
Appendix D

RELIANCE GARAGE GLOSSOP

UPDATED PHASE 2 GEO- ENVIRONMENTAL INVESTIGATION, RISK ASSESSMENT AND REMEDIATION STRATEGY

Job Number: LKC 21 1086
Date: October 2022
Client: Mr Peter Shaw



INCREASING LAND VALUE

LK
GROUP

INCREASING LAND VALUE



LK Consult Document Verification			
Site Address	Reliance Garage, Turnlee Road, Glossop, Derbyshire, SK13 6PW		
Report Title	Updated Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy		
Job Number	LKC 21 1086	Document Ref.	CL-602-LKC 21 1086-02
Date Issued	September 2022	Report Version	R1
Prepared By	Hannah Moss	Reviewed By	Chris Hughes

Revision Record			
Revision No.	Date	Nature of Revision	Approved By
1	10/10/2022	Additional Investigation / delineation work	Ben Smith

DISCLAIMER

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

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

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

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

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

CONTENTS

1	Introduction	1
1.1	Background	1
1.2	Site Details	1
2	Previous Work	2
2.1	Summary of Existing Information	2
2.2	Site History	2
2.3	Environmental Setting	2
2.4	Petroleum Officer Search	3
2.5	Site Reconnaissance	4
2.6	Contamination Sources / Pathways and Receptors	5
2.7	LKC Preliminary Contamination Conceptual Model	6
2.8	Recommendations	7
3	Ground Investigation	9
3.1	Site Investigation Design and Methodology	9
3.2	Well Installations	10
3.3	Sampling Protocol	10
3.4	Gas Monitoring	12
4	Ground Conditions	13
4.1	Geology – Generalised Sequence	13
4.2	Groundwater	13
5	Generic Risk Assessment	14
5.1	Introduction	14
5.2	Soil Risk Assessment	14
5.3	Gas Risk Assessment	19
5.4	Controlled Water Assessment	20
5.5	Additional Risk Assessments	22
5.6	Revised Contamination Conceptual Model	23
6	Waste Disposal Assessment	25
7	Conclusions	26
7.1	Contamination Assessment	26
8	Recommendations and Remedial Strategy	27
8.1	Remediation and Validation Recommendations	27
8.2	Validation of Subsoil / Topsoil	29
8.3	Site Completion Report	30

FIGURES

- Figure 1: Site Location and Boundary Plan
Figure 2: Site Investigation Location Plan
Figure 3: Location of Hydrocarbon Contamination

APPENDICES

- Appendix A: Risk Matrix
Appendix B: Profile Logs
Appendix C: Certificate of Analysis - Soil
Appendix D: Certificate of Analysis - Water
Appendix E: Generic Assessment Criteria Values
Appendix F: HazWaste Online Classification Report
Appendix G: Typical Environmental Cover System

1 Introduction

1.1 Background

LK Consult Ltd (LKC) has been commissioned by Mr Peter Shaw to carry out a Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy for Reliance Garage, Glossop. The investigation was undertaken to assess potential contamination liabilities for developing the site for residential end use.

The following work has previously been undertaken:

- Preliminary Risk Assessment (PRA) report, undertaken by LKC (Ref: LKC 21 1086, dated March 2021).

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

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

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 indicates the site location and boundary.

Site Location	To the east of Turnlee Road, Glossop, Derbyshire. Centred at approximate National Grid Reference 402930E 393550N.
Approximate Area	5,000m ² .
Topography	230 metres Above Ordnance Datum (AOD). Site is approximately level.
Current Site Use	Garage and former filling station.
Proposed Development	No proposed development layout – risk assessment assumes residential development.

Table 1-1. Summary of site details.

¹ DCL (2018). "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 21 1086-01, dated March 2021) has previously been undertaken by LKC and is summarised in Section 2.2-2.7.

2.2 Site History

Table 2-1 summarises features on site.

Table 2-2 summarises potentially contaminative land uses within approximately 50m and potentially infilled features within approximate 250m.

Site Features	Location on Site	Dates Present		Comments
		From	To	
Undeveloped Land	Centre and E	1880	1910	
Mill Pond	W	1880	1899	Extends offsite to the west. No longer annotated by 1910 mapping.
Allotment Gardens	Whole Site	1921	1954	Part of larger allotment gardens extending to the west and east.
Garage/Filling Station	Whole Site	1968	present	With garage building in centre of site. Filling station ceased operation in 2000s. Further information on fuel tanks in section 3.2.

Table 2-1: Summary of site features. Dates based on available historical map editions.

Surrounding Area Features	Distance (m)	Direction	Dates Present		Comments
			From	To	
Mill Pond	Adj	W	1880	1899	Extended on to site.
Allotment Gardens	Adj	E & W	1921	1954	Also present on site.
Allotment Gardens	6	NW	1968	1994	
Sand Pit	117	SW	1880	1954	Annotated as 'Old Sand Pit' by 1921 mapping. No longer annotated but excavation still visible on 1954 mapping. No longer visible, potentially infilled by 1968 mapping.
Mill Pond	151	SE	1880	1899	No longer present by 1910 mapping, potentially infilled.

Table 2-2: Summary of potentially contaminative features within 50m and potentially infilled features with 250m. Dates are based on available historical map editions.

2.3 Environmental Setting

The environmental setting is summarised in Table 2-2.

Categories		Details
Geology	Artificial	- No artificial ground recorded on BGS mapping.
	Superficial	- Alluvium (clay, silt, sand and gravel).
	Bedrock	- Marsden Formation (mudstone and siltstone). - 1no. fault in south west of the site, striking south east-north west.
	BGS Logs (<50m)	- None.
Hydro-geology	Aquifer	- Superficial
	Designation	- Bedrock
	Source Protection Zone (SPZ)	- Site not within an SPZ.
	Groundwater Abstractions (100m)	- None.
Hydrology	Surface Water Courses (100m)	- Turnlee Brook, adjacent to north and east, flowing W.
	Flooding risk	- Most of site is in Flood Zone 2. North of the site is in Flood Zone 3.
	Surface Water Abstractions (100m)	- None.
	Discharge Consents (100m)	- None.
	Pollution Incidents	- Year: 1992. - Pollutant: Suspended solids. - Severity: Category 3 Minor Incident. - Receiving water: Turnlee Brook.
Minerals & Mining	Coal Mining	- Within a Coal Reporting Area. - Not within a Development High Risk Area.
	Surface Mineral Extractions (250m)	- 144m W, Bridgefield Sand Pit, opencast extraction of sand, operation now ceased.
	Non-Coal Mining Area	- Not within an area of conclusive metalliferous mining.
Ground Stability	Collapsible Ground	- Very low hazard.
	Compressible Ground	- Moderate hazard.
	Ground Dissolution	- No hazard.
	Landslide	- Low hazard.
	Running Sand	- Low hazard.
	Shrinking / Swelling Clay	- Very low hazard.
Landfill Sites (250m)	Known / Registered	- None.
	Potentially Infilled Land (non-water and water), based on Envirocheck Report	- 5no. features: onsite, 106m S, 175m SE, 216 N and 98m W.
	Potentially infilled sites, based on LKC historical review	- 3no. features: See Table 2-1.
Radon Potential		- <1% of homes above Action Level. No protective measures are necessary in the construction of new dwellings or extensions.
Designated Sites (50m)		- None.
Contemporary Trade Directory (50m)		- Onsite, Reliance Garage, active. - No others within 50m of the site.
Fuel Station Entries (50m)		- Onsite, Reliance Garage, closed.
Unexploded Ordnance Risk (UXO)	Zetica Risk Map	- Low.

Table 2-2: Summary of the environmental setting.

2.4 Petroleum Officer Search

An application was made to Derbyshire County Council for information on the storage of petroleum products at the site.

Records of three below ground fuel storage tanks were held by Derbyshire County Council at the site:

- » Tank 1: 4,500 litres, installed in 1965, single skin steel.
- » Tank 2: 9,000 litres, installed in 1965, single skin steel.
- » Tank 3: 4,500 litres, installed in 1965, single skin steel.

All tanks above were tested in 1999 and passed. These tanks were then decommissioned in 2020 and decommissioning certificates are included in Appendix C.

There were no records of any reported incidents of spillages or leaks relating to the tanks or site.

The search also noted above ground tanks sited to the east of the garage building but, as it is assumed they contained waste oil and diesel and not fuel, no further details of these tanks were held.

The results of the petroleum officer search are presented in Appendix C.

2.5 Site Reconnaissance

A site reconnaissance was carried out on 18 November 2020. Hand dug trial holes were undertaken in accessible areas to confirm the shallow ground conditions.

Relevant features identified on site are summarised below:

- » Tarmacadam forecourt surrounding a garage building.
- » Classic / historic vehicles and memorabilia occupy the front single storey building while the taller building to the rear contains vehicle servicing and maintenance equipment.
- » The rear building appears to be clad in possible asbestos containing material (ACM).
- » The petrol pumps have been removed from the forecourt, the owner indicated the former location and the location of the pipework leading to the underground storage tanks.
- » At the time of the walkover a number of cars were present on the forecourt. It was not established if these were employees, for sale or customer vehicles. All appeared to be intact with no evidence of leaks or spills.
- » The quality of the tarmacadam decreased to the north and west of the buildings giving way to rough a rough grassed area.
- » An above ground fuel storage tank was noted within a bund to the east of the workshop building.
- » Several containers were noted to the north of the buildings, no significant evidence of spills or leaks were noted.
- » No access restrictions were noted.

The surrounding area comprises Turnlee Road and residential properties to the south, residential development to the east and west, Long Clough Brook, Slatelands Road and residential properties to the north.

2.6 Contamination Sources / Pathways and Receptors

Potential contamination sources are detailed in Table 2-3.

Potential Source	Contaminants
On Site	
Made ground across site including infilled mill pond in west of site.	- General made ground e.g from site levelling, allotments: heavy metals, sulphates, PAHs². - Other fill material sources: Unknown organic / inorganic compounds. - If organic / putrescible material: Hazardous gas (principally carbon dioxide and methane).
Allotment	- Assuming the use of ash and clinker for drainage: heavy metals, sulphates, PAHs. - Significant pesticide use not anticipated.
Garage/Filling Station	- Petroleum hydrocarbons from fuels and oils. - Ethylene glycol (anti-freeze).
Surrounding Area	
Surrounding area	- No significant contamination sources within influencing distance of the site.
Offsite potentially infilled features within 250m	- Given distance and age of offsite features, there is not considered to be a significant source of hazardous gas.

Table 2-3: Potential contamination sources

Potential receptors are detailed in Table 2-4.

Receptors	
Human Health	- Future site users (including residents, visitors and site workers). - Offsite land users.
Controlled Waters	- Turnlee Brook, adjacent north. - Secondary A Aquifer.
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.

² Defra (2002). "Potential Contaminants for the Assessment of Land". R&D Publication CLR 8.

Pathways		
Soil	Human Health ³ (residential land use: houses with private gardens)	- Ingestion of soil. - Ingestion of soil-derived indoor dust. - Ingestion of contaminated vegetables. - Ingestion of soil attached to vegetables. - 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.
		- Site is predominantly hardstood; therefore, infiltration is likely to be limited.
Water and Gas		- Migration through potentially permeable strata and preferential pathways. - Superficial (clay, silt sand and gravel) is likely to be variably permeable. - Bedrock (mudstone and siltstone) is likely to be variably permeable. - Preferential pathways: fault on boundary of site, services, drains.
Gas		- 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

2.7 LKC Preliminary Contamination Conceptual Model

The preliminary contamination conceptual model using contaminant-pathway-receptor linkages based on guidance in LCRM⁴ 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 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 C552⁵.

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.

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>

⁵ CIRIA (2001). "Contaminated land risk assessment: A guide to good practice". C552.

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 guidance⁶) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

2.8 Recommendations

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

⁶ HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land" London HMSO.

PL	Pathway	Receptor	Contaminants of Concern (CoC)	Probability	Consequence	Risk	Recommendations
1	- 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. - Heavy metals. - PAHs.	Likely (given site history, site conditions and proposed end use)	Medium	Moderate	Intrusive investigation required. Soil analysis of CoC.
			- Petroleum hydrocarbons.	Likely (given site history, site conditions and proposed end use)	Medium	Moderate	Intrusive investigation required. Soil analysis of CoC.
2	- Inhalation of vapours. - Migration via permeable strata and preferential pathways.	- Future site users. - Offsite receptors.	- Volatile contaminants (TPHCWG, SVOC, VOCs).	Likely (given site history, site conditions and proposed end use)	Medium	Moderate	Intrusive investigation required, to include PID testing. Soil analysis of CoC, subject to ground conditions encountered and PID testing.
3	- Inhalation of gas. - Migration via permeable strata and preferential pathways. - Explosion in confined spaces. - Exposure to radon.	- Future site users. - Buildings. - Offsite land users.	- Ground / hazardous gas (carbon dioxide, methane).	Low Likelihood (only viable source is made ground on site and potentially infilled mill pond.)	Severe	Moderate	Intrusive investigation to confirm ground conditions. If significant gas source and pathway identified, gas monitoring required.
			- Radon	Unlikely (as <1% of homes above action level)	Medium	Low	(<1%) No protective measures are necessary in the construction of new dwellings or extensions.
4	- Surface run-off. - Migration via permeable strata and preferential pathways. - Perched waters migration.	- Groundwater (Secondary A Aquifer). - Surface water (Turnlee Brook).	- Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds.	Likely (mobile contamination anticipated with possible pathway)	Medium	Moderate	Intrusive investigation required. Groundwater and surface water sampling, subject to ground conditions encountered. Analysis of CoC.
5	- Sulphate attack on concrete.	- Building structure.	- Sulphate.	Likely (given site history, site conditions, geology and direct contact / pathway)	Mild	Moderate / Low (moderate assumed until ground conditions confirmed)	Intrusive investigation required. Soil analysis of CoC.
6	- Ingestion of tainted water supply.	- Future site users. - Water pipes.	- Organic contaminants such as petroleum hydrocarbons, naphthalene, volatile compounds.	Likely (given site history, site conditions and direct contact / pathway)	Medium	Moderate	Intrusive investigation required. Soil analysis of CoC.
7	- Direct contact (plant uptake).	- Flora.	- Phytotoxic contaminants such as heavy metals.	Likely (given site history, site conditions and proposed end use)	Minor	Low	Intrusive investigation required. Soil analysis of CoC.

Table 2-6. 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 11th and 12th March 2021 and comprised the following:

- 7no. window sample boreholes drilled to 2.44-5.45 metres below ground level (mbgl) (ref. WS101 to WS107).

A second phase of investigation work was undertaken on 26th April 2021 to delineate hydrocarbon contamination identified. The additional investigation comprised the following:

- 5no. window sample boreholes drilled to 2.6-4.0 metres below ground level (mbgl) (ref. WS301 to WS305).

A third phase of investigation work was undertaken on 31st August 2022 to further delineate hydrocarbon contamination identified. The additional investigation comprised the following:

- 5no. window sample boreholes drilled to 2.3-5.0 metres below ground level (mbgl) (ref. WS201 to WS205).

All site investigation locations are shown in Figure 2.

The initial locations were chosen to allow a good spread across the site as well as target areas of concern e.g. above ground diesel tank, below ground tanks, interceptors and refuelling area. Table 3-1 details the targeted and general coverage (non-targeted) site investigation locations.

Site Investigation Locations	Rationale
WS102, WS106-WS107	General site coverage.
WS103, WS104, WS105	Adjacent to historical underground fuel tanks and within garage foreground.
WS101	Adjacent to existing above ground fuel tank.
WS201-205	Delineation of hydrocarbon contamination.
WS301-305	Delineation of hydrocarbon contamination.

Table 3-1: Summary of sampling locations.

The number of site investigation location points corresponds to approximately one location per 15m square centres. This is considered to be a conservative sampling density and is in line with BS10175⁷ for an 'main investigation'.

All profile logs are provided in Appendix B and are in line with BS14688-1⁸ and BS5930⁹.

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.

3.2 Well Installations

6no. (WS101-WS105 and WS107) of the boreholes were installed with monitoring wells for groundwater monitoring and sampling. Monitoring wells were installed in accordance with BS10175 and CIRIA C665¹⁰ and generally comprised approximately 1m plain pipe over a length of slotted pipe surrounded by pea gravel and sealed at the top with bentonite and concrete.

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 investigation¹¹.

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 C665¹² 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. If collection was not possible the same day then samples were stored in the sample storage fridge at the LK Group offices below 4°C. Samples were tracked using appropriate Chain of Custody forms provided by Chemtest.

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.

¹⁰ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

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.

Suites and Contaminants	No. Samples	Location & Depth	Justification
Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.	4	WS101 0.4-1.0m WS102 0.2-0.5m WS103 0.0-0.8m WS105 0.0-0.30m WS106 0.0-0.4m	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.	5	WS103 1.2-2.0m WS104 1.1-2.0m WS107 0.1-0.9m WS201 1.8-2.0m WS202 1.5m	Although no visual/olfactory evidence of contamination was identified detailed suite undertaken WS107 0.1-0.9m Evidence of hydrocarbon contamination (visual / olfactory) identified in WS103 and WS104m therefore detailed suite undertaken to confirm contamination risk and extent. Testing in WS201 and WS202 for delineation of previously identified contamination.
TPHCWG, BTEX, MTBE and SOM.	15	WS103 2.7-3.0m WS103 3.7-4.0m WS104 3.4-4.0m WS201 2.5 WS201 3.5 WS203 1.5 WS203 3.5 WS204 2.2 WS205 1.7 WS301 1.4-2.0 WS302 0.2-1.0 WS303 1.3-1.8 WS303 1.8-2.8 WS304 1.0-2.0 WS305 0.6-1.0	Tested to confirm the vertical and lateral extent of hydrocarbon contamination observed in nearby locations.

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.

3.3.2 Water Sampling

To establish the condition of shallow groundwater LKC undertook 5 groundwater samples. 3 surface water samples were taken from the brook adjacent to site.

The groundwater samples were collected a minimum of 1 week after drilling had finished and following well development. Sample collection was undertaken using a #ow flow sampling pump using thin walled tubing to encourage laminar flow and minimise the potential loss of volatiles during sampling. The boreholes were purged of all standing water and the samples collected from the recharged water. A water meter was used to test the pH, temperature and conductivity before groundwater sampling until equilibrium conditions were met, as per BS10175¹³ guidelines.

¹³ British Standard (2017). "Investigation of Potentially Contaminated Sites – Code of Practice." BS10175:2017.

The surface water samples were collected using a telescope from safe locations upstream, midstream and downstream.

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 BS5930¹⁴ and BS5667-11¹⁵.

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.	8	WS101 (G) WS102 (G) WS103 (G) WS104 (G) WS105 (G) Upstream (SW) Downstream (SW) Midstream (SW)	Detailed suite undertaken on surface water samples confirm the absence of contamination. Detailed suite undertaken in WS101, WS102 and WS105 due to proximity of garage / fuel tanks. Undertaken in WS103 and WS104 due to visual / olfactory evidence of hydrocarbons noted during groundwater sampling.

Table 3-3. Summary of groundwater sampling tests undertaken.

Notes:

SW=Surface Water 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

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

A moderate risk was identified in the preliminary contamination conceptual model for gas (pollutant linkage 3) and further action was only recommended if significant organic / putrescible material was identified on site. Based on the ground conditions encountered, LKC did not consider gas monitoring to be required. This is discussed further in Section 5.3.

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.

4 Ground Conditions

4.1 Geology – Generalised Sequence

The ground conditions beneath the site generally comprised made ground underlain by natural slightly clayey and gravelly SAND. The sand was in turn underlain by firm to stiff slightly gravelly slightly sandy CLAY. The clay was generally encountered at depths between 2.7-3.7mbgl.

Additional information on ground conditions:

- Made ground was recorded from depths of 0.4-3.7mbgl and generally consisted of gravelly and clayey sand with brick, ash, tarmacadam and clinker.
- Made ground to the rear of the garage and in the east of the site, where investigated, was limited (0.4m) and underlain by natural clay.
- Visual / olfactory evidence of hydrocarbon was identified in WS103 at 1.2-3.7m, WS104 1.1-3.1m, WS201 1.2-3.2m, WS202 1.0-1.8m, WS203 1.1-3.2m, WS204 1.1-2.6m, WS205 at 1.5-1.7mbgl and WS303 at 1.3-1.8mbgl.
- No evidence of hydrocarbon contamination was identified within the natural clay underlying the made ground and natural sand indicating that vertical migration of the contamination is limited.

4.2 Groundwater

4.2.1 Groundwater Levels

Groundwater strikes were recorded during the investigation in boreholes. In addition, groundwater monitoring within the borehole wells has been undertaken on one occasion. 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)			Sample Taken?	Evidence of Contam?
				Min	Max	Base		
WS101	2.0	1.0-5.0 (MG/S)	1	1.64	1.64	4.85	Y	N
WS102	3.0	0.5-4.1 (MG/C)	1	1.65	1.65	3.82	Y	N
WS103	2.0,3.0	0.5-2.0 (MG)	1	1.87	1.87	2.92	Y	Y ¹
WS104	2.0,3.0	1.0-5.1 (S)	1	2.12	2.12	2.94	Y	Y ¹
WS105	3.0	Not installed.					N	N
WS106	Dry	Not installed.					N	N
WS107	2.0	1.0-5.0 (S)	1	1.98	1.98	2.05	Y	N

Table 4-1: Summary of water strike depths within boreholes.

