

VICTORIA PARK PROBATION CENTRE, MANCHESTER

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

Job Number: LKC 21 1679

Date: September 2022

Client: Britannia Victoria Ltd



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EXECUTIVE SUMMARY

Site Details

Site Location:	South of Daisy Bank Road, east of Laindon Road, Manchester, M14 5YJ. Centred at approximate National Grid Reference 386180E 395730N.
Site Area:	6,600m ²
Current Land Use:	Derelict probation centre and associated grounds, including car park, grassed area and another small derelict building.
Proposed Development:	34no. low-rise residential houses with private rear gardens, 33no. apartments with a resident garden, kitchen garden area and 53no. parking spaces.
Purpose of Report:	Contamination and Geotechnical Assessment.

Preliminary Risk Assessment

PRA Details:	Undertaken by LKC in August 2022. Ref: CL-602-LKC 21 1679-01.
History:	Onsite: Field Boundary, Pond, Road, Stafford House, Stafford House Gardens, Grassed area with trees and footpath, Victoria Park Probation Centre, Day Nursery. Surrounding Area: Ponds, Old Clay Pits.
Geology / Hydrogeology:	Artificial: No BGS recorded artificial. Superficial: Till (Diamicton). Secondary Undifferentiated Aquifer Bedrock: Cheshire Formation (Sandstone). Principal Aquifer.
Relevant Environmental Setting:	No surface water courses within 100m. Nearest groundwater abstraction >1km. Not within Source Protection Zone.
Preliminary Conceptual Model: PL=Pollutant Linkage	PL1 Direct Contact (Human Health): Moderate Risk (metals, PAHs, asbestos), Moderate / Low Risk (Petroleum Hydrocarbons). PL2 Inhalation of Vapours: Moderate / Low Risk (volatile contaminants). PL3 Gas: Moderate Risk (hazardous gas). PL4 Controlled waters: Moderate / Low Risk (mobile contaminants). PL5 Water Pipelines: Moderate / Low Risk (organic contaminants).
Recommendations:	Site Investigation was recommended to further assess all the above pollutant linkages.

Ground Investigation Work Undertaken

Date of Investigation:	18 th - 19 th August 2022.
Intrusive Investigation Work Undertaken:	2no. cable percussive boreholes (CP101-CP102). 5no. window sample boreholes (WS101-WS105). 6no. mechanically excavated trial pits (TP101-TP106).
Monitoring Wells:	Installed in CP101, WS102, WS103 and WS105..
Soil Sampling:	17no. samples tested for metals, speciated PAHs, pH, sulphate, asbestos and SOM. 2no. samples tested for pH and sulphate.
Groundwater Sampling:	N/A.
Monitoring:	1no. groundwater level monitoring visit.
In situ and Laboratory Geotechnical Testing:	SPTs, shear vanes, pocket penetrometers, PSDs, plasticity.

Ground Conditions and Geotechnical Assessment

General Ground conditions	Allowable Bearing Pressure	Anticipated Foundation Type	Other Considerations
<p>Made Ground (including clinker) to depths of between 0.30m-2.20mbgl.</p> <p>Very stiff CLAY to completion depths of the exploratory holes (>10.13mbgl).</p> <p>Sandy CLAY to >5.45mbgl</p> <p>Groundwater encountered as a perched pocket within WS105 only at 5mbgl.</p>	188kN/m ² within the natural very stiff CLAY.	<p>Traditional shallow foundations recommended from approximately 1mbgl within natural superficial CLAY for the low-rise residential units. If Made Ground is encountered greater than 2.0m then mini pile foundations should be utilised.</p> <p>For the proposed apartment block pads or deeper piles are recommended.</p>	<p>Consideration of effects of trees also needs to be considered.</p> <p>Temporary supports of excavations may be required.</p> <p>Detailed design should be carried out by structural engineer.</p> <p>Concrete Requirements DS1-AC-1s.</p>

Contamination Risk Assessment

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

Pollutant Linkage	Risk	Recommendations
1 Contaminants posing a risk to future residents via dermal contact, ingestion and inhalation (of soil, dust, fibres and vegetables).	Moderate (asbestos, arsenic, lead, PAHs)	<p>Elevated asbestos, arsenic, lead and PAHs identified across the site.</p> <p>Recommendations: Remediation (environmental cover system) required in garden / soft landscaping areas.</p>
	Low (petroleum hydrocarbons)	<p>No visual / olfactory evidence of petroleum hydrocarbons identified.</p> <p>Recommendations: Further investigation (post demolition) required to confirm risk.</p>
2 Volatile contaminants posing a risk to future residents via the inhalation of vapours.	Low	<p>No volatile contamination identified.</p> <p>Recommendations: No remediation required.</p>
3 Gas posing a risk to buildings and future residents via the migration of gas into building causing explosion and asphyxiation.	Moderate	<p>RB17 gas risk assessment undertaken using depth of made ground and TOC.</p> <p>Recommendations: Gas protection measures to CS2 required. Further RB17 risk assessment (forensic soil logging and TOC analysis) required following post demolition site investigation.</p>
4 Mobile contamination posing a risk to controlled waters via the migration through permeable strata.	Low	<p>No elevated contaminants identified in groundwater.</p> <p>Recommendations: No remediation required.</p>
5 Organic contaminants posing a risk to water pipes.	Moderate (north of site)	<p>Organic contamination identified at potable pipe depth of 0.75-1.35mbgl.</p> <p>Recommendations: UU risk assessment to be completed. The site will likely require barrier piping.</p>

		Low (central & south of site)	<p>Although elevated naphthalene encountered in the made ground, new pipe likely to be laid in natural clay.</p> <p>Recommendation: Barrier piping unlikely to be required. However, this will need to be confirmed once UU risk assessment undertaken.</p>
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Recommendations and Remedial Strategy

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

Phase	PL	Remediation Requirements	Validation Requirements
Post-Demolition Work	1, 3	<p><u>Post-demolition Trial Pitting</u></p> <p>This is recommended to confirm ground conditions below the current buildings and allow delineation of areas of concern. This should allow a more targeted remediation strategy to be completed. This work will also provide more geotechnical information for foundation design.</p>	N/A (Investigation Report will be provided with an updated Remediation Strategy).
Pre-Construction	ALL	<p><u>Earthworks Inspections / Unexpected Contamination</u></p> <p>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.</p>	<p>Log of work undertaken including photographs.</p> <p>Details of any sampling undertaken and validation of any potential additional remedial work.</p>
Building Construction Phase	1	<p><u>Environmental Cover System</u></p> <p>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:</p> <p>Kitchen Garden: <u>Vegetables:</u> Raised planters comprising: sufficient compost / topsoil for a growing medium, 250mm granular material for drainage (MOT type 1), hard stood base (paving slabs). <u>Fruit Trees:</u> 1m x 1m tree pit with 1000mm thick environmental cover system comprising: 750mm compost / topsoil, 250mm granular material for drainage (MOT type 1), hard stood base (paving slabs).</p> <p>Private Rear Gardens: 600mm thick environmental cover system comprising: 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.</p>	<p>Measuring depth of environmental cover system using a staff and providing photographic evidence.</p> <p>Photographic evidence of the granular physical break or geotextile layer will also be collected.</p> <p>Chemical validation of imported soils: See Table 9-2.</p>

		<p>Private Front Garden / Shared Landscaping / Residents Garden: 300mm thick environmental cover system comprising: 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.</p> <p>The subsoil layer can be replaced by additional topsoil. A diagram of a typical environmental cover system is shown in Appendix I.</p> <p>Areas of TPO's Please note where there are TPO's in influencing distance of the gardens it is likely the arboriculture officer may only allow a 150mm clean cover system over a geotextile membrane.</p>	
	3	<p><u>Gas Protection Measures</u> Further RB17 gas risk assessment to be undertaken following completion of post demolition site investigation.</p>	Forensic soil logging and TOC analysis to be RB17 methodology.
	6	<p><u>Potable Water Pipes</u> It is recommended that a Water Pipeline Assessment is undertaken once the location and depth of potable water pipes are known. It is likely that barrier pipe will be required in the north of the site.</p>	Delivery Notes of Pipe Material. Photographs of the Installed Pipe.
	2, 4	No remediation anticipated with respect to PL2 (inhalation of vapours), PL4 (controlled waters), however, this needs to be confirmed once additional work has been completed.	TBC
Other Considerations	<p><u>Grubbing Out of In-Ground Structures</u> It is recommended that in-ground structures are grubbed out as part of the groundworks. In-ground structures expected across the site associated with the former buildings.</p>		
	<p><u>Re-use of site won material</u> 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.</p> <p>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 ¹): 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.</p> <p>A Materials Management Plan (MMP) with recourse to the CL:AIRE Code of Practice may be required if volumes exceed exemption limits. This must be registered before material movement starts onsite.</p> <p>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'.</p>		

¹ <https://www.gov.uk/guidance/waste-exemptions-using-waste>

	<p>For all the above material will need to be tested at the rate and analytical suites presented in Table 9-2.</p> <p><u>Asbestos Management Plan</u> Due to the presence of asbestos containing material, it is recommended that additional precautions are taken during site clearance, earthworks and construction in the area of concern. The presence of asbestos in the made ground at the site presents a potential risk of generation of airborne fibres if this material is disturbed, such as for excavations to construct new foundations.</p> <p>This risk can be managed by careful procedures and site monitoring to reduce the risk of airborne fibres, and it is recommended that an appropriate 'Asbestos Management Strategy' is developed and adopted for all intrusive ground works which disturb the made ground in the area of concern. This should be carried out in line with CIRIA C733².</p> <p>This may include asbestos awareness training for all site staff, provision of suitable personal and respiratory protective equipment and air monitoring.</p> <p>With regards to cement bound asbestos, this can be handpicked, doubled bagged and disposed of appropriately to a licenced landfill. Guidance on removing asbestos cement is described in HSE (2012)³.</p> <p>If ACM is identified in soil arisings then soil should be placed directly into covered skips and disposed of at a suitable licenced landfill, after further testing to quantify the extent of asbestos contamination of the soils. It should be considered that blue asbestos is notifiable and must be removed by a licenced contractor.</p> <p><u>Health and Safety Considerations</u> 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 guidance⁴) should be adopted by all workers involved with site enabling and construction works.</p> <p><u>Asbestos Survey</u> 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.</p>
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As asbestos has been identified within the soils on site, it is also recommended that an Asbestos Management Plan is adopted during construction work.

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

² CIRIA (2014). "Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks". C733.

³ HSE (2012). "Removing Asbestos Cement (AC) Debris)." A11 Asbestos Essential – Non-licenced Tasks.

⁴ HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land" London HMSO.

CONTENTS

EXECUTIVE SUMMARY	iv
1 Introduction	1
1.1 Background	1
1.2 Site Details	1
2 Review of Previous Work	2
2.1 Phase 1 Preliminary Risk Assessment (PRA)	2
3 Ground Investigation	5
3.1 Site Investigation Design and Methodology	5
3.2 Well Installations	5
3.3 Sampling Protocol	6
3.4 Gas Monitoring	7
3.5 Site Investigation Scope	7
3.6 Geotechnical Testing	7
4 Ground Conditions	9
4.1 Geology – Generalised Sequence	9
4.2 Groundwater Strikes	10
4.3 In-Situ Geotechnical Testing	11
4.4 Geotechnical Laboratory Testing	11
5 Geotechnical Assessment	13
5.1 Proposed Development	13
5.2 Summary of Ground Conditions	13
5.3 Site Preparation	13
5.4 Foundation Conditions and Bearing Capacity	13
5.5 Low Rise Residential Housing	15
5.6 Apartment Block	16
5.7 Ground Floor Slabs	17
5.8 Pavement Construction	18
5.9 Drainage	18
5.10 Concrete Durability	18
5.11 Excavations	18
5.12 Construction Activity and Inspection	19
6 Generic Risk Assessment	20
6.1 Introduction	20
6.2 Soil Risk Assessment	20

6.3	Gas Risk Assessment	25
6.4	Controlled Water Assessment	26
6.5	Additional Risk Assessments	27
6.6	Revised Contamination Conceptual Model	27
7	Waste Disposal Assessment	31
8	Conclusions	32
8.1	Geotechnical	32
8.2	Contamination Assessment	32
9	Recommendations and Remedial Strategy	34
9.1	Remediation and Validation Recommendations	34
9.2	Validation of Subsoil / Topsoil	37
9.3	Site Completion Report	38

FIGURES

Figure 1:	Site Location & Boundary Plan
Figure 2:	Proposed Development Plan
Figure 3:	Site Investigation Location Plan
Figure 4:	Site Zoning Plan
Figure 5:	Contamination Location Plan

APPENDICES

Appendix A:	Risk Matrix
Appendix B:	Profile Logs
Appendix C:	Certificate of Analysis - Soil
Appendix D:	Certificate of Analysis - Geotechnical
Appendix E:	Generic Assessment Criteria Values
Appendix F:	Soil Results Compared to GACs
Appendix G:	JIWG Risk Assessment Sheets
Appendix H:	HazWasteOnline Output Sheets
Appendix I:	Environmental Cover System

1 Introduction

1.1 Background

LK Consult Ltd (LKC) has been commissioned by Britannia Victoria Ltd to carry out a Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy for Victoria Park Probation Centre, Manchester. The investigation was undertaken in support of a future planning application.

The following work has previously been undertaken:

- Preliminary Risk Assessment (PRA) report, undertaken by LKC (Ref: LKC 21 1679, dated 5th August 2022).

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

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

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)⁵ 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.

A post demolition investigation is also proposed once the existing buildings have been demolished to investigate the former pond and school. A separate report including revised remediation strategy will be produced once this has been completed.

1.2 Site Details

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

Site Location	South of Daisy Bank Road, east of Laindon Road, Manchester, M14 5YJ. Centred at approximate National Grid Reference 386180E 395730N.
Approximate Area	6,600m ²
Topography	50 metres Above Ordnance Datum (AOD). Site is approximately level.
Current Site Use	Derelict probation centre and associated grounds, including car park, grassed area and another small derelict building.
Purpose of Report	Planning.
Proposed Development	34 no. Low-rise residential houses with rear gardens, 33no. apartments with a resident garden, allotment area and 53no. parking spaces.

Table 1-1. Summary of site details.

⁵ "National Planning Policy Framework." Ministry of Housing, Communities and Local Government. July 2021.

2 Review of Previous Work

2.1 Phase 1 Preliminary Risk Assessment (PRA)

A PRA report (Ref: CL-602- LKC 21 1679, dated 5th August 2022) has previously been undertaken by LKC. Table 2-1 summarises the site details, historical review, environmental settings and site reconnaissance.

Current Site Use	Derelict probation centre and associated grounds, including car park, grassed area and another small derelict building.
Proposed Development	34 no. Low-rise residential houses with rear gardens, 33no. apartments with a resident garden, allotment area and 53no. parking spaces.
Main Historical Features	Onsite: Field Boundary, Pond, Road, Stafford House, Stafford House Gardens, Grassed area with trees and footpath, Victoria Park Probation Centre, Day Nursery. Surrounding Area: Ponds, Old Clay Pits.
Geology / Hydrogeology	Artificial: No BGS recorded artificial. Superficial: Till (Diamicton). Secondary Undifferentiated Aquifer Bedrock: Cheshire Formation (Sandstone). Principal Aquifer.
Landfills / Infilled ground	Potentially infilled ground identified. No landfills within 250m.
Site walkover	Site comprises two buildings, a hardstood tarmac area in the centre, a car park and a grassed and shrubbed area with several trees in the north of the site. One of the buildings was fire damaged in poor condition. Fly-tipping present across the site. The site is relatively flat with hummocks present in the northern grassed area.

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

The preliminary contamination conceptual model (PCCM) produced in the PRA is provided in Table 2-2.

Each pollutant linkage is described along with an assessment of the risk based upon guidance on probabilities and consequences outlined in CIRIA C552⁶. The risk matrix is provided in Appendix A.

The preliminary contamination conceptual model using contaminant-pathway-receptor pollutant linkages based on guidance in LCRM⁷ is provided in Table 2-2.

Each pollutant linkage is described along with an assessment of the risk based upon guidance on probabilities and consequences outlined in CIRIA C552⁸. The risk matrix is provided in Appendix A.

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

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

⁶ CIRIA (2001). "Contaminated Land Risk Assessment: A Guide to Good Practice". C552.

⁷ Land Contamination Risk Management (LCRM) <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

⁸ CIRIA (2001). "Contaminated Land Risk Assessment: A Guide to Good Practice". C552.

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 guidance⁹) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

⁹ 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	<ul style="list-style-type: none"> - Dermal contact. - Inhalation of soil, fibres and dust. - Ingestion of soils, dust, vegetables, soil attached to vegetables. - Windblown dust. 	<ul style="list-style-type: none"> - Future site users. - Offsite receptors. 	<ul style="list-style-type: none"> - Heavy metals. - PAHs. - Asbestos 	Likely (given site history, site conditions and proposed end use)	Medium	Moderate	Intrusive investigation required. Soil analysis of CoC.
			<ul style="list-style-type: none"> - Petroleum hydrocarbons 	Low Likelihood (limited source associated with possible former boiler)	Medium	Moderate / Low (low risk due to limited pathway)	Targeted intrusive investigation required. Soil analysis of CoC, subject to ground conditions encountered.
2	<ul style="list-style-type: none"> - Inhalation of vapours. - Migration via permeable strata and preferential pathways. 	<ul style="list-style-type: none"> - Future site users. - Offsite receptors. 	<ul style="list-style-type: none"> - Volatile contaminants (naphthalene, TPHCWG). 	Low likelihood (given site history, site conditions and proposed end use)	Medium	Moderate / Low (moderate risk due to ash associated with burning, possible former boiler)	Targeted intrusive investigation required, to include PID testing.
3	<ul style="list-style-type: none"> - Inhalation of gas. - Migration via permeable strata and preferential pathways. - Explosion in confined spaces. - Exposure to radon. 	<ul style="list-style-type: none"> - Future site users. - Buildings. - Offsite land users. 	<ul style="list-style-type: none"> - Ground / hazardous gas (carbon dioxide, methane). 	Low likelihood (given possible on site gas source and limited pathway)	Severe	Moderate	Intrusive investigation to confirm ground conditions. If significant depth of putrescible / organic material identified within former onsite infilled pond, gas monitoring or precautionary protection measures required.
4	<ul style="list-style-type: none"> - Surface run-off. - Migration via permeable strata and preferential pathways. - Perched waters migration. 	<ul style="list-style-type: none"> - Groundwater (Principal Aquifer, Secondary Undifferentiated Aquifer). 	<ul style="list-style-type: none"> - Mobile contaminants such as metals, PAHs, hydrocarbons. 	Low Likelihood (only minimal mobile contamination anticipated with limited pathway)	Medium	Moderate / Low (low assumed as only minor aquifer within superficial deposits and anticipated cohesive clay will offer protection to Principal Aquifer in bedrock)	Low density intrusive investigation required. Groundwater sampling, subject to ground conditions encountered. Analysis of CoC.
5	<ul style="list-style-type: none"> - Ingestion of tainted water supply. 	<ul style="list-style-type: none"> - Future site users. - Water pipes. 	<ul style="list-style-type: none"> - Organic contaminants such as petroleum hydrocarbons, naphthalene. 	Low Likelihood (although some contamination may be present, significant contamination not expected at pipeline depth)	Medium	Moderate / Low (low risk assumed as significant depth of made ground not anticipated)	Low density intrusive investigation required. Soil analysis of CoC, subject to ground conditions encountered.

Table 2-2. Preliminary Contamination Conceptual Model.

Notes: PL = Pollutant Linkage. Contaminant of Concern (CoC) - See Table 5-1 for contamination sources. Site conditions based on observations during site reconnaissance.

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 18th to 19th August 2022 and comprised the following:

- 5no. window sample boreholes drilled to 5.45 metres below ground level (mbgl) (ref. WS101 to WS105).
- 2no. cable percussion boreholes drilled to 10.00-10.13mbgl (ref. CP101 to CP102).
- 6no. trial pits (using JCB) excavated to 2.20-3.00mbgl (ref. TP101 to TP106).

All site investigation locations are shown in Figure 3.

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

Site Investigation Locations	Rationale
CP101, CP102	Proposed apartment block.
TP104, TP104B, TP105	Former house and greenhouses. Target proposed allotment / kitchen garden.
TP103, WS103	Former pond.
TP101, TP102, WS101, WS102, WS104	General site coverage.

Table 3-1: Summary of sampling locations.

In addition, areas where buildings are still present (northwest, south) could not be accessed. Further investigation may be required in these areas following demolition.

The number of site investigation points corresponds to approximately one location per 22m square centres. This is considered to be a conservative sampling density and is in line with BS10175¹⁰ for a 'main investigation'.

All profile logs are provided in Appendix B and are in line with BS14688-1¹¹ and BS5930¹².

3.2 Well Installations

3no. of the window sample boreholes and 1no. of the cable percussive boreholes (CP101) of the boreholes were installed with monitoring wells for gas and groundwater monitoring. Monitoring wells were installed in accordance with BS10175 and CIRIA C665¹³ and generally comprised approximately 0.50-1.00m plain pipe over a length of slotted pipe surrounded by pea gravel and sealed at the top with bentonite and

¹⁰ British Standard (2017). "Investigation of Potentially Contaminated Sites – Code of Practice." BS10175:2017.

¹¹ British Standards (2002) Geotechnical investigation and testing – Identification and Classification of Soil. Part 1: Identification and description. BS EN ISO 14688-1:2002.

¹² British Standard (2015). "Code of Practice for Ground Investigations". BS5930:2015.

¹³ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

concrete. The response zone for the cable percussive borehole was installed along the entire length of the borehole, whereas the response zones in the window sample boreholes were installed to c. 3.00-4.00mbgl.

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

3.3 Sampling Protocol

3.3.1 Soil Sampling (Contamination)

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation¹⁴. Soil was collected for on-site 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 C665¹⁵ 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.

Suites and Contaminants	No. Samples	Location & Depth	Justification
Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.	17	CP101 0.0-0.4m CP102 0.0-0.3m TP101 0.1-0.6m TP102 0.0-0.6m TP103 0.1-0.3m TP104B 0.0-0.1m TP104B 0.1-1.0m TP105 0.5-1.5m TP105 2.2-3.0m TP106 0.0-0.7m WS101 0.0-0.3m WS101 0.3-1.0m WS102 0.0-0.6m WS103 0.5-1.0m WS104 0.0-0.4m WS105 0.2-0.4m WS105 0.5-1.0m	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.

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; PAH=polycyclic aromatic hydrocarbons, SOM=Soil Organic Matter.

¹⁴ EA (2000). "Technical Aspects of Site Investigation. Volumes 1 & 2 Text Supplements Research and Development Technical Report." P5-065/Tr.

¹⁵ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

3.3.2 *Water Sampling / Leaching Testing*

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

A low risk was identified in the preliminary contamination conceptual model for controlled waters (pollutant linkage 4) and further action was only recommended if significant soil contamination was identified on site. Based on the ground conditions encountered, LKC did not consider testing to be required. This is discussed further in Section 6.4.

3.4 **Gas Monitoring**

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

Although a moderate risk was identified in the preliminary contamination conceptual model for gas (pollutant linkage 3), LKC only recommend ground gas monitoring or precautionary gas protection measures if a significant depth of putrescible material was encountered. Given the ground conditions encountered, LKC have argued qualitatively that the made ground does not pose a risk to the future site users (residents). Additionally, an RB17 ground gas risk assessment, possibly with forensic soil logging, will be undertaken as part of a post demolition site investigation to determine the extent and fill composition of an historic pond. This is discussed further in Section 6.3.

3.5 **Site Investigation Scope**

The scope of the contaminated land investigation was agreed with the local authority. This investigation was generally in line with the agreed scope.

3.6 **Geotechnical Testing**

3.6.1 *In-situ Onsite Geotechnical Testing*

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

- » Standard Penetration Tests (SPTs) were performed in the window sample boreholes and cable percussion boreholes at approximately 1m intervals, generally within the natural strata.
- » Shear vane tests and pocket penetrometers (giving undrained shear strength) were performed in the window sample boreholes (to a maximum depth of 3mbgl) and trial pits at approximately 1m intervals, within the natural clay strata.

Shear vanes tests were not always possible due to the friable nature of some of the clay deposits.

The SPT and shear vane readings are provided within the profile logs (Appendix B).

3.6.2 *Laboratory Geotechnical Testing*

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

Many of the tests are UKAS accredited and further details are given in the laboratory report presented in Appendix D. Table 3-3 shows the geotechnical testing undertaken.

Suites and Contaminants	No. Samples	Location	Justification
pH and water-soluble sulphate	5	CP101 0.0-0.4m TP103 0.1-0.3m TP104B 0.1-1.0m TP105 0.5-1.5m WS104 0.0-0.4m	Additional samples of natural ground taken across the site to assess the pH and sulphate for geotechnical purposes. pH and water-soluble sulphate are also included in Suites 1, 2 and 5.
Atterberg Limits (plasticity testing)	3	TP102 1.5-2.5m TP104 0.4-1.4m TP105 0.5-1.5m	A selection of clay samples across the site were tested for Atterberg Limits to assess their shrinkability potential associated with current and proposed trees.
Single Stage Triaxial Tests	4	CP101 2.3-2.75m CP101 3.3-3.75m CP101 9.5-9.95m CP102 6.5-6.95m	Undertaken to determine compressibility of the clay in the vicinity of the proposed residential apartment block.

Table 3-3. Summary of geotechnical testing undertaken.

4 Ground Conditions

4.1 Geology – Generalised Sequence

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

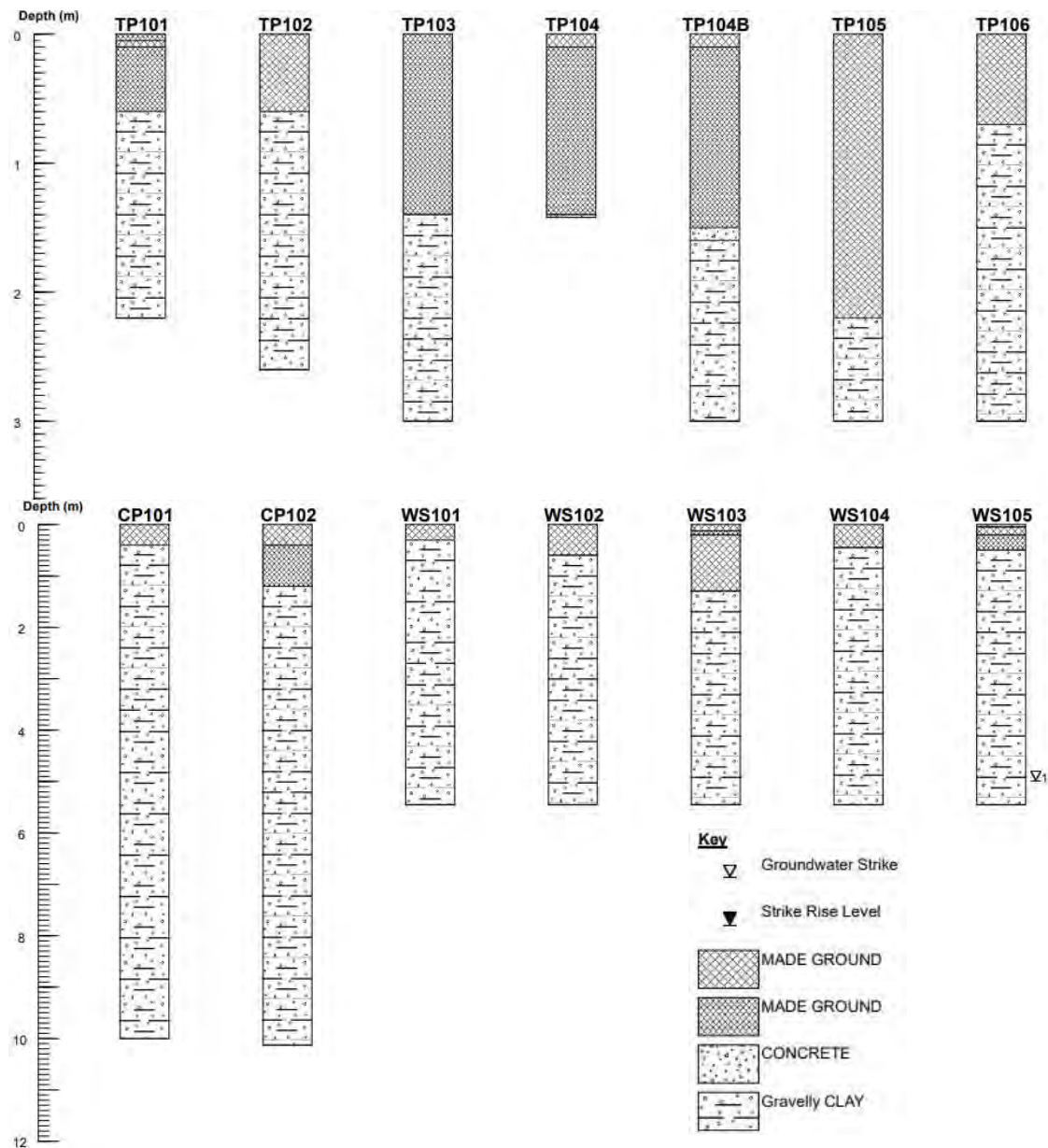


Plate 4-1. Summary of ground conditions.

Made Ground

Made ground was recorded in all boreholes from ground level to a maximum depth of 0.30-2.20mbgl. Several types of made ground were present across the site and a maximum of two types were present at each location. The made ground comprised horizons of gravel, sand, silt, clay with anthropogenic material including ash, brick, coal, clinker, ceramic, plastic, rebar, timber, metal and glass.

Exceptions to this were found at the follow locations.

- WS105: tarmacadam underlain by probable MOT.
- WS103: paving stone with sub-base.
- TP104 and TP104B had a large volume of brick fragments in the made ground.
TP105 also contained concrete fragments and copper pipe in the made ground.

A concrete basement floor was identified at the following locations:

- TP104 at 1.40-1.42mbgl.
- TP104B at 1.50-1.60mbgl.

Natural Strata

Natural strata was encountered from 0.30-2.20mbgl to a maximum depth of 2.20-10.13mbgl, comprising gravelly clay with fragments of coal. The clay was generally high strength and very firm consistency across the site. The clay at WS101 increased in strength and consistency with depth.

Contamination

With the exception of the anthropogenic material encountered in the made ground (as described above), no further contamination was identified.

4.2 Groundwater Strikes

One groundwatwer strike was recorded during the site investigation at a depth of 5.00mbgl in WS105. One groundwater monitoring visit was undertaken, the results of which are shown 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		
CP101	Dry	0.5-10.0 (C)	1	5.00		9.14	N	N
CP102	Dry	-	-	-	-	-	N	N
WS101	Dry	-	-	-	-	-	N	N
WS102	Dry	1.0-4.0 (C)	1	Dry		3.91	N	N
WS103	Dry	1.0-4.0 (MG/C)	1	1.28		3.92	N	N
WS104	Dry	-	-	-	-	-	N	N
WS105	5.00	1.0-5.0 (C)	-	0.81		4.60	N	N
TP101	Dry	-	-	-	-	-	N	N
TP102	Dry	-	-	-	-	-	N	N
TP103	Dry	-	-	-	-	-	N	N
TP104	Dry	-	-	-	-	-	N	N
TP105	Dry	-	-	-	-	-	N	N
TP106	Dry	-	-	-	-	-	N	N

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

Response Zones:

MG=Made Ground; C=Clay.

