

EARL STREET PRESTWICH

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

Job Number: LKC 20 1260

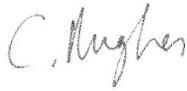
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1 Introduction

1.1 Background

LK Consult Ltd (LKC) has been commissioned by Dream Homes Construction Ltd to carry out a Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy for Earl Street, Prestwich. The investigation was undertaken in support of a future planning application to redevelop the site for 18no. low rise residential dwellings.

The following work has previously been undertaken:

- » Preliminary Risk Assessment (PRA) report, undertaken by LKC (Ref CL-602-LKC 20 1260-01, dated February 2020).

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)¹ the site may be developed for a residential end use and that appropriate site investigation and risk assessment works are in place to allow conditional approval of any future planning application.

1.2 Site Details

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

Location	East of Earl Street; boundary extends to the tram line embankment adjacent to the north of the site. Centred at approximate National Grid Reference 382290E 403770N.
Area	Approximately 4,500m ² .
Topography	85 metres Above Ordnance Datum (AOD). Site is approximately level and located above the adjacent Metrolink line (tramline located in a cutting).
Land Use	<u>Site</u> The site is predominately covered by scrub vegetation with garage clusters to the north and eastern boundaries and a former nursery building in the south. <u>Surrounding Area</u> North: Metrolink line. East: Residential properties. South: Residential properties. West: Residential properties.
Proposed Development	18no. low rise residential dwellings with soft landscaping and car parking.

Table 1-1. Summary of site details.

¹ DCL (2018). "National Planning Policy Framework." Department of Communities and Local Government.

2 Previous Work

2.1 Summary of Existing Information

A PRA report ((Ref CL-602-LKC 20 1260-01, dated February 2020) has previously been undertaken by LKC and is summarised in Section 2.2-2.6.

This also includes a summary of a previous intrusive investigation undertaken by LKC (Section 2.4).

2.2 Site History

The site history is summarised in Table 2-1.

Site Features	Location	Map Dates Present	Comments
Agricultural field	Whole Site	1848-1891-93	- Site is spread across 2no. agricultural fields. Trees are present along the southern boundary. Heaton Park Station and railway line is present adjacent to the north.
Road	NW	1848 only	- Running NE-SW.
Greenhouse	N	1909 only	
Residential rear gardens	SE	1891-93-1932	- Associated with 3-4no. residential houses.
Greenhouse	NE	1952-1963-75	- No longer present by 1978-88 mapping.
Several small buildings	E	1952-1953	- No longer present by 1963-75 mapping.
Bowling Green	Centre and S	1909-1932	- Then allotment gardens on 1952-53 mapping. - No longer marked on 1978-88 mapping.
Printing Works	SW	1952-1983-86	- Formerly marked as a club on 1909-1932 mapping. - Extended to the E by 1963 mapping. - Marked as unspecified works on 1992 mapping. - No longer marked on 1999 mapping.
Garages	SE and NW	1952-present	
Trees	Whole Site	2000-present	Central part of site cleared on 2019 photography.
Surrounding Area Features	Distance / Location	Map Dates Present	Comments
Train / Tram line with embankment	Adj to N of site-250m	1891-93-present	- Including railway tunnel under Bury Old Road 90-130m E. Tramway present on 1909-1932 mapping.
Electricity Substation	65m N	1963-75-1993	
Pond	80m W	1909-1932	Presumably infilled by 1952 mapping.
Embankment associated with Bury Old Road	110m E	1848-present	
Embankments associated with Bent Lane / Ostrich Lane	240m S	1848-present	

Table 2-1: Summary of significant historical features.

2.3 Environmental Setting

The environmental setting is summarised in Table 2-2.

Categories (data sources)		Details
Geology	Artificial	- None recorded on the database.
	Superficial	- Hummocky glacial deposits (sand and gravel).
	Bedrock	- Collyhurst Sandstone Formation (sandstone). - 1no. fault 200m NE of the site striking NW-SE.
	BGS Logs	- BH Ref: SD80SW822, 225m N: made ground (setts; ash and broken rocks; clayey sandy gravel; black peaty sand) to 1.0m, medium dense SAND.
Hydro-geology	Aquifer Designation	- Superficial
		- Bedrock
	Source Protection Zone (SPZ)	- Site is not within an SPZ.
	Groundwater Abstractions	- None within the Envirocheck search area of 1km.
Hydrology	Nearest Surface Water	- Un-named stream, sinks, weir and a pond 570m NE, flowing SE-S.
	Water Quality Data	- No water quality data.
	Flooding	- No risk from rivers or sea. - Limited potential for groundwater flooding.
	Surface Water Abstractions	- None within the Envirocheck search area of 1km.
	Discharge Consents	- None within 250m. Nearest: 357m NW, sewage discharge from storm tank operated by United Utilities into Clough via a culvert.
	Pollution Incidents	- None within 250m (3no. within 1km). Nearest: 753m E, minor incident involving crude sewage into a pond / lake on 05/06/1998.
Minerals & Mining	Coal Mining	- Within a Coal Mining Reporting Area. - Not within Development High Risk Area (DHRA).
	Surface Extractions	- No mineral extraction within 500m of the site.
	Cheshire Brine Compensation District	- N/A.
	Mining Instability / Non-Coal Mining Area	- N/A.
Ground Stability (onsite) ¹	Collapsible Ground	- Very low hazard.
	Compressible Ground	- No hazard.
	Ground Dissolution	- No hazard.
	Landslide	- Very low hazard.
	Running Sand	- Very low hazard.
	Shrinking / Swelling Clay	- No hazard.
Landfill Sites	Known / Registered	- None within 250m.
	Potential	- 1no. within 250m: pond 80m W infilled by 1952.

Table 2-2: Summary of the environmental setting.

Categories ^(data sources)	Details
Radon	- Probability of 1-3% of homes above Action Level. No further action required.
Designated Site	- Adopted Green Belt 162m and 487m N..
Contemporary Trade Directory	- 6No. within 100m: Nearest 13m NW (garage services). 1No. on site (Earl Street Garage - vehicle repair, testing and servicing).
Fuel Station Entries	- None within 100m. Nearest 366m W (closed).
Unexploded Bomb Risk (UXO)	- Low.

Table 2-2: Summary of the environmental setting.

2.4 Site Reconnaissance

A site reconnaissance was carried out on the 24th February 2020. Hand dug trial holes were undertaken in accessible areas to confirm the shallow ground conditions.

Relevant features identified on site are summarised below:

- » The site is accessed via a tarmacadam road to the north west of the former works and nursery off Earl Street.
- » The site is bounded by timber fences and a low brick wall.
- » The former printworks, a three-storey brick building, is located in the south west of the site. The building was utilised as a children's nursery (Friesner Nurseries, for children aged 0-5 years), with associated play area in the centre of the site. This building is now vacant.
- » Rough ground across the majority of the site with occasional shrubs and trees.
- » Japanese Knotweed (JK) stands were observed in the central and eastern parts of the site, together with mature trees located around the perimeter of the site. The JK stands appear to have been treated via injections, and a 7m exclusion zone has been demarcated.
- » 2no. residential garage clusters are located in the north west and south east of the site, with associated hardstanding (good condition concrete in the south east of the site, poor condition tarmacadam and flags in the north west of the site).
- » The residential garages are roofed with possible asbestos containing material (ACM).
- » Shallow excavations into the topsoil identified inclusions of ash and clinker.
- » Dark staining was noted to the west of the garage cluster in the north west of the site.

2.5 Contamination Sources / Pathways and Receptors

Potential contamination sources are detailed in Table 2-3.

Source	Contaminants
Onsite agricultural fields	- Use of pesticides, insecticides and herbicides: organophosphates, organochlorides, chlorophenols, aldrin, dieldrin, atrazine and DDT. - Unlikely to be a significant contamination source given age since site formerly fields (c. 130 years).
Onsite former bowling green, former allotments and former greenhouses	- Pesticides, insecticides and herbicides. - Ash and clinker used for levelling / drainage: heavy metals, sulphates and PAHs².
Onsite former printworks	- Semi-Volatile and volatile organic compounds including solvents and dyes; hydrocarbons associated with fuel and lubricating oils, heavy metals, inorganic compounds.
Onsite former buildings, former road and current domestic garages. Potential former service and MOT garage on site.	- Asbestos Containing Material (ACM). - Spillages / leakages: petroleum hydrocarbons, oils.
Onsite made ground	- Ash and clinker (e.g. from hearths and boilers, often historically used for site raising / levelling, noted in the site walkover): Heavy metals, sulphates and PAHs. - If significant depth of organic / putrescible material: Hazardous gas (principally carbon dioxide and methane).
Adjacent railway line	- Fuels, oils, PAHs, ethylene glycol (antifreeze), creosote, solvents, herbicides (including atrazine and simazine), heavy metals (such as vanadium), sulphate, phenols and asbestos.
Offsite current electricity sub station	- Polychlorinated biphenyl (PCBs) and transistor oils. - Due to distance from site, not considered to be a significant risk.
Offsite potentially infilled ground (pond, 80m W, presumably infilled 1950s; embankments 110m E and 240m S)	- Hazardous gas (principally carbon dioxide and methane). - Given distance and age, potentially infilled embankments not considered to be a significant source.

Table 2-3: Potential contamination sources

Potential receptors are detailed in Table 2-4.

Receptors	
Human Health	- Future site users (including residents, visitors and site workers). - Offsite land users.
Controlled Waters	- Underlying Secondary A and Principal Aquifers. - Un-named stream, sinks, weir and a pond 570m NE, flowing SE-S are not considered to be a significant receptor given the distance from the site.
Buildings and structures.	
Potable water pipes.	
Flora within future gardens and landscaping.	

Table 2-4: Potential receptors

Potential pathways are detailed in Table 2-5.

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

Pathways		
Soil	Human Health ³ (residential land use: houses with private gardens)	- Ingestion of soil. - Ingestion of soil-derived indoor dust. - Ingestion of contaminated vegetables. - Ingestion of soil attached to vegetables - Dermal contact with soil. - Dermal contact with soil-derived indoor dust. - Inhalation of soil-derived outdoor dust. - Inhalation of soil-derived indoor dust. - Inhalation of vapours outside. - Inhalation of vapours inside.
		- Windblown dust and fibres to adjacent receptors.
		- Direct contact with receptors (building foundations, services).
		- Root uptake.
Water		- Surface run-off over impermeable surfaces.
		- Site is relatively flat; where scrub vegetation is present surface run-off will be limited.
		- Infiltration into the ground, through potentially contaminated material (contamination possibly going into solution).
		- Migration through potentially permeable strata and preferential pathways. - Superficial (sand and gravel) is likely to be relatively permeable. - Bedrock (sandstone) likely to be relatively permeable. - Preferential pathways: services.
Gas		- Migration through potentially permeable strata and preferential pathways. - Superficial (sand and gravel) is likely to be relatively permeable. - Bedrock (sandstone) likely to be relatively permeable. - Preferential pathways: services.
		- Migration into buildings (e.g. via services) and accumulation of gases in confined spaces (potentially causing explosion if methane is present).

Table 2-5: Potential pathways

2.6 LKC Preliminary Contamination Conceptual Model

The preliminary contamination conceptual model using contaminant-pathway-receptor linkages based on guidance in CLR11⁴ has been summarised in Table 2-6.

The aim of the conceptual model is to provide a preliminary assessment of the likelihood of a pollutant linkage for each potential combination of contaminant, pathway and receptor. A conceptual model can be used to make an informed decision on the contamination risks associated with the site and determine what site investigation work is required.

The preliminary contamination conceptual model has identified seven generic potential pollutant linkages. Each linkage is described along with an assessment of the risk based upon guidance on probabilities and consequences outlined in CIRIA C552⁵.

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

³ EA (2008). "Updated Technical Background to the CLEA Model". Science Report – SC050021/SR3.

⁴ EA (2004). "Model Procedures for the Management of Land Contamination." R&D Publication CLR 11.

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

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

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

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

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

It should be noted that there may be risk from short term exposure from contaminated soil to site workers during development work. The Preliminary Contamination Conceptual Model deals with long term exposure to key receptors associated with the future use of the site. Acute risks can be easily mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE guidance⁶) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

2.7 Recommendations

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

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

Pollutant Linkage	Pathway	Receptor	Contaminant (source)	Probability	Consequence	Risk	Assessment & Recommendations
PL1	- Dermal contact. - Inhalation of soil, fibres and dust. - Ingestion of soils, dust, vegetables, soil attached to vegetables. - Windblown dust.	- Future site users. - Offsite receptors.	- ACM (former buildings, potentially in made ground). - Heavy metals, PAHs (made ground and atmospheric fallout from adj. railway). - Pesticides (former allotment, former bowling green, former greenhouses).	High likelihood	Medium	Moderate	- Likely probability given history of site (former printing works), multiple potential contamination sources, and potential pathway to receptors in gardens / landscaping. Recommendation: Intrusive investigation required to include soil sampling.
			Heavy end hydrocarbons (oils / fuels from domestic garages, former road and printing works, potential former MOT and service garage).	Likely	Medium	Moderate	- Likely possibility hydrocarbons as localised spills / leakages expected from domestic garages, potential former MOT/ service garage and printing works. Potential pathway exists to receptors in gardens / soft landscaping. - Moderate risk assumed as evidence identified during site reconnaissance. Recommendation: Intrusive investigation required (TPHCWG testing) if evidence of hydrocarbons identified in the ground.
PL2	- Inhalation of vapours. - Migration through permeable strata and preferential pathways.	- Future site users. - Offsite receptors.	Volatile and semi-volatile contaminants such as hydrocarbons, solvents (made ground, domestic garages, printing works).	Likely	Medium	Moderate	- Likely probability as contamination source is from domestic garages, printworks. Pathway to receptors in gardens / landscaping / Recommendation: Intrusive investigation required to include soil sampling, PID testing and VOC testing.
PL3	- Inhalation of gas. - Migration through permeable strata and preferential pathways. - Explosion in confined spaces.	- Future site users. - Buildings. - Offsite land users.	Ground gas: Methane, carbon dioxide (peaty strata identified in BGS borehole logs).	Unlikely	Severe	Moderate / Low	- BGS log is some distance from site, therefore low risk identified. Recommendation: Either gas monitoring or precautionary measures if peaty / organic deposits present within superficial deposits.
			Hazardous Gas: Methane, carbon dioxide (potentially infilled features 250m of the site, potentially deep made ground).	Unlikely		Moderate / Low	- Unlikely probability due to absence of a viable source of gas. Therefore, low risk assumed. Recommendation: Either gas monitoring or precautionary measures required if deep made ground present on site.
PL4	- Surface run-off. - Migration through permeable strata and preferential pathways. - Perched waters migration.	Groundwater (Secondary A and Principal Aquifers).	Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds (made ground, printing works, domestic garages)	Likely	Medium	Moderate	- Likely probability as multiple contamination sources and pathway to receptors through granular superficial strata. Recommendation: Groundwater testing required.

Table 2-6. Preliminary Contamination Conceptual Model.

Pollutant Linkage	Pathway	Receptor	Contaminant (source)	Probability	Consequence	Risk	Assessment & Recommendations
PL5	- Sulphate attack on concrete.	- Building structure.	- Sulphate.	Likely	Mild	Moderate / Low	- Likely probability as ashy made ground likely to be present on site. - Moderate risk assumed at this stage. - Recommendation: Intrusive investigation required as part of PL1.
PL6	- Ingestion of tainted water supply.	- Future site users. - Water pipes.	- Organic contaminants such as hydrocarbons, solvents (made ground, garage).	Likely	Medium	Moderate	- Likely probability as made ground and significant contamination possible at pipeline depth (0.75-1.35m). - Recommendation: Sampling required if made ground present at pipeline installation depths.
PL7	- Direct contact (plant uptake).	- Flora.	- Phytotoxic contaminants (made ground).	Likely	Minor	Low	- Low probability as contamination considered possible, which may be taken up by flora in soft landscaping / gardens. - Recommendation: Investigation work as part of PL1.

Table 2-6. Preliminary Contamination Conceptual Model.

3 Ground Investigation

3.1 Site Investigation Design and Methodology

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

The investigation was carried out on 6th and 16th March 2020 and comprised the following:

- » 7no. hand pits (using hand auger / spade) excavated to 0.4-1.0mbgl (ref. HD101 to HD107).
- » 10no. window sample boreholes drilled to 5.45 metres below ground level (mbgl) (ref. WS201 to WS210).

Two hand augers (HD101 & HD105) were undertaken in areas where access was restricted to drilling rigs.

WS203B had to be re-positioned due to the presence of possible asbestos-containing material. The repositioned borehole is referenced WS203A.

All site investigation locations are shown in Figure 4.

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

Site Investigation Locations	Rationale
WS203A, WS203B, HD107	Close to former print works and general site coverage.
HD101, WS201	Inside and next to garages.
HD104, WS208, WS209	Next to garages and general site coverage.
HD103, HD104-HD106	General site coverage.
WS202, WS204-WS210	General site coverage.

Table 3-1: Summary of sampling locations.

The number of site investigation points corresponds to approximately one location per 18m square centres. This is considered to be a conservative sampling density and is in line with BS10175⁷ for a 'main investigation'.

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

3.2 Well Installations

5no. (WS201, WS203A, WS204, WS208 & WS210) boreholes were installed with monitoring wells for groundwater sampling. Monitoring wells were installed in accordance with BS10175 and CIRIA C665¹⁰ and generally comprised approximately

⁷ British Standard (2017). "Investigation of Potentially Contaminated Sites – Code of Practice." BS10175:2017.

⁸ British Standards (2002) Geotechnical investigation and testing – Identification and Classification of Soil. Part 1: Identification and description. BS EN ISO 14688-1:2002.

⁹ British Standard (2015). "Code of Practice for Ground Investigations". BS5930:2015.

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

0.5-0.8m plain pipe over a length of slotted pipe surrounded by pea gravel and sealed at the top with bentonite and concrete.

Due to wet sand collapsing in some boreholes, it was not possible to install monitoring wells to the depth of 5.00mbgl. The response zones for the window sample boreholes were installed between 0.50mbgl–0.80mbgl and 3.50mbgl–3.80mbgl.

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 investigation¹¹.

Soil was collected for onsite testing. A plastic zip bag was half filled with soil allowing a suitably sized headspace. The bag was sealed and stored for at least 20 minutes before being tested for total volatile organic compounds (TVOCs) using a PhoCheck Tiger photoionisation detector (PID). Results of the PID readings are presented on the profile logs (Appendix B). The on-site monitoring was carried out in line CIRIA C665¹² to aid in screening samples for volatile analysis.

Soil samples of approximately 500g were recovered in amber jars, amber vials for volatile analysis and plastic tubs. All the samples were labelled and stored in cool boxes prior to being collected by courier at the end of the day for delivery to the Chemtest laboratory in Newmarket for chemical testing. If collection was not possible the same day then samples were stored in the sample storage fridge at the LK Group offices below 4°C. Samples were tracked using appropriate Chain of Custody forms provided by Chemtest.

Many of the contamination tests are UKAS or MCERTS accredited and further details are given in the Certificate of Analysis presented in Appendix C. Table 3-2 shows the soil testing undertaken.

Suites and Contaminants	No. Samples	Location & Depth	Justification
Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.	9	HD102 0-0.2m HD103 0-0.3m HD103 0.3-1m HD104 0.5-0.7m HD106 0-0.3m HD107 0-0.3m WS204 0-0.5m WS205 0-0.5m WS209 0.1-0.45m	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, coal and clinker) and no TVOCs identified from the PID tests.

¹¹ EA (2000). "Technical Aspects of Site Investigation. Volumes 1 & 2 Text Supplements Research and Development Technical Report." P5-065/Tr.

¹² CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665.

Suites and Contaminants	No. Samples	Location & Depth	Justification
Metals / metalloids, pH, water soluble sulphate, cyanide suite, phenol, TPHCWG, BTEX, MTBE, speciated PAHs, SOM and asbestos screen.	5	HD101 0-0.25m HD104 0-0.5m WS201 0.15-0.45m WS203A 0-0.4m WS206 0-1m	A detailed site undertaken on HD101, WS201 and HD104 to confirm contamination risk due to close proximity to garages and undertaken on WS2-3A due to close proximity to former print works. Detailed suite undertaken on WS206 due to quantity of ash and clinker identified and for general site coverage.
Asbestos Identification	1	WS203B 0.35-0.4m	Sample tested for asbestos as visual evidence of fibres were observed.

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

Notes:

If asbestos present during screen identification and quantification will be undertaken.

Metal/metalloids=arsenic, cadmium, chromium, (total and hexavalent), copper, lead, mercury, nickel, selenium, vanadium, zinc and boron; TPHCWG=carbon banded and aromatic/aliphatic split petroleum hydrocarbons; PAH=polycyclic aromatic hydrocarbons, BTEX=benzene, toluene, ethylbenzene and xylenes; MTBE=Methyl tert-butyl ether, SOM=Soil Organic Matter.

3.3.2 Water Sampling

To establish the condition of shallow groundwater LKC undertook 3no. groundwater samples.

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

WS101 had limited groundwater present at the time of sampling. Therefore, only limited purging was possible and only one vial and a partially filled glass bottle of groundwater was collected.

All water samples were placed in glass bottles, plastic bottles and septum topped vials and stored in ice packed cool boxes. The samples were sent to Chemtest on the same day for analysis. The sampling suite is presented in Table 3-3.

Sampling was carried out in accordance with BS5930¹⁴ and BS5667-11¹⁵.

Many of the tests are UKAS or MCERTS accredited and further details are given in the Certificate of Analysis presented in Appendix E.

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

¹⁴ British Standard (2015). "Code of Practice for Ground Investigations". BS5930:2015.

¹⁵ British Standard (2009). "Water Quality – Sampling. Part 11: Guidance on Sampling of Groundwaters". BS ISO 5667-11:2009.

Suites and Contaminants	No. Samples	Location	Justification
Metals / metalloids, pH, sulphate, cyanide suite, TPHCWG, BTEX, MTBE, speciated PAHs, phenol and hardness.	3	WS201 WS203A WS208	Detailed suite undertaken in WS201 and WS208 due to proximity of garages and as lube oil identified during the soil testing of WS201 and HD104 which is close to WS208. Undertaken in WS203A due to contamination identified in soils in this location and close proximity to former print works.

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

Metal/metalloids=arsenic, cadmium, chromium, (total and hexavalent), copper, lead, mercury, nickel, selenium, vanadium, zinc and boron; TPHCWG=carbon banded and aromatic/aliphatic split petroleum hydrocarbons; PAH=polycyclic aromatic hydrocarbons, BTEX=benzene, toluene, ethylbenzene and xylenes; MTBE=Methyl tert-butyl ether.

3.4 Gas Monitoring

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

A low risk was identified in the preliminary contamination conceptual model for gas (pollutant linkage 3) and further action was only recommended if significant organic / putrescible material was identified on site. Based on the ground conditions encountered, LKC did not consider gas monitoring to be required. This is discussed further in Section 6.3.

3.5 Geotechnical Testing

3.5.1 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 at approximately 1m intervals, generally within the natural strata.

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

3.5.2 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 3-4 shows the geotechnical testing undertaken.

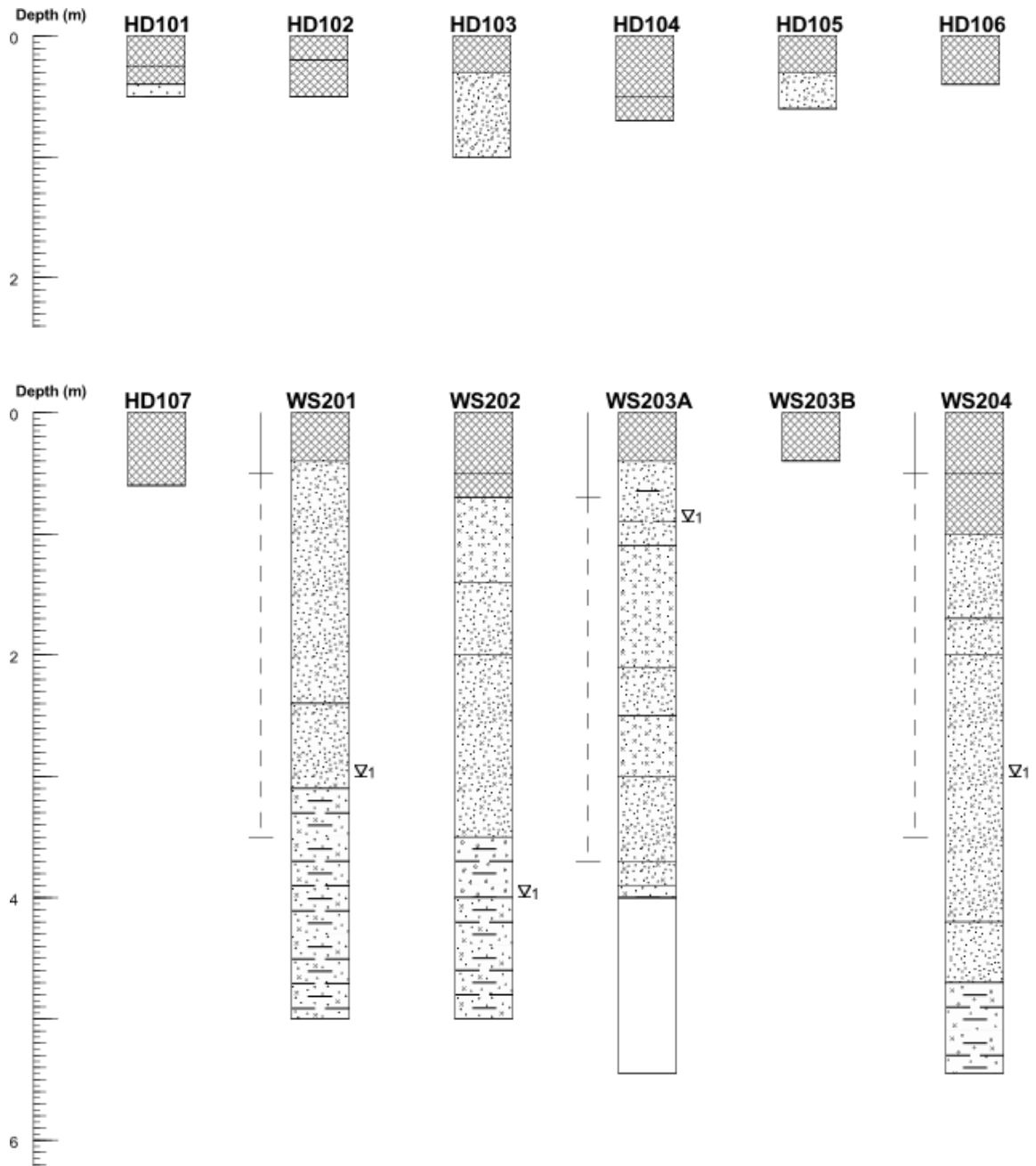
Suites and Contaminants	No. Samples	Location	Justification
Particle Size Distribution (PSD)	7	WS201 0.4-0.9m WS202 1.4-2.0m WS204 1.0-1.5m WS206 1.5-2.0m WS208 0.6-1.1m WS209 1.1-1.4m WS210 1.5-2.0m	PSD undertaken to confirm grading of granular material.