Response Zones:

MG=Made Ground; S=Sand; C=Clay.

Notes:

¹ Hydrocarbon odour noted during drilling.

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 (LCRM¹⁶). 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^{17,18}. The recent change to the contaminated land guidance has changed the evaluation of risk from 'minimal' (referred to as Health Criteria values (HCVs))¹⁹ 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 S4ULs²⁰. 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^{21,22,23,24}.

If contaminants are not present as C4SLs and S4ULs then LKC will use ATRISK SSVs or CL:AIRE GACs²⁵. 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

¹⁶ Land Contamination Risk Management (LCRM) <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

¹⁷ Defra (2014). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Policy Companion Document."

¹⁸ CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."

¹⁹ EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.

²⁰ LQM (2014). "The LQM/CIEH S4ULs for Human Health Risk Assessment."

²¹ EA (2008). "Updated Technical Background to the CLEA Model." Science Report – SC050021/SR3.

²² EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.

²³ EA (2008). "A Review of Body Weight and Height Data used within the Contaminated Land Exposure Assessment Model (CLEA)." Project SC050021/Technical Review 1.

²⁴ EA (2009). "Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values." Science report SC050021/SR7.

²⁵ CL:AIRE (2009). "The Soil Generic Assessment Criteria for Human Health Risk Assessment."

PAHs^{26,27} and naphthalene the most volatile and soluble²⁸. 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 negligible²⁹. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)³⁰ and CL:AIRE (2013). Naphthalene will be treated separately using the LQM S4ULs.

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

All criteria have been generated using the CLEA V1.06 model³¹ 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 E. 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.*³², which was based on coal tar mixtures (>80,000mg/kg of total PAHs) fed in food to mice over a two-year carcinogenicity study.

Graph 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.

²⁶ EA (2002). "Contaminants in Soils: Collation of Toxicological Data and Intake Values for Humans. Benzo[a]pyrene." R&D Publication TOX2.

²⁷ USEPA (1984). "Health Effects Assessment of Polycyclic Aromatic Hydrocarbons (PAHs). EPA 540/1-86-013."

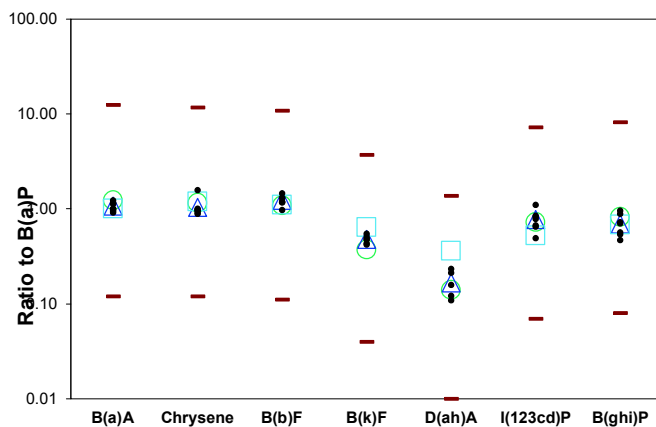
²⁸ EA (2003). "Review of the Fate and Transport of Selected Contaminants in the Soil Environment." Draft technical report P5- 079/TR1.

²⁹ CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."

³⁰ HPA (2010). "HPA Contaminated Land Information Sheet: Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)." Version 3.

³¹ EA (2008). "CLEA Software (Version 1.05) Handbook." Science Report – SC050021/SR4.

³² 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 9 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 hydrocarbon contamination is presented in Figure 3.

Contaminant	Units	No. of samples	Elevated Results	Sample Location	Criteria (1%/2.5%/6%)	Source of Criteria
Metals						
Lead	mg/kg	10	240	WS103 1.2-2.0m	200	C4SL
			510	WS104 1.1-2.0m		
Copper	mg/kg	10	4,400	WS104 1.1-2.0m	2,400	S4UL
PAHs						
Benzo(a)pyrene	mg/kg	10	46	WS103 0.0-0.8m	5	C4SL
TPHs						
Aliphatic C8-10	mg/kg	13	260	WS104 1.1-2.0m	27/65/150	S4UL
			58	WS201 2.5m		
			68	WS205 1.7m		
Aliphatic C10-12	mg/kg	13	280	WS205 1.7m	130/330/760	S4UL
Aromatic C8-10	mg/kg	13	250	WS103 1.2-2.0m	34/83/190	S4UL
			84	WS201 2.5m		
			230	WS203 1.5m		
			320	WS204 2.2m		
			170	WS205 1.7m		
Aromatic C10-12	mg/kg	13	220	WS201 2.5m	74/180/380	S4UL
			510	WS204 2.2m		
			670	WS205 1.7m		
Aromatic C12-16	mg/kg	13	180	WS201 2.5m	140/330/930	S4UL
			950	WS205 1.7m		
Aromatic C16-21	mg/kg	13	770	WS205 1.7m	260/540/930	S4UL
Aromatic C21-35	mg/kg	13	15,000	WS104 1.1-2.0m	1100/1500/1700	S4UL
Aromatic C35-44	mg/kg	13	13,000	WS104 1.1-2.0m	1100/1500/1700	S4UL
GENERAL						
pH	pH	10	Range 6.6 to 10.3			
SOM	%	10	Range <0.4 to 11			
Asbestos	N/A	10	Detected (see Table 5-2)			

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.

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

Sample Location	ID	Type	Total Asbestos (%)
WS103 (0-0.8m)	Chrysotile	Fibres/Clumps	<0.001

Table 5-2: Details of asbestos identified.

5.2.3 Direct Contact Risk – Pollutant Linkage 1

Elevated metals, PAHs, asbestos and petroleum hydrocarbons are present on the site. The elevated contaminants are concentrated in the south west of the site.

The extent of the hydrocarbon contamination is shown on Figure 3 and discussed further below.

Metals

Elevated lead and copper were identified in made ground samples in the south west of the site, in the area between the below ground tanks, interceptor and refuelling area. The elevated metals were detected in soils between 1mbgl and 2mbgl which were also impacted by hydrocarbons. The source is anticipated to be ash and metal fragments noted in the made ground at these locations. Alternatively, the elevated lead could

potentially be associated with leaded fuels used at the site historically. At the concentrations identified, the contaminants are considered to pose a risk to future site users (residents).

The principal pathways are the ingestion pathways (soil, dust and vegetables) and to a lesser degree dermal contact.

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

No other elevated metals were identified across the remainder of the site.

PAHs

Elevated PAHs (using BaP as a surrogate marker) were identified in one location (WS103) in made ground in the south west of the site.

The source is anticipated to be coal and ash noted in the soils.

At the concentrations identified, the contaminants are considered to pose a risk to future site users (residents). The principal pathways are the ingestion pathways (soil, dust and vegetables) and dermal contact.

The probability of PAHs posing a risk to site users is considered to be likely in the eastern in the south west of the site. With a medium consequence, the risk is considered to be moderate and remediation is recommended.

No other elevated PAHs were identified across the remainder of the site.

Petroleum Hydrocarbons

Elevated aliphatic (C8-10 and C10-12) and aromatic (C8-10, C10-12, C12-16, C16-21, C21-35 and C35-44) were identified in several locations in the south west of the site between the below ground fuel tanks, the interceptor and refuelling area.

The impacted soils were generally between 1mbgl and 3mbgl suggesting the source of contamination is from leaks from the below ground fuel tanks, drains or the interceptor in that area rather than from surface spillages. Samples of made ground at shallower depths (<1mbgl) did not record any elevated hydrocarbons.

The hydrocarbon contamination identified ranged from light end (C8-C16) to heavy end hydrocarbons (>C16) and the pathways associated with these hydrocarbon fractions are ingestion (of soil, dust and homegrown produce), dermal contact (indoor and outdoor) and inhalation of indoor vapours (C8-16 only).

The additional delineation investigation works carried out by LKC in April 2021 and August 2022 demonstrated showed no evidence of hydrocarbon contamination extending below the buildings/workshop to the east or towards the river to the north except for the sample collected from WS205.

LKC considers the probability of hydrocarbon contamination affecting site users (via ingestion and dermal contact) as likely in the south west of the site (Figure 3). Given

a medium consequence, a moderate risk is considered appropriate and localised remediation is recommended.

The risk associated with the inhalation of vapours is discussed in Section 5.2.4 below.

Asbestos

Asbestos (chrysotile) was identified in one location (WS103, 0.0-0.8m) and was recorded as free fibres/clumps. The source of the asbestos is likely to be from soils used to level the site prior to construction of the garage.

Given the number of samples containing asbestos (1 out of 10 samples), the low quantification (<0.001%) and as significant demolition has not been recorded on site, the asbestos is expected to be limited and localised.

Asbestos may affect site users in soft landscaping and garden areas in localised areas of the site, via the inhalation of fibres. The probability is considered to be low. With a medium consequence the risk is assumed to be moderate/low and localised remediation is recommended.

Additional consideration should also be given to the risk to workers and offsite receptors during groundworks and construction.

5.2.4 Risk from Inhalation of Vapours – Pollutant Linkage 2

Elevated aliphatic and aromatic petroleum hydrocarbons (C8-10, C10-12 and C12-16) were identified in WS103, WS104 and also the subsequent hydrocarbon delineation boreholes in the south west of the site. The contamination corresponds to the presence of a hydrocarbon odours noted in the area between the below ground tanks, interceptor and refuelling area. Elevated PID results (maximum of 782ppm) were also recorded in the samples from this area.

These contaminants may pose a risk to site users via the inhalation of vapours.

The probability of vapours posing a risk to site users in the south west of the site (shown on Figure 3) is considered to be likely. With a medium consequence, the risk is expected to be moderate and remediation will be required.

5.3 Gas Risk Assessment

Gas monitoring was not carried out as part of this assessment. The PRA identified a moderate risk and recommended gas monitoring if a significant depth of organic / putrescible material was identified.

Although made ground was encountered up to 3.7m, no significant quantity of organic or putrescible material was identified.

In addition, the area where the deepest made ground was identified will need remediation for hydrocarbon contamination. It is likely this will comprise excavation and removal of the material and replacement with clean fill.

Given the ground conditions encountered, LKC considers the probability of gas posing a risk to site users as unlikely. The consequence is severe, which gives a moderate /

low risk. Given the known ground conditions, LKC considers there to be a low risk and no further action is required with respect to pollutant linkage 3.

5.4 Controlled Water Assessment

LKC considers the Turnlee Brook and the underlying Secondary A Aquifer as the primary receptors.

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:

- River Basin District Standards³³ and updated Water Framework Directive³⁴ for Annual Average / Maximum Allowable Concentration Environmental Quality Standards (AA-MAC-EQS) for priority substances (surface water risk).
- 2016 private water supply standards (UKDWS potable)³⁵.
- 2001 Environment Agency Values for Environmental Quality Standards (EQS) and UK Drinking Water Standard (UKDWS)³⁶.
- Resource Protection Values (RPVs)³⁷.
- Minimal Reporting Values (MRVs).

With regards to hydrocarbon mixtures (TPHCWG) for UKDWS, LKC will use the CL:AIRE guidance on petroleum hydrocarbons in groundwater³⁸ based on WHO guidelines.

No criteria values have been presented for surface waters (EQS) except the odour, visual evidence and taste test for fish³⁹. However, criteria for each banding has been presented by WHO within the CL:AIRE report for drinking water and will be used in the assessment.

Elevated contaminants above limits of detection are presented in Table 5-3 below and all analysis sheets are presented in Appendix D.

³³ Defra (2010). "The River Basin Districts Typology, Standards and Groundwater Threshold Values". Water Framework Directive (England and Wales) Directions 2010.

³⁴ Defra (2015). "Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015".

³⁵ Statutory Instruments (2016). "The Private Water Supplies Regulation 2016." No. 614

³⁶ EA (2002). "Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the Environment Protection Act 1990."

³⁷ SEPA (2010). "Assigning Groundwater Assessment Criteria for Pollutant Inputs." WAT-PS-10-01.

³⁸ CL:AIRE (2017). "Petroleum Hydrocarbons in Groundwater: Guidance on Assessing Petroleum Hydrocarbons Using Existing Hydrological Risk Assessment Methodologies."

³⁹ EA (2009). "Petroleum Hydrocarbons in Groundwater: Supplementary Guidance for Hydrological Risk Assessment."

Contaminant	Units	No. of samples	Elevat ed Result	Location	Assessment Criteria	Source of Criteria
Metals						
Manganese	µg/l	5	830	WS101	123	EQS
			190	WS102		
			1,300	WS103		
			780	WS104		
			190	WS105		
PAHs						
Naphthalene	µg/l	5	69	WS103	2	EQS
			64	WS104		
TPH						
Aro >EC8-EC10 (xylene)	µg/l	5	7,700	WS104	500	WHO
Aro >EC10-EC12	µg/l	5	3,700	WS104	90	WHO
Aro >EC12-EC16	µg/l	5	660	WS104	90	WHO
BTEX						
Benzene	µg/l	5	20	WS103	10	EQS
			13	WS104		
Xylene (total)	µg/l	5	690	WS104	500	UKDWS
General						
pH	pH	5	Range 7.9 to 8.3			
Hardness	mg/l CaC O ₃	5	Range 150 to 390			

Table 5-3: Summary of elevated groundwater 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.

Three samples, upstream, midstream and downstream, were also taken from the adjacent watercourse, Turnlee Brook. No elevated concentrations of any contaminants were recorded in any of the surface water samples.

No free product was noted in any water samples collected.

A majority of the exceedences in the groundwater samples collected were from the southwest of the site between the below ground fuel tanks, interceptor and refuelling area. This is the area where hydrocarbon contamination has also been identified in soil samples and from visual/olfactory evidence during the intrusive investigation. The source of this contamination is likely to be from leaks from the below ground tanks or drains running to the interceptor.

The groundwater is considered to be perched on the underlying clay encountered in all exploratory locations and there was no evidence of significant vertical migration of contaminants to deeper groundwater below the clay.

The hydrocarbon contamination identified in the south west of the site does not appear to be migrating to the adjacent surface watercourse to the north. Exploratory locations between the garage and the adjacent brook (WS106, WS107, WS301, WS304 and WS305)) did not identify any evidence of hydrocarbon contamination.

Based on the above, LKC considers the probability of contaminants on site affecting the adjacent Turnlee Brook and Secondary A Aquifer as unlikely due to the localised

and confined nature of the contamination. Given the medium consequence, a low risk is anticipated (Pollutant Linkage 4) and no specific remediation is required to protect groundwater or surface water. However, as remediation will be required to mitigate risks to human health from the hydrocarbon contamination onsite, the source of the contamination identified in groundwater is likely to be removed.

5.5 Additional Risk Assessments

5.5.1 Concrete (Pollutant Linkage 5)

The concentrations of soluble sulphate in the soil when contrasted to BRE Digest 2005⁴⁰ categorise the concrete requirement as DS-1 AC-1.

Based on the above, the probability of sulphate concentrations affecting buildings is unlikely. Given the consequence is considered to be mild, the risk (pollutant linkage 5) is anticipated to be low and sulphate resistant concrete is not required. 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 contamination⁴¹. 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: chlorinated compounds, phenols, cresols, ethers, nitrobenzene, ketones, aldehydes and amines.

The following elevated contaminants were identified:

- Elevated petroleum hydrocarbons in the south west of the site.
- Elevated TVOCs (inc. naphthalene) in the south west of the site.

It is likely that barrier pipe will be required for any new water connections on site.

Once the remediation strategy has been agreed and 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 a 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 BS3882⁴².

Elevated zinc (maximum concentration 530mg/kg) and copper (maximum concentration 4,400mg/kg) were identified. The probability of phytotoxic contaminants affecting vegetation is considered to be likely. With a minor consequence, the risk (pollutant linkage 7) is anticipated to be low. Although the risk is low, some remediation is recommended. The remediation associated with PL1 (cover system) will be more than sufficient for PL7.

⁴⁰ BRE (2005). "Concrete in Aggressive Ground." Special Digest 1.

⁴¹ UU(2011). "United Utilities Water Supplementary Guidance for the Selection of Water Pipes in Land Potentially Affected by Contamination."

⁴² BS (2015). "Specifications for Topsoil and Requirements for Use." BS3882:2015.

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 5-4.

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.

PL	Pathway	Receptor	Contaminants of Concern (CoC)	Probability	Consequence	Risk	Recommendations
1	- 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. - Heavy metals. - PAHs.	Likely (in south west of site)	Medium	Moderate	Remediation required – likely to comprise either removal of made ground or provision of clean capping layers in gardens.
			- Petroleum hydrocarbons.	Likely (in south west of site)			
2	- Inhalation of vapours. - Migration via permeable strata and preferential pathways.	- Future site users. - Offsite receptors.	- Volatile contaminants (TPHCWG, BTEX).	Likely (in south west of site)	Medium	Moderate	Remediation required to remove or treat the hydrocarbon impacted soils in the south west of the site.
3	- Inhalation of gas. - Migration via permeable strata and preferential pathways. - Explosion in confined spaces. - Exposure to radon.	- Future site users. - Buildings. - Offsite land users.	- Ground / hazardous gas (carbon dioxide, methane).	Unlikely (no viable source identified.)	Severe	Moderate / Low (low risk assumed based on ground conditions)	No gas protection measures required.
			- Radon	Unlikely (as <1% of homes above action level)	Medium	Low	(<1%) No protective measures are necessary in the construction of new dwellings or extensions.
4	- Surface run-off. - Migration via permeable strata and preferential pathways. - Perched waters migration.	- Groundwater (Secondary A Aquifer). - Surface water (Turnlee Brook).	- Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds.	Low Likelihood (mobile contamination identified but no evidence of pathways to the identified receptors)	Medium	Moderate / Low (low risk assumed based on the remediation recommended to remove or treat the hydrocarbon impacted soils)	No specific groundwater remediation. Impacted perched water may need to be removed from site via tanker during excavation of the hydrocarbon hotspot.
5	- Sulphate attack on concrete.	- Building structure.	- Sulphate.	Unlikely (no elevated sulphate or aggressive ground conditions)	Mild	Low	Concrete classification of DS-1 AC-1.
6	- Ingestion of tainted water supply.	- Future site users. - Water pipes.	- Organic contaminants such as petroleum hydrocarbons, naphthalene, volatile compounds.	Likely (organic contamination identified at pipeline depths)	Medium	Moderate	United Utilities Risk Assessment to be completed once remediation has been undertaken and route of new potable water pipes are known.
7	- Direct contact (plant uptake).	- Flora.	- Phytotoxic contaminants such as heavy metals.	Likely (elevated phytotoxic contaminants identified)	Minor	Low	Remediation associated with PL1 will be sufficient to mitigate risks to flora.

Table 5-4: Revised Contamination Conceptual Model.

Notes

* 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.

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^{43, 44, 45, 46, 47, 48, 49, 50, 51}.

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 output sheet is presented in Appendix F and locations where soil which would be deemed to be hazardous waste are summarised in Table 6-1.

Sampling Location	LoW Code	Hazard (Risk Phrase)	Contaminants
WS103	17 05 03	HP3(i) (flammable), HP7 (carcinogenic), HP11 (mutagenic)	Benzene, ethylbenzene, TPH (C6-40)
WS104	17-05-03	HP3(i) (flammable), HP7 (carcinogenic), (HP10) toxic for reproduction, HP11 (mutagenic), HP14 (ecotoxic)	Benzene, ethylbenzene, TPH (C6-40), copper.
WS204	17-05-03	HP3(i) (flammable), HP7 (carcinogenic)	TPH (C6-40)
WS205	17-05-03	HP3(i) (flammable), HP7 (carcinogenic)	TPH (C6-40)

Table 6-1: Summary of Hazwaste Online™ findings.

Based on individual locations, hazardous waste has been identified. The soil from within the area of hydrocarbon contamination (shown on Figure 3) is likely to be classified as HAZARDOUS WASTE and LoW code "17-05-03 - soil and stones containing hazardous substances".

The soil from other areas of the site would be deemed to be non-hazardous waste if it was to be excavated and disposed of offsite.

⁴³ EA (2018). "Guidance on the Classification and Assessment of Waste (1st Edition v1.1)". Technical Guidance WM3.

⁴⁴ CLP Regulation - Regulation 1272/2008/EC of 16 December 2008.

⁴⁵ 1st ATP - Regulation 790/2009/EC of 10 August 2009

⁴⁶ Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

⁴⁷ WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

⁴⁸ Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014

⁴⁹ 13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

⁵⁰ POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004

⁵¹ 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

7 Conclusions

7.1 Contamination Assessment

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).

Pollutant Linkage		Risk	Recommendations
1	Contaminants posing a risk to site users via dermal contact, ingestion and inhalation (of soil, dust, fibres and vegetables).	Moderate	– Remediation required in garden/soft landscaping areas.
2	Volatile contaminants posing a risk to site users via the inhalation of vapours.	Moderate (SW of site)	– Remediation required to remove or treat the hydrocarbon impacted soils in the south west of the site.
3	Gas posing a risk to 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.	Moderate / Low	– No specific groundwater remediation. Impacted perched water may need to be removed from site via tanker during excavation of the hydrocarbon hotspot.
5	Sulphate posing a risk to building via direct contact (sulphate attack).	Low	– Concrete classification of DS-1 AC-1.
6	Organic contaminants posing a risk to water pipes.	Moderate	– United Utilities Risk Assessment to be completed once remediation has been undertaken and route of new potable water pipes are known.
7	Phytotoxic metals posing a risk to flora via root uptake.	Low	– Remediation associated with PL1 will be sufficient to mitigate risks to flora

Table 8-1: Summary Risk Table.