4.3 In-Situ Geotechnical Testing

4.3.1 Standard Penetration Tests

In-situ standard penetration tests (SPTs) were undertaken, predominantly in the natural ground. The results are summarised in Table 4-2 and provided within the profile logs in Appendix B.

Approximate Depth (mbgl)	SPT 'N' Values						
	WS101	WS102	WS103	WS104	WS105	CP101	CP102
1-2	17 (C)	17 (C)	7 (MG/C)	15 (C)	11 (C)	31 (C)	15 (C)
2-3	18 (C)	19 (C)	19 (C)	17 (C)	17 (C)	32 (C)	-
3-4	24 (C)	22 (C)	20 (C)	19 (C)	15 (C)	-	24 (C)
4-5	30 (C)	27 (C)	23 (C)	21 (C)	15 (C)	50 (C)	42 (C)
5-6	25 (C)	-	27 (C)	23 (C)	22 (C)	50 (C)	50 (C)
6-7	-	-	-	-	-	50 (C)	-
7-8	-	-	-	-	-	-	-
8-9	-	-	-	-	-	50 (C)	50 (C)
9-10	-	-	-	-	-	-	50 (C)
GW Level					5.00		

Table 4-2: Summary of SPT (N) values.

Notes:

MG=Made ground; C=Clay.

Groundwater level based on strikes during investigation.

4.3.2 Shear Vanes

Hand shear vane readings, recording undrained shear strength (s_u), were taken within the clay strata. The results are summarised in Table 4-3 and provided within the profile logs in Appendix B.

It should be noted that some clays could not be tested for undrained shear strength due to the friability of the clay. This is noted in the profile logs in Appendix B.

Approximate Depth (mbgl)	Average Undrained Shear Strength (kN/m ²)						
	TP101	TP102	TP103	TP104	TP104B	TP105	TP106
0-1	-	-	-	-	-	-	-
1-2	140	-	140	-	-	-	-
2-3	-	-	140	-	140	-	140
GW Level	-	-	-	-	-	-	-

Table 4-3: Summary of average hand shear vane readings.

Notes:

Groundwater level based on strikes during investigation.

Shear vane readings can be influenced by coarse material including silt.

4.4 Geotechnical Laboratory Testing

4.4.1 Single Stage Triaxial Test

Single stage triaxial testing has been undertaken on four samples of the natural clay strata. The results are presented in Appendix D and summarised in Table 4.4.

Location	Depth (mbgl)	Material Description	Undrained Shear strength (kPa)
CP101	2.30-2.75	Stiff brown slightly gravelly sandy silty CLAY	225
CP101	3.30-3.75	Stiff brown slightly gravelly sandy silty CLAY	135
CP101	9.50-9.95	Stiff brown slightly gravelly sandy silty CLAY	205
CP102	6.50-6.95	Stiff brown slightly gravelly sandy silty CLAY	152

Table 4-4: Summary of single stage triaxial results.

4.4.2 Atterberg Limits

Representative samples of natural clay were subjected to Atterberg Limits (plasticity) and Moisture Content testing. Results are presented in Appendix D and summarised in Table 4-5.

Table 4-5 also includes the modified plasticity index as detailed in Chapter 4.2-D5 of the NHBC standards (modified plasticity index = plasticity index x % less than 425µm sieve / 100%).

Location	Depth (mbgl)	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Class	Passing 425 micron (%)	Modified Plasticity Index (%)
TP102	1.5-2.5	16.4	33	12	21	CIL	90	18.90
TP104	0.4-1.4	11.4	28	11	17	CIL	62	10.54
TP105	0.5-1.5	15.5	31	14	17	CIL	78	13.26

Table 4-5: Summary of plasticity index testing.

Notes:

Class: Cl= Clay; L=Low plasticity.

The modified plasticity index is between 10.54% and 18.9%. This characterises the clay as having a low volume change potential.

4.4.3 Sulphate and pH

Water soluble sulphate and pH tests were carried out on soil samples. Full results are presented in Appendix C and summarised in Table 4-6.

Strata	pH	Sulphate (g/l)
Made Ground	7.7-9.4	<0.01-0.38
Natural	7.9-9.3	<0.01-0.14

Table 4-6: Summary of pH and sulphate results.

5 Geotechnical Assessment

5.1 Proposed Development

It is understood that the proposed development will comprise the future development of the site for a residential end use with low rise housing across majority of the site and a residential apartment block in the north of the site bordering Daisy Bank Road. The development will also comprise associated landscaping and infrastructure. Details of the proposed layout are unknown at this time and loadings are not known; therefore a line loading of 75kN/m has been assumed for preliminary assessment purposes only for the low rise residential houses.

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

The depths of any underground engineering works (sewers etc.) are unknown and therefore have not been taken into account in the following assessment. It is considered that any such works will be designed so as not to have an effect on, or compromise, proposed or existing foundations or ground stability.

5.2 Summary of Ground Conditions

Ground conditions identified at the site are detailed in Section 4.1, and typically comprises Made Ground up to 2.20mbgl over natural cohesive superficial deposits of CLAY to the completion depths investigated.

5.3 Site Preparation

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

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

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

5.4 Foundation Conditions and Bearing Capacity

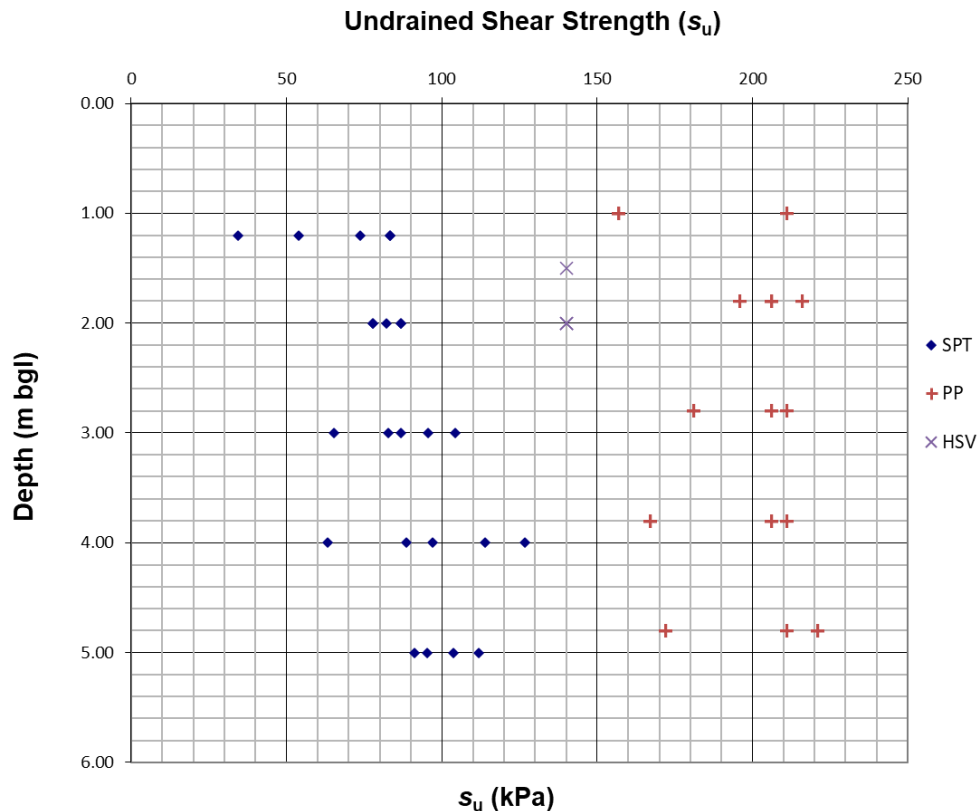
5.4.1 General

It is considered that the Made Ground are not suitable for a founding material due to the inherent variability of the material. Foundation options are therefore:

- » Strip foundations into the underlying Glacial Till (CLAY).

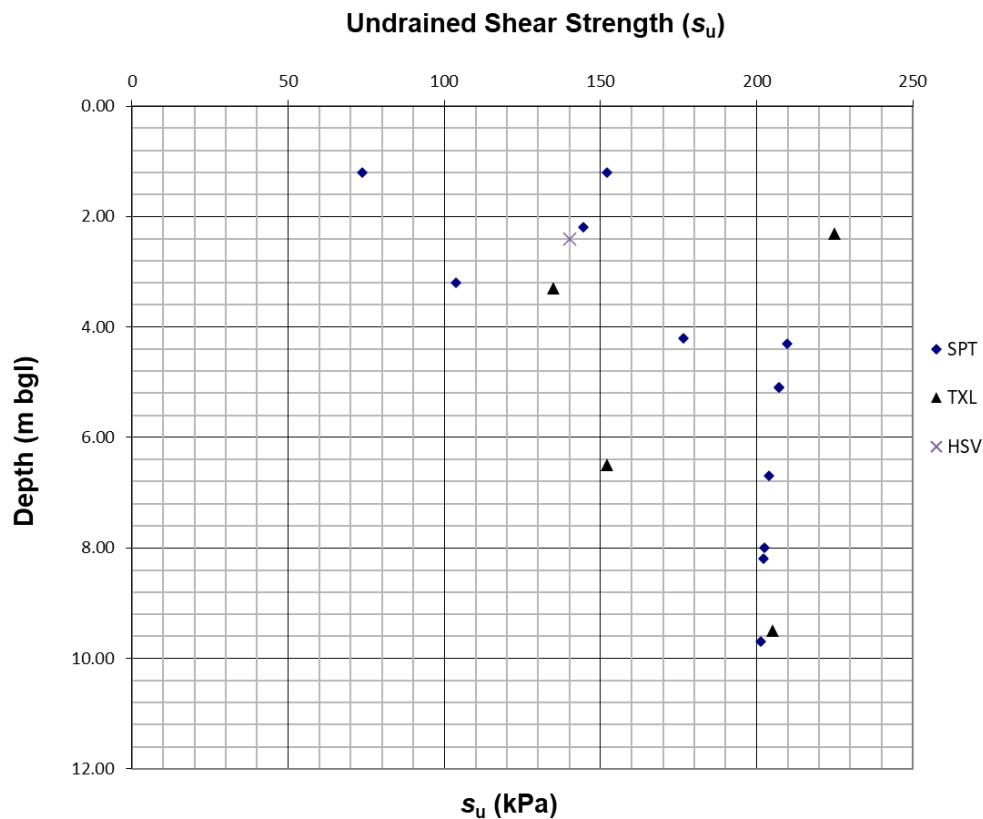
» Deeper pile foundations.

Strength of the natural cohesive material has been assessed using in-situ testing by SPT, Hand Shear Vane (HV) and laboratory Triaxial (TXL) Testing. The results of the testing have been plotted against depth for exploratory holes WS101 – WS105 and TP101 – TP106 as is shown in Graph 5-1 below and for Boreholes CP101 & CP102 shown in Graph 5-2.



Graph 5-1: Summary of s_u vs depth from in-situ SPT, PP and HSV .

From Graph 5-1 it can be seen that the strength of the cohesive deposits typically increases with depth. The in-situ HSV all reached 140kPa without shearing and the test could not be progressed, therefore the HSV show artificially low results. The results of the in-situ PP testing return more competent shear strengths than the in-situ SPT results. It is therefore considered that the PP and HSV results provide a more representative strength of the natural CLAY, however, a highly conservative s_u of 50kPa is assigned to the cohesive material.



Graph 5-2: Summary of s_u vs depth from in-situ SPT, HSV and laboratory TXL testing.

From Graph 5-2 it can be seen that the strength of the cohesive deposits typically increases with depth. The in-situ HSV in TP104B reached 140kPa without shearing and the test could not be progressed, therefore the HSV show artificially low results. The results of the laboratory TXL give similar results to the SPTs. It is recommended that a conservative s_u of 70kPa is adopted at 1mbgl, increasing to 150kPa between 2.00m to 6.00mbgl and 200kPa at 10.00mbgl.

5.5 Low Rise Residential Housing

5.5.1 Strip Foundations

Strip foundations should be constructed at least 150mm into the underlying stiff to very stiff CLAY. An allowable bearing capacity of 103kN/m² has been calculated using a Factor of safety of 2.5 and a conservative undrained shear strength of 50kN/m² taken from Graph 5-1.

At the location of TP103, Made Ground was recorded to a depth of 1.40m, at this location deeper strip foundations will be required to found on the very stiff CLAY.

It is considered that the competency of the natural ground far exceeds that required for supporting a low-rise residential structure.

Atterberg limits determinations, summarised in Table 4-5 show the clay to be of low plasticity and as such the sides of the foundations do not require protection using clay board or similar.

Foundation depths should take account of the presence of existing and proposed trees with foundations deepened locally in accordance with the requirements of NHBC Standards for a clay of low plasticity. It is recommended that at working drawing stage a foundation schedule is prepared for the development taking account of the soil plasticity and the locations of trees.

5.5.2 *Piled Foundations*

At the locations of TP105, Made Ground was recorded to a depth of 2.20mbgl and it is considered that a mini-pile foundation solution may be more appropriate in this location.

Recommendation

Shallow strip foundations where natural superficial CLAY encountered at a depth less than 0.50m, deeper strip foundations up to 2.0mbgl and where the Made Ground encountered is in excess of 2.0m a mini pile solution will provide the most reliable and cost-effective option for the site.

5.6 **Apartment Block**

5.6.1 *Strip Foundations*

The number of storeys of the proposed apartment block is unknown at this time. Apartment blocks will impose a greater load as the construction between each floor will likely comprise reinforced concrete, and therefore impose a greater loading on foundations.

It is considered that strip foundations would not be suitable to support the structure but will be suitable for supporting cladding walls.

Atterberg limits determinations, summarised in Table 4-5 show the clay to be of low plasticity and as such the sides of the foundations do not require protection using clay board or similar.

Foundation depths should take account of the presence of existing and proposed trees with foundations deepened locally in accordance with the requirements of NHBC Standards for a clay of low plasticity. It is recommended that at working drawing stage a foundation schedule is prepared for the development taking account of the soil plasticity and the locations of trees.

5.6.2 *Pad Foundations*

Based upon the s_u obtained from the in-situ and laboratory testing of the Glacial Till material, an assessment has been made on a pad foundation supporting column loads. For preliminary assessment purposes, two sizes of pad (1m² and 2m²) have been considered at depths of 1m and 2mbgl. The bearing capacity assessment has been made in line with combination 1 (partial factors on Actions) and Combination 2 (partial factors on materials), results are shown in Table 5-1.

Pad Size	Pad Depth (mbgl)	Allowable Load (kN)
1m ² (1.00m x 1.00m)	1.00	187
	2.00	392
2m ² (1.42m x 1.42m)	1.00	266
	2.00	799

Table 5-1: Summary of pad Allowable Load.

The pads show an ABC of 187kN for a 1m² pad and 266kN for a 2m² pad foundation placed at a depth of 1mbgl in the target stratum of firm becoming stiff and very stiff clay (Glacial Till). Strip foundations supporting cladding walls should be able to support loadings of 100kN/m².

The above is for assessment purposes only, foundation design should be undertaken by a specialist contractor/structural engineer.

5.6.3 Piled Foundations

As an alternative consideration maybe given to the use of piled foundations. For preliminary purposes the following initial pile carrying capacities have been calculated. When undertaking these preliminary calculations, the following parameters have been used:

- Undrained shear strength values from Graph 5-2 and Tables 4-3 and 4-4.
- Adhesion Factor of 0.45 based on CFA piles.
- Factors of safety of 1.5 on side resistance and 3 on base resistance; and,
- Global Factor of safety of 2.5.

Depth	Pile Carrying Capacity (kN)		
	300mm dia	450mm dia	600mm dia
5	64	124	204
8	204	344	509
10	322	522	746

Table 5-2: Preliminary Pile Carrying Capacity.

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

Consideration will need to be given to the potential for negative skin friction to have an effect on the piles, especially in areas of deep Made Ground, such as at the location of TP104 and TP104B where Made Ground was recorded to depths of between 1.40m to 1.60mbgl.

Recommendation

It is considered that shallow strip foundations will not be suitable for supporting the structure and therefore either a pad or pile foundation solution will provide the most reliable and cost-effective option for the site.

5.7 Ground Floor Slabs

Due to the presence of substantial thickness' of Made Ground across the site it is considered that ground bearing floor slabs, whilst viable, will require detailed design to accommodate variability of the formation and account for differential settlement. If the proposed development is for low rise residential housing, then suspended floor slabs should be used in accordance with NHBC guidance where Made Ground is encountered deeper than 600mm.

Where it is proposed to construct the apartment block, due to the presence of substantial thickness' of Made Ground across the site it is considered that ground bearing floor slabs, whilst viable, will require detailed design to accommodate variability of the formation and account for differential settlement. If a piled foundation

solution is adopted, then it is recommended that a suspended or piled floor is used due to the potential for differential settlement to occur between the floor and the shell of the structure.

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

5.8 Pavement Construction

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

Based on the plasticity index the soils may be frost susceptible. Frost action can cause differential heaving, surface roughness and cracking, blocked drainage, and a reduction in bearing capacity during thaw periods. In areas of proposed roads and car parking it may be necessary to remove the frost susceptible soils and replace with non-frost susceptible material to the expected frost depth penetration.

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

5.9 Drainage

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

Soakaway drainage is not recommended in areas of significant Made Ground. The presence of the underlying CLAY is of likely to be of low permeability and therefore it is not recommended that soakaways are used for the disposal of surface water runoff.

5.10 Concrete Durability

Based upon the results of the chemical analyses summarised in Table 4-6 it is considered that subsurface concrete can be designed in accordance with Design Sulphate Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with the recommendations provided in BRE Special Digest 1 (2005).

5.11 Excavations

Site observations indicated that excavations should be feasible in the near surface with normal plant, however obstructions were identified in the near surface including former foundations and former floor slabs. It is anticipated that any obstructions will be grubbed out during the reduced level dig for the sub structure works.

Some of the exploratory holes were observed to be unstable during the excavation/drilling and the Made Ground and natural deposits included granular strata

containing perched groundwater. The short- and long-term stability of near vertically sided excavations can therefore not be guaranteed and random and sudden instability within these soils should be anticipated.

Due to the variability of the Made Ground it is considered that all excavations are supported or battered back in accordance with guidance contained in CIRIA R97¹⁶. Groundwater seepages were noted in one window sample location (WS105), however, this was minor and at a depth of 5.00mbgl, therefore it is considered that conventional sump pumping should be adequate if required.

5.12 Construction Activity and Inspection

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

- » Due to the variability of the soils at the site it is recommended that sufficient allowance is made for the inspection of formation and sub formations to foundations and pavement construction.
- » Excavations where access is required should be subject to a risk assessment from a competent person and where appropriate mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97 utilised.
- » It is considered that de-watering may be required, especially following periods of heavy rainfall. Removal of surface water and water within trenches should be possible with conventional sump pumping. Discharge of any water should be agreed with the relevant regulatory body and be undertaken under a trade effluent discharge, where required. Measures to remove silt and suspended solids may be required and consideration should be given to provision of space for settling tanks or an attenuation pond.
- » Where access to confined spaces is required appropriate mitigation measures should be addressed within the Construction Stage Health and Safety Plan. Particular account should be taken of the gas results.
- » The presence of potential contamination and mitigation measures should be addressed as part of the Construction Stage Health and Safety Plan and should include measures to design out the risks, reduce their impact and finally the use of Personnel Protective Equipment (PPE).

¹⁶ CIRIA Report 97 – Trenching Practice – Second Edition (2001 revision)

6 Generic Risk Assessment

6.1 Introduction

Current good practice requires that the findings from a site investigation should be evaluated on a site-specific basis, using a risk-based approach. Risk assessment involves identification and evaluation of the hazards presented by the concentrations of contaminants measured followed by an evaluation of the risks which are associated with these hazards (LCRM¹⁷). Information gathered from the risk assessment has been collated in the revised contamination conceptual model in Section 6.6.

6.2 Soil Risk Assessment

6.2.1 Methodology

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

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

C4SLs were published in 2013^{18,19}. The recent change to the contaminated land guidance has changed the evaluation of risk from 'minimal' (referred to as Health Criteria values (HCVs))²⁰ 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 S4ULs²¹. 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^{22,23,24,25}.

If contaminants are not present as C4SLs and S4ULs then LKC will use ATRISK SSVs or CL:AIRE GACs²⁶. 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

¹⁷ Land Contamination Risk Management (LCRM) <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

¹⁸ Defra (2014). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Policy Companion Document."

¹⁹ CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."

²⁰ EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.

²¹ LQM (2014). "The LQM/CIEH S4ULs for Human Health Risk Assessment."

²² EA (2008). "Updated Technical Background to the CLEA Model." Science Report – SC050021/SR3.

²³ EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.

²⁴ EA (2008). "A Review of Body Weight and Height Data used within the Contaminated Land Exposure Assessment Model (CLEA)." Project SC050021/Technical Review 1.

²⁵ EA (2009). "Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values." Science report SC050021/SR7.

²⁶ CL:AIRE (2009). "The Soil Generic Assessment Criteria for Human Health Risk Assessment."

PAHs^{27,28} and naphthalene the most volatile and soluble²⁹. 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 negligible³⁰. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)³¹ and CL:AIRE (2013). Naphthalene will be treated separately using the LQM S4ULs.

The proposed development has been zoned as shown in Figure 4. The following assessment criteria will be used for each zone:

Zone	Proposed Use	Assessment Criteria
1	Residents garden	Residential without plant uptake
2	Apartment block with soft landscaping	POS residential
3	Kitchen garden	Allotments
4	Residential houses with gardens	Residential with plant uptake

Table 6-1: Summary of zones and associated assessment criteria.

It should be noted that no access for site investigation equipment was possible in the northwest of the site in the vicinity of the proposed residents garden.

All criteria have been generated using the CLEA V1.06 model³² 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 G. 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.*³³, which was based on coal tar mixtures (>80,000mg/kg of total PAHs) fed in food to mice over a two-year carcinogenicity study.

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

²⁷ EA (2002). "Contaminants in Soils: Collation of Toxicological Data and Intake Values for Humans. Benzo[a]pyrene." R&D Publication TOX2.

²⁸ USEPA (1984). "Health Effects Assessment of Polycyclic Aromatic Hydrocarbons (PAHs). EPA 540/1-86-013."

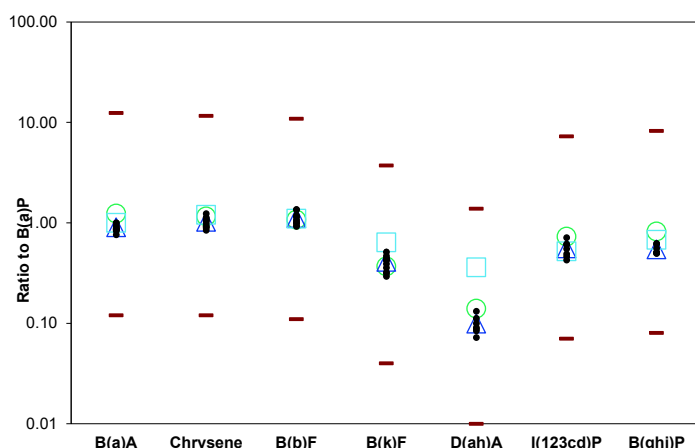
²⁹ EA (2003). "Review of the Fate and Transport of Selected Contaminants in the Soil Environment." Draft technical report P5- 079/TR1.

³⁰ CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."

³¹ HPA (2010). "HPA Contaminated Land Information Sheet: Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)." Version 3.

³² EA (2008). "CLEA Software (Version 1.05) Handbook." Science Report – SC050021/SR4.

³³ 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 6-1: The ratio of PAH to B(a)P in soil for all available data at the site based on 12no. 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.

6.2.2 Soil Results Comparison against Assessment Criteria

All analysis sheets are presented in Appendix C and comparison sheets contained in Appendix F. Elevated and pertinent results are presented in Tables 6-2 to 6.5 and shown on Figure 5.

Zone 1: Residents Garden (based on soil results from TP102, CP101, CP102)						
Contaminant	Units	No. of samples	Elevated Results	Sample Location	Criteria (6%)	Source of Criteria
METALS						
Lead	mg/kg	3	340	TP104B 0.1-1.0m	310	C4SL
PAHs						
Benzo(a)pyrene	mg/kg	3	12	TP103 0.1-0.3m	5.3	C4SL
GENERAL						
pH	pH	3	Range 7.8 to 8.3			
SOM	%	3	Range 5.7 to 17			
Asbestos	N/A	3	Detected, see Table 6.6.			

Table 6-2: Summary of elevated and pertinent analytical results in Zone 1.

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.

Zone 2: Apartment Block with Soft Landscaping (based on soil results from TP104, TP104B, CP101, CP102)						
Contaminant	Units	No. of samples	Elevated Results	Sample Location	Criteria (6%)	Source of Criteria
METALS						
Lead	mg/kg	4	3300	TP104B 0.1-1.0m	630	C4SL
GENERAL						
pH	pH	4	Range 7.8 to 9.4			
SOM	%	4	Range 3.9 to 7.2			
Asbestos	N/A	4	Not detected.			

Table 6-3: Summary of elevated and pertinent analytical results in Zone 2.

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.

Zone 3: Kitchen Garden (based on soil results from TP105)						
Contaminant	Units	No. of samples	Elevated Results	Sample Location	Criteria (6%)	Source of Criteria
METALS						
Lead	mg/kg	2	670	TP105 0.5-1.5m	80	C4SL
GENERAL						
pH	pH	2	9.3			
SOM	%	2	Range 1.8 to 8.2			
Asbestos	N/A	2	Not detected.			

Table 6-4: Summary of elevated and pertinent analytical results in Zone 3.

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.

Zone 4: Residential houses with gardens (based on soil results from TP101-TP103, TP106, WS101-WS105)						
Contaminant	Units	No. of samples	Elevated Results	Sample Location	Criteria (6%)	Source of Criteria
METALS						
Lead	mg/kg	13	270	TP102 0.0-0.6m	200	C4SL
			340	TP103 0.1-0.3m		
			990	TP106 0.0-0.7m		
Arsenic	mg/kg	13	82	TP106 0.0-0.7m	37	C4SL
PAHS						
Benzo(a)pyrene	mg/kg	13	13	TP102 0.0-0.6m	5	C4SL
			12	TP103 0.1-0.3m		
			7.3	WS105 0.2-0.5m		
GENERAL						
pH	pH	13	Range 7.7 to 9.2			
SOM	%	13	Range 1.0 to 27			
Asbestos	N/A	13	Detected, see Table 6.6.			

Table 6-5: Summary of elevated and pertinent analytical results in Zone 4.

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 in the made ground soils, as detailed in Table 6-6.

Sample Location	ID	Type	Total Asbestos (%)
TP103 0.1-0.3m	Amosite	Fibres/Clumps	0.002
WS101 0.0-0.3m	Chrysotile	Fibres/Clumps	0.004
WS105 0.5-1.0m	Chrysotile	Fibres/Clumps	0.002

Table 6-6: Details of asbestos identified.

Elevated results have been identified as follows:

- Zone 1: Lead, asbestos, PAHs within the made ground from nearest site investigation location (however no samples taken directly within area).
- Zone 2: Lead within the made ground.
- Zone 3: Lead within the made ground.
- Zone 4: Lead, arsenic, PAHs and asbestos within the made ground.

No elevated levels of contaminants were encountered in the natural clay deposits (based on only five samples). As such LKC considers that the natural clay was not impacted by the made ground above, with regards to human health.

No olfactory or visual evidence of gross total petroleum hydrocarbon contamination was observed.

6.2.3 Direct Contact Risk – Pollutant Linkage 1

Zone 1: Residents Garden

Elevated lead, PAHs and asbestos were encountered within the made ground from the closest locations to this area, likely associated with the brick, concrete, coal, clinker and glass identified within the made ground.

No olfactory / visual evidence of gross hydrocarbons was encountered within the shallow soil sample from the closest locations.

The main pathways are considered to be direct contact and ingestion. With a medium consequence, a moderate risk is anticipated, and some remediation is required. However, LKC acknowledge that due to access restrictions no soil sampling has been undertaken in the vicinity of the proposed residents garden.

Therefore, subject to tree protection zones, it is recommended that further shallow soil samples are obtained from this area of the site and analysed to confirm the low risk.

Zone 2: Soft Landscaping associated with Residential Apartments

Elevated lead was encountered, likely associated with the coal, clinker, brick, metal ceramic and glass observed within the made ground. The principal pathways are the ingestion and dermal contact pathways. With a medium consequence, the risk is anticipated to be moderate, and remediation (an environmental cover system) is required.

Zone 3: Kitchen Garden

Elevated lead was encountered in the made ground in the vicinity of the proposed kitchen garden, likely associated with the brick, coal, clinker and glass fragments identified in the made ground. The principal pathways are the ingestion and dermal

contact pathways. With a medium consequence, the risk is anticipated to be moderate, and remediation (an environmental cover system) is required.

Zone 4: Proposed Private Gardens associated with Residential Housing

Heavy Metals and PAHs

Elevated lead, arsenic and PAHs were identified within the made ground, likely associated with the brick, coal, clinker, ash, glass, rebar and ceramic pottery. The principal pathways are ingestion and dermal contact, and inhalation. With a medium consequence, the risk is anticipated to be moderate, and some remediation (an environmental cover system) is required within the proposed residential gardens.

Asbestos

Asbestos (amosite) fibres / clumps were identified in the made ground at TP103, and chrysotile fibres / clumps were identified in the made ground at WS101 and WS105. Given the low asbestos quantification results (0.002-0.004%), a risk assessment was undertaken using the Joint Industry Working Group (JIWG) Receptor Risk Ranking. This is contained in Appendix G.

Asbestos may affect site users in soft landscaping and garden areas in localised areas of the site via the inhalation of fibres. Taking into account the recommended environmental cover system (assuming a break layer is in place) associated with the heavy metal and PAH contamination identified, the JIWG receptor risk ranking suggests a very low to low risk associated with asbestos fibres.

Additional consideration should also be given to the risk to workers and offsite receptors during groundworks and construction. This is discussed further in Section 9.1.

6.2.4 Risk from Inhalation of Vapours – Pollutant Linkage 2

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

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

6.3 Gas Risk Assessment

The PRA identified a moderate risk with respect to hazardous and ground gas given that there was the potential for deep made ground on site associated with the former buildings in the north of the site and no viable offsite sources were identified within 250m of the site. The anticipated underlying cohesive Glacial Till was also expected to reduce any gas migration to site.