Table 3-4. 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 sand, silt and clay. A summary section of the logs is provided in Plate 4-1, with additional comments below.



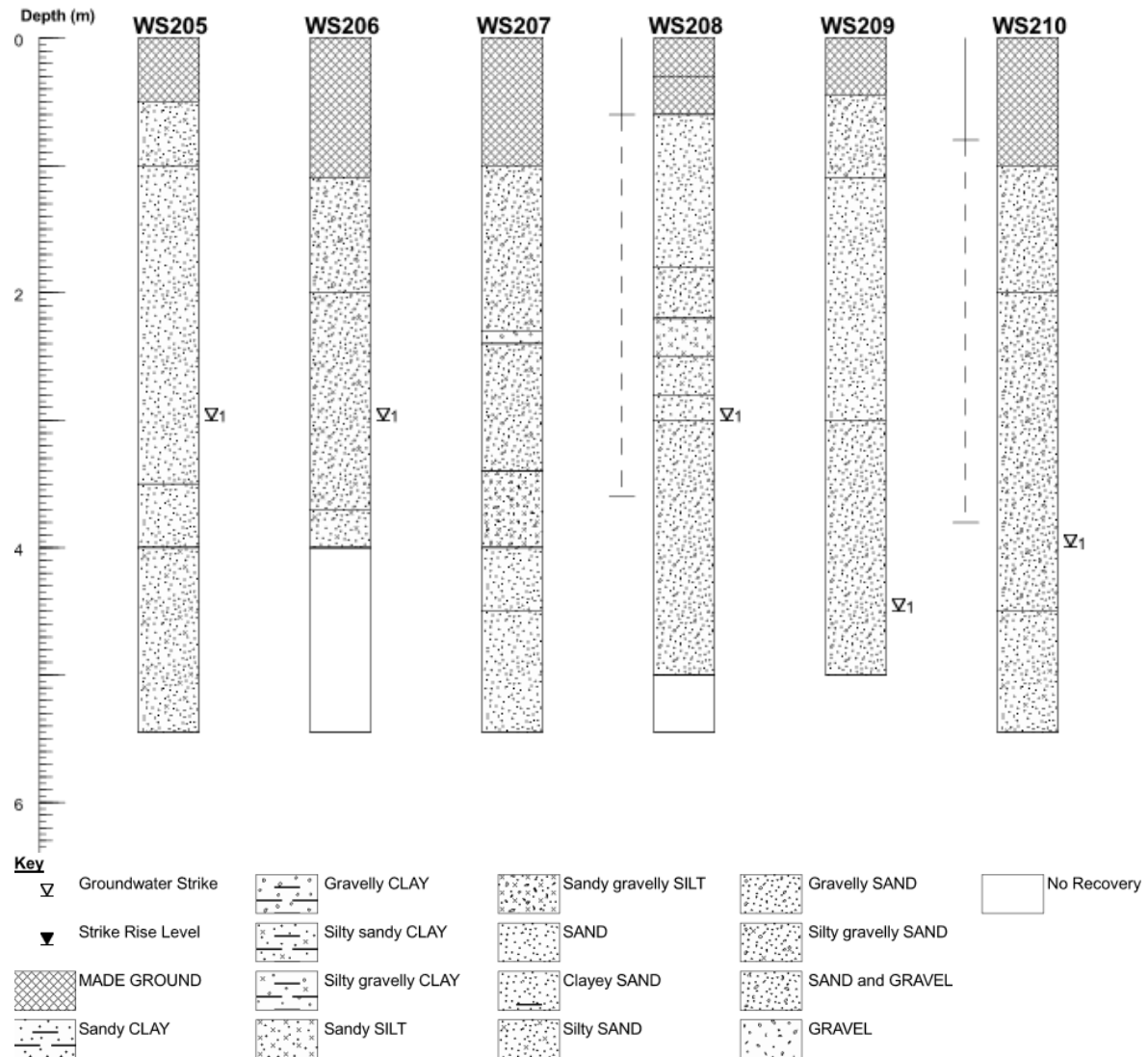


Plate 4-1: Summary of ground conditions.

Additional information on ground conditions:

- » Made ground was recorded from depths of 0.3-1.1mbgl and generally consisted of gravelly sandy silt / gravelly silty sand with brick, ash, coal, glass and pottery. Exceptions to this were:
- WS202 (0.5-0.7mbgl), WS203A (0-0.4mbgl), WS203B (0-0.4mbgl) & WS208 (0.3-0.6mbgl) - predominantly ash and clinker gravel.
 - HD101 0-0.25mbgl – made ground with frequent wood debris.
 - HD104 0.5-0.7mbgl – made ground with frequent ash and wood fragments.
 - Possible asbestos-containing material identified in WS203B & WS203A.

Superficial deposits comprised sand, silt and clay to the base of the boreholes. Occasional pockets of organic matter were identified in WS202 between 1.4-2.0mbgl and WS203A between 1.1-2.1mbgl (slight natural organic odour noted).

4.2 Groundwater

4.2.1 Groundwater Levels

Groundwater strikes were recorded during the investigation in boreholes. In addition, groundwater monitoring within the borehole wells has been undertaken on one occasion.

Results are summarised in Table 4-1.

BH	Water Strike Depths (mbgl)	Well Response Zone (mbgl)	No. of Monitoring Visits	Monitoring Depths (mbgl)		Sample Taken?	Evidence of Contam?
				GW	Base		
WS201	3.0	0.5-3.5 (S)	1	2.41	3.81	Y(G)	Y ¹
WS202	4.0	Not installed					
WS203A	0.9	0.7-3.7 (S/Si)	1	2.98	3.42	Y (G)	N
WS204	3.0	0.5-3.5 (MG/S)	1	2.96	3.29	N	N
WS205	3.0	Not installed					
WS206	3.0	Not installed					
WS207	Damp	Not installed					
WS208	3.0	0.3-3.6 (S/Si)	1	2.89	3.37	Y (G)	N
WS209	4.5	Not installed					
WS210	4.0	0.8-3.8 (MG/S/SG)	1	3.19	3.47	N	N

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

Response Zones:

MG=Made Ground; SG=Sands and Gravel; S=Sand; Si=Silt.

Notes:

G=Groundwater Sample

¹ Sheen noted.

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					
	WS201	WS202	WS203A	WS204	WS205	WS206
1-2	9 (sS)	5 (Si/S)	1 (sSi)	17 (sS)	15 (sS)	12 (sSG)
2-3	4 (sS)	12 (sS)	10 (sSi/sS)	12 (sS)	16 (sS)	17 (gsS)
3-4	9 (ssC)	6 (sS)	10 (sS)	18 (sS)	18 (sS)	10 (gsS)
4-5	14 (ssC)	6 (ssC)	2 (NR)	12 (sS/S)	8 (sS)	14 (NR)
5-6	-	-	15 (NR)	14 (gsC)	12 (sS)	4 (NR)
GW Level	2.41-3.0	4.0	0.9-2.98	2.96-3.0	3.0	3.0

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

Notes

S/ SG=Sands and Gravel; S=Sand; C=Clay; Si=Silt; sSi=Silty Sand; sSi=Sandy Silt; gsS=Gravelly Silty Sand; G=Gravel; NR=No Recovery.

Groundwater level based on strikes during investigation and monitoring data.

Approximate Depth (mbgl)	SPT 'N' Values			
	WS207	WS208	WS209	WS210
1-2	33 (gsS)	7 (S)	12 (S)	15 (gS)
2-3	15 (gsS/G)	8 (gS/sSi)	12 (S)	8 (sSG)
3-4	11 (gsS)	8 (gS)	10 (gS)	15 (sSG)
4-5	15 (S)	5 (gS)	10 (gS)	5 (sSG)
5-6	24 (S)	21 (NR)	-	10 (sS)
GW Level	Damp strata	2.89-3.0	4.5	3.19-4.0

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

Notes

S/ SG=Sands and Gravel; S=Sand; C=Clay; Si=Silt; sSi=Silty Sand; sSi=Sandy Silt; gsS=Gravelly Silty Sand; G=Gravel; NR=No Recovery.

Groundwater level based on strikes during investigation and monitoring data.

4.4 Geotechnical Laboratory Testing

4.4.1 Particle Size Distribution

Particle size distribution (PSDs) tests were carried out on granular strata to confirm the material type. Full results are presented in Appendix D and summarised below in Table 4-3.

Location	Depth (mbgl)	Material	Percent passing through sieve		
			63mm	2mm	0.063mm
WS201	0.4-0.9	Brown silty fine to coarse SAND with rare gravel.	100	98	5
WS202	1.4-2.0	Brown silty fine to coarse SAND.	100	100	8
WS204	1.0-1.5	Brown silty fine to coarse SAND with rare gravel.	100	98	12
WS206	1.5-2.0	Brown silty sandy fine to medium GRAVEL.	100	36	6
WS208	0.6-1.1	Brown silty fine to coarse SAND with rare gravel.	100	95	15
WS209	1.1-1.4	Brown silty fine to coarse SAND with rare gravel.	100	99	7
WS210	1.5-2.0	Brown slightly silty SAND and GRAVEL.	100	43	4

Table 4-3: Summary of particle size distribution results.

Notes:

% passing: 63mm = cobble / gravel boundary; 2mm = gravel / sand boundary; 0.063mm = sand / silt boundary

4.4.2 Sulphate and pH

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

Strata	pH		Sulphate	
	Soil	Groundwater	Soil (g/l)	Groundwater (mg/l)
Made Ground	5.1-9.5	7.6-8.5	<0.01-0.44	16-51
Natural	7.1		<0.01	

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

5 Geotechnical Assessment

5.1 Proposed Development

It is understood that the proposed development will comprise 18 low rise residential units with associated gardens, vehicle hard standing, access road, associated landscaping and infrastructure. Details of the proposed loadings are not known and therefore a line loading of 75kN/m has been assumed for preliminary assessment purposes only.

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, nor have any excavations required as part of the Japanese knotweed remediation. 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.

Given the nature of the proposed development it is considered that the structure meets the criteria of Geotechnical Category 1 of Euro Code 7.

Given the nature of the development it is considered that acceptable risk from settlement is a total settlement value of 25mm for a masonry structure.

5.2 Summary of Ground Conditions

Ground conditions identified at the site are detailed in Section 4.1 and summarised in Table 5-1 below:

Strata	Typical Description	Min Depth to top of Strata (mbgl)	Max Depth to top of Strata (mbgl)	Max Thickness (m)
Made Ground	Dark brown sandy SILT.	0.00	0.30	1.00
	Black silty SAND with frequent ash.	0.00	0.00	1.00
	Dark brown sandy GRAVEL (ash and clinker).	0.00	0.50	0.40
Granular	Very loose to medium dense light brown silty SAND.	0.40	1.40	Not proven in some locations
Cohesive	Brown sandy SILT.	0.70	1.10	0.70
	Soft grey with orange mottling sandy CLAY.	3.10	4.70	Not proven

Table 5-1: Summary of ground conditions.

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 anticipated on site. Where encountered these should be excavated from below the proposed development footprint with the resulting void backfilled and, Suitable control measures provided as part of the Japanese knotweed management plan.

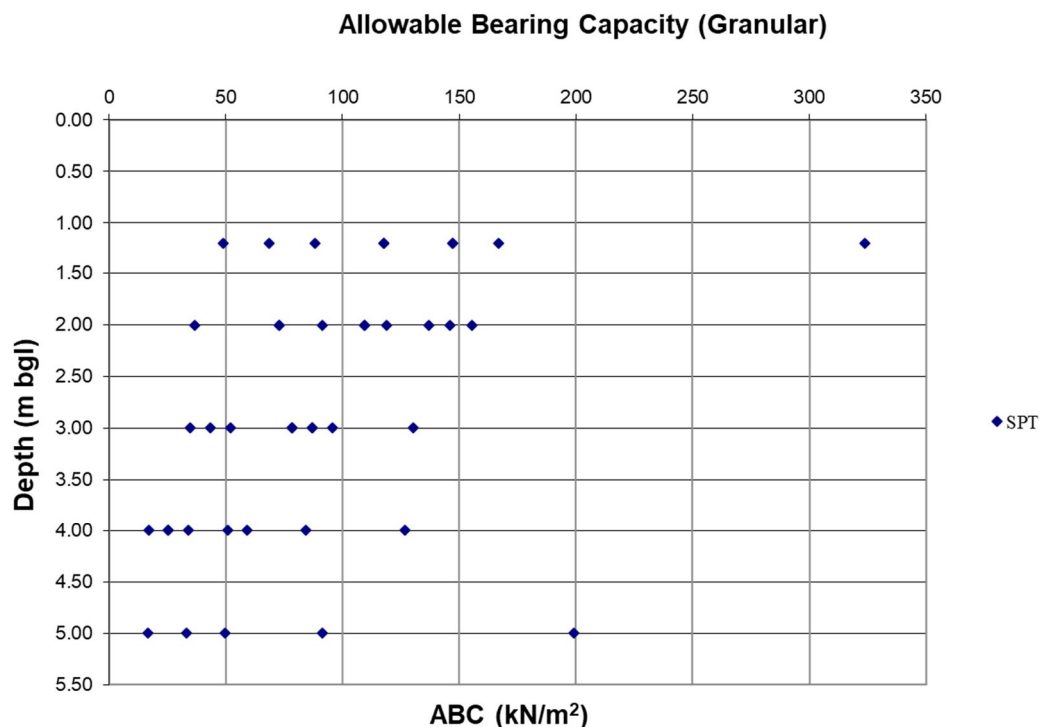
5.4 Foundation Conditions and Bearing Capacity

5.4.1 General

Shallow deposits comprise Made Ground to depths of between 0.40m and 1.10mbgl over granular deposits of variable density and occasional lenses of SILT. Groundwater is present at depths of between 2.4 and 3.2mbgl, the presence of groundwater within a granular material can reduce the bearing capacity by as much as 50%. It is considered that the Made Ground is not suitable for a founding material due to the inherent variability of the material. Foundation options are therefore:

- » Standard strip footings;
- » Conventional strip footings on vibro granular columns; or
- » Deeper pile foundations.

Density of the natural granular material has been assessed using in-situ testing by SPT. The results of the testing have been plotted against depth as is shown in Graph 5-1 below:



Graph 5-1: Summary of ABC vs depth from in-situ SPT testing.

From Graph 5-1 it can be seen that the density of the shallow granular deposits in the upper 3m range between 34 and 167kN/m², reducing to between 17 and 126kN/m² below 4mbgl. One very high erroneous value of 323kN/m² was recorded at a depth of 1.2m within WS207.

These options are discussed in the following Sections.

5.4.2 *Strip Foundations*

Strip foundations should be constructed at least 150mm beneath any made ground founding on uniform granular horizons.

The Made Ground is in places up to 1.10m in thickness, underlain by granular horizons of varying density with ABCs ranging between 34 and 167kN/m² to depths of 3mbgl. Due to the range of ABCs foundations may need to be widened and reinforced and will likely require specialist design by a suitably experienced foundation/structural engineer.

5.4.3 *Ground Improvement*

The use of ground improvement techniques such as vibro granular columns will allow shallow foundations to be utilised with the Made Ground. The vibro granular columns should provide a bearing capacity of around 150kN/m² but will also remove variability within the Made Ground and shallow granular deposits. Specialist advice should be sought from a suitably experienced contractor with regard to allowable bearing capacity and settlements.

5.4.4 *Piled Foundations*

As an alternative consideration maybe given to the use of piled foundations. Shallow soils investigated to date consist predominantly of SAND strata over CLAY with the interface between the two materials at various depths. Piles would likely comprise a combination of skin friction and end bearing, and further investigation may be required to obtain suitable information at depth to ensure a safe pile design.

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.

Recommendation

Strip foundations are not considered suitable due to the varying density and composition of the shallow strata and whilst a piling solution is viable it is considered that vibro granular columns will provide the most reliable and cost effective option for the site.

5.5 **Ground Floor Slabs**

Due to the presence of up to 1.1m 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 vibro granular columns are used for the foundations, then this could be extended to the floor slab to improve formation conditions and reduce the risk of damage from settlement. However, it may be more reliable and cost effective to opt for suspended floor slabs.

5.6 Pavement Construction

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.

5.7 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.

5.8 Concrete Durability

Based upon the results of the chemical analyses summarised in Table 4-4 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).

5.9 Excavations

Site observations indicate that excavations should be feasible in the near surface with normal plant. 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.

5.10 Construction Activity and Inspection

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

- » Due to the variability of the soils at the site it is recommended that sufficient allowance is made for the inspection of formation and sub formations to foundations and pavement construction;
- » Excavations where access is required should be subject to a risk assessment from a competent person and where appropriate mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97 utilised;
- » 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;

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

- » 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).

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 (CLR11¹⁷). 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 EA (2004). "Model Procedures for the Management of Land Contamination." R&D Publication CLR 11.

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

All criteria have been generated using the CLEA V1.06 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 F. 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."

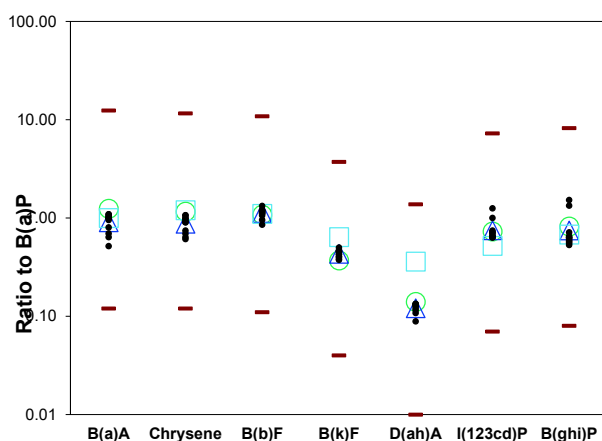
²⁹ EA (2003). "Review of the Fate and Transport of Selected Contaminants in the Soil Environment." Draft technical report P5- 079/TR1.

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 12 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. Elevated and pertinent results are presented in Table 6-1.

Contaminant	Units	No. of samples	Elevated Results	Sample Location	Criteria (6%)	Source of Criteria
Metals						
Arsenic	mg/kg	3	60	HD101 (0-0.25m)	37	C4SL
			40	HD102 (0-0.2m)		
			45	HD105 (0.5-0.7m)		
Lead	mg/kg	9	1,500	WS203A (0-0.4m)	200	C4SL
			340	WS204 (0-0.5m)		
			280	WS205 (0-0.5m)		
			490	WS206 (0-1m)		
			2,300	HD101 (0-0.25m)		
			600	HD102 (0-0.2m)		
			800	HD103 (0-0.3m)		
			500	HD104 (0.5-0.7m)		
			590	HD106 (0-0.3m)		
Cadmium	mg/kg	1	1,200	HD107 (0-0.3m)	22	C4SL
			24	HD101 (0-0.25m)		

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

Notes:

Only results that exceeded assessment criteria have been shown and results from **all depths** are noted. Results have been compared to the nearest appropriate SOM.

Contaminant	Units	No. of samples	Elevated Results	Sample Location	Criteria (6%)	Source of Criteria
PAHs						
Benzo(a)pyrene (used as a surrogate marker)	mg/kg	8	33	WS203A (0-0.4m)	5	C4SL
			11	WS205 (0-0.5m)		
			15	WS206 (0-1m)		
			12	HD101 (0-0.25m)		
			64	HD102 (0-0.2m)		
			6.5	HD103 (0-0.3m)		
			20	HD106 (0-0.3m)		
			44	HD107 (0-0.3m)		
TPHs						
Aromatic C16-C21	mg/kg	1	1,600	HD101 (0-0.25m)	930	S4UL
Aromatic C21-C35	mg/kg	2	2,700	WS206 (0-1m)	1700	S4UL
			19,000	HD101 (0-0.25m)		
Aromatic C35-C44	mg/kg	2	2,500	HD101 (0-0.25m)	1700	S4UL
			3,200	WS206 (0-1m)		
GENERAL						
pH	pH	14	Range 5.1 to 9.5			
SOM	%	14	Range 1.3 to 19			
Asbestos	N/A	4	Detected (see Table 6-2)			

Table 6-1 continued: Summary of elevated and pertinent analytical results.

Notes:

Only results that exceeded assessment criteria have been shown and results from **all depths** are noted. Results have been compared to the nearest appropriate SOM.

Asbestos was identified, as detailed in Table 6-2.

Sample Location	ID	Type	Total Asbestos (%)
HD102 (0-0.2m)	Chrysotile	Insulation	2.3
WS203A (0-0.4m)	Chrysotile	Free fibres	<0.001
WS203B (0-0.4m)	Chrysotile	Cement	-
WS206 (0-1m)	Chrysotile	Fibres/clumps	0.002

Table 6-2: Details of asbestos identified.

Elevated results have been identified for arsenic, lead, cadmium, PAHs (benzo(a)pyrene used as a surrogate marker) and TPHs (C16-44).

6.2.3 Direct Contact Risk – Pollutant Linkage 1

Elevated metals (arsenic, lead and cadmium), PAHs and petroleum hydrocarbons have been identified on site.

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

Metals

Elevated arsenic, lead, and cadmium were identified in made ground samples across the site. The source is anticipated to be coal, ash and metal fragments noted in the soils. At the concentrations identified, the contaminants are considered to pose a risk to future site users (residents).

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

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

PAHs

Elevated PAHs (benzo(a)pyrene used as a surrogate marker) were identified in made ground samples across the site.

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

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

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

Petroleum Hydrocarbons

Elevated heavy-end aromatic hydrocarbons C16-21, C21-35 and C35-44 were identified in HD101 (0-0.25mbgl) and WS206 (0-1m).

Lube oil was also identified during the laboratory testing in WS201 (0.1-0.45m) and HD104 (0-0.5m).

HD101 was undertaken inside a garage and is likely to be from spillages. Similarly, WS201 and HD104 were undertaken next to the garages so the source of contamination is likely to be from spillages of leaks of fuels or oils.

WS206 was not undertaken adjacent to the garages on site and elevated aromatic hydrocarbons (C16-21 & C35-44) were identified. However, these were identified as from a potential PAH source by the laboratory and are likely to be associated with ash and clinker in made ground.

The principal pathways associated with these hydrocarbon fractions are ingestion (of soil, dust and homegrown produce) and dermal contact (indoor and outdoor). Inhalation of vapours associated with these fractions is considered unlikely.

LKC considers the probability of hydrocarbon contamination affecting site users (via ingestion and dermal contact) as likely. Given a medium consequence a moderate risk is considered appropriate and localised remediation is recommended.

The risk associated with the inhalation of vapours is discussed in Section 6.2.4 below.

Asbestos

Asbestos (chrysotile) was identified in WS203A (free fibres), WS203B (cement), HD102 (insulation) and WS206 fibres/clumps). The source of the asbestos is likely to be from demolished buildings.

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

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.

Pesticides

The PRA identified a moderate risk from pesticides due to the former allotment, former bowling green, former greenhouses on site. Intensive pesticide use is not anticipated, and pesticides do not generally persist in the environment, therefore specific pesticide testing was not undertaken. The probability of these contaminants posing a risk to site users is considered unlikely. With a medium consequence, the risk is considered to be moderate and **no remediation is recommended.**

6.2.4 Risk from Inhalation of Vapours – Pollutant Linkage 2

Elevated aromatic hydrocarbons C16-21, C21-35 and C35-44 were identified in HD101 and WS206. Heavy-end aromatic hydrocarbons with carbon chain lengths greater than the C16 fraction are not considered to pose a risk with regards to inhalation of vapours. In addition, no elevated PID results were noted.

The probability of vapours posing a risk to site users across the site is considered to be unlikely. With a medium consequence, the risk is expected to be low and **no further investigation / assessment is recommended.**

6.3 Gas Risk Assessment

Gas monitoring was not carried out as part of this assessment. The PRA identified a moderate risk and recommended gas monitoring if a significant depth of organic / putrescible material was identified within the made ground or if peaty / organic deposits were identified in superficial strata.

No organic / putrescible material was encountered in the made ground on site. The maximum depth of made ground encountered on site is 1.1mbgl (WS206), and three other locations in the eastern area of site comprise 1m of made ground. However, the depth of made ground across the remainder of the site is shallow (between 0.3-0.6m). Superficial deposits generally did not comprise peaty / organic deposits. Occasional pockets of organic matter were identified in WS202 between 1.4-2.0mbgl and WS203A between 1.1-2.1mbgl (slight organic odour noted).

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

6.4 Controlled Water Assessment

LKC considers the underlying Principal and Secondary A Aquifers as the primary receptor. However, it should be noted that the site is not within a Source Protection Zone.

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

- » River Basin District Standards³⁴ and updated Water Framework Directive³⁵ for Annual Average / Maximum Allowable Concentration Environmental Quality Standards (AA-MAC-EQS) for priority substances (surface water risk).
- » 2016 private water supply standards (UKDWS potable)³⁶.
- » 2001 Environment Agency Values for Environmental Quality Standards (EQS) and UK Drinking Water Standard (UKDWS)³⁷.
- » Resource Protection Values (RPVs)³⁸.
- » Minimal Reporting Values (MRVs).

With regards to hydrocarbon mixtures (TPHCWG) for UKDWS, LKC will use the CL:AIRE guidance on petroleum hydrocarbons in groundwater³⁹ based on WHO guidelines.

No criteria values have been presented for surface waters (EQS) except the odour, visual evidence and taste test for fish⁴⁰. However, criteria for each banding has been presented by WHO within the CL:AIRE report for drinking water and will be used in the assessment.

The risk from List 2 compound (EC Dangerous Substance Directive 76/464/EEC) in a freshwater ecosystem is governed by the hardness of the water. Where applicable the hardness was taken into account for these contaminants. Additionally, to run the M-BAT⁴¹ model to take into account bioaccessibility of copper, zinc and nickel the Dissolved Oxygen Concentration (DOC), pH and calcium concentrations will be used.

Elevated results have been identified for manganese (WS201, WS203a & WS208) and nickel (WS201) but these were in comparison to conservative UKDWS.

No free product was noted in any water samples and no concentrations of petroleum hydrocarbons or PAHs were recorded above laboratory detection limits.

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

³⁴ Defra (2010). "The River Basin Districts Typology, Standards and Groundwater Threshold Values". Water Framework Directive (England and Wales) Directions 2010.

³⁵ Defra (2015). "Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015".

³⁶ Statutory Instruments (2016). "The Private Water Supplies Regulation 2016." No. 614

³⁷ EA (2002). "Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the Environment Protection Act 1990."

³⁸ SEPA (2010). "Assigning Groundwater Assessment Criteria for Pollutant Inputs." WAT-PS-10-01.

³⁹ CL:AIRE (2017). "Petroleum Hydrocarbons in Groundwater: Guidance on Assessing Petroleum Hydrocarbons Using Existing Hydrological Risk Assessment Methodologies."

⁴⁰ EA (2009). "Petroleum Hydrocarbons in Groundwater: Supplementary Guidance for Hydrological Risk Assessment."