Outline remedial recommendations are presented in Section 8.

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 buildings, pre-construction (i.e. during earthworks) and during / post construction.

Phase	PL	Remediation Requirements	Validation Requirements
Post-Demolition Work	1, 2, 5, 6, 7	<u>Post-demolition watching brief</u> A watching brief is recommended during the demolition of the existing buildings. This should be carried out by an appropriately qualified geo-environmental engineer. Testing and sampling may be required if the ground conditions vary significantly from those already observed.	Log of work undertaken including photographs. Details of any sampling undertaken and validation of any potential additional remedial work.
Pre-Construction	ALL	<u>Earthworks Inspections / Unexpected Contamination</u> 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. Should asbestos be identified during groundworks, precautions should be taken to ensure the safety of the construction workers and nearby land users. It would be advisable to introduce an asbestos management strategy in line with CIRIA C733⁵².	Log of work undertaken including photographs. Details of any sampling undertaken and validation of any potential additional remedial work.
	2	<u>Hydrocarbon Contamination Removal</u> Impacted soils (based on visual / olfactory evidence and the use of a PID) should be excavated and removed. Impacted soils should be placed on an impermeable surface to await removal from site (this may be subject to chemical testing to confirm suitable waste facility). The work should be done under the supervision and instruction of an environmental consultant. If all impacted ground cannot be removed and contamination remains on the ground, further remediation may need to be considered.	Details of work undertaken including photographs. Confirmatory samples of the remaining in-situ soils. Consignment notes confirming the removal of impacted soil

⁵² CIRIA (2014). "Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks". C733.

	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 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. Private Front Garden / Shared Landscaping: 300mm thick environmental cover system comprising: Either 100mm physical break layer (MOT type 1 material, 20-30mm, minimal fines) and at least 200mm comprising clean inert fill and sufficient topsoil for a growing medium. Or geotextile membrane and at least 300mm 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 G.	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.
	4	Controlled Waters In combination with the hydrocarbon contamination excavation the pumping of shallow ground water to either external tankers for removal from site or IBCs for onsite treatment and discharge to sewer under a discharge consent. Pumping should continue until the ground water runs clear and no sheen is noted.	Confirmatory testing of groundwater samples. Disposal tickets for water removed from site.
	6	Potable Water Pipes It is recommended that a United Utilities Risk Assessment is undertaken once the remediation has been undertaken and the location and depth of potable water pipes are known.	Delivery Notes of Pipe Material. Photographs of the Installed Pipe.
Other Considerations		Grubbing Out of In-Ground Structures and Removal of Tanks It is recommended that in-ground structures are grubbed out as part of the groundworks. Former below ground fuel storage tanks, fuel lines and other infrastructure will need to be removed by an appropriately qualified contractor and validation of any associated hydrocarbon contamination may be required.	
		Re-use of site won material To ensure material is compliant with appropriate waste regulations, any site won material re-used onsite should be in recourse to appropriate exemptions. A U1 and T5 exemption should be registered.	

	This will allow the following to be used onsite or brought in for use onsite (refer to guidance for types of waste that can be used ⁵³): 5,000 tonnes (c. 2,500m³) <u>treatment</u> of crushed concrete / stone. 1,000 tonnes (c. 500³) <u>use of</u> non-hazardous soil 5,000 tonnes (c. 2,500m³) <u>use of</u> clays, sand, gravel, brick, concrete, stone etc. 50,000 tonnes (c. 25,000m³) <u>use of</u> bituminous 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 <u>before</u> material movement starts onsite. If an MMP is required, this needs to be registered by a Qualified Person (QP) and there must be 'certainty of use' for any material re-used onsite or exported to site to ensure there is no 'sham recovery'. For all the above material will need to be tested at the rate and analytical suites presented in Table 9-2. 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 guidance⁵⁴) should be adopted by all workers involved with site enabling and construction works. Asbestos Survey A Pre-Demolition and Major Refurbishment Asbestos Survey should be undertaken, and any ACMs removed and properly disposed of, prior to the demolition of the existing buildings, by a suitably qualified professional.
--	--

Table 8-1: Further work, remediation and validation requirements

Notes: See Table 5-4 for pollutant linkage (PL) details.

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.

A summary of the required imported material sampling requirements is presented in Table 8-2. Ideally, the material should be sampled at source to prevent double handling if soil fails. 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 to ensure suitability for use.

⁵³ <https://www.gov.uk/guidance/waste-exemptions-using-waste>

⁵⁴ HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land" London HMSO.

Material Type	Source	Suite of Analysis	Sampling Rate*
Topsoil	Greenfield	Suite A	1 sample per 50m³
	Brownfield / Unknown	Suite B	
Subsoil	Brownfield / Unknown	Suite B	1 sample per 150m³
	Site won natural material / greenfield	Suite A	
	Physical Stone Break Layer	First Generation i.e. quarried sand (subsoil) or stone (break layer)	
	Recycled Stone (6F2 / screened)	Suite B	1 sample per 500m³

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.

*Minimum sampling rate of 3 samples per source.

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 BS3882⁵⁵). 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 E.

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. This should include as a minimum:

- Details of the demolition of the existing buildings within a Pre-Demolition and Major Refurbishment Asbestos Survey.
- Validation of the hydrocarbon hotspot removal.
-
- Provision of waste transfer documents.
- Validation of environmental cover system.
- 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.

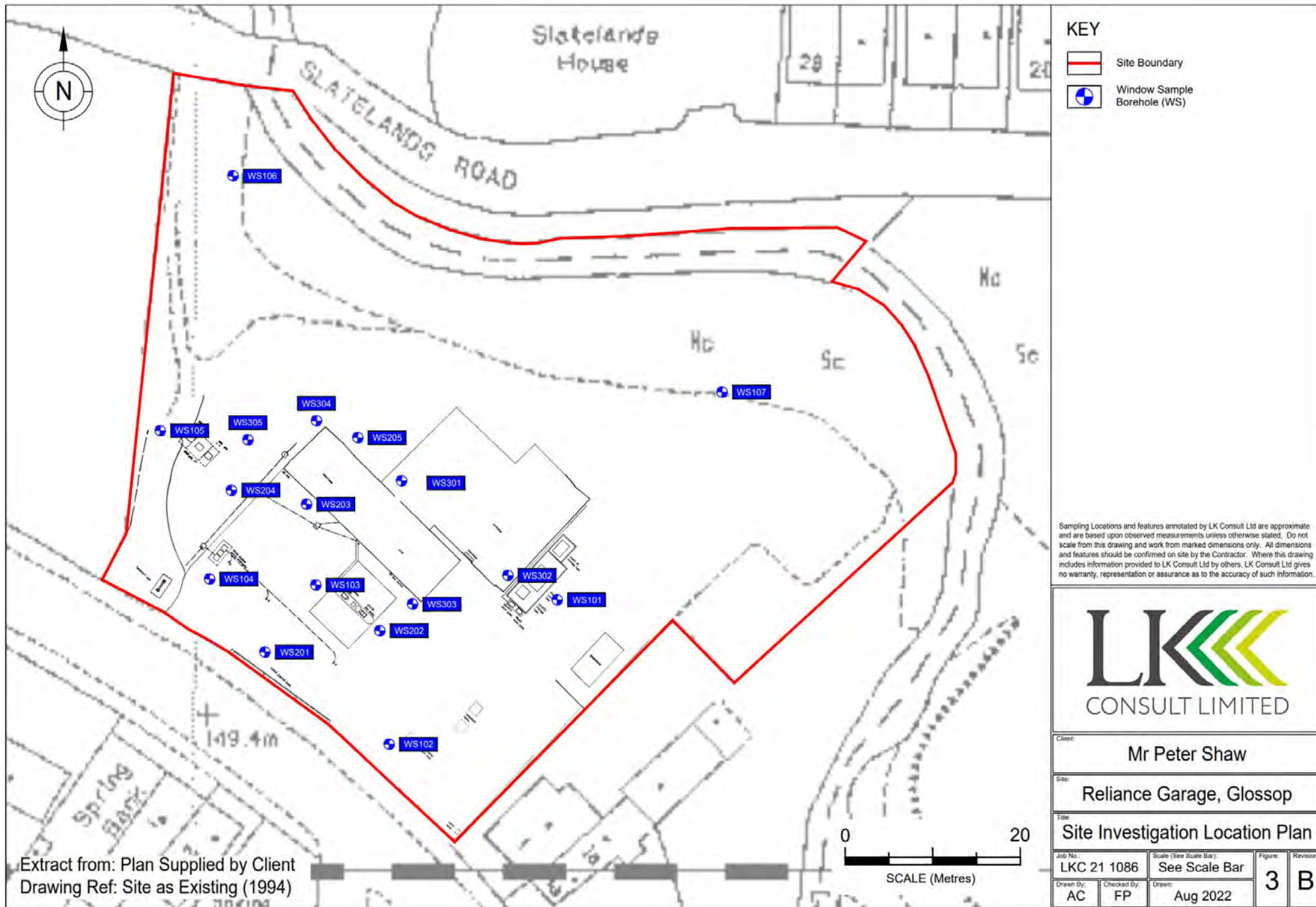
The Site Completion Report will assist the Local Authority in the discharge of any future relevant planning condition and will also be of use to solicitors acting on behalf of any prospective conveyancer who may have concerns over the former use of the site.

⁵⁵ BS (2015). "Specifications for Topsoil and Requirements for use." BS3882:2015.

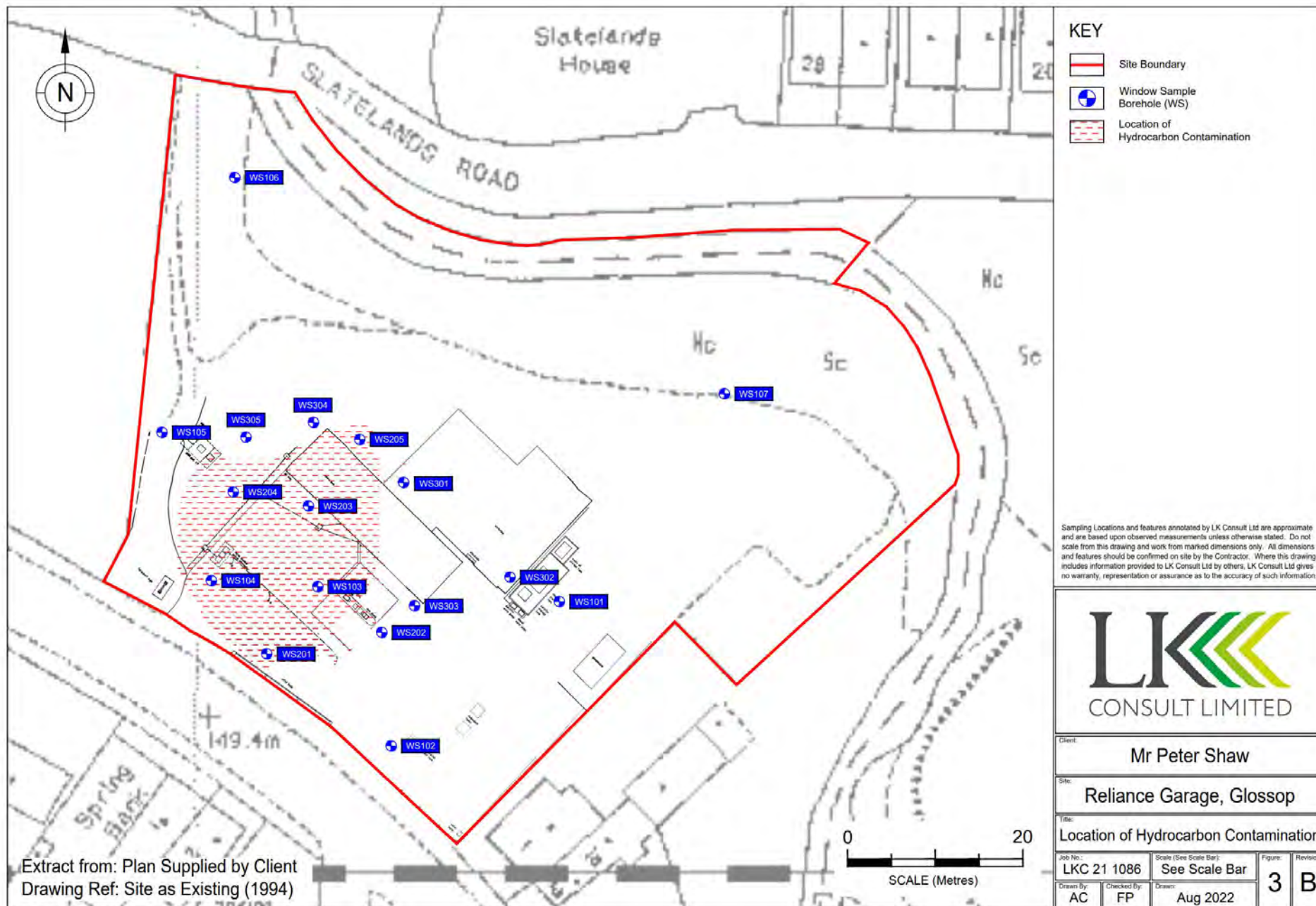
Figures



Client: Mr Peter Shaw				Title: Site Location & Boundary Plan					
Site: Reliance Garage, Glossop				Scale (see scale bar): 1:25,000 & 1:1,000 @ A4				Figure: 1	Revision:
Job No.: LKC 21 1086	Drawn By: HM	Checked By: CH	Drawn: Mar 2021						



Extract from: Plan Supplied by Client
Drawing Ref: Site as Existing (1994)



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 552⁵⁶. It involves the classification of the:

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

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

Table A. Classification of Consequence

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

Table B. Classification of Probability.

⁵⁶ 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 severe harm to a designated receptor is currently happening. - This risk, if realised, is likely to result in a substantial liability. - Urgent investigation (if not already undertaken) and remediation are likely to be required.
High Risk	- Harm is likely to arise to a designated receptor from an identified hazard. - Realisation of the risk is likely to present a substantial liability. - Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate Risk	- It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. - Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	- It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	- There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

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

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

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

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

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

Appendix B

Profile Logs

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

Reliance Garage, Glossop

Number
WS101**Excavation Method**Drive-in Windowless Sample
driven to 5.45mbgl.**Dimensions****Location**

402942 E 393534 N

Ground Level (mOD)

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**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
0.40-1.00	ES1 PID=1.6ppm			154.95	0.05	MADE GROUND: Tarmacadam.			
					(0.35)				
				154.60	0.40	MADE GROUND: Grey sandy GRAVEL with frequent tarmacadam, concrete fragments. Sand is fine to medium. Gravel is fine to coarse and angular to subangular comprising limestone.			
					(1.00)				
1.20-1.65	SPT N=7		1,2/3,2,1,1			MADE GROUND: Yellowish brown mottled sandy silty GRAVEL with occasional subangular sandstone cobbles, tarmacadam fragments, rare brick fragments, clinker. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone.			
1.40-1.60	ES2 PID=0.8ppm			153.60	1.40				
1.60-2.00	B3			153.40	1.60	Soft consistency brown slightly gravelly sandy silty CLAY. Sand is fine to medium. Gravel is fine to medium and subangular comprising sandstone.			
					(0.40)				
				153.00	2.00	Brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to medium and rounded to subrounded comprising sandstone and quartzite.			
2.00-2.45	SPT N=27		Water strike(1) at 2.00m. 4,5/6,7,7,7		(1.50)	Medium dense brown and yellow slightly clayey SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse and angular to subangular comprising sandstone.			
3.00-3.45	SPT N=18		2,2/3,5,5,5						
3.50-4.00	B4			151.50	3.50	Firm to stiff consistency high strength brown slightly gravelly slightly sandy silty CLAY. Sand is fine to medium. Gravel is fine to medium and subangular comprising sandstone and mudstone.			
4.00	PP 110.36kPa								
4.00-4.45	SPT N=15		2,3/3,4,4,4		(1.95)				
4.00-4.45	X5								
5.00	PP 98.1kPa		3,3/3,3,4,4						
5.00-5.45	SPT N=14								
5.00-5.45	X6								
				149.55	5.45	Complete at 5.45m			

RemarksBorehole collapse at 3.00mbgl.
Groundwater strike at 2.00mbgl.
Location accurate to 5.00-8.00m.
Elevation estimated using <https://www.freemaptools.com/elevation-finder.htm>**Scale**
(approx)

1:40

Logged
By

HM

Figure No.

lk21 1086.WS101

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

Reliance Garage, Glossop

Number
WS102**Excavation Method**Drive-in Windowless Sample
driven to 5.45mbgl.**Dimensions****Location**

402922 E 393517 N

Ground Level (mOD)

155.00

Dates11/03/2021-
12/03/2021**Client**

Mr Peter Shaw

Project Contractor

D&I

Job
Number
LKC 21 1086**Sheet**
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20-0.50	ES1 PID=0.9ppm			154.90	(0.10)	MADE GROUND: Tarmacadam.			
0.50-1.00	ES2 PID=0.6ppm			154.50	0.50	MADE GROUND: Black slightly silty sandy GRAVEL with frequent ash, occasional concrete fragments, rare brick fragments. Sand is fine to medium. Gravel is fine to coarse and subrounded to angular comprising sandstone, mudstone and limestone.			
1.20-1.65	SPT N=17		7,8/8,3,3,3	153.80	1.20	MADE GROUND: Brown very gravelly very sandy CLAY with frequent coal fragments, occasional ash, rare brick fragments. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone. Less gravelly with depth.			
1.40-2.00	ES3 PID=0.7ppm				(0.80)	MADE GROUND: Grey and white mottled slightly silty fine to coarse GRAVEL of predominantly concrete fragments. Possible sandstone cobble at 1.20-1.30mbgl.			
2.00-2.45	SPT N=14		4,5/4,4,3,3	153.00	2.00	Medium dense brown and yellowish brown mottled slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse and rounded to subrounded comprising sandstone and quartzite.			
2.00-2.50	ESB4 PID=0.5ppm				(1.00)				
3.00	PP 85.83kPa X5		Water strike(1) at 3.00m.	152.00	3.00	Stiff consistency high strength greyish brown slightly gravelly slightly sandy silty CLAY. Sand is fine to medium. Gravel is fine to medium and subangular to subrounded comprising sandstone and mudstone. Less gravelly with depth.		▽1	
3.00-3.45	SPT N=14		3,3/3,3,4,4						
4.00	PP 98.1kPa SPT N=22 X6		3,4/4,5,6,7		(2.45)				
4.00-4.45									
5.00	PP 98.1kPa SPT N=42 X7		6,7/10,10,10,12						
5.00-5.45									
5.00-5.45				149.55	5.45	Complete at 5.45m			

RemarksWater strike at 3.00mbgl.
Borehole collapsing from 3.00mbgl.
Location accurate to 5.00-8.00m.
Elevation estimated using <https://www.freemaptools.com/elevation-finder.htm>**Scale**
(approx)

1:40

Logged
By

HM

Figure No.

LKC 21 1086.WS102

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

Reliance Garage, Glossop

Number
WS103**Excavation Method**Drive-in Windowless Sample
driven to 5.45mbgl.**Dimensions****Location**

402914 E 393535 N

Ground Level (mOD)

155.00

Client

Mr Peter Shaw

Job
Number

LKC 21 1086

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 PID=13.8ppm			154.95	0.05	MADE GROUND: Tarmacadam.			
					(0.75)	MADE GROUND: Black silty sandy GRAVEL with frequent tarmacadam fragments, ash and occasional coal fragments. Sand is fine to coarse. Gravel is fine to coarse and subrounded to angular comprising mudstone and sandstone.			
0.80-1.20	ES2 PID=4.8ppm			154.20	0.80	MADE GROUND: Dark brown and yellow mottled gravelly sandy CLAY with occasional ash, brick fragments. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone.			
					(0.40)				
1.20-1.65	SPT N=6		2,2/1,1,2,2	153.80	1.20	MADE GROUND: Dark grey slightly gravelly slightly sandy silty CLAY with occasional ash, organic material and rare brick fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprising sandstone. Strong hydrocarbon odour and oily sheen.			
1.20-2.00	ES3 PID=542ppm				(1.50)				
2.00-2.45	SPT N=41		Water strike(1) at 2.00m. 6,7/7,10,10,14						
				152.30	2.70	MADE GROUND: Black clayey very sandy GRAVEL with occasional ash. Sand is fine to coarse. Gravel is fine to coarse and subangular to subrounded comprising sandstone and mudstone. Strong hydrocarbon odour and oily sheen.			
2.70-3.00	ES4 PID=480ppm				(1.00)				
3.00-3.45	SPT N=9		Water strike(2) at 3.00m. 1,1/1,2,3,3						
3.70-4.00	ESB5 PID=0.9ppm			151.30	3.70	Stiff consistency medium to high strength brown slightly gravelly silty CLAY. Gravel is fine to medium and subangular comprising mudstone.			
4.00	PP 73.57kPa		2,2/3,3,3,4		(1.75)				
4.00-4.45	SPT N=13								
4.00-4.45	X6								
5.00	PP 98.1kPa		1,1/2,3,4,4						
5.00-5.45	SPT N=13			149.55	5.45	Complete at 5.45m			
5.00-5.45	X7								

RemarksBorehole collapsing from 3.00mbgl.
Strong hydrocarbon odour and oily sheen between 1.20-3.70mbgl.
Groundwater strike at 2.00mbgl and 3.00mbgl.
Location accurate to 5.00-8.00mbgl.
Elevation estimated using <https://www.freemaptools.com/elevation-finder.htm>**Scale**
(approx)

1:40

Logged
By

HM

Figure No.

