							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
16		phenanthrene				0.39	mg/kg		0.308	mg/kg	0.0000308 %	✓	
			201-581-5	85-01-8									
17		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
18		fluoranthene				0.71	mg/kg		0.561	mg/kg	0.0000561 %	✓	
			205-912-4	206-44-0									
19		pyrene				0.6	mg/kg		0.474	mg/kg	0.0000474 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				0.22	mg/kg		0.174	mg/kg	0.0000174 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				0.28	mg/kg		0.221	mg/kg	0.0000221 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				26	mg/kg	1.785	36.668	mg/kg	0.00367 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0331 %		

Key

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

Classification of sample: TP103 ES1-25/02/2021-0.10

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

Sample details

Sample Name:
TP103 ES1-25/02/2021-0.10
Sample Depth:
0.10-0.50 m
Moisture content:
16%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		20	mg/kg	1.32	22.181	mg/kg	0.00222 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.48	mg/kg	1.142	0.461	mg/kg	0.0000461 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18	mg/kg	1.462	22.099	mg/kg	0.00221 %	✓	
4	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<**LOD**
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		57	mg/kg	1.126	53.908	mg/kg	0.00539 %	✓	
6	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	180	mg/kg	1.56	235.844	mg/kg	0.0151 %	✓	
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		1.1	mg/kg	1.353	1.251	mg/kg	0.000125 %	✓	
8	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20	mg/kg	2.976	50.001	mg/kg	0.005 %	✓	
9	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<**LOD**
10	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		100	mg/kg	2.774	233.028	mg/kg	0.0233 %	✓	
11	pH			PH		8.3	pH		8.3	pH	8.3 pH		
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.64	mg/kg		0.538	mg/kg	0.0000538 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.2	mg/kg		0.168	mg/kg	0.0000168 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.39	mg/kg		0.328	mg/kg	0.0000328 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		fluorene				0.35	mg/kg		0.294	mg/kg	0.0000294 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				2.9	mg/kg		2.436	mg/kg	0.000244 %	✓	
			201-581-5	85-01-8									
17		anthracene				0.57	mg/kg		0.479	mg/kg	0.0000479 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				4.3	mg/kg		3.612	mg/kg	0.000361 %	✓	
			205-912-4	206-44-0									
19		pyrene				3.9	mg/kg		3.276	mg/kg	0.000328 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				1.9	mg/kg		1.596	mg/kg	0.00016 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				1.8	mg/kg		1.512	mg/kg	0.000151 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				2.5	mg/kg		2.1	mg/kg	0.00021 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				0.72	mg/kg		0.605	mg/kg	0.0000605 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				2.1	mg/kg		1.764	mg/kg	0.000176 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				1.3	mg/kg		1.092	mg/kg	0.000109 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.22	mg/kg		0.185	mg/kg	0.0000185 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				1.2	mg/kg		1.008	mg/kg	0.000101 %	✓	
			205-883-8	191-24-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	37.489	mg/kg	0.00375 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0594 %		