⁴¹ WFD (2014). "UKTAG River & Lake Assessment Method Specific Pollutants (Metal): Metal Bioavailability Assessment Tool (M-BAT)." Water Framework Directive.

6.5 Additional Risk Assessments

6.5.1 Concrete (Pollutant Linkage 5) (check GW results)

As stated in Section 5, sulphate resistant concrete will not be required at the site. The site was classified as DS-1 AC-1.

Based on the above, the probability of sulphate concentrations affecting buildings is unlikely. Given the consequence is considered to be mild, the risk (pollutant linkage 5) is anticipated to be low and no remediation is required. This should be confirmed with the structural engineer.

6.5.2 Potable Water Supply (Pollutant Linkage 6)

Soil results were compared to United Utilities (UU) guidelines for the selection of potable water pipes in land potentially affected by contamination⁴². Only contaminants of concern, based on the preliminary conceptual model and ground conditions encountered, were analysed. The following contaminants were not considered to be a risk and therefore not included in the analysis suites: chlorinated compounds, ethers, nitrobenzene, ketones, aldehydes and amines.

The following elevated contaminants were identified:

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

It should be noted typical pipework depths are 0.75mbgl to 1.35mbgl. The pipework will likely be laid into the underlying natural strata 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 is anticipated to be moderate and remediation (i.e. barrier pipe) is likely to be required (subject to further risk assessment).

6.5.3 Phytotoxicity (Pollutant Linkage 7)

Soil results were compared to phytotoxic guideline values as outlined in BS3882⁴³.

Elevated zinc (maximum concentration 1500mg/kg), copper (maximum concentration 630mg/kg) and nickel (maximum concentration 140mg/kg) were identified. The probability of phytotoxic contaminants affecting vegetation is considered to be likely. With a minor consequence, the risk (pollutant linkage 7) is anticipated to be low. Although the risk is low, some remediation is recommended. The remediation associated with PL1 will be more than sufficient for PL7.

6.6 Revised Contamination Conceptual Model

The preliminary contamination conceptual model (Table 2-6) 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

⁴² UU(2011). "United Utilities Water Supplementary Guidance for the Selection of Water Pipes in Land Potentially Affected by Contamination."

⁴³ BS (2015). "Specifications for Topsoil and Requirements for Use." BS3882:2015.

the preliminary contamination conceptual model. The risk matrix is provided in Appendix A.

The revised contamination conceptual model is presented in Table 6-3.

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

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

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

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

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

Pollutant Linkage	Pathway	Receptor	Contaminant	Probability	Consequence	Risk	Assessment
PL1	-Dermal contact. -Inhalation of soil, fibres and dust. -Ingestion of soils, dust, vegetables, soil attached to vegetables. -Windblown dust.	-Future site users. -Offsite receptors.	-ACM: Chrysotile -Heavy metals: arsenic, lead and cadmium. -PAHs -Hydrocarbons: aromatic C16-21, C21-35 & C35-44.	Likely	Medium	Moderate	-Likely as ACM (chrysotile) identified, elevated metals (arsenic, lead and cadmium), PAHs and heavier end petroleum hydrocarbons identified in the made ground across the site which could come into contact with site users in gardens / soft landscaping areas. -Recommendation: Remediation required. Likely to include an environmental cover system in gardens / soft landscaping areas.
			-Pesticides.	Unlikely	Medium	Low	-Unlikely as extensive pesticide use not anticipated and pesticides do not typically persist in the environment. -Recommendation: No remediation required.
PL2	-Inhalation of vapours. -Migration through permeable strata and preferential pathways.	-Future site users. -Offsite receptors.	-Volatile contaminants: none identified.	Unlikely	Medium	Low	-Unlikely as no evidence of significant volatile contamination identified. -Elevated TPH concentrations recorded but these were only heavier end petroleum hydrocarbon fractions (>C16). -Recommendation: No remediation required.
PL3	-Inhalation of gas. -Migration through permeable strata and preferential pathways. -Explosion in confined spaces (methane only).	-Future site users. -Offsite receptors. -Buildings.	-Carbon dioxide. -Methane.	Unlikely	Severe	Moderate / Low	-Unlikely as no viable source of hazardous gas identified. -No organic / putrescible material encountered in the made ground on site. Superficial deposits generally did not contain significant organic/ peaty deposits. -Recommendation: No gas protection measures required.
PL4	-Surface Run-off. -Migration through permeable strata and preferential pathways -Perched waters migration.	-Groundwater (Secondary A and Principal Aquifers).	- Mobile contaminants: -Metals and PAHs. -Hydrocarbons.	Unlikely	Medium	Low	-Although slightly elevated metals identified, given the environmental settings and ground conditions encountered not considered to pose a significant risk to groundwater. Site is not within a Source Protection Zone. -Recommendation: No remediation required.

Table 6-3: Revised Contamination Conceptual Model.

Pollutant Linkage	Pathway	Receptor	Contaminant	Probability	Consequence	Risk	Assessment
PL5	- Sulphate attack on concrete.	- Building structure.	- Sulphate.	Unlikely	Mild	Low	- No elevated sulphate or aggressive ground conditions identified with respect to concrete. - Recommendation: No sulphate resistant concrete required. Concrete classification of DS-1 AC-1s.
PL6	- Ingestion of tainted water supply.	- Future site users. - Water pipes.	Organic Contaminants: - Naphthalene. - Petroleum hydrocarbons.	Likely	Medium	Moderate	- Likely probability as elevated naphthalene and petroleum hydrocarbons encountered which could permeate water pipes and contaminate water supply. - Recommendation: UU risk assessment undertaken. Barrier piping likely to be required.
PL7	- Direct Contact (plant uptake).	- Flora.	Phytotoxic Contaminants: - Zinc, copper, nickel.	Likely	Minor	Low	- Elevated zinc, copper and nickel identified, which may be taken up by flora in soft landscaping / gardens. - Recommendation: Given risk to flora, some remediation is recommended. Remediation associated with PL1 will be more than sufficient.

Table 6-3 continued: Revised Contamination Conceptual Model.

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^{44, 45, 46, 47, 48, 49, 50, 51, 52}.

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

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

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

The output sheet is presented in Appendix G and the locations where soil which would be determined to be hazardous waste, if excavated, is summarised in Table 7-1.

Sampling Location	Hazardous Waste Y/N	LoW Code	Hazard (Risk Phrase)	Contaminants
WS206 0-1m	Y	17 05 03	HP3 (flammable), HP7 (carcinogenic), HP11 (mutagenic)	TPH (C6-40)
WS203A 0-0.4m	Y	17-05-03	HP14 (ecotoxic)	lead, zinc.
HD101 0-0.25m	Y	17-05-03	HP3 (flammable), HP7 (carcinogenic), HP11 (mutagenic), HP14 (ecotoxic)	TPH (C6-40), lead, zinc.

Table 7-1: Summary of HazwasteOnline™ findings.

Based on the assessment of soil from individual locations, potentially hazardous waste has been identified if the soil from these locations was to be excavated. The soil in all other locations was classified as non-hazardous waste based on the soil samples tested.

Further testing of soils, including Waste Acceptance Criteria (WAC) testing, may be required during the groundworks phase if any surplus soils are due to be disposed of offsite.

⁴⁴ EA (2018). "Guidance on the Classification and Assessment of Waste (1st Edition v1.1)". Technical Guidance WM3.

⁴⁵ CLP Regulation - Regulation 1272/2008/EC of 16 December 2008.

⁴⁶ 1st ATP - Regulation 790/2009/EC of 10 August 2009

⁴⁷ Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

⁴⁸ WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

⁴⁹ Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014

⁵⁰ 13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

⁵¹ POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004

⁵² 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

8 Conclusions

8.1 Geotechnical

Strip foundations are not considered suitable due to the varying density and composition of the shallow strata and whilst a piling solution is viable it is considered that vibro granular columns will provide the most reliable and cost-effective option for the site.

Due to the presence of up to 1.1m 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.

Based upon the results of the chemical analyses summarised in Table 4-4 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).

Detailed foundation design should be carried out by structural engineer.

8.2 Contamination Assessment

A revised contamination conceptual model has been produced by LKC which is summarised in Table 8-1 below (more detailed model provided in Section 6).

Pollutant Linkage		Risk	Recommendations
1	Contaminants posing a risk to site users via dermal contact, ingestion and inhalation (of soil, dust, fibres and vegetables).	Moderate (ACM, heavy metals, PAHs, hydrocarbons)	Remediation required in garden and soft landscaped areas.
		Low (Pesticides)	-No remediation required.
2	Volatile contaminants posing a risk to site users via the inhalation of vapours.	Low	-No remediation required.
3	Gas posing a risk to buildings and site users via the migration of gas into building causing explosion and asphyxiation.	Moderate/Low	-No gas protection measures required.
4	Mobile contamination posing a risk to controlled waters via the migration through permeable strata.	Low	-No remediation required.
5	Sulphate posing a risk to building via direct contact (sulphate attack).	Low	-Concrete classification of DS-1 AC-1s.
6	Organic contaminants posing a risk to water pipes.	Moderate	-UU risk assessment to be completed. The site will likely require barrier piping.
7	Phytotoxic metals posing a risk to flora via root uptake.	Low	-Remediation associated with PL1.

Table 8-1: 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. The below assumes that the Japanese knotweed remediation has been prior completed.

9.1 Remediation and Validation Recommendations

Table 9-1 details the further works and remedial recommendations / requirements.

PL	Remediation Requirements	Validation Requirements
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.
1 and 7	<u>Environmental Cover System</u> As made ground is relatively deep, it is unlikely to be viable to remove the contaminated soils. Therefore, an environmental cover system is recommended. The environmental cover system should be as follows: Private Back Gardens: 600mm thick environmental cover system comprising: <u>Either</u> 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. <u>Or</u> geotextile membrane and at least 600mm comprising clean inert fill and sufficient topsoil for a growing medium. Private Front Garden / Shared Landscaping: 300mm thick environmental cover system comprising: <u>Either</u> 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. <u>Or</u> geotextile membrane and at least 300mm comprising clean inert fill and sufficient topsoil for a growing medium. The subsoil layer can be replaced by additional topsoil. A diagram of a typical environmental cover system is shown in <u>Appendix H</u>.	Measuring depth of environmental cover system using a staff and providing photographic evidence. Photographic evidence of the granular physical break or geotextile layer will also be collected. Chemical validation of imported soils: See Table 9-2.
6	<u>Potable Water Pipes</u> It is recommended that a United Utilities Risk Assessment is undertaken once the location and depth of potable water pipes are known. Barrier pipe likely to be required.	Delivery Notes of Pipe Material. Photographs of the Installed Pipe.

Grubbing Out of In-Ground Structures It is recommended that in-ground structures are grubbed out as part of the groundworks.
Re-use of site won material To ensure material is compliant with appropriate waste regulations, any site won material re-used onsite should be in recourse to appropriate exemptions. A U1 and T5 exemption should be registered. This will allow the following to be used onsite or brought in for use onsite (refer to guidance for types of waste that can be used ⁵³): 5,000 tonnes (c. 2,500m³) <u>treatment of</u> crushed concrete / stone. 1,000 tonnes (c. 500³) <u>use of</u> non-hazardous soil 5,000 tonnes (c. 2,500m³) <u>use of</u> clays, sand, gravel, brick, concrete, stone etc. 50,000 tonnes (c. 25,000m³) <u>use of</u> bituminous material to be used in roadways. A Materials Management Plan (MMP) with recourse to the CL:AIRE Code of Practice may be required if volumes exceed exemption limits. This must be registered before material movement starts onsite. If an MMP is required, this needs to be registered by a Qualified Person (QP) and there must be 'certainty of use' for any material re-used onsite or exported to site to ensure there is no 'sham recovery'. For all the above material will need to be tested at the rate and analytical suites presented in Table 9-2.
Asbestos Management Plan 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. 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 C733⁵⁴. This may include asbestos awareness training for all site staff, provision of suitable personal and respiratory protective equipment and air monitoring. 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)⁵⁵. 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.
Health and Safety Considerations In working with, removing or treating any contaminating material it is important that any potential risks associated with the actual site works are mitigated by good environmental management of the site during the remedial phases. Standard health and safety precautions (as per HSE guidance⁵⁶) should be adopted by all workers involved with site enabling and construction works.

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

Notes: See Table 6-3 for pollutant linkage (PL) details.

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

⁵⁴ CIRIA (2014). "Asbestos in Soil and Made Ground: A Guide to Understanding and Managing Risks". C733.

⁵⁵ HSE (2012). "Removing Asbestos Cement (AC) Debris." A11 Asbestos Essential – Non-licenced Tasks.

⁵⁶ HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land" London HMSO.

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. Ideally, the material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site. However, where this is not possible then material imported should be segregated based on source and soil type. Validation samples should be taken prior to placement in gardens to ensure suitability for use.

Material Type	Source	Suite of Analysis	Sampling Rate*
Topsoil	Greenfield	Suite A	1 sample per 50m ³
	Brownfield / Unknown	Suite B	
Subsoil	Brownfield / Unknown	Suite B	1 sample per 150m ³
	Site won natural material / greenfield	Suite A	
	Physical Stone Break Layer	First Generation i.e. quarried sand (subsoil) or stone (break layer)	
Recycled Stone (6F2 / screened)		Suite B	1 sample per 500m ³

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.

*Minimum sampling rate of 3 samples per source.

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

In addition, it should be ensured that the matrix of the topsoil is suitable as a growing medium and no undesirable material is present (in line with BS3882⁵⁷). 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 F.

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:

- » 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.
- » Provision of waste transfer documents.

⁵⁷ BS (2015). "Specifications for Topsoil and Requirements for use." BS3882:2015.

- » Details of any unexpected contamination identified onsite, suitably risk assessed and / or validated.

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

Figures

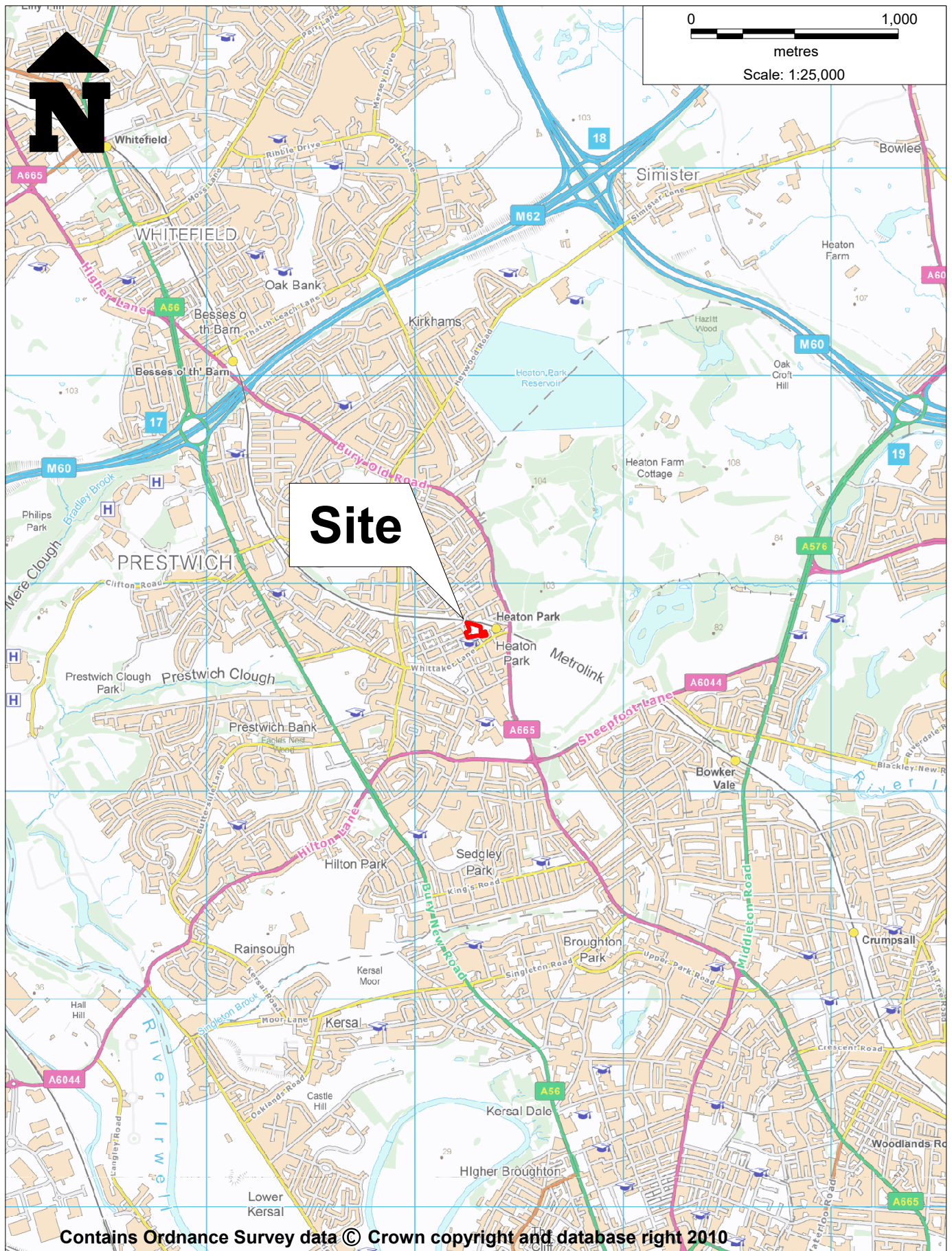
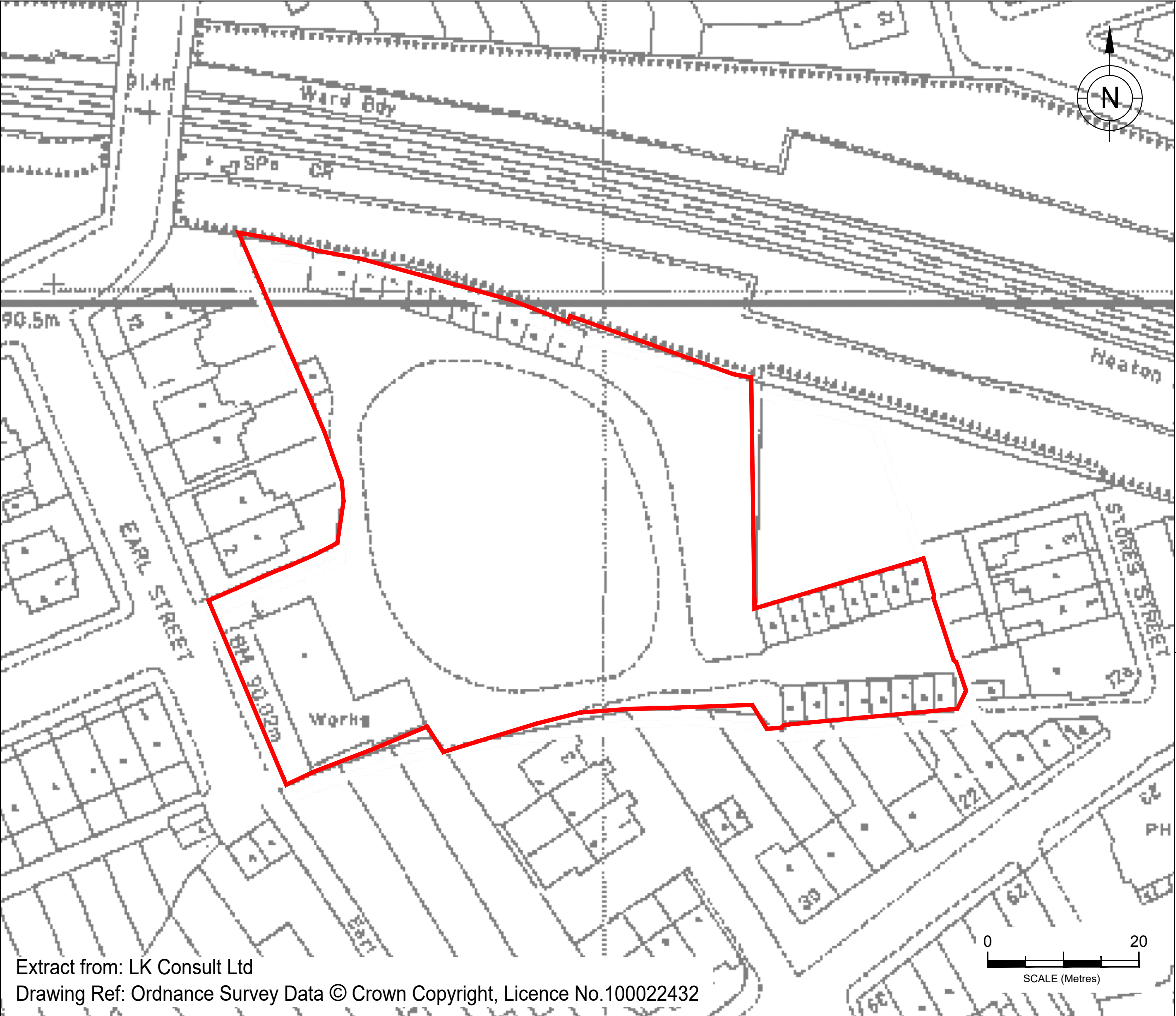


Figure 1: Site Location Plan, Earl Street, Prestwich

Drawn: March 2020 Scale: 1:25,000 @ A4 (see scale bar)



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.

LK

CONSULT LIMITED

Client:

Dream Homes Construction Ltd

Site:

Earl Street, Prestwich

Title:

Site Boundary Plan

Job No.:

LKC 20 1260

Scale (See Scale Bar):

1:500 @ A3

Figure:

2

Revision:

Drawn By:

AC

Checked By:

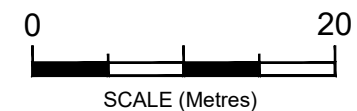
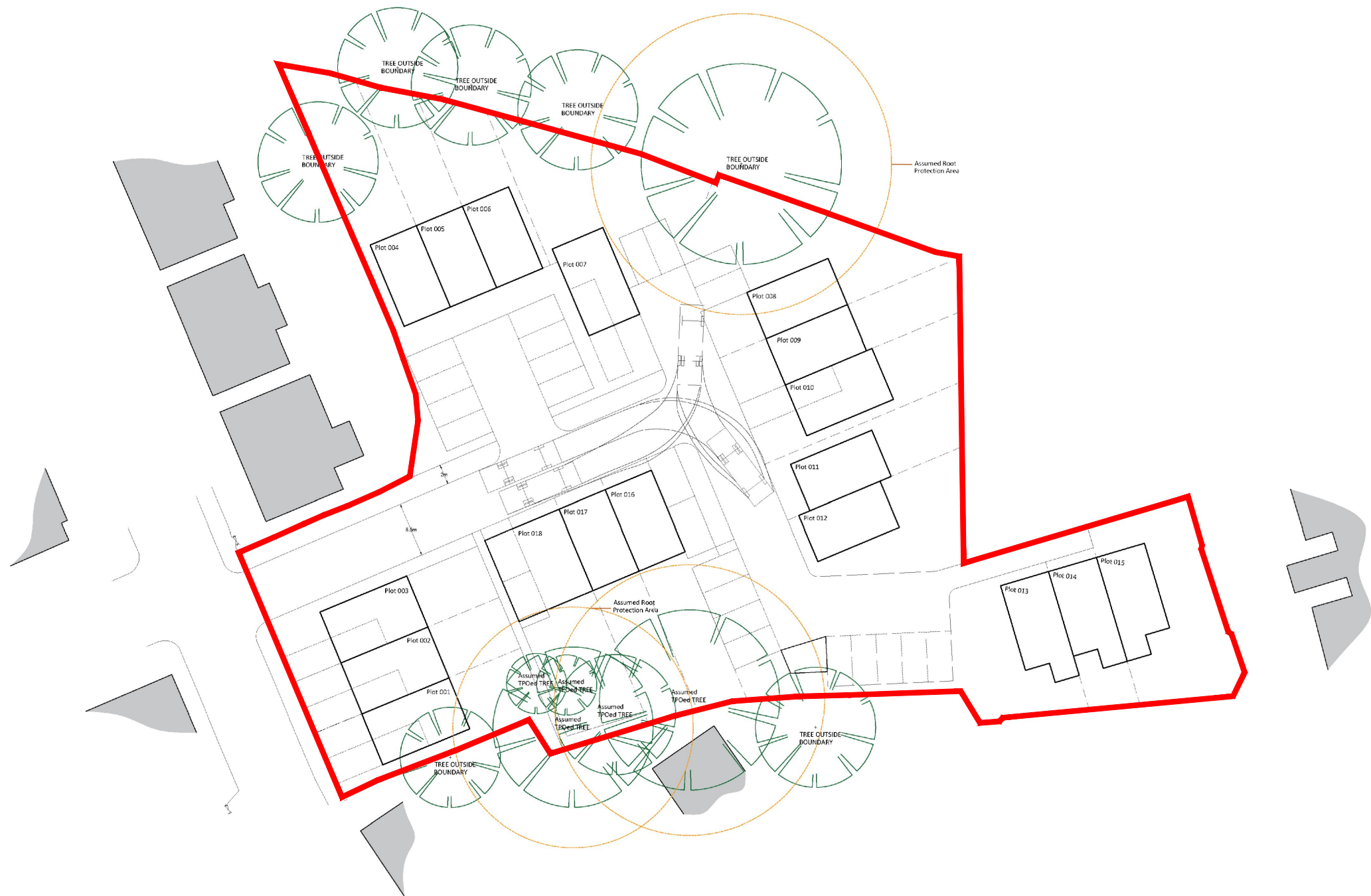
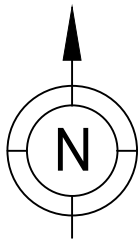
EK

Drawn:

Mar 2020

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KEY



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.