LKC 21 1086.WS103

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

Reliance Garage, Glossop

Number
WS104**Excavation Method**Drive-in Windowless Sample
driven to 5.45mbgl.**Dimensions****Location**

402902 E 393536 N

Ground Level (mOD)

155.00

Client

Mr Peter Shaw

Job**Number**

LKC 21 1086

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
0.20-1.00	ES1 PID=5.4ppm			154.95	0.05	MADE GROUND: Tarmacadam.			
					(1.05)	MADE GROUND: Grey to dark brown gravelly silty SAND with frequent ash, occasional clinker, brick fragments and rare metal fragments. Sand is fine to coarse. Gravel is fine to coarse and angular to subrounded comprising sandstone and mudstone.			
1.10-2.00	ES2 PID=71.9ppm		2,3/3,1,1,1	153.90	1.10	MADE GROUND: Dark grey slightly gravelly slightly sandy silty CLAY with occasional brick fragments, rare rootlets, metal fragments. Sand is fine to medium. Gravel is fine to medium and subrounded comprising sandstone. Moderate hydrocarbon odour and oil.			
1.20-1.65	SPT N=6				(1.20)				
2.00-2.45	SPT N=11		Water strike(1) at 2.00m. 1,2/2,3,3,3	152.70	2.30	MADE GROUND: Dark grey gravelly clayey SAND with rare brick fragments. Sand is fine to coarse. Gravel is fine to coarse and rounded to subangular comprising sandstone and mudstone. Moderate hydrocarbon odour noted.			
2.30-3.00	ES3 PID=782ppm				(0.80)				
3.00-3.45	SPT N=7		Water strike(2) at 3.00m. 1,1/1,2,2,2	151.90	3.10	Firm to stiff consistency medium to high strength brown slightly gravelly silty CLAY. Gravel is fine to coarse and rounded to subangular comprising sandstone and mudstone.			
3.40-4.00	ESB4 PID=0.5ppm								
4.00	PP 67.43kPa		2,3/4,5,5,5						
4.00-4.45	SPT N=19				(2.35)				
4.00-4.45	X5								
5.00	PP 98.01kPa		7,8/10,12,12,11						
5.00-5.45	SPT N=45								
5.00-5.45	X6								
				149.55	5.45	Complete at 5.45m			

RemarksElevation estimated using <https://www.freemaptools.com/elevation-finder.htm>
Location accurate to 5.00-8.00m.
Groundwater strikes at 2.00-3.00mbgl.
Borehole collapsing from 3.00mbgl.**Scale**
(approx)

1:40

Logged
By

HM

Figure No.

lkc 21 1086.WS104

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

Reliance Garage, Glossop

Number
WS105**Excavation Method**Drive-in Windowless Sample
driven to 5.45mbgl.**Dimensions****Location**

402896 E 393553 N

Ground Level (mOD)

156.00

Client

Mr Peter Shaw

Job
Number

LKC 21 1086

Dates11/03/2021-
12/03/2021**Project Contractor**

D&I

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	ES1 PID=0.2ppm				(0.40)	MADE GROUND: Brown gravelly sandy silty CLAY with occasional brick fragments. Sand is fine to medium. Gravel is fine to coarse and angular to subangular comprising sandstone.		
0.40-1.00	ESB2 PID=0.1ppm			155.60	0.40	Soft to firm consistency low strength brown to grey slightly gravelly slightly sandy silty CLAY with rare subangular sandstone cobbles. Sand is fine to medium. Gravel is fine to coarse and subangular to subrounded comprising sandstone.		
1.20-1.65	PP 30.66kPa SPT N=0 X3		1,0/0,0,0,0		(2.30)			
1.70-2.00	B4					Grey gravelly sandy silty CLAY between 2.00-2.70mbgl.		
2.00-2.45	PP 24.53kPa SPT N=8 X5		5,3/5,1,1,1					
3.00-3.45	PP 61.31kPa X6 SPT N=12		Water strike(1) at 3.00m. 2,3/3,3,3,3	153.30	2.70	Stiff consistency medium to high strength brown slightly gravelly CLAY. Gravel is fine to medium and subangular comprising sandstone and mudstone.		V1
4.00-4.45	PP 94.01kPa SPT N=19 X7		4,4/4,4,5,6		(2.75)			
5.00-5.45	PP 98.1kPa SPT N=27 X8		6,6/6,7,7,7	150.55	5.45	Complete at 5.45m		

RemarksGroundwater strike at 3.00mbgl.
Borehole stable.
Location accurate to 5.00-8.00m.
Elevation estimated using <https://www.freemaptools.com/elevation-finder.htm>
Installation of monitoring well not possible due to flooding at surface level.**Scale**
(approx)

1:40

Logged
By

HM

Figure No.

LKC 21 1086.WS105

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

Reliance Garage, Glossop

Number
WS106**Excavation Method**

Drive-in Windowless Sampler

Dimensions**Ground Level (mOD)**

156.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**Location**

402905 E 393582 N

Dates11/03/2021-
12/03/2021**Project Contractor**

D&I

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.40	ES1 PID=0.1ppm				(0.40)	MADE GROUND: Brown slightly gravelly sandy silty CLAY with occasional brick fragments, rootlets, rare plastic and subangular sandstone cobbles. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone.		
0.40-1.00	ESB2 PID=0.1ppm			155.60	0.40	Stiff consistency medium to high strength brown gravelly sandy CLAY with rare coal fragments. Sand is fine to medium. Gravel is fine to coarse and angular to subangular comprising sandstone.		
1.20 1.20-1.65 1.20-1.65 1.50	PP 73.58kPa SPT N=9 X3 PP 85.84kPa		2,2/2,2,2,3		(2.02)			
1.70-1.90	B4					Very gravelly below 1.90mbgl.		
2.00-2.42	SPT 50/270		9,9/11,15,15,9	153.58	2.42	Refusal on sandstone cobble at 2.42mbgl. Complete at 2.42m		

RemarksNo monitoring installation.
Borehole dry and stable.
Location accurate to 5.00-8.00m.
Elevation estimated using <https://www.freemaptools.com/elevation-finder.htm>**Scale**
(approx)

1:40

Logged
By

HM

Figure No.

LKC 21 1086.WS106

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

Reliance Garage, Glossop

Number
WS107**Excavation Method**Drive-in Windowless Sample
driven to 5.45mbgl.**Dimensions****Ground Level (mOD)**

158.00

Client

Mr Peter Shaw

Job
Number

LKC 21 1086

Location

402961 E 393557 N

Dates11/03/2021-
12/03/2021**Project Contractor**

D&I

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10-0.90	ES1 PID=0.9ppm				(0.90)	MADE GROUND: Dark grey slightly clayey sandy GRAVEL with occasional concrete fragments, rare ash and clay inclusions. Sand is fine to medium. Gravel is fine to coarse and subangular to angular comprising sandstone and mudstone.			
0.90-1.20	ES2 PID=0.7ppm			157.10	0.90				
1.20-1.65	SPT N=8		2,2/2,2,2,2	156.70	1.30	MADE GROUND: Dark brown and orange mottled gravelly sandy CLAY with frequent ash, concrete fragments, rare wood fragments. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone.			
1.20-1.90	ES3 PID=0.6ppm				(0.80)	MADE GROUND: Brown and black mottled gravelly silty SAND with frequent ash. Sand is fine to medium. Gravel is fine to medium and subrounded to subangular comprising sandstone and mudstone.			
2.00-2.50	ESB4 PID=0.3ppm		Water strike(1) at 2.00m.	155.90	2.10	Dark brown mottled CLAY with occasional ash between 1.90-2.00mbgl.			
2.00-2.45	SPT N=36		6,8/10,10,8,8		(0.40)	Possible sandstone cobble between 2.00--2.10mbgl.			
				155.50	2.50	Medium dense brown sandy clayey GRAVEL. Sand is fine to coarse. Gravel is fine to coarse and subrounded to angular comprising sandstone.			
					(0.50)				
3.00-3.45	SPT N=27		4,4/6,7,7,7	155.00	3.00	Medium dense brown and orange mottled silty SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse and subangular to subrounded comprising sandstone.			
3.00-3.45	X5					Stiff consistency high strength brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone. Less sand content with depth.			
4.00	PP 98.1kPa		3,7/7,7,7,6		(2.45)				
4.00-4.45	SPT N=27								
4.00-4.45	X6								
5.00	PP 110.36kPa		7,7/7,8,8,9						
5.00-5.45	SPT N=32								
5.00-5.45	X7								
				152.55	5.45	Complete at 5.45m			

RemarksGroundwater strike at 2.00mbgl.
Borehole collapsing from 3.00mbgl.
Location accurate to 5.00-8.00mbgl.
Elevation estimated using <https://www.freemaptools.com/elevation-finder.htm>**Scale**
(approx)

1:40

Logged
By

HM

Figure No.

LKC 21 1086.WS107



LK CONSULT LTD

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

Site

Reliance Garage, Glossop

Number
WS201

Excavation Method

Drive-in Windowless Sample
driven to 4.0mbgl.

Dimensions

Ground Level (mOD)

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086

Location

Dates

26/04/2021

Project Contractor

D&I

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.20-1.20	ES1			154.95	0.05	MADE GROUND: Tarmacadam.		
					(0.85)	MADE GROUND: Black silty sandy GRAVEL with ash and occasional coal fragments. Sand is fine to coarse. Gravel is fine to coarse and subrounded to angular comprising mudstone and sandstone.		
				154.10	0.90			
				153.90	(0.20)	MADE GROUND: Dark orange brown gravelly sandy CLAY with occasional ash, brick fragments. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone.		
1.80-2.00	ES2				(0.90)	MADE GROUND: Dark grey brown slightly gravelly slightly sandy silty CLAY. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone. Slight hydrocarbon odour.		
				153.00	2.00	Dark grey brown gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse and subangular to subrounded comprising sandstone and mudstone. Moderate hydrocarbon odour.		Σ1
2.50-2.50	ES3		Water strike(1) at 2.20m.		(1.20)			
				151.80	3.20	Stiff consistency dark grey brown silty CLAY. No hydrocarbon odour.		
3.50-3.50	ES4				(0.80)			
				151.00	4.00	Complete at 4.00m		

Remarks

Slight to moderate hydrocarbon odour between 1.1-3.20mbgl.
Groundwater strike at 2.20mbgl.

Scale
(approx)

1:40

Logged
By

CH

Figure No.

LKC 21 1086.WS103

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

Reliance Garage, Glossop

Number
WS202**Excavation Method**Drive-in Windowless Sample
driven to 3.0mbgl.**Dimensions****Ground Level (mOD)**

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**Location****Dates**

26/04/2021

Project Contractor

D&I

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water			
1.50-1.50	ES1			154.95	0.05	MADE GROUND: Tarmacadam.					
					(0.85)	MADE GROUND: Black silty sandy GRAVEL with ash and occasional coal fragments. Sand is fine to coarse. Gravel is fine to coarse and subrounded to angular comprising mudstone and sandstone.					
				154.10	0.90	MADE GROUND: Dark orange brown gravelly sandy CLAY with occasional ash, brick fragments. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone.					
				154.00	1.00						
					(0.80)	MADE GROUND: Dark grey brown slightly gravelly slightly sandy silt. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone. Slight hydrocarbon odour.					
				153.20	1.80						
					(0.60)	Dark orange brown slightly gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse and subangular to subrounded comprising sandstone and mudstone. No hydrocarbon odour.					
				152.60	2.40	Stiff consistency orange brown silty CLAY. No hydrocarbon odour.					
					(0.60)						
				152.00	3.00	Complete at 3.00m					

RemarksSlight hydrocarbon odour between 1.0-1.8mbgl.
Borehole dry.**Scale**
(approx)

1:40

Logged
By

CH

Figure No.

LKC 21 1086.WS103

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

Reliance Garage, Glossop

Number
WS203**Excavation Method**Drive-in Windowless Sample
driven to 4.0mbgl.**Dimensions****Ground Level (mOD)**

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**Location****Dates**

26/04/2021

Project Contractor

D&I

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.50-1.50	ES1			154.95	0.05	MADE GROUND: Tarmacadam.		
					(0.75)	MADE GROUND: Black silty sandy GRAVEL with ash and occasional coal fragments. Sand is fine to coarse. Gravel is fine to coarse and subrounded to angular comprising mudstone and sandstone.		
				154.20	0.80	MADE GROUND: Dark orange brown gravelly sandy CLAY with occasional ash, brick fragments. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone.		
				153.90	1.10	MADE GROUND: Dark grey brown slightly gravelly slightly sandy silty CLAY. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone. Moderate hydrocarbon odour.		
					(1.10)			
			Water strike(1) at 2.20m.	152.80	2.20	Dark grey slightly silty coarse SAND. Moderate hydrocarbon odour.		▽1
				152.60	2.40	Dark grey brown and light grey brown sandy GRAVEL of sandstone and mudstone. Slight hydrocarbon odour.		
					(0.80)			
				151.80	3.20	Stiff consistency dark grey brown silty CLAY. No hydrocarbon odour.		
					(0.80)			
3.50-3.50	ES2			151.00	4.00	Complete at 4.00m		

RemarksSlight to moderate hydrocarbon odour between 1.1-3.20mbgl.
Groundwater strike at 2.20mbgl.**Scale**
(approx)

1:40

Logged
By

CH

Figure No.

LKC 21 1086.WS103

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

Reliance Garage, Glossop

Number
WS204**Excavation Method**Drive-in Windowless Sample
driven to 3.0mbgl.**Dimensions****Ground Level (mOD)**

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**Location****Dates**

26/04/2021

Project Contractor

D&I

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
2.20-2.20	ES1		Water strike(1) at 2.20m.	154.95	0.05	MADE GROUND: Tarmacadam.		Σ1
					(1.05)	MADE GROUND: Black silty sandy GRAVEL with ash and occasional coal fragments. Sand is fine to coarse. Gravel is fine to coarse and subrounded to angular comprising mudstone and sandstone.		
				153.90	1.10	MADE GROUND: Dark grey brown slightly gravelly slightly sandy silt. Sand is fine to medium. Gravel is fine to coarse and subangular comprising sandstone. Moderate hydrocarbon odour.		
					(0.80)			
				153.10	1.90	Dark grey brown sandy GRAVEL. Sand is fine to medium. Gravel is fine to medium and subangular comprising sandstone. Moderate hydrocarbon odour.		
					(0.70)			
152.40	2.60	Stiff consistency dark grey brown silty CLAY. No hydrocarbon odour.						
	(0.40)							
152.00	3.00	Complete at 3.00m						

RemarksSlight to moderate hydrocarbon odour between 1.1-2.6mbgl.
Groundwater strike at 1.8mbgl.**Scale**
(approx)

1:40

Logged
By

CH

Figure No.

LKC 21 1086.WS103

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

Reliance Garage, Glossop

Number
WS205**Excavation Method**Drive-in Windowless Sample
driven to 2.7mbgl.**Dimensions****Ground Level (mOD)**

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**Location****Dates**

26/04/2021

Project Contractor

D&I

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.70-1.70	ES1		Water strike(1) at 1.70m.	154.95 154.80 154.50	0.05 (0.15) (0.20) (0.30) 0.50	MADE GROUND: Tarmacadam. MADE GROUND: Dark grey and black gravel of ash. MADE GROUND: Dark brown and orange gravelly clay. Gravel is fine to medium and subangular of brick, concrete and sandstone. MADE GROUND: Dark brownish grey slightly sandy gravelly silt. Sand is fine to medium. Gravel is fine to medium and subangular of sandstone. Becoming sandier. Slight hydrocarbon odour.		▽ ₁
				152.40 152.30	2.60 (0.60) (2.70)	Light orange brown sandy GRAVEL. Sand is fine to medium. Gravel is fine to coarse and subrounded to subangular of sandstone and mudstone. No hydrocarbon odour. Complete at 2.70m		

RemarksSlight hydrocarbon odour between 1.6-2.6mbgl.
Groundwater strike at 2.0mbgl.
Borehole refused on sand and gravel at 2.7mbgl**Scale**
(approx)

1:40**Logged**
By

CH**Figure No.**
LKC 21 1086.WS103

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

Reliance Garage, Glossop

Number
WS301**Excavation Method**

Drive-in Windowless Sampler

Dimensions

101mm to 3.00m

Ground Level (mOD)

155.00

Client

Mr Peter Shaw

Job Number
LKC 21 1086**Location** (Observed measurements)

402924 E 393548 N

Dates

25/08/2022

Project Contractor

D&I

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40-1.40	ESD PID: 0.2ppm			154.85 154.60	(0.15) 0.15 (0.25) 0.40	MADE GROUND: CONCRETE. 6mm rebar present in mesh at 0.11mbgl. MADE GROUND: Light brown sandy GRAVEL with rare ash and brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.	 	
1.40-2.00	ESD PID: 0.5ppm			153.60	(1.00) 1.40	MADE GROUND: Black gravelly silty SAND with frequent ash and clinker. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising ash and clinker.		
2.00-2.40	ESD PID: 0.2ppm		Water strike(1) at 2.00m.	153.00	2.00	MADE GROUND: Dark greish brown slightly gravelly sandy SILT with rare ash, clinker and brick fragments. Sand is fine to coarse. Gravel is fine, subangular to subrounded comprising ash, clinker and brick fragments.		
2.40-3.00	ESD PID: 0.2ppm			152.60	2.40	Orangish brown gravelly sandy SILT. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising various lithologies.		
4.00-5.00	D PID: 0.3ppm				(2.60) 5.00	Firm consistency brown gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone and various other lithologies.		
				150.00	5.00	Complete at 5.00m		

RemarksGroundwater encountered at 2.00mbgl.
Borehole was stable.
Elevation estimated using www.freemaptools.com/elevation-finder.htm
Grid reference estimated using www.gridreferencefinder.com**Scale (approx)**

1:40

Logged By

FP

Figure No.

LKC 21 1086.WS301

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

Reliance Garage, Glossop

Number
WS302**Excavation Method**

Drive-in Windowless Sampler

Dimensions

101mm to 2.00m

Ground Level (mOD)

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**Location** (Observed measurements)

402935 E 393537 N

Dates

25/08/2022

Project Contractor

D&I

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20-1.00	ESD PID: 3.2ppm			154.85 154.80	(0.15) 0.15 0.20	MADE GROUND: CONCRETE. 6mm rebar encountered at 0.11mbgl.		
					(0.80)	MADE GROUND: Light brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
				154.00	1.00	MADE GROUND: Dark brown gravelly sandy SILT with occasional ash, clinker and brick fragments. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising various lithologies.		
					(1.00)	Cobbles struck at 1.00mbgl pushed down to 2.00mbgl.		
2.00-2.30	ESD PID: 2.1ppm			153.00 152.70	2.00 (0.30) 2.30	Grey sandy silty GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
						Complete at 2.30m		

RemarksSampler refusal at 2.30mbgl.
Cobble encountered at 1.00mbgl and pushed down to 2.00mbgl.
Borehole was dry and stable.
Elevation estimated using www.freemaptools.com/elevation-finder.htm
Grid reference estimated using www.gridreferencefinder.com**Scale**
(approx)

1:40

Logged
By

FP

Figure No.

LKC 21 1086.WS302

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

Reliance Garage, Glossop

Number
WS303**Excavation Method**

Drive-in Windowless Sampler

Dimensions

101mm to 2.00m

Ground Level (mOD)

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**Location** (Observed measurements)

402923 E 393533 N

Dates

25/08/2022

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	ESD PID: 3.7ppm			154.95 154.90	0.05 0.10	MADE GROUND: TARMACADAM		
					(0.90)	MADE GROUND: Light brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
1.00-1.30	ESD PID: 2.9ppm			154.00	1.00	MADE GROUND: Dark brown gravelly sandy SILT with frequent ash, occasional brick fragments, rare glass, clinker and metal. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
1.30-1.80	ESD PID: 63.7ppm			153.70	1.30	MADE GROUND: Dark brown gravelly sandy SILT. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
					(0.50)	MADE GROUND: Greyish brown gravelly silty SAND with hydrocarbon odour. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
1.80-2.80	ESD PID: 2.7ppm			153.20	1.80	Brown sandy silty GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
2.30-3.00	D PID: 1.0ppm		Water strike(1) at 2.00m.		(1.20)			
				152.00	3.00	Complete at 3.00m		

RemarksHydrocarbon odour noted between 1.30 - 1.80mbgl.
Grid reference estimated using www.gridreferencefinder.com
Elevation estimated using www.freemaptools.com/elevation-finder.htm
Borehole was stable.
Groundwater encountered at 2.00mbgl.**Scale**
(approx)

1:40

Logged
By

FP

Figure No.