Based upon the site investigation there may be a small risk for the generation of hazardous gas from made ground onsite. Localised areas of deeper made ground were identified in the north of the site between 1.40m thick at TP103 and TP104B, and 2.20m thick at TP105. Made ground was generally between 0.20-0.70m thick in the centre and south of the site.

Guidance given in CIRIA C665³⁴, BS8485³⁵ and CL:AIRE RB17³⁶ has been used to assess the risk.

Made ground encountered in the north of the site generally was comprised of brick, coal, clinker, concrete, glass, metal and ceramic, and is likely associated with the former Stafford House and associated gardens.

The Soil Organic Matter (SOM) varied across the made ground (average 6.3%) which was an equivalent Total Organic Matter (TOC) of 3.7%. It should be noted that that ash and clinker may skew the TOC results generating a false positive for degradable material and not necessarily generating gas. The TOC may be adjusted for non-degradability by approximately 60% for ash and 13% for soil³⁷. By adjusting the average TOC by 63%, assuming 37% is non-degradable (for a mixed ash soil matrix) a revised average TOC of 2.3% (degradable fraction) can be derived and is assumed for this soil. Considering the difficulty in undertaking detailed forensic work on the sample (due to limited volume), this assumption is still considered reasonable.

A qualitative assessment using CL:AIRE RB17 (Table 2 and Table A1) may indicate precautionary Characteristic Situation (CS) 2 gas protection measures in lieu of no gas monitoring is required at the site.

Given the age of the made ground in the north of the site >50 years old, the likelihood of gas generation is low. Based on the above and assuming a severe consequence, there is a moderate risk from hazardous ground gas and precautionary CS2 gas protection measures are required in lieu of no gas monitoring.

This will be further risk assessed using forensic logging techniques and further TOC analysis during the site enabling works.

6.4 Controlled Water Assessment

The PRA identified a moderate / **low** risk with respect to controlled waters as no significant source of mobile contamination was anticipated. Furthermore, although a Secondary Undifferentiated and Principal Aquifers are present below the site, no abstractions have been identified within 1000m of the site. There are no surface water receptors within influencing distance of the site.

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

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

³⁴ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

³⁵ BSI (2019). "Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings." BS8485:2015+A1 2019.

³⁶ CL:AIRE Research Bulletin 17. "A Pragmatic Approach to Ground Gas Risk Assessment". November 2012.

³⁷ Kumpiene, J; Robinson, R; Brannvall, E, Nordmark D, Bjurstrom, H, Andreas, L; Lagerkvist, A, Ecke, H (2010). "Carbon Speciation in Ash, Residual Waste and Contaminated Soil by Thermal Chemical Analysis." *Waste Manag.* 2011 Jan; 31(1): 18-25.

6.5 Additional Risk Assessments

6.5.1 Potable Water Supply (Pollutant Linkage 5)

Soil results were compared to United Utilities (UU) guidelines for the selection of potable water pipes in land potentially affected by contamination³⁸. Only contaminants of concern, based on the preliminary conceptual model and ground conditions encountered, were analysed. The following contaminants were not considered to be a risk and therefore not included in the analysis suites: speciated petroleum hydrocarbons, chlorinated compounds, BTEX compounds, phenols, cresols, ethers, nitrobenzene, ketones, aldehydes and amines.

The following elevated contaminants were identified:

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

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

It should be noted typical pipework depths are 0.75mbgl to 1.35mbgl. The pipework will likely be laid into the underlying natural strata in the south of the site after levels have been reduced.

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

At this stage, the probability of organic contaminants affecting potable water pipes is likely. Given the consequence is considered to be medium, the risk (pollutant linkage 5) is anticipated to be moderate risk and remediation (i.e. barrier pipe) is likely to be required (subject to further risk assessment).

6.6 Revised Contamination Conceptual Model

The preliminary contamination conceptual model (Table 2-2) has been revised following the risk assessments undertaken in Sections 6.1-6.5. The revised contamination conceptual model follows the same methodology and guidance used in the preliminary contamination conceptual model. The risk matrix is provided in Appendix A.

The revised contamination conceptual model is presented in Table 6-7.

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

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

³⁸ UU(2011). "United Utilities Water Supplementary Guidance for the Selection of Water Pipes in Land Potentially Affected by Contamination."

Further details of the remedial proposals and a remedial option appraisal are given in Section 9.

Pollutant Linkage	Pathway	Receptor	Contaminant	Probability	Consequence	Risk	Assessment
PL1	<ul style="list-style-type: none"> - Dermal contact. - Inhalation of soil, fibres and dust. - Ingestion of soils, dust, vegetables, soil attached to vegetables. - Windblown dust. 	<ul style="list-style-type: none"> - Current residents. - Future residents. - Site users. - Offsite receptors. 	ACM: -Chrysotile and amosite fibres / clumps. Heavy metals: -Arsenic and lead PAHs: -BaP.	Likely	Medium	Moderate	<ul style="list-style-type: none"> - Likely probability as ACM (chrysotile and amosite) identified, elevated metals (arsenic and lead) and PAHs identified in the made ground across the site which could come into contact with site users in proposed garden / soft landscaping areas. - Recommendation*1: Remediation required. Likely to include an environmental cover system in garden / soft landscaping areas. Further sampling required in proposed residents garden area during post demolition site investigation.
			Hydrocarbons	Unlikely	Medium	Low	<ul style="list-style-type: none"> - No olfactory / visual evidence of gross hydrocarbon contamination. - Recommendation: Post demolition site investigation) to confirm ground conditions under existing buildings.
PL2	<ul style="list-style-type: none"> - Inhalation of vapours. - Migration through permeable strata and preferential pathways. 	<ul style="list-style-type: none"> - Current residents. - Future residents. - Site users. 	Volatile Contaminants: - None identified.	Unlikely	Medium	Low	<ul style="list-style-type: none"> - No elevated volatile contaminants across remainder of the site. - Recommendation: No remediation required. To be confirmed following post demolition site investigation.
PL3	<ul style="list-style-type: none"> - Inhalation of gas. - Migration through permeable strata and preferential pathways. - Explosion in confined spaces (methane only). 	<ul style="list-style-type: none"> - Current residents. - Future residents. - Buildings. - Offsite land users. 	- Carbon dioxide, Methane.	Low Likelihood	Severe	Moderate	<ul style="list-style-type: none"> - RB17 risk assessment undertaken using TOC, site classified as CS2. - Recommendation: Gas protection measures in line with CS2 recommended. Further RB17 risk assessment (forensic logging, TOC analysis) required following post demolition site investigation.
PL4	<ul style="list-style-type: none"> - Surface Run-off. - Migration through permeable strata and preferential pathways - Perched waters migration. 	- Groundwater: Secondary Undifferentiated & Principal Aquifers.	Mobile contaminants: - Metals and PAHs.	Unlikely	Medium	Low	<ul style="list-style-type: none"> - Although slightly elevated metals and PAHs identified, given the environmental settings and ground conditions encountered (clay encountered across the site), not considered to pose a significant risk to groundwater. - Recommendation: No remediation required. To be confirmed following post demolition site investigation.

Table 6-7: Revised Contamination Conceptual Model.

Notes

*1 The conceptual model only takes into consideration the future use of the site and long-term exposure. Consideration should also be given to the short-term exposure of construction workers and nearby land users to ACM containing soils during groundworks. This is discussed further in Section 9.

Pollutant Linkage	Pathway	Receptor	Contaminant	Probability	Consequence	Risk	Assessment
PL5	- Ingestion of tainted water supply.	- Future site users (via potable water).	Organic Contaminants: - Naphthalene.	Likely	Medium	Moderate (north of site)	- Likely probability as elevated naphthalene encountered which could permeate water pipes and contaminate water supply. - Recommendation: UU risk assessment undertaken. Barrier piping likely to be required.
				Unlikely	Medium	Low (central & south of site)	- Although elevated naphthalene encountered in the made ground, new pipe likely to be laid in natural clay. - Recommendation: Barrier piping unlikely to be required. However, this will need to be confirmed once UU risk assessment undertaken.

Table 6-7: Revised Contamination Conceptual Model.

Notes

*1 The conceptual model only takes into consideration the future use of the site and long-term exposure. Consideration should also be given to the short-term exposure of construction workers and nearby land users to ACM containing soils during groundworks. This is discussed further in Section 9.

7 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 HazWasteOnline™. This is a web-based facility that allows an assessment waste as either hazardous or non-hazardous waste based on relevant guidance and legislation^{39, 40, 41, 42, 43, 44, 45, 46, 47}.

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

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

Where applicable, appropriate metal species based on hazard statements/ molecular weight, site history, ground conditions and likely species present in soils were used (e.g. metal oxides relating to an ash based source).

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

The following sample is classified as HAZARDOUS WASTE based on ecotoxicity and LoW code "17-05-03 - soil and stones containing hazardous substances" is suitable:

Sampling Location	Hazardous Waste Y/N	LoW Code	Hazard (Risk Phrase)	Contaminants
TP104B 0.1-1.0m	Y	17 05 03	HP14 (Ecotoxic)	Lead

Table 7-1: Summary of HazWasteOnline™ findings.

³⁹ EA (2018). "Guidance on the Classification and Assessment of Waste (1st Edition v1.1)". Technical Guidance WM3.

⁴⁰ CLP Regulation - Regulation 1272/2008/EC of 16 December 2008.

⁴¹ 1st ATP - Regulation 790/2009/EC of 10 August 2009

⁴² Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

⁴³ WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

⁴⁴ Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014

⁴⁵ 13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

⁴⁶ POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004

⁴⁷ 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

8 Conclusions

8.1 Geotechnical

Geotechnical observations and conclusions are contained in Table 8-1 below, more detailed discussions are contained within Section 5.

Proposed Development	- Pre-planning application for proposed low rise and apartments residential development.
General Ground conditions / Geotechnical Testing	- Based on CP101-CP102, WS101-WS105, TP101-TP106. - Maximum investigation depth 10.13mbgl. - Made Ground to 0.3-2.2mbgl. SPT N=2 at 1mbgl. - Natural superficial deposits comprise very stiff CLAY to completion depths of exploratory holes. - No bedrock encountered. - Groundwater encountered at 5.00mbgl within WS105 only.
Allowable Bearing Pressure	- A conservative su of 140kPa is applied to the very stiff CLAY, returning an Allowable Bearing Pressure in the region of 188kN/m2.
Anticipated Foundation Type	- Traditional shallow foundations recommended from approximately 1mbgl within natural superficial CLAY for the low rise residential units. If Made Ground is encountered greater than 2.0m then mini pile foundations should be utilised. - In the north of the site where an apartment block is proposed, it is considered that either pads supporting column loads, or deeper piled foundations will be suitable.
Shallow Groundwater	- Shallow groundwater identified as a perched pocket at 5.00mbgl within WS105 only.
Concrete Requirements	- Based on BRE Digest 200548 – DS-1 AC-1s recommended.
Services	- Services – consideration to the presence of services running through the site. Services may need to re-routed.
Temporary support of excavation	- Due to the variability of the Made Ground it is considered that all excavations are supported or battered back in accordance with guidance contained in CIRIA R97
Plasticity	- Consideration will need to be given to the shrink / swell of the clay strata if it is to be used as founding strata, particularly where trees/hedges are present. Foundations may need to be deepened. A low volume change potential has been calculated for the site.

Table 8-1: Geotechnical Observations and Conclusions Table.

8.2 Contamination Assessment

A revised contamination conceptual model has been produced by LKC which is summarised in Table 8-2 below (more detailed model provided in Section 6). Where a moderate / low risk was identified, the assumed risk at this stage has been shown.

⁴⁸ BRE (2005). "Concrete in Aggressive Ground." Special Digest 1.

Pollutant Linkage		Risk	Recommendations
1	Contaminants posing a risk to future residents via dermal contact, ingestion and inhalation (of soil, dust, fibres and vegetables).	Moderate (asbestos, arsenic, lead, PAHs)	- Elevated asbestos, arsenic, lead and PAHs identified across the site. Recommendations: Remediation (environmental cover system) required in garden / soft landscaping areas.
		Low (petroleum hydrocarbons)	- No visual / olfactory evidence of petroleum hydrocarbons identified. Recommendations: Further investigation (post demolition) required to confirm risk.
2	Volatile contaminants posing a risk to future residents via the inhalation of vapours.	Low	- No volatile contamination identified. Recommendations: No remediation required. To be confirmed following post demolition site investigation.
3	Gas posing a risk to buildings and future residents via the migration of gas into building causing explosion and asphyxiation.	Moderate	- RB17 gas risk assessment undertaken using depth of made ground and TOC. Recommendations: Gas protection measures to CS2 required. Further RB17 risk assessment (forensic soil logging and TOC analysis) required following post demolition site investigation.
4	Mobile contamination posing a risk to controlled waters via the migration through permeable strata.	Low	- No elevated contaminants identified in groundwater. Recommendations: No remediation required. To be confirmed following post demolition site investigation.
5	Organic contaminants posing a risk to water pipes.	Moderate (north of site)	- Organic contamination identified at potable pipe depth of 0.75-1.35mbgl. Recommendations: UU risk assessment to be completed. The site will likely require barrier piping.
		Low (central & south of site)	- Although elevated naphthalene encountered in the made ground, new pipe likely to be laid in natural clay. Recommendation: Barrier piping unlikely to be required. However, this will need to be confirmed once UU risk assessment undertaken.

Table 8-2: Summary Risk Table.

Remedial recommendations are presented in Section 9.

9 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.

9.1 Remediation and Validation Recommendations

Table 9-1 details the further works and remedial recommendations / requirements. The table shows work required post-demolition of building(s), pre-construction (i.e. during earthworks) and during / post construction.

Phase	PL	Remediation Requirements	Validation Requirements
Post-Demolition Work	1, 3	<u>Post-demolition Trial Pitting</u> This is recommended to confirm ground conditions below the current buildings and allow delineation of areas of concern. This should allow a more targeted remediation strategy to be completed. This work will also provide more geotechnical information for foundation design.	N/A (Investigation Report will be provided with an updated Remediation Strategy).
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.	Log of work undertaken including photographs. Details of any sampling undertaken and validation of any potential additional remedial work.

Table 9-1: Further work, remediation and validation requirements

Notes: See Table 6-7 for pollutant linkage (PL) details.

Phase	PL	Remediation Requirements	Validation Requirements
Building Construction Phase	1	<p>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:</p> <p>Kitchen Garden: Vegetables: Raised planters comprising: sufficient compost / topsoil for a growing medium, 250mm granular material for drainage (MOT type 1), hard stood base (paving slabs). Fruit Trees: 1m x 1m tree pit with 1000mm thick environmental cover system comprising: 750mm compost / topsoil, 250mm granular material for drainage (MOT type 1), hard stood base (paving slabs).</p> <p>Private Rear Gardens: 600mm thick environmental cover system comprising: 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.</p> <p>Private Front Garden / Shared Landscaping / Residents Garden: 300mm thick environmental cover system comprising: 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.</p> <p>The subsoil layer can be replaced by additional topsoil. A diagram of a typical environmental cover system is shown in Appendix I.</p> <p>Areas of TPO's Please note where there are TPO's in influencing distance of the gardens it is likely the arboriculture officer may only allow a 150mm clean cover system over a geotextile membrane.</p>	<p>Measuring depth of environmental cover system using a staff and providing photographic evidence.</p> <p>Photographic evidence of the granular physical break or geotextile layer will also be collected.</p> <p>Chemical validation of imported soils: See Table 9-2.</p>

Table 9-1 (continued): Further work, remediation and validation requirements

Notes: See Table 6-7 for pollutant linkage (PL) details.

Phase	PL	Remediation Requirements	Validation Requirements
Building Construction Phase	3	<u>Gas Protection Measures</u> Further RB17 gas risk assessment to be undertaken following completion of post demolition site investigation.	Forensic soil logging and TOC analysis to be RB17 methodology.
	6	<u>Potable Water Pipes</u> It is recommended that a Water Pipeline Assessment is undertaken once the location and depth of potable water pipes are known. It is likely that barrier pipe will be required in the north of the site.	Delivery Notes of Pipe Material. Photographs of the Installed Pipe.
	2, 4	No remediation anticipated with respect to PL2 (inhalation of vapours), PL4 (controlled waters), however, this needs to be confirmed once additional work has been completed.	TBC
Other Considerations		<u>Grubbing Out of In-Ground Structures</u> It is recommended that in-ground structures are grubbed out as part of the groundworks. In-ground structures expected across the site associated with the former buildings.	
		<u>Re-use of site won material</u> 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 ⁴⁹): 5,000 tonnes (c. 2,500m ³) <u>treatment</u> of crushed concrete / stone. 1,000 tonnes (c. 500 ³) <u>use of</u> non-hazardous soil 5,000 tonnes (c. 2,500m ³) <u>use of</u> clays, sand, gravel, brick, concrete, stone etc. 50,000 tonnes (c. 25,000m ³) <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.	

Table 9-1 (continued): Further work, remediation and validation requirements

Notes: See Table 6-7 for pollutant linkage (PL) details.

⁴⁹ <https://www.gov.uk/guidance/waste-exemptions-using-waste>

Other Considerations	<p>Asbestos Management Plan</p> <p>Due to the presence of asbestos containing material, it is recommended that additional precautions are taken during site clearance, earthworks and construction in the area of concern. The presence of asbestos in the made ground at the site presents a potential risk of generation of airborne fibres if this material is disturbed, such as for excavations to construct new foundations. A JIWG work categories assessment is contained in Appendix G.</p> <p>This risk can be managed by careful procedures and site monitoring to reduce the risk of airborne fibres, and it is recommended that an appropriate 'Asbestos Management Strategy' is developed and adopted for all intrusive ground works which disturb the made ground in the area of concern. This should be carried out in line with CIRIA C733⁵⁰.</p> <p>This may include asbestos awareness training for all site staff, provision of suitable personal and respiratory protective equipment and air monitoring.</p> <p>With regards to cement bound asbestos, this can be handpicked, doubled bagged and disposed of appropriately to a licenced landfill. Guidance on removing asbestos cement is described in HSE (2012)⁵¹.</p> <p>If ACM is identified in soil arisings then soil should be placed directly into covered skips and disposed of at a suitable licenced landfill, after further testing to quantify the extent of asbestos contamination of the soils. It should be considered that blue asbestos is notifiable and must be removed by a licenced contractor.</p>
	<p>Health and Safety Considerations</p> <p>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 guidance⁵²) should be adopted by all workers involved with site enabling and construction works.</p>
	<p>Asbestos Survey</p> <p>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.</p>

Table 9-1 (continued): Further work, remediation and validation requirements

Notes: See Table 6-7 for pollutant linkage (PL) details.

9.2 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 9-2, based on MCC 'Guidelines to Developer' (2021)⁵³. LKC consider no testing, but proof of provenance is sufficient for natural, virgin, quarried material.

Ideally, the material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site. However, where this is not possible then material imported should be segregated based on source and

⁵⁰ CIRIA (2014). "Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks". C733.

⁵¹ HSE (2012). "Removing Asbestos Cement (AC) Debris." A11 Asbestos Essential – Non-licenced Tasks.

⁵² HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land" London HMSO.

⁵³ YALPAG (2021). "Verification Requirements for Cover Systems: Technical Guidance for Developers, Landowners and Consultants." Yorkshire and Lincolnshire Pollution Advisory Group. V. 4.1-June 2021.

soil type. Validation samples should be taken prior to placement in gardens / soft landscaping to ensure suitability for use.

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

Table 9-2: Sampling requirements for imported soils.

Notes:

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

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

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

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

In addition, it should be ensured that the matrix of the topsoil is suitable as a growing medium and no undesirable material is present (in line with BS3882⁵⁴). 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 6-1)). Appropriate remedial target criteria are presented in Appendix E.

9.3 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.
- » Post Demolition Site Investigation including soil sampling within the proposed Residents Garden.
- » Validation of gas protection measures installed or assessment of the gas risk after the post demolition site investigation using RB17 methodology (forensic soil logging and TOC analysis).
- » Provision of waste transfer documents.
- » Environmental capping layer: 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.

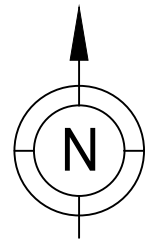
⁵⁴ BS (2015). "Specifications for Topsoil and Requirements for use." BS3882:2015.

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

Figures



Client: Britannia Victoria Ltd				Title: Site Location & Boundary Plan			
Site: Victoria Park Probation Centre				Scale (see scale bar): 1:25,000 & 1:2,000 @ A4			
Job No.: LKC 21 1679	Drawn By: CC	Checked By: MT	Drawn: June 2022	Figure: 1	Revision:		



KEY

 Site Boundary

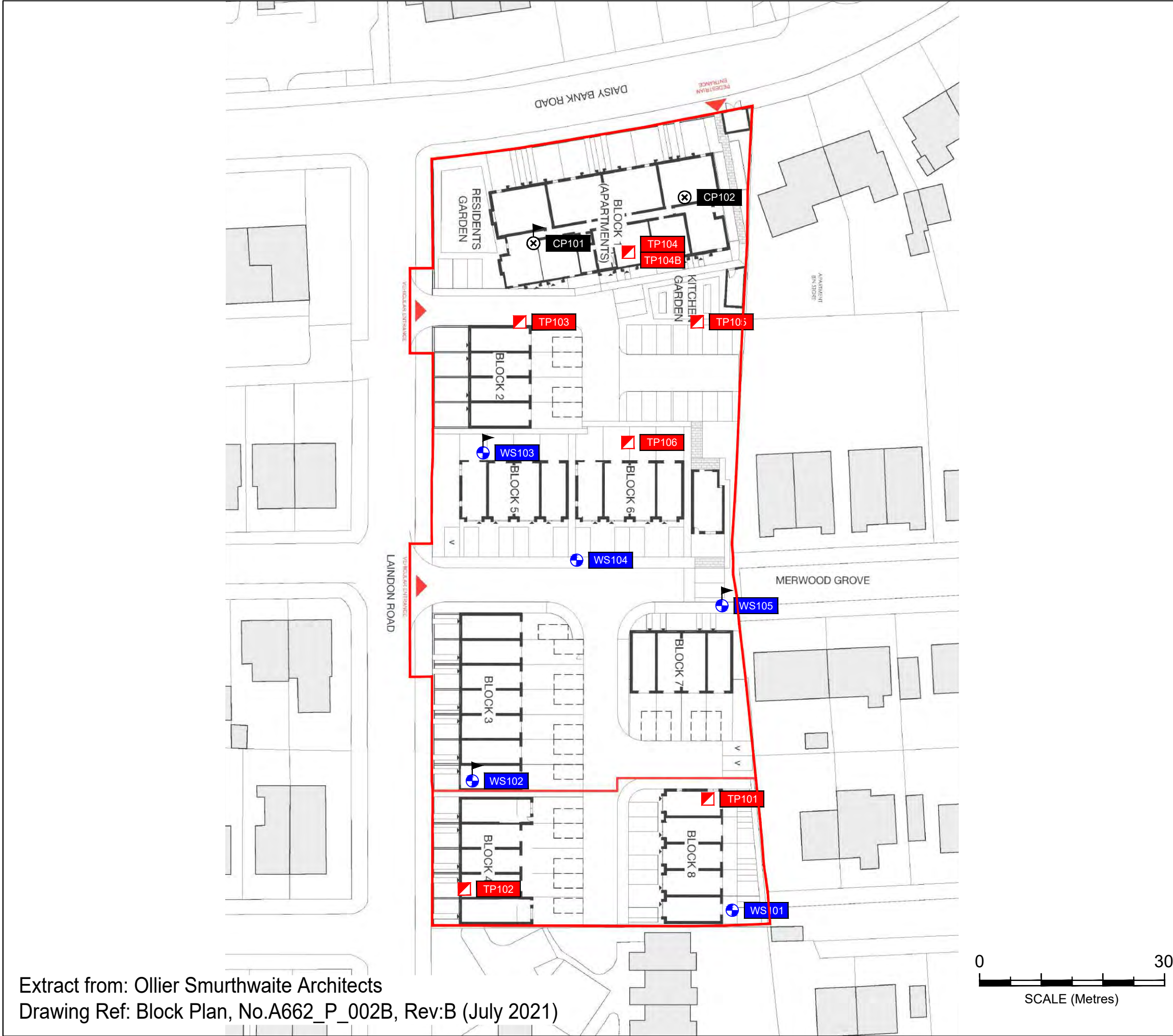
Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing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



Client: Britannia Victoria Ltd			
Site: Victoria Park Probation Centre			
Title: Proposed Development Plan			
Job No.: LKC 21 1679	Scale (See Scale Bar): See Scale Bar	Figure: 2	Revision: A
Drawn By: AC	Checked By: EK	Drawn: Sep 2022	

Extract from: Ollier Smurthwaite Architects
Drawing Ref: Block Plan, No.A662_P_002B, Rev:B (July 2021)





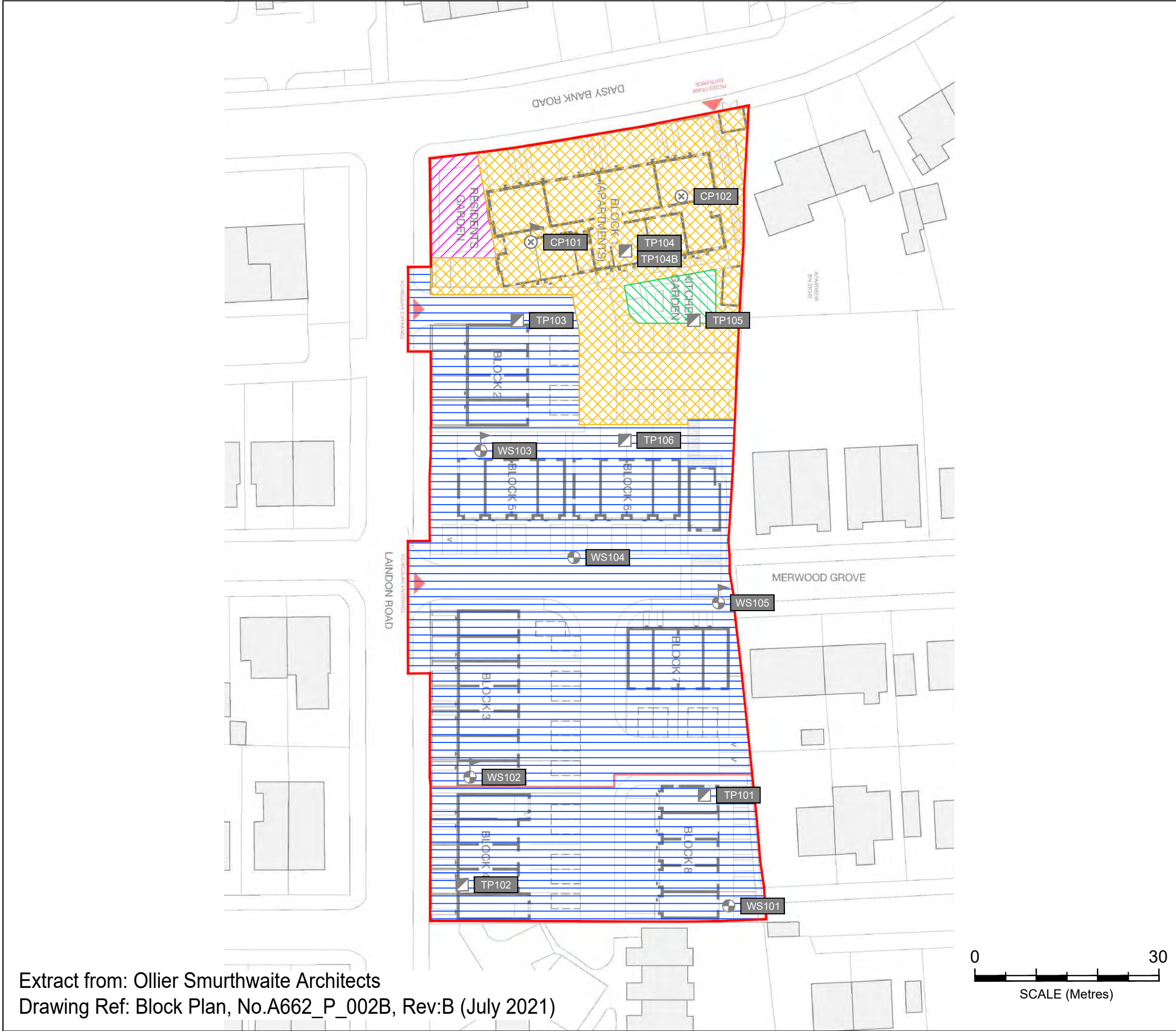
KEY

	Site Boundary
	Window Sample Borehole (WS)
	Trial Pit (TP)
	Cable Percussive Borehole (CP)
	Installation

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

Client: Britannia Victoria Ltd			
Site: Victoria Park Probation Centre			
Title: Site Investigation Location Plan			
Job No.: LKC 21 1679	Scale (See Scale Bar): See Scale Bar	Figure: 3	Revision: A
Drawn By: AC	Checked By: EK	Drawn: Sep 2022	

Extract from: Ollier Smurthwaite Architects
Drawing Ref: Block Plan, No.A662_P_002B, Rev:B (July 2021)



KEY

- Site Boundary
- Window Sample Borehole (WS)
- Trial Pit (TP)
- Cable Percussive Borehole (CP)
- Installation

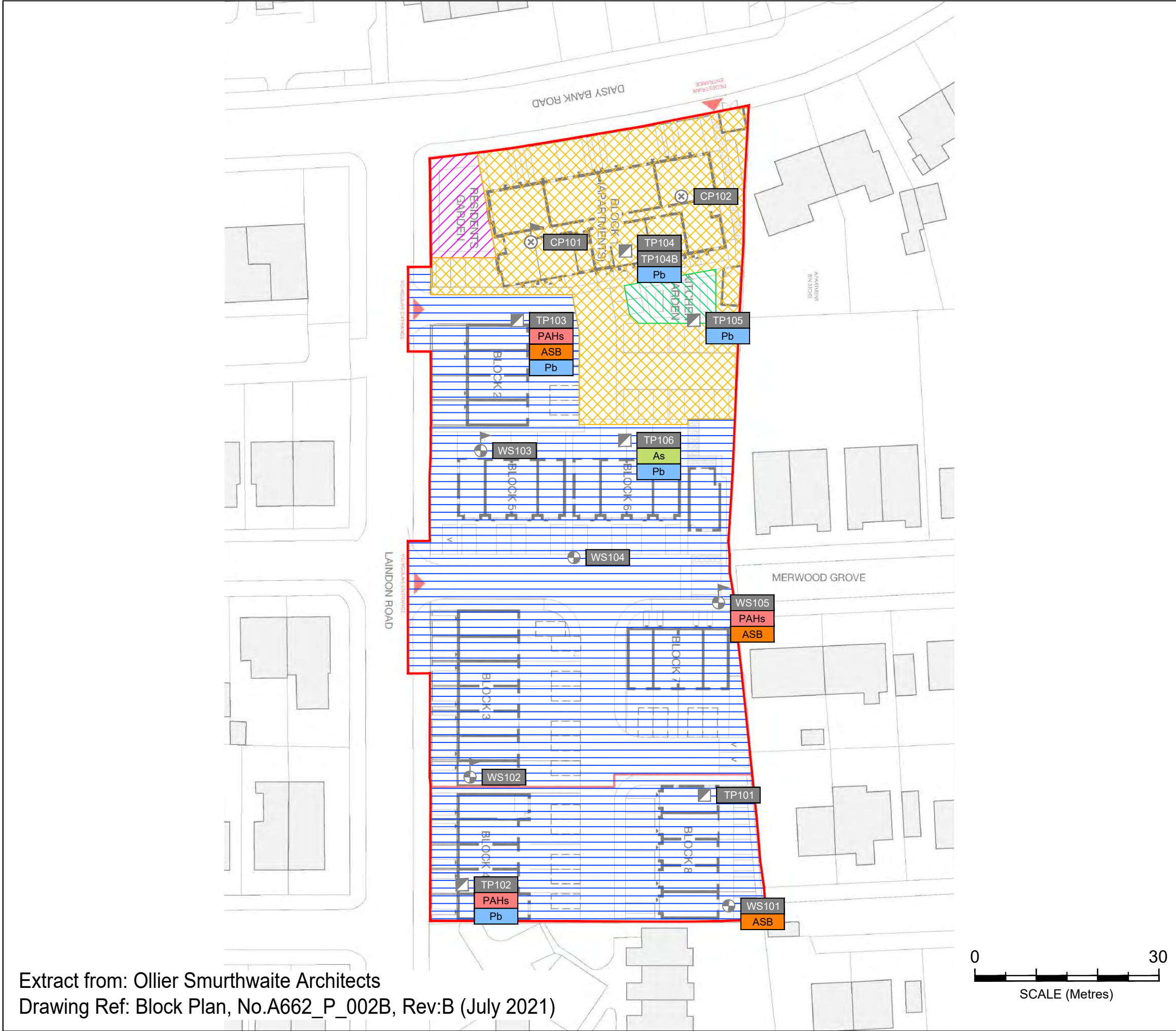
ZONING KEY:

- Zone 1: Residents Garden
- Zone 2: Apartment Block with Soft Landscaping
- Zone 3: Kitchen Garden
- Zone 4: Residential Houses with Gardens

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



Client: Britannia Victoria Ltd			
Site: Victoria Park Probation Centre			
Title: Site Zoning Plan			
Job No.: LKC 21 1679	Scale (See Scale Bar): See Scale Bar	Figure: 4	Revision:
Drawn By: AC	Checked By: EK	Drawn: Sep 2022	



KEY

- Site Boundary
- Window Sample Borehole (WS)
- Trial Pit (TP)
- Cable Percussive Borehole (CP)
- Installation

ZONING KEY:

- Zone 1: Residents Garden
- Zone 2: Apartment Block with Soft Landscaping
- Zone 3: Kitchen Garden
- Zone 4: Residential Houses with Gardens

CONTAMINANTS:

- Arsenic (As)
- PAHs (Polycyclic Aromatic Hydrocarbons)
- Asbestos (ASB)
- Lead (Pb)

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



Client: Britannia Victoria Ltd			
Site: Victoria Park Probation Centre			
Title: Contamination Location Plan			
Job No.: LKC 21 1679	Scale (See Scale Bar): See Scale Bar	Figure: 5	Revision:
Drawn By: AC	Checked By: EK	Drawn: Sep 2022	

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 552⁵⁵. 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	<ul style="list-style-type: none"> - Short term (acute) risk to human health likely to results in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. - Short term risk of pollution (note: water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. - Catastrophic damage to buildings/properties. - A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note: the definition of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000). 	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - Pollution of non-classified groundwater. - Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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.