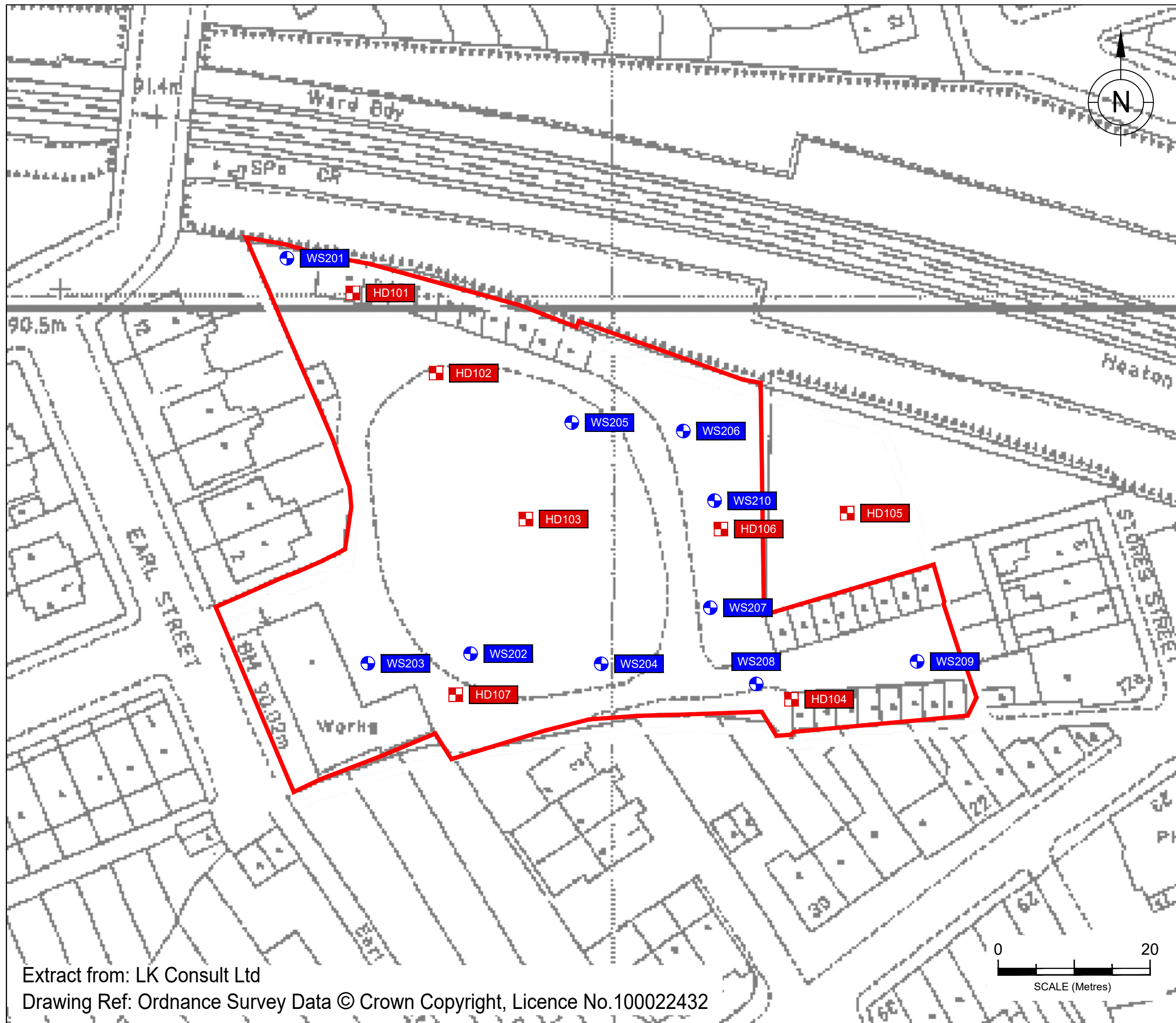
Client:
Dream Homes Construction Ltd

Site:
Earl Street, Prestwich

Title:
Proposed Site Use

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 20 1260	1:500 @ A3	3	
Drawn By:	Checked By:	Drawn:	
AC	EK	Mar 2020	

Extract from: Plan Supplied by Client
Drawing Ref: Proposed Draft Site Plan, 190529



KEY

-  Site Boundary
-  Window Sample Borehole (WS)
-  Hand Dug Trial Pit (HD)

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:
Dream Homes Construction Ltd

Site:
Earl Street, Prestwich

Title:
Site Investigation Location Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 20 1260	1:500 @ A3	4	
Drawn By:	Checked By:	Drawn:	
AC	EM	Mar 2020	

Extract from: LK Consult Ltd
Drawing Ref: Ordnance Survey Data © Crown Copyright, Licence No.100022432

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 552⁵⁸. It involves the classification of the:

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

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

Table A. Classification of Consequence

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

Table B. Classification of Probability.

⁵⁸ CIRIA C552 (2001) Contaminated Land Risk Assessment - A Guide to Good Practice.

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

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

Table C. Comparison of Consequence against Probability

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

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

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

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

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

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

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

Appendix B

Profile Logs

Excavation Method

Hand excavated trial pit to 0.50mbgl.

Dimensions

0.20m x 0.20m x 0.50m

Ground Level (mOD)

90.00

Client

Dream Homes Construction Ltd

**Job
Number**

LKC 20 1260

Location (Handheld GPS)

382264 E 403802 N

Dates

06/03/2020

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.25	D1 PID=0.3ppm				(0.25)	MADE GROUND: Dark brown slightly gravelly silty SAND with frequent wood debris, occasional ash, rare plastic and metal fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.		
				89.75	0.25 (0.15)	MADE GROUND: Grey clayey fine to medium SAND with rare ash. Wet strata.		
0.40-0.50	D2 PID=0.1ppm			89.60	0.40 (0.10)	Firm consistency brown sandy CLAY. Sand is fine to medium. Wet strata.		
				89.50	0.50	Complete at 0.50m		


Remarks

Trial hole stable. Wet strata noted between 0.25-0.50mbgl.
Location accurate to 3.00-5.00m.
Elevation estimated from
<https://www.freemaptools.com/elevation-finder.htm>

Scale (approx)

1:20

Logged By

HM

Figure No.

LKC 20 1260.HD101

Excavation Method

Hand excavated trial hole to 0.50mbgl.

Dimensions

0.20m x 0.20m x 0.50m

Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

**Job
Number**
LKC 20 1260

Location (Handheld GPS)

382270 E 403793 N

Dates

06/03/2020

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1 PID=0.1ppm				(0.20)	MADE GROUND: Dark brown gravelly slightly silty SAND with frequent ash, occasional glass, brick fragments, concrete fragments, rare coal, metal fragments and rootlets.		
0.20-0.50	D2 PID=0.1ppm			91.80	0.20			
					(0.30)	MADE GROUND: Dark brown silty SAND with rare ash and brick fragments. Sand is fine to medium.		
				91.50	0.50	Complete at 0.50m		


Remarks

Trial hole dry and stable.
Location accurate to 300-5.00m.
Elevation estimated from
<https://www.freemaptools.com/elevation-finder.htm>

Scale (approx)

1:20

Logged By

HM

Figure No.

LKC 20 1260.HD102

Excavation Method

Hand excavated trial hole to 1.00mbgl.

Dimensions

0.20m x 0.20m x 1.00m

Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

**Job
Number**
LKC 20 1260

Location (Handheld GPS)

382280 E 403776 N

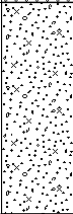
Dates

06/03/2020

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	D2 PID<0.1ppm				(0.30)	MADE GROUND: Dark brown slightly gravelly silty SAND with occasional brick fragments and rootlets. Sand is fine to medium. Gravel is fine to medium and subangular comprising sandstone.		
0.30-1.00	D2 PID<0.1ppm			91.70	0.30	Greyish brown slightly gravelly silty SAND. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.		
					(0.70)			
				91.00	1.00	Complete at 1.00m		


Remarks

Trial hole dry and stable.
Location accurate to 3.00-5.00m.
Elevation estimated from
<https://www.freemaptools.com/elevation-finder.htm>

Scale (approx)

1:25

Logged By

HM

Figure No.

LKC 20 1260.HD103

Excavation Method

Hand excavated trial hole to 0.70mbgl.

Dimensions

0.20m x 0.20m x 0.70m

Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

**Job
Number**
LKC 20 1260

Location (Handheld GPS)

382322 E 403746 N

Dates

06/03/2020

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	D1 PID=0.2ppm				(0.50)	MADE GROUND: Brown gravelly SAND with occasional ash, rare brick fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone. Increasing ash content with depth.		
0.50-0.70	D2 PID=0.1ppm			91.50	0.50 (0.20)	MADE GROUND: Black gravelly silty SAND with frequent ash and wood fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.		
				91.30	0.70	Complete at 0.70m		


Remarks

Trial pit dry and stable.
Location accurate to 3.00-5.00m.
Elevation estimated from
<https://www.freemaptools.com/elevation-finder.htm>

Scale (approx)

1:20

Logged By

HM

Figure No.

LKC 20 1260.HD104

Excavation Method

Hand excavated trial hole to 0.60mbgl.

Dimensions

0.20m x 0.20m x 0.60m

Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

**Job
Number**
LKC 20 1260

Location

382311 E 403766 N

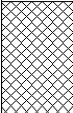
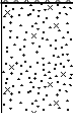
Dates

06/03/2020

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	D1 PID<0.1ppm					MADE GROUND: Blackish brown slightly gravelly very sandy SILT with frequent rootlets and rare coal fragments. Sand is fine to medium. Gravel is fine to coarse and subangular to subrounded comprising sandstone and mudstone.		
				91.70	0.30 (0.30)	Light brownish orange and grey silty fine to medium SAND.		
				91.40	0.60 (0.30)	Complete at 0.60m		


Remarks

Japanese Knotweed rhizomes noted.
Trial hole dry and stable.
Location accurate to 3.00-5.00m.
Elevation estimated from
<https://www.freemaptools.com/elevation-finder.htm>

Scale (approx)

1:20

Logged By

HM

Figure No.

LKC 20 1260.HD105

Excavation Method

Hand excavated trial hole to 0.40mbgl.

Dimensions

0.20m x 0.20m x 0.40m

Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

**Job
Number**
LKC 20 1260

Location (Handheld GPS)

382299 E 403770 N

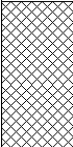
Dates

06/03/2020

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	D1 PID=0.2ppm			91.60	(0.40) 0.40	MADE GROUND: Blackish brown gravelly silty SAND with occasional rootlets, brick fragments, rare pottery, clinker and ash. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone. Complete at 0.40m		


Remarks

Trial hole dry and stable.
Location accurate to 3.00-5.00m.
Elevation estimated from
<https://www.freemaptools.com/elevation-finder.htm>
Scale (approx)

1:20

Logged By

HM

Figure No.

LKC 20 1260.HD106

Excavation Method

Hand excavated trial hole to 0.60mbgl.

Dimensions

0.20m x 0.20m x 0.60m

Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

**Job
Number**
LKC 20 1260

Location (Handheld GPS)

382275 E 403743 N

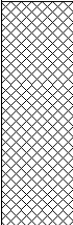
Dates

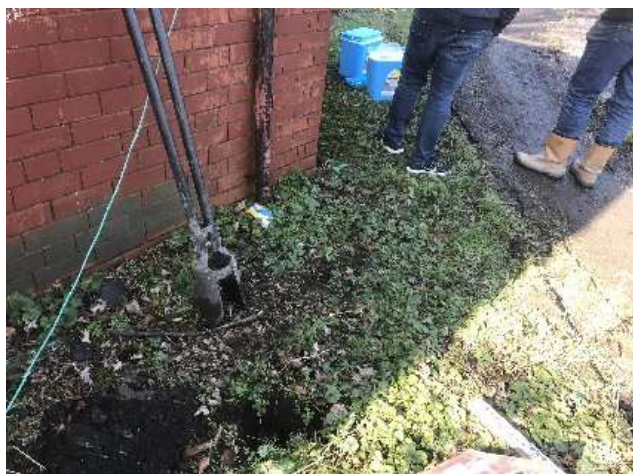
06/03/2020

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	D1 PID=0.2ppm			91.40	(0.60) 0.60	MADE GROUND: Blackish brown gravelly sandy SILT with frequent ash, occasional brick and rare metal. Sand is fine to medium. Gravel is fine to coarse and subangular comprising mudstone and sandstone. Complete at 0.60m		


Remarks

Trial pit dry and stable.
Location accurate to 3.00-5.00m.
Elevation estimated from
<https://www.freemaptools.com/elevation-finder.htm>
Scale (approx)

1:20

Logged By

HM

Figure No.

lkc 20 1260.HD107

Excavation Method

Drive-in Windowless Sampler
driven to 5.00mbgl.

Dimensions
Location

382264 E 403795 N

Ground Level (mOD)

92.00

Dates

16/03/2020

Client

Dream Homes Construction Ltd

Engineer

LKC

Job
Number
LKC 20 1260

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.15-0.40	DB1 PID< 0.1ppm				(0.40)	MADE GROUND: Dark brown sandy SILT with occasional rootlets and rare polystyrene. Sand is fine to medium.			
0.40-0.90	B2			91.60	0.40	Loose light brown silty SAND. Sand is fine to medium.			
1.20-1.65	SPT N=9		1,2/2,2,2,3		(2.00)				
2.00-2.45	SPT N=4		1,1/1,1,1,1						
2.40-3.10	B3			89.60	2.40	Loose grey with orange mottling silty SAND with rootlets. Sand is fine to medium.			
3.00-3.45	SPT N=9		Water strike(1) at 3.00m.	88.90	3.10	Soft consistency grey with orange mottling sandy silty CLAY becoming very soft consistency with depth. Sand is fine to medium.			
3.10-4.00	B4		2,2/2,3,2,2						
4.00-4.45	SPT N=14		2,2/3,3,3,5		(1.90)				
				87.00	5.00	Complete at 5.00m			

Remarks

Location estimated from <https://gridreferencefinder.com/>
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Water strike at 3.00mbgl.

Scale
(approx)

1:40

Logged
By

RW

Figure No.

LKC 20 1260.WS201

Excavation Method

Drive-in Windowless Sampler
driven to 5.00mbgl.

Dimensions
Location

382284 E 403753 N

Ground Level (mOD)

92.00

Dates

16/03/2020

Client

Dream Homes Construction Ltd

Engineer

LKC

Job
Number
LKC 20 1260

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	D1 PID=0.2ppm				(0.50)	MADE GROUND: Black sandy SILT with occasional rootlets, brick, ash and pottery. Sand is fine to medium.		
0.50-0.70	DB2 PID< 0.1ppm			91.50	0.50 (0.20)	MADE GROUND: Dark brown sandy GRAVEL (predominantly comprising ash and clinker). Sand is fine to medium. Gravel is fine to coarse, sub-angular to sub-rounded.		
0.70-1.40	B3			91.30	0.70	Brown sandy SILT with frequent rootlets. Sand is fine to medium.		
1.20-1.65	SPT N=5		1,1/1,1,1,2		(0.70)			
1.40-2.00	B4			90.60	1.40	Brown fine to medium SAND with occasional pockets of organic matter.		
					(0.60)			
2.00-2.45	SPT N=12		3,3/3,4,3,2	90.00	2.00	Loose to medium dense brown slightly silty SAND. Sand is fine to medium.		
					(1.50)			
3.00-3.45	SPT N=6		2,2/2,1,2,1			Grey with orange mottling and occasional rootlets between 3.10-3.50mbgl.		
				88.50	3.50	Soft consistency brown gravelly CLAY. Gravel is fine, sub-angular comprising sandstone and mudstone.		
					(0.50)			
4.00-4.45	SPT N=16		Water strike(1) at 4.00m. 3,3/3,4,4,5	88.00	4.00	Soft consistency brown sandy silty CLAY becoming soft to firm consistency with depth. Sand is fine to medium.		
					(1.00)			
				87.00	5.00	Complete at 5.00m		

Remarks

Location estimated from <https://gridreferencefinder.com/>
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Water strike at 4.00mbgl.

Scale
(approx)

1:40

Logged
By

RW

Figure No.

LKC 20 1260.WS202

Excavation Method

Drive-in Windowless Sampler
driven to 5.45mbgl.

Dimensions
Location

382273 E 403749 N

Ground Level (mOD)

92.00

Dates

16/03/2020

Client

Dream Homes Construction Ltd

Engineer

LKC

Job
Number
LKC 20 1260

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.40	D1 PID < 0.1ppm.				(0.40)	MADE GROUND: Black SAND and GRAVEL (predominantly ash and clinker) with occasional brick. Possible asbestos-containing material identified.			
0.40-1.10	D2			91.60	0.40	Greyish brown with black mottling clayey SAND. Sand is fine to medium.			
			Water strike(1) at 0.90m.		(0.70)				
1.10-2.10	B3			90.90	1.10	Dark brown sandy SILT with occasional organic matter. Slight organic odour. Sand is fine to medium.			
1.20-1.65	SPT N=1		0,0/0,0,1,0		(1.00)				
2.00-2.45	SPT N=10			89.90	2.10	Loose to medium dense brown silty SAND. Sand is fine to medium.			
2.10-2.50	B4		1,1/1,3,3,3		(0.40)				
				89.50	2.50	Dark brown sandy SILT with occasional organic matter Slight organic odour. Sand is fine to medium.			
					(0.50)				
3.00-3.45	SPT N=10		3,3/3,2,2,3	89.00	3.00	Loose to medium dense brown silty SAND with occasional pockets of organic matter. Sand is fine to medium.			
					(0.70)				
				88.30	3.70	Grey silty SAND. Sand is fine to medium.			
				88.10	(0.20)				
4.00-4.45	SPT N=2		1,0/1,0,1,0	88.00	(0.10)	Soft consistency grey sandy silty CLAY. Sand is fine to medium.			
					(0.10)	NO RECOVERY.			
					(1.45)				
5.00-5.45	SPT(C) N=15		2,3/3,3,4,5						
				86.55	5.45	Terminated at 5.45m			

Remarks

Possible asbestos-containing material identified at 0.35mbgl.
Water strike at 0.90mbgl.
No recovery between 4.00-5.00mbgl due to possible granular strata.
No recovery between 5.00-5.45mbgl as cone used.
Location estimated from <https://gridreferencefinder.com/>
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Scale
(approx)
1:40

Logged
By
RW

Figure No.
LKC 20 1260.WS203A

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

Earl Street, Prestwich

Number
WS203B**Excavation Method**

Drive-in Windowless Sampler

Dimensions**Ground Level (mOD)**

92.00

Client

Dream Homes Construction Ltd

Job Number
LKC 20 1260**Location**

382274 E 403749 N

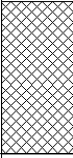
Dates

16/03/2020

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				91.60	(0.40) 0.40	MADE GROUND: Black SAND and GRAVEL predominantly ash and clinker) and occasional brick. Possible asbestos-containing material identified. Terminated at 0.40m		

RemarksHand excavated pit abandoned at 0.40mbgl due to presence of possible asbestos-containing material.
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Location estimated from <https://gridreferencefinder.com/>**Scale (approx)**

1:20

Logged By

RW

Figure No.

LKC 20 1260.WS203B

Excavation Method

Drive-in Windowless Sampler
driven to 5.45mbgl.

Dimensions
Location (Handheld GPS)
382295 E 403752 N

Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

Job
Number
LKC 20 1260

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.50	D1 PID < 0.1ppm				(0.50)	MADE GROUND: Dark brown very sandy SILT with occasional rootlets (top 0.20m), brick fragments, rare glass, concrete, ash and coal. Sand is fine to medium.			
0.50-1.00	D2 PID < 0.1ppm			91.50	0.50 (0.50)	MADE GROUND: Brown very sandy SILT with occasional coal, rare brick fragments, ash and glass. Sand is fine to medium.			
1.00-1.50	B3			91.00	1.00	Medium dense dark brown becoming orangish brown silty SAND. Sand is fine to medium.			
1.20-1.65	SPT N=17		3,3/4,5,4,4		(0.70)				
1.80-2.00	B4			90.30	1.70 (0.30)	Greyish brown in colour between 1.50-1.70mbgl with rare rootlets. Frequent coal at 1.60mbgl.			
2.00-2.45	SPT N=12		2,2/3,3,3,3	90.00	2.00	Light greyish brown very silty SAND with occasional silty sandy clay lenses. Frequent rootlets in clay. Sand is fine to medium.			
						Medium dense brown slightly silty SAND. Sand is fine to medium.			
3.00-3.45	SPT N=18		Water strike(1) at 3.00m. 3,3/4,4,5,5		(2.20)	Very silty SAND between 3.00-3.30mbgl.		Σ1	
4.00-4.45	SPT N=12		2,2/3,3,2,4	87.80	4.20 (0.50)	Very silty SAND between 4.00-4.20mbgl.			
				87.30	4.70 (0.75)	Firm consistency brown slightly gravelly silty CLAY. Gravel is fine to medium, sub-angular to rounded comprising sandstone, mudstone and coal.			
5.00-5.45	SPT N=14		2,2/3,3,4,4	86.55	5.45	Complete at 5.45m			

Remarks

Water strike at 3.00mbgl.
Location accurate to 3.00-5.00m.
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Japanese Knotweed shoots noted.

Scale
(approx)

1:40

Logged
By

EM

Figure No.

LKC 20 1260.WS204

Excavation Method

Drive-in Windowless Sampler
driven to 5.45mbgl.

Dimensions
Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

Job
Number
LKC 20 1260

Location (Handheld GPS)

382297 E 403787 N

Dates

16/03/2020

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.50	D1 PID < 0.1ppm				(0.50)	MADE GROUND: Blackish brown very sandy SILT with occasional rootlets (top 0.20m, rare with depth), occasional brick fragments, pottery, coal, ash and rare glass. Sand is fine to medium.		
0.50-1.00	D2 PID < 0.1ppm			91.50	0.50 (0.50)	Medium dense very light greyish brown slightly silty SAND becoming orangish brown with depth. Sand is fine to medium. Occasional coal between 0.80-1.00mbgl.		
1.00-1.50	B3			91.00	1.00	Medium dense light brown slightly silty SAND. Sand is fine.		
1.20-1.65	SPT N=15		3,3/3,4,4,4			Occasional rootlets between 1.50-2.00mbgl.		
2.00-2.45	SPT N=16		2,2/3,4,4,5		(2.50)			
3.00-3.45	SPT N=18		Water strike(1) at 3.00m. 3,3/4,4,5,5					
				88.50	3.50 (0.50)	Light brown fine SAND.		
4.00-4.45	SPT N=8		2,2/2,2,2,2	88.00	4.00 (1.45)	Loose to medium dense brown silty SAND, becoming less silty with depth. Sand is fine.		
5.00-5.45	SPT N=12		3,3/2,2,4,4					
				86.55	5.45	Complete at 5.45m		

Remarks

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

1:40

Logged By

EM

Figure No.

LKC 20 1260.WS205

Excavation Method

Drive-in Windowless Sampler
driven to 5.45mbgl.

Dimensions
Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

Job
Number
LKC 20 1260

Location (Handheld GPS)

382208 E 403783 N

Dates

16/03/2020

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	D1 PID < 0.1ppm				(1.10)	MADE GROUND: Black very silty SAND with frequent ash, clinker, brick fragments, occasional rootlets (top 0.10m), half-brick, rare glass, concrete, coal and ash. Sand is fine to medium.		
1.10-1.50 1.20-1.65	D2 PID < 0.1ppm SPT N=12		5,4/3,3,3,3	90.90	1.10 (0.90)	Medium dense orangish brown slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded comprising sandstone and mudstone.		
1.50-2.00	B3							
2.00-2.45	SPT N=17		4,3/3,4,5,5	90.00	2.00 (1.70)	Medium dense orangish brown very gravelly very silty SAND becoming brown in colour with depth. Sand is fine to medium. Gravel is fine, sub-angular to sub-rounded comprising sandstone and mudstone.		
3.00-3.45	SPT N=10		Water strike(1) at 3.00m. 4,3/2,2,3,3					
				88.30	3.70 (0.30)	Brown slightly silty SAND with occasional coal. Sand is fine to medium.		
4.00-4.45	SPT N=14		4,3/4,3,3,4	88.00	4.00 (1.45)	NO RECOVERY.		
5.00-5.45	SPT N=4		1,1/0,1,2,1					
				86.55	5.45	Complete at 5.45m		

Remarks

No recovery between 4.00-5.45mbgl possibly due to wet granular strata.
Water strike at 3.00mbgl.
Location accurate to 3.00-5.00m.
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Scale
(approx)

1:40

Logged
By

EM

Figure No.

LKC 20 1260.WS206

Excavation Method

Drive-in Windowless Sampler
driven to 5.45mbgl.

Dimensions
Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

Job
Number
LKC 20 1260

Location (Handheld GPS)

382310 E 403761 N

Dates

16/03/2020

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	D1 PID < 0.1ppm					MADE GROUND: Blackish brown very silty SAND with occasional rootlets (top 0.20m), brick fragments, rare half-brick, pottery, concrete, coal and glass. Sand is fine to medium.		
1.00-1.50	D2 PID < 0.1ppm			91.00	1.00	Medium dense to dense dark orange slightly gravelly slightly silty SAND. Sand is fine to medium. Gravel is fine to medium, sub-angular to sub-rounded comprising sandstone and mudstone.		
1.20-1.65	SPT N=33		7,7/7,8,9,9			Black coarse SAND band at 1.20mbgl (possible coal).		
1.50-2.00	B3				(1.30)			
2.00-2.45	SPT N=15		3,3/3,4,4,4	89.70	2.30	Black fine to coarse, sub-angular GRAVEL (coal).		
				89.60	(0.10)			
					(1.00)	Medium dense light orangish brown slightly silty gravelly SAND with occasional coal. Sand is fine to coarse. Gravel is fine to medium, sub-angular to sub-rounded comprising sandstone and mudstone.		
3.00-3.45	SPT N=11		2,3/3,3,2,3					
				88.60	3.40	Soft consistency light brown gravelly sandy SILT with occasional silty gravelly sand lenses and coal. Sand is fine to medium. Gravel is fine to medium, sub-angular to sub-rounded comprising sandstone and mudstone.		
3.50-4.00	B4				(0.60)			
4.00-4.45	SPT N=15		3,3/4,4,4,3	88.00	4.00	Medium dense light brown fine SAND with occasional gravelly silt lenses. Gravel is fine, sub-angular comprising sandstone and mudstone.		
				87.50	4.50	Medium dense orangish brown fine to medium SAND.		
5.00-5.45	SPT N=24		4,4/5,6,6,7		(0.95)			
				86.55	5.45	Complete at 5.45m		

Remarks

Strata damp from 1.50mbgl.
Location accurate to 3.00-5.00m.
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Scale (approx)

1:40

Logged By

EM

Figure No.

LKC 20 1260.WS207

Excavation Method

Drive-in Windowless Sampler
to 5.45mbgl.

Dimensions

150mm to 1.00m

Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

Job
Number

LKC 20 1260

Location (Handheld GPS)

382317 E 403747 N

Dates

16/03/2020

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.30	D1 PID< 0.1ppm				(0.30)	MADE GROUND: Black sandy GRAVEL (predominantly comprising ash and clinker). Sand is fine to coarse. Gravel is fine to coarse, sub-angular to sub-rounded.			
0.30-0.60	D2 PID< 0.1ppm			91.70	0.30 (0.30)				
				91.40	0.60	MADE GROUND: Black sandy SILT with occasional rootlets, ash and brick. Sand is fine to medium. Brick fragments from 0.30mbgl to 0.40mbgl.			
1.10-1.30	B3		2,1/2,1,2,2		(1.20)	Loose brown SAND with occasional lenses of coal gravel. Sand is fine to medium.			
1.20-1.65	SPT N=7					Brown clayey SAND from 1.20mbgl to 1.30mbgl. Sand is fine to medium.			
1.80-2.00	B4			90.20	1.80	Loose brown gravelly SAND. Sand is fine to coarse. Gravel is fine, sub-angular to sub-rounded comprising mixed lithologies.			
2.00-2.45	SPT N=8		3,2/2,2,2,2		(0.40)				
2.00-2.20	B5			89.80	2.20	Light brown sandy SILT. Sand is fine to medium.			
2.20-2.50	B6			89.50	2.50 (0.30)	Orange silty SAND. Sand is fine to medium.			
				89.20	2.80 (0.20)	Reddish brown fine to medium SAND.			
3.00-3.45	SPT N=8		Water strike(1) at 3.00m. 1,2/2,2,2,2	89.00	3.00	Loose brown gravelly SAND with occasional coal fragments, becoming more gravelly with depth. Sand is fine to coarse. Gravel is fine to medium, sub-angular to rounded comprising mixed lithologies.			
4.00-4.45	SPT N=5		1,0/1,1,1,2		(2.00)				
5.00-5.45	SPT(C) N=21		8,8/6,5,5,5	87.00	5.00	NO RECOVERY.			
				86.55	5.45	Complete at 5.45m			

Remarks

Water strike at 3.00mbgl.
Location accurate to 3.00-5.00m.
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
No recovery between 5.00-5.45mbgl as cone used.