LKC 21 1086.WS303

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

Reliance Garage, Glossop

Number
WS304**Excavation Method**

Drive-in Windowless Sampler

Dimensions

101mm to 2.00m

Ground Level (mOD)

155.00

Client

Mr Peter Shaw

Job
Number
LKC 21 1086**Location** (Observed measurements)

402911 E 393554 N

Dates

25/08/2022

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	ESD PID: 0.5ppm			154.90	(0.10)	MADE GROUND: Black sandy GRAVEL with frequent tarmacadam fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising tarmacadam fragments.		
					(0.90)	MADE GROUND: Brown gravelly sandy CLAY with rare coal and brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
				154.00	1.00	Dark brown gravelly sandy SILT with low cobble content. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies. Cobbles comprising sandstone.		
					(1.30)			
2.00-3.00	ESD PID: 0.1ppm			152.70	2.30	Slightly greenish grey silty SAND. Sand is fine to coarse.		
					(0.70)			
				152.00	3.00	Greyish brown gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising various lithologies.		
					(1.00)			
				151.00	4.00	Grey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising sandstone and various other lithologies.		
					(1.00)			
				150.00	5.00	Complete at 5.00m		

RemarksBorehole was dry and stable.
Elevation estimated using www.freemaptools.com/elevation-finder.htm
Grid reference estimated using www.gridreferencefinder.com**Scale**
(approx)

1:40

Logged
By

FP

Figure No.

LKC 21 1086.WS304

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**
Reliance Garage, Glossop**Number**
WS305**Excavation Method**
Drive-in Windowless Sampler**Dimensions**
101mm to 2.00m**Ground Level (mOD)**
155.00**Client**
Mr Peter Shaw**Job Number**
LKC 21 1086**Location** (Observed measurements)
402903 E 393552 N**Dates**
25/08/2022**Project Contractor**
D&I**Sheet**
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.60-1.00	ESD PID: 0.9ppm			154.80	(0.20) 0.20	MADE GROUND: Black sandy GRAVEL with frequent tarmacadam fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising tarmacadam fragments.		
				154.40	(0.40) 0.60	MADE GROUND: Pinkish brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
					(1.50)	MADE GROUND: Brown gravelly sandy SILT with rare ash, coal and brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
2.10-2.80	ESD PID: 4.0ppm			152.90	2.10	Orangish greenish brown gravelly silty SAND. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded comprising various lithologies.		
					(0.70)			
2.80-3.50	D PID: 1.9ppm			152.20	2.80	Greyish brown gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded comprising various lithologies.		
					(1.20)			
				151.00	4.00	Complete at 4.00m		

RemarksBorehole was dry and stable.
Elevation estimated using www.freemaptools.com/elevation-finder.htm
Grid reference estimated using www.gridreferencefinder.com**Scale (approx)**

1:40

Logged By

FP

Figure No.

LKC 21 1086.WS305

Appendix C

Certificates of Analysis – Soil



Final Report

Report No.: 21-08180-1

Initial Date of 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 2 1086 Reliance Garage, Glossop

Quotation No.: **Date Received:** 16-Mar-2021

Order No.: **Date Instructed:** 16-Mar-2021

No. of Samples: 10

Turnaround (Wkdays): 5 **Results Due:** 22-Mar-2021

Date Approved: 22-Mar-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: LKC 2 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:				21-08180	21-08180	21-08180	21-08180	21-08180	21-08180	21-08180	21-08180
Quotation No.:	Chemtest Sample ID.:				1160237	1160239	1160242	1160243	1160245	1160246	1160247	1160249
Order No.:	Client Sample Ref.:				WS101	WS102	WS102	WS103	WS103	WS103	WS103	WS104
	Client Sample ID.:				ES1	ES1	ES3	ES1	ES3	ES4	ES5	ES2
	Sample Location:				WS101	WS102	WS102	WS103	WS103	WS103	WS103	WS104
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.40	0.20	2.00	0.00	1.20	2.70	3.70	1.10
	Bottom Depth (m):				1.00	0.50	2.50	0.80	2.00	3.00	4.00	2.00
	Date Sampled:				11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-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		Chrysotile	No Asbestos Detected	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	6.6	4.4	12	10	31	13	19	35
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	None	None	Stones	None	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Clay	Sand	Clay	Clay
Chromatogram (TPH)	N			N/A					See Attached			See Attached
pH	M	2010		4.0	8.6	8.8	9.0	10.3	6.6			6.7
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40					1.6			1.8
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.021	< 0.010	0.099	0.065	0.021			0.18
Cyanide (Free)	M	2300	mg/kg	0.50					< 0.50			< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50					< 0.50			0.90
Arsenic	M	2450	mg/kg	1.0	7.3	7.3		19	29			30
Cadmium	M	2450	mg/kg	0.10	0.25	0.35		1.0	0.86			1.5
Chromium	M	2450	mg/kg	1.0	16	16		41	34			32
Copper	M	2450	mg/kg	0.50	46	18		62	98			4400
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10		0.18	0.80			0.47
Nickel	M	2450	mg/kg	0.50	15	24		61	39			49
Lead	M	2450	mg/kg	0.50	82	27		91	240			510
Selenium	M	2450	mg/kg	0.20	< 0.20	< 0.20		< 0.20	1.2			2.1
Vanadium	U	2450	mg/kg	5.0	21	40		48	43			32
Zinc	M	2450	mg/kg	0.50	60	41		130	530			310
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50		< 0.50	< 0.50			< 0.50
Organic Matter	M	2625	%	0.40	3.3	9.5		11	7.1	< 0.40	1.1	11
Diesel Present	N	2670		N/A					False	True	False	True
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0					< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0					< 1.0	< 1.0	< 1.0	11
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0					76	23	< 1.0	260
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0					100	16	< 1.0	710
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0					55	24	< 1.0	1900
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0					100	22	< 1.0	820

Results - Soil

Project: LKC 2 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:				21-08180	21-08180	21-08180	21-08180	21-08180	21-08180	21-08180	21-08180	21-08180
Quotation No.:	Chemtest Sample ID.:				1160237	1160239	1160242	1160243	1160245	1160246	1160247	1160249	
Order No.:	Client Sample Ref.:				WS101	WS102	WS102	WS103	WS103	WS103	WS103	WS104	
	Client Sample ID.:				ES1	ES1	ES3	ES1	ES3	ES4	ES5	ES2	
	Sample Location:				WS101	WS102	WS102	WS103	WS103	WS103	WS103	WS104	
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
	Top Depth (m):				0.40	0.20	2.00	0.00	1.20	2.70	3.70	1.10	
	Bottom Depth (m):				1.00	0.50	2.50	0.80	2.00	3.00	4.00	2.00	
	Date Sampled:				11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	
	Asbestos Lab:				COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD									
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0					320	34	< 1.0	49000	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0					< 1.0	< 1.0	< 1.0	6700	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0					650	120	< 5.0	59000	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0					< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0					44	< 1.0	< 1.0	49	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0					250	9.7	< 1.0	26	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0					350	15	< 1.0	21	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0					91	24	< 1.0	31	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0					67	25	< 1.0	65	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0					420	170	< 1.0	15000	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0					< 1.0	< 1.0	< 1.0	13000	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0					1200	250	< 5.0	28000	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0					1900	370	< 10	88000	
Benzene	M	2760	µg/kg	1.0					20	18	< 1.0	< 1.0	
Toluene	M	2760	µg/kg	1.0					< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	M	2760	µg/kg	1.0					8100	230	4.4	2.2	
m & p-Xylene	M	2760	µg/kg	1.0					31000	1800	< 1.0	< 1.0	
o-Xylene	M	2760	µg/kg	1.0					11	12	< 1.0	2.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0					< 1.0	< 1.0	< 1.0	< 1.0	
Naphthalene	M	2800	mg/kg	0.10	0.48	< 0.10		3.8	< 0.10			1.1	
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10		0.78	< 0.10			0.14	
Acenaphthene	M	2800	mg/kg	0.10	0.22	< 0.10		5.4	0.13			0.57	
Fluorene	M	2800	mg/kg	0.10	0.16	< 0.10		4.7	0.32			0.65	
Phenanthrene	M	2800	mg/kg	0.10	1.3	0.16		51	0.98			3.0	
Anthracene	M	2800	mg/kg	0.10	0.29	< 0.10		17	0.34			0.66	
Fluoranthene	M	2800	mg/kg	0.10	1.8	0.30		100	1.3			4.7	
Pyrene	M	2800	mg/kg	0.10	1.6	0.30		97	1.1			< 0.10	
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.75	< 0.10		53	0.66			2.4	
Chrysene	M	2800	mg/kg	0.10	0.71	< 0.10		44	0.69			2.3	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.91	< 0.10		54	0.92			3.4	
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.39	< 0.10		22	0.34			1.1	
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.77	< 0.10		46	0.70			2.6	
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.60	< 0.10		30	0.77			2.2	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.18	< 0.10		5.6	0.15			0.41	
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.56	< 0.10		25	0.62			2.5	
Total Of 16 PAH's	N	2800	mg/kg	2.0	11	< 2.0		560	9.0			28	

Results - Soil

Project: LKC 2 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:		21-08180	21-08180	21-08180	21-08180	21-08180	21-08180	21-08180	21-08180
Quotation No.:	Chemtest Sample ID.:		1160237	1160239	1160242	1160243	1160245	1160246	1160247	1160249
Order No.:	Client Sample Ref.:		WS101	WS102	WS102	WS103	WS103	WS103	WS103	WS104
	Client Sample ID.:		ES1	ES1	ES3	ES1	ES3	ES4	ES5	ES2
	Sample Location:		WS101	WS102	WS102	WS103	WS103	WS103	WS103	WS104
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):		0.40	0.20	2.00	0.00	1.20	2.70	3.70	1.10
	Bottom Depth (m):		1.00	0.50	2.50	0.80	2.00	3.00	4.00	2.00
	Date Sampled:		11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021	11-Mar-2021
	Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD						
Total Phenols	M	2920	mg/kg	0.30				< 0.30		< 0.30

Results - Soil

Project: LKC 2 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:				21-08180	21-08180
Quotation No.:	Chemtest Sample ID.:				1160251	1160252
Order No.:	Client Sample Ref.:				WS104	WS105
	Client Sample ID.:				ES4	ES1
	Sample Location:				WS104	WS105
	Sample Type:				SOIL	SOIL
	Top Depth (m):				3.40	0.00
	Bottom Depth (m):				4.00	0.30
	Date Sampled:				11-Mar-2021	12-Mar-2021
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	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	18	22
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	None	Stones
Soil Texture	N	2040		N/A	Clay	Sand
Chromatogram (TPH)	N			N/A		
pH	M	2010		4.0	8.9	7.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 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		11
Cadmium	M	2450	mg/kg	0.10		0.74
Chromium	M	2450	mg/kg	1.0		25
Copper	M	2450	mg/kg	0.50		86
Mercury	M	2450	mg/kg	0.10		0.29
Nickel	M	2450	mg/kg	0.50		29
Lead	M	2450	mg/kg	0.50		110
Selenium	M	2450	mg/kg	0.20		0.45
Vanadium	U	2450	mg/kg	5.0		31
Zinc	M	2450	mg/kg	0.50		120
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50
Organic Matter	M	2625	%	0.40	1.1	2.6
Diesel Present	N	2670		N/A	False	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	

Results - Soil

Project: LKC 2 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:				21-08180	21-08180
Quotation No.:	Chemtest Sample ID.:				1160251	1160252
Order No.:	Client Sample Ref.:				WS104	WS105
	Client Sample ID.:				ES4	ES1
	Sample Location:				WS104	WS105
	Sample Type:				SOIL	SOIL
	Top Depth (m):				3.40	0.00
	Bottom Depth (m):				4.00	0.30
	Date Sampled:				11-Mar-2021	12-Mar-2021
	Asbestos Lab:				COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	
Benzene	M	2760	µg/kg	1.0	2.2	
Toluene	M	2760	µg/kg	1.0	< 1.0	
Ethylbenzene	M	2760	µg/kg	1.0	7.2	
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	
o-Xylene	M	2760	µg/kg	1.0	1.2	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	
Naphthalene	M	2800	mg/kg	0.10		0.14
Acenaphthylene	N	2800	mg/kg	0.10		0.25
Acenaphthene	M	2800	mg/kg	0.10		0.67
Fluorene	M	2800	mg/kg	0.10		0.75
Phenanthrene	M	2800	mg/kg	0.10		9.9
Anthracene	M	2800	mg/kg	0.10		2.8
Fluoranthene	M	2800	mg/kg	0.10		14
Pyrene	M	2800	mg/kg	0.10		11
Benzo[a]anthracene	M	2800	mg/kg	0.10		5.2
Chrysene	M	2800	mg/kg	0.10		4.5
Benzo[b]fluoranthene	M	2800	mg/kg	0.10		5.5
Benzo[k]fluoranthene	M	2800	mg/kg	0.10		2.0
Benzo[a]pyrene	M	2800	mg/kg	0.10		4.6
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10		3.1
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		0.50
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10		2.6
Total Of 16 PAH's	N	2800	mg/kg	2.0		68

Results - Soil

Project: LKC 2 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:		21-08180	21-08180
Quotation No.:	Chemtest Sample ID.:		1160251	1160252
Order No.:	Client Sample Ref.:		WS104	WS105
	Client Sample ID.:		ES4	ES1
	Sample Location:		WS104	WS105
	Sample Type:		SOIL	SOIL
	Top Depth (m):		3.40	0.00
	Bottom Depth (m):		4.00	0.30
	Date Sampled:		11-Mar-2021	12-Mar-2021
	Asbestos Lab:		COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD
Total Phenols	M	2920	mg/kg	0.30

TPH Chromatogram on Soil Sample: 1160245

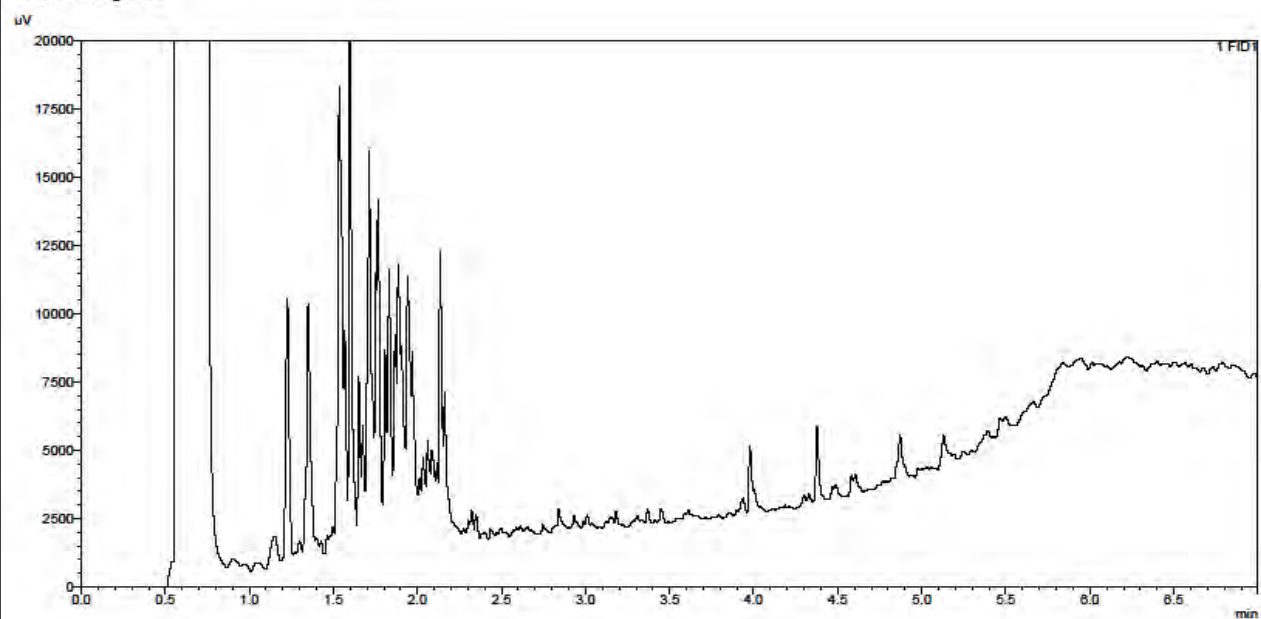
<Sample Information>

Sample Name : 1160245 21-08180
Data Filename : 2021-03-17_17032021_1160245 21-08180_037.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 19
Date Acquired : 17/03/2021 18:57:11
Date Processed : 17/03/2021

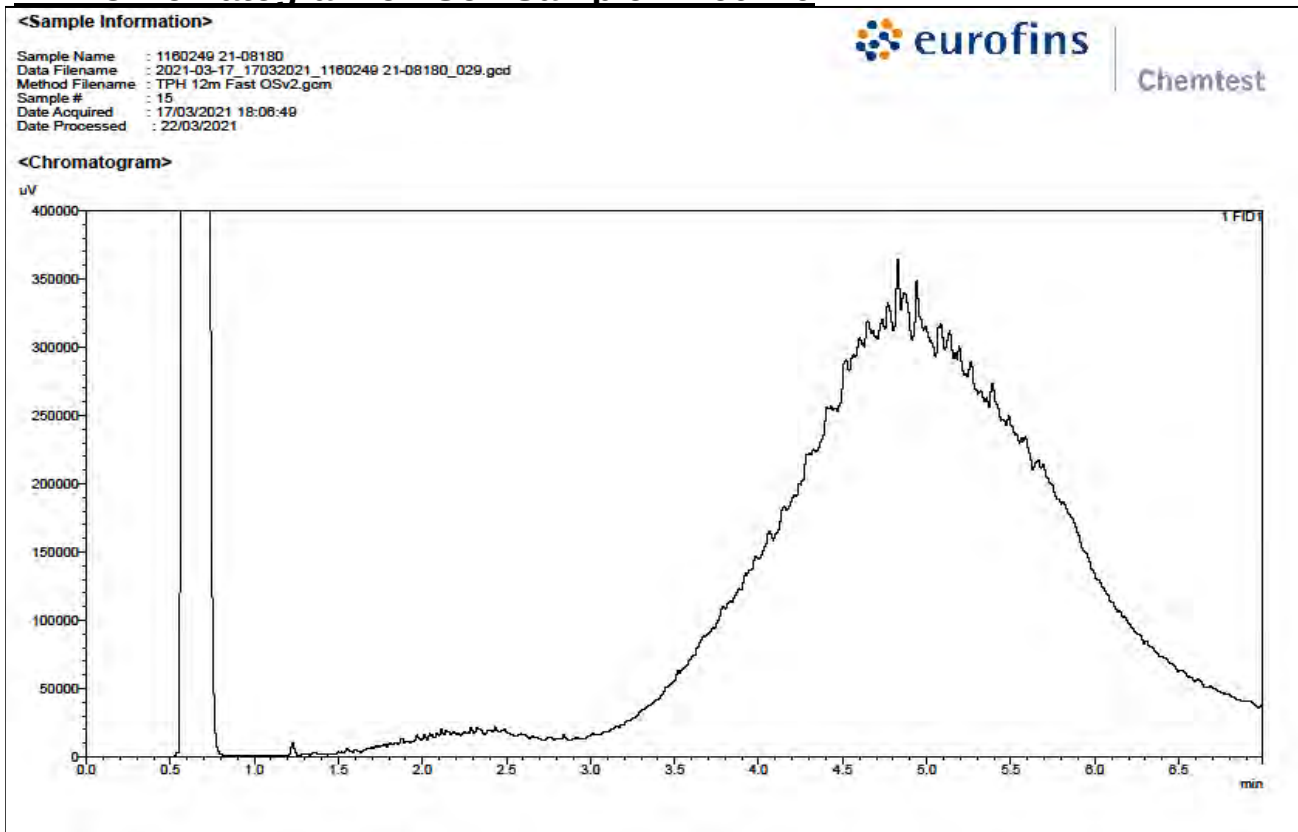


Chemtest

<Chromatogram>



TPH Chromatogram on Soil Sample: 1160249



TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
21-08180	1160245	S	WS103	WS103	ES3	1.20	No	Kerosene
21-08180	1160246	S	WS103	WS103	ES4	2.70	Yes	Kerosene and Weathered Diesel
21-08180	1160247	S	WS103	WS103	ES5	3.70	No	N/A
21-08180	1160249	S	WS104	WS104	ES2	1.10	Yes	Heavy Oil and Weathered Diesel
21-08180	1160251	S	WS104	WS104	ES4	3.40	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
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline 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*; Dibenzo[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



Final Report

Report No.: 21-13880-1
Initial Date of Issue: 05-May-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 21 1086 Reliance Garage,
Glossop