Key

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

Classification of sample: TP104 ES1-25/02/2021-0.40

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

Sample details

Sample Name:
TP104 ES1-25/02/2021-0.40
Sample Depth:
0.40-1.00 m
Moisture content:
25%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 25% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	arsenic { arsenic trioxide }		62 mg/kg	1.32	61.395 mg/kg	0.00614 %	✓	
	033-003-00-0 / 215-481-4 / 1327-53-3							
2	boron { diboron trioxide; boric oxide }		0.69 mg/kg	3.22	1.666 mg/kg	0.000167 %	✓	
	005-008-00-8 / 215-125-8 / 1303-86-2							
3	cadmium { cadmium oxide }		0.17 mg/kg	1.142	0.146 mg/kg	0.0000146 %	✓	
	048-002-00-0 / 215-146-2 / 1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		25 mg/kg	1.462	27.404 mg/kg	0.00274 %	✓	
	/ 215-160-9 / 1308-38-9							
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }		<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
	024-017-00-8 / /							
6	copper { dicopper oxide; copper (I) oxide }		370 mg/kg	1.126	312.434 mg/kg	0.0312 %	✓	
	029-002-00-X / 215-270-7 / 1317-39-1							
7	lead { lead chromate }	1	1100 mg/kg	1.56	1286.848 mg/kg	0.0825 %	✓	
	082-004-00-2 / 231-846-0 / 7758-97-6							
8	mercury { mercury dichloride }		6.3 mg/kg	1.353	6.395 mg/kg	0.00064 %	✓	
	080-010-00-X / 231-299-8 / 7487-94-7							
9	nickel { nickel chromate }		45 mg/kg	2.976	100.449 mg/kg	0.01 %	✓	
	028-035-00-7 / 238-766-5 / 14721-18-7							
10	selenium { nickel selenate }		0.92 mg/kg	2.554	1.762 mg/kg	0.000176 %	✓	
	028-031-00-5 / 239-125-2 / 15060-62-5							
11	zinc { zinc chromate }		130 mg/kg	2.774	270.479 mg/kg	0.027 %	✓	
	024-007-00-3 / 236-878-9 / 13530-65-9							
12	TPH (C6 to C40) petroleum group		470 mg/kg		352.5 mg/kg	0.0352 %	✓	
	/ / TPH							
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	603-181-00-X / 216-653-1 / 1634-04-4							
14	benzene		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8 / 200-753-7 / 71-43-2							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**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]									
18		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 }				1.7	mg/kg	1.884	2.402	mg/kg	0.00024 %	✓	
		006-007-00-5											
19		pH				8.2	pH		8.2	pH	8.2 pH		
				PH									
20		naphthalene				1.5	mg/kg		1.125	mg/kg	0.000112 %	✓	
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				0.96	mg/kg		0.72	mg/kg	0.000072 %	✓	
			205-917-1	208-96-8									
22		acenaphthene				1.2	mg/kg		0.9	mg/kg	0.00009 %	✓	
			201-469-6	83-32-9									
23		fluorene				1.7	mg/kg		1.275	mg/kg	0.000127 %	✓	
			201-695-5	86-73-7									
24		phenanthrene				12	mg/kg		9	mg/kg	0.0009 %	✓	
			201-581-5	85-01-8									
25		anthracene				3.1	mg/kg		2.325	mg/kg	0.000233 %	✓	
			204-371-1	120-12-7									
26		fluoranthene				15	mg/kg		11.25	mg/kg	0.00112 %	✓	
			205-912-4	206-44-0									
27		pyrene				15	mg/kg		11.25	mg/kg	0.00112 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				6.9	mg/kg		5.175	mg/kg	0.000518 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				7.1	mg/kg		5.325	mg/kg	0.000533 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				7.5	mg/kg		5.625	mg/kg	0.000563 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				2.8	mg/kg		2.1	mg/kg	0.00021 %	✓	
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				7.3	mg/kg		5.475	mg/kg	0.000547 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				4.1	mg/kg		3.075	mg/kg	0.000308 %	✓	
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				0.88	mg/kg		0.66	mg/kg	0.000066 %	✓	
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				3.9	mg/kg		2.925	mg/kg	0.000293 %	✓	
			205-883-8	191-24-2									
36		vanadium { divanadium pentaoxide; vanadium pentoxide }				44	mg/kg	1.785	58.911	mg/kg	0.00589 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
37		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
										Total:	0.209 %		

Key	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
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 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.: 0.0352%)

Classification of sample: TP105 ES1-25/02/2021-0.20

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

Sample details

Sample Name:
TP105 ES1-25/02/2021-0.20
Sample Depth:
0.20-1.00 m
Moisture content:
22%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 22% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		46 mg/kg	1.32	47.373 mg/kg	0.00474 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.32 mg/kg	1.142	0.285 mg/kg	0.0000285 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31 mg/kg	1.462	35.34 mg/kg	0.00353 %	✓	
4	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		160 mg/kg	1.126	140.511 mg/kg	0.0141 %	✓	
6	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	530 mg/kg	1.56	644.828 mg/kg	0.0413 %	✓	
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		2.3 mg/kg	1.353	2.428 mg/kg	0.000243 %	✓	
8	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		38 mg/kg	2.976	88.216 mg/kg	0.00882 %	✓	
9	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.75 mg/kg	2.554	1.494 mg/kg	0.000149 %	✓	
10	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		170 mg/kg	2.774	367.852 mg/kg	0.0368 %	✓	
11	pH			PH		8.2 pH		8.2 pH	8.2 pH		
12	naphthalene	601-052-00-2	202-049-5	91-20-3		1.4 mg/kg		1.092 mg/kg	0.000109 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.9 mg/kg		0.702 mg/kg	0.0000702 %	✓	
14	acenaphthene		201-469-6	83-32-9		1.7 mg/kg		1.326 mg/kg	0.000133 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		fluorene				2.2	mg/kg		1.716	mg/kg	0.000172 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				16	mg/kg		12.48	mg/kg	0.00125 %	✓	
			201-581-5	85-01-8									
17		anthracene				4	mg/kg		3.12	mg/kg	0.000312 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				20	mg/kg		15.6	mg/kg	0.00156 %	✓	
			205-912-4	206-44-0									
19		pyrene				20	mg/kg		15.6	mg/kg	0.00156 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				9	mg/kg		7.02	mg/kg	0.000702 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				9.2	mg/kg		7.176	mg/kg	0.000718 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				9.9	mg/kg		7.722	mg/kg	0.000772 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				3.8	mg/kg		2.964	mg/kg	0.000296 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				9.8	mg/kg		7.644	mg/kg	0.000764 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				5.7	mg/kg		4.446	mg/kg	0.000445 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				1	mg/kg		0.78	mg/kg	0.000078 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				5.3	mg/kg		4.134	mg/kg	0.000413 %	✓	
			205-883-8	191-24-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				37	mg/kg	1.785	51.52	mg/kg	0.00515 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.124 %		