⁵⁵ 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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

Window Sample Logs
Cable Percussive Logs
Trial Pit Logs

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

Victoria Park Probation Centre

Number
WS101**Excavation Method**Drive-in Windowless Sampler
driven to 5.45mbgl.**Dimensions****Ground Level (mOD)**

51.00

Client

Britannia Victoria Ltd

Job
Number
LKC 21 1679**Location** (Observed measurements)

386201 E 395674 N

Dates

19/08/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	ES PID=0.2ppm				(0.30)	MADE GROUND: Dark brown gravelly sandy SILT with occasional coal fragments, rootlets, rare clinker, plastic fragments and brick fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies. Firm to very stiff consistency very high strength brown and grey mottled slightly gravelly CLAY with rare coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies. Firm consistency at 0.30-0.90mbgl. Stiff consistency at 0.90-1.40mbgl. Very stiff consistency at 1.40-5.45mbgl.		
0.30-1.00	ES PID=0.3ppm			50.70	0.30			
1.00	PP 157kPa		3,3/4,4,4,5					
1.20-1.65	SPT N=17							
1.80	PP 196kPa		2,3/4,4,4,6					
2.00-2.45	SPT N=18							
2.00-3.00	D							
2.80	PP 206kPa		4,4/5,6,6,7		(5.15)			
3.00-3.45	SPT N=24							
3.80	PP 211kPa		5,6/6,7,7,10					
4.00-4.45	SPT N=30							
4.00-5.00	D							
4.80	PP >221kPa		5,5/5,6,6,8					
5.00-5.45	SPT N=25							
				45.55	5.45	Complete at 5.45m		

RemarksBorehole dry and stable.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from: www.freemaptools.com/elevation-finder.htm.**Scale**
(approx)

1:40

Logged
By

JW

Figure No.

LKC 21 1679.WS101

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

Victoria Park Probation Centre

Number
WS102**Excavation Method**Drive-in Windowless Sampler
driven to 5.45mbgl.**Dimensions****Location** (Observed measurements)
386158 E 395696 N**Ground Level (mOD)**

50.00

Dates

19/08/2022

Client

Britannia Victoria Ltd

Engineer

LKC

Job
Number
LKC 21 1679**Sheet**
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.60	ES PID=0.5ppm				(0.60)	MADE GROUND: Dark brown gravelly sandy SILT with occasional brick fragments, rootlets, rare pottery fragments and coal fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.			
0.60-1.00	ES PID=0.3ppm			49.40	0.60	Very stiff consistency very high strength brown and grey mottled slightly gravelly CLAY with rare coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies.			
1.00 1.00-2.00 1.20-1.65	PP 211kPa D SPT N=17		3,4/4,4,4,5						
1.80 2.00-2.45	PP 206kPa SPT N=19		3,3/4,4,5,6						
2.80 3.00-3.45 3.00-4.00	PP 211kPa SPT N=22 D		3,4/5,5,5,7		(4.85)				
3.80 4.00-4.45	PP 206kPa SPT N=27		4,5/5,7,7,8						
4.80	PP 221kPa			44.55	5.45	Complete at 5.45m			

RemarksBorehole dry and stable.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from: www.freemaptools.com/elevation-finder.htm.**Scale**
(approx)
1:40**Logged**
By
JW**Figure No.**
LKC 21 1679.WS102

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

Victoria Park Probation Centre

Number
WS103

Excavation Method Drive-in Windowless Sampler driven to 5.45mbgl.	Dimensions	Ground Level (mOD) 50.00	Client Britannia Victoria Ltd	Job Number LKC 21 1679
	Location (Observed measurements) 386159 E 395750 N	Dates 19/08/2022	Engineer LKC	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.50-1.00	ES PID=0.4ppm			49.88 49.80	(0.12) 0.12 0.20	MADE GROUND: Yellowish light brown slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded of mixed lithologies. Paving stone present at 0.00-0.05mbgl.			
1.20-1.65	SPT N=7		2,1/1,2,2,2	48.70	(1.10) 1.30	MADE GROUND: Light grey slightly sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of limestone. Probable MOT.			
1.50-2.00	ES PID=0.4ppm					MADE GROUND: Loose density dark brown gravelly sandy SILT with occasional coal fragments, rootlets, clinker, brick fragments and rare ceramic fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.			
1.80	PP 216kPa					Very stiff consistency very high strength grey and brown mottled slightly gravelly CLAY with rare coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies.			
2.00-2.45	SPT N=19		2,3/4,5,5,5						
2.00-3.00	D								
2.80	PP 206kPa								
3.00-3.45	SPT N=20		3,4/4,5,5,6		(4.15)				
3.80	PP 206kPa								
4.00-4.45	SPT N=23		3,4/5,5,6,7						
4.80	PP 211kPa								
5.00-5.45	SPT N=27		3,5/6,6,7,8	44.55	5.45	Complete at 5.45m			

RemarksNo SPT recovery at 1.20mbgl.
Elevation information obtained from: www.freemaptools.com/elevation-finder.htm.
Grid reference information obtained from: gridreferencefinder.com.
Borehole dry and stable.**Scale (approx)**

1:40

Logged By

JW

Figure No.

LKC 21 1679.WS103

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

Victoria Park Probation Centre

Number**WS104****Excavation Method**Drive-in Windowless Sampler
driven to 5.45mbgl.**Dimensions****Location** (Observed measurements)
386201 E 395674 N**Ground Level (mOD)**

50.00

Client

Britannia Victoria Ltd

Job**Number**
LKC 21 1679**Engineer**

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.40	ES PID=0.4ppm				(0.45)	MADE GROUND: Dark brown gravelly sandy SILT with occasional brick fragments, rare coal fragments, clinker and plastic fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies. Gravel surface layer present to 0.05mbgl. Gravel is fine to coarse, subangular to subrounded of mixed lithologies. (Imported)		
0.50-1.00	ES PID=0.4ppm			49.55	0.45			
1.00	PP 157kPa					Very stiff consistency grey and brown mottled very high strength brown and grey mottled slightly gravelly CLAY with rare coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies.		
1.20-1.65	SPT N=15		3,3/3,4,4,4					
1.20-2.00	D							
1.80	PP 206kPa							
2.00-2.45	SPT N=17		2,3/3,4,5,5					
2.80	PP 181kPa							
3.00-3.45	SPT N=19		3,4/4,5,5,5		(5.00)			
3.00-4.00	D							
3.80	PP 167kPa							
4.00-4.45	SPT N=21		4,5/5,5,5,6					
4.80	PP 172kPa					Complete at 5.45m		
5.00-5.45	SPT N=23		6,5/5,6,6,6					
				44.55	5.45			

RemarksBorehole dry and stable.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from: www.freemaptools.com/elevation-finder.htm.**Scale**
(approx)

1:40

Logged
By

JW

Figure No.

LKC 21 1679.WS104

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

Victoria Park Probation Centre

Number
WS105

Excavation Method Drive-in Windowless Sampler driven to 5.45mbgl.	Dimensions	Ground Level (mOD) 52.00	Client Britannia Victoria Ltd	Job Number LKC 21 1679
	Location (Observed measurements) 386199 E 395724 N	Dates 19/08/2022	Engineer LKC	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.10-0.40	ES PID=0.4ppm			51.95	0.05 (0.15)	MADE GROUND: Tarmacadam.			
0.50-1.00	ES PID=0.4ppm			51.80	0.20 (0.30)	MADE GROUND: Blackish grey gravelly SAND with frequent ash, occasional clinker, rare brick fragments and coal fragments. Sand is fine to coarse. Gravel is fine to medium, subangular to subrounded of predominantly ash.			
1.00	PP 157kPa			51.50	0.50	MADE GROUND: Grey and red gravelly SAND with frequent brick fragments, occasional ash, coal fragments and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of predominantly brick.			
1.20-1.65	SPT N=11		2,2/2,2,3,4			Stiff to very stiff consistency high to very high strength brown and grey mottled slightly gravelly CLAY with rare coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies. Stiff consistency and high strength until 1.00mbgl. Very stiff consistency and very high strength below 1.00mbgl.			
1.20-2.00	D								
1.80	PP 206kPa								
2.00-2.45	SPT N=17		3,3/3,4,4,6						
2.80	PP 181kPa								
3.00-3.45	SPT N=15		2,2/3,3,4,5		(4.95)				
3.00-4.00	D								
3.80	PP 167kPa								
4.00-4.45	SPT N=15		3,3/3,4,4,4						
4.00-5.00	D								
4.80	PP kPa								
4.80	PP 172kPa								
5.00-5.45	SPT N=22		Water strike(1) at 5.00m. 3,3/4,5,6,7			Very sandy clay band at 5.00mbgl. Sand is fine to coarse.		Σ1	
				46.55	5.45	Complete at 5.45m			

RemarksGroundwater strike at 5.00mbgl.
Elevation information obtained from: www.freemaptools.com/elevation-finder.htm.
Grid reference information obtained from: gridreferencefinder.com.
Borehole stable.**Scale (approx)**

1:40

Logged By

JW

Figure No.

LKC 21 1679.WS105

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

Victoria Park Probation Centre

Borehole Number**CP101****Boring Method**

Cased to 3.00mbgl.

Casing Diameter

150mm cased to 3.00m

Ground Level (mOD)

50.00

Client

Britannia Victoria Ltd

Job Number

LKC 21 1679

Location (Observed measurements)

386171 E 395780 N

Dates

18/08/2022

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.40 0.20	ES PID=0.4ppm D				49.60	(0.40) 0.40	MADE GROUND: Dark brown gravelly sandy SILT with occasional brick fragments, rare coal fragments and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.			
0.50 0.70-1.00	D B									
1.20-1.65 1.20-1.65	SPT N=31 D			3,5/7,7,8,9			Very stiff consistency brown and grey mottled slightly gravelly CLAY with occasional coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies. Occasional rootlets to 1.20mbgl.			
2.20-2.65 2.20-2.65	SPT N=32 D			5,6/7,8,8,9						
3.30-3.75 3.80	U D									
4.30-4.71 4.30-4.70 4.70-5.00	SPT 50/255 D B			7,7/10,12,18,10						
5.10-5.50 5.10-5.50	SPT 50/245 D			8,10/13,15,15,7		(9.60)				
6.70-7.13 6.70-7.10	SPT 50/275 D			7,9/12,13,13,12						
8.00-8.41 8.00-8.40	SPT 50/255 D			5,8/10,12,18,10						
9.50-9.95 10.00	U D				40.00	10.00	Complete at 10.00m			

RemarksInstalled to 10.00mbgl.
Borehole is stable and dry.
Chiselling from 4.30m to 9.50m for 1.5 hours.**Scale (approx)**

1:75

Logged By

JW

Figure No.

LKC 21 1679.CP101

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

Victoria Park Probation Centre

**Borehole
Number
CP102****Boring Method**

Cased to 3.00mbgl.

Casing Diameter

150mm cased to 3.00m

Ground Level (mOD)

50.00

Client

Britannia Victoria Ltd

**Job
Number**
LKC 21 1679**Location (Observed measurements)**

386171 E 395780 N

Dates

18/08/2022

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30 0.20	ES PID=0.5ppm D				49.60	(0.40) 0.40	MADE GROUND: Dark brown gravelly sandy SILT with occasional brick fragments, rare coal fragments and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
0.70	D					(0.80)			
1.20-1.65 1.20-1.65	SPT N=15 D			3,4/4,3,4,4	48.80	1.20	MADE GROUND: Dark brown gravelly sandy CLAY with occasional brick fragments, coal fragments, clinker and rootlets. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
1.80-2.10	B						Stiff to very stiff consistency brown and grey mottled slightly gravelly CLAY with occasional coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies.		
2.30-2.75	U						Stiff consistency from 0.40-3.20mbgl.		
2.80	D								
3.20-3.65 3.20-3.65	SPT N=24 D			4,4/5,6,6,7			Very stiff consistency from 3.20-10.125mbgl.		
4.20-4.65 4.20-4.65	SPT N=42 D			7,7/8,10,12,12					
4.70-5.00	B								
5.10-5.53 5.10-5.50	SPT 50/275 D			8,9/11,13,13,13		(8.93)			
6.50-6.95	U								
7.00	D								
8.20-8.65 8.20-8.60 8.60-8.90	SPT 50/295 S B			7,7/8,12,13,17					
9.70-10.13 9.70-10.10	SPT 50/275 D			8,9/11,14,14,11	39.87	10.13	Complete at 10.13m		

RemarksBackfilled with arisings.
Borehole is stable and dry.
Chiselling from 5.10m to 9.70m for 1.25 hours.**Scale
(approx)**

1:75

**Logged
By**

JW

Figure No.

LKC 21 1679.CP102

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

Victoria Park Probation Centre

**Trial Pit
Number
TP101****Excavation Method**

Machine excavated trial pit.

Dimensions

2.00m x 0.60m x 2.20m

Ground Level (mOD)

51.00

Client

Britannia Victoria Ltd

**Job
Number
LKC 21 1679****Location (Observed measurements)**

386197 E 395691 N

Dates

18/08/2022

Engineer

LKC

**Sheet
1/1**

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.60	ES D PID=1.2ppm			50.95 50.90	0.05 0.10	MADE GROUND: Tarmacadam.		
					(0.50)	MADE GROUND: Light brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
0.60-1.00	ES PID=0.4ppm			50.40	0.60	MADE GROUND: Soft to firm consistency dark brown gravelly sandy CLAY with occasional brick fragments, glass fragments, ceramic fragments, coal fragments, rootlets and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies. Pockets of dark grey organic gravelly sandy clay at 0.60mbgl.		
1.00-2.00	D				(1.60)	Very stiff consistency high strength brown and grey mottled slightly gravelly CLAY with rare coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies.		
1.50	SV >140kPa		SV = 140 kPa, 140 kPa, 140 kPa. Av. = 140Kpa.	48.80	2.20	Complete at 2.20m		

RemarksTrial pit dry and stable.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from:
www.freemaptools.com/elevation-finder.htm.

No image available

Scale (approx)

1:25

Logged By

JW

Figure No.

LKC 21 1679.TP101

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

Victoria Park Probation Centre

**Trial Pit
Number
TP102****Excavation Method**

Machine excavated trial pit to 2.60mbgl.

Dimensions

2.50m x 0.60m x 2.60m

Ground Level (mOD)

50.00

Client

Britannia Victoria Ltd

**Job
Number
LKC 21 1679****Location (Observed measurements)**

386154 E 395676 N

Dates

18/08/2022

Engineer

LKC

**Sheet
1/1**

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.60	ES D PID=1.1ppm				(0.60)	MADE GROUND: Dark brown gravelly sandy SILT with frequent rootlets, rare brick fragments, glass fragments, coal fragments, rebar and plastic fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
0.60-1.00	ES PID=0.4ppm			49.40	0.60	Very stiff consistency brown and grey mottled slightly gravelly CLAY with occasional rootlets and rare coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies. Clay is friable. Recovered as gravel.		
1.50-2.50	D				(2.00)	No shear vane reading due to friable nature of clay.		
				47.40	2.60	Complete at 2.60m		

No image available

RemarksNo shear vane readings at 0.60-2.60mbgl due to friable nature of the clay.
Trial pit dry and stable.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from: www.freemaptools.com/elevation-finder.htm.**Scale (approx)**

1:25

Logged By

JW

Figure No.

LKC 21 1679.TP102

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

Victoria Park Probation Centre

**Trial Pit
Number
TP103****Excavation Method**Machine excavated trial pit to
3.00mbgl.**Dimensions**

2.50m x 0.60m x 3.00m

Ground Level (mOD)

50.00

Client

Britannia Victoria Ltd

**Job
Number
LKC 21 1679****Location (Observed measurements)**

386166 E 395770 N

Dates

18/08/2022

Engineer

LKC

**Sheet
1/1**

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	ES PID=0.3ppm					MADE GROUND: Dark brown gravelly sandy SILT with frequent whole bricks, brick fragments, occasional rootlets, concrete fragments, coal fragments, clinker, rare glass fragments and timber. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
0.40-1.40	D PID=0.3ppm				(1.40)			
1.40-2.00	ES PID=0.4ppm			48.60	1.40	Firm to very stiff consistency high strength brown and grey mottled slightly gravelly CLAY with rare coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies.		
2.00 2.00-3.00	SV >140kPa D		SV = 140 kPa, 140 kPa, 140 kPa. Av. = 140kPa.		(1.60)	Firm to stiff consistency to 2.30mbgl. Very stiff consistency below 2.30mbgl.		
2.80	SV >140kPa		SV = 140 kPa, 140 kPa, 140 kPa. Av. = 140kPa.	47.00	3.00	Complete at 3.00m		

No image available

RemarksTrial pit dry and stable.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from:
www.freemaptools.com/elevation-finder.htm.**Scale (approx)**

1:25

Logged By

JW

Figure No.

LKC 21 1679.TP103

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

Victoria Park Probation Centre

**Trial Pit
Number
TP104****Excavation Method**Machine excavated trial pit tp
1.42mbgl.**Dimensions**

2.50m x 1.10m x 1.42m

Ground Level (mOD)

50.00

Client

Britannia Victoria Ltd

**Job
Number
LKC 21 1679****Location (Observed measurements)**

386187 E 395783 N

Dates

18/08/2022

Engineer

LKC

**Sheet
1/1**

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				49.90	(0.10) 0.10	MADE GROUND: Dark brown slightly gravelly sandy SILT with frequent rootlets, occasional brick fragments and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
					(1.30)	MADE GROUND: Dark brown and red sandy GRAVEL with frequent whole bricks, brick fragments, occasional metal fragments, concrete fragments, glass fragments, plastic fragments and rare ceramic fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of predominantly brick.		
				48.60 48.58	1.40 1.42	CONCRETE. Abandoned at 1.42m		

No image available

Remarks

Trial pit dry.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from:
www.freemaptools.com/elevation-finder.htm.
Refusal on concrete floor. Trial pit repositioned approximately 4m E (Ref. TP104B).
Trial pit unstable, collapse at 0.10-1.40mbgl.

Scale (approx)

1:25

Logged By

JW

Figure No.

LKC 21 1679.TP104

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

Victoria Park Probation Centre

**Trial Pit
Number****TP104B****Excavation Method**

Machine excavated trial pit to 3.00mbgl.

Dimensions

2.50m x 1.40m x 3.00m

Ground Level (mOD)

50.00

Client

Britannia Victoria Ltd

**Job
Number**

LKC 21 1679

Location (Observed measurements)

386188 E 395784 N

Dates

18/08/2022

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.10	ES PID=0.4ppm			49.90	(0.10)	MADE GROUND: Dark brown slightly gravelly sandy SILT with frequent rootlets, occasional brick fragments and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
0.10-1.00	ES PID=0.9ppm					MADE GROUND: Dark brown and red sandy GRAVEL with frequent whole bricks, brick fragments, occasional metal fragments, concrete fragments, glass fragments, plastic fragments and rare ceramic fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of predominantly brick.		
					(1.40)			
				48.50	1.50			
				48.40	(0.10)	CONCRETE.		
					1.60	Firm to very stiff consistency high strength brown and grey mottled slightly gravelly CLAY with occasional coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies.		
2.00-3.00	D				(1.40)			
2.40	SV >140kPa		SV = 140 kPa, 140 kPa, 140 kPa. Av. = 140Kpa.					
				47.00	3.00	Complete at 3.00m		

RemarksTrial pit unstable, made ground collapse at 0.10-1.50mbgl.
Trial pit dry.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from: www.freemaptools.com/elevation-finder.htm.

No image available

Scale (approx)

1:25

Logged By

JW

Figure No.

LKC 21 1679.TP104B

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

Victoria Park Probation Centre

**Trial Pit
Number
TP105****Excavation Method**

Machine excavated trial pit to 3.00mbgl.

Dimensions

2.50m x 0.60m x 3.00m

Ground Level (mOD)

52.00

Client

Britannia Victoria Ltd

**Job
Number
LKC 21 1679****Location** (Observed measurements)

386196 E 395769 N

Dates

18/08/2022

Engineer

LKC

**Sheet
1/1**

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50-1.50	ES D PID=0.7ppm					MADE GROUND: Dark brown very gravelly sandy SILT with frequent whole bricks, brick fragments, occasional rootlets, coal fragments, clinker, concrete fragments, rare copper pipe, glass fragments, timber and plastic fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
2.20-3.00	ES D PID=0.4ppm			49.80	2.20	Very stiff consistency brown and grey mottled slightly gravelly CLAY with occasional coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies. Recovered as gravel.		
				49.00	3.00	No shear vane readings due to friable nature of clay.		
						Complete at 3.00m		

No image available

RemarksNo shear vane readings at 2.20-3.00mbgl due to friable nature of the clay.
Trial pit dry and stable.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from:
www.freemaptools.com/elevation-finder.htm.**Scale (approx)**

1:25

Logged By

JW

Figure No.

LKC 21 1679.TP105

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

Victoria Park Probation Centre

**Trial Pit
Number****TP106****Excavation Method**

Machine excavated trial pit to 3.00mbgl.

Dimensions

2.50m x 0.60m x 3.00m

Ground Level (mOD)

52.00

Client

Britannia Victoria Ltd

**Job
Number**

LKC 21 1679

Location (Observed measurements)

386186 E 395748 N

Dates

18/08/2022

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.70	ES D PID=0.7ppm				(0.70)	MADE GROUND: Dark brown gravelly sandy SILT with occasional brick fragments, coal fragments, clinker, rare glass fragments and ceramic fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of mixed lithologies.		
1.00-2.00	ES PID=0.4ppm			51.30	0.70	Very stiff consistency high strength brown and grey mottled slightly gravelly CLAY with occasional coal fragments. Gravel is fine to medium, subangular to subrounded of mixed lithologies. Recovered as gravel.		
1.50-2.50	D				(2.30)	No shear vane readings above 2.00mbgl due to friable nature of clay.		
2.00	SV >140kPa		SV = 140 kPa, 140 kPa, 140 kPa. Av. = 140Kpa.	49.00	3.00	Complete at 3.00m		

No image available

Remarks

No shear vane readings above 2.00mbgl due to friable nature of the clay.
Trial pit dry and stable.
Grid reference information obtained from: gridreferencefinder.com.
Elevation information obtained from: www.freemaptools.com/elevation-finder.htm.

Scale (approx)

1:25

Logged By

JW

Figure No.

LKC 21 1679.TP106

Appendix C

Certificates of Analysis – Soil

Final Report

Report No.: 22-32307-1

Initial Date of Issue: 01-Sep-2022

Client LK Consult

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

Contact(s): Contaminated Land
Emma Khadun

Project LKC 21 1679 Victoria Park Probation
Centre

Quotation No.:		Date Received:	24-Aug-2022
Order No.:	740525	Date Instructed:	25-Aug-2022
No. of Samples:	11		
Turnaround (Wkdays):	5	Results Due:	01-Sep-2022
Date Approved:	01-Sep-2022		

Approved By:



Details: Stuart Henderson, Technical
Manager

Results - Soil

Project: LKC 21 1679 Victoria Park Probation Centre

Client: LK Consult	Chemtest Job No.:				22-32307	22-32307	22-32307	22-32307	22-32307	22-32307	22-32307	22-32307
Quotation No.:	Chemtest Sample ID.:				1493397	1493399	1493400	1493401	1493403	1493404	1493406	1493407
Order No.: 740525	Client Sample Ref.:				ES	ES	ES	ES	ES	ES	ES	ES
	Client Sample ID.:				TP101	TP102	TP102	TP103	TP104B	TP104B	TP105	TP105
	Sample Location:				TP101	TP102	TP102	TP103	TP104B	TP104B	TP105	TP105
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.1	0.0	0.6	0.1	0.0	0.1	0.5	2.2
	Bottom Depth (m):				0.6	0.6	1.0	0.3	0.1	1.0	1.5	3.0
	Date Sampled:				18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-	-	-	Fibres/Clumps	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Amosite	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001				0.002				
Total Asbestos	U	2192	%	0.001				0.002				
Moisture	N	2030	%	0.020	19	7.4	12	12	7.7	11	12	14
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Grey	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Sand	Gravel	Sand	Sand	Sand	Sand	Gravel
pH	U	2010		4.0	9.2	7.7	8.9	7.9	9.4	8.4	9.3	9.3
Magnesium (Water Soluble)	N	2120	g/l	0.010				< 0.010		< 0.010	< 0.010	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.038	< 0.010	< 0.010
Chloride (Water Soluble)	U	2220	g/l	0.010				< 0.010		< 0.010	< 0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010				< 0.010		< 0.010	< 0.010	
Arsenic	U	2455	mg/kg	0.5	7.5	24	5.9	15	18	7.0	8.5	5.2
Cadmium	U	2455	mg/kg	0.10	0.14	0.35	< 0.10	0.19	0.19	0.17	0.10	< 0.10
Chromium	U	2455	mg/kg	0.5	15	13	18	16	31	20	14	19
Copper	U	2455	mg/kg	0.50	29	80	20	44	33	70	20	16
Mercury	U	2455	mg/kg	0.05	0.18	0.83	0.08	0.31	0.41	0.98	0.16	0.05
Nickel	U	2455	mg/kg	0.50	19	18	25	15	8.0	5.4	12	24
Lead	U	2455	mg/kg	0.50	66	270	110	340	130	3300	670	34
Selenium	U	2455	mg/kg	0.25	0.41	0.78	0.45	0.59	0.31	< 0.25	0.40	0.40
Vanadium	U	2455	mg/kg	0.5	17	25	17	20	8.5	12	12	18
Zinc	U	2455	mg/kg	0.50	52	220	46	95	77	130	60	39
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	13	27	1.9	5.7	6.6	3.9	8.2	1.8
Naphthalene	U	2800	mg/kg	0.10	< 0.10	0.92	< 0.10	0.52	0.29	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	0.63	< 0.10	0.19	0.16	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	0.64	< 0.10	0.80	0.38	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	0.76	< 0.10	0.58	0.20	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	1.7	11	< 0.10	7.3	2.8	1.3	2.2	< 0.10
Anthracene	U	2800	mg/kg	0.10	0.38	2.6	< 0.10	1.9	0.86	0.38	0.96	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	3.5	22	0.32	19	8.4	3.3	5.6	0.28
Pyrene	U	2800	mg/kg	0.10	3.9	22	0.34	19	8.3	3.1	5.8	0.26
Benzo[a]anthracene	U	2800	mg/kg	0.10	1.9	12	< 0.10	10	4.8	1.7	2.9	< 0.10

Results - Soil

Project: LKC 21 1679 Victoria Park Probation Centre

Client: LK Consult	Chemtest Job No.:				22-32307	22-32307	22-32307	22-32307	22-32307	22-32307	22-32307	22-32307
Quotation No.:	Chemtest Sample ID.:				1493397	1493399	1493400	1493401	1493403	1493404	1493406	1493407
Order No.: 740525	Client Sample Ref.:				ES	ES	ES	ES	ES	ES	ES	ES
	Client Sample ID.:				TP101	TP102	TP102	TP103	TP104B	TP104B	TP105	TP105
	Sample Location:				TP101	TP102	TP102	TP103	TP104B	TP104B	TP105	TP105
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.1	0.0	0.6	0.1	0.0	0.1	0.5	2.2
	Bottom Depth (m):				0.6	0.6	1.0	0.3	0.1	1.0	1.5	3.0
	Date Sampled:				18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022	18-Aug-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD								
Chrysene	U	2800	mg/kg	0.10	2.5	12	< 0.10	11	5.0	2.1	3.5	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	3.0	13	< 0.10	13	6.5	2.3	4.0	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.96	5.1	< 0.10	5.1	2.5	0.87	1.6	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	2.2	13	< 0.10	12	5.6	1.7	3.4	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	6.0	< 0.10	7.3	4.0	< 0.10	2.1	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	1.1	< 0.10	0.87	0.51	< 0.10	0.34	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	6.5	< 0.10	6.1	3.5	< 0.10	1.9	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	20	130	< 2.0	110	54	17	34	< 2.0