Scale
(approx)

1:40

Logged
By

RW

Figure No.

LKC 20 1260.WS208

Excavation Method

Drive-in Windowless Sampler
driven to 5.00mbgl.

Dimensions
Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

Job
Number

LKC 20 1260

Location (Handheld GPS)

382338 E 403752 N

Dates

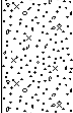
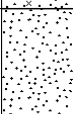
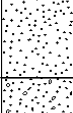
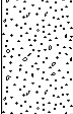
16/03/2020

Engineer

LKC

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.45	D1 PID< 0.1ppm				(0.45)	MADE GROUND: Dark brown gravelly sandy SILT with occasional pottery and ash. Sand is fine to medium. Gravel is fine to medium, sub-angular comprising sandstone. Flagstone at surface.		
0.45-0.90	D2 PID 1.1 ppm			91.55	0.45	Greyish brown slightly gravelly silty SAND becoming lighter in colour with depth. Sand is fine to medium. Gravel is fine to medium, sub-rounded comprising sandstone.		
1.10-1.40	B3		2,2/3,3,3,3	90.90	1.10	Medium dense brown fine to medium SAND with occasional lenses of coal gravel. Band of coal gravel from 1.00mbgl to 1.10mbgl.		
1.20-1.65	SPT N=12							
1.40-1.60	B4							
2.00-2.45	SPT N=12		2,3/2,3,4,3		(1.90)			
2.00-2.30	B5							
2.50-2.60	B6					Brown gravelly SAND between 2.50-2.60mbgl. Sand is fine to medium. Gravel is fine to medium, sub-rounded to rounded comprising mixed lithologies.		
3.00-3.45	SPT N=10		2,2/2,2,3,3	89.00	3.00	Loose to medium dense brown slightly gravelly SAND becoming more gravelly with depth and darker in colour. Sand is fine to medium. Gravel is fine to medium, sub-angular to sub-rounded comprising mixed lithologies.		
4.00-4.45	SPT N=10		2,2/3,2,3,2		(2.00)			
			Water strike(1) at 4.50m.					▽1
				87.00	5.00	Complete at 5.00m		

Remarks

Water strike at 4.50mbgl.
Location estimated from <https://gridreferencefinder.com/>
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Scale
(approx)

1:40

Logged
By

RW

Figure No.

LKC 20 1260.WS209

Excavation Method

Drive-in Windowless Sampler
driven to 5.45mbgl.

Dimensions
Ground Level (mOD)

92.00

Client

Dream Homes Construction Ltd

Job
Number
LKC 20 1260

Location (Handheld GPS)

382312 E 403776 N

Dates

16/03/2020

Engineer

LKC

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.50	D1 PID < 0.1ppm				(1.00)	MADE GROUND: Dark brown very silty SAND with frequent brick fragments, occasional rootlets (top 0.10m), whole and half-brick, pottery, concrete, ash, coal, rare metal and glass. Less brick with depth. Sand is fine to medium.			
1.00-1.50	D2 PID < 0.1ppm		2,3/3,4,4,4	91.00	1.00	Medium dense orangish brown very gravelly SAND. Sand is fine to medium. Gravel is fine to medium, sub-angular to sub-rounded comprising sandstone and mudstone.			
1.20-1.65	SPT N=15				(1.00)				
1.50-2.00	B3								
2.00-2.45	SPT N=8		2,2/2,2,2,2	90.00	2.00	Loose to medium dense orangish brown very silty SAND and GRAVEL with occasional coal. Sand is fine to coarse. Gravel is fine to medium, sub-angular to sub-rounded comprising sandstone and mudstone.			
2.50-3.00	B4								
3.00-3.45	SPT N=15		3,3/3,3,4,5		(2.50)	Orange in colour from 3.20mbgl.			
4.00-4.45	SPT N=5		Water strike(1) at 4.00m. 4,3/2,1,1,1			Brown in colour from 4.00mbgl.			
				87.50	4.50	Loose to medium dense light brown very silty SAND with frequent coal and occasional sandy silt lenses. Sand is fine to medium.			
5.00-5.45	SPT N=10		2,2/2,2,3,3		(0.95)				
				86.55	5.45	Complete at 5.45m			

Remarks

Location accurate to 3.00-5.00m.
Water strike at 4.00mbgl.
Elevation estimated from <https://www.freemaptools.com/elevation-finder.htm>
Scale
(approx)

1:40

Logged
By

EM

Figure No.

LKC 20 1260.WS210

Appendix C

Certificates of Analysis – Soil



Final Report

Report No.: 20-07456-1

Initial Date of Issue: 18-Mar-2020

Client LK Consult

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

Contact(s): Colin Crompton
Contaminated Land

Project LKC 20 1260 Earl Street, Prestwich

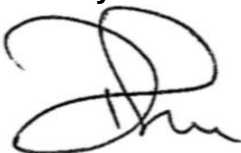
Quotation No.: **Date Received:** 09-Mar-2020

Order No.: 737655 **Date Instructed:** 12-Mar-2020

No. of Samples: 8

Turnaround (Wkdays): 5 **Results Due:** 18-Mar-2020

Date Approved: 18-Mar-2020

Approved By:


Details: Darrell Hall, Director

Results - Soil

Client: LK Consult	Chemtest Job No.:				20-07456	20-07456	20-07456	20-07456	20-07456	20-07456	20-07456	20-07456	20-07456
Quotation No.:	Chemtest Sample ID.:				982446	982448	982450	982451	982452	982453	982455	982456	982456
	Client Sample ID.:				HD101	HD102	HD103	HD103	HD104	HD104	HD106	HD107	HD107
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.0	0.0
	Bottom Depth (m):				0.25	0.20	0.30	1.00	0.50	0.70	0.30	0.30	0.30
	Date Sampled:				06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	Insulation	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	Stereo Microscopy	-	-	-	-	-	-	-
Asbestos by Gravimetry	U	2192	%	0.001		2.3							
Total Asbestos	N	2192	%	0.001		2.3							
Moisture	N	2030	%	0.020	21	29	14	17	5.0	17	28	27	27
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	Stones, Brick,	Stones, Brick,	Stones, Brick,	Stones, Brick,	Stones, Brick,	Stones, Brick,	Stones, Brick,	Stones, Brick,	Stones, Brick,
Soil Texture	N	2040		N/A	Sand,	Sand,	Sand,	Sand,	Sand,	Sand,	Sand,	Sand,	Sand,
Chromatogram (TPH)	N			N/A	See Attached				See Attached				
pH	M	2010		4.0	7.9	8.2	7.6	7.1	7.8	5.1	7.5	7.8	7.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	68				0.53				
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.32	0.039	0.077	< 0.010	0.12	0.10	0.016	0.054	0.054
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50				< 0.50				
Cyanide (Total)	M	2300	mg/kg	0.50	4.1				0.60				
Arsenic	M	2450	mg/kg	1.0	60	40	23	12	13	45	24	17	17
Cadmium	M	2450	mg/kg	0.10	24	4.9	0.86	0.13	0.18	0.25	1.8	0.91	0.91
Chromium	M	2450	mg/kg	1.0	100	51	17	9.0	22	19	20	28	28
Copper	U	2450	mg/kg	0.50	630	120	140	29	22	97	110	56	56
Mercury	M	2450	mg/kg	0.10	0.78	0.46	1.5	1.5	0.13	1.2	0.75	0.47	0.47
Nickel	M	2450	mg/kg	0.50	140	73	64	14	32	28	34	27	27
Lead	M	2450	mg/kg	0.50	2300	600	800	84	94	500	590	1200	1200
Selenium	M	2450	mg/kg	0.20	0.79	0.45	1.1	0.81	0.54	1.4	1.0	0.85	0.85
Vanadium	U	2450	mg/kg	5.0	23	22	23	12	15	28	21	32	32
Zinc	U	2450	mg/kg	0.50	1500	670	250	43	76	140	430	330	330
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	19	9.8	6.7	4.5	1.3	10	11	9.3	9.3
Fuel Type	N	2670		N/A	Lube				Lube				
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0				< 1.0				
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0				< 1.0				
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	11				< 1.0				
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	16				< 1.0				
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	27				< 1.0				
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	85				< 1.0				
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	3600				5.2				
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	130				< 1.0				

Results - Soil

Client: LK Consult	Chemtest Job No.:					20-07456	20-07456	20-07456	20-07456	20-07456	20-07456	20-07456	20-07456
Quotation No.:	Chemtest Sample ID.:					982446	982448	982450	982451	982452	982453	982455	982456
	Client Sample ID.:					HD101	HD102	HD103	HD103	HD104	HD104	HD106	HD107
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.0
	Bottom Depth (m):					0.25	0.20	0.30	1.00	0.50	0.70	0.30	0.30
	Date Sampled:					06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020	06-Mar-2020
	Asbestos Lab:					COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD									
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	3800					5.2			
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0					< 1.0			
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0					< 1.0			
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	21					< 1.0			
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	3.2					< 1.0			
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	230					< 1.0			
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	1600					11			
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	19000					570			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	2500					< 1.0			
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	24000					580			
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	27000					580			
Benzene	M	2760	µg/kg	1.0	< 1.0					< 1.0			
Toluene	M	2760	µg/kg	1.0	< 1.0					< 1.0			
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0					< 1.0			
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0					< 1.0			
o-Xylene	M	2760	µg/kg	1.0	< 1.0					< 1.0			
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0					< 1.0			
Naphthalene	M	2800	mg/kg	0.10	0.65	0.62	0.72	< 0.10	< 0.10	0.44	3.2	1.3	
Acenaphthylene	N	2800	mg/kg	0.10	0.74	0.83	0.18	< 0.10	< 0.10	0.14	0.81	1.6	
Acenaphthene	M	2800	mg/kg	0.10	0.14	4.3	1.6	< 0.10	< 0.10	0.10	2.2	3.7	
Fluorene	M	2800	mg/kg	0.10	0.18	7.3	1.1	< 0.10	< 0.10	< 0.10	1.9	4.9	
Phenanthrene	M	2800	mg/kg	0.10	4.7	140	11	0.64	0.50	1.2	22	65	
Anthracene	M	2800	mg/kg	0.10	1.0	26	2.7	0.19	0.14	0.28	5.7	22	
Fluoranthene	M	2800	mg/kg	0.10	11	180	13	1.1	0.92	1.8	38	100	
Pyrene	M	2800	mg/kg	0.10	16	150	13	0.95	0.81	1.7	33	84	
Benzo[a]anthracene	M	2800	mg/kg	0.10	6.2	65	6.5	0.52	0.42	0.87	19	48	
Chrysene	M	2800	mg/kg	0.10	8.3	58	6.4	0.44	0.36	0.88	18	42	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	14	72	7.3	0.41	< 0.10	1.1	22	51	
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	4.8	29	2.5	0.22	< 0.10	0.31	8.1	20	
Benzo[a]pyrene	M	2800	mg/kg	0.10	12	64	6.5	0.48	< 0.10	0.83	20	44	
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	15	41	4.1	0.32	< 0.10	0.60	14	31	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	1.6	6.9	0.86	< 0.10	< 0.10	< 0.10	2.4	5.6	
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	16	34	3.8	0.30	< 0.10	0.54	11	25	
Total Of 16 PAH's	N	2800	mg/kg	2.0	110	880	81	5.5	3.2	11	220	550	
Total Phenols	M	2920	mg/kg	0.30	0.43				< 0.30				

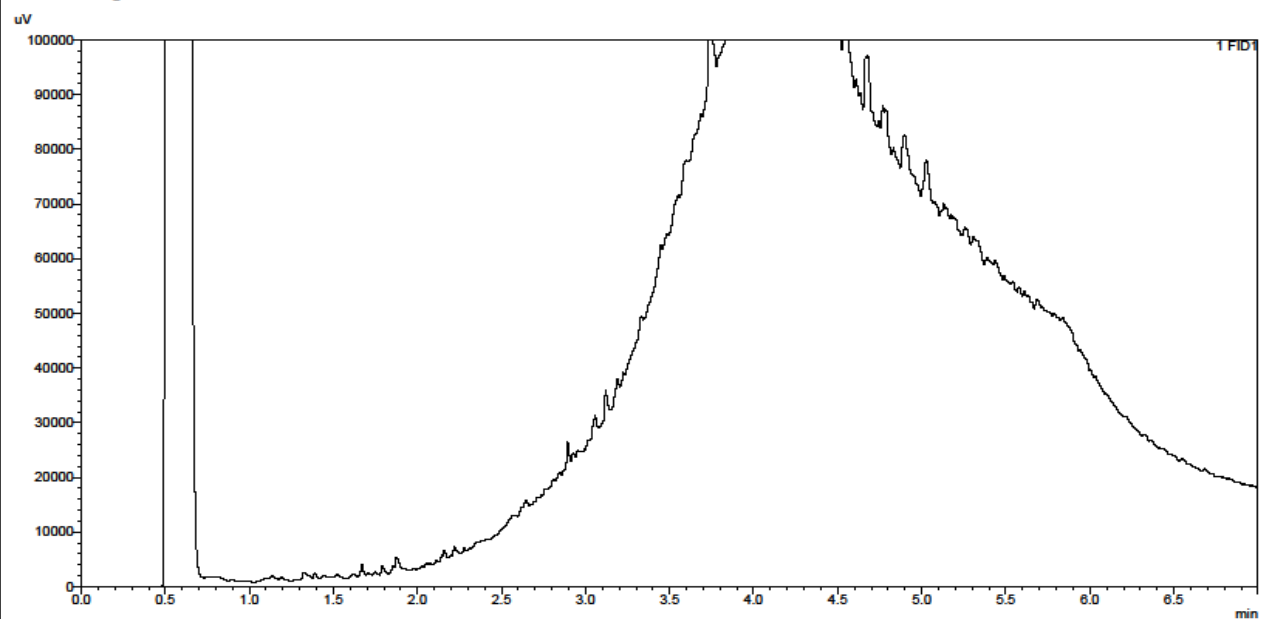
TPH Chromatogram on Soil Sample: 982446

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Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 55
Date Acquired : 14/03/2020 04:08:14
Date Processed : 14/03/2020



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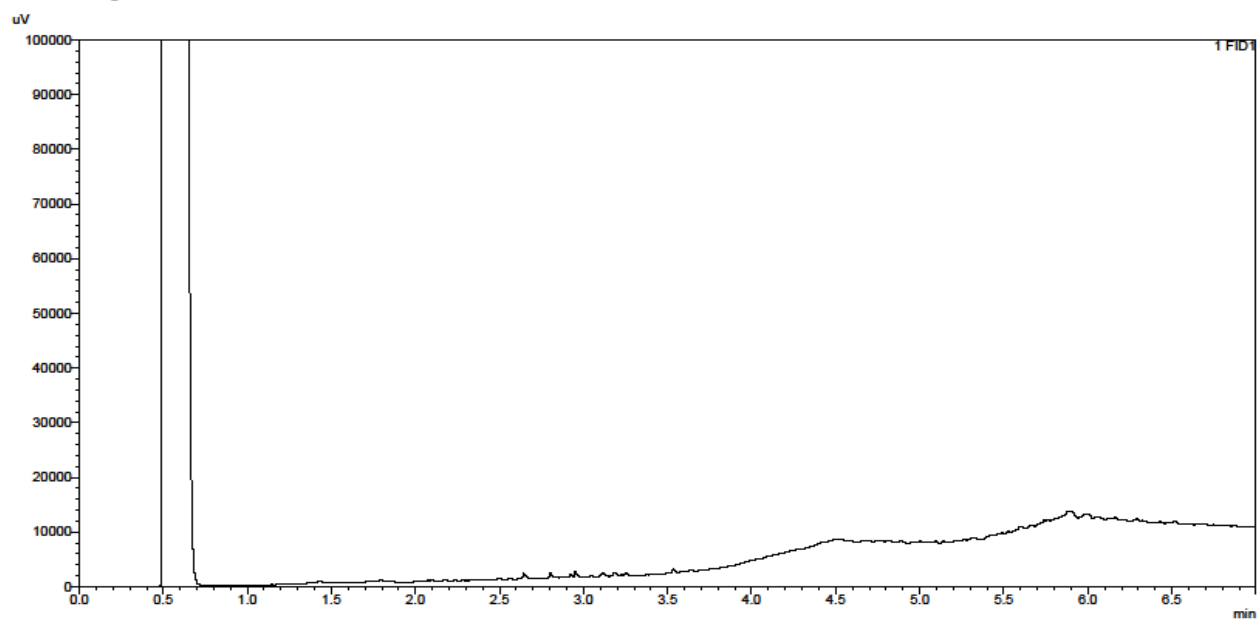
TPH Chromatogram on Soil Sample: 982452

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Sample Name : 982452 20-07456
Data Filename : 13 March 2020_13032020_982452 20-07456_111.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 56
Date Acquired : 14/03/2020 04:20:58
Date Processed : 14/03/2020



<Chromatogram>



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

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 20-08610-1

Initial Date of Issue: 26-Mar-2020

Client LK Consult

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

Contact(s): Colin Crompton
Contaminated Land

Project LKC 20 1260 Earl Street, Prestwich

Quotation No.:

Order No.: 737374

No. of Samples: 6

Turnaround (Wkdays): 5

Date Approved: 26-Mar-2020

Date Received: 18-Mar-2020

Date Instructed: 20-Mar-2020

Results Due: 26-Mar-2020

Approved By:

Details: Darrell Hall, Director

Bulk Identification Certificate

Client: LK Consult

Site Address:

Date Sampled: 16-Mar-2020

Date Received: 18-Mar-2020

Your Ref.:

Project: LKC 20 1260 Earl Street,
Prestwich

Job Number: 20-08610

No Samples:

Date Reported: 26-Mar-2020

Sample No.	Sample ID	Sample Ref.	Description	Top (m)	Bottom (m)	SOP	Accred.	Laboratory	Material	Result
987938	WS203B					2185	U	COVENTRY	Cement	Chrysotile

The in-house procedure SOP2185 is in accordance with the requirements of Appendix 2 of the Analyst Guide (HSG 248).

The results relate only to items tested as supplied by the client.

Comments and interpretations are beyond the scope of UKAS accreditation.

Samples associated with asbestos in building surveys are retained for six months (HSG 264 refers)

Results - Soil

Client: LK Consult	Chemtest Job No.:				20-08610	20-08610	20-08610	20-08610	20-08610
Quotation No.:	Chemtest Sample ID.:				987939	987940	987941	987942	987944
	Client Sample ID.:				WS201	WS203A	WS204	WS205	WS209
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.15	0.00	0.00	0.00	0.10
	Bottom Depth (m):				0.40	0.40	0.50	0.50	0.45
	Date Sampled:				16-Mar-2020	16-Mar-2020	16-Mar-2020	16-Mar-2020	16-Mar-2020
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A	-	Free Fibres	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	Stereo Microscopy	-	-	-
Asbestos by Gravimetry	U	2192	%	0.001		<0.001			
Total Asbestos	N	2192	%	0.001		<0.001			
Moisture	N	2030	%	0.020	19	15	19	20	20
Soil Colour	N	2040		N/A	Brown,	Brown,	Brown,	Brown,	Brown,
Other Material	N	2040		N/A	NONE,	NONE,	NONE,	NONE,	NONE,
Soil Texture	N	2040		N/A	Sand,	Sand,	Sand,	Sand,	Sand,
Chromatogram (TPH)	N			N/A	See Attached	See Attached			
pH	M	2010		4.0	7.1	8.6	7.7	7.6	7.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.63	0.46			
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.010	0.040	< 0.010	< 0.010	< 0.010
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50			
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50			
Arsenic	M	2450	mg/kg	1.0	15	37	19	36	34
Cadmium	M	2450	mg/kg	0.10	1.8	2.5	4.4	0.96	0.24
Chromium	M	2450	mg/kg	1.0	12	20	18	22	11
Copper	U	2450	mg/kg	0.50	28	69	67	120	62
Mercury	M	2450	mg/kg	0.10	0.11	0.18	1.9	2.0	0.49
Nickel	M	2450	mg/kg	0.50	13	32	20	30	22
Lead	M	2450	mg/kg	0.50	92	1500	340	280	180
Selenium	M	2450	mg/kg	0.20	0.60	0.31	1.5	0.91	0.79
Vanadium	U	2450	mg/kg	5.0	21	42	24	40	39
Zinc	U	2450	mg/kg	0.50	74	2400	320	250	67
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	6.0	16	9.8	11	6.4
Fuel Type	N	2670		N/A	Lube	PAH			
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0			
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0			
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0			
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0			
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0			
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0			
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	410	< 1.0			
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0			

Results - Soil

Client: LK Consult	Chemtest Job No.:				20-08610	20-08610	20-08610	20-08610	20-08610
Quotation No.:	Chemtest Sample ID.:				987939	987940	987941	987942	987944
	Client Sample ID.:				WS201	WS203A	WS204	WS205	WS209
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.15	0.00	0.00	0.00	0.10
	Bottom Depth (m):				0.40	0.40	0.50	0.50	0.45
	Date Sampled:				16-Mar-2020	16-Mar-2020	16-Mar-2020	16-Mar-2020	16-Mar-2020
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD					
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	410	< 5.0			
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0			
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0			
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0			
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0			
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0			
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	6.2			
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	140	37			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	13	< 1.0			
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	150	44			
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	560	44			
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0			
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0			
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0			
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0			
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0			
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0			
Naphthalene	M	2800	mg/kg	0.10	< 0.10	5.0	4.6	6.3	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	1.3	0.15	0.86	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	1.5	0.29	0.49	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	2.1	0.26	0.60	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	0.17	22	2.8	13	0.21
Anthracene	M	2800	mg/kg	0.10	< 0.10	7.8	0.80	4.1	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.27	39	6.4	27	0.38
Pyrene	M	2800	mg/kg	0.10	0.29	36	5.6	22	0.39
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.16	21	2.8	11	< 0.10
Chrysene	M	2800	mg/kg	0.10	0.14	21	2.6	11	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	0.22	35	4.2	13	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	14	1.5	5.5	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	0.23	33	3.5	11	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.23	21	2.6	7.1	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	3.8	0.31	1.4	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.35	21	2.5	6.6	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	2.3	280	41	140	< 2.0
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30			

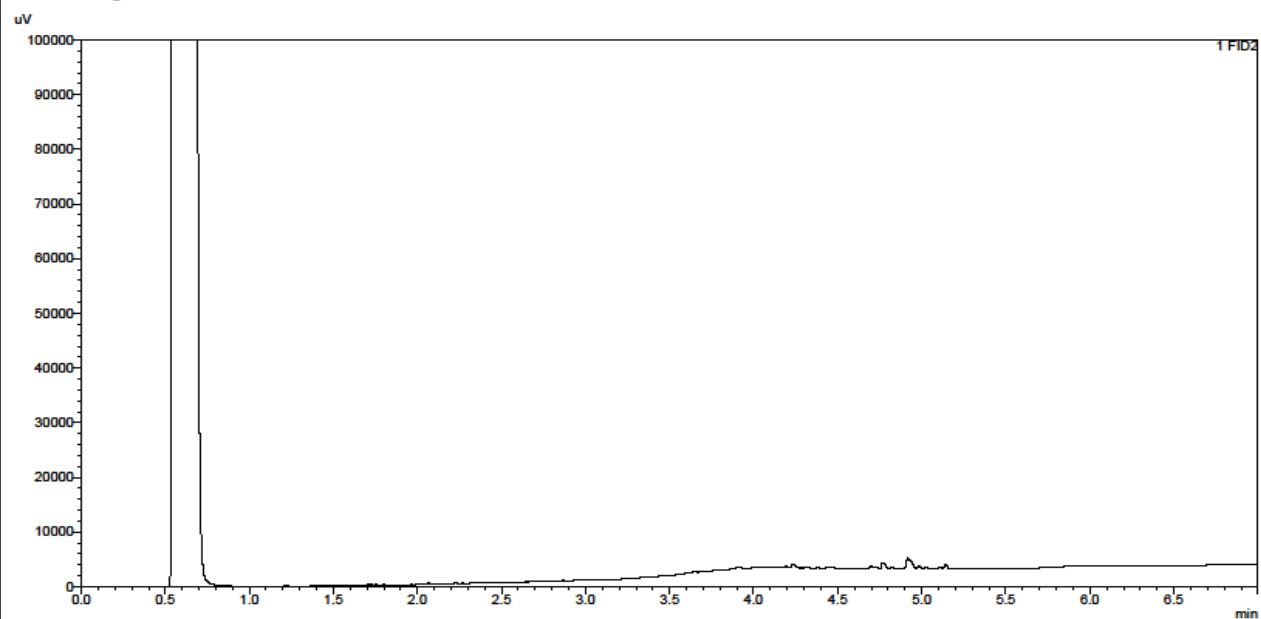
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Date Acquired : 23/03/2020 17:53:18
Date Processed : 23/03/2020



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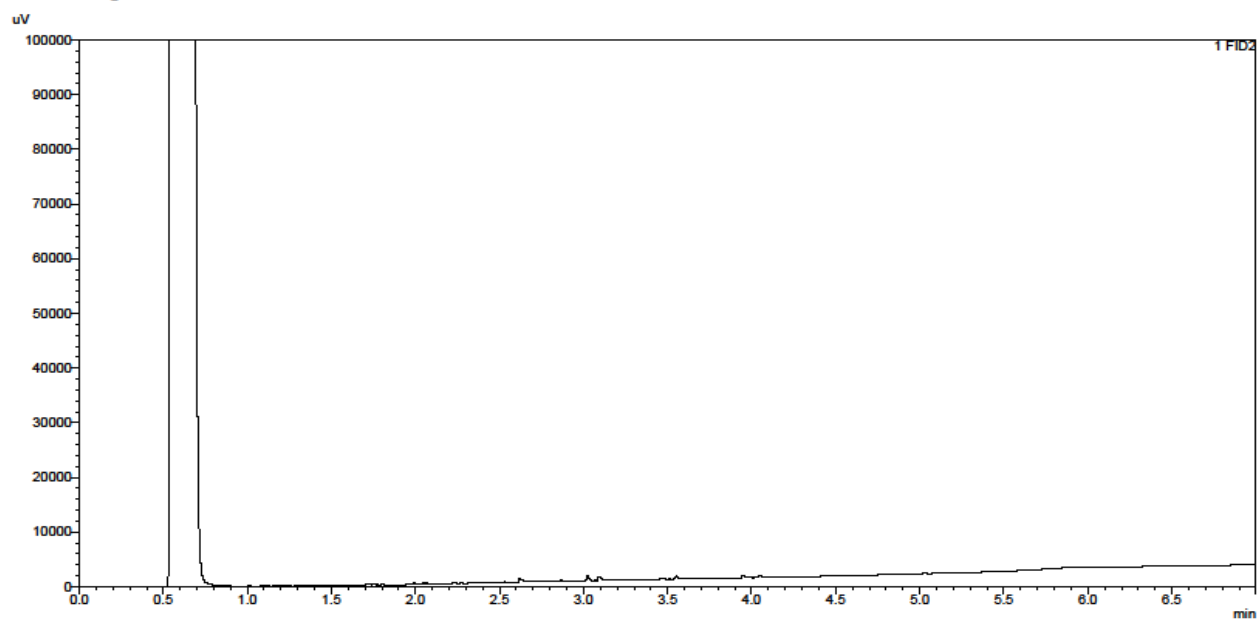
TPH Chromatogram on Soil Sample: 987940