Key

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

Classification of sample: TP106 ES1-25/02/2021-0.10

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

Sample details

Sample Name:
TP106 ES1-25/02/2021-0.10
Sample Depth:
0.10-1.00 m
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number / EC Number / CAS Number							
1	arsenic { arsenic trioxide }		39 mg/kg	1.32	44.799 mg/kg	0.00448 %	✓	
	033-003-00-0 / 215-481-4 / 1327-53-3							
2	boron { diboron trioxide; boric oxide }		0.73 mg/kg	3.22	2.045 mg/kg	0.000204 %	✓	
	005-008-00-8 / 215-125-8 / 1303-86-2							
3	cadmium { cadmium oxide }		0.5 mg/kg	1.142	0.497 mg/kg	0.0000497 %	✓	
	048-002-00-0 / 215-146-2 / 1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		25 mg/kg	1.462	31.789 mg/kg	0.00318 %	✓	
	/ 215-160-9 / 1308-38-9							
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }		<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
	024-017-00-8 / /							
6	copper { dicopper oxide; copper (I) oxide }		69 mg/kg	1.126	67.587 mg/kg	0.00676 %	✓	
	029-002-00-X / 215-270-7 / 1317-39-1							
7	lead { lead chromate }	1	220 mg/kg	1.56	298.549 mg/kg	0.0191 %	✓	
	082-004-00-2 / 231-846-0 / 7758-97-6							
8	mercury { mercury dichloride }		0.54 mg/kg	1.353	0.636 mg/kg	0.0000636 %	✓	
	080-010-00-X / 231-299-8 / 7487-94-7							
9	nickel { nickel chromate }		24 mg/kg	2.976	62.144 mg/kg	0.00621 %	✓	
	028-035-00-7 / 238-766-5 / 14721-18-7							
10	selenium { nickel selenate }		<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<**LOD**
	028-031-00-5 / 239-125-2 / 15060-62-5							
11	zinc { zinc chromate }		120 mg/kg	2.774	289.621 mg/kg	0.029 %	✓	
	024-007-00-3 / 236-878-9 / 13530-65-9							
12	TPH (C6 to C40) petroleum group		340 mg/kg		295.8 mg/kg	0.0296 %	✓	
	/ / TPH							
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**
	603-181-00-X / 216-653-1 / 1634-04-4							
14	benzene		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**
	601-020-00-8 / 200-753-7 / 71-43-2							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**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]									
18		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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
19		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
20		naphthalene				0.6	mg/kg		0.522	mg/kg	0.0000522 %	✓	
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				0.61	mg/kg		0.531	mg/kg	0.0000531 %	✓	
			205-917-1	208-96-8									
22		acenaphthene				0.81	mg/kg		0.705	mg/kg	0.0000705 %	✓	
			201-469-6	83-32-9									
23		fluorene				0.82	mg/kg		0.713	mg/kg	0.0000713 %	✓	
			201-695-5	86-73-7									
24		phenanthrene				8.6	mg/kg		7.482	mg/kg	0.000748 %	✓	
			201-581-5	85-01-8									
25		anthracene				2.2	mg/kg		1.914	mg/kg	0.000191 %	✓	
			204-371-1	120-12-7									
26		fluoranthene				15	mg/kg		13.05	mg/kg	0.00131 %	✓	
			205-912-4	206-44-0									
27		pyrene				13	mg/kg		11.31	mg/kg	0.00113 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				6.5	mg/kg		5.655	mg/kg	0.000566 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				6.1	mg/kg		5.307	mg/kg	0.000531 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				7.5	mg/kg		6.525	mg/kg	0.000653 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				3.3	mg/kg		2.871	mg/kg	0.000287 %	✓	
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				6.5	mg/kg		5.655	mg/kg	0.000566 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				4.3	mg/kg		3.741	mg/kg	0.000374 %	✓	
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				0.76	mg/kg		0.661	mg/kg	0.0000661 %	✓	
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				3.7	mg/kg		3.219	mg/kg	0.000322 %	✓	
			205-883-8	191-24-2									
36		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	38.828	mg/kg	0.00388 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
37		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
38		asbestos				0.008	mg/kg		0.0069	mg/kg	0.000000696 %	✓	
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.11 %		