Quotation No.:	Date Received:	28-Apr-2021
Order No.:	Date Instructed:	28-Apr-2021
No. of Samples: 8		
Turnaround (Wkdays): 5	Results Due:	05-May-2021
Date Approved: 05-May-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: LKC 21 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:				21-13880	21-13880	21-13880	21-13880	21-13880	21-13880	21-13880	21-13880
Quotation No.:	Chemtest Sample ID.:				1188941	1188942	1188943	1188944	1188945	1188946	1188947	1188948
	Client Sample ID.:				WS201	WS201	WS201	WS202	WS203	WS203	WS204	WS205
	Sample Location:				WS201	WS201	WS201	WS202	WS203	WS203	WS204	WS205
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.80	2.50	3.50	1.50	1.50	3.50	2.20	1.70
	Bottom Depth (m):				2.00	2.50	3.50	1.50	1.50	3.50	2.20	1.70
	Date Sampled:				26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	16	13	17	18	33	14	16	14
Soil Colour	N	2040		N/A	Grey	Brown	Brown	Black	Black	Brown	Black	Brown
Other Material	N	2040		N/A	Stones	Stones	None	None	Stones	None	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Sand	Clay	Sand	Sand	Clay	Sand	Sand
Chromatogram (TPH)	N			N/A	See Attached			See Attached				
pH	M	2010		4.0	8.0			8.0				
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40			< 0.40				
Sulphate (2:1 Water Soluble) as SO4	M	2120	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	< 0.50			< 0.50				
Arsenic	M	2450	mg/kg	1.0	6.2			5.5				
Cadmium	M	2450	mg/kg	0.10	0.27			0.26				
Chromium	M	2450	mg/kg	1.0	25			20				
Copper	M	2450	mg/kg	0.50	26			18				
Mercury	M	2450	mg/kg	0.10	< 0.10			< 0.10				
Nickel	M	2450	mg/kg	0.50	28			22				
Lead	M	2450	mg/kg	0.50	30			22				
Selenium	M	2450	mg/kg	0.20	0.24			< 0.20				
Vanadium	U	2450	mg/kg	5.0	27			22				
Zinc	M	2450	mg/kg	0.50	98			58				
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50			< 0.50				
Organic Matter	M	2625	%	0.40	1.2	0.55	1.4	2.1	9.7	0.78	< 0.40	1.6
Diesel Present	N	2670		N/A	False	False	False	False	False	False	False	False
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	58	< 1.0	< 1.0	84	< 1.0	150	68
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	24	100	< 1.0	< 1.0	35	< 1.0	220	280
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	45	120	< 1.0	< 1.0	< 1.0	< 1.0	450	680
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	95	< 1.0	< 1.0	< 1.0	< 1.0	450	720
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	64	< 1.0	< 1.0	< 1.0	71	< 1.0	170	220
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	130	370	< 5.0	< 5.0	190	< 5.0	1400	2000
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: LKC 21 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:				21-13880	21-13880	21-13880	21-13880	21-13880	21-13880	21-13880	21-13880
Quotation No.:	Chemtest Sample ID.:				1188941	1188942	1188943	1188944	1188945	1188946	1188947	1188948
	Client Sample ID.:				WS201	WS201	WS201	WS202	WS203	WS203	WS204	WS205
	Sample Location:				WS201	WS201	WS201	WS202	WS203	WS203	WS204	WS205
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.80	2.50	3.50	1.50	1.50	3.50	2.20	1.70
	Bottom Depth (m):				2.00	2.50	3.50	1.50	1.50	3.50	2.20	1.70
	Date Sampled:				26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD								
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	25	84	< 1.0	< 1.0	230	< 1.0	320	170
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	37	220	< 1.0	< 1.0	170	< 1.0	510	670
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	180	< 1.0	< 1.0	46	< 1.0	560	950
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	440	770
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	550	620
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	62	480	< 5.0	< 5.0	440	< 5.0	2400	3200
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	200	850	< 10	< 10	630	< 10	3800	5200
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	6.9	< 1.0	38	< 1.0	74	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	41	< 1.0	23	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	32	40	200	9.8	6300	150
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	19	8400	380
o-Xylene	M	2760	µg/kg	1.0	39	< 1.0	< 1.0	< 1.0	74	< 1.0	190	13
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.5	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10			1.4				
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10			< 0.10				
Acenaphthene	M	2800	mg/kg	0.10	< 0.10			0.64				
Fluorene	M	2800	mg/kg	0.10	< 0.10			0.94				
Phenanthrene	M	2800	mg/kg	0.10	0.25			3.1				
Anthracene	M	2800	mg/kg	0.10	< 0.10			0.86				
Fluoranthene	M	2800	mg/kg	0.10	0.44			2.4				
Pyrene	M	2800	mg/kg	0.10	0.29			1.6				
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.21			0.87				
Chrysene	M	2800	mg/kg	0.10	0.27			0.77				
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.25			0.75				
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10			0.42				
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.17			0.77				
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.14			0.38				
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10			< 0.10				
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.12			0.36				
Total Of 16 PAH's	N	2800	mg/kg	2.0	2.1			15				
Total Phenols	M	2920	mg/kg	0.10	0.76			< 0.10				

TPH Chromatogram on Soil Sample: 1188941

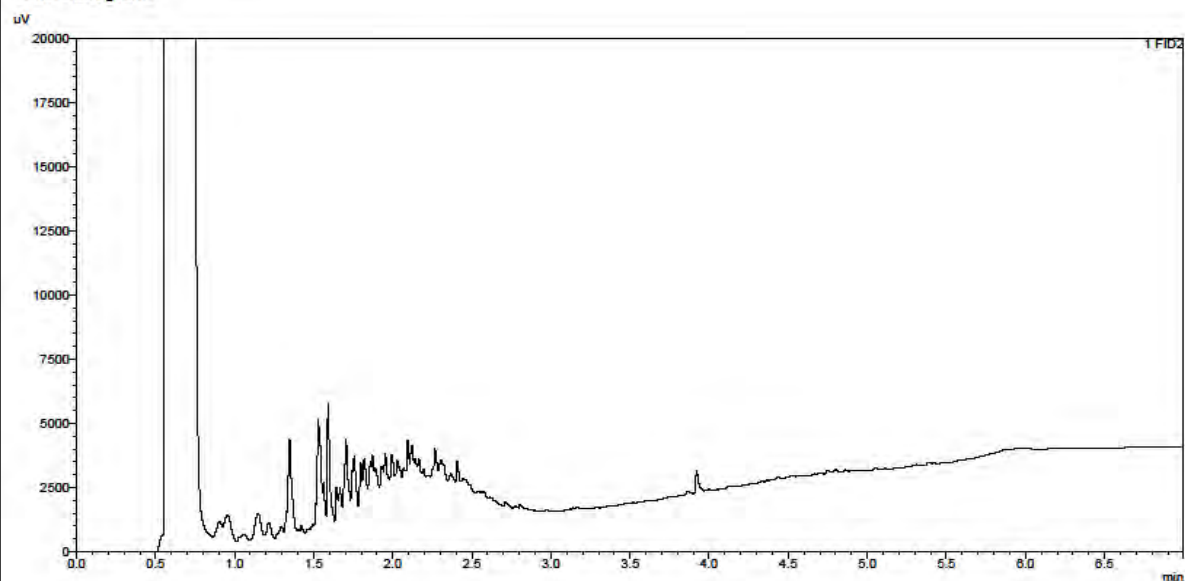
<Sample Information>

Sample Name : 1188941 21-13880
Data Filename : 29 April 2021_26042021_1188941 21-13880_072.god
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 111
Date Acquired : 30/04/2021 00:54:20
Date Processed : 30/04/2021



Chemtest

<Chromatogram>



TPH Chromatogram on Soil Sample: 1188944

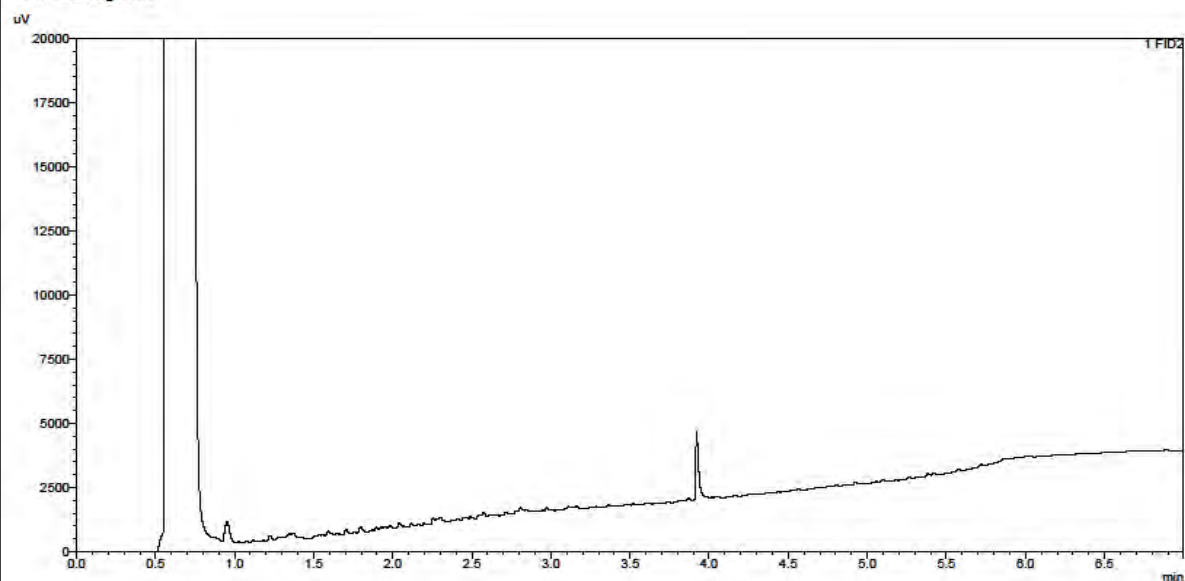
<Sample Information>

Sample Name : 1188944 21-13880
Data Filename : 29 April 2021_26042021_1188944 21-13880_078.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 114
Date Acquired : 30/04/2021 01:32:23
Date Processed : 30/04/2021



Chemtest

<Chromatogram>



TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
21-13880	1188941	S	WS201		WS201	1.80	No	Kerosene
21-13880	1188942	S	WS201		WS201	2.50	No	Kerosene
21-13880	1188943	S	WS201		WS201	3.50	No	N/A
21-13880	1188944	S	WS202		WS202	1.50	No	N/A
21-13880	1188945	S	WS203		WS203	1.50	No	Kerosene
21-13880	1188946	S	WS203		WS203	3.50	No	N/A
21-13880	1188947	S	WS204		WS204	2.20	No	Kerosene
21-13880	1188948	S	WS205		WS205	1.70	No	Kerosene

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
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline 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*; Dibenzo[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

Final Report

Report No.: 22-33459-1

Initial Date of Issue: 09-Sep-2022

Client LK Consult

Client Address: Unit 29 Eton Business Park
Eton Hill Road
Radcliffe
Manchester
Lancashire
M26 2ZS

Contact(s): Ben Smith
Contaminated Land
Fraser Peers

Project LKC 21 1086 Relance Garage, Glossop

Quotation No.: **Date Received:** 02-Sep-2022

Order No.: 740537 **Date Instructed:** 05-Sep-2022

No. of Samples: 6

Turnaround (Wkdays): 5 **Results Due:** 09-Sep-2022

Date Approved: 09-Sep-2022

Approved By:



Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: LKC 21 1086 Relance Garage, Glossop

Client: LK Consult	Chemtest Job No.:					22-33459	22-33459	22-33459	22-33459	22-33459	22-33459
Quotation No.:	Chemtest Sample ID.:					1498690	1498693	1498697	1498698	1498700	1498702
Order No.: 740537	Client Sample Ref.:					ES	ES	ES	ES	ES	ES
	Client Sample ID.:					WS301	WS302	WS303	WS303	WS304	WS305
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					1.4	0.2	1.3	1.8	1.0	0.6
	Bottom Depth (m):					2.0	1.0	1.8	2.8	2.0	1.0
	Date Sampled:					31-Aug-2022	31-Aug-2022	31-Aug-2022	31-Aug-2022	31-Aug-2022	31-Aug-2022
	Asbestos Lab:					COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD							
ACM Type	U	2192		N/A	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	19	9.0	8.9	10	23	15	
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	
Soil Texture	N	2040		N/A	Loam	Sand	Sand	Sand	Loam	Clay	
Organic Matter	U	2625	%	0.40	7.0	3.3	4.3	0.95	1.1	8.5	
Diesel Present	N	2670		N/A	False	False	True	False	False	False	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	27	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	240	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	1500	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	1700	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	120	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	3600	< 5.0	< 5.0	< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	52	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	350	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	87	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	490	< 5.0	< 5.0	< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	4100	< 10	< 10	< 10	
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	

TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
22-33459	1498690	S		ES	WS301	1.4	No	N/A
22-33459	1498693	S		ES	WS302	0.2	No	N/A
22-33459	1498697	S		ES	WS303	1.3	Yes	Diesel
22-33459	1498698	S		ES	WS303	1.8	No	N/A
22-33459	1498700	S		ES	WS304	1.0	No	N/A
22-33459	1498702	S		ES	WS305	0.6	No	N/A

Test Methods

SOP	Title	Parameters included	Method summary
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
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
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.

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 30 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

Certificate of Analysis – Water



2183

Final Report

Report No.: 21-09553-1
Initial Date of Issue: 01-Apr-2021
Client LK Consult
Client Address: Unit 29 Eton Business Park
Eton Hill Road
Radcliffe
Manchester
Lancashire
M26 2ZS
Contact(s): Contaminated Land
Chris Hughes
Project LKC 21 1086 Reliance Garage,
Glossop

Quotation No.:		Date Received:	25-Mar-2021
Order No.:	738498	Date Instructed:	26-Mar-2021
No. of Samples:	8		
Turnaround (Wkdays):	5	Results Due:	01-Apr-2021
Date Approved:	01-Apr-2021		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Water

Project: LKC 21 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:				21-09553	21-09553	21-09553	21-09553	21-09553	21-09553	21-09553	21-09553
Quotation No.:	Chemtest Sample ID.:				1166743	1166744	1166745	1166746	1166747	1166748	1166749	1166750
	Client Sample ID.:				WS101	WS102	WS103	WS104	WS105	Upstream	Midstream	Downstream
	Sample Type:				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	Date Sampled:				22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021
Determinand	Accred.	SOP	Units	LOD								
Diesel Present	N	1670		N/A	False	False	True	True	False	False	False	False
pH	U	1010		N/A	8.1	8.3	8.1	7.9	8.0	8.2	8.1	8.2
Sulphate	U	1220	mg/l	1.0	22	22	10	22	75	16	16	17
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 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	< 0.050	< 0.050
Calcium	U	1455	mg/l	2.00	95	53	100	140	130	10	10	9.8
Total Hardness as CaCO3	U	1270	mg/l	15	260	150	290	390	370	42	43	42
Arsenic (Dissolved)	U	1455	µg/l	0.20	0.21	< 0.20	4.5	6.4	0.45	< 0.20	< 0.20	< 0.20
Boron (Dissolved)	U	1455	µg/l	10.0	62	46	290	120	60	22	20	18
Cadmium (Dissolved)	U	1455	µg/l	0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Chromium (Dissolved)	U	1455	µg/l	0.50	< 0.50	0.64	< 0.50	< 0.50	< 0.50	3.8	1.9	< 0.50
Copper (Dissolved)	U	1455	µg/l	0.50	1.0	2.6	< 0.50	< 0.50	2.7	2.1	1.9	1.9
Manganese (Dissolved)	U	1455	µg/l	0.50	830	190	1300	780	190	9.5	8.6	8.9
Nickel (Dissolved)	U	1455	µg/l	0.50	2.2	3.2	0.73	3.4	3.2	1.1	1.0	1.0
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	6.2	< 0.50	0.66	0.70	0.73
Selenium (Dissolved)	U	1455	µg/l	0.50	0.60	0.75	< 0.50	< 0.50	4.8	< 0.50	< 0.50	< 0.50
Vanadium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	3.0	< 3.0	8.7	3.9	43	6.4	5.9	5.5	6.5
Mercury Low Level	U	1460	µg/l	0.010	< 0.010	< 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	[B] < 20	[B] < 20
Dissolved Organic Carbon	U	1610	mg/l	2.0	6.2	6.5	10	10	< 2.0	4.7	4.5	4.5
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 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	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	190	< 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	< 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	< 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	< 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	< 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	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0	190	< 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	< 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	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	100	7700	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	48	3700	< 0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10	660	< 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	< 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	< 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	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	150	12000	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	150	12000	< 10	< 10	< 10	< 10
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	20	13	< 1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: LKC 21 1086 Reliance Garage, Glossop

Client: LK Consult	Chemtest Job No.:				21-09553	21-09553	21-09553	21-09553	21-09553	21-09553	21-09553	21-09553
Quotation No.:	Chemtest Sample ID.:				1166743	1166744	1166745	1166746	1166747	1166748	1166749	1166750
	Client Sample ID.:				WS101	WS102	WS103	WS104	WS105	Upstream	Midstream	Downstream
	Sample Type:				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	Date Sampled:				22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021	22-Mar-2021
Determinand	Accred.	SOP	Units	LOD								
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	2.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	99	170	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	220	690	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	2.4	12	< 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	< 1.0	< 1.0
Naphthalene	N	1800	µg/l	0.010	< 0.010	< 0.010	69	64	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	0.12	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	0.71	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	0.50	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	0.73	< 0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010	0.17	< 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	< 0.010	< 0.010
Pyrene	N	1800	µg/l	0.010	< 0.010	< 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	< 0.010	< 0.010
Chrysene	N	1800	µg/l	0.010	< 0.010	< 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	< 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	< 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	< 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	< 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	< 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	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	µg/l	0.20	< 0.20	< 0.20	69	66	< 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	< 0.030	< 0.030	< 0.030

TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
21-09553	1166743	W			WS101		No	N/A
21-09553	1166744	W			WS102		No	N/A
21-09553	1166745	W			WS103		Yes	Gasoline
21-09553	1166746	W			WS104		Yes	Gasoline
21-09553	1166747	W			WS105		No	N/A
21-09553	1166748	W			Upstream		No	N/A
21-09553	1166749	W			Midstream		No	N/A
21-09553	1166750	W			Downstream		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:
1166743		WS101		22-Mar-2021	B	Coloured Winchester 1000ml
1166743		WS101		22-Mar-2021	B	EPA Vial 40ml
1166743		WS101		22-Mar-2021	B	Plastic Bottle 1000ml
1166744		WS102		22-Mar-2021	B	Coloured Winchester 1000ml
1166744		WS102		22-Mar-2021	B	EPA Vial 40ml
1166744		WS102		22-Mar-2021	B	Plastic Bottle 1000ml
1166745		WS103		22-Mar-2021	B	Coloured Winchester 1000ml
1166745		WS103		22-Mar-2021	B	EPA Vial 40ml
1166745		WS103		22-Mar-2021	B	Plastic Bottle 1000ml
1166746		WS104		22-Mar-2021	B	Coloured Winchester 1000ml
1166746		WS104		22-Mar-2021	B	EPA Vial 40ml
1166746		WS104		22-Mar-2021	B	Plastic Bottle 1000ml
1166747		WS105		22-Mar-2021	B	Coloured Winchester 1000ml
1166747		WS105		22-Mar-2021	B	EPA Vial 40ml
1166747		WS105		22-Mar-2021	B	Plastic Bottle 1000ml
1166748		Upstream		22-Mar-2021	B	Coloured Winchester 1000ml
1166748		Upstream		22-Mar-2021	B	EPA Vial 40ml
1166748		Upstream		22-Mar-2021	B	Plastic Bottle 1000ml
1166749		Midstream		22-Mar-2021	B	Coloured Winchester 1000ml
1166749		Midstream		22-Mar-2021	B	EPA Vial 40ml
1166749		Midstream		22-Mar-2021	B	Plastic Bottle 1000ml

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:
1166750		Downstream		22-Mar-2021	B	Coloured Winchester 1000ml
1166750		Downstream		22-Mar-2021	B	EPA Vial 40ml
1166750		Downstream		22-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-diphenylcarbazine.
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; Dibenzo[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.

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 E

Generic Assessment Criteria Values

Summary of Category 4 Screening Levels: 2015

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

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.

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}
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.

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}
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}
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.

		LQM Generic Assessment Criteria (mg/kg) Dry weight soil						
Contaminant		SOM	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-Trinitrotoluene (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
	Endosulfans (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.