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Sample Name : 987940 20-08610
Data Filename : 23 March 2020_23032020_987940 20-08610_044.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 97
Date Acquired : 23/03/2020 18:06:01
Date Processed : 23/03/2020



<Chromatogram>



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
2185	Asbestos	Asbestos	Polarised light microscopy
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44 Aromatics: >C5–C7, >C7–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
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- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.: 20-08929-1

Initial Date of Issue: 26-Mar-2020

Client LK Consult

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

Contact(s): Colin Crompton
Contaminated Land

Project LKC 20 1260, Earl Street, Prestwich

Quotation No.:

Order No.: 737674

No. of Samples: 1

Turnaround (Wkdays): 5

Date Approved: 26-Mar-2020

Date Received: 20-Mar-2020

Date Instructed: 20-Mar-2020

Results Due: 26-Mar-2020

Approved By:

Details: Darrell Hall, Director

Results - Soil

Client: LK Consult	Chemtest Job No.:				20-08929
Quotation No.:	Chemtest Sample ID.:				989330
	Client Sample ID.:				WS206
	Sample Type:				SOIL
	Top Depth (m):				0
	Bottom Depth (m):				1
	Date Sampled:				16-Mar-2020
	Asbestos Lab:				COVENTRY
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	Fibres/Clumps
Asbestos Identification	U	2192	%	0.001	Chrysotile
ACM Detection Stage	U	2192		N/A	Stereo Microscopy
Asbestos by Gravimetry	U	2192	%	0.001	0.002
Total Asbestos	N	2192	%	0.001	0.002
Moisture	N	2030	%	0.020	14
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones
Soil Texture	N	2040		N/A	Sand
Chromatogram (TPH)	N			N/A	See Attached
pH	M	2010		4.0	9.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.66
Sulphate (2:1 Water Soluble) as SO ₄	M	2120	g/l	0.010	0.44
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	3.2
Arsenic	M	2450	mg/kg	1.0	25
Cadmium	M	2450	mg/kg	0.10	1.5
Chromium	M	2450	mg/kg	1.0	25
Copper	U	2450	mg/kg	0.50	71
Mercury	M	2450	mg/kg	0.10	0.86
Nickel	M	2450	mg/kg	0.50	32
Lead	M	2450	mg/kg	0.50	490
Selenium	M	2450	mg/kg	0.20	0.58
Vanadium	U	2450	mg/kg	5.0	35
Zinc	U	2450	mg/kg	0.50	230
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	M	2625	%	0.40	12
Fuel Type	N	2670		N/A	PAH/H. Oil
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	18
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	140
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	88
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	240

Results - Soil

Client: LK Consult	Chemtest Job No.:		20-08929		
Quotation No.:	Chemtest Sample ID.:		989330		
	Client Sample ID.:		WS206		
	Sample Type:		SOIL		
	Top Depth (m):		0		
	Bottom Depth (m):		1		
	Date Sampled:		16-Mar-2020		
	Asbestos Lab:		COVENTRY		
Determinand	Accred.	SOP	Units	LOD	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	40
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	430
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	2700
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	44
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	3200
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	3500
Benzene	M	2760	µg/kg	1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	8.7
Acenaphthylene	N	2800	mg/kg	0.10	0.26
Acenaphthene	M	2800	mg/kg	0.10	2.9
Fluorene	M	2800	mg/kg	0.10	2.3
Phenanthrene	M	2800	mg/kg	0.10	29
Anthracene	M	2800	mg/kg	0.10	7.2
Fluoranthene	M	2800	mg/kg	0.10	38
Pyrene	M	2800	mg/kg	0.10	33
Benzo[a]anthracene	M	2800	mg/kg	0.10	15
Chrysene	M	2800	mg/kg	0.10	16
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	18
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	7.0
Benzo[a]pyrene	M	2800	mg/kg	0.10	15
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	9.7
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	2.0
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	9.4
Total Of 16 PAH's	N	2800	mg/kg	2.0	210
Total Phenols	M	2920	mg/kg	0.30	< 0.30

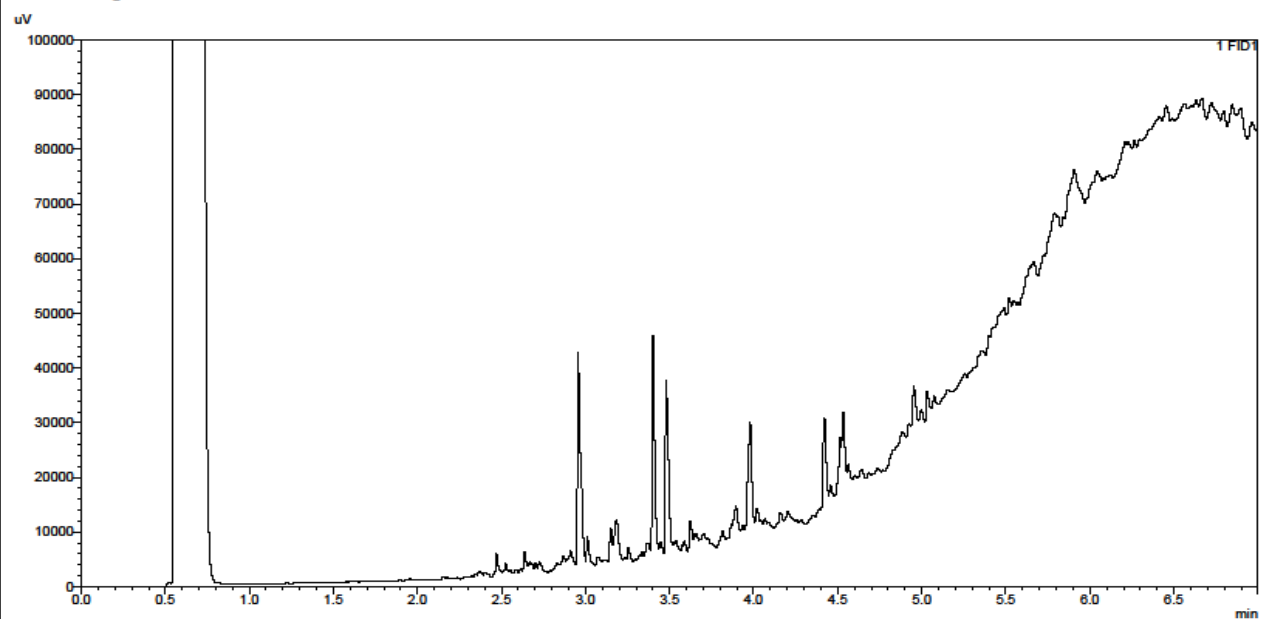
TPH Chromatogram on Soil Sample: 989330

<Sample Information>

Sample Name : 989330 20-08929
Data Filename : 24 March 2020_24032020_989330 20-08929_047.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 24
Date Acquired : 24/03/2020 18:51:49
Date Processed : 24/03/2020



<Chromatogram>



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

Report Information

Key

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

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

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

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Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Appendix D

Certificates of Analysis - Geotechnical

TEST REPORT

Client LK Consult Ltd

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

Contract LKC 20 1290 –
Earl Street, Prestwich

Job Number MRN 3816/41
Date of Issue 03 April 2020
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. This does not, however, guarantee the balance of the materials from which the tested samples have been taken to be of equal quality.

MURRAY RIX

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



TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

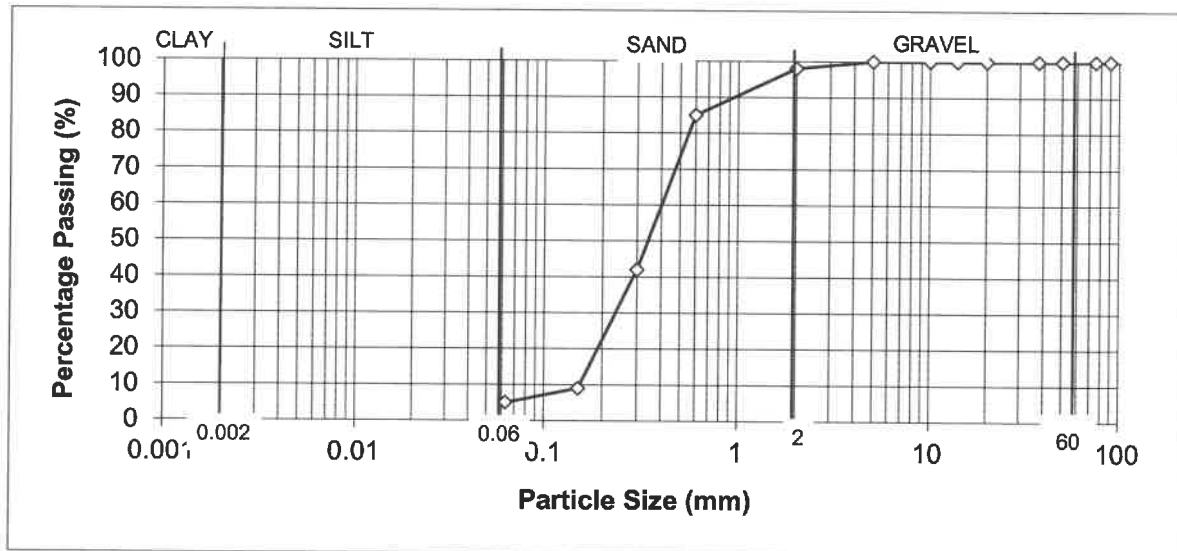
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 20 1290 - Earl Street, Prestwich
JOB NUMBER	MRN 3816/41

SAMPLE LABEL	WS201/B2/0.4-0.9m	DATE SAMPLED	16-Mar-20
LAB SAMPLE No	88725	DATE RECEIVED	23-Mar-20
DATE TESTED	26-Mar-20	SAMPLED BY	Client

MATERIAL	Brown silty fine to coarse SAND with rare gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	100	
90	100		5	100	
75	100		2	98	
50	100		0.6	85	
37.5	100		0.3	42	
20	100		0.15	9	
14	100		0.063	5	



REMARKS

As received moisture content = 19%

SIGNED

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

DATE

03-Apr-20

MURRAY RIX

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



TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

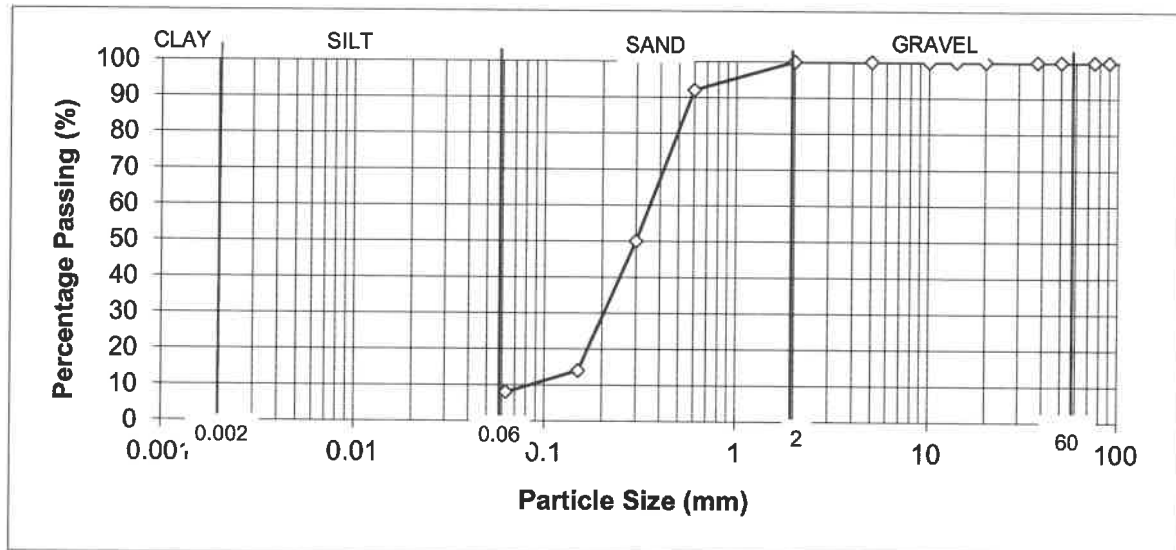
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 20 1290 - Earl Street, Prestwich
JOB NUMBER	MRN 3816/41

SAMPLE LABEL	WS202/B4/1.4-2.0m	DATE SAMPLED	16-Mar-20
LAB SAMPLE No	88726	DATE RECEIVED	23-Mar-20
DATE TESTED	26-Mar-20	SAMPLED BY	Client

MATERIAL	Brown silty fine to coarse SAND
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	100	
90	100		5	100	
75	100		2	100	
50	100		0.6	92	
37.5	100		0.3	50	
20	100		0.15	14	
14	100		0.063	8	



REMARKS

As received moisture content = 25%

SIGNED

NAME

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

DATE

03-Apr-20

MURRAY RIX

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



TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

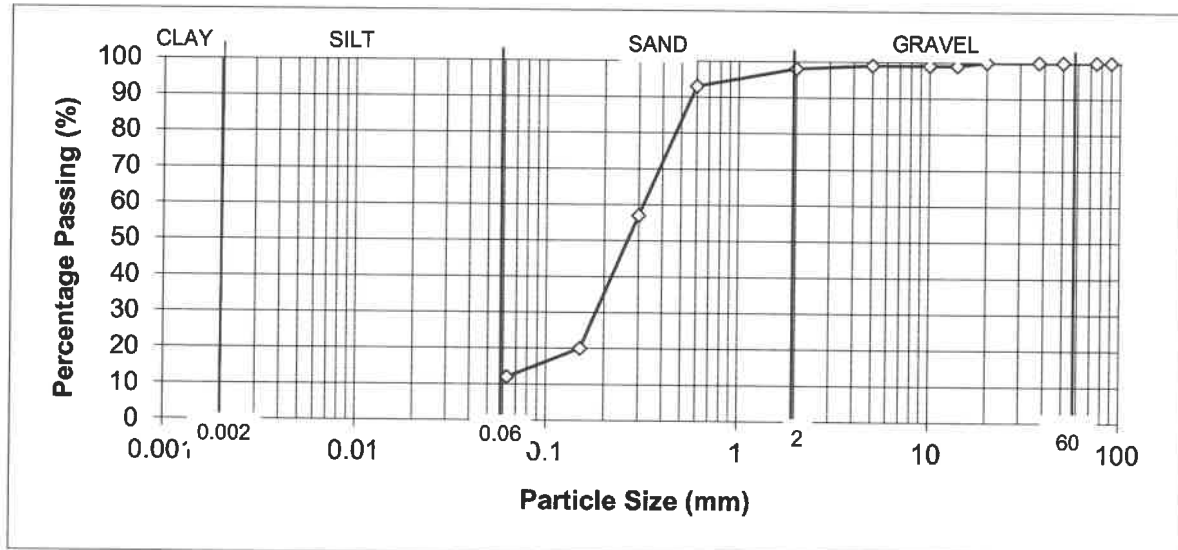
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 20 1290 - Earl Street, Prestwich
JOB NUMBER	MRN 3816/41

SAMPLE LABEL	WS204/B3/1-1.5m	DATE SAMPLED	16-Mar-20
LAB SAMPLE No	88727	DATE RECEIVED	23-Mar-20
DATE TESTED	26-Mar-20	SAMPLED BY	Client

MATERIAL	Brown silty fine to coarse SAND with rare gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	99	
90	100		5	99	
75	100		2	98	
50	100		0.6	93	
37.5	100		0.3	57	
20	100		0.15	20	
14	99		0.063	12	



REMARKS

As received moisture content = 19%

SIGNED

NAME

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

DATE

03-Apr-20

MURRAY RIX

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



TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

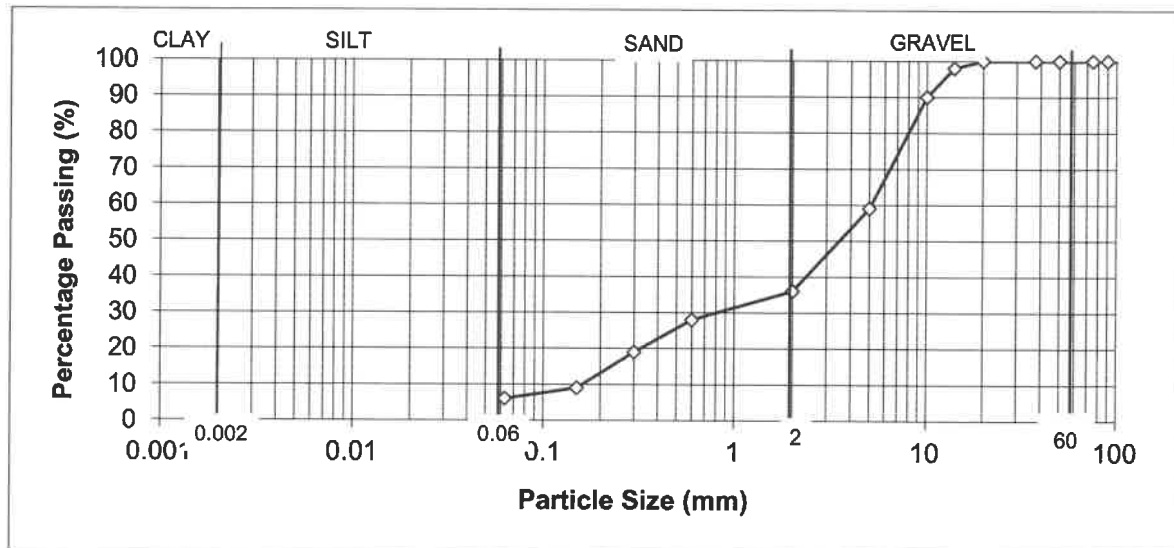
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 20 1290 - Earl Street, Prestwich
JOB NUMBER	MRN 3816/41

SAMPLE LABEL	WS206/B3/1.5-2m	DATE SAMPLED	16-Mar-20
LAB SAMPLE No	88728	DATE RECEIVED	23-Mar-20
DATE TESTED	26-Mar-20	SAMPLED BY	Client

MATERIAL	Brown silty sandy fine to medium GRAVEL
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	90	
90	100		5	59	
75	100		2	36	
50	100		0.6	28	
37.5	100		0.3	19	
20	100		0.15	9	
14	98		0.063	6	



REMARKS

As received moisture content = 9.4%

SIGNED

NAME

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

DATE

03-Apr-20

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION
BS 1377: PART 2: Clause 9.2: 1990

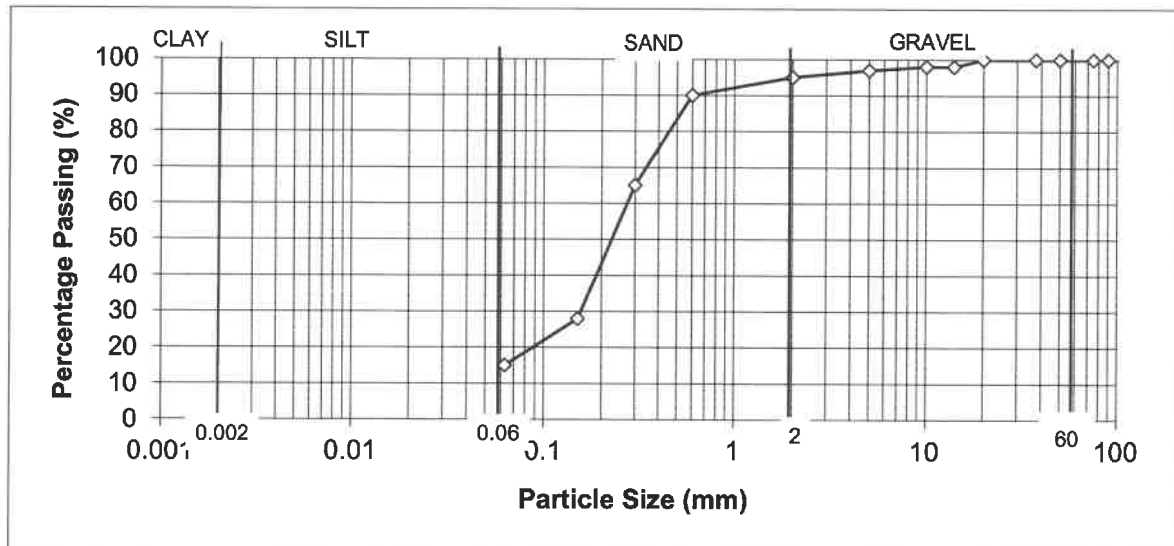
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 20 1290 - Earl Street, Prestwich
JOB NUMBER	MRN 3816/41

SAMPLE LABEL	WS208/B3/0.6-1.1m	DATE SAMPLED	16-Mar-20
LAB SAMPLE No	88729	DATE RECEIVED	23-Mar-20
DATE TESTED	26-Mar-20	SAMPLED BY	Client

MATERIAL	Brown silty fine to coarse SAND with rare gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	98	
90	100		5	97	
75	100		2	95	
50	100		0.6	90	
37.5	100		0.3	65	
20	100		0.15	28	
14	98		0.063	15	



REMARKS

As received moisture content = 13%

SIGNED 

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

DATE 03-Apr-20

MURRAY RIX

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



TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

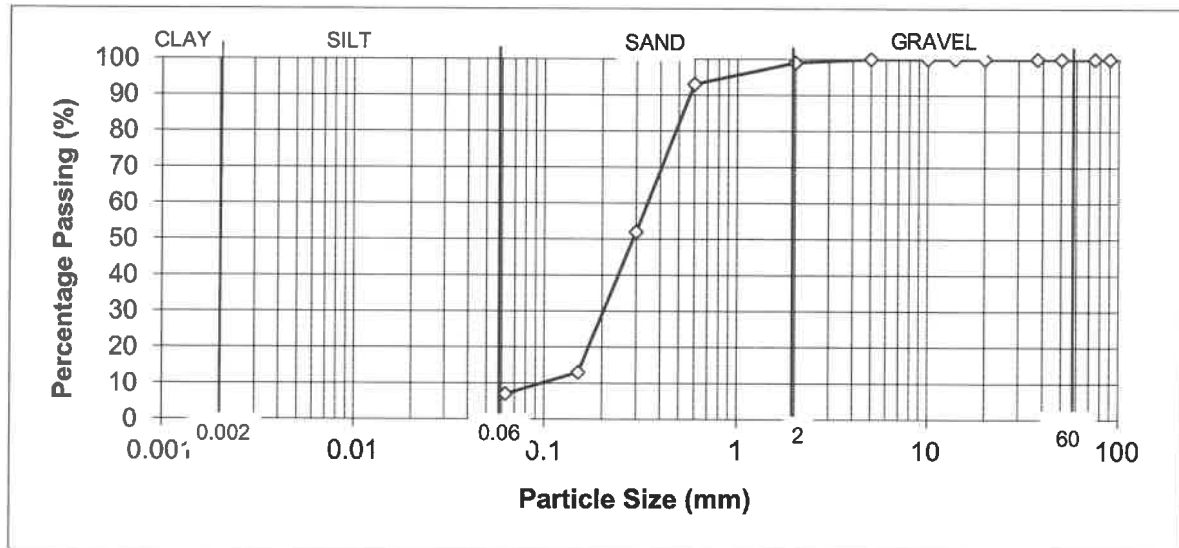
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 20 1290 - Earl Street, Prestwich
JOB NUMBER	MRN 3816/41

SAMPLE LABEL	WS209/B3/1.1-1.4m	DATE SAMPLED	16-Mar-20
LAB SAMPLE No	88730	DATE RECEIVED	23-Mar-20
DATE TESTED	26-Mar-20	SAMPLED BY	Client

MATERIAL	Brown silty fine to coarse SAND with rare gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	100	
90	100		5	100	
75	100		2	99	
50	100		0.6	93	
37.5	100		0.3	52	
20	100		0.15	13	
14	100		0.063	7	



REMARKS

As received moisture content = 7.8%

SIGNED

NAME

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

DATE

03-Apr-20

MURRAY RIX

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



TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.2: 1990

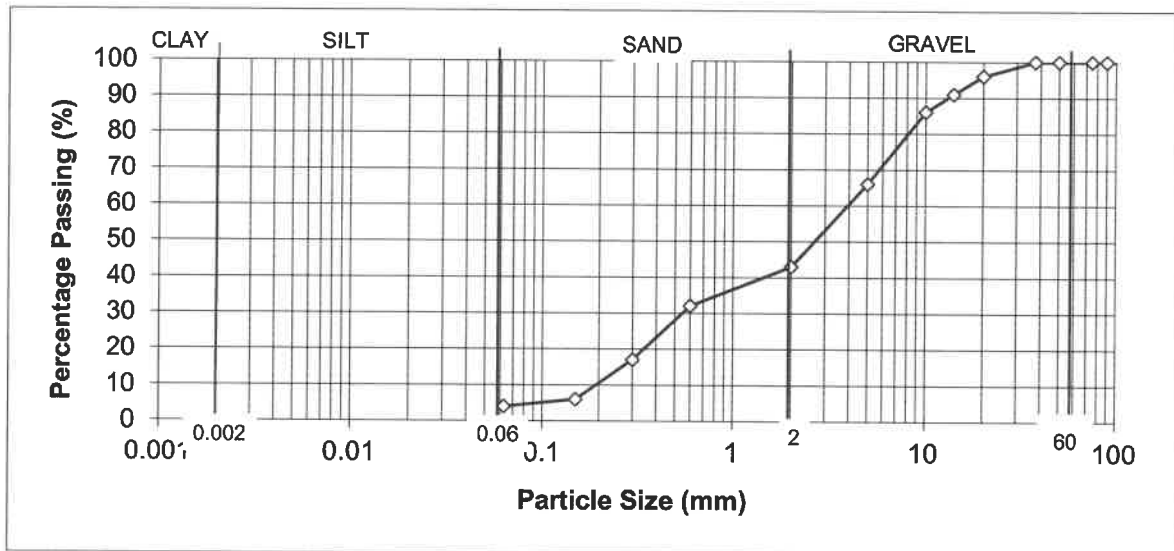
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	LK Consult Ltd
SITE	LKC 20 1290 - Earl Street, Prestwich
JOB NUMBER	MRN 3816/41