Key	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
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 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.: 0.0296%)

Classification of sample: TP106 ES3-25/02/2021-2.00

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

Sample details

Sample Name:
TP106 ES3-25/02/2021-2.00
Sample Depth:
2.00-2.80 m
Moisture content:
16%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 16% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.5 pH		8.5 pH	8.5 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: TP107 ES1-25/02/2021-0.00

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

Sample details

Sample Name:
TP107 ES1-25/02/2021-0.00
Sample Depth:
0.00-0.40 m
Moisture content:
22%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 22% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		21	mg/kg	1.32	21.627	mg/kg	0.00216 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.88	mg/kg	1.142	0.784	mg/kg	0.0000784 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31	mg/kg	1.462	35.34	mg/kg	0.00353 %	✓	
4	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<**LOD**
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		58	mg/kg	1.126	50.935	mg/kg	0.00509 %	✓	
6	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	130	mg/kg	1.56	158.165	mg/kg	0.0101 %	✓	
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.57	mg/kg	1.353	0.602	mg/kg	0.0000602 %	✓	
8	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		24	mg/kg	2.976	55.716	mg/kg	0.00557 %	✓	
9	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<**LOD**
10	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		140	mg/kg	2.774	302.937	mg/kg	0.0303 %	✓	
11	pH			PH		8.6	pH		8.6	pH	8.6 pH		
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.45	mg/kg		0.351	mg/kg	0.0000351 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.26	mg/kg		0.203	mg/kg	0.0000203 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.42	mg/kg		0.328	mg/kg	0.0000328 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		fluorene				0.41	mg/kg		0.32	mg/kg	0.000032 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				3.9	mg/kg		3.042	mg/kg	0.000304 %	✓	
			201-581-5	85-01-8									
17		anthracene				0.97	mg/kg		0.757	mg/kg	0.0000757 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				7.1	mg/kg		5.538	mg/kg	0.000554 %	✓	
			205-912-4	206-44-0									
19		pyrene				6.3	mg/kg		4.914	mg/kg	0.000491 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				3.1	mg/kg		2.418	mg/kg	0.000242 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				3.1	mg/kg		2.418	mg/kg	0.000242 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				3.8	mg/kg		2.964	mg/kg	0.000296 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				1.5	mg/kg		1.17	mg/kg	0.000117 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				3.6	mg/kg		2.808	mg/kg	0.000281 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				2.1	mg/kg		1.638	mg/kg	0.000164 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.41	mg/kg		0.32	mg/kg	0.000032 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				2	mg/kg		1.56	mg/kg	0.000156 %	✓	
			205-883-8	191-24-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				25	mg/kg	1.785	34.811	mg/kg	0.00348 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0637 %		

Key

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

Classification of sample: WS101 ES1-23/02/2021-0.3

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

Sample details

Sample Name:
WS101 ES1-23/02/2021-0.3
Sample Depth:
0.3-1 m
Moisture content:
23%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 23% Wet Weight Moisture Correction applied (MC)