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}
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 F

HazWaste Online Classification Report

Waste Classification Report



GP2L3-NFF3U-9VYSF

Job name

LKC 21 1086

Description/Comments

Project

LKC 21 1086

Site

Reliance Garage, Glossop

Related Documents

#	Name	Description
1	HWOL_21-08180-20210322 182516.hwol	.hwol file used to create the Job

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name: Peter Dunn	Company: LK Group	HazWasteOnline™ Training Record:	
Date: 23 Mar 2021 11:07 GMT	Unit 29, Eton Business Park	Course	Date
Telephone: 0161 763 7200	Eton Hill Rd, Radcliffe	Hazardous Waste Classification	17 Sep 2019
	Manchester	Advanced Hazardous Waste Classification	18 Sep 2019
	M26 2ZS		

Report

Created by: Peter Dunn
Created date: 23 Mar 2021 11:07 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS101/ES1	0.40-1.00	Non Hazardous		3
2	WS102/ES1	0.20-0.50	Non Hazardous		5
3	WS102/ES3	2.00-2.50	Non Hazardous		7
4	WS103/ES1	0.00-0.80	Non Hazardous		8
5	WS103/ES3	1.20-2.00	Hazardous	HP 3(i), HP 7, HP 11	10
6	WS103/ES4	2.70-3.00	Non Hazardous		13
7	WS103/ES5	3.70-4.00	Non Hazardous		15
8	WS104/ES2	1.10-2.00	Hazardous	HP 3(i), HP 7, HP 10, HP 11, HP 14	17
9	WS104/ES4	3.40-4.00	Non Hazardous		20
10	WS105/ES1	0.00-0.30	Non Hazardous		22

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	24
Appendix B: Rationale for selection of metal species	25
Appendix C: Version	26

Classification of sample: WS101/ES1

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

Sample details

Sample Name:	LoW Code:	
WS101/ES1	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.40-1.00 m		
Moisture content:		
6.6%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 6.6% 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 }				7.3 mg/kg	1.32	9.002 mg/kg	0.0009 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.25 mg/kg	1.142	0.267 mg/kg	0.0000267 %	✓		
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				16 mg/kg	1.462	21.841 mg/kg	0.00218 %	✓		
		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 }				46 mg/kg	1.126	48.373 mg/kg	0.00484 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	82 mg/kg		76.588 mg/kg	0.00766 %	✓		
	082-001-00-6										
7	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
8	nickel { nickel chromate }				15 mg/kg	2.976	41.697 mg/kg	0.00417 %	✓		
	028-035-00-7	238-766-5	14721-18-7								
9	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								
10	zinc { zinc oxide }				60 mg/kg	1.245	69.754 mg/kg	0.00698 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
11	pH		PH		8.6 pH		8.6 pH	8.6 pH			
12	naphthalene				0.48 mg/kg		0.448 mg/kg	0.0000448 %	✓		
	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				0.22 mg/kg		0.205 mg/kg	0.0000205 %	✓		
		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	201-695-5	86-73-7		0.16 mg/kg		0.149 mg/kg	0.0000149 %	✓	
16	phenanthrene	201-581-5	85-01-8		1.3 mg/kg		1.214 mg/kg	0.000121 %	✓	
17	anthracene	204-371-1	120-12-7		0.29 mg/kg		0.271 mg/kg	0.0000271 %	✓	
18	fluoranthene	205-912-4	206-44-0		1.8 mg/kg		1.681 mg/kg	0.000168 %	✓	
19	pyrene	204-927-3	129-00-0		1.6 mg/kg		1.494 mg/kg	0.000149 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		0.75 mg/kg		0.701 mg/kg	0.0000701 %	✓	
21	chrysene	601-048-00-0	205-923-4		0.71 mg/kg		0.663 mg/kg	0.0000663 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.91 mg/kg		0.85 mg/kg	0.000085 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.39 mg/kg		0.364 mg/kg	0.0000364 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.77 mg/kg		0.719 mg/kg	0.0000719 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.6 mg/kg		0.56 mg/kg	0.000056 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.18 mg/kg		0.168 mg/kg	0.0000168 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		0.56 mg/kg		0.523 mg/kg	0.0000523 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8		21 mg/kg	1.785	35.015 mg/kg	0.0035 %	✓	
Total:								0.0314 %		

Key

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

Classification of sample: WS102/ES1

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

Sample details

Sample Name:	LoW Code:	
WS102/ES1	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.20-0.50 m		
Moisture content:		
4.4%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 4.4% 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 }				7.3 mg/kg	1.32	9.214 mg/kg	0.000921 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.35 mg/kg	1.142	0.382 mg/kg	0.0000382 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				16 mg/kg	1.462	22.356 mg/kg	0.00224 %	✓	
		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 }				18 mg/kg	1.126	19.374 mg/kg	0.00194 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	27 mg/kg		25.812 mg/kg	0.00258 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel chromate }				24 mg/kg	2.976	68.287 mg/kg	0.00683 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
9	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							
10	zinc { zinc oxide }				41 mg/kg	1.245	48.788 mg/kg	0.00488 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	pH				8.8 pH		8.8 pH	8.8 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	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		0.16	mg/kg		0.153	mg/kg	0.0000153 %	✓	
17	anthracene	204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
18	fluoranthene	205-912-4	206-44-0		0.3	mg/kg		0.287	mg/kg	0.0000287 %	✓	
19	pyrene	204-927-3	129-00-0		0.3	mg/kg		0.287	mg/kg	0.0000287 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
21	chrysene	601-048-00-0	205-923-4		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27	benzo[ghi]perylene	205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8		40	mg/kg	1.785	68.265	mg/kg	0.00683 %	✓	
Total:										0.0266 %		

Key

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

Classification of sample: WS102/ES3

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

Sample details

Sample Name:	LoW Code:	
WS102/ES3	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
2.00-2.50 m		
Moisture content:		
12%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 12% 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				9 pH		9 pH	9pH		
			PH							
Total:								0%		

Key

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

Classification of sample: WS103/ES1

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

Sample details

Sample Name:	LoW Code:
WS103/ES1	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.00-0.80 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
10%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 10% Wet Weight Moisture Correction applied (MC)

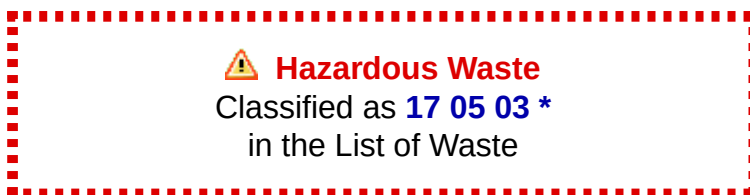
#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				19	mg/kg	1.32	22.578	mg/kg	0.00226 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				1	mg/kg	1.142	1.028	mg/kg	0.000103 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				41	mg/kg	1.462	53.931	mg/kg	0.00539 %	✓	
		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 }				62	mg/kg	1.126	62.825	mg/kg	0.00628 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	91	mg/kg		81.9	mg/kg	0.00819 %	✓	
	082-001-00-6											
7	mercury { mercury dichloride }				0.18	mg/kg	1.353	0.219	mg/kg	0.0000219 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				61	mg/kg	2.976	163.397	mg/kg	0.0163 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	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									
10	zinc { zinc oxide }				130	mg/kg	1.245	145.632	mg/kg	0.0146 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	pH				10.3	pH		10.3	pH	10.3 pH		
12	naphthalene				3.8	mg/kg		3.42	mg/kg	0.000342 %	✓	
	601-052-00-2	202-049-5	91-20-3									
13	acenaphthylene				0.78	mg/kg		0.702	mg/kg	0.0000702 %	✓	
		205-917-1	208-96-8									
14	acenaphthene				5.4	mg/kg		4.86	mg/kg	0.000486 %	✓	
		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	201-695-5	86-73-7		4.7 mg/kg		4.23 mg/kg	0.000423 %	✓	
16	phenanthrene	201-581-5	85-01-8		51 mg/kg		45.9 mg/kg	0.00459 %	✓	
17	anthracene	204-371-1	120-12-7		17 mg/kg		15.3 mg/kg	0.00153 %	✓	
18	fluoranthene	205-912-4	206-44-0		100 mg/kg		90 mg/kg	0.009 %	✓	
19	pyrene	204-927-3	129-00-0		97 mg/kg		87.3 mg/kg	0.00873 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		53 mg/kg		47.7 mg/kg	0.00477 %	✓	
21	chrysene	601-048-00-0	205-923-4		44 mg/kg		39.6 mg/kg	0.00396 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		54 mg/kg		48.6 mg/kg	0.00486 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		22 mg/kg		19.8 mg/kg	0.00198 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		46 mg/kg		41.4 mg/kg	0.00414 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		30 mg/kg		27 mg/kg	0.0027 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		5.6 mg/kg		5.04 mg/kg	0.000504 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		25 mg/kg		22.5 mg/kg	0.00225 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8		48 mg/kg	1.785	77.12 mg/kg	0.00771 %	✓	
29	asbestos	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		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
Total:								0.112 %		

Key

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

Classification of sample: WS103/ES3



Sample details

Sample Name:	LoW Code:	
WS103/ES3	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
1.20-2.00 m		
Moisture content:		
31%		
(wet weight correction)		

Hazard properties

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

Force this Hazardous property to 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. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene: (conc.: 1.38e-06%)
ethylbenzene: (conc.: 0.00055%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.131%)
xylene: (conc.: 0.00214%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.131%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.131%)

Determinands

Moisture content: 31% 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 }				29	mg/kg	1.32	26.42	mg/kg	0.00264 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
2		boron { diboron trioxide ; boric oxide }				1.6	mg/kg	3.22	3.555	mg/kg	0.000355 %	✓	
		005-008-00-8	215-125-8	1303-86-2									
3		cadmium { cadmium oxide }				0.86	mg/kg	1.142	0.678	mg/kg	0.0000678 %	✓	
		048-002-00-0	215-146-2	1306-19-0									
4		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				34	mg/kg	1.462	34.288	mg/kg	0.00343 %	✓	
			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 }				98	mg/kg	1.126	76.133	mg/kg	0.00761 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
7		lead {  lead compounds with the exception of those specified elsewhere in this Annex }			1	240	mg/kg		165.6	mg/kg	0.0166 %	✓	
		082-001-00-6											
8		mercury { mercury dichloride }				0.8	mg/kg	1.353	0.747	mg/kg	0.0000747 %	✓	
		080-010-00-X	231-299-8	7487-94-7									
9		nickel { nickel chromate }				39	mg/kg	2.976	80.091	mg/kg	0.00801 %	✓	
		028-035-00-7	238-766-5	14721-18-7									
10		selenium { nickel selenate }				1.2	mg/kg	2.554	2.115	mg/kg	0.000211 %	✓	
		028-031-00-5	239-125-2	15060-62-5									
11		zinc { zinc oxide }				530	mg/kg	1.245	455.192	mg/kg	0.0455 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
12		TPH (C6 to C40) petroleum group				1900	mg/kg		1311	mg/kg	0.131 %	✓	
				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				0.02	mg/kg		0.0138	mg/kg	0.00000138 %	✓	
		601-020-00-8	200-753-7	71-43-2									
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				8.1	mg/kg		5.589	mg/kg	0.000559 %	✓	
		601-023-00-4	202-849-4	100-41-4									
17		xylene				31.011	mg/kg		21.398	mg/kg	0.00214 %	✓	
		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				6.6	pH		6.6	pH	6.6 pH		
				PH									
20		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
21		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
22		acenaphthene				0.13	mg/kg		0.0897	mg/kg	0.00000897 %	✓	
			201-469-6	83-32-9									
23		fluorene				0.32	mg/kg		0.221	mg/kg	0.0000221 %	✓	
			201-695-5	86-73-7									
24		phenanthrene				0.98	mg/kg		0.676	mg/kg	0.0000676 %	✓	
			201-581-5	85-01-8									
25		anthracene				0.34	mg/kg		0.235	mg/kg	0.0000235 %	✓	
			204-371-1	120-12-7									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
26		fluoranthene				1.3	mg/kg		0.897	mg/kg	0.0000897 %	✓	
			205-912-4	206-44-0									
27		pyrene				1.1	mg/kg		0.759	mg/kg	0.0000759 %	✓	
			204-927-3	129-00-0									
28		benzo[a]anthracene				0.66	mg/kg		0.455	mg/kg	0.0000455 %	✓	
		601-033-00-9	200-280-6	56-55-3									
29		chrysene				0.69	mg/kg		0.476	mg/kg	0.0000476 %	✓	
		601-048-00-0	205-923-4	218-01-9									
30		benzo[b]fluoranthene				0.92	mg/kg		0.635	mg/kg	0.0000635 %	✓	
		601-034-00-4	205-911-9	205-99-2									
31		benzo[k]fluoranthene				0.34	mg/kg		0.235	mg/kg	0.0000235 %	✓	
		601-036-00-5	205-916-6	207-08-9									
32		benzo[a]pyrene; benzo[def]chrysene				0.7	mg/kg		0.483	mg/kg	0.0000483 %	✓	
		601-032-00-3	200-028-5	50-32-8									
33		indeno[123-cd]pyrene				0.77	mg/kg		0.531	mg/kg	0.0000531 %	✓	
			205-893-2	193-39-5									
34		dibenz[a,h]anthracene				0.15	mg/kg		0.104	mg/kg	0.0000103 %	✓	
		601-041-00-2	200-181-8	53-70-3									
35		benzo[ghi]perylene				0.62	mg/kg		0.428	mg/kg	0.0000428 %	✓	
			205-883-8	191-24-2									
36		vanadium { divanadium pentaoxide; vanadium pentoxide }				43	mg/kg	1.785	52.966	mg/kg	0.0053 %	✓	
		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:											0.224 %		

Key

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

Classification of sample: WS103/ES4

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

Sample details

Sample Name:	LoW Code:	
WS103/ES4	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
2.70-3.00 m		
Moisture content:		
13%		
(wet weight correction)		

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	TPH (C6 to C40) petroleum group				370 mg/kg		321.9 mg/kg	0.0322 %	✓	
			TPH							
2	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							
3	benzene				0.018 mg/kg		0.0157 mg/kg	0.00000157 %	✓	
	601-020-00-8	200-753-7	71-43-2							
4	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				0.23 mg/kg		0.2 mg/kg	0.00002 %	✓	
	601-023-00-4	202-849-4	100-41-4							
6	xylene				1.812 mg/kg		1.576 mg/kg	0.000158 %	✓	
	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]							
Total:								0.0324 %		

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)
<LOD	Below limit of detection
ND	Not detected

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. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene: (conc.: 1.57e-06%)

ethylbenzene: (conc.: 0.00002%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.0322%)

xylene: (conc.: 0.00015%)

Classification of sample: WS103/ES5

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

Sample details

Sample Name:	LoW Code:	
WS103/ES5	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
3.70-4.00 m		
Moisture content:		
19%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 19% 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	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
2	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							
3	benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
4	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				0.0044 mg/kg		0.0035 mg/kg	0.000000356 %	✓	
	601-023-00-4	202-849-4	100-41-4							
6	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]							
Total:								0.001 %		

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)
<LOD	Below limit of detection
ND	Not detected

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).

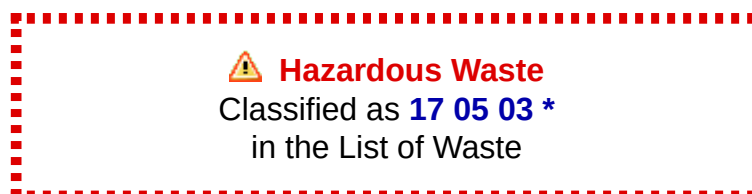
Hazard Statements hit:

Flam. Liq. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

ethylbenzene: (conc.: 3.56e-07%)

Classification of sample: WS104/ES2



Sample details

Sample Name:	LoW Code:	
WS104/ES2	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
1.10-2.00 m		
Moisture content:		
35%		
(wet weight correction)		

Hazard properties

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

Force this Hazardous property to 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. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

ethylbenzene: (conc.: 1.43e-07%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 5.72%)

xylene: (conc.: 1.3e-07%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 5.72%)

HP 10: Toxic for reproduction "waste which has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring"

Hazard Statements hit:

Repr. 2; H361d "Suspected of damaging the unborn child."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 5.72%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 5.72%)

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 1; H410 "Very toxic to aquatic life with long lasting effects."

Because of determinand:

dicopper oxide; copper (I) oxide: (compound conc.: 0.322%)

Aquatic Chronic 2; H411 "Toxic to aquatic life with long lasting effects."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 5.72%)

Determinands

Moisture content: 35% 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 }	033-003-00-0	215-481-4	1327-53-3	30	mg/kg	1.32	25.746	mg/kg	0.00257 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	1.8	mg/kg	3.22	3.767	mg/kg	0.000377 %	✓	
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	1.5	mg/kg	1.142	1.114	mg/kg	0.000111 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		32	mg/kg	1.462	30.4	mg/kg	0.00304 %	✓	
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	4400	mg/kg	1.126	3220.041	mg/kg	0.322 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			510	mg/kg		331.5	mg/kg	0.0331 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	0.47	mg/kg	1.353	0.413	mg/kg	0.0000413 %	✓	
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	49	mg/kg	2.976	94.794	mg/kg	0.00948 %	✓	
10	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5	2.1	mg/kg	2.554	3.486	mg/kg	0.000349 %	✓	
11	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	310	mg/kg	1.245	250.81	mg/kg	0.0251 %	✓	
12	TPH (C6 to C40) petroleum group			TPH	88000	mg/kg		57200	mg/kg	5.72 %	✓	
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
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	0.0022	mg/kg		0.0014	mg/kg	0.000000143 %	✓	
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		0.0013	mg/kg	0.00000013 %	✓	
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides,				0.9	mg/kg	1.884	1.102	mg/kg	0.00011 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
	ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }									
	006-007-00-5									
19	pH				6.7 pH		6.7 pH	6.7 pH		
			PH							
20	naphthalene				1.1 mg/kg		0.715 mg/kg	0.0000715 %	✓	
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.14 mg/kg		0.091 mg/kg	0.0000091 %	✓	
		205-917-1	208-96-8							
22	acenaphthene				0.57 mg/kg		0.371 mg/kg	0.0000371 %	✓	
		201-469-6	83-32-9							
23	fluorene				0.65 mg/kg		0.423 mg/kg	0.0000422 %	✓	
		201-695-5	86-73-7							
24	phenanthrene				3 mg/kg		1.95 mg/kg	0.000195 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.66 mg/kg		0.429 mg/kg	0.0000429 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				4.7 mg/kg		3.055 mg/kg	0.000306 %	✓	
		205-912-4	206-44-0							
27	pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				2.4 mg/kg		1.56 mg/kg	0.000156 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				2.3 mg/kg		1.495 mg/kg	0.00015 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				3.4 mg/kg		2.21 mg/kg	0.000221 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				1.1 mg/kg		0.715 mg/kg	0.0000715 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				2.6 mg/kg		1.69 mg/kg	0.000169 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				2.2 mg/kg		1.43 mg/kg	0.000143 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.41 mg/kg		0.266 mg/kg	0.0000266 %	✓	
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				2.5 mg/kg		1.625 mg/kg	0.000162 %	✓	
		205-883-8	191-24-2							
36	vanadium { divanadium pentaoxide; vanadium pentoxide }				32 mg/kg	1.785	37.132 mg/kg	0.00371 %	✓	
	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:								6.122 %		

Key

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

Classification of sample: WS104/ES4

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

Sample details

Sample Name:	LoW Code:
WS104/ES4	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
3.40-4.00 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% 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	TPH (C6 to C40) petroleum group							
			TPH		<10 mg/kg	<10 mg/kg	<0.001 %	<LOD
2	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					
3	benzene				0.0022 mg/kg	0.0018 mg/kg	0.00000018 %	✓
	601-020-00-8	200-753-7	71-43-2					
4	toluene				<0.001 mg/kg	<0.001 mg/kg	<0.0000001 %	<LOD
	601-021-00-3	203-625-9	108-88-3					
5	ethylbenzene				0.0072 mg/kg	0.0059 mg/kg	0.00000059 %	✓
	601-023-00-4	202-849-4	100-41-4					
6	xylene				0.0012 mg/kg	0.0009 mg/kg	0.000000098 %	✓
	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]					
7	pH				8.9 pH	8.9 pH	8.9 pH	
			PH					
Total:						0.001 %		

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)
<LOD	Below limit of detection
ND	Not detected

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. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene: (conc.: 1.8e-07%)

ethylbenzene: (conc.: 5.9e-07%)

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

Because of determinand:

xylene: (conc.: 9.84e-08%)

Classification of sample: WS105/ES1

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

Sample details

Sample Name:	WS105/ES1	LoW Code:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	0.00-0.30 m	Chapter:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:	22%	Entry:	
(wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 22% 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 }				11	mg/kg	1.32	11.328	mg/kg	0.00113 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.74	mg/kg	1.142	0.659	mg/kg	0.0000659 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				25	mg/kg	1.462	28.5	mg/kg	0.00285 %	✓	
		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 }				86	mg/kg	1.126	75.525	mg/kg	0.00755 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	110	mg/kg		85.8	mg/kg	0.00858 %	✓	
	082-001-00-6											
7	mercury { mercury dichloride }				0.29	mg/kg	1.353	0.306	mg/kg	0.0000306 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				29	mg/kg	2.976	67.323	mg/kg	0.00673 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	selenium { nickel selenate }				0.45	mg/kg	2.554	0.896	mg/kg	0.0000896 %	✓	
	028-031-00-5	239-125-2	15060-62-5									
10	zinc { zinc oxide }				120	mg/kg	1.245	116.505	mg/kg	0.0117 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	pH				7.9	pH		7.9	pH	7.9 pH		
12	naphthalene				0.14	mg/kg		0.109	mg/kg	0.0000109 %	✓	
	601-052-00-2	202-049-5	91-20-3									
13	acenaphthylene				0.25	mg/kg		0.195	mg/kg	0.0000195 %	✓	
		205-917-1	208-96-8									
14	acenaphthene				0.67	mg/kg		0.523	mg/kg	0.0000523 %	✓	
		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				0.75 mg/kg		0.585 mg/kg	0.0000585 %	✓	
		201-695-5	86-73-7							
16	phenanthrene				9.9 mg/kg		7.722 mg/kg	0.000772 %	✓	
		201-581-5	85-01-8							
17	anthracene				2.8 mg/kg		2.184 mg/kg	0.000218 %	✓	
		204-371-1	120-12-7							
18	fluoranthene				14 mg/kg		10.92 mg/kg	0.00109 %	✓	
		205-912-4	206-44-0							
19	pyrene				11 mg/kg		8.58 mg/kg	0.000858 %	✓	
		204-927-3	129-00-0							
20	benzo[a]anthracene				5.2 mg/kg		4.056 mg/kg	0.000406 %	✓	
	601-033-00-9	200-280-6	56-55-3							
21	chrysene				4.5 mg/kg		3.51 mg/kg	0.000351 %	✓	
	601-048-00-0	205-923-4	218-01-9							
22	benzo[b]fluoranthene				5.5 mg/kg		4.29 mg/kg	0.000429 %	✓	
	601-034-00-4	205-911-9	205-99-2							
23	benzo[k]fluoranthene				2 mg/kg		1.56 mg/kg	0.000156 %	✓	
	601-036-00-5	205-916-6	207-08-9							
24	benzo[a]pyrene; benzo[def]chrysene				4.6 mg/kg		3.588 mg/kg	0.000359 %	✓	
	601-032-00-3	200-028-5	50-32-8							
25	indeno[123-cd]pyrene				3.1 mg/kg		2.418 mg/kg	0.000242 %	✓	
		205-893-2	193-39-5							
26	dibenz[a,h]anthracene				0.5 mg/kg		0.39 mg/kg	0.000039 %	✓	
	601-041-00-2	200-181-8	53-70-3							
27	benzo[ghi]perylene				2.6 mg/kg		2.028 mg/kg	0.000203 %	✓	
		205-883-8	191-24-2							
28	vanadium { divanadium pentaoxide; vanadium pentoxide }				31 mg/kg	1.785	43.166 mg/kg	0.00432 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.0484 %		