SAMPLE LABEL	WS210/B3/1.5-2m	DATE SAMPLED	16-Mar-20
LAB SAMPLE No	88731	DATE RECEIVED	23-Mar-20
DATE TESTED	26-Mar-20	SAMPLED BY	Client

MATERIAL	Brown slightly silty SAND and GRAVEL
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		10	86	
90	100		5	66	
75	100		2	43	
50	100		0.6	32	
37.5	100		0.3	17	
20	96		0.15	6	
14	91		0.063	4	



REMARKS

As received moisture content = 7.5%

SIGNED

NAME

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

DATE

03-Apr-20

Appendix E

Certificate of Analysis – Groundwater



2183

Final Report

Report No.: 20-09902-1

Initial Date of Issue: 09-Apr-2020

Client LK Consult

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

Contact(s): Colin Crompton
Contaminated Land

Project LKC 20 2960 Earl Street, Prestwich

Quotation No.: **Date Received:** 01-Apr-2020

Order No.: 737708 **Date Instructed:** 02-Apr-2020

No. of Samples: 3

Turnaround (Wkdays): 5 **Results Due:** 08-Apr-2020

Date Approved: 09-Apr-2020

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Water

Client: LK Consult	Chemtest Job No.:				20-09902	20-09902	20-09902
Quotation No.:	Chemtest Sample ID.:				994629	994630	994631
	Client Sample ID.:				WS201	WS203A	WS208
	Sample Type:				WATER	WATER	WATER
	Date Sampled:				30-Mar-2020	30-Mar-2020	30-Mar-2020
Determinand	Accred.	SOP	Units	LOD			
pH	U	1010		N/A	7.6	8.1	8.5
Sulphate	U	1220	mg/l	1.0	51	16	25
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050
Calcium	U	1415	mg/l	5.0	100	76	89
Total Hardness as CaCO3	U	1270	mg/l	15	280	210	240
Arsenic (Dissolved)	U	1450	µg/l	1.0	2.3	2.0	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	110	63	48
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.34	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	1.5	1.1
Copper (Dissolved)	U	1450	µg/l	1.0	9.1	3.4	8.8
Manganese (Dissolved)	U	1450	µg/l	1.0	510	640	2300
Nickel (Dissolved)	U	1450	µg/l	1.0	23	2.4	5.3
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.2	1.4
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	130	20	28
Mercury Low Level	U	1460	µg/l	0.010	< 0.010	< 0.010	< 0.010
Chromium (Hexavalent)	U	1490	µg/l	20	< 20	< 20	< 20
Dissolved Organic Carbon	U	1610	mg/l	2.0	7.7	21	9.4
Fuel Type	N	1670		N/A	N/A	N/A	N/A
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0

Results - Water

Client: LK Consult	Chemtest Job No.:				20-09902	20-09902	20-09902
Quotation No.:	Chemtest Sample ID.:				994629	994630	994631
	Client Sample ID.:				WS201	WS203A	WS208
	Sample Type:				WATER	WATER	WATER
	Date Sampled:				30-Mar-2020	30-Mar-2020	30-Mar-2020
Determinand	Accred.	SOP	Units	LOD			
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Pyrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[a]anthracene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1800	µg/l	0.010	< 0.010	< 0.010	< 0.010
Total Of 16 PAH's	N	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l ⁻¹ CaCO ₃ equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1460	Mercury low-level in Waters by AFS	Mercury	Atomic Fluorescence Spectrometry, with collimated UV source, wavelength 253.7 nm.
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44 Aromatics: >C5–C7, >C7–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44	Pentane extraction / GCxGC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Appendix F

Generic Assessment Criteria Values

Summary of Category 4 Screening Levels: 2015

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

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

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

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

NOTES

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

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

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

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

NOTES

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

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

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

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

Contaminant	SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Aliphatic							
EC 5-6	1%	42	42	730	3,200 (304) ^{sol}	570,000(304) ^{sol}	95,000 (304) ^{sol}
EC>6-8	1%	100	100	2,300	7,800 (144) ^{sol}	600,000	150,000 (144) ^{sol}
EC>8-10	1%	27	27	320	2,000 (78) ^{sol}	13,000	14,000 (78) ^{vap}
EC>10-12	1%	130 (48) ^{vap}	130 (48) ^{vap}	2,200	9,700 (48) ^{sol}	13,000	21,000 (48) ^{vap}
EC>12-16	1%	1,100 (24) ^{sol}	1,100 (24) ^{sol}	11,000	59,000 (24) ^{sol}	13,000	25,000 (24) ^{sol}
EC>16-35	1%	65,000 (8.48) ^{f, sol}	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f
EC>35-44	1%	65,000 (8.48) ^{f, sol}	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f
Aliphatic							
EC 5-6	2.5%	78	78	1,700	5,900 (558) ^{sol}	590,000	130,000 (558) ^{sol}
EC>6-8	2.5%	230	230	5,600	17,000 (322) ^{sol}	610,000	220,000 (322) ^{sol}
EC>8-10	2.5%	65	65	770	4,800 (190) ^{vap}	13,000	18,000 (190) ^{vap}
EC>10-12	2.5%	330 (118) ^{vap}	330 (118) ^{vap}	4,400	23,000 (118) ^{vap}	13,000	23,000 (118) ^{vap}
EC>12-16	2.5%	2,400 (59) ^{sol}	2,400 (59) ^{sol}	13,000	82,000 (59) ^{sol}	13,000	25,000 (59) ^{sol}
EC>16-35	2.5%	92,000 (21) ^{f, sol}	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f
EC>35-44	2.5%	92,000 (21) ^{f, sol}	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f
Aliphatic							
EC 5-6	6%	160	160	3,900	12,000 (1,150) ^{sol}	600,000	180,000 (1,150) ^{sol}
EC>6-8	6%	530	530	13,000	40,000 (736) ^{sol}	620,000	320,000 (736) ^{sol}
EC>8-10	6%	150	150	1,700	11,000 (451) ^{vap}	13,000	21,000 (451) ^{vap}
EC>10-12	6%	760 (283) ^{vap}	760 (283) ^{vap}	7,300	47,000 (283) ^{vap}	13,000	24,000 (283) ^{vap}
EC>12-16	6%	4,300 (142) ^{sol}	4,400 (142) ^{sol}	13,000	90,000 (142) ^{sol}	13,000	26,000 (142) ^{sol}
EC>16-35	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f
EC>35-44	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f
Aromatic							
EC5-7(benzene as non-threshold)	1%	70	370	13	26,000 (1,220) ^{sol}	56,000	76,000 (1,220) ^{sol}
EC>7-8(toluene)	1%	130	860	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}
EC>8-10	1%	34	47	8.6	3,500 (613) ^{vap}	5,000	7,200 (613) ^{vap}
EC>10-12	1%	74	250	13	16,000 (364) ^{sol}	5,000	9,200 (364) ^{sol}
EC>12-16	1%	140	1,800	23	36,000 (169) ^{sol}	5,100	10,000
EC>16-21	1%	260 ^f	1,900 ^f	46 ^f	28,000 ^f	3,800 ^f	7,600 ^f
EC>21-35	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f
EC>35-44	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f
Aromatic							
EC5-7(benzene as non-threshold)	2.5%	140	690	27	46,000 (2,260) ^{sol}	56,000	84,000 (2,260) ^{sol}
EC>7-8(toluene)	2.5%	290	1,800	51	110,000 (1,920) ^{sol}	56,000	95,000 (1,920) ^{sol}
EC>8-10	2.5%	83	110	21	8,100 (1,500) ^{vap}	5,000	8,500 (1,500) ^{vap}
EC>10-12	2.5%	180	590	31	28,000 (899) ^{sol}	5,000	9,700 (899) ^{sol}
EC>12-16	2.5%	330	2,300 (419) ^{sol}	57	37,000	5,100	10,000
EC>16-21	2.5%	540 ^f	1,900 ^f	110 ^f	28,000 ^f	3,800 ^f	7,700 ^f
EC>21-35	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f
EC>35-44	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f
Aromatic							
EC5-7(benzene as non-threshold)	6%	300	1,400	57	86,000 (4,710) ^{sol}	56,000	92,000 (4,710) ^{sol}
EC>7-8(toluene)	6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}
EC>8-10	6%	190	270	51	17,000 (3,580) ^{vap}	5,000	9,300 (3,580) ^{vap}
EC>10-12	6%	380	1,200	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	1%	1,600 ^f	1,900 ^f	1,200 ^f	28,000 ^f	3,800 ^f	7,800 ^f
+Aromatic	2.5%	1,800 ^f	1,900 ^f	2,100 ^f	28,000 ^f	3,800 ^f	7,800 ^f
>EC44	6%	1,900 ^f	1,900 ^f	3,000 ^f	28,000 ^f	3,800 ^f	7,900 ^f

NOTES

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

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

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

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

NOTES

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

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

All GAC are based on sandy loam soils with a pH 7.			LQM Generic Assessment Criteria (mg/kg) Dry weight soil					
Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Chlorobenzenes	Chlorobenzene	1%	0.46	0.46	5.9	56	11,000	1,300 (675) ^{sol}
		2.5%	1.0	1.0	14	130	13,000	2,000 (1,520) ^{sol}
		6%	2.4	2.4	32	290	14,000	2,900
	Dichlorobenzenes (3 isomers)	1%	23	24	94	2,000 (571) ^{sol}	90,000	24,000 (571) ^{sol}
		2.5%	55	57	230	4,800 (1,370) ^{sol}	95,000	36,000 (1,370) ^{sol}
		6%	130	130	540	11,000 (3,240) ^{sol}	98,000	51,000 (3,270) ^{sol}
	Trichlorobenzenes (3 isomers)	1%	2.6	2.6	55	220	15,000	1,700 (318) ^{vap}
		2.5%	6.4	6.4	140	530	17,000	2,600 (786) ^{vap}
		6%	15	15	320	1,300	19,000	4,000 (1,880) ^{vap}
	Tetrachlorobenzenes (3 isomers)	1%	0.66	0.75	0.38	49 (39.4) ^{vap}	78	110 (39) ^{vap}
		2.5%	1.6	1.9	0.90	120 (98.1) ^{vap}	79	120
		6%	3.7	4.3	2.2	240 (235) ^{vap}	79	130
	Pentachlorobenzene	1%	5.8	19	1.2	640 (43.0) ^{sol}	100	190
		2.5%	12	30	3.1	770 (107) ^{sol}	100	190
		6%	22	38	7.0	830	100	190
	Hexachlorobenzene	1%	1.8 (0.20) ^{vap}	4.1 (0.20) ^{vap}	0.47	110 (0.20) ^{vap}	16	30
		2.5%	3.3 (0.50) ^{vap}	5.7 (0.50) ^{vap}	1.1	120	16	30
		6%	4.9	6.7 (1.2) ^{vap}	2.5	120	16	30
Chlorophenol	Chlorophenols (4 congeners)	1%	0.87 ^g	94	0.13 ^g	3,500	620	1,100
		2.5%	2.0	150	0.30	4,000	620	1,100
		6%	4.5	210	0.70	4,300	620	1,100
	Pentachlorophenol	1%	0.22	27 (16.4) ^{vap}	3.0E-02	400	60	110
		2.5%	0.52	29	8.0E-02	400	60	120
		6%	1.2	31	0.19	400	60	120
Others	Carbon Disulphide	1%	0.14	0.14	4.8	11	11,000	1,300
		2.5%	0.29	0.29	10	22	11,000	1,900
		6%	0.62	0.62	23	47	11,000	2,700
	Hexachlorobutadiene	1%	0.29	0.32	0.25	31	25	48
		2.5%	0.7	0.78	0.61	66	25	50
		6%	1.6	1.8	1.4	120	25	51
	Phenol	1%	280	750	66	760 ^{dir} (31,000)	760 ^{dir} (11,000)	760 ^{dir} (8,600)
		2.5%	550	1,300	140	1,500 ^{dir} (35,000)	1,500 ^{dir} (11,000)	1,500 ^{dir} (9,700)
		6%	1,100	2,300	280	3,200 ^{dir} (37,000)	3,200 ^{dir} (11,000)	3,200 ^{dir} (11,000)

NOTES

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

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

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

Appendix G

HazWasteOnline Classification Report

Waste Classification Report



5ECQC-4CJBT-M332A

Job name

LKC 20 1260

Description/Comments

Project

LKC 20 1260

Site

Earl Street, Prestwich

Related Documents

#	Name	Description
1	HWOL_20-07456-20200318 113937.hwol	.hwol file used to create the Job
2	HWOL_20-08610-20200326 150459.hwol	.hwol file used to create the Job
3	HWOL_20-08929-20200326 151553.hwol	.hwol file used to create the Job

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name: Peter Dunn	Company: LK Group	HazWasteOnline™ Training Record:	
Date: 16 Apr 2020 11:46 GMT	Unit 29, Eton Business Park	Course	Date
Telephone: 0161 763 7200	Eton Hill Rd, Radcliffe	Hazardous Waste Classification	17 Sep 2019
	Manchester	Advanced Hazardous Waste Classification	18 Sep 2019
	M26 2ZS		

Report

Created by: Peter Dunn
Created date: 16 Apr 2020 11:46 GMT

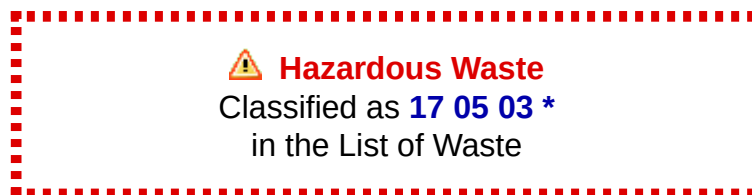
Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	WS206-989330-16/03/2020-0	0-1	Hazardous	HP 3(i), HP 7, HP 11	3
2	WS201-987939-16/03/2020-0.15	0.15-0.40	Non Hazardous		6
3	WS203A-987940-16/03/2020-0.00	0.00-0.40	Hazardous	HP 14	9
4	WS204-987941-16/03/2020-0.00	0.00-0.50	Non Hazardous		12
5	WS205-987942-16/03/2020-0.00	0.00-0.50	Non Hazardous		14
6	WS209-987944-16/03/2020-0.10	0.10-0.45	Non Hazardous		16
7	HD101-982446-06/03/2020-0.0	0.0-0.25	Hazardous	HP 3(i), HP 7, HP 11, HP 14	18
8	HD102-982448-06/03/2020-0.0	0.0-0.20	Non Hazardous		21
9	HD103-982450-06/03/2020-0.0	0.0-0.30	Non Hazardous		23
10	HD103-982451-06/03/2020-0.3	0.3-1.00	Non Hazardous		25

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
11	HD104-982452-06/03/2020-0.0	0.0-0.50	Non Hazardous		27
12	HD104-982453-06/03/2020-0.5	0.5-0.70	Non Hazardous		30
13	HD106-982455-06/03/2020-0.0	0.0-0.30	Non Hazardous		32
14	HD107-982456-06/03/2020-0.0	0.0-0.30	Non Hazardous		34

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	36
Appendix B: Rationale for selection of metal species	37
Appendix C: Version	38

Classification of sample: WS206-989330-16/03/2020-0



Sample details

Sample Name:	LoW Code:	
WS206-989330-16/03/2020-0	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 m		
Moisture content:		
14%		
(wet weight correction)		

Hazard properties

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

Force this Hazardous property to hazardous because <1% TPH unlikely to be flammable in soils

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.301%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.301%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.301%)

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				25 mg/kg	1.32	28.387 mg/kg	0.00284 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	boron { diboron trioxide; boric oxide }				0.66 mg/kg	3.22	1.828 mg/kg	0.000183 %	✓	
	005-008-00-8	215-125-8	1303-86-2							
3	cadmium { cadmium oxide }				1.5 mg/kg	1.142	1.474 mg/kg	0.000147 %	✓	
	048-002-00-0	215-146-2	1306-19-0							

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
4	chromium in chromium(III) compounds { chromium(III) oxide }	215-160-9	1308-38-9		25	mg/kg	1.462	31.423	mg/kg	0.00314 %	✓	
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	71	mg/kg	1.126	68.747	mg/kg	0.00687 %	✓	
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			490	mg/kg		421.4	mg/kg	0.0421 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	0.86	mg/kg	1.353	1.001	mg/kg	0.0001 %	✓	
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	32	mg/kg	2.976	81.907	mg/kg	0.00819 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			0.58	mg/kg	2.554	1.274	mg/kg	0.000127 %	✓	
11	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	230	mg/kg	1.245	246.204	mg/kg	0.0246 %	✓	
12	TPH (C6 to C40) petroleum group			TPH	3500	mg/kg		3010	mg/kg	0.301 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
15	toluene	601-021-00-3	203-625-9	108-88-3	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5			3.2	mg/kg	1.884	5.185	mg/kg	0.000518 %	✓	
19	pH			PH	9.5	pH		9.5	pH	9.5 pH		
20	naphthalene	601-052-00-2	202-049-5	91-20-3	8.7	mg/kg		7.482	mg/kg	0.000748 %	✓	
21	acenaphthylene		205-917-1	208-96-8	0.26	mg/kg		0.224	mg/kg	0.0000224 %	✓	
22	acenaphthene		201-469-6	83-32-9	2.9	mg/kg		2.494	mg/kg	0.000249 %	✓	
23	fluorene		201-695-5	86-73-7	2.3	mg/kg		1.978	mg/kg	0.000198 %	✓	
24	phenanthrene		201-581-5	85-01-8	29	mg/kg		24.94	mg/kg	0.00249 %	✓	
25	anthracene		204-371-1	120-12-7	7.2	mg/kg		6.192	mg/kg	0.000619 %	✓	
26	fluoranthene		205-912-4	206-44-0	38	mg/kg		32.68	mg/kg	0.00327 %	✓	
27	pyrene		204-927-3	129-00-0	33	mg/kg		28.38	mg/kg	0.00284 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
28	benzo[a]anthracene				15 mg/kg		12.9 mg/kg	0.00129 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				16 mg/kg		13.76 mg/kg	0.00138 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				18 mg/kg		15.48 mg/kg	0.00155 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				7 mg/kg		6.02 mg/kg	0.000602 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				15 mg/kg		12.9 mg/kg	0.00129 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				9.7 mg/kg		8.342 mg/kg	0.000834 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				2 mg/kg		1.72 mg/kg	0.000172 %	✓	
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				9.4 mg/kg		8.084 mg/kg	0.000808 %	✓	
		205-883-8	191-24-2							
36	vanadium { divanadium pentaoxide; vanadium pentoxide }				35 mg/kg	1.785	53.734 mg/kg	0.00537 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.414 %		

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: WS201-987939-16/03/2020-0.15



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

Sample details

Sample Name:	LoW Code:	
WS201-987939-16/03/2020-0.15	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)
0.15-0.40 m		
Moisture content:		
19%		
(wet weight correction)		

Hazard properties

None identified

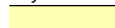
Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				15	mg/kg	1.32	16.042	mg/kg	0.0016 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	boron { diboron trioxide; boric oxide }				0.63	mg/kg	3.22	1.643	mg/kg	0.000164 %	✓	
	005-008-00-8	215-125-8	1303-86-2									
3	cadmium { cadmium oxide }				1.8	mg/kg	1.142	1.666	mg/kg	0.000167 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide }				12	mg/kg	1.462	14.206	mg/kg	0.00142 %	✓	
		215-160-9	1308-38-9									
5	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									
6	copper { dicopper oxide; copper (I) oxide }				28	mg/kg	1.126	25.535	mg/kg	0.00255 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	92	mg/kg		74.52	mg/kg	0.00745 %	✓	
	082-001-00-6											
8	mercury { mercury dichloride }				0.11	mg/kg	1.353	0.121	mg/kg	0.0000121 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
9	nickel { nickel chromate }				13	mg/kg	2.976	31.34	mg/kg	0.00313 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.6	mg/kg	2.554	1.241	mg/kg	0.000124 %	✓	
	034-002-00-8											
11	zinc { zinc oxide }				74	mg/kg	1.245	74.608	mg/kg	0.00746 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
12	TPH (C6 to C40) petroleum group				560	mg/kg		453.6	mg/kg	0.0454 %	✓	
			TPH									
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
15	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
16	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
17	xylene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
	006-007-00-5									
19	pH				7.1 pH		7.1 pH	7.1 pH		
			PH							
20	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.17 mg/kg		0.138 mg/kg	0.0000138 %	✓	
		201-581-5	85-01-8							
25	anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				0.27 mg/kg		0.219 mg/kg	0.0000219 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.29 mg/kg		0.235 mg/kg	0.0000235 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.16 mg/kg		0.13 mg/kg	0.000013 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.14 mg/kg		0.113 mg/kg	0.0000113 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.22 mg/kg		0.178 mg/kg	0.0000178 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.23 mg/kg		0.186 mg/kg	0.0000186 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.23 mg/kg		0.186 mg/kg	0.0000186 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.35 mg/kg		0.284 mg/kg	0.0000284 %	✓	
		205-883-8	191-24-2							
36	vanadium { divanadium pentaoxide; vanadium pentoxide }				21 mg/kg	1.785	30.366 mg/kg	0.00304 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.0729 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because <1% TPH unlikely to be flammable in soils

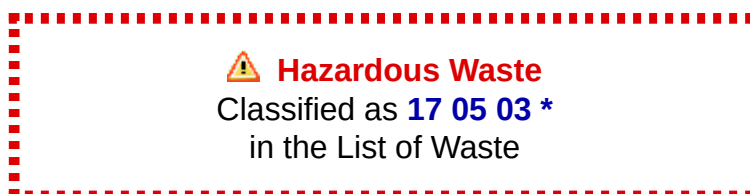
Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0454%)

Classification of sample: WS203A-987940-16/03/2020-0.00



Sample details

Sample Name:	LoW Code:	
WS203A-987940-16/03/2020-0.00	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
0.00-0.40 m		
Moisture content:		
15%		
(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 determinands:

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.128%)

zinc oxide: (compound conc.: 0.254%)

Determinands

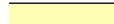
Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				37 mg/kg	1.32	41.524 mg/kg	0.00415 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	boron { diboron trioxide; boric oxide }				0.46 mg/kg	3.22	1.259 mg/kg	0.000126 %	✓	
	005-008-00-8	215-125-8	1303-86-2							
3	cadmium { cadmium oxide }				2.5 mg/kg	1.142	2.427 mg/kg	0.000243 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide }				20 mg/kg	1.462	24.846 mg/kg	0.00248 %	✓	
		215-160-9	1308-38-9							
5	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							
6	copper { dicopper oxide; copper (I) oxide }				69 mg/kg	1.126	66.033 mg/kg	0.0066 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	1500 mg/kg		1275 mg/kg	0.128 %	✓	
	082-001-00-6									
8	mercury { mercury dichloride }				0.18 mg/kg	1.353	0.207 mg/kg	0.0000207 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
9	nickel { nickel chromate }				32 mg/kg	2.976	80.954 mg/kg	0.0081 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.31 mg/kg	2.554	0.673 mg/kg	0.0000673 %	✓	
	034-002-00-8									

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
11	zinc { zinc oxide }				2400	mg/kg	1.245	2539.217	mg/kg	0.254 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
12	TPH (C6 to C40) petroleum group		TPH		44	mg/kg		37.4	mg/kg	0.00374 %	✓	
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
14	benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
15	toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
16	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
17	xylene				<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
	006-007-00-5											
19	pH		PH		8.6	pH		8.6	pH	8.6 pH		
20	naphthalene				5	mg/kg		4.25	mg/kg	0.000425 %	✓	
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				1.3	mg/kg		1.105	mg/kg	0.000111 %	✓	
		205-917-1	208-96-8									
22	acenaphthene				1.5	mg/kg		1.275	mg/kg	0.000127 %	✓	
		201-469-6	83-32-9									
23	fluorene				2.1	mg/kg		1.785	mg/kg	0.000179 %	✓	
		201-695-5	86-73-7									
24	phenanthrene				22	mg/kg		18.7	mg/kg	0.00187 %	✓	
		201-581-5	85-01-8									
25	anthracene				7.8	mg/kg		6.63	mg/kg	0.000663 %	✓	
		204-371-1	120-12-7									
26	fluoranthene				39	mg/kg		33.15	mg/kg	0.00331 %	✓	
		205-912-4	206-44-0									
27	pyrene				36	mg/kg		30.6	mg/kg	0.00306 %	✓	
		204-927-3	129-00-0									
28	benzo[a]anthracene				21	mg/kg		17.85	mg/kg	0.00179 %	✓	
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				21	mg/kg		17.85	mg/kg	0.00179 %	✓	
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				35	mg/kg		29.75	mg/kg	0.00298 %	✓	
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				14	mg/kg		11.9	mg/kg	0.00119 %	✓	
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				33	mg/kg		28.05	mg/kg	0.00281 %	✓	
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				21	mg/kg		17.85	mg/kg	0.00179 %	✓	
		205-893-2	193-39-5									
34	dibenz[a,h]anthracene				3.8	mg/kg		3.23	mg/kg	0.000323 %	✓	
	601-041-00-2	200-181-8	53-70-3									
35	benzo[ghi]perylene				21	mg/kg		17.85	mg/kg	0.00179 %	✓	
		205-883-8	191-24-2									
36	asbestos				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
	650-013-00-6	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
			77536-68-6 77536-67-5 12001-29-5							
37	 vanadium { divanadium pentaoxide; vanadium pentoxide }				42 mg/kg	1.785	63.731 mg/kg	0.00637 %	✓	
	023-001-00-8	215-239-8	1314-62-1							
Total:								0.439 %		

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	

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because <1% TPH unlikely to be flammable in soils

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00374%)

Classification of sample: WS204-987941-16/03/2020-0.00

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

Sample details

Sample Name:	LoW Code:	
WS204-987941-16/03/2020-0.00	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.00-0.50 m		
Moisture content:		
19%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 19% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				19	mg/kg	1.32	20.32	mg/kg	0.00203 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				4.4	mg/kg	1.142	4.071	mg/kg	0.000407 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide }				18	mg/kg	1.462	21.309	mg/kg	0.00213 %	✓	
		215-160-9	1308-38-9									
4	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									
5	copper { dicopper oxide; copper (I) oxide }				67	mg/kg	1.126	61.102	mg/kg	0.00611 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	340	mg/kg		275.4	mg/kg	0.0275 %	✓	
	082-001-00-6											
7	mercury { mercury dichloride }				1.9	mg/kg	1.353	2.083	mg/kg	0.000208 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				20	mg/kg	2.976	48.215	mg/kg	0.00482 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				1.5	mg/kg	2.554	3.103	mg/kg	0.00031 %	✓	
	034-002-00-8											
10	zinc { zinc oxide }				320	mg/kg	1.245	322.63	mg/kg	0.0323 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	pH		PH		7.7	pH		7.7	pH	7.7 pH		
12	naphthalene				4.6	mg/kg		3.726	mg/kg	0.000373 %	✓	
	601-052-00-2	202-049-5	91-20-3									
13	acenaphthylene				0.15	mg/kg		0.122	mg/kg	0.0000121 %	✓	
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	acenaphthene	201-469-6	83-32-9		0.29 mg/kg		0.235 mg/kg	0.0000235 %	✓	
15	fluorene	201-695-5	86-73-7		0.26 mg/kg		0.211 mg/kg	0.0000211 %	✓	
16	phenanthrene	201-581-5	85-01-8		2.8 mg/kg		2.268 mg/kg	0.000227 %	✓	
17	anthracene	204-371-1	120-12-7		0.8 mg/kg		0.648 mg/kg	0.0000648 %	✓	
18	fluoranthene	205-912-4	206-44-0		6.4 mg/kg		5.184 mg/kg	0.000518 %	✓	
19	pyrene	204-927-3	129-00-0		5.6 mg/kg		4.536 mg/kg	0.000454 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	2.8 mg/kg		2.268 mg/kg	0.000227 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	2.6 mg/kg		2.106 mg/kg	0.000211 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	4.2 mg/kg		3.402 mg/kg	0.00034 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	1.5 mg/kg		1.215 mg/kg	0.000122 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	3.5 mg/kg		2.835 mg/kg	0.000284 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		2.6 mg/kg		2.106 mg/kg	0.000211 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.31 mg/kg		0.251 mg/kg	0.0000251 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		2.5 mg/kg		2.025 mg/kg	0.000202 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1	24 mg/kg	1.785	34.704 mg/kg	0.00347 %	✓	
Total:								0.0827 %		