Results - Soil

Project: LKC 21 1679 Victoria Park Probation Centre

Client: LK Consult	Chemtest Job No.:				22-32307	22-32307	22-32307
Quotation No.:	Chemtest Sample ID.:				1493408	1493410	1493411
Order No.: 740525	Client Sample Ref.:				ES	ES	ES
	Client Sample ID.:				TP106	CP101	CP102
	Sample Location:				TP106	CP101	CP102
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.0	0.0	0.0
	Bottom Depth (m):				0.7	0.4	0.3
	Date Sampled:				18-Aug-2022	18-Aug-2022	18-Aug-2022
	Asbestos Lab:				DURHAM		DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-		-
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001			
Total Asbestos	U	2192	%	0.001			
Moisture	N	2030	%	0.020	14	6.0	7.6
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones and Roots
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH	U	2010		4.0	8.1	8.3	7.8
Magnesium (Water Soluble)	N	2120	g/l	0.010		< 0.010	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.018	< 0.010	< 0.010
Chloride (Water Soluble)	U	2220	g/l	0.010		0.011	
Nitrate (Water Soluble)	N	2220	g/l	0.010		< 0.010	
Arsenic	U	2455	mg/kg	0.5	82		19
Cadmium	U	2455	mg/kg	0.10	0.28		0.31
Chromium	U	2455	mg/kg	0.5	19		36
Copper	U	2455	mg/kg	0.50	170		38
Mercury	U	2455	mg/kg	0.05	3.0		0.42
Nickel	U	2455	mg/kg	0.50	47		9.5
Lead	U	2455	mg/kg	0.50	990		88
Selenium	U	2455	mg/kg	0.25	1.3		0.42
Vanadium	U	2455	mg/kg	0.5	75		10
Zinc	U	2455	mg/kg	0.50	94		91
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50
Organic Matter	U	2625	%	0.40	15		7.2
Naphthalene	U	2800	mg/kg	0.10	< 0.10		0.35
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10		0.20
Acenaphthene	U	2800	mg/kg	0.10	< 0.10		0.48
Fluorene	U	2800	mg/kg	0.10	< 0.10		0.30
Phenanthrene	U	2800	mg/kg	0.10	3.6		3.6
Anthracene	U	2800	mg/kg	0.10	0.99		0.96
Fluoranthene	U	2800	mg/kg	0.10	6.1		7.4
Pyrene	U	2800	mg/kg	0.10	6.6		7.0
Benzo[a]anthracene	U	2800	mg/kg	0.10	3.4		3.9

Results - Soil

Project: LKC 21 1679 Victoria Park Probation Centre

Client: LK Consult	Chemtest Job No.:				22-32307	22-32307	22-32307
Quotation No.:	Chemtest Sample ID.:				1493408	1493410	1493411
Order No.: 740525	Client Sample Ref.:				ES	ES	ES
	Client Sample ID.:				TP106	CP101	CP102
	Sample Location:				TP106	CP101	CP102
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.0	0.0	0.0
	Bottom Depth (m):				0.7	0.4	0.3
	Date Sampled:				18-Aug-2022	18-Aug-2022	18-Aug-2022
	Asbestos Lab:				DURHAM		DURHAM
Determinand	Accred.	SOP	Units	LOD			
Chrysene	U	2800	mg/kg	0.10	3.6		4.3
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	3.4		4.7
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	1.1		1.6
Benzo[a]pyrene	U	2800	mg/kg	0.10	3.4		5.1
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10		2.5
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10		0.45
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10		2.6
Total Of 16 PAH's	N	2800	mg/kg	2.0	32		45

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
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.
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

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

Final Report

Report No.:	22-32319-1		
Initial Date of Issue:	01-Sep-2022		
Client	LK Consult		
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS		
Contact(s):	Contaminated Land Joe Walker		
Project	LKC 21 1679 Victoria Park		
Quotation No.:		Date Received:	24-Aug-2022
Order No.:	740518	Date Instructed:	25-Aug-2022
No. of Samples:	8		
Turnaround (Wkdays):	5	Results Due:	01-Sep-2022
Date Approved:	01-Sep-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: LKC 21 1679 Victoria Park

Client: LK Consult	Chemtest Job No.:				22-32319	22-32319	22-32319	22-32319	22-32319	22-32319	22-32319	22-32319
Quotation No.:	Chemtest Sample ID.:				1493467	1493468	1493469	1493471	1493473	1493474	1493475	1493476
Order No.: 740518	Client Sample Ref.:				ES	ES	ES	ES	ES	ES	ES	ES
	Client Sample ID.:				WS101	WS101	WS102	WS103	WS104	WS104	WS105	WS105
	Sample Location:				WS101	WS101	WS102	WS103	WS104	WS104	WS105	WS105
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.0	0.3	0.0	0.5	0.0	0.5	0.2	0.5
	Bottom Depth (m):				0.3	1.0	0.6	1.0	0.4	1.0	0.4	1.0
	Date Sampled:				19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	Fibres/Clumps	-	-	-	-	-	Fibres/Clumps	-
Asbestos Identification	U	2192		N/A	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	0.004						0.002	
Total Asbestos	U	2192	%	0.001	0.004						0.002	
Moisture	N	2030	%	0.020	18	16	12	8.7	15	19	11	19
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones and Roots	Stones	Stones and Roots	Stones	Stones	None	Stones	None
Soil Texture	N	2040		N/A	Sand	Clay	Sand	Sand	Sand	Clay	Sand	Clay
pH	U	2010		4.0	7.9	8.5	7.7	8.2	7.8	8.1	9.4	7.9
Magnesium (Water Soluble)	N	2120	g/l	0.010					< 0.010			
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	0.014
Chloride (Water Soluble)	U	2220	g/l	0.010					< 0.010			
Nitrate (Water Soluble)	N	2220	g/l	0.010					< 0.010			
Arsenic	U	2455	mg/kg	0.5	18	6.7	12	13	14	4.6	12	7.7
Cadmium	U	2455	mg/kg	0.10	0.21	< 0.10	0.16	0.26	0.17	< 0.10	0.20	< 0.10
Chromium	U	2455	mg/kg	0.5	9.1	24	11	10	15	18	30	25
Copper	U	2455	mg/kg	0.50	38	18	40	37	37	13	66	16
Mercury	U	2455	mg/kg	0.05	0.11	< 0.05	0.19	0.26	0.21	< 0.05	0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	17	25	13	14	18	27	20	30
Lead	U	2455	mg/kg	0.50	67	15	81	120	150	7.0	66	11
Selenium	U	2455	mg/kg	0.25	0.53	0.49	0.40	0.51	0.62	0.37	0.42	0.54
Vanadium	U	2455	mg/kg	0.5	22	27	17	17	21	17	17	24
Zinc	U	2455	mg/kg	0.50	86	38	56	66	74	28	68	39
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	17	1.4	12	13	8.0	1.0	15	1.1
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.48	0.79	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	0.42	0.18	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.47	0.99	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.58	0.82	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	1.1	< 0.10	5.5	6.7	1.8	< 0.10	8.7	< 0.10
Anthracene	U	2800	mg/kg	0.10	0.26	< 0.10	1.2	1.4	0.40	< 0.10	2.4	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	1.5	< 0.10	8.4	8.6	3.0	< 0.10	18	< 0.10
Pyrene	U	2800	mg/kg	0.10	1.4	< 0.10	9.0	8.7	3.3	< 0.10	15	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.73	< 0.10	4.4	3.7	1.6	< 0.10	7.3	< 0.10

Results - Soil

Project: LKC 21 1679 Victoria Park

Client: LK Consult	Chemtest Job No.:				22-32319	22-32319	22-32319	22-32319	22-32319	22-32319	22-32319	22-32319
Quotation No.:	Chemtest Sample ID.:				1493467	1493468	1493469	1493471	1493473	1493474	1493475	1493476
Order No.: 740518	Client Sample Ref.:				ES	ES	ES	ES	ES	ES	ES	ES
	Client Sample ID.:				WS101	WS101	WS102	WS103	WS104	WS104	WS105	WS105
	Sample Location:				WS101	WS101	WS102	WS103	WS104	WS104	WS105	WS105
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.0	0.3	0.0	0.5	0.0	0.5	0.2	0.5
	Bottom Depth (m):				0.3	1.0	0.6	1.0	0.4	1.0	0.4	1.0
	Date Sampled:				19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022	19-Aug-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD								
Chrysene	U	2800	mg/kg	0.10	0.77	< 0.10	4.6	4.5	2.0	< 0.10	7.9	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	5.5	4.4	1.7	< 0.10	9.0	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	2.0	1.5	0.53	< 0.10	3.8	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	4.7	4.2	1.8	< 0.10	7.3	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	2.6	1.8	< 0.10	< 0.10	4.3	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	0.62	0.47	< 0.10	< 0.10	0.81	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	2.9	2.1	< 0.10	< 0.10	4.0	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	5.8	< 2.0	53	51	16	< 2.0	89	< 2.0

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurement by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
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.
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

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

Certificates of Analysis - Geotechnical

TEST REPORT

Client LK Consult Ltd

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

Contract LKC 21 1679 -
Victoria Park, Manchester

Job Number MRN 4310/118
Date of Issue 08 September 2022
Page 1 of 8

Approved Signatories

S J Hutchings, O P Davies

Notes

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



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

Also at: London: 020 8523 1999

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

MURRAY RIX

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



TEST CERTIFICATE

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

PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

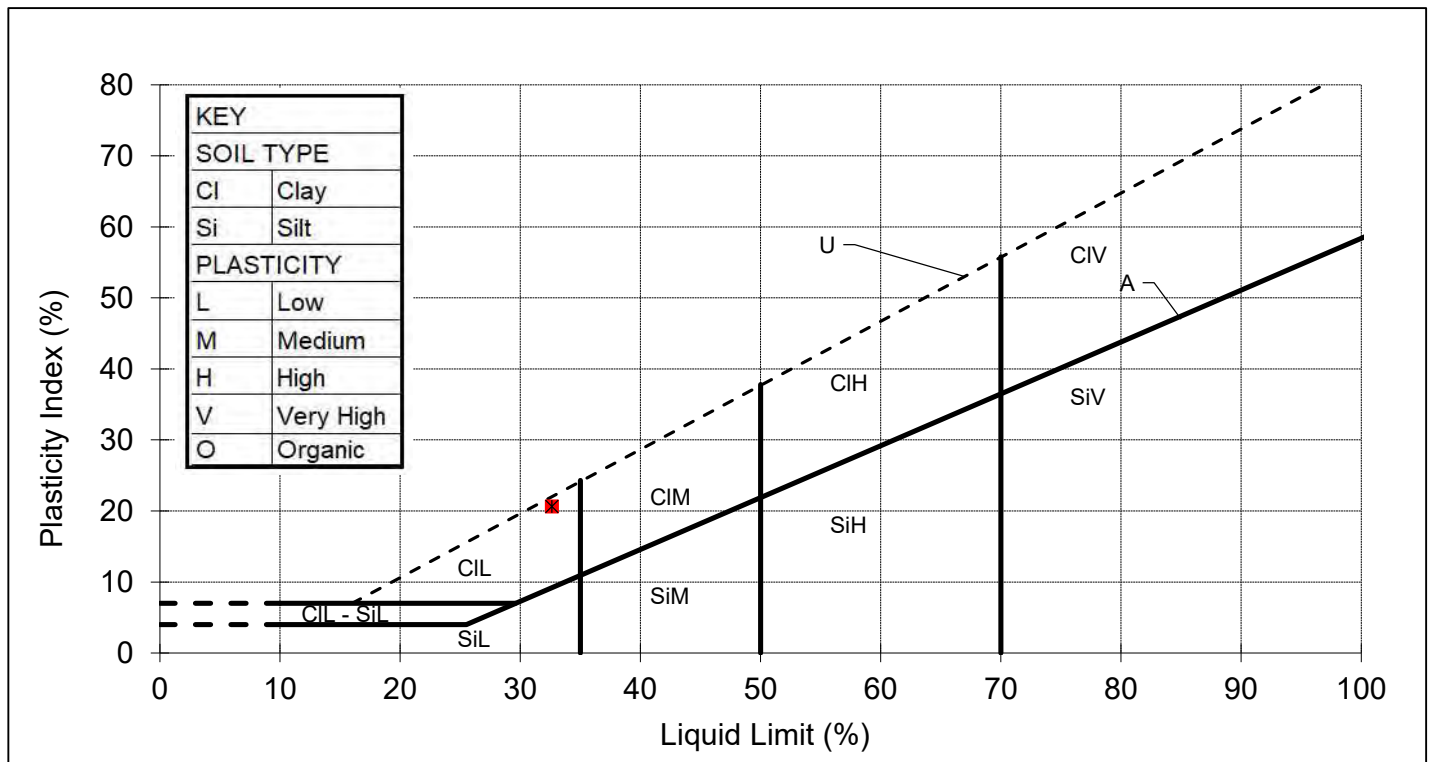
CLIENT	LK Consult Ltd
SITE	LKC 21 1679 - Victoria Park, Manchester
JOB NUMBER	MRN 4310/118

SAMPLE LABEL	TP102 1.5-2.5m	DATE SAMPLED	Not advised
SAMPLE No.	115924	DATE RECEIVED	23-Aug-22
DATE TESTED	30-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.0	32.7	1.001	
Determination 2 (avg)	19.9	32.5		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
16.4	33	12	21	90



REMARKS

SIGNED

NAME

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

DATE

08-Sep-22

MURRAY RIX

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



TEST CERTIFICATE

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

PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5

WATER CONTENT METHOD BS EN ISO 17892-1:2014

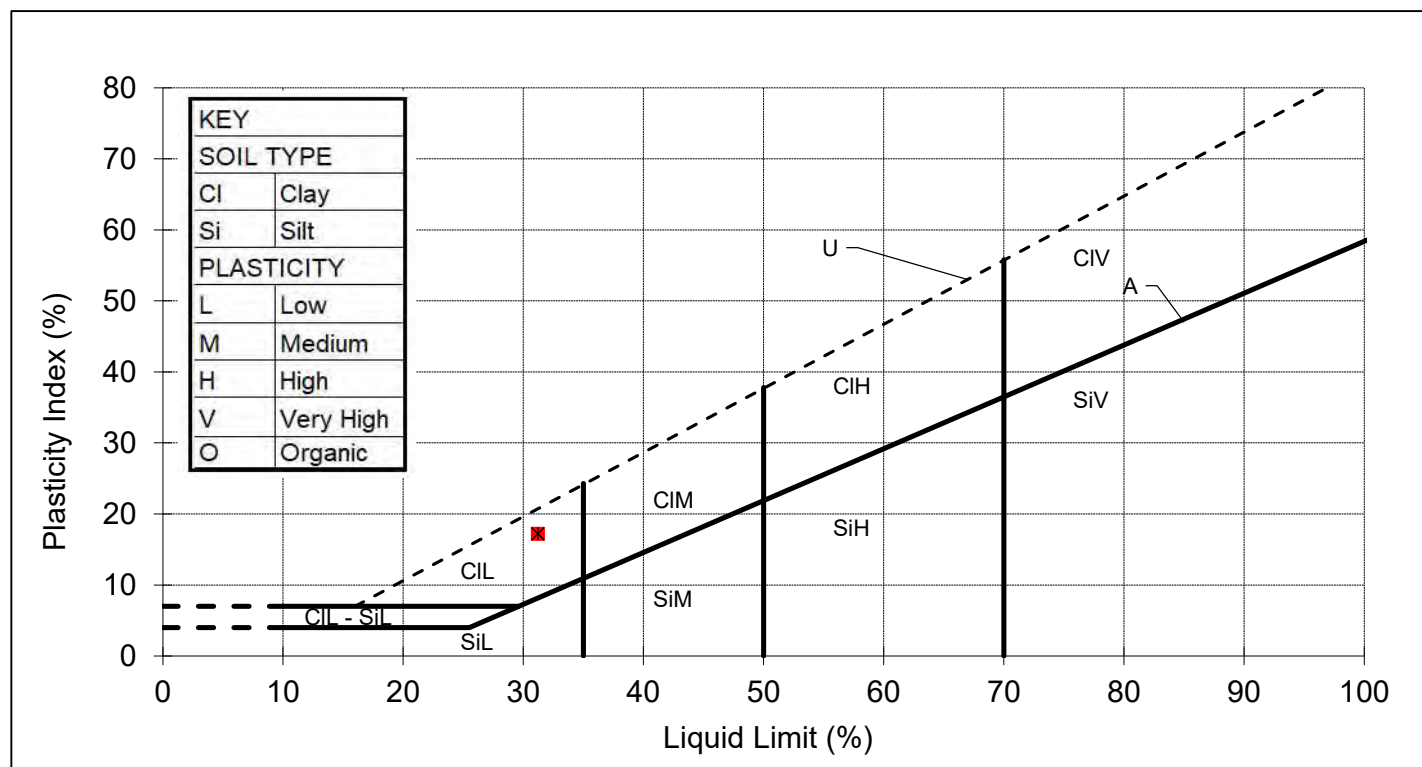
CLIENT	LK Consult Ltd
SITE	LKC 21 1679 - Victoria Park, Manchester
JOB NUMBER	MRN 4310/118

SAMPLE LABEL	TP105 0.5-1.5m	DATE SAMPLED	Not advised
SAMPLE No.	115925	DATE RECEIVED	23-Aug-22
DATE TESTED	30-Aug-22	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with occasional gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)		Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	20.3	31.4	0.995	
Determination 2 (avg)	20.3	31.3		

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
15.5	31	14	17	78



REMARKS

SIGNED

NAME

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

DATE

08-Sep-22

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.3 (30° FALL CONE) 1 POINT METHOD
PLASTIC LIMIT BS EN ISO 17892-12:2018+A1:2021 Clause 5.5
WATER CONTENT METHOD BS EN ISO 17892-1:2014

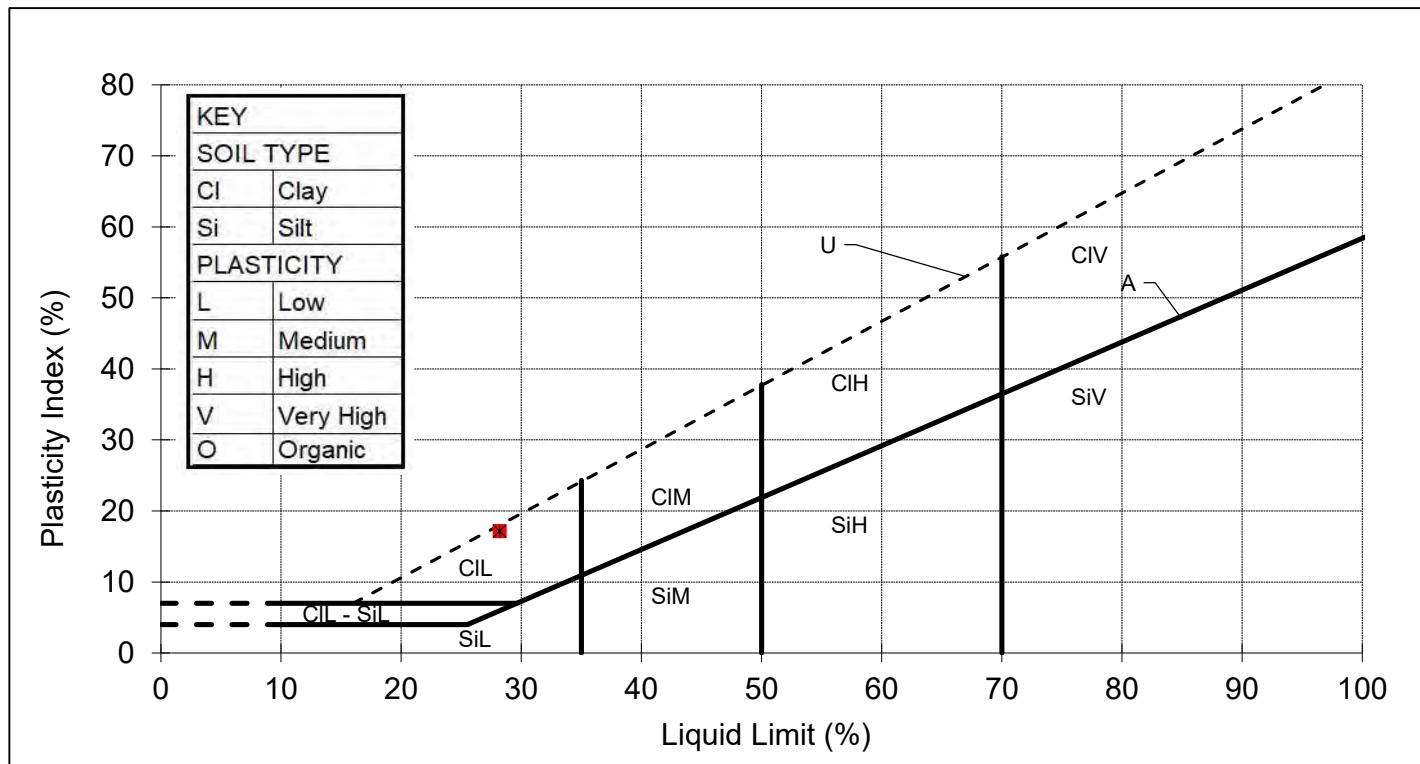
CLIENT	LK Consult Ltd
SITE	LKC 21 1679 - Victoria Park, Manchester
JOB NUMBER	MRN 4310/118

SAMPLE LABEL	TP104 0.4-1.4m	DATE SAMPLED	Not advised
SAMPLE No.	115926	DATE RECEIVED	23-Aug-22
DATE TESTED	30-Aug-22	SAMPLED BY	Client

MATERIAL	MADE GROUND; Firm brown silty sandy CLAY with frequent gravel		
ADVISED SOURCE	Site Investigation sample	WATER CONTENT	Increasing
SAMPLE HISTORY	Natural State	% RET. 425um BY	Wet Sieved

Test Readings mm (average)	Moisture Content %	Correction Factor	Correction factor from Clayton and Jukes 1978
Determination 1 (avg)	17.8	27.3	
Determination 2 (avg)	17.8	27.3	

Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
11.4	28	11	17	62



REMARKS

SIGNED

NAME

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

DATE

08-Sep-22

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

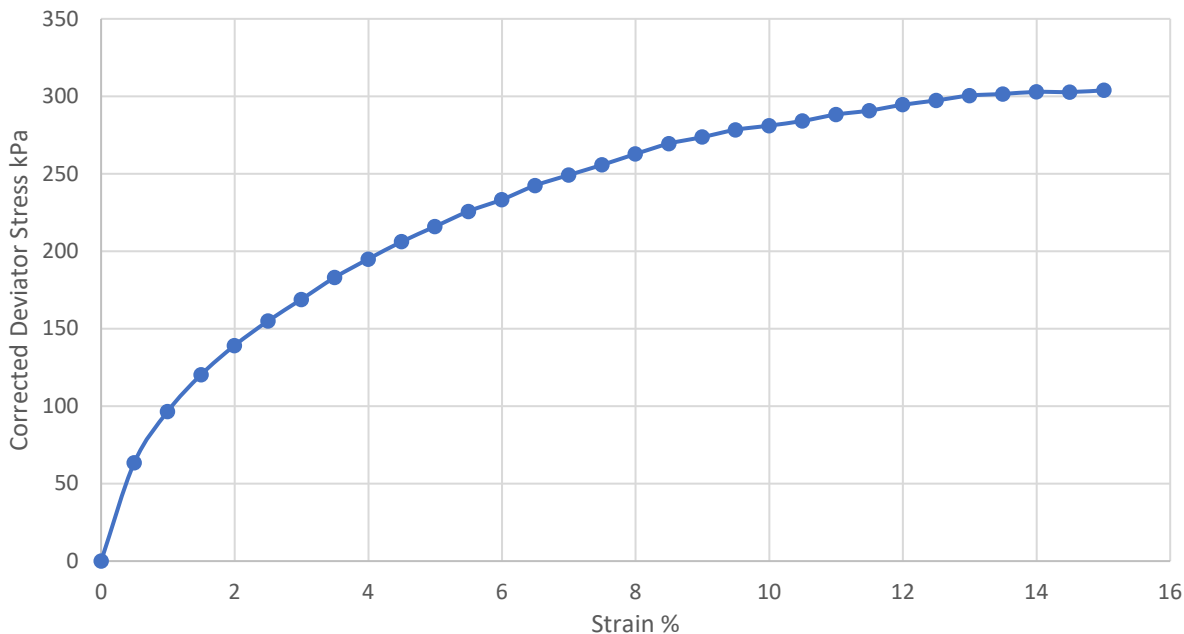
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1679 - Victoria Park, Manchester
JOB NUMBER	MRN 4310/118

SAMPLE LABEL	CP102 6.50-6.95m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115920	DATE RECEIVED	23-Aug-22
DATE TESTED	02-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

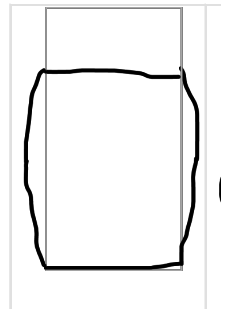
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	440	Specimen depth from top of Sample (mm)	120
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	204	Specimen Water Content (%)	15.2
		Specimen Diameter (mm)	99	Specimen Bulk Density (Mg/m3)	2.26
		Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.96
		Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
135	15.0	2.0	304	152

Remarks/Abnormalities

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

Signed



Date 08 September 2022

MURRAY RIX

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

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

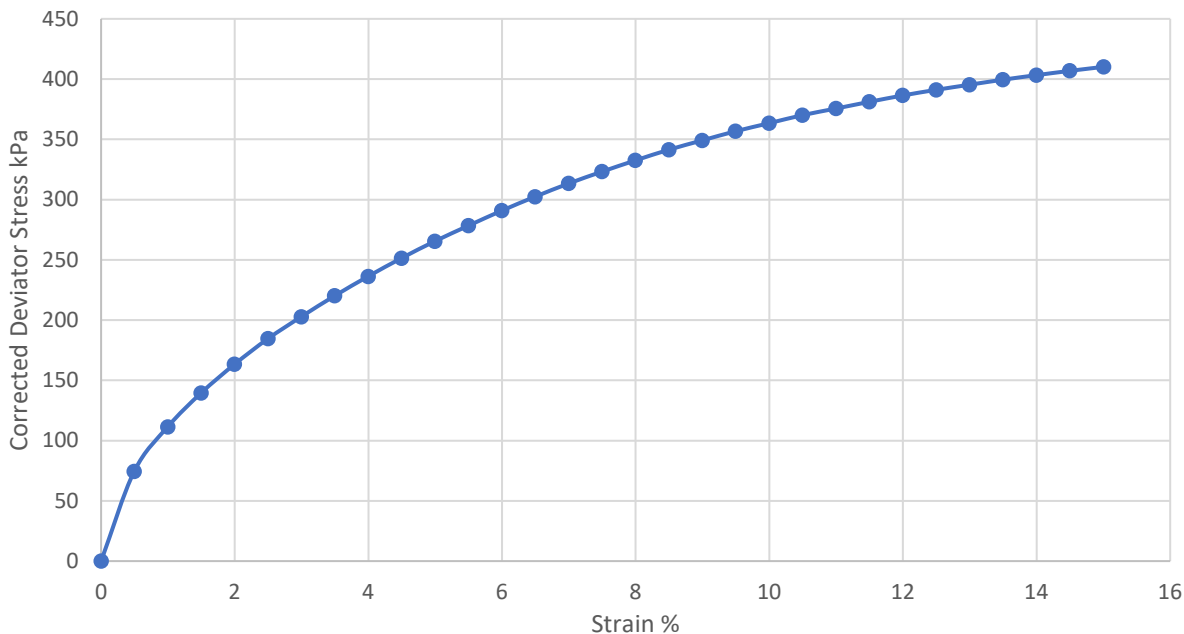
CLIENT	LK Consult Ltd
SITE	LKC 21 1679 - Victoria Park, Manchester
JOB NUMBER	MRN 4310/118

SAMPLE LABEL	CP101 9.50-9.95m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115921	DATE RECEIVED	23-Aug-22
DATE TESTED	02-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

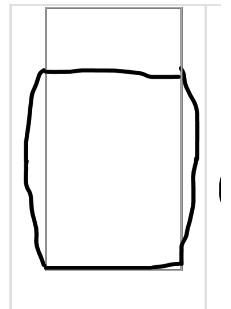
Specimen Location 	Sample Length (mm)	385	Specimen depth from top of Sample (mm)	145
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	204	Specimen Water Content (%)	14.1
	Specimen Diameter (mm)	99	Specimen Bulk Density (Mg/m3)	2.36
	Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	2.07
	Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN



TEST TYPE
SINGLE STAGE

SKETCH OF
SPECIMEN AT
FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
195	15.0	2.0	410	205

Remarks/Abnormalities

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

Signed



Date 08 September 2022

MURRAY RIX

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

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

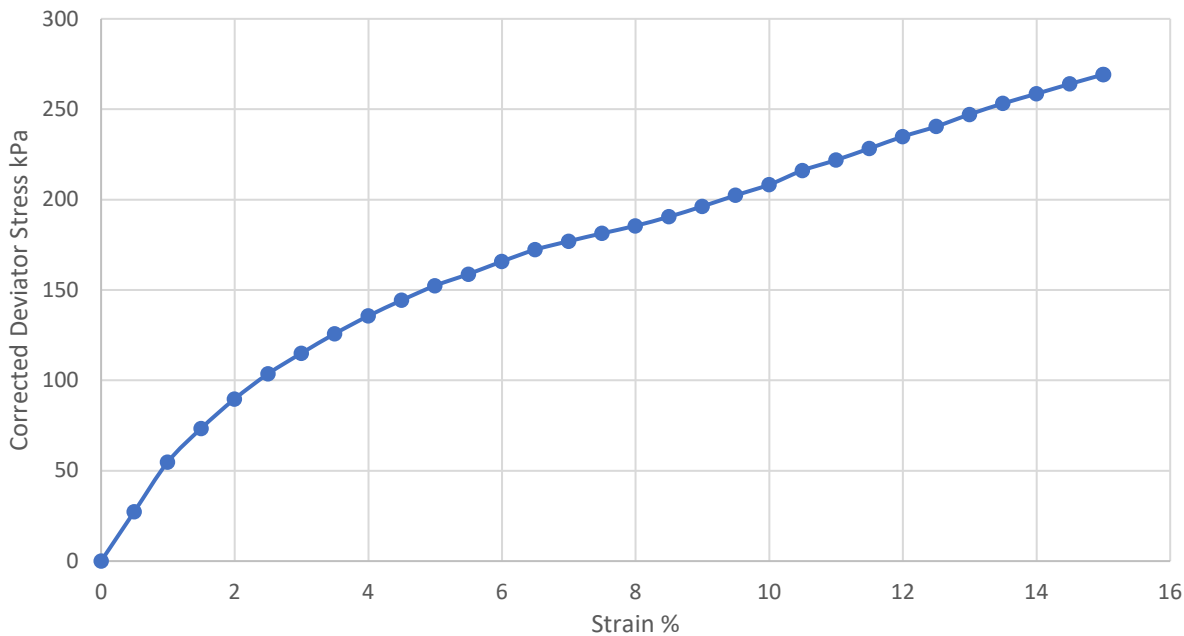
CLIENT	LK Consult Ltd
SITE	LKC 21 1679 - Victoria Park, Manchester
JOB NUMBER	MRN 4310/118