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		70	mg/kg	1.32	71.166	mg/kg	0.00712 %	✓	
2		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.23	mg/kg	1.142	0.202	mg/kg	0.0000202 %	✓	
3		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30	mg/kg	1.462	33.762	mg/kg	0.00338 %	✓	
4		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<**LOD**
5		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		160	mg/kg	1.126	138.709	mg/kg	0.0139 %	✓	
6		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	410	mg/kg	1.56	492.434	mg/kg	0.0316 %	✓	
7		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		1.5	mg/kg	1.353	1.563	mg/kg	0.000156 %	✓	
8		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		40	mg/kg	2.976	91.669	mg/kg	0.00917 %	✓	
9		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.36	mg/kg	2.554	0.708	mg/kg	0.0000708 %	✓	
10		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		160	mg/kg	2.774	341.775	mg/kg	0.0342 %	✓	
11		pH			PH		8.6	pH		8.6	pH	8.6 pH		
12		naphthalene	601-052-00-2	202-049-5	91-20-3		1.4	mg/kg		1.078	mg/kg	0.000108 %	✓	
13		acenaphthylene		205-917-1	208-96-8		2.2	mg/kg		1.694	mg/kg	0.000169 %	✓	
14		acenaphthene		201-469-6	83-32-9		1.7	mg/kg		1.309	mg/kg	0.000131 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		fluorene				2.6	mg/kg		2.002	mg/kg	0.0002 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				29	mg/kg		22.33	mg/kg	0.00223 %	✓	
			201-581-5	85-01-8									
17		anthracene				6.4	mg/kg		4.928	mg/kg	0.000493 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				38	mg/kg		29.26	mg/kg	0.00293 %	✓	
			205-912-4	206-44-0									
19		pyrene				41	mg/kg		31.57	mg/kg	0.00316 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				20	mg/kg		15.4	mg/kg	0.00154 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				21	mg/kg		16.17	mg/kg	0.00162 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				23	mg/kg		17.71	mg/kg	0.00177 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				8.5	mg/kg		6.545	mg/kg	0.000655 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				21	mg/kg		16.17	mg/kg	0.00162 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				12	mg/kg		9.24	mg/kg	0.000924 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				2.5	mg/kg		1.925	mg/kg	0.000193 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				11	mg/kg		8.47	mg/kg	0.000847 %	✓	
			205-883-8	191-24-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				37	mg/kg	1.785	50.86	mg/kg	0.00509 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.123 %		

Key

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

Classification of sample: WS102 ES1-23/02/2021-0

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

Sample details

Sample Name:
WS102 ES1-23/02/2021-0
Sample Depth:
0-0.4 m
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		38 mg/kg	1.32	43.65 mg/kg	0.00436 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		1.1 mg/kg	3.22	3.081 mg/kg	0.000308 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.58 mg/kg	1.142	0.576 mg/kg	0.0000576 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31 mg/kg	1.462	39.418 mg/kg	0.00394 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		86 mg/kg	1.126	84.239 mg/kg	0.00842 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	220 mg/kg	1.56	298.549 mg/kg	0.0191 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.61 mg/kg	1.353	0.718 mg/kg	0.0000718 %	✓	
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30 mg/kg	2.976	77.681 mg/kg	0.00777 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<**LOD**
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		130 mg/kg	2.774	313.756 mg/kg	0.0314 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		470 mg/kg		408.9 mg/kg	0.0409 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
16		ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**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]									
18		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 }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<**LOD**
		006-007-00-5											
19		pH				10.2	pH		10.2	pH	10.2 pH		
				PH									
20		naphthalene				0.7	mg/kg		0.609	mg/kg	0.0000609 %	✓	
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				0.27	mg/kg		0.235	mg/kg	0.0000235 %	✓	
			205-917-1	208-96-8									
22		acenaphthene				0.83	mg/kg		0.722	mg/kg	0.0000722 %	✓	
			201-469-6	83-32-9									
23		fluorene				0.67	mg/kg		0.583	mg/kg	0.0000583 %	✓	
			201-695-5	86-73-7									
24		phenanthrene				5.6	mg/kg		4.872	mg/kg	0.000487 %	✓	
			201-581-5	85-01-8									
25		anthracene				1.5	mg/kg		1.305	mg/kg	0.000131 %	✓	
			204-371-1	120-12-7									
26		fluoranthene				11	mg/kg		9.57	mg/kg	0.000957 %	✓	
			205-912-4	206-44-0									
27		pyrene				10	mg/kg		8.7	mg/kg	0.00087 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				5.1	mg/kg		4.437	mg/kg	0.000444 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				4.9	mg/kg		4.263	mg/kg	0.000426 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				7.2	mg/kg		6.264	mg/kg	0.000626 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				3	mg/kg		2.61	mg/kg	0.000261 %	✓	
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				6.3	mg/kg		5.481	mg/kg	0.000548 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				4.2	mg/kg		3.654	mg/kg	0.000365 %	✓	
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				0.71	mg/kg		0.618	mg/kg	0.0000618 %	✓	
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				3.8	mg/kg		3.306	mg/kg	0.000331 %	✓	
			205-883-8	191-24-2									
36		vanadium { divanadium pentaoxide; vanadium pentoxide }				27	mg/kg	1.785	41.934	mg/kg	0.00419 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
37		monohydric phenols				<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<**LOD**
				P1186									
38		asbestos				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
		650-013-00-6	- - - - - - -	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5									
										Total:	0.128 %		

Key	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
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 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.: 0.0409%)