Key

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

Appendix A: Classifier defined and non CLP determinands

• pH (CAS Number: PH)

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

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

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

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

CLP index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following CLP protocols, considers many simple lead compounds to be Carcinogenic category 2
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
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 2A (Sup 7, 87) 2006; Lead REACH Consortium
www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

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

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

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 oxide}

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

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: 2021.77.4714.9046 (18 Mar 2021)

HazWasteOnline Database: 2021.77.4714.9046 (18 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)

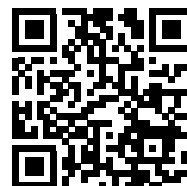
Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

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

Waste Classification Report



Z89S4-JUMLN-385QL

Job name

LKC 21 1086[2]

Description/Comments

Project

LKC 21 1086

Site

Reliance Garage, Glossop

Related Documents

#	Name	Description
1	HWOL_21-13880-20210505 190438.hwol	.hwol file used to create the Job

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name: Peter Dunn	Company: LK Group	HazWasteOnline™ Training Record:
Date: 20 May 2021 15:09 GMT		Course
Telephone: 0161 763 7200		Hazardous Waste Classification
		Advanced Hazardous Waste Classification
		Date
		17 Sep 2019
		18 Sep 2019

Report

Created by: Peter Dunn
Created date: 20 May 2021 15:09 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS201-26/04/2021-1.80	1.80-2.00	Non Hazardous		3
2	WS201-26/04/2021-2.50	2.50-2.50	Non Hazardous		6
3	WS201-26/04/2021-3.50	3.50-3.50	Non Hazardous		8
4	WS202-26/04/2021-1.50	1.50-1.50	Non Hazardous		10
5	WS203-26/04/2021-1.50	1.50-1.50	Non Hazardous		13
6	WS203-26/04/2021-3.50	3.50-3.50	Non Hazardous		15
7	WS204-26/04/2021-2.20	2.20-2.20	Hazardous	HP 7, HP 11	17
8	WS205-26/04/2021-1.70	1.70-1.70	Hazardous	HP 7, HP 11	19

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	21
Appendix B: Rationale for selection of metal species	22



Appendices	Page
Appendix C: Version	23

Classification of sample: WS201-26/04/2021-1.80

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

Sample details

Sample Name:	LoW Code:	
WS201-26/04/2021-1.80	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.80-2.00 m		
Moisture content:		
16%		
(wet weight correction)		

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	arsenic { arsenic trioxide }				6.2 mg/kg	1.32	6.876 mg/kg	0.000688 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	boron { diboron trioxide; boric oxide }				<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
	005-008-00-8	215-125-8	1303-86-2							
3	cadmium { cadmium oxide }				0.27 mg/kg	1.142	0.259 mg/kg	0.0000259 %	✓	
	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	30.693 mg/kg	0.00307 %	✓	
		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 }				26 mg/kg	1.126	24.589 mg/kg	0.00246 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	30 mg/kg	1.56	39.307 mg/kg	0.00252 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	nickel { nickel chromate }				28 mg/kg	2.976	70.002 mg/kg	0.007 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
10	selenium { nickel selenate }				0.24 mg/kg	2.554	0.515 mg/kg	0.0000515 %	✓	
	028-031-00-5	239-125-2	15060-62-5							
11	zinc { zinc chromate }				98 mg/kg	2.774	228.368 mg/kg	0.0228 %	✓	
	024-007-00-3	236-878-9	13530-65-9							
12	TPH (C6 to C40) petroleum group		TPH		200 mg/kg		168 mg/kg	0.0168 %	✓	
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 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]		0.039 mg/kg		0.0328 mg/kg	0.00000328 %	✓		
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 pH		8 pH	8pH			
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			0.25 mg/kg		0.21 mg/kg	0.000021 %	✓		
25	anthracene 204-371-1	120-12-7			<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
26	fluoranthene 205-912-4	206-44-0			0.44 mg/kg		0.37 mg/kg	0.000037 %	✓		
27	pyrene 204-927-3	129-00-0			0.29 mg/kg		0.244 mg/kg	0.0000244 %	✓		
28	benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.21 mg/kg		0.176 mg/kg	0.0000176 %	✓		
29	chrysene 601-048-00-0	205-923-4	218-01-9		0.27 mg/kg		0.227 mg/kg	0.0000227 %	✓		
30	benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.25 mg/kg		0.21 mg/kg	0.000021 %	✓		
31	benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
32	benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		0.17 mg/kg		0.143 mg/kg	0.0000143 %	✓		
33	indeno[123-cd]pyrene 205-893-2	193-39-5			0.14 mg/kg		0.118 mg/kg	0.0000118 %	✓		
34	dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
35	benzo[ghi]perylene 205-883-8	191-24-2			0.12 mg/kg		0.101 mg/kg	0.0000101 %	✓		
36	vanadium { divanadium pentaoxide; vanadium pentoxide } 023-001-00-8	215-239-8	1314-62-1		27 mg/kg	1.785	40.488 mg/kg	0.00405 %	✓		
37	monohydric phenols P1186				0.76 mg/kg		0.638 mg/kg	0.0000638 %	✓		
Total:									0.0602 %		

Key

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

TPH (C6 to C40) petroleum group: (conc.: 0.0168%)

xylene: (conc.: 3.28e-06%)

Classification of sample: WS201-26/04/2021-2.50

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

Sample details

Sample Name:	LoW Code:
WS201-26/04/2021-2.50	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
2.50-2.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
13%	
(wet weight correction)	

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	TPH (C6 to C40) petroleum group				850 mg/kg		739.5 mg/kg		0.0739 %	✓	
			TPH								
2	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								
3	benzene				<0.001 mg/kg		<0.001 mg/kg		<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2								
4	toluene				<0.001 mg/kg		<0.001 mg/kg		<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3								
5	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg		<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4								
6	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]								
Total:									0.074 %		

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)
<LOD	Below limit of detection
ND	Not detected

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.: 0.0739%)

Classification of sample: WS201-26/04/2021-3.50

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

Sample details

Sample Name:	LoW Code:
WS201-26/04/2021-3.50	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
3.50-3.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
17%	
(wet weight correction)	

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	●	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
				TPH							
2		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							
3		benzene				0.0069 mg/kg		0.0057 mg/kg	0.000000573 %	✓	
		601-020-00-8	200-753-7	71-43-2							
4		toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3							
5	●	ethylbenzene				0.032 mg/kg		0.0266 mg/kg	0.00000266 %	✓	
		601-023-00-4	202-849-4	100-41-4							
6		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]							
Total:									0.001 %		

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)
<LOD	Below limit of detection
ND	Not detected

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. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene: (conc.: 5.73e-07%)

ethylbenzene: (conc.: 2.66e-06%)

Classification of sample: WS202-26/04/2021-1.50

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

Sample details

Sample Name:	LoW Code:
WS202-26/04/2021-1.50	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.50-1.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% 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 }				5.5 mg/kg	1.32	5.955 mg/kg	0.000595 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	boron { diboron trioxide; boric oxide }				<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %			<LOD
	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }				0.26 mg/kg	1.142	0.244 mg/kg	0.0000244 %	✓		
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				20 mg/kg	1.462	23.97 mg/kg	0.0024 %	✓		
		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 }				18 mg/kg	1.126	16.618 mg/kg	0.00166 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead chromate }			1	22 mg/kg	1.56	28.139 mg/kg	0.0018 %	✓		
	082-004-00-2	231-846-0	7758-97-6								
8	mercury { mercury dichloride }				<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				22 mg/kg	2.976	53.692 mg/kg	0.00537 %	✓		
	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 }				58 mg/kg	2.774	131.938 mg/kg	0.0132 %	✓		
	024-007-00-3	236-878-9	13530-65-9								
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				<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				0.04 mg/kg		0.0328 mg/kg	0.00000328 %	✓	
	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 pH		8 pH	8pH		
			PH							
20	naphthalene				1.4 mg/kg		1.148 mg/kg	0.000115 %	✓	
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				0.64 mg/kg		0.525 mg/kg	0.0000525 %	✓	
		201-469-6	83-32-9							
23	fluorene				0.94 mg/kg		0.771 mg/kg	0.0000771 %	✓	
		201-695-5	86-73-7							
24	phenanthrene				3.1 mg/kg		2.542 mg/kg	0.000254 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.86 mg/kg		0.705 mg/kg	0.0000705 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				2.4 mg/kg		1.968 mg/kg	0.000197 %	✓	
		205-912-4	206-44-0							
27	pyrene				1.6 mg/kg		1.312 mg/kg	0.000131 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.87 mg/kg		0.713 mg/kg	0.0000713 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.77 mg/kg		0.631 mg/kg	0.0000631 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.75 mg/kg		0.615 mg/kg	0.0000615 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.42 mg/kg		0.344 mg/kg	0.0000344 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.77 mg/kg		0.631 mg/kg	0.0000631 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.38 mg/kg		0.312 mg/kg	0.0000312 %	✓	
		205-893-2	193-39-5							
34	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							
35	benzo[ghi]perylene				0.36 mg/kg		0.295 mg/kg	0.0000295 %	✓	
		205-883-8	191-24-2							
36	vanadium { divanadium pentaoxide; vanadium pentoxide }				22 mg/kg	1.785	32.205 mg/kg	0.00322 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
37	monohydric phenols				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
			P1186							
Total:								0.031 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
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. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

ethylbenzene: (conc.: 3.28e-06%)

Classification of sample: WS203-26/04/2021-1.50

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

Sample details

Sample Name:	LoW Code:	
WS203-26/04/2021-1.50	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.50-1.50 m		
Moisture content:		
33%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 33% 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	TPH (C6 to C40) petroleum group				630 mg/kg		422.1 mg/kg	0.0422 %	✓	
			TPH							
2	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							
3	benzene				0.038 mg/kg		0.0255 mg/kg	0.00000255 %	✓	
	601-020-00-8	200-753-7	71-43-2							
4	toluene				0.041 mg/kg		0.0275 mg/kg	0.00000275 %	✓	
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				0.2 mg/kg		0.134 mg/kg	0.0000134 %	✓	
	601-023-00-4	202-849-4	100-41-4							
6	xylene				0.074 mg/kg		0.0496 mg/kg	0.00000496 %	✓	
	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]							
Total:								0.0422 %		

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)
<LOD	Below limit of detection
ND	Not detected

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. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

benzene: (conc.: 2.55e-06%)

toluene: (conc.: 2.75e-06%)

ethylbenzene: (conc.: 0.00001%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.0422%)

xylene: (conc.: 4.96e-06%)

Classification of sample: WS203-26/04/2021-3.50

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

Sample details

Sample Name:	LoW Code:	
WS203-26/04/2021-3.50	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
3.50-3.50 m		
Moisture content:		
14%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 14% 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	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
			TPH							
2	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							
3	benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
4	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				0.0098 mg/kg		0.0084 mg/kg	0.000000843 %	✓	
	601-023-00-4	202-849-4	100-41-4							
6	xylene				0.019 mg/kg		0.0163 mg/kg	0.00000163 %	✓	
	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]							
Total:								0.001 %		

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)
<LOD	Below limit of detection
ND	Not detected

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. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

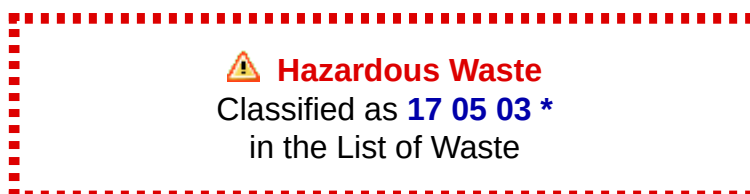
ethylbenzene: (conc.: 8.43e-07%)

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

Because of determinand:

xylene: (conc.: 1.63e-06%)

Classification of sample: WS204-26/04/2021-2.20



Sample details

Sample Name:	LoW Code:
WS204-26/04/2021-2.20	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
2.20-2.20 m	Entry:
Moisture content:	17 05 03 * (Soil and stones containing hazardous substances)
16%	
(wet weight correction)	

Hazard properties

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.319%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.319%)

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	TPH (C6 to C40) petroleum group				3800 mg/kg		3192 mg/kg	0.319 %	✓	
			TPH							
2	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				0.0025 mg/kg		0.0021 mg/kg	0.0000021 %	✓	
	603-181-00-X	216-653-1	1634-04-4							
3	benzene				0.074 mg/kg		0.0622 mg/kg	0.00000622 %	✓	
	601-020-00-8	200-753-7	71-43-2							
4	toluene				0.023 mg/kg		0.0193 mg/kg	0.00000193 %	✓	
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				6.3 mg/kg		5.292 mg/kg	0.000529 %	✓	
	601-023-00-4	202-849-4	100-41-4							
6	xylene				8.59 mg/kg		7.216 mg/kg	0.000722 %	✓	
	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]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
Total:							0.32 %			

Key

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

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 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. 2; H225 "Highly flammable liquid and vapour."

Because of determinands:

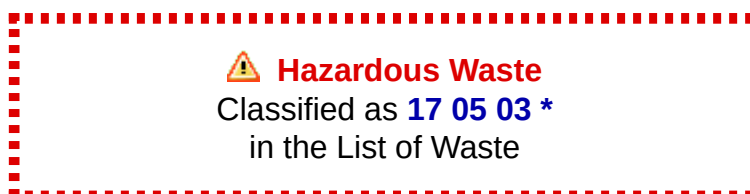
tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane: (conc.: 2.1e-07%)
benzene: (conc.: 6.22e-06%)
toluene: (conc.: 1.93e-06%)
ethylbenzene: (conc.: 0.00052%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.319%)
xylene: (conc.: 0.00072%)

Classification of sample: WS205-26/04/2021-1.70



Sample details

Sample Name:	LoW Code:
WS205-26/04/2021-1.70	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.70-1.70 m	Entry:
Moisture content:	17 05 03 * (Soil and stones containing hazardous substances)
14%	
(wet weight correction)	

Hazard properties

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.447%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.447%)

Determinands

Moisture content: 14% 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	TPH (C6 to C40) petroleum group				5200 mg/kg		4472 mg/kg	0.447 %	✓	
			TPH							
2	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							
3	benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
4	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
5	ethylbenzene				0.15 mg/kg		0.129 mg/kg	0.0000129 %	✓	
	601-023-00-4	202-849-4	100-41-4							
6	xylene				0.393 mg/kg		0.338 mg/kg	0.0000338 %	✓	
	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]							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
Total:								0.447 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
<LOD	Below limit of detection
ND	Not detected

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 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. 2; H225 "Highly flammable liquid and vapour."

Because of determinand:

ethylbenzene: (conc.: 0.00001%)

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

Because of determinands:

TPH (C6 to C40) petroleum group: (conc.: 0.447%)

xylene: (conc.: 0.00003%)

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

■ **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

■ **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

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

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xlenols (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)

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)

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) Worst 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)

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)

vanadium {divanadium pentaoxide; vanadium pentoxide}

worst case/most likely scenario

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2021.138.4779.9121 (18 May 2021)

HazWasteOnline Database: 2021.138.4779.9121 (18 May 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 G

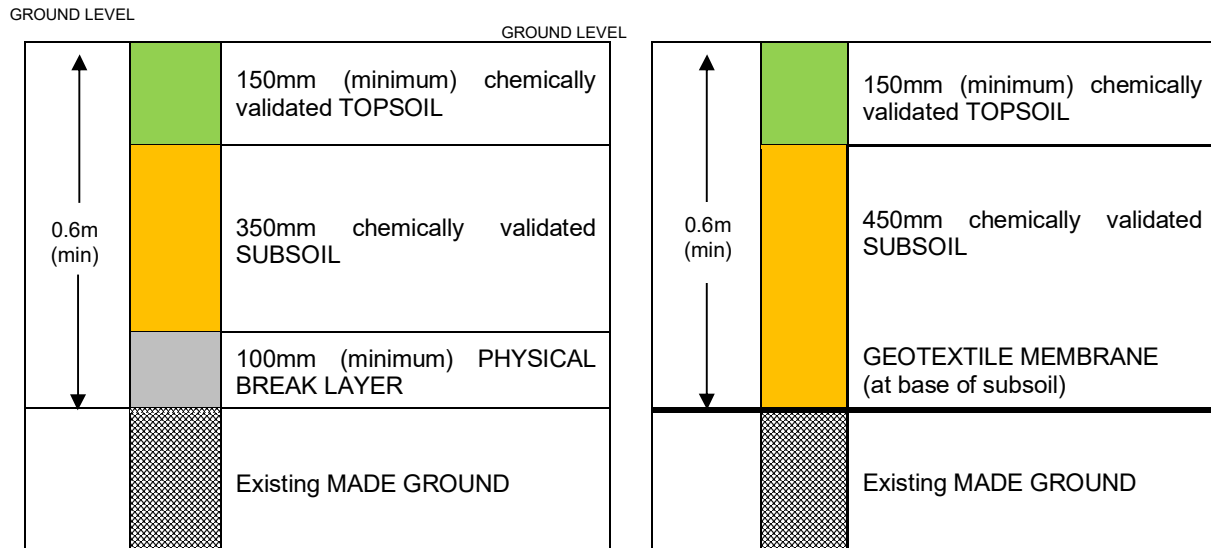
Environmental Cover System Construction

Private Gardens

Shared Landscaping

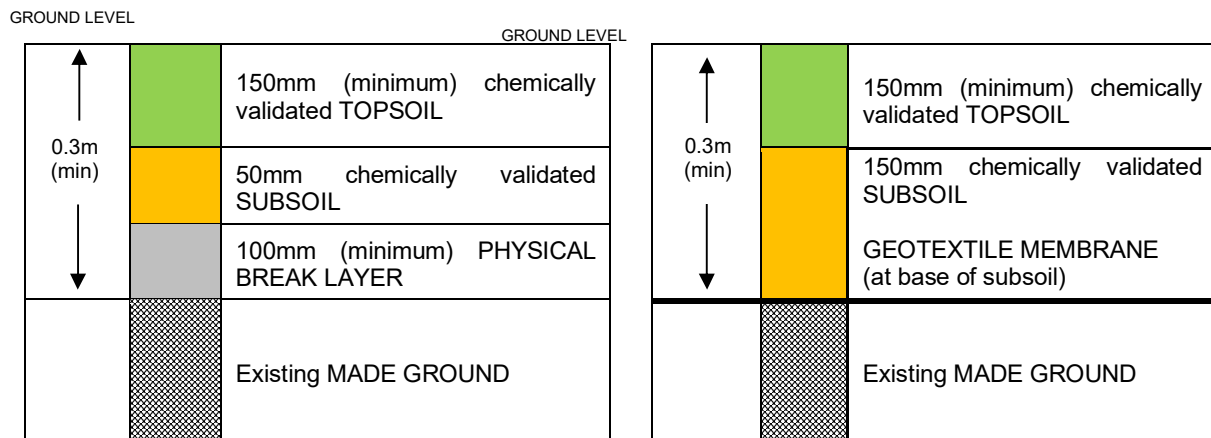
PRIVATE BACK GARDENS:

Either (physical break layer)
Or (geotextile membrane)



PRIVATE FRONT GARDENS / SHARED LANDSCAPING:

Either (physical break layer)
Or (geotextile membrane)



Hardstood Areas – No Remediation Required

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

Manchester (Head Office)

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

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

Swindon

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

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

London

Brooklands Business Park
Wellington Way
Weybridge
KT13 0TT

t: 01932 871872
e: info@thelkgroup.com

Glasgow

Wright Business Centre
1 Lonmay Road
Glasgow
G33 4EL

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

Liverpool

The Corn Exchange
Fenwick Street
Liverpool
L2 7QL

t: 0151 235 8716
e: info@thelkgroup.com



- » Geotechnical
- » Contaminated Land
- » Flood Risk and Drainage
- » Asbestos
- » Invasive Species
- » Land Remediation
- » Project Management
- » Land Drilling