SAMPLE LABEL	CP101 3.30-3.75m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115922	DATE RECEIVED	23-Aug-22
DATE TESTED	02-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

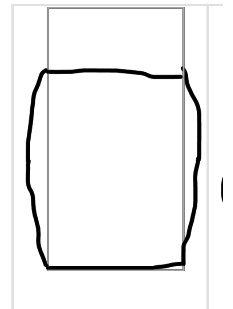
Specimen Location		Sample Length (mm)	440	Specimen depth from top of Sample (mm)	50
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	204	Specimen Water Content (%)	16.1
		Specimen Diameter (mm)	99	Specimen Bulk Density (Mg/m3)	2.16
		Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.86
		Membrane Correction	3.40		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN



TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
75	15.0	2.0	269	135

Remarks/Abnormalities

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

Signed



Date 08 September 2022

MURRAY RIX

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

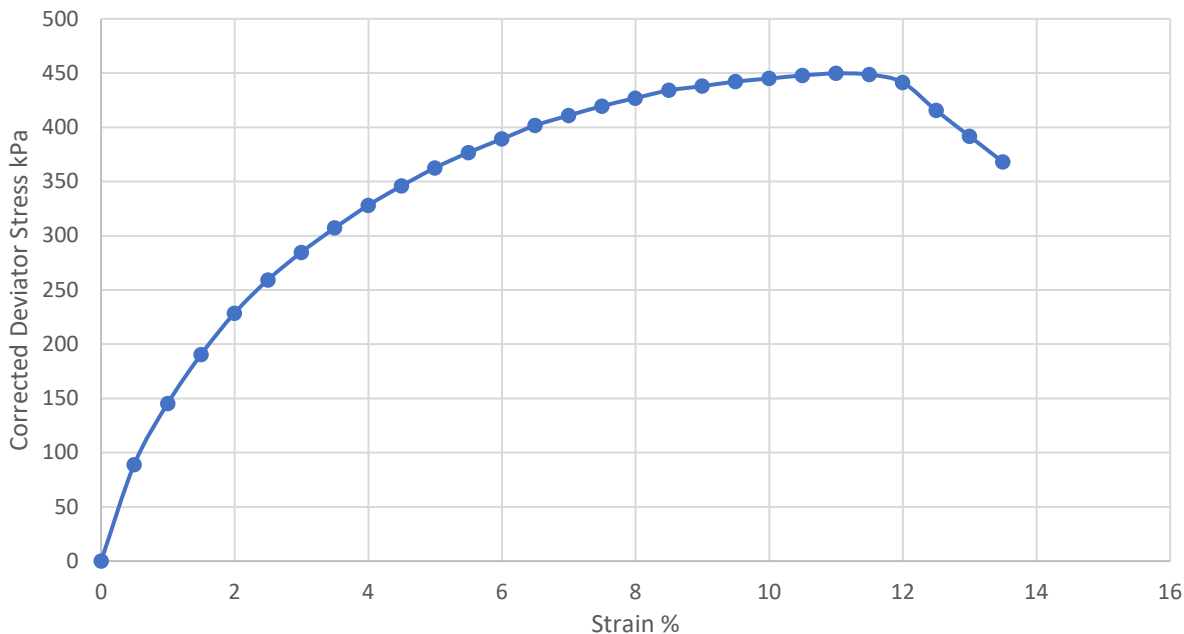
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS EN ISO 17892-8:2018

CLIENT	LK Consult Ltd
SITE	LKC 21 1679 - Victoria Park, Manchester
JOB NUMBER	MRN 4310/118

SAMPLE LABEL	CP101 2.30-2.75m	DATE SAMPLED	Not advised
LAB SAMPLE No.	115923	DATE RECEIVED	23-Aug-22
DATE TESTED	02-Sep-22	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY with rare gravel		
ADVISED SOURCE	Site Investigation Sample		

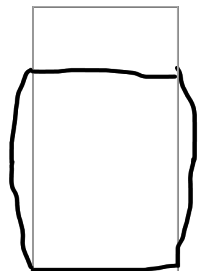
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	445	Specimen depth from top of Sample (mm)	50
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	204	Specimen Water Content (%)	19.1
		Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.09
		Membrane Thickness (mm)	0.4	Specimen Dry Density (Mg/m3)	1.75
		Membrane Correction	3.11		

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
SINGLE STAGE

SKETCH OF SPECIMEN AT FAILURE



PLASTIC

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
55	11.0	2.0	450	225

Remarks/Abnormalities

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

Signed



Date 08 September 2022

Appendix E

Generic Assessment Criteria Values

CATEGORY 4 SCREENING LEVELS

Substance	Residential (with home- grown produce)	Residential (without home- grown produce)	Allotments	Commercial	Public Open Space 1	Public Open Space 2
Arsenic	37 mg/kg	40 mg/kg	49 mg/kg	640 mg/kg	79 mg/kg	170 mg/kg
Benzene	0.87 mg/kg	3.3 mg/kg	0.18 mg/kg	98 mg/kg	140 mg/kg	230 mg/kg
Benzo(a)pyrene	5.0 mg/kg	5.3 mg/kg	5.7 mg/kg	77 mg/kg	10 mg/kg	21 mg/kg
Cadmium	22 mg/kg	150 mg/kg	3.9 mg/kg	410 mg/kg	220 mg/kg	880 mg/kg
Chromium VI	21 mg/kg	21 mg/kg	170 mg/kg	49 mg/kg	21 mg/kg	250 mg/kg
Lead	200 mg/kg	310 mg/kg	80 mg/kg	2300 mg/kg	630 mg/kg	1300 mg/kg

Tetrachlorethene (PCE) – 1% SOM	0.31 mg/kg	0.32 mg/kg	2.0 mg/kg	24 mg/kg	3,200 mg/kg	1,400 mg/kg
Tetrachlorethene (PCE) – 2.5% SOM	0.70 mg/kg	0.71 mg/kg	4.8 mg/kg	55 mg/kg	3,300 mg/kg	1,900 mg/kg
Tetrachlorethene (PCE) – 6% SOM	1.6 mg/kg	1.6 mg/kg	11 mg/kg	130 mg/kg	3,400 mg/kg	2,500 mg/kg
Trichlorethene (TCE) – 1% SOM	0.0093 mg/kg	0.0097 mg/kg	0.032 mg/kg	0.73 mg/kg	76 mg/kg	41 mg/kg
Trichlorethene (TCE) – 2.5% SOM	0.020 mg/kg	0.020 mg/kg	0.072 mg/kg	1.5 mg/kg	78 mg/kg	54 mg/kg
Trichlorethene (TCE) – 6% SOM	0.043 mg/kg	0.045 mg/kg	0.16 mg/kg	3.4 mg/kg	79 mg/kg	69 mg/kg
Vinyl Chloride (VC) – 1%SOM	0.0064 mg/kg	0.015 mg/kg	0.0017 mg/kg	1.1 mg/kg	7.8 mg/kg	18 mg/kg
Vinyl Chloride (VC) – 2.5%SOM	0.010 mg/kg	0.019 mg/kg	0.0031 mg/kg	1.4 mg/kg	7.8 mg/kg	19 mg/kg
Vinyl Chloride (VC) – 6%SOM	0.017 mg/kg	0.029 mg/kg	0.0058 mg/kg	2.2 mg/kg	7.8 mg/kg	19 mg/kg
1,2-Dichloroethane 1% SOM	0.11 mg/kg	0.16 mg/kg	0.054 mg/kg	12 mg/kg	300 mg/kg	300 mg/kg
1,2-Dichloroethane 2.5% SOM	0.18 mg/kg	0.24 mg/kg	0.10 mg/kg	17 mg/kg	310 mg/kg	330 mg/kg
1,2-Dichloroethane 6% SOM	0.31 mg/kg	0.41 mg/kg	0.19 mg/kg	29 mg/kg	310 mg/kg	380 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 (update 2015)	6%	126	181	53	983	231	804
	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	74	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.

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
	Endosulfanns (2 isomers)	1%	7.4	160 (3.0E-03) ^{vap}	1.2	5,600 (3.0E-03) ^{vap}	1,200	2,300
		2.5%	18	280 (7.0E-03) ^{vap}	2.9	7,400 (7.0E-03) ^{vap}	1,200	2,400
		6%	41	410 (1.6E-02) ^{vap}	6.8	8,400 (1.6E-02) ^{vap}	1,200	2,500
	Hexachlorocyclohexane (3 isomers), inc Lindane	1%	8.5E-02	3.7	1.3E-02	65	8.1	15
		2.5%	0.2	3.8	3.2E-02	65	8.1	15
		6%	0.46	3.8	7.7E-02	65	8.1	16

NOTES

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

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

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

Soil Results Compared to GACs



		Client Sample ID.:	TP101	TP102	TP102	TP103	TP104B	TP104B	TP105	TP105	TP106	CP101	CP102	WS101	WS101	WS102	WS103	WS104	WS104	WS105	WS105		
SCREENING SCENARIO	Allotments (6% SOM)	Strata:	MG: clay	MG: silt	CLAY	MG: silt	MG: silt	MG: gravel	MG: silt	CLAY	MG:silt	MG:silt	MG: silt	MG: silt	MG: silt	CLAY	MG:silt	MG:silt	CLAY	MG:sand	CLAY		
		Top Depth (m):	0.1	0.0	0.6	0.1	0.0	0.1	0.5	2.2	0.0	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.5	0.2	0.5		
		Bottom Depth (m):	0.6	0.6	1.0	0.3	0.1	1.0	1.5	3.0	0.7	0.4	0.3	0.3	1.0	0.6	1.0	0.4	1.0	0.4	1.0		
	Determinand	Units	GAC												Fibres/Clum ps							Fibres/Clum ps	
ASBESTOS	ACM Type	mg/kg	-	-	-	Fibres/Clum ps	-	-	-	-	-		-	Fibres/Clum ps	-	-	-	-	-	-	Fibres/Clum ps	-	
	Asbestos Identification	mg/kg	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Amosite	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected	
SOIL PROPERTIES	Moisture	mg/kg	19	7.4	12	12	7.7	11	12	14	14	6.0	7.6	18	16	12	8.7	15	19	11	19		
	Soil Colour	mg/kg	Brown	Brown	Brown	Brown	Brown	Grey	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	
	Other Material	mg/kg	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones	None	Stones	None		
	Soil Texture	mg/kg	Clay	Sand	Gravel	Sand	Sand	Sand	Sand	Sand	Gravel	Sand	Sand	Sand	Sand	Sand	Clay	Sand	Sand	Clay	Sand	Clay	
	pH	mg/kg	9.2	7.7	8.9	7.9	9.4	8.4	9.3	9.3	8.1	8.3	7.8	7.9	8.5	7.7	8.2	7.8	8.1	9.4	7.9		
NON_METALS	Sulphate (2:1 Water Soluble) as SO4	g/l	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.038	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	0.014		
METALS	Arsenic	mg/kg	49.0	7.5	24	5.9	15	18	7.0	8.5	5.2	82		19	18	6.7	12	13	14	4.6	12	7.7	
	Cadmium	mg/kg	3.9	0.14	0.35	< 0.10	0.19	0.19	0.17	0.10	< 0.10	0.28		0.31	0.21	< 0.10	0.16	0.26	0.17	< 0.10	0.20	< 0.10	
	Chromium	mg/kg	18000.0	15	13	18	16	31	20	14	19	19		36	9.1	24	11	10	15	18	30	25	
	Copper	mg/kg	520.0	29	80	20	44	33	70	20	16	170		38	38	18	40	37	37	13	66	16	
	Mercury	mg/kg	21.0	0.18	0.83	0.08	0.31	0.41	0.98	0.16	0.05	3.0		0.42	0.11	< 0.05	0.19	0.26	0.21	< 0.05	0.05	< 0.05	
	Nickel	mg/kg	230.0	19	18	25	15	8.0	5.4	12	24	47		9.5	17	25	13	14	18	27	20	30	
	Lead	mg/kg	80.0	66	270	110	340	130	3300	670	34	990		88	67	15	81	120	150	7.0	66	11	
	Selenium	mg/kg	88.0	0.41	0.78	0.45	0.59	0.31	< 0.25	0.40	0.40	1.3		0.42	0.53	0.49	0.40	0.51	0.62	0.37	0.42	0.54	
	Vanadium	mg/kg	91.0	17	25	17	20	8.5	12	12	18	75		10	22	27	17	17	21	17	17	24	
	Zinc	mg/kg	620.0	52	220	46	95	77	130	60	39	94		91	86	38	56	66	74	28	68	39	
Chromium (Hexavalent)	mg/kg	170.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		
PAHs	Organic Matter	mg/l	13	27	1.9	5.7	6.6	3.9	8.2	1.8	15		7.2	17	1.4	12	13	8.0	1.0	15	1.1		
	Naphthalene	mg/kg	24.0	< 0.10	0.92	< 0.10	0.52	0.29	< 0.10	< 0.10	< 0.10	< 0.10		0.35	< 0.10	< 0.10	0.48	0.79	< 0.10	< 0.10	< 0.10	< 0.10	
	Acenaphthylene	mg/kg	160.0	< 0.10	0.63	< 0.10	0.19	0.16	< 0.10	< 0.10	< 0.10	< 0.10		0.20	< 0.10	< 0.10	0.42	0.18	< 0.10	< 0.10	< 0.10	< 0.10	
	Acenaphthene	mg/kg	200.0	< 0.10	0.64	< 0.10	0.80	0.38	< 0.10	< 0.10	< 0.10	< 0.10		0.48	< 0.10	< 0.10	0.47	0.99	< 0.10	< 0.10	< 0.10	< 0.10	
	Fluorene	mg/kg	160.0	< 0.10	0.76	< 0.10	0.58	0.20	< 0.10	< 0.10	< 0.10	< 0.10		0.30	< 0.10	< 0.10	0.58	0.82	< 0.10	< 0.10	< 0.10	< 0.10	
	Phenanthrene	mg/kg	90.0	1.7	11	< 0.10	7.3	2.8	1.3	2.2	< 0.10	3.6		3.6	1.1	< 0.10	5.5	6.7	1.8	< 0.10	8.7	< 0.10	
	Anthracene	mg/kg	2200.0	0.38	2.6	< 0.10	1.9	0.86	0.38	0.96	< 0.10	0.99		0.96	0.26	< 0.10	1.2	1.4	0.40	< 0.10	2.4	< 0.10	
	Fluoranthene	mg/kg	290.0	3.5	22	0.32	19	8.4	3.3	5.6	0.28	6.1		7.4	1.5	< 0.10	8.4	8.6	3.0	< 0.10	18	< 0.10	
	Pyrene	mg/kg	620.0	3.9	22	0.34	19	8.3	3.1	5.8	0.26	6.6		7.0	1.4	< 0.10	9.0	8.7	3.3	< 0.10	15	< 0.10	
	Benzo[a]anthracene	mg/kg	13.0	1.9	12	< 0.10	10	4.8	1.7	2.9	< 0.10	3.4		3.9	0.73	< 0.10	4.4	3.7	1.6	< 0.10	7.3	< 0.10	
	Chrysene	mg/kg	19.0	2.5	12	< 0.10	11	5.0	2.1	3.5	< 0.10	3.6		4.3	0.77	< 0.10	4.6	4.5	2.0	< 0.10	7.9	< 0.10	
	Benzo[b]fluoranthene	mg/kg	3.9	3.0	13	< 0.10	13	6.5	2.3	4.0	< 0.10	3.4		4.7	< 0.10	< 0.10	5.5	4.4	1.7	< 0.10	9.0	< 0.10	
	Benzo[k]fluoranthene	mg/kg	130.0	0.96	5.1	< 0.10	5.1	2.5	0.87	1.6	< 0.10	1.1		1.6	< 0.10	< 0.10	2.0	1.5	0.53	< 0.10	3.8	< 0.10	
	Benzo[a]pyrene	mg/kg	5.7	2.2	13	< 0.10	12	5.6	1.7	3.4	< 0.10	3.4		5.1	< 0.10	< 0.10	4.7	4.2	1.8	< 0.10	7.3	< 0.10	
	Indeno(1,2,3-c,d)Pyrene	mg/kg	39.0	< 0.10	6.0	< 0.10	7.3	4.0	< 0.10	2.1	< 0.10	< 0.10		2.5	< 0.10	< 0.10	2.6	1.8	< 0.10	< 0.10	4.3	< 0.10	
	Dibenz[a,h]Anthracene	mg/kg	0.4	< 0.10	1.1	< 0.10	0.87	0.51	< 0.10	0.34	< 0.10	< 0.10		0.45	< 0.10	< 0.10	0.62	0.47	< 0.10	< 0.10	0.81	< 0.10	
	Benzo[g,h,i]perylene	mg/kg	640.0	< 0.10	6.5	< 0.10	6.1	3.5	< 0.10	1.9	< 0.10	< 0.10		2.6	< 0.10	< 0.10	2.9	2.1	< 0.10	< 0.10	4.0	< 0.10	
Total Of 16 PAH's	mg/kg		20	130	< 2.0	110	54	17	34	< 2.0	32		45	5.8	< 2.0	53	51	16	< 2.0	89	< 2.0		



			Client Sample ID.:	TP101	TP102	TP102	TP103	TP104B	TP104B	TP105	TP105	TP106	CP101	CP102	WS101	WS101	WS102	WS103	WS104	WS104	WS105	WS105	
SCREENING SCENARIO	POSresi (1% SOM)		Strata:	MG: clay	MG: silt	CLAY	MG: silt	MG: silt	MG: gravel	MG: silt	CLAY	MG:silt	MG:silt	MG: silt	MG: silt	CLAY	MG:silt	MG:silt	MG:silt	CLAY	MG:sand	CLAY	
			Top Depth (m):	0.1	0.0	0.6	0.1	0.0	0.1	0.5	2.2	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.5	0.0	0.5	0.2	0.5
			Bottom Depth (m):	0.6	0.6	1.0	0.3	0.1	1.0	1.5	3.0	0.7	0.4	0.3	0.3	1.0	0.6	1.0	0.4	1.0	0.4	1.0	1.0
	Determinand	Units	GAC																				
ASBESTOS	ACM Type	mg/kg		-	-	-	Fibres/Clum ps	-	-	-	-	-		-	Fibres/Clum ps	-	-	-	-	-	-	Fibres/Clum ps	
	Asbestos Identification	mg/kg		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Amosite	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	
SOIL PROPERTIES	Moisture	mg/kg		19	7.4	12	12	7.7	11	12	14	14	6.0	7.6	18	16	12	8.7	15	19	11	19	
	Soil Colour	mg/kg		Brown	Brown	Brown	Brown	Brown	Grey	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	
	Other Material	mg/kg		Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones and Roots	Stones	Stones	None	Stones	None	
	Soil Texture	mg/kg		Clay	Sand	Gravel	Sand	Sand	Sand	Sand	Gravel	Sand	Sand	Sand	Sand	Sand	Clay	Sand	Sand	Clay	Sand	Clay	
	pH	mg/kg		9.2	7.7	8.9	7.9	9.4	8.4	9.3	9.3	8.1	8.3	7.8	7.9	8.5	7.7	8.2	7.8	8.1	9.4	7.9	
NON_METALS	Sulphate (2:1 Water Soluble) as SO4	g/l		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.038	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	0.014	
METALS	Arsenic	mg/kg	79.0	7.5	24	5.9	15	18	7.0	8.5	5.2	82		19	18	6.7	12	13	14	4.6	12	7.7	
	Cadmium	mg/kg	220.0	0.14	0.35	< 0.10	0.19	0.19	0.17	0.10	< 0.10	0.28		0.31	0.21	< 0.10	0.16	0.26	0.17	< 0.10	0.20	< 0.10	
	Chromium	mg/kg	1500.0	15	13	18	16	31	20	14	19	19		36	9.1	24	11	10	15	18	30	25	
	Copper	mg/kg	12000.0	29	80	20	44	33	70	20	16	170		38	38	18	40	37	37	13	66	16	
	Mercury	mg/kg	16.0	0.18	0.83	0.08	0.31	0.41	0.98	0.16	0.05	3.0		0.42	0.11	< 0.05	0.19	0.26	0.21	< 0.05	0.05	< 0.05	
	Nickel	mg/kg	230.0	19	18	25	15	8.0	5.4	12	24	47		9.5	17	25	13	14	18	27	20	30	
	Lead	mg/kg	630.0	66	270	110	340	130	3300	670	34	990		88	67	15	81	120	150	7.0	66	11	
	Selenium	mg/kg	1100.0	0.41	0.78	0.45	0.59	0.31	< 0.25	0.40	0.40	1.3		0.42	0.53	0.49	0.40	0.51	0.62	0.37	0.42	0.54	
	Vanadium	mg/kg	2000.0	17	25	17	20	8.5	12	12	18	75		10	22	27	17	17	21	17	17	24	
	Zinc	mg/kg	81000.0	52	220	46	95	77	130	60	39	94		91	86	38	56	66	74	28	68	39	
	Chromium (Hexavalent)	mg/kg	21.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
PAHs	Organic Matter	mg/l		13	27	1.9	5.7	6.6	3.9	8.2	1.8	15		7.2	17	1.4	12	13	8.0	1.0	15	1.1	
	Naphthalene	mg/kg	4900.0	< 0.10	0.92	< 0.10	0.52	0.29	< 0.10	< 0.10	< 0.10	< 0.10		0.35	< 0.10	< 0.10	0.48	0.79	< 0.10	< 0.10	< 0.10	< 0.10	
	Acenaphthylene	mg/kg	15000.0	< 0.10	0.63	< 0.10	0.19	0.16	< 0.10	< 0.10	< 0.10	< 0.10		0.20	< 0.10	< 0.10	0.42	0.18	< 0.10	< 0.10	< 0.10	< 0.10	
	Acenaphthene	mg/kg	15000.0	< 0.10	0.64	< 0.10	0.80	0.38	< 0.10	< 0.10	< 0.10	< 0.10		0.48	< 0.10	< 0.10	0.47	0.99	< 0.10	< 0.10	< 0.10	< 0.10	
	Fluorene	mg/kg	9900.0	< 0.10	0.76	< 0.10	0.58	0.20	< 0.10	< 0.10	< 0.10	< 0.10		0.30	< 0.10	< 0.10	0.58	0.82	< 0.10	< 0.10	< 0.10	< 0.10	
	Phenanthrene	mg/kg	3100.0	1.7	11	< 0.10	7.3	2.8	1.3	2.2	< 0.10	3.6		3.6	1.1	< 0.10	5.5	6.7	1.8	< 0.10	8.7	< 0.10	
	Anthracene	mg/kg	74000.0	0.38	2.6	< 0.10	1.9	0.86	0.38	0.96	< 0.10	0.99		0.96	0.26	< 0.10	1.2	1.4	0.40	< 0.10	2.4	< 0.10	
	Fluoranthene	mg/kg	3100.0	3.5	22	0.32	19	8.4	3.3	5.6	0.28	6.1		7.4	1.5	< 0.10	8.4	8.6	3.0	< 0.10	18	< 0.10	
	Pyrene	mg/kg	7400.0	3.9	22	0.34	19	8.3	3.1	5.8	0.26	6.6		7.0	1.4	< 0.10	9.0	8.7	3.3	< 0.10	15	< 0.10	
	Benzo[a]anthracene	mg/kg	29.0	1.9	12	< 0.10	10	4.8	1.7	2.9	< 0.10	3.4		3.9	0.73	< 0.10	4.4	3.7	1.6	< 0.10	7.3	< 0.10	
	Chrysene	mg/kg	57.0	2.5	12	< 0.10	11	5.0	2.1	3.5	< 0.10	3.6		4.3	0.77	< 0.10	4.6	4.5	2.0	< 0.10	7.9	< 0.10	
	Benzo[b]fluoranthene	mg/kg	7.1	3.0	13	< 0.10	13	6.5	2.3	4.0	< 0.10	3.4		4.7	< 0.10	< 0.10	5.5	4.4	1.7	< 0.10	9.0	< 0.10	
	Benzo[k]fluoranthene	mg/kg	190.0	0.96	5.1	< 0.10	5.1	2.5	0.87	1.6	< 0.10	1.1		1.6	< 0.10	< 0.10	2.0	1.5	0.53	< 0.10	3.8	< 0.10	
	Benzo[a]pyrene	mg/kg	10.0	2.2	13	< 0.10	12	5.6	1.7	3.4	< 0.10	3.4		5.1	< 0.10	< 0.10	4.7	4.2	1.8	< 0.10	7.3	< 0.10	
	Indeno(1,2,3-c,d)Pyrene	mg/kg	82.0	< 0.10	6.0	< 0.10	7.3	4.0	< 0.10	2.1	< 0.10	< 0.10		2.5	< 0.10	< 0.10	2.6	1.8	< 0.10	< 0.10	4.3	< 0.10	
	Dibenz[a,h]Anthracene	mg/kg	0.6	< 0.10	1.1	< 0.10	0.87	0.51	< 0.10	0.34	< 0.10	< 0.10		0.45	< 0.10	< 0.10	0.62	0.47	< 0.10	< 0.10	0.81	< 0.10	
	Benzo[g,h,i]perylene	mg/kg	640.0	< 0.10	6.5	< 0.10	6.1	3.5	< 0.10	1.9	< 0.10	< 0.10		2.6	< 0.10	< 0.10	2.9	2.1	< 0.10	< 0.10	4.0	< 0.10	
	Total Of 16 PAH's	mg/kg		20	130	< 2.0	110	54	17	34	< 2.0	32		45	5.8	< 2.0	53	51	16	< 2.0	89	< 2.0	



		Client Sample ID.:	TP101	TP102	TP102	TP103	TP104B	TP104B	TP105	TP105	TP106	CP101	CP102	WS101	WS101	WS102	WS103	WS104	WS104	WS105	WS105
Residential with plant uptake (6% SOM)		Strata:	MG: clay	MG: silt	CLAY	MG: silt	MG: silt	MG: gravel	MG: silt	CLAY	MG:silt	MG:silt	MG: silt	MG: silt	CLAY	MG:silt	MG:silt	MG:silt	CLAY	MG:sand	CLAY
		Top Depth (m):	0.1	0.0	0.6	0.1	0.0	0.1	0.5	2.2	0.0	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.5	0.2	0.5
		Bottom Depth (m):	0.6	0.6	1.0	0.3	0.1	1.0	1.5	3.0	0.7	0.4	0.3	0.3	1.0	0.6	1.0	0.4	1.0	0.4	1.0
Determinand	Units	GAC																			
ACM Type	mg/kg		-	-	-	Fibres/Clumps	-	-	-	-	-		-	Fibres/Clumps	-	-	-	-	-	Fibres/Clumps	-
Asbestos Identification	mg/kg		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Amosite	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected
Moisture	mg/kg		19	7.4	12	12	7.7	11	12	14	14	6.0	7.6	18	16	12	8.7	15	19	11	19
Soil Colour	mg/kg		Brown	Brown	Brown	Brown	Brown	Grey	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	mg/kg		Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones and Roots	Stones	Stones	None	Stones	None
Soil Texture	mg/kg		Clay	Sand	Gravel	Sand	Sand	Sand	Sand	Gravel	Sand	Sand	Sand	Sand	Clay	Sand	Sand	Sand	Clay	Sand	Clay
pH	mg/kg		9.2	7.7	8.9	7.9	9.4	8.4	9.3	9.3	8.1	8.3	7.8	7.9	8.5	7.7	8.2	7.8	8.1	9.4	7.9
Sulphate (2:1 Water Soluble) as SO4	g/l		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.038	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	0.014
Arsenic	mg/kg	37.0	7.5	24	5.9	15	18	7.0	8.5	5.2	82		19	18	6.7	12	13	14	4.6	12	7.7
Cadmium	mg/kg	22.0	0.14	0.35	< 0.10	0.19	0.19	0.17	0.10	< 0.10	0.28		0.31	0.21	< 0.10	0.16	0.26	0.17	< 0.10	0.20	< 0.10
Chromium	mg/kg	910.0	15	13	18	16	31	20	14	19	19		36	9.1	24	11	10	15	18	30	25
Copper	mg/kg	2400.0	29	80	20	44	33	70	20	16	170		38	38	18	40	37	37	13	66	16
Mercury	mg/kg	40.0	0.18	0.83	0.08	0.31	0.41	0.98	0.16	0.05	3.0		0.42	0.11	< 0.05	0.19	0.26	0.21	< 0.05	0.05	< 0.05
Nickel	mg/kg	180.0	19	18	25	15	8.0	5.4	12	24	47		9.5	17	25	13	14	18	27	20	30
Lead	mg/kg	200.0	66	270	110	340	130	3300	670	34	990		88	67	15	81	120	150	7.0	66	11
Selenium	mg/kg	250.0	0.41	0.78	0.45	0.59	0.31	< 0.25	0.40	0.40	1.3		0.42	0.53	0.49	0.40	0.51	0.62	0.37	0.42	0.54
Vanadium	mg/kg	410.0	17	25	17	20	8.5	12	12	18	75		10	22	27	17	17	21	17	17	24
Zinc	mg/kg	3700.0	52	220	46	95	77	130	60	39	94		91	86	38	56	66	74	28	68	39
Chromium (Hexavalent)	mg/kg	21.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	mg/l		13	27	1.9	5.7	6.6	3.9	8.2	1.8	15		7.2	17	1.4	12	13	8.0	1.0	15	1.1
Naphthalene	mg/kg	13.0	< 0.10	0.92	< 0.10	0.52	0.29	< 0.10	< 0.10	< 0.10	< 0.10		0.35	< 0.10	< 0.10	0.48	0.79	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	mg/kg	920.0	< 0.10	0.63	< 0.10	0.19	0.16	< 0.10	< 0.10	< 0.10	< 0.10		0.20	< 0.10	< 0.10	0.42	0.18	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	1100.0	< 0.10	0.64	< 0.10	0.80	0.38	< 0.10	< 0.10	< 0.10	< 0.10		0.48	< 0.10	< 0.10	0.47	0.99	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	860.0	< 0.10	0.76	< 0.10	0.58	0.20	< 0.10	< 0.10	< 0.10	< 0.10		0.30	< 0.10	< 0.10	0.58	0.82	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	440.0	1.7	11	< 0.10	7.3	2.8	1.3	2.2	< 0.10	3.6		3.6	1.1	< 0.10	5.5	6.7	1.8	< 0.10	8.7	< 0.10
Anthracene	mg/kg	11000.0	0.38	2.6	< 0.10	1.9	0.86	0.38	0.96	< 0.10	0.99		0.96	0.26	< 0.10	1.2	1.4	0.40	< 0.10	2.4	< 0.10
Fluoranthene	mg/kg	890.0	3.5	22	0.32	19	8.4	3.3	5.6	0.28	6.1		7.4	1.5	< 0.10	8.4	8.6	3.0	< 0.10	18	< 0.10
Pyrene	mg/kg	2000.0	3.9	22	0.34	19	8.3	3.1	5.8	0.26	6.6		7.0	1.4	< 0.10	9.0	8.7	3.3	< 0.10	15	< 0.10
Benzo[a]anthracene	mg/kg	13.0	1.9	12	< 0.10	10	4.8	1.7	2.9	< 0.10	3.4		3.9	0.73	< 0.10	4.4	3.7	1.6	< 0.10	7.3	< 0.10
Chrysene	mg/kg	27.0	2.5	12	< 0.10	11	5.0	2.1	3.5	< 0.10	3.6		4.3	0.77	< 0.10	4.6	4.5	2.0	< 0.10	7.9	< 0.10
Benzo[b]fluoranthene	mg/kg	3.7	3.0	13	< 0.10	13	6.5	2.3	4.0	< 0.10	3.4		4.7	< 0.10	< 0.10	5.5	4.4	1.7	< 0.10	9.0	< 0.10
Benzo[k]fluoranthene	mg/kg	100.0	0.96	5.1	< 0.10	5.1	2.5	0.87	1.6	< 0.10	1.1		1.6	< 0.10	< 0.10	2.0	1.5	0.53	< 0.10	3.8	< 0.10
Benzo[a]pyrene	mg/kg	5.0	2.2	13	< 0.10	12	5.6	1.7	3.4	< 0.10	3.4		5.1	< 0.10	< 0.10	4.7	4.2	1.8	< 0.10	7.3	< 0.10
Indeno(1,2,3-c,d)Pyrene	mg/kg	41.0	< 0.10	6.0	< 0.10	7.3	4.0	< 0.10	2.1	< 0.10	< 0.10		2.5	< 0.10	< 0.10	2.6	1.8	< 0.10	< 0.10	4.3	< 0.10
Dibenz(a,h)Anthracene	mg/kg	0.3	< 0.10	1.1	< 0.10	0.87	0.51	< 0.10	0.34	< 0.10	< 0.10		0.45	< 0.10	< 0.10	0.62	0.47	< 0.10	< 0.10	0.81	< 0.10
Benzo[g,h,i]perylene	mg/kg	350.0	< 0.10	6.5	< 0.10	6.1	3.5	< 0.10	1.9	< 0.10	< 0.10		2.6	< 0.10	< 0.10	2.9	2.1	< 0.10	< 0.10	4.0	< 0.10
Total Of 16 PAH's	mg/kg		20	130	< 2.0	110	54	17	34	< 2.0	32		45	5.8	< 2.0	53	51	16	< 2.0	89	< 2.0