Classification of sample: WS102 ES4-23/02/2021-1.7

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

Sample details

Sample Name:
WS102 ES4-23/02/2021-1.7
Sample Depth:
1.7-2 m
Moisture content:
17%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	●	pH		PH		8.9 pH		8.9 pH	8.9 pH		
								Total:	0%		

Key

	User supplied data
●	Determinand defined or amended by HazWasteOnline (see Appendix A)

Classification of sample: WS103 ES2-23/02/2021-0.3

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

Sample details

Sample Name:
WS103 ES2-23/02/2021-0.3
Sample Depth:
0.3-0.7 m
Moisture content:
8.1%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 8.1% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16 mg/kg	1.32	19.414 mg/kg	0.00194 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.28 mg/kg	1.142	0.294 mg/kg	0.0000294 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12 mg/kg	1.462	16.118 mg/kg	0.00161 %	✓	
4	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		24 mg/kg	1.126	24.833 mg/kg	0.00248 %	✓	
6	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	41 mg/kg	1.56	58.772 mg/kg	0.00377 %	✓	
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1 mg/kg	1.353	0.124 mg/kg	0.0000124 %	✓	
8	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		11 mg/kg	2.976	30.087 mg/kg	0.00301 %	✓	
9	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<**LOD**
10	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		41 mg/kg	2.774	104.527 mg/kg	0.0105 %	✓	
11	pH			PH		9.9 pH		9.9 pH	9.9 pH		
12	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
13	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
14	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
16		phenanthrene				1.8	mg/kg		1.654	mg/kg	0.000165 %	✓	
			201-581-5	85-01-8									
17		anthracene				0.46	mg/kg		0.423	mg/kg	0.0000423 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				3.4	mg/kg		3.125	mg/kg	0.000312 %	✓	
			205-912-4	206-44-0									
19		pyrene				3	mg/kg		2.757	mg/kg	0.000276 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				1.3	mg/kg		1.195	mg/kg	0.000119 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				1.4	mg/kg		1.287	mg/kg	0.000129 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				2.1	mg/kg		1.93	mg/kg	0.000193 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				0.54	mg/kg		0.496	mg/kg	0.0000496 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				1.6	mg/kg		1.47	mg/kg	0.000147 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				15	mg/kg	1.785	24.609	mg/kg	0.00246 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.0274 %		

Key

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

Classification of sample: WS104 ES1-23/02/2021-0.2

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

Sample details

Sample Name:
WS104 ES1-23/02/2021-0.2
Sample Depth:
0.2-0.8 m
Moisture content:
20%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		21 mg/kg	1.32	22.181 mg/kg	0.00222 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2		0.42 mg/kg	3.22	1.082 mg/kg	0.000108 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.29 mg/kg	1.142	0.265 mg/kg	0.0000265 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		22 mg/kg	1.462	25.723 mg/kg	0.00257 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<**LOD**
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		100 mg/kg	1.126	90.071 mg/kg	0.00901 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	89 mg/kg	1.56	111.059 mg/kg	0.00712 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.53 mg/kg	1.353	0.574 mg/kg	0.0000574 %	✓	
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		28 mg/kg	2.976	66.668 mg/kg	0.00667 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.25 mg/kg	2.554	0.511 mg/kg	0.0000511 %	✓	
11	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		81 mg/kg	2.774	179.765 mg/kg	0.018 %	✓	
12	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**
14	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<**LOD**

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		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]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
18		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				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
19		pH			PH		8.7	pH		8.7	pH	8.7 pH		
20		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
21		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		phenanthrene		201-581-5	85-01-8		1.5	mg/kg		1.2	mg/kg	0.00012 %	✓	
25		anthracene		204-371-1	120-12-7		0.46	mg/kg		0.368	mg/kg	0.0000368 %	✓	
26		fluoranthene		205-912-4	206-44-0		2.8	mg/kg		2.24	mg/kg	0.000224 %	✓	
27		pyrene		204-927-3	129-00-0		2.6	mg/kg		2.08	mg/kg	0.000208 %	✓	
28		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.3	mg/kg		1.04	mg/kg	0.000104 %	✓	
29		chrysene	601-048-00-0	205-923-4	218-01-9		1.3	mg/kg		1.04	mg/kg	0.000104 %	✓	
30		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.7	mg/kg		1.36	mg/kg	0.000136 %	✓	
31		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.54	mg/kg		0.432	mg/kg	0.0000432 %	✓	
32		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.4	mg/kg		1.12	mg/kg	0.000112 %	✓	
33		indeno[123-cd]pyrene		205-893-2	193-39-5		0.93	mg/kg		0.744	mg/kg	0.0000744 %	✓	
34		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.14	mg/kg		0.112	mg/kg	0.0000112 %	✓	
35		benzo[ghi]perylene		205-883-8	191-24-2		0.86	mg/kg		0.688	mg/kg	0.0000688 %	✓	
36		vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		29	mg/kg	1.785	41.416	mg/kg	0.00414 %	✓	
37		monohydric phenols			P1186		<0.3	mg/kg		<0.3	mg/kg	<0.00003 %		<LOD
											Total:	0.0525 %		

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

Classification of sample: WS105 ES1-23/02/2021-0

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

Sample details

Sample Name:
WS105 ES1-23/02/2021-0
Sample Depth:
0-0.8 m
Moisture content:
22%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 22% Wet Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16	mg/kg	1.32	16.478	mg/kg	0.00165 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.29	mg/kg	1.142	0.258	mg/kg	0.0000258 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18	mg/kg	1.462	20.52	mg/kg	0.00205 %	✓	
4	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<**LOD**
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		53	mg/kg	1.126	46.544	mg/kg	0.00465 %	✓	
6	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	82	mg/kg	1.56	99.766	mg/kg	0.0064 %	✓	
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.69	mg/kg	1.353	0.728	mg/kg	0.0000728 %	✓	
8	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21	mg/kg	2.976	48.751	mg/kg	0.00488 %	✓	
9	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.47	mg/kg	2.554	0.936	mg/kg	0.0000936 %	✓	
10	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		70	mg/kg	2.774	151.468	mg/kg	0.0151 %	✓	
11	pH			PH		8.4	pH		8.4	pH	8.4 pH		
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.63	mg/kg		0.491	mg/kg	0.0000491 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.2	mg/kg		0.156	mg/kg	0.0000156 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.27	mg/kg		0.211	mg/kg	0.0000211 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		fluorene				0.25	mg/kg		0.195	mg/kg	0.0000195 %	✓	
			201-695-5	86-73-7									
16		phenanthrene				2	mg/kg		1.56	mg/kg	0.000156 %	✓	
			201-581-5	85-01-8									
17		anthracene				0.52	mg/kg		0.406	mg/kg	0.0000406 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				3.3	mg/kg		2.574	mg/kg	0.000257 %	✓	
			205-912-4	206-44-0									
19		pyrene				3.6	mg/kg		2.808	mg/kg	0.000281 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				1.8	mg/kg		1.404	mg/kg	0.00014 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				1.8	mg/kg		1.404	mg/kg	0.00014 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				2.3	mg/kg		1.794	mg/kg	0.000179 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				0.88	mg/kg		0.686	mg/kg	0.0000686 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				2.1	mg/kg		1.638	mg/kg	0.000164 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				1.4	mg/kg		1.092	mg/kg	0.000109 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.31	mg/kg		0.242	mg/kg	0.0000242 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				1.3	mg/kg		1.014	mg/kg	0.000101 %	✓	
			205-883-8	191-24-2									
28		vanadium { divanadium pentaoxide; vanadium pentoxide }				23	mg/kg	1.785	32.026	mg/kg	0.0032 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
										Total:	0.04 %		

Key

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

Appendix A: Classifier defined and non CLP 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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Description/Comments: 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)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - 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

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

monohydric phenols (CAS Number: P1186)

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

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. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

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 (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

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. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

vanadium {divanadium pentaoxide; vanadium pentoxide}

worst case/most likely scenario

boron {diboron trioxide; boric oxide}

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 (edit as required)

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] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2021.72.4703.9037 (14 Mar 2021)
HazWasteOnline Database: 2021.72.4703.9037 (14 Mar 2021)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
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 2019 - UK: 2019 No. 720 of 27th March 2019
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
POPs Regulation 2019 - Regulation (EU) 2019/1021 of 20 June 2019