SCREENING SCENARIO	Residential without plant uptake (6% SOM)	Client Sample ID.:	TP101	TP102	TP102	TP103	TP104B	TP104B	TP105	TP105	TP106	CP101	CP102	WS101	WS101	WS102	WS103	WS104	WS104	WS105	WS105		
		Strata:	MG: clay	MG: silt	CLAY	MG: silt	MG: silt	MG: gravel	MG: silt	CLAY	MG:silt	MG:silt	MG: silt	MG: silt	CLAY	MG:silt	MG:silt	MG:silt	CLAY	MG:sand	CLAY		
		Top Depth (m):	0.1	0.0	0.6	0.1	0.0	0.1	0.5	2.2	0.0	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.5	0.2	0.5		
		Bottom Depth (m):	0.6	0.6	1.0	0.3	0.1	1.0	1.5	3.0	0.7	0.4	0.3	0.3	1.0	0.6	1.0	0.4	1.0	0.4	1.0		
	Determinand	Units	GAC													Fibres/Clum ps							
ASBESTOS	ACM Type	mg/kg	-	-	-	Fibres/Clum ps	-	-	-	-	-		-	Fibres/Clum ps	-	-	-	-	-	Fibres/Clum ps	-		
	Asbestos Identification	mg/kg	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Amosite	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	Chrysotile	No Asbestos Detected		
SOIL PROPERTIES	Moisture	mg/kg	19	7.4	12	12	7.7	11	12	14	14	6.0	7.6	18	16	12	8.7	15	19	11	19		
	Soil Colour	mg/kg	Brown	Brown	Brown	Brown	Brown	Grey	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown		
	Other Material	mg/kg	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones	Stones	Stones	Stones	Stones and Roots	Stones and Roots	Stones	Stones	Stones	None	Stones	None		
	Soil Texture	mg/kg	Clay	Sand	Gravel	Sand	Sand	Sand	Sand	Gravel	Sand	Sand	Sand	Sand	Sand	Clay	Sand	Sand	Clay	Sand	Clay		
	pH	mg/kg	9.2	7.7	8.9	7.9	9.4	8.4	9.3	9.3	8.1	8.3	7.8	7.9	8.5	7.7	8.2	7.8	8.1	9.4	7.9		
NON_METALS	Sulphate (2:1 Water Soluble) as SO4	g/l	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.038	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.018	< 0.010	< 0.010	< 0.010	0.014		
METALS	Arsenic	mg/kg	40.0	7.5	24	5.9	15	18	7.0	8.5	5.2	82	19	18	6.7	12	13	14	4.6	12	7.7		
	Cadmium	mg/kg	150.0	0.14	0.35	< 0.10	0.19	0.17	0.10	< 0.10	0.28	0.31	0.21	< 0.10	0.16	0.26	0.17	< 0.10	0.20	< 0.10			
	Chromium	mg/kg	910.0	15	13	18	16	31	20	14	19	36	9.1	24	11	10	15	18	30	25			
	Copper	mg/kg	7100.0	29	80	20	44	33	70	20	16	170	38	38	18	40	37	37	13	66	16		
	Mercury	mg/kg	56.0	0.18	0.83	0.08	0.31	0.41	0.98	0.16	0.05	3.0	0.42	0.11	< 0.05	0.19	0.26	0.21	< 0.05	0.05	< 0.05		
	Nickel	mg/kg	180.0	19	18	25	15	8.0	5.4	12	24	47	9.5	17	25	13	14	18	27	20	30		
	Lead	mg/kg	310.0	66	270	110	340	130	3300	670	34	990	88	67	15	81	120	150	7.0	66	11		
	Selenium	mg/kg	430.0	0.41	0.78	0.45	0.59	0.31	< 0.25	0.40	0.40	1.3	0.42	0.53	0.49	0.40	0.51	0.62	0.37	0.42	0.54		
	Vanadium	mg/kg	1200.0	17	25	17	20	8.5	12	12	18	75	10	22	27	17	17	21	17	17	24		
	Zinc	mg/kg	40000.0	52	220	46	95	77	130	60	39	94	91	86	38	56	66	74	28	68	39		
Chromium (Hexavalent)	mg/kg	21.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50			
PAHs	Organic Matter	mg/l	13	27	1.9	5.7	6.6	3.9	8.2	1.8	15	7.2	17	1.4	12	13	8.0	1.0	15	1.1			
	Naphthalene	mg/kg	13.0	< 0.10	0.92	< 0.10	0.52	0.29	< 0.10	< 0.10	< 0.10	< 0.10	0.35	< 0.10	< 0.10	0.48	0.79	< 0.10	< 0.10	< 0.10	< 0.10		
	Acenaphthylene	mg/kg	6000.0	< 0.10	0.63	< 0.10	0.19	0.16	< 0.10	< 0.10	< 0.10	< 0.10	0.20	< 0.10	< 0.10	0.42	0.18	< 0.10	< 0.10	< 0.10	< 0.10		
	Acenaphthene	mg/kg	6000.0	< 0.10	0.64	< 0.10	0.80	0.38	< 0.10	< 0.10	< 0.10	< 0.10	0.48	< 0.10	< 0.10	0.47	0.99	< 0.10	< 0.10	< 0.10	< 0.10		
	Fluorene	mg/kg	4500.0	< 0.10	0.76	< 0.10	0.58	0.20	< 0.10	< 0.10	< 0.10	< 0.10	0.30	< 0.10	< 0.10	0.58	0.82	< 0.10	< 0.10	< 0.10	< 0.10		
	Phenanthrene	mg/kg	1500.0	1.7	11	< 0.10	7.3	2.8	1.3	2.2	< 0.10	3.6	3.6	1.1	< 0.10	5.5	6.7	1.8	< 0.10	8.7	< 0.10		
	Anthracene	mg/kg	37000.0	0.38	2.6	< 0.10	1.9	0.86	0.38	0.96	< 0.10	0.99	0.96	0.26	< 0.10	1.2	1.4	0.40	< 0.10	2.4	< 0.10		
	Fluoranthene	mg/kg	1600.0	3.5	22	0.32	19	8.4	3.3	5.6	0.28	6.1	7.4	1.5	< 0.10	8.4	8.6	3.0	< 0.10	18	< 0.10		
	Pyrene	mg/kg	3800.0	3.9	22	0.34	19	8.3	3.1	5.8	0.26	6.6	7.0	1.4	< 0.10	9.0	8.7	3.3	< 0.10	15	< 0.10		
	Benzo[a]anthracene	mg/kg	15.0	1.9	12	< 0.10	10	4.8	1.7	2.9	< 0.10	3.4	3.9	0.73	< 0.10	4.4	3.7	1.6	< 0.10	7.3	< 0.10		
	Chrysene	mg/kg	32.0	2.5	12	< 0.10	11	5.0	2.1	3.5	< 0.10	3.6	4.3	0.77	< 0.10	4.6	4.5	2.0	< 0.10	7.9	< 0.10		
	Benzo[b]fluoranthene	mg/kg	4.0	3.0	13	< 0.10	13	6.5	2.3	4.0	< 0.10	3.4	4.7	< 0.10	< 0.10	5.5	4.4	1.7	< 0.10	9.0	< 0.10		
	Benzo[k]fluoranthene	mg/kg	110.0	0.96	5.1	< 0.10	5.1	2.5	0.87	1.6	< 0.10	1.1	1.6	< 0.10	< 0.10	2.0	1.5	0.53	< 0.10	3.8	< 0.10		
	Benzo[a]pyrene	mg/kg	5.3	2.2	13	< 0.10	12	5.6	1.7	3.4	< 0.10	3.4	5.1	< 0.10	< 0.10	4.7	4.2	1.8	< 0.10	7.3	< 0.10		
	Indeno(1,2,3-c,d)Pyrene	mg/kg	46.0	< 0.10	6.0	< 0.10	7.3	4.0	< 0.10	2.1	< 0.10	< 0.10	2.5	< 0.10	< 0.10	2.6	1.8	< 0.10	< 0.10	4.3	< 0.10		
	Dibenz[a,h]Anthracene	mg/kg	0.3	< 0.10	1.1	< 0.10	0.87	0.51	< 0.10	0.34	< 0.10	< 0.10	0.45	< 0.10	< 0.10	0.62	0.47	< 0.10	< 0.10	0.81	< 0.10		
	Benzo[g,h,i]perylene	mg/kg	360.0	< 0.10	6.5	< 0.10	6.1	3.5	< 0.10	1.9	< 0.10	< 0.10	2.6	< 0.10	< 0.10	2.9	2.1	< 0.10	< 0.10	4.0	< 0.10		
Total Of 16 PAH's	mg/kg	20	130	< 2.0	110	54	17	34	< 2.0	32	45	5.8	< 2.0	53	51	16	< 2.0	89	< 2.0				

Appendix G

JIWG Risk Assessment Sheets Receptor Risk Ranking Work Categories

Decision Support Tool for Receptor Risk Ranking

Stage 1		Score
Hazard Identification		
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Mainly amosite (and possible trace tremolite/anthophyllite) with/without chrysotile (no crocidolite)	3
Sub-total		13
Hazard ranking		Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.

It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.



Joint Industry Working Group
Asbestos in Soil and Construction & Demolition Materials

Stage 2

Emission Factors

Score

Amount of asbestos fibre in selected ACM/fibre type as % of host material

Very Low quantities - 0.001 to 0.01 %wt/wt

1

Respirable fibre index for ACM - RIVM report 711701034 (2003)

Medium

3

Activity type and effect on deterioration of ACMs

Minimal disturbance, no deterioration expected

1

Best description of primary host material matrix

Fine Silt and/or Clay

1

Sub-total

6

Exposure ranking

Low

Stage 3

Pathway and Receptor Sensitivity

Score

Receptor category

Residential

No score required

Age of Receptor

Infant (under 5)

4

Duration of exposure/site occupancy

>> 10 hours per day (e.g. 24 hour residential exposure)

4

Receptor ranking

8

High

Combined hazard, exposure and receptor ranking

Medium

Pathway: Distance of Receptor from Source

In or within 10m of area of disturbance

4

Pathway: Depth to impacted material

Material buried at depth, unlikely to be disturbed except for deeper construction related excavation

B

Pathway ranking

4B

Very Low

Overall ranking

Very Low

Project Reference	LKC 21 1679 TP103
Site Name	Victoria Park, Manchester
Client	Victoria Britannia
Run by	Emma Khadun
Date	22-Sep-22
Reviewed by	Ben Smith
Characterisation of scenario being evaluated	Fibres / clumps present in the ground, residential with plant uptake, assuming 600mm cover system placed in garden areas.
Interpretation of scenario ranking by DST	Assumes environmental cover system with break layer is present.

Decision Support Tool for Receptor Risk Ranking

Stage 1		Score
Hazard Identification		
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Chrysotile alone	0
Sub-total		10
Hazard ranking		Low

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.

It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.



Joint Industry Working Group
Asbestos in Soil and Construction & Demolition Materials

Stage 2

Emission Factors

Score

Amount of asbestos fibre in selected ACM/fibre type as % of host material

Very Low quantities - 0.001 to 0.01 %wt/wt

1

Respirable fibre index for ACM - RIVM report 711701034 (2003)

Very low

1

Activity type and effect on deterioration of ACMs

Minimal disturbance, no deterioration expected

1

Best description of primary host material matrix

Fine Silt and/or Clay

1

Sub-total

4

Exposure ranking

Very Low

Stage 3		Score	
Pathway and Receptor Sensitivity			
Receptor category	Residential	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		8	High
Combined hazard, exposure and receptor ranking			Low
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material buried at shallow depth, potential to be disturbed by excavation	C	
Pathway ranking		4C	Low
Overall ranking			Very Low

Project Reference	LKC 21 1679 WS101
Site Name	Victoria Park, Manchester
Client	Victoria Britannia
Run by	Emma Khadun
Date	22-Sep-22
Reviewed by	Paul Quimby
Characterisation of scenario being evaluated	Fibres / clumps present in the ground, residential with plant uptake, assuming 600mm cover system placed in garden areas.
Interpretation of scenario ranking by DST	Assumes 600mm environmental cover system with break layer present.

Decision Support Tool for Receptor Risk Ranking

Stage 1		Score
Hazard Identification		
Select ACM type (run model for each type to generate 'Worst Case' output)	Free dispersed fibres/fibre bundles	2
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Chrysotile alone	0
Sub-total		10
Hazard ranking		Low

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.

It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.



Joint Industry Working Group
Asbestos in Soil and Construction & Demolition Materials

Stage 2

Emission Factors

Score

Amount of asbestos fibre in selected ACM/fibre type as % of host material

Very Low quantities - 0.001 to 0.01 %wt/wt

1

Respirable fibre index for ACM - RIVM report 711701034 (2003)

Very low

1

Activity type and effect on deterioration of ACMs

Minimal disturbance, no deterioration expected

1

Best description of primary host material matrix

Coarse to Fine Sand

2

Sub-total

5

Exposure ranking

Low

Stage 3			
Pathway and Receptor Sensitivity		Score	
Receptor category	Residential	No score required	
Age of Receptor	Infant (under 5)	4	
Duration of exposure/site occupancy	>> 10 hours per day (e.g. 24 hour residential exposure)	4	
Receptor ranking		8	High
Combined hazard, exposure and receptor ranking			Medium
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4	
Pathway: Depth to impacted material	Material buried at shallow depth, potential to be disturbed by excavation	C	
Pathway ranking		4C	Low
Overall ranking			Low

Project Reference	LKC 21 1679 WS105
Site Name	Victoria Park, Manchester
Client	Victoria Britannia
Run by	Emma Khadun
Date	22-Sep-22
Reviewed by	Paul Quimby
Characterisation of scenario being evaluated	Fibres / clumps present in the ground, residential with plant uptake, assuming 600mm cover system placed in garden areas.
Interpretation of scenario ranking by DST	Assumes 600mm environmental cover system in place with break layer.



Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	LKC 21 1679
Site Name	Victoria Park Probation Centre, Manchester
Client	Victoria Britannia Ltd
Run by	EK
Date	23-Sep-22
Scenario details	Construction work - assumes soil moisture content of c. 20%

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

Select ACM type (run model for each type to generate 'Worst Case' output)
Extent of degradation of ACMs at outset of work
Friability and degree of bonding by matrix (ACM matrix, not ground materials)
Distribution of Visible Asbestos Across Affected Area
Amount of asbestos fibre in selected ACM/fibre type as % of host material

Free dispersed fibres/fibre bundles	2
Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)	4
No visible ACMs/fibre bundles	0
Very Low quantities - <0.001 to 0.01 %wt/wt	1

Sub-total

11

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking

Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.

It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

Stage 2

Exposure Factors

Anticipated airborne fibre concentration - Control Limit or SALI?
 Anticipated duration of exposure to asbestos
 Activity type and effect on deterioration of ACMs during work
 Best description of primary host material matrix (soil/made ground)
 Respirable fibre index for ACM - RIVM report 711701034 (2003)

<0.001 fibres/ml	0
> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Sampling, manual or mechanical (significant deterioration expected)	2
Coarse to Fine Sand	2
Very low	1

Sub-total

9

Exposure ranking

Low

Combined hazard and exposure ranking

20

Low



Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Stage 3

Risk Assessment Outputs

Probable Licensing Status	Non-Licensed Work
RPE*	EN149 type FFP3 disposable
Dust Suppression**	Manual/localised dust suppression
Hygiene/Decontamination***	Localised and basic personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.

**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)

***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis

Appendix H

HazWasteOnline Output Sheets

Waste Classification Report

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

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



20K36-SH0EJ-LJVES

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

Job name

LKC 21 1679

Description/Comments

Project

LKC 21 1679

Site

Victoria Park Probation Centre

Classified by

Name: **Peter Dunn**
Company: **LK Group**
Date: **09 Sep 2022 06:32 GMT**
Telephone: **0161 763 7200**

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

HazWasteOnline™ Certification:

CERTIFIED

Course

Hazardous Waste Classification
Most recent 3 year Refresher

Date

18 Sep 2019
02 Aug 2022

Next 3 year Refresher due by Aug 2025

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP101-18/08/2022-0.1	0.1-0.6	Non Hazardous	HP 14	3
2	TP102-18/08/2022-0.0	0.0-0.6	Non Hazardous		5
3	TP102-18/08/2022-0.6	0.6-1.0	Non Hazardous		7
4	TP103-18/08/2022-0.1	0.1-0.3	Non Hazardous		9
5	TP104B-18/08/2022-0.0	0.0-0.1	Non Hazardous		11
6	TP104B-18/08/2022-0.1	0.1-1.0	Hazardous		13
7	TP105-18/08/2022-0.5	0.5-1.5	Non Hazardous		15
8	TP105-18/08/2022-2.2	2.2-3.0	Non Hazardous		17
9	TP106-18/08/2022-0.0	0.0-0.7	Non Hazardous		19
10	CP101-18/08/2022-0.0	0.0-0.4	Non Hazardous		21
11	CP102-18/08/2022-0.0	0.0-0.3	Non Hazardous		22
12	WS101-19/08/2022-0.0	0.0-0.3	Non Hazardous		24
13	WS101-19/08/2022-0.3	0.3-1.0	Non Hazardous		26
14	WS102-19/08/2022-0.0	0.0-0.6	Non Hazardous		28
15	WS103-19/08/2022-0.5	0.5-1.0	Non Hazardous		30
16	WS104-19/08/2022-0.0	0.0-0.4	Non Hazardous		32
17	WS104-19/08/2022-0.5	0.5-1.0	Non Hazardous		34
18	WS105-19/08/2022-0.2	0.2-0.4	Non Hazardous		36
19	WS105-19/08/2022-0.5	0.5-1.0	Non Hazardous		38

Related documents

#	Name	Description
1	HWOL_22-32307-20220901 160901.hwol	Eurofins Chemtest .hwol file used to populate the Job
2	HWOL_22-32319-20220901 105501.hwol	Eurofins Chemtest .hwol file used to populate the Job
3	LK SUITE 1 - 5	waste stream template used to create this Job

Report

Created by: Peter Dunn

Created date: 09 Sep 2022 06:32 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	40
Appendix B: Rationale for selection of metal species	41
Appendix C: Version	41

Classification of sample: TP101-18/08/2022-0.1

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

Sample details

Sample name:	LoW Code:
TP101-18/08/2022-0.1	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.1-0.6 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
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
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				7.5	mg/kg	1.32	8.021	mg/kg	0.000802 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.14	mg/kg	1.142	0.13	mg/kg	0.000013 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				15	mg/kg	1.462	17.758	mg/kg	0.00178 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				29	mg/kg	1.126	26.447	mg/kg	0.00264 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				0.18	mg/kg	1.353	0.197	mg/kg	0.0000197 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				19	mg/kg	1.273	19.585	mg/kg	0.00196 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	66	mg/kg		53.46	mg/kg	0.00535 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.41	mg/kg	1.405	0.467	mg/kg	0.0000467 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				17	mg/kg	1.785	24.582	mg/kg	0.00246 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				52	mg/kg	1.245	52.427	mg/kg	0.00524 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH		PH		9.2	pH		9.2	pH	9.2 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	phenanthrene	201-581-5	85-01-8		1.7 mg/kg		1.377 mg/kg	0.000138 %	✓	
18	anthracene	204-371-1	120-12-7		0.38 mg/kg		0.308 mg/kg	0.0000308 %	✓	
19	fluoranthene	205-912-4	206-44-0		3.5 mg/kg		2.835 mg/kg	0.000284 %	✓	
20	pyrene	204-927-3	129-00-0		3.9 mg/kg		3.159 mg/kg	0.000316 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	1.9 mg/kg		1.539 mg/kg	0.000154 %	✓	
22	chrysene	601-048-00-0	205-923-4	218-01-9	2.5 mg/kg		2.025 mg/kg	0.000202 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	3 mg/kg		2.43 mg/kg	0.000243 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.96 mg/kg		0.778 mg/kg	0.0000778 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	2.2 mg/kg		1.782 mg/kg	0.000178 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0221 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated 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: TP102-18/08/2022-0.0

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

Sample details

Sample name:	LoW Code:
TP102-18/08/2022-0.0	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.0-0.6 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
7.4%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 7.4% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				24 mg/kg	1.32	29.343 mg/kg	0.00293 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.35 mg/kg	1.142	0.37 mg/kg	0.000037 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				13 mg/kg	1.462	17.594 mg/kg	0.00176 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				80 mg/kg	1.126	83.406 mg/kg	0.00834 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.83 mg/kg	1.353	1.04 mg/kg	0.000104 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				18 mg/kg	1.273	21.212 mg/kg	0.00212 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	270 mg/kg		250.02 mg/kg	0.025 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.78 mg/kg	1.405	1.015 mg/kg	0.000101 %	✓	
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				25 mg/kg	1.785	41.327 mg/kg	0.00413 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				220 mg/kg	1.245	253.573 mg/kg	0.0254 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	pH		PH		7.7 pH		7.7 pH	7.7 pH		
13	naphthalene				0.92 mg/kg		0.852 mg/kg	0.0000852 %	✓	
	601-052-00-2	202-049-5	91-20-3							
14	acenaphthylene				0.63 mg/kg		0.583 mg/kg	0.0000583 %	✓	
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		0.64 mg/kg		0.593 mg/kg	0.0000593 %	✓	
16	fluorene	201-695-5	86-73-7		0.76 mg/kg		0.704 mg/kg	0.0000704 %	✓	
17	phenanthrene	201-581-5	85-01-8		11 mg/kg		10.186 mg/kg	0.00102 %	✓	
18	anthracene	204-371-1	120-12-7		2.6 mg/kg		2.408 mg/kg	0.000241 %	✓	
19	fluoranthene	205-912-4	206-44-0		22 mg/kg		20.372 mg/kg	0.00204 %	✓	
20	pyrene	204-927-3	129-00-0		22 mg/kg		20.372 mg/kg	0.00204 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	12 mg/kg		11.112 mg/kg	0.00111 %	✓	
22	chrysene	601-048-00-0	205-923-4	218-01-9	12 mg/kg		11.112 mg/kg	0.00111 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	13 mg/kg		12.038 mg/kg	0.0012 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	5.1 mg/kg		4.723 mg/kg	0.000472 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	13 mg/kg		12.038 mg/kg	0.0012 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		6 mg/kg		5.556 mg/kg	0.000556 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	1.1 mg/kg		1.019 mg/kg	0.000102 %	✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		6.5 mg/kg		6.019 mg/kg	0.000602 %	✓	
Total:								0.082 %		

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: TP102-18/08/2022-0.6

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

Sample details

Sample name:	LoW Code:
TP102-18/08/2022-0.6	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.6-1.0 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
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
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				5.9 mg/kg	1.32	6.855 mg/kg	0.000686 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18 mg/kg	1.462	23.151 mg/kg	0.00232 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				20 mg/kg	1.126	19.816 mg/kg	0.00198 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.08 mg/kg	1.353	0.0953 mg/kg	0.00000953 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				25 mg/kg	1.273	27.997 mg/kg	0.0028 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	110 mg/kg		96.8 mg/kg	0.00968 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.45 mg/kg	1.405	0.556 mg/kg	0.0000556 %	✓	
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				17 mg/kg	1.785	26.706 mg/kg	0.00267 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				46 mg/kg	1.245	50.386 mg/kg	0.00504 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	pH		PH		8.9 pH		8.9 pH	8.9 pH		
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	• anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	• fluoranthene	205-912-4	206-44-0		0.32 mg/kg		0.282 mg/kg	0.0000282 %	✓	
20	• pyrene	204-927-3	129-00-0		0.34 mg/kg		0.299 mg/kg	0.0000299 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	chrysene	601-048-00-0	205-923-4	218-01-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0255 %		

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: TP103-18/08/2022-0.1

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

Sample details

Sample name:	LoW Code:
TP103-18/08/2022-0.1	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.1-0.3 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
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
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				15 mg/kg	1.32	17.428 mg/kg	0.00174 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.19 mg/kg	1.142	0.191 mg/kg	0.0000191 %	✓	
	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	20.579 mg/kg	0.00206 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				44 mg/kg	1.126	43.594 mg/kg	0.00436 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.31 mg/kg	1.353	0.369 mg/kg	0.0000369 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				15 mg/kg	1.273	16.798 mg/kg	0.00168 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	340 mg/kg		299.2 mg/kg	0.0299 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.59 mg/kg	1.405	0.729 mg/kg	0.0000729 %	✓	
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				20 mg/kg	1.785	31.419 mg/kg	0.00314 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				95 mg/kg	1.245	104.058 mg/kg	0.0104 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	pH		PH		7.9 pH		7.9 pH	7.9 pH		
13	naphthalene				0.52 mg/kg		0.458 mg/kg	0.0000458 %	✓	
	601-052-00-2	202-049-5	91-20-3							
14	acenaphthylene				0.19 mg/kg		0.167 mg/kg	0.0000167 %	✓	
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		0.8 mg/kg		0.704 mg/kg	0.0000704 %	✓	
16	fluorene	201-695-5	86-73-7		0.58 mg/kg		0.51 mg/kg	0.000051 %	✓	
17	phenanthrene	201-581-5	85-01-8		7.3 mg/kg		6.424 mg/kg	0.000642 %	✓	
18	anthracene	204-371-1	120-12-7		1.9 mg/kg		1.672 mg/kg	0.000167 %	✓	
19	fluoranthene	205-912-4	206-44-0		19 mg/kg		16.72 mg/kg	0.00167 %	✓	
20	pyrene	204-927-3	129-00-0		19 mg/kg		16.72 mg/kg	0.00167 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		10 mg/kg		8.8 mg/kg	0.00088 %	✓	
22	chrysene	601-048-00-0	205-923-4		11 mg/kg		9.68 mg/kg	0.000968 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		13 mg/kg		11.44 mg/kg	0.00114 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		5.1 mg/kg		4.488 mg/kg	0.000449 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		12 mg/kg		10.56 mg/kg	0.00106 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		7.3 mg/kg		6.424 mg/kg	0.000642 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.87 mg/kg		0.766 mg/kg	0.0000766 %	✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		6.1 mg/kg		5.368 mg/kg	0.000537 %	✓	
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		20 mg/kg		17.6 mg/kg	0.00176 %	✓	
Total:								0.0654 %		

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: TP104B-18/08/2022-0.0

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

Sample details

Sample name:	LoW Code:
TP104B-18/08/2022-0.0	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.0-0.1 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
7.7%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 7.7% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				18 mg/kg	1.32	21.936 mg/kg	0.00219 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.19 mg/kg	1.142	0.2 mg/kg	0.00002 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				31 mg/kg	1.462	41.819 mg/kg	0.00418 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				33 mg/kg	1.126	34.293 mg/kg	0.00343 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.41 mg/kg	1.353	0.512 mg/kg	0.0000512 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				8 mg/kg	1.273	9.397 mg/kg	0.00094 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	130 mg/kg		119.99 mg/kg	0.012 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.31 mg/kg	1.405	0.402 mg/kg	0.0000402 %	✓	
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				8.5 mg/kg	1.785	14.006 mg/kg	0.0014 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				77 mg/kg	1.245	88.463 mg/kg	0.00885 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							
12	pH		PH		9.4 pH		9.4 pH	9.4 pH		
13	naphthalene				0.29 mg/kg		0.268 mg/kg	0.0000268 %	✓	
	601-052-00-2	202-049-5	91-20-3							
14	acenaphthylene				0.16 mg/kg		0.148 mg/kg	0.0000148 %	✓	
		205-917-1	208-96-8							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		0.38 mg/kg		0.351 mg/kg	0.0000351 %	✓	
16	fluorene	201-695-5	86-73-7		0.2 mg/kg		0.185 mg/kg	0.0000185 %	✓	
17	phenanthrene	201-581-5	85-01-8		2.8 mg/kg		2.584 mg/kg	0.000258 %	✓	
18	anthracene	204-371-1	120-12-7		0.86 mg/kg		0.794 mg/kg	0.0000794 %	✓	
19	fluoranthene	205-912-4	206-44-0		8.4 mg/kg		7.753 mg/kg	0.000775 %	✓	
20	pyrene	204-927-3	129-00-0		8.3 mg/kg		7.661 mg/kg	0.000766 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	4.8 mg/kg		4.43 mg/kg	0.000443 %	✓	
22	chrysene	601-048-00-0	205-923-4	218-01-9	5 mg/kg		4.615 mg/kg	0.000461 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	6.5 mg/kg		5.999 mg/kg	0.0006 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	2.5 mg/kg		2.308 mg/kg	0.000231 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	5.6 mg/kg		5.169 mg/kg	0.000517 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		4 mg/kg		3.692 mg/kg	0.000369 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.51 mg/kg		0.471 mg/kg	0.0000471 %	✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		3.5 mg/kg		3.231 mg/kg	0.000323 %	✓	
Total:								0.0382 %		

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: TP104B-18/08/2022-0.1

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

Sample details

Sample name:	LoW Code:
TP104B-18/08/2022-0.1	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 03 * (Soil and stones containing hazardous substances)
0.1-1.0 m	
Moisture content:	
11%	
(wet weight correction)	

Hazard properties

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:

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.294%)

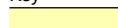
Determinands

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

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				7 mg/kg	1.32	8.226 mg/kg	0.000823 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.17 mg/kg	1.142	0.173 mg/kg	0.0000173 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				20 mg/kg	1.462	26.016 mg/kg	0.0026 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				70 mg/kg	1.126	70.143 mg/kg	0.00701 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	mercury { mercury dichloride }				0.98 mg/kg	1.353	1.181 mg/kg	0.000118 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
6	nickel { nickel(II) oxide (nickel monoxide) }				5.4 mg/kg	1.273	6.116 mg/kg	0.000612 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	3300 mg/kg		2937 mg/kg	0.294 %	✓	
	082-001-00-6									
8	selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }				<0.25 mg/kg	1.405	<0.351 mg/kg	<0.0000351 %		<LOD
	034-002-00-8									
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				12 mg/kg	1.785	19.066 mg/kg	0.00191 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
10	zinc { zinc oxide }				130 mg/kg	1.245	144.013 mg/kg	0.0144 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
12	• pH				8.4 pH		8.4	pH	8.4 pH		
13	naphthalene				<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
14	• acenaphthylene				<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8								
15	• acenaphthene				<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9								
16	• fluorene				<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7								
17	• phenanthrene				1.3 mg/kg		1.157	mg/kg	0.000116 %	✓	
		201-581-5	85-01-8								
18	• anthracene				0.38 mg/kg		0.338	mg/kg	0.0000338 %	✓	
		204-371-1	120-12-7								
19	• fluoranthene				3.3 mg/kg		2.937	mg/kg	0.000294 %	✓	
		205-912-4	206-44-0								
20	• pyrene				3.1 mg/kg		2.759	mg/kg	0.000276 %	✓	
		204-927-3	129-00-0								
21	benzo[a]anthracene				1.7 mg/kg		1.513	mg/kg	0.000151 %	✓	
	601-033-00-9	200-280-6	56-55-3								
22	chrysene				2.1 mg/kg		1.869	mg/kg	0.000187 %	✓	
	601-048-00-0	205-923-4	218-01-9								
23	benzo[b]fluoranthene				2.3 mg/kg		2.047	mg/kg	0.000205 %	✓	
	601-034-00-4	205-911-9	205-99-2								
24	benzo[k]fluoranthene				0.87 mg/kg		0.774	mg/kg	0.0000774 %	✓	
	601-036-00-5	205-916-6	207-08-9								
25	benzo[a]pyrene; benzo[def]chrysene				1.7 mg/kg		1.513	mg/kg	0.000151 %	✓	
	601-032-00-3	200-028-5	50-32-8								
26	• indeno[123-cd]pyrene				<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-893-2	193-39-5								
27	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-041-00-2	200-181-8	53-70-3								
28	• benzo[ghi]perylene				<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-883-8	191-24-2								
Total:									0.323 %		

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: TP105-18/08/2022-0.5

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

Sample details

Sample name:	LoW Code:
TP105-18/08/2022-0.5	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.5-1.5 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
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
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				8.5	mg/kg	1.32	9.876	mg/kg	0.000988 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.1	mg/kg	1.142	0.101	mg/kg	0.0000101 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				14	mg/kg	1.462	18.006	mg/kg	0.0018 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				20	mg/kg	1.126	19.816	mg/kg	0.00198 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				0.16	mg/kg	1.353	0.191	mg/kg	0.0000191 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				12	mg/kg	1.273	13.439	mg/kg	0.00134 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	670	mg/kg		589.6	mg/kg	0.059 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.4	mg/kg	1.405	0.495	mg/kg	0.0000495 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				12	mg/kg	1.785	18.852	mg/kg	0.00189 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				60	mg/kg	1.245	65.721	mg/kg	0.00657 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH		PH		9.3	pH		9.3	pH	9.3 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	phenanthrene	201-581-5	85-01-8		2.2 mg/kg		1.936 mg/kg	0.000194 %	✓	
18	anthracene	204-371-1	120-12-7		0.96 mg/kg		0.845 mg/kg	0.0000845 %	✓	
19	fluoranthene	205-912-4	206-44-0		5.6 mg/kg		4.928 mg/kg	0.000493 %	✓	
20	pyrene	204-927-3	129-00-0		5.8 mg/kg		5.104 mg/kg	0.00051 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		2.9 mg/kg		2.552 mg/kg	0.000255 %	✓	
22	chrysene	601-048-00-0	205-923-4		3.5 mg/kg		3.08 mg/kg	0.000308 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		4 mg/kg		3.52 mg/kg	0.000352 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		1.6 mg/kg		1.408 mg/kg	0.000141 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		3.4 mg/kg		2.992 mg/kg	0.000299 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		2.1 mg/kg		1.848 mg/kg	0.000185 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.34 mg/kg		0.299 mg/kg	0.0000299 %	✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		1.9 mg/kg		1.672 mg/kg	0.000167 %	✓	
Total:								0.0768 %		

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: TP105-18/08/2022-2.2

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

Sample details

Sample name:	LoW Code:
TP105-18/08/2022-2.2	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
2.2-3.0 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
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
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				5.2	mg/kg	1.32	5.904	mg/kg	0.00059 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				19	mg/kg	1.462	23.882	mg/kg	0.00239 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				16	mg/kg	1.126	15.492	mg/kg	0.00155 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				0.05	mg/kg	1.353	0.0582	mg/kg	0.00000582 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				24	mg/kg	1.273	26.266	mg/kg	0.00263 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	34	mg/kg		29.24	mg/kg	0.00292 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.4	mg/kg	1.405	0.483	mg/kg	0.0000483 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				18	mg/kg	1.785	27.635	mg/kg	0.00276 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				39	mg/kg	1.245	41.748	mg/kg	0.00417 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH		PH		9.3	pH		9.3	pH	9.3 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	fluoranthene	205-912-4	206-44-0		0.28 mg/kg		0.241 mg/kg	0.0000241 %	✓	
20	pyrene	204-927-3	129-00-0		0.26 mg/kg		0.224 mg/kg	0.0000224 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	chrysene	601-048-00-0	205-923-4	218-01-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0174 %		

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: TP106-18/08/2022-0.0

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

Sample details

Sample name:	LoW Code:
TP106-18/08/2022-0.0	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.0-0.7 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
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
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				82	mg/kg	1.32	93.109	mg/kg	0.00931 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.28	mg/kg	1.142	0.275	mg/kg	0.0000275 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				19	mg/kg	1.462	23.882	mg/kg	0.00239 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				170	mg/kg	1.126	164.605	mg/kg	0.0165 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				3	mg/kg	1.353	3.492	mg/kg	0.000349 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				47	mg/kg	1.273	51.438	mg/kg	0.00514 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	990	mg/kg		851.4	mg/kg	0.0851 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.3	mg/kg	1.405	1.571	mg/kg	0.000157 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				75	mg/kg	1.785	115.144	mg/kg	0.0115 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				94	mg/kg	1.245	100.623	mg/kg	0.0101 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH		PH		8.1	pH		8.1	pH	8.1 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		3.6 mg/kg		3.096 mg/kg	0.00031 %	✓	
18	• anthracene	204-371-1	120-12-7		0.99 mg/kg		0.851 mg/kg	0.0000851 %	✓	
19	• fluoranthene	205-912-4	206-44-0		6.1 mg/kg		5.246 mg/kg	0.000525 %	✓	
20	• pyrene	204-927-3	129-00-0		6.6 mg/kg		5.676 mg/kg	0.000568 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	3.4 mg/kg		2.924 mg/kg	0.000292 %	✓	
22	chrysene	601-048-00-0	205-923-4	218-01-9	3.6 mg/kg		3.096 mg/kg	0.00031 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	3.4 mg/kg		2.924 mg/kg	0.000292 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.1 mg/kg		0.946 mg/kg	0.0000946 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	3.4 mg/kg		2.924 mg/kg	0.000292 %	✓	
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.143 %		

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: CP101-18/08/2022-0.0

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

Sample details

Sample name:	LoW Code:
CP101-18/08/2022-0.0	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.0-0.4 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
6%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 6% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	• pH				8.3 pH		8.3 pH	8.3 pH		
Total:								0%		

Key

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

Classification of sample: CP102-18/08/2022-0.0

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

Sample details

Sample name:	LoW Code:
CP102-18/08/2022-0.0	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)
0.0-0.3 m	
Moisture content:	
7.6%	
(wet weight correction)	

Hazard properties

None identified

Determinands

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

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
1		arsenic { arsenic trioxide }				19	mg/kg	1.32	23.18	mg/kg	0.00232 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
2		cadmium { cadmium oxide }				0.31	mg/kg	1.142	0.327	mg/kg	0.0000327 %	✓	
		048-002-00-0	215-146-2	1306-19-0									
3		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				36	mg/kg	1.462	48.617	mg/kg	0.00486 %	✓	
			215-160-9	1308-38-9									
4		copper { dicopper oxide; copper (I) oxide }				38	mg/kg	1.126	39.532	mg/kg	0.00395 %	✓	
		029-002-00-X	215-270-7	1317-39-1									
5		mercury { mercury dichloride }				0.42	mg/kg	1.353	0.525	mg/kg	0.0000525 %	✓	
		080-010-00-X	231-299-8	7487-94-7									
6		nickel { nickel(II) oxide (nickel monoxide) }				9.5	mg/kg	1.273	11.171	mg/kg	0.00112 %	✓	
		028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	88	mg/kg		81.312	mg/kg	0.00813 %	✓	
		082-001-00-6											
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.42	mg/kg	1.405	0.545	mg/kg	0.0000545 %	✓	
		034-002-00-8											
9		vanadium { divanadium pentaoxide; vanadium pentoxide }				10	mg/kg	1.785	16.495	mg/kg	0.00165 %	✓	
		023-001-00-8	215-239-8	1314-62-1									
10		zinc { zinc oxide }				91	mg/kg	1.245	104.661	mg/kg	0.0105 %	✓	
		030-013-00-7	215-222-5	1314-13-2									
11		chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
12		pH				7.8	pH		7.8	pH	7.8 pH		
				pH									
13		naphthalene				0.35	mg/kg		0.323	mg/kg	0.0000323 %	✓	
		601-052-00-2	202-049-5	91-20-3									
14		acenaphthylene				0.2	mg/kg		0.185	mg/kg	0.0000185 %	✓	
			205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		0.48 mg/kg		0.444 mg/kg	0.0000444 %	✓	
16	• fluorene	201-695-5	86-73-7		0.3 mg/kg		0.277 mg/kg	0.0000277 %	✓	
17	• phenanthrene	201-581-5	85-01-8		3.6 mg/kg		3.326 mg/kg	0.000333 %	✓	
18	• anthracene	204-371-1	120-12-7		0.96 mg/kg		0.887 mg/kg	0.0000887 %	✓	
19	• fluoranthene	205-912-4	206-44-0		7.4 mg/kg		6.838 mg/kg	0.000684 %	✓	
20	• pyrene	204-927-3	129-00-0		7 mg/kg		6.468 mg/kg	0.000647 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		3.9 mg/kg		3.604 mg/kg	0.00036 %	✓	
22	chrysene	601-048-00-0	205-923-4		4.3 mg/kg		3.973 mg/kg	0.000397 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		4.7 mg/kg		4.343 mg/kg	0.000434 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		1.6 mg/kg		1.478 mg/kg	0.000148 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		5.1 mg/kg		4.712 mg/kg	0.000471 %	✓	
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		2.5 mg/kg		2.31 mg/kg	0.000231 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.45 mg/kg		0.416 mg/kg	0.0000416 %	✓	
28	• benzo[ghi]perylene	205-883-8	191-24-2		2.6 mg/kg		2.402 mg/kg	0.00024 %	✓	
Total:								0.0369 %		

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: WS101-19/08/2022-0.0

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

Sample details

Sample name:	LoW Code:
WS101-19/08/2022-0.0	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)
0.0-0.3 m	
Moisture content:	
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
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				18 mg/kg	1.32	19.488 mg/kg	0.00195 %		✓	
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.21 mg/kg	1.142	0.197 mg/kg	0.0000197 %		✓	
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				9.1 mg/kg	1.462	10.906 mg/kg	0.00109 %		✓	
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				38 mg/kg	1.126	35.083 mg/kg	0.00351 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
5	mercury { mercury dichloride }				0.11 mg/kg	1.353	0.122 mg/kg	0.0000122 %		✓	
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel(II) oxide (nickel monoxide) }				17 mg/kg	1.273	17.74 mg/kg	0.00177 %		✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	67 mg/kg		54.94 mg/kg	0.00549 %		✓	
	082-001-00-6										
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.53 mg/kg	1.405	0.611 mg/kg	0.0000611 %		✓	
	034-002-00-8										
9	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								
10	zinc { zinc oxide }				86 mg/kg	1.245	87.777 mg/kg	0.00878 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
12	pH				7.9 pH		7.9 pH	7.9 pH			
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	phenanthrene	201-581-5	85-01-8		1.1 mg/kg		0.902 mg/kg	0.0000902 %	✓	
18	anthracene	204-371-1	120-12-7		0.26 mg/kg		0.213 mg/kg	0.0000213 %	✓	
19	fluoranthene	205-912-4	206-44-0		1.5 mg/kg		1.23 mg/kg	0.000123 %	✓	
20	pyrene	204-927-3	129-00-0		1.4 mg/kg		1.148 mg/kg	0.000115 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		0.73 mg/kg		0.599 mg/kg	0.0000599 %	✓	
22	chrysene	601-048-00-0	205-923-4		0.77 mg/kg		0.631 mg/kg	0.0000631 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
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		40 mg/kg		32.8 mg/kg	0.00328 %	✓	
Total:								0.0299 %		

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: WS101-19/08/2022-0.3

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

Sample details

Sample name:	LoW Code:
WS101-19/08/2022-0.3	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)
0.3-1.0 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
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				6.7 mg/kg	1.32	7.431 mg/kg	0.000743 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %			<LOD
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				24 mg/kg	1.462	29.465 mg/kg	0.00295 %	✓		
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				18 mg/kg	1.126	17.023 mg/kg	0.0017 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
5	mercury { mercury dichloride }				<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel(II) oxide (nickel monoxide) }				25 mg/kg	1.273	26.724 mg/kg	0.00267 %	✓		
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	15 mg/kg		12.6 mg/kg	0.00126 %	✓		
	082-001-00-6										
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.49 mg/kg	1.405	0.578 mg/kg	0.0000578 %	✓		
	034-002-00-8										
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				27 mg/kg	1.785	40.488 mg/kg	0.00405 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
10	zinc { zinc oxide }				38 mg/kg	1.245	39.731 mg/kg	0.00397 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
12	pH				8.5 pH		8.5 pH	8.5 pH			
			PH								
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	• anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	• fluoranthene	205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
20	• pyrene	204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	benzo[a]anthracene	601-033-00-9	200-280-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	chrysene	601-048-00-0	205-923-4		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0177 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated 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: WS102-19/08/2022-0.0

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

Sample details

Sample name:	LoW Code:
WS102-19/08/2022-0.0	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)
0.0-0.6 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
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				12 mg/kg	1.32	13.943	mg/kg	0.00139 %	✓	
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.16 mg/kg	1.142	0.161	mg/kg	0.0000161 %	✓	
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				11 mg/kg	1.462	14.148	mg/kg	0.00141 %	✓	
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				40 mg/kg	1.126	39.631	mg/kg	0.00396 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
5	mercury { mercury dichloride }				0.19 mg/kg	1.353	0.226	mg/kg	0.0000226 %	✓	
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel(II) oxide (nickel monoxide) }				13 mg/kg	1.273	14.558	mg/kg	0.00146 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	81 mg/kg		71.28	mg/kg	0.00713 %	✓	
	082-001-00-6										
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.4 mg/kg	1.405	0.495	mg/kg	0.0000495 %	✓	
	034-002-00-8										
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				17 mg/kg	1.785	26.706	mg/kg	0.00267 %	✓	
	023-001-00-8	215-239-8	1314-62-1								
10	zinc { zinc oxide }				56 mg/kg	1.245	61.34	mg/kg	0.00613 %	✓	
	030-013-00-7	215-222-5	1314-13-2								
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0								
12	pH				7.7 pH		7.7	pH	7.7 pH		
			PH								
13	naphthalene				0.48 mg/kg		0.422	mg/kg	0.0000422 %	✓	
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				0.42 mg/kg		0.37	mg/kg	0.000037 %	✓	
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		0.47 mg/kg		0.414 mg/kg	0.0000414 %	✓	
16	• fluorene	201-695-5	86-73-7		0.58 mg/kg		0.51 mg/kg	0.000051 %	✓	
17	• phenanthrene	201-581-5	85-01-8		5.5 mg/kg		4.84 mg/kg	0.000484 %	✓	
18	• anthracene	204-371-1	120-12-7		1.2 mg/kg		1.056 mg/kg	0.000106 %	✓	
19	• fluoranthene	205-912-4	206-44-0		8.4 mg/kg		7.392 mg/kg	0.000739 %	✓	
20	• pyrene	204-927-3	129-00-0		9 mg/kg		7.92 mg/kg	0.000792 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		4.4 mg/kg		3.872 mg/kg	0.000387 %	✓	
22	chrysene	601-048-00-0	205-923-4		4.6 mg/kg		4.048 mg/kg	0.000405 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		5.5 mg/kg		4.84 mg/kg	0.000484 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		2 mg/kg		1.76 mg/kg	0.000176 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		4.7 mg/kg		4.136 mg/kg	0.000414 %	✓	
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		2.6 mg/kg		2.288 mg/kg	0.000229 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.62 mg/kg		0.546 mg/kg	0.0000546 %	✓	
28	• benzo[ghi]perylene	205-883-8	191-24-2		2.9 mg/kg		2.552 mg/kg	0.000255 %	✓	
Total:								0.029 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated 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: WS103-19/08/2022-0.5

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

Sample details

Sample name:	LoW Code:
WS103-19/08/2022-0.5	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)
0.5-1.0 m	
Moisture content:	
8.7%	
(wet weight correction)	

Hazard properties

None identified

Determinands

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

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				13 mg/kg	1.32	15.671 mg/kg	0.00157 %		✓	
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.26 mg/kg	1.142	0.271 mg/kg	0.0000271 %		✓	
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				10 mg/kg	1.462	13.344 mg/kg	0.00133 %		✓	
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				37 mg/kg	1.126	38.034 mg/kg	0.0038 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
5	mercury { mercury dichloride }				0.26 mg/kg	1.353	0.321 mg/kg	0.0000321 %		✓	
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel(II) oxide (nickel monoxide) }				14 mg/kg	1.273	16.266 mg/kg	0.00163 %		✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	120 mg/kg		109.56 mg/kg	0.011 %		✓	
	082-001-00-6										
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.51 mg/kg	1.405	0.654 mg/kg	0.0000654 %		✓	
	034-002-00-8										
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				17 mg/kg	1.785	27.708 mg/kg	0.00277 %		✓	
	023-001-00-8	215-239-8	1314-62-1								
10	zinc { zinc oxide }				66 mg/kg	1.245	75.004 mg/kg	0.0075 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
12	pH				8.2 pH		8.2 pH	8.2 pH			
13	naphthalene				0.79 mg/kg		0.721 mg/kg	0.0000721 %		✓	
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				0.18 mg/kg		0.164 mg/kg	0.0000164 %		✓	
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		0.99 mg/kg		0.904 mg/kg	0.0000904 %	✓	
16	• fluorene	201-695-5	86-73-7		0.82 mg/kg		0.749 mg/kg	0.0000749 %	✓	
17	• phenanthrene	201-581-5	85-01-8		6.7 mg/kg		6.117 mg/kg	0.000612 %	✓	
18	• anthracene	204-371-1	120-12-7		1.4 mg/kg		1.278 mg/kg	0.000128 %	✓	
19	• fluoranthene	205-912-4	206-44-0		8.6 mg/kg		7.852 mg/kg	0.000785 %	✓	
20	• pyrene	204-927-3	129-00-0		8.7 mg/kg		7.943 mg/kg	0.000794 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		3.7 mg/kg		3.378 mg/kg	0.000338 %	✓	
22	chrysene	601-048-00-0	205-923-4		4.5 mg/kg		4.108 mg/kg	0.000411 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		4.4 mg/kg		4.017 mg/kg	0.000402 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		1.5 mg/kg		1.37 mg/kg	0.000137 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		4.2 mg/kg		3.835 mg/kg	0.000383 %	✓	
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		1.8 mg/kg		1.643 mg/kg	0.000164 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.47 mg/kg		0.429 mg/kg	0.0000429 %	✓	
28	• benzo[ghi]perylene	205-883-8	191-24-2		2.1 mg/kg		1.917 mg/kg	0.000192 %	✓	
Total:								0.0344 %		

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: WS104-19/08/2022-0.0

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

Sample details

Sample name:	LoW Code:
WS104-19/08/2022-0.0	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)
0.0-0.4 m	
Moisture content:	
15%	
(wet weight correction)	

Hazard properties

None identified

Determinands

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

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				14 mg/kg	1.32	15.712 mg/kg	0.00157 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.17 mg/kg	1.142	0.165 mg/kg	0.0000165 %	✓		
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				15 mg/kg	1.462	18.635 mg/kg	0.00186 %	✓		
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				37 mg/kg	1.126	35.409 mg/kg	0.00354 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
5	mercury { mercury dichloride }				0.21 mg/kg	1.353	0.242 mg/kg	0.0000242 %	✓		
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel(II) oxide (nickel monoxide) }				18 mg/kg	1.273	19.471 mg/kg	0.00195 %	✓		
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	150 mg/kg		127.5 mg/kg	0.0127 %	✓		
	082-001-00-6										
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.62 mg/kg	1.405	0.74 mg/kg	0.000074 %	✓		
	034-002-00-8										
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				21 mg/kg	1.785	31.866 mg/kg	0.00319 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
10	zinc { zinc oxide }				74 mg/kg	1.245	78.293 mg/kg	0.00783 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
12	pH				7.8 pH		7.8 pH	7.8 pH			
			PH								
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		1.8 mg/kg		1.53 mg/kg	0.000153 %	✓	
18	• anthracene	204-371-1	120-12-7		0.4 mg/kg		0.34 mg/kg	0.000034 %	✓	
19	• fluoranthene	205-912-4	206-44-0		3 mg/kg		2.55 mg/kg	0.000255 %	✓	
20	• pyrene	204-927-3	129-00-0		3.3 mg/kg		2.805 mg/kg	0.000281 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		1.6 mg/kg		1.36 mg/kg	0.000136 %	✓	
22	chrysene	601-048-00-0	205-923-4		2 mg/kg		1.7 mg/kg	0.00017 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		1.7 mg/kg		1.445 mg/kg	0.000145 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.53 mg/kg		0.451 mg/kg	0.0000451 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		1.8 mg/kg		1.53 mg/kg	0.000153 %	✓	
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0343 %		

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: WS104-19/08/2022-0.5

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

Sample details

Sample name:	LoW Code:
WS104-19/08/2022-0.5	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)
0.5-1.0 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
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				4.6	mg/kg	1.32	4.92	mg/kg	0.000492 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18	mg/kg	1.462	21.309	mg/kg	0.00213 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				13	mg/kg	1.126	11.856	mg/kg	0.00119 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				<0.05	mg/kg	1.353	<0.0677	mg/kg	<0.00000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				27	mg/kg	1.273	27.832	mg/kg	0.00278 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	7	mg/kg		5.67	mg/kg	0.000567 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.37	mg/kg	1.405	0.421	mg/kg	0.0000421 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				17	mg/kg	1.785	24.582	mg/kg	0.00246 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				28	mg/kg	1.245	28.23	mg/kg	0.00282 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH				8.1	pH		8.1	pH	8.1 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	• anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	• fluoranthene	205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
20	• pyrene	204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	benzo[a]anthracene	601-033-00-9	200-280-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	chrysene	601-048-00-0	205-923-4		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0128 %		

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: WS105-19/08/2022-0.2

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

Sample details

Sample name:	LoW Code:
WS105-19/08/2022-0.2	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)
0.2-0.4 m	
Moisture content:	
11%	
(wet weight correction)	

Hazard properties

None identified

Determinands

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

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				12	mg/kg	1.32	14.101	mg/kg	0.00141 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.2	mg/kg	1.142	0.203	mg/kg	0.0000203 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				30	mg/kg	1.462	39.024	mg/kg	0.0039 %	✓	
		215-160-9	1308-38-9									
4	copper { dicopper oxide; copper (I) oxide }				66	mg/kg	1.126	66.135	mg/kg	0.00661 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
5	mercury { mercury dichloride }				0.05	mg/kg	1.353	0.0602	mg/kg	0.00000602 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
6	nickel { nickel(II) oxide (nickel monoxide) }				20	mg/kg	1.273	22.652	mg/kg	0.00227 %	✓	
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	66	mg/kg		58.74	mg/kg	0.00587 %	✓	
	082-001-00-6											
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.42	mg/kg	1.405	0.525	mg/kg	0.0000525 %	✓	
	034-002-00-8											
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				17	mg/kg	1.785	27.01	mg/kg	0.0027 %	✓	
	023-001-00-8	215-239-8	1314-62-1									
10	zinc { zinc oxide }				68	mg/kg	1.245	75.33	mg/kg	0.00753 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
	024-001-00-0	215-607-8	1333-82-0									
12	pH				9.4	pH		9.4	pH	9.4 pH		
13	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
14	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	phenanthrene	201-581-5	85-01-8		8.7 mg/kg		7.743 mg/kg	0.000774 %	✓	
18	anthracene	204-371-1	120-12-7		2.4 mg/kg		2.136 mg/kg	0.000214 %	✓	
19	fluoranthene	205-912-4	206-44-0		18 mg/kg		16.02 mg/kg	0.0016 %	✓	
20	pyrene	204-927-3	129-00-0		15 mg/kg		13.35 mg/kg	0.00134 %	✓	
21	benzo[a]anthracene	601-033-00-9	200-280-6		7.3 mg/kg		6.497 mg/kg	0.00065 %	✓	
22	chrysene	601-048-00-0	205-923-4		7.9 mg/kg		7.031 mg/kg	0.000703 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		9 mg/kg		8.01 mg/kg	0.000801 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		3.8 mg/kg		3.382 mg/kg	0.000338 %	✓	
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		7.3 mg/kg		6.497 mg/kg	0.00065 %	✓	
26	indeno[123-cd]pyrene	205-893-2	193-39-5		4.3 mg/kg		3.827 mg/kg	0.000383 %	✓	
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.81 mg/kg		0.721 mg/kg	0.0000721 %	✓	
28	benzo[ghi]perylene	205-883-8	191-24-2		4 mg/kg		3.56 mg/kg	0.000356 %	✓	
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		20 mg/kg		17.8 mg/kg	0.00178 %	✓	
Total:								0.0402 %		

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: WS105-19/08/2022-0.5

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

Sample details

Sample name:	LoW Code:
WS105-19/08/2022-0.5	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)
0.5-1.0 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
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				7.7 mg/kg	1.32	8.235 mg/kg	0.000823 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				<0.1 mg/kg	1.142	<0.114 mg/kg	<0.0000114 %			<LOD
	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	29.597 mg/kg	0.00296 %	✓		
		215-160-9	1308-38-9								
4	copper { dicopper oxide; copper (I) oxide }				16 mg/kg	1.126	14.592 mg/kg	0.00146 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
5	mercury { mercury dichloride }				<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
6	nickel { nickel(II) oxide (nickel monoxide) }				30 mg/kg	1.273	30.924 mg/kg	0.00309 %	✓		
	028-003-00-2	215-215-7 [1] 234-323-5 [2] - [3]	1313-99-1 [1] 11099-02-8 [2] 34492-97-2 [3]								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	11 mg/kg		8.91 mg/kg	0.000891 %	✓		
	082-001-00-6										
8	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.54 mg/kg	1.405	0.615 mg/kg	0.0000615 %	✓		
	034-002-00-8										
9	vanadium { divanadium pentaoxide; vanadium pentoxide }				24 mg/kg	1.785	34.704 mg/kg	0.00347 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
10	zinc { zinc oxide }				39 mg/kg	1.245	39.321 mg/kg	0.00393 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
11	chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %			<LOD
	024-001-00-0	215-607-8	1333-82-0								
12	pH				7.9 pH		7.9 pH	7.9 pH			
13	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
14	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
15	• acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	• fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17	• phenanthrene	201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	• anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
19	• fluoranthene	205-912-4	206-44-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
20	• pyrene	204-927-3	129-00-0		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	benzo[a]anthracene	601-033-00-9	200-280-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	chrysene	601-048-00-0	205-923-4		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	• indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	• benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.017 %		

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 GB MCL determinands

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

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

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

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

pH (CAS Number: PH)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

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

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

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

cadmium {cadmium oxide}

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

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

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

copper {dicopper oxide; copper (I) oxide}

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

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

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

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

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

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

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

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

vanadium {divanadium pentaoxide; vanadium pentoxide}

Most conservative species.

zinc {zinc oxide}

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

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

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

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021

HazWasteOnline Classification Engine Version: 2022.250.5318.9946 (07 Sep 2022)

HazWasteOnline Database: 2022.250.5318.9946 (07 Sep 2022)

This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

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

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

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

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

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

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

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

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

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

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

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021

Appendix I

Environmental Cover System Gardens and Soft Landscaped Areas

PRIVATE BACK GARDENS:

Physical break layer

GROUND LEVEL

↑ 0.6m (min) ↓		150mm (minimum) chemically validated TOPSOIL
		350mm chemically validated SUBSOIL
		100mm (minimum) PHYSICAL BREAK LAYER
		Existing MADE GROUND

PRIVATE FRONT GARDENS / SHARED LANDSCAPING:

Physical break layer

GROUND LEVEL

↑ 0.3m (min) ↓		150mm (minimum) chemically validated TOPSOIL
		50mm chemically validated SUBSOIL
		100mm (minimum) PHYSICAL BREAK LAYER
		Existing MADE GROUND

Hardstood Areas – No Remediation Required

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