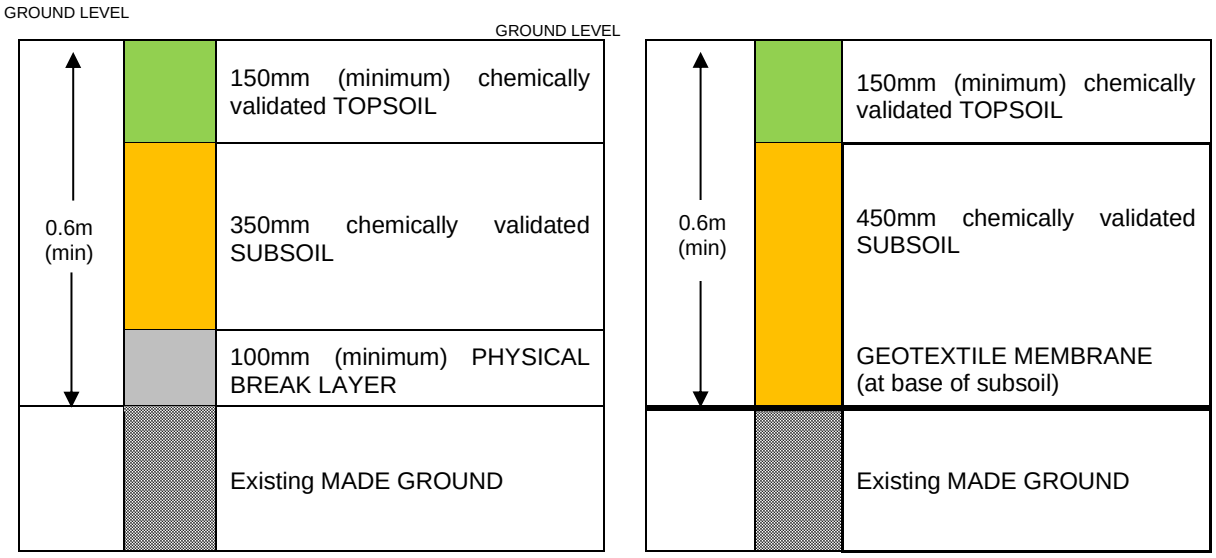
Appendix J

Environmental Cover System Construction

Private Gardens
Shared Landscaping

PRIVATE FRONT AND BACK GARDENS:

Either (physical break layer)
Or (geotextile membrane)



Hardstood Areas – No Remediation Required

JIWG

Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	LKC 20 1673
Site Name	Collyhurst South
Client	Far East Consortium Ltd
Run by	CH
Date	25-Mar-21
Scenario details	

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs at outset of work	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - <0.001 to 0.01 %wt/wt	1
Sub-total		**11**

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking — Medium

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It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Stage 2

Exposure Factors

		Score
Anticipated airborne fibre concentration - Control Limit or SALI?	<0.001 fibres/ml	0
Anticipated duration of exposure to asbestos	< 2 hours in a 7 day period for all persons involved (e.g. Short Duration Work)	1
Activity type and effect on deterioration of ACMs during work	Low intensity, no or minimal deterioration expected	0
Best description of primary host material matrix (soil/made ground)	Coarse to Fine Gravel	3
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3
Sub-total		**7**
Exposure ranking		Low
Combined hazard and exposure ranking	**18**	Low

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Stage 3

Risk Assessment Outputs

Probable Licensing Status	Non-Licensed Work
RPE*	EN149 type FFP3 disposable
Dust Suppression**	Manual/localised dust suppression
Hygiene/Decontamination***	Localised and basic personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.
**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)
***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

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Asbestos in Soil and Construction & Demolition Materials

Decision Support Tool for Receptor Risk Ranking

Stage 1

Hazard Identification		Score
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly chrysotile and trace amphibole (no crocidolite)	1
Sub-total		11
Hazard ranking		Medium

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It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

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Version 2, February 2017

Stage 2

Emission Factors		Score
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - 0.001 to 0.01 %wt/wt	1
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3
Activity type and effect on deterioration of ACMs	Low disturbance, minimal deterioration expected	2
Best description of primary host material matrix	Coarse to Fine Gravel	3
Sub-total		**9**
Exposure ranking		**Low**

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Stage 3

Pathway and Receptor Sensitivity		Score	
Receptor category	Residential	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	< 1 hour in any single day (e.g. frequent but short exposure event)	1	
Receptor ranking		5	Medium
Combined hazard, exposure and receptor ranking			Medium
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material buried at shallow depth, potential to be disturbed by excavation	C	
Pathway ranking		4C	Low
Overall ranking			Low

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Project Reference	LKC 20 1673

Site Name	Collyhurst South
Client	Far East Consortium Ltd

Run by	Chris Hughes
Date	19-Mar-21
Reviewed by	PQ

Characterisation of scenario being evaluated	Residential end use - private gardens with 600mm cover layer. Assumed potential for trace levels of asbestos to be present in made ground in localised areas.

Interpretation of scenario ranking by DST	

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Appendix K

JIWG Assessments

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

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- Asbestos
- Invasive Species
- Land Remediation
- Project Management
- Land Drilling