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: WS205-987942-16/03/2020-0.00

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

Sample details

Sample Name:	LoW Code:
WS205-987942-16/03/2020-0.00	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.00-0.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
20%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	 arsenic { arsenic trioxide }				36 mg/kg	1.32	38.025 mg/kg	0.0038 %		✓	
	033-003-00-0	215-481-4	1327-53-3								
2	 cadmium { cadmium oxide }				0.96 mg/kg	1.142	0.877 mg/kg	0.0000877 %		✓	
	048-002-00-0	215-146-2	1306-19-0								
3	 chromium in chromium(III) compounds { chromium(III) oxide }				22 mg/kg	1.462	25.723 mg/kg	0.00257 %		✓	
		215-160-9	1308-38-9								
4	 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								
5	 copper { dicopper oxide; copper (I) oxide }				120 mg/kg	1.126	108.085 mg/kg	0.0108 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
6	 lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	280 mg/kg		224 mg/kg	0.0224 %		✓	
	082-001-00-6										
7	 mercury { mercury dichloride }				2 mg/kg	1.353	2.166 mg/kg	0.000217 %		✓	
	080-010-00-X	231-299-8	7487-94-7								
8	 nickel { nickel chromate }				30 mg/kg	2.976	71.43 mg/kg	0.00714 %		✓	
	028-035-00-7	238-766-5	14721-18-7								
9	 selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.91 mg/kg	2.554	1.859 mg/kg	0.000186 %		✓	
	034-002-00-8										
10	 zinc { zinc oxide }				250 mg/kg	1.245	248.943 mg/kg	0.0249 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
11	 pH		PH		7.6 pH		7.6 pH	7.6 pH			
12	 naphthalene				6.3 mg/kg		5.04 mg/kg	0.000504 %		✓	
	601-052-00-2	202-049-5	91-20-3								
13	 acenaphthylene				0.86 mg/kg		0.688 mg/kg	0.0000688 %		✓	
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	acenaphthene	201-469-6	83-32-9		0.49 mg/kg		0.392 mg/kg	0.0000392 %	✓	
15	fluorene	201-695-5	86-73-7		0.6 mg/kg		0.48 mg/kg	0.000048 %	✓	
16	phenanthrene	201-581-5	85-01-8		13 mg/kg		10.4 mg/kg	0.00104 %	✓	
17	anthracene	204-371-1	120-12-7		4.1 mg/kg		3.28 mg/kg	0.000328 %	✓	
18	fluoranthene	205-912-4	206-44-0		27 mg/kg		21.6 mg/kg	0.00216 %	✓	
19	pyrene	204-927-3	129-00-0		22 mg/kg		17.6 mg/kg	0.00176 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		11 mg/kg		8.8 mg/kg	0.00088 %	✓	
21	chrysene	601-048-00-0	205-923-4		11 mg/kg		8.8 mg/kg	0.00088 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		13 mg/kg		10.4 mg/kg	0.00104 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		5.5 mg/kg		4.4 mg/kg	0.00044 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		11 mg/kg		8.8 mg/kg	0.00088 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		7.1 mg/kg		5.68 mg/kg	0.000568 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		1.4 mg/kg		1.12 mg/kg	0.000112 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		6.6 mg/kg		5.28 mg/kg	0.000528 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8		40 mg/kg	1.785	57.126 mg/kg	0.00571 %	✓	
Total:								0.0892 %		

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: WS209-987944-16/03/2020-0.10



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

Sample details

Sample Name:	LoW Code:	
WS209-987944-16/03/2020-0.10	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)
0.10-0.45 m		
Moisture content:		
20%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 20% Wet Weight Moisture Correction applied (MC)

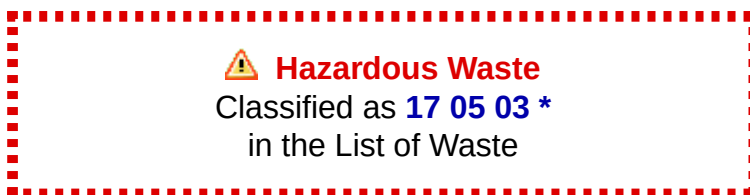
#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				34 mg/kg	1.32	35.913 mg/kg	0.00359 %		✓	
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.24 mg/kg	1.142	0.219 mg/kg	0.0000219 %		✓	
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide }				11 mg/kg	1.462	12.862 mg/kg	0.00129 %		✓	
		215-160-9	1308-38-9								
4	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								
5	copper { dicopper oxide; copper (I) oxide }				62 mg/kg	1.126	55.844 mg/kg	0.00558 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	180 mg/kg		144 mg/kg	0.0144 %		✓	
	082-001-00-6										
7	mercury { mercury dichloride }				0.49 mg/kg	1.353	0.531 mg/kg	0.0000531 %		✓	
	080-010-00-X	231-299-8	7487-94-7								
8	nickel { nickel chromate }				22 mg/kg	2.976	52.382 mg/kg	0.00524 %		✓	
	028-035-00-7	238-766-5	14721-18-7								
9	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				0.79 mg/kg	2.554	1.614 mg/kg	0.000161 %		✓	
	034-002-00-8										
10	zinc { zinc oxide }				67 mg/kg	1.245	66.717 mg/kg	0.00667 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
11	pH		PH		7.6 pH		7.6 pH	7.6 pH			
12	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	acenaphthene	201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
15	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	phenanthrene	201-581-5	85-01-8		0.21 mg/kg		0.168 mg/kg	0.0000168 %	✓	
17	anthracene	204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18	fluoranthene	205-912-4	206-44-0		0.38 mg/kg		0.304 mg/kg	0.0000304 %	✓	
19	pyrene	204-927-3	129-00-0		0.39 mg/kg		0.312 mg/kg	0.0000312 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
21	chrysene	601-048-00-0	205-923-4		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
25	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	benzo[ghi]perylene	205-883-8	191-24-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8		39 mg/kg	1.785	55.698 mg/kg	0.00557 %	✓	
Total:								0.0429 %		

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: HD101-982446-06/03/2020-0.0



Sample details

Sample Name:	LoW Code:	
HD101-982446-06/03/2020-0.0	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 03 * (Soil and stones containing hazardous substances)
0.0-0.25 m		
Moisture content:		
21%		
(wet weight correction)		

Hazard properties

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

Force this Hazardous property to hazardous because <1% TPH unlikely to be flammable in soils

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 2.133%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 2.133%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 2.133%)

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 determinands:

lead compounds with the exception of those specified elsewhere in this Annex: (Note 1 conc.: 0.182%)
zinc oxide: (compound conc.: 0.147%)

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 2.133%)

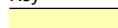
Determinands

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

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	60	mg/kg	1.32	62.583	mg/kg	0.00626 %	✓	
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	24	mg/kg	1.142	21.659	mg/kg	0.00217 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9								
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			2300	mg/kg		1817	mg/kg	0.182 %	✓	
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	140	mg/kg	2.976	329.175	mg/kg	0.0329 %	✓	
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8										
11	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	1500	mg/kg	1.245	1474.986	mg/kg	0.147 %	✓	
12	TPH (C6 to C40) petroleum group		TPH									
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
14	benzene	601-020-00-8	200-753-7	71-43-2								
15	toluene	601-021-00-3	203-625-9	108-88-3	<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
16	ethylbenzene	601-023-00-4	202-849-4	100-41-4								
17	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5										
19	pH		PH		7.9	pH		7.9	pH	7.9 pH		
20	naphthalene	601-052-00-2	202-049-5	91-20-3								
21	acenaphthylene		205-917-1	208-96-8	0.74	mg/kg		0.585	mg/kg	0.0000585 %	✓	
22	acenaphthene		201-469-6	83-32-9								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
23	fluorene	201-695-5	86-73-7		0.18 mg/kg		0.142 mg/kg	0.0000142 %	✓	
24	phenanthrene	201-581-5	85-01-8		4.7 mg/kg		3.713 mg/kg	0.000371 %	✓	
25	anthracene	204-371-1	120-12-7		1 mg/kg		0.79 mg/kg	0.000079 %	✓	
26	fluoranthene	205-912-4	206-44-0		11 mg/kg		8.69 mg/kg	0.000869 %	✓	
27	pyrene	204-927-3	129-00-0		16 mg/kg		12.64 mg/kg	0.00126 %	✓	
28	benzo[a]anthracene	601-033-00-9	200-280-6		6.2 mg/kg		4.898 mg/kg	0.00049 %	✓	
29	chrysene	601-048-00-0	205-923-4		8.3 mg/kg		6.557 mg/kg	0.000656 %	✓	
30	benzo[b]fluoranthene	601-034-00-4	205-911-9		14 mg/kg		11.06 mg/kg	0.00111 %	✓	
31	benzo[k]fluoranthene	601-036-00-5	205-916-6		4.8 mg/kg		3.792 mg/kg	0.000379 %	✓	
32	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		12 mg/kg		9.48 mg/kg	0.000948 %	✓	
33	indeno[123-cd]pyrene	205-893-2	193-39-5		15 mg/kg		11.85 mg/kg	0.00119 %	✓	
34	dibenz[a,h]anthracene	601-041-00-2	200-181-8		1.6 mg/kg		1.264 mg/kg	0.000126 %	✓	
35	benzo[ghi]perylene	205-883-8	191-24-2		16 mg/kg		12.64 mg/kg	0.00126 %	✓	
36	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8		23 mg/kg	1.785	32.437 mg/kg	0.00324 %	✓	
Total:								2.601 %		

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: HD102-982448-06/03/2020-0.0

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

Sample details

Sample Name:	LoW Code:	
HD102-982448-06/03/2020-0.0	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)
0.0-0.20 m		
Moisture content:		
29%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 29% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1		arsenic { arsenic trioxide }				40	mg/kg	1.32	37.497	mg/kg	0.00375 %	✓	
	033-003-00-0	215-481-4	1327-53-3										
2		cadmium { cadmium oxide }				4.9	mg/kg	1.142	3.974	mg/kg	0.000397 %	✓	
	048-002-00-0	215-146-2	1306-19-0										
3		chromium in chromium(III) compounds {  chromium(III) oxide }				51	mg/kg	1.462	52.923	mg/kg	0.00529 %	✓	
		215-160-9	1308-38-9										
4		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										
5		copper { dicopper oxide; copper (I) oxide }				120	mg/kg	1.126	95.926	mg/kg	0.00959 %	✓	
	029-002-00-X	215-270-7	1317-39-1										
6		lead {  lead compounds with the exception of those specified elsewhere in this Annex }			1	600	mg/kg		426	mg/kg	0.0426 %	✓	
	082-001-00-6												
7		mercury { mercury dichloride }				0.46	mg/kg	1.353	0.442	mg/kg	0.0000442 %	✓	
	080-010-00-X	231-299-8	7487-94-7										
8		nickel { nickel chromate }				73	mg/kg	2.976	154.26	mg/kg	0.0154 %	✓	
	028-035-00-7	238-766-5	14721-18-7										
9		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.45	mg/kg	2.554	0.816	mg/kg	0.0000816 %	✓	
	034-002-00-8												
10		zinc { zinc oxide }				670	mg/kg	1.245	592.11	mg/kg	0.0592 %	✓	
	030-013-00-7	215-222-5	1314-13-2										
11		pH				8.2	pH		8.2	pH	8.2 pH		
			PH										
12		naphthalene				0.62	mg/kg		0.44	mg/kg	0.000044 %	✓	
	601-052-00-2	202-049-5	91-20-3										
13		acenaphthylene				0.83	mg/kg		0.589	mg/kg	0.0000589 %	✓	
		205-917-1	208-96-8										

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
14	acenaphthene	201-469-6	83-32-9		4.3	mg/kg		3.053	mg/kg	0.000305 %	✓	
15	fluorene	201-695-5	86-73-7		7.3	mg/kg		5.183	mg/kg	0.000518 %	✓	
16	phenanthrene	201-581-5	85-01-8		140	mg/kg		99.4	mg/kg	0.00994 %	✓	
17	anthracene	204-371-1	120-12-7		26	mg/kg		18.46	mg/kg	0.00185 %	✓	
18	fluoranthene	205-912-4	206-44-0		180	mg/kg		127.8	mg/kg	0.0128 %	✓	
19	pyrene	204-927-3	129-00-0		150	mg/kg		106.5	mg/kg	0.0107 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	65	mg/kg		46.15	mg/kg	0.00462 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	58	mg/kg		41.18	mg/kg	0.00412 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	72	mg/kg		51.12	mg/kg	0.00511 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	29	mg/kg		20.59	mg/kg	0.00206 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	64	mg/kg		45.44	mg/kg	0.00454 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		41	mg/kg		29.11	mg/kg	0.00291 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	6.9	mg/kg		4.899	mg/kg	0.00049 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		34	mg/kg		24.14	mg/kg	0.00241 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1	22	mg/kg	1.785	27.885	mg/kg	0.00279 %	✓	
Total:										0.202 %		

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: HD103-982450-06/03/2020-0.0

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

Sample details

Sample Name:	LoW Code:	
HD103-982450-06/03/2020-0.0	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)
0.0-0.30 m		
Moisture content:		
14%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
1	arsenic { arsenic trioxide }				23 mg/kg	1.32	26.116 mg/kg	0.00261 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.86 mg/kg	1.142	0.845 mg/kg	0.0000845 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in chromium(III) compounds { chromium(III) oxide }				17 mg/kg	1.462	21.368 mg/kg	0.00214 %	✓	
		215-160-9	1308-38-9							
4	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							
5	copper { dicopper oxide; copper (I) oxide }				140 mg/kg	1.126	135.557 mg/kg	0.0136 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	800 mg/kg		688 mg/kg	0.0688 %	✓	
	082-001-00-6									
7	mercury { mercury dichloride }				1.5 mg/kg	1.353	1.746 mg/kg	0.000175 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
8	nickel { nickel chromate }				64 mg/kg	2.976	163.814 mg/kg	0.0164 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.1 mg/kg	2.554	2.416 mg/kg	0.000242 %	✓	
	034-002-00-8									
10	zinc { zinc oxide }				250 mg/kg	1.245	267.614 mg/kg	0.0268 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
11	pH				7.6 pH		7.6 pH	7.6 pH		
12	naphthalene				0.72 mg/kg		0.619 mg/kg	0.0000619 %	✓	
	601-052-00-2	202-049-5	91-20-3							
13	acenaphthylene				0.18 mg/kg		0.155 mg/kg	0.0000155 %	✓	
		205-917-1	208-96-8							

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value		MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number										
14	acenaphthene		201-469-6	83-32-9		1.6	mg/kg		1.376	mg/kg	0.000138 %	✓		
15	fluorene		201-695-5	86-73-7		1.1	mg/kg		0.946	mg/kg	0.0000946 %	✓		
16	phenanthrene		201-581-5	85-01-8		11	mg/kg		9.46	mg/kg	0.000946 %	✓		
17	anthracene		204-371-1	120-12-7		2.7	mg/kg		2.322	mg/kg	0.000232 %	✓		
18	fluoranthene		205-912-4	206-44-0		13	mg/kg		11.18	mg/kg	0.00112 %	✓		
19	pyrene		204-927-3	129-00-0		13	mg/kg		11.18	mg/kg	0.00112 %	✓		
20	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		6.5	mg/kg		5.59	mg/kg	0.000559 %	✓		
21	chrysene	601-048-00-0	205-923-4	218-01-9		6.4	mg/kg		5.504	mg/kg	0.00055 %	✓		
22	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		7.3	mg/kg		6.278	mg/kg	0.000628 %	✓		
23	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		2.5	mg/kg		2.15	mg/kg	0.000215 %	✓		
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		6.5	mg/kg		5.59	mg/kg	0.000559 %	✓		
25	indeno[123-cd]pyrene		205-893-2	193-39-5		4.1	mg/kg		3.526	mg/kg	0.000353 %	✓		
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.86	mg/kg		0.74	mg/kg	0.000074 %	✓		
27	benzo[ghi]perylene		205-883-8	191-24-2		3.8	mg/kg		3.268	mg/kg	0.000327 %	✓		
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1		23	mg/kg	1.785	35.311	mg/kg	0.00353 %	✓		
Total:											0.141 %			

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: HD103-982451-06/03/2020-0.3

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

Sample details

Sample Name:	HD103-982451-06/03/2020-0.3	LoW Code:	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	0.3-1.00 m	Entry:		17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:	17%			
	(wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	12 mg/kg	1.32	13.15	mg/kg	0.00132 %	✓	
2	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	0.13 mg/kg	1.142	0.123	mg/kg	0.0000123 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9	9 mg/kg	1.462	10.918	mg/kg	0.00109 %	✓	
4	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.5 mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
5	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	29 mg/kg	1.126	27.1	mg/kg	0.00271 %	✓	
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			84 mg/kg		69.72	mg/kg	0.00697 %	✓	
7	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	1.5 mg/kg	1.353	1.685	mg/kg	0.000169 %	✓	
8	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	14 mg/kg	2.976	34.584	mg/kg	0.00346 %	✓	
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			0.81 mg/kg	2.554	1.717	mg/kg	0.000172 %	✓	
10	zinc { zinc oxide }	030-013-00-7	215-222-5	1314-13-2	43 mg/kg	1.245	44.424	mg/kg	0.00444 %	✓	
11	pH				7.1 pH		7.1	pH	7.1 pH		
12	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
13	acenaphthylene		205-917-1	208-96-8	<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
14	acenaphthene	201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
15	fluorene	201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
16	phenanthrene	201-581-5	85-01-8		0.64	mg/kg		0.531	mg/kg	0.0000531 %	✓	
17	anthracene	204-371-1	120-12-7		0.19	mg/kg		0.158	mg/kg	0.0000158 %	✓	
18	fluoranthene	205-912-4	206-44-0		1.1	mg/kg		0.913	mg/kg	0.0000913 %	✓	
19	pyrene	204-927-3	129-00-0		0.95	mg/kg		0.789	mg/kg	0.0000788 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.52	mg/kg		0.432	mg/kg	0.0000432 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	0.44	mg/kg		0.365	mg/kg	0.0000365 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.41	mg/kg		0.34	mg/kg	0.000034 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.22	mg/kg		0.183	mg/kg	0.0000183 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.48	mg/kg		0.398	mg/kg	0.0000398 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.32	mg/kg		0.266	mg/kg	0.0000266 %	✓	
26	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
27	benzo[ghi]perylene	205-883-8	191-24-2		0.3	mg/kg		0.249	mg/kg	0.0000249 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1	12	mg/kg	1.785	17.78	mg/kg	0.00178 %	✓	
Total:										0.0227 %		

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: HD104-982452-06/03/2020-0.0

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

Sample details

Sample Name:	HD104-982452-06/03/2020-0.0	LoW Code:	
Sample Depth:	0.0-0.50 m	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	5%	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
(wet weight correction)			

Hazard properties

None identified

Determinands

Moisture content: 5% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				13 mg/kg	1.32	16.306 mg/kg	0.00163 %	✓		
	033-003-00-0	215-481-4	1327-53-3								
2	boron { diboron trioxide; boric oxide }				0.53 mg/kg	3.22	1.621 mg/kg	0.000162 %	✓		
	005-008-00-8	215-125-8	1303-86-2								
3	cadmium { cadmium oxide }				0.18 mg/kg	1.142	0.195 mg/kg	0.0000195 %	✓		
	048-002-00-0	215-146-2	1306-19-0								
4	chromium in chromium(III) compounds { chromium(III) oxide }				22 mg/kg	1.462	30.547 mg/kg	0.00305 %	✓		
		215-160-9	1308-38-9								
5	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								
6	copper { dicopper oxide; copper (I) oxide }				22 mg/kg	1.126	23.531 mg/kg	0.00235 %	✓		
	029-002-00-X	215-270-7	1317-39-1								
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	94 mg/kg		89.3 mg/kg	0.00893 %	✓		
	082-001-00-6										
8	mercury { mercury dichloride }				0.13 mg/kg	1.353	0.167 mg/kg	0.0000167 %	✓		
	080-010-00-X	231-299-8	7487-94-7								
9	nickel { nickel chromate }				32 mg/kg	2.976	90.478 mg/kg	0.00905 %	✓		
	028-035-00-7	238-766-5	14721-18-7								
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.54 mg/kg	2.554	1.31 mg/kg	0.000131 %	✓		
	034-002-00-8										
11	zinc { zinc oxide }				76 mg/kg	1.245	89.868 mg/kg	0.00899 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
12	TPH (C6 to C40) petroleum group				580 mg/kg		551 mg/kg	0.0551 %	✓		
			TPH								
13	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	603-181-00-X	216-653-1	1634-04-4								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
14	benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	601-020-00-8	200-753-7	71-43-2								
15	toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	601-021-00-3	203-625-9	108-88-3								
16	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	601-023-00-4	202-849-4	100-41-4								
17	xylene				<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %			<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				0.6 mg/kg	1.884	1.074 mg/kg	0.000107 %		✓	
	006-007-00-5										
19	pH				7.8 pH		7.8 pH	7.8 pH			
20	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-052-00-2	202-049-5	91-20-3								
21	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-917-1	208-96-8								
22	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		201-469-6	83-32-9								
23	fluorene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		201-695-5	86-73-7								
24	phenanthrene				0.5 mg/kg		0.475 mg/kg	0.0000475 %		✓	
		201-581-5	85-01-8								
25	anthracene				0.14 mg/kg		0.133 mg/kg	0.0000133 %		✓	
		204-371-1	120-12-7								
26	fluoranthene				0.92 mg/kg		0.874 mg/kg	0.0000874 %		✓	
		205-912-4	206-44-0								
27	pyrene				0.81 mg/kg		0.77 mg/kg	0.000077 %		✓	
		204-927-3	129-00-0								
28	benzo[a]anthracene				0.42 mg/kg		0.399 mg/kg	0.0000399 %		✓	
	601-033-00-9	200-280-6	56-55-3								
29	chrysene				0.36 mg/kg		0.342 mg/kg	0.0000342 %		✓	
	601-048-00-0	205-923-4	218-01-9								
30	benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-034-00-4	205-911-9	205-99-2								
31	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-036-00-5	205-916-6	207-08-9								
32	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-032-00-3	200-028-5	50-32-8								
33	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-893-2	193-39-5								
34	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
	601-041-00-2	200-181-8	53-70-3								
35	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
		205-883-8	191-24-2								
36	vanadium { divanadium pentaoxide; vanadium pentoxide }				15 mg/kg	1.785	25.439 mg/kg	0.00254 %		✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0926 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because <1% TPH unlikely to be flammable in soils

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0551%)

Classification of sample: HD104-982453-06/03/2020-0.5

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

Sample details

Sample Name:	LoW Code:	
HD104-982453-06/03/2020-0.5	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)
0.5-0.70 m		
Moisture content:		
17%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				45	mg/kg	1.32	49.314	mg/kg	0.00493 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				0.25	mg/kg	1.142	0.237	mg/kg	0.0000237 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide }				19	mg/kg	1.462	23.049	mg/kg	0.0023 %	✓	
		215-160-9	1308-38-9									
4	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									
5	copper { dicopper oxide; copper (I) oxide }				97	mg/kg	1.126	90.645	mg/kg	0.00906 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	500	mg/kg		415	mg/kg	0.0415 %	✓	
	082-001-00-6											
7	mercury { mercury dichloride }				1.2	mg/kg	1.353	1.348	mg/kg	0.000135 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				28	mg/kg	2.976	69.168	mg/kg	0.00692 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				1.4	mg/kg	2.554	2.967	mg/kg	0.000297 %	✓	
	034-002-00-8											
10	zinc { zinc oxide }				140	mg/kg	1.245	144.636	mg/kg	0.0145 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	pH		PH		5.1	pH		5.1	pH	5.1 pH		
12	naphthalene				0.44	mg/kg		0.365	mg/kg	0.0000365 %	✓	
	601-052-00-2	202-049-5	91-20-3									
13	acenaphthylene				0.14	mg/kg		0.116	mg/kg	0.0000116 %	✓	
		205-917-1	208-96-8									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	acenaphthene	201-469-6	83-32-9		0.1 mg/kg		0.083 mg/kg	0.0000083 %	✓	
15	fluorene	201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	phenanthrene	201-581-5	85-01-8		1.2 mg/kg		0.996 mg/kg	0.0000996 %	✓	
17	anthracene	204-371-1	120-12-7		0.28 mg/kg		0.232 mg/kg	0.0000232 %	✓	
18	fluoranthene	205-912-4	206-44-0		1.8 mg/kg		1.494 mg/kg	0.000149 %	✓	
19	pyrene	204-927-3	129-00-0		1.7 mg/kg		1.411 mg/kg	0.000141 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		0.87 mg/kg		0.722 mg/kg	0.0000722 %	✓	
21	chrysene	601-048-00-0	205-923-4		0.88 mg/kg		0.73 mg/kg	0.000073 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		1.1 mg/kg		0.913 mg/kg	0.0000913 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.31 mg/kg		0.257 mg/kg	0.0000257 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.83 mg/kg		0.689 mg/kg	0.0000689 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		0.6 mg/kg		0.498 mg/kg	0.0000498 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
27	benzo[ghi]perylene	205-883-8	191-24-2		0.54 mg/kg		0.448 mg/kg	0.0000448 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8		28 mg/kg	1.785	41.488 mg/kg	0.00415 %	✓	
Total:								0.0848 %		

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: HD106-982455-06/03/2020-0.0



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

Sample details

Sample Name:	LoW Code:	
HD106-982455-06/03/2020-0.0	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)
0.0-0.30 m		
Moisture content:		
28%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 28% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number									
1	arsenic { arsenic trioxide }				24	mg/kg	1.32	22.815	mg/kg	0.00228 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
2	cadmium { cadmium oxide }				1.8	mg/kg	1.142	1.48	mg/kg	0.000148 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
3	chromium in chromium(III) compounds { chromium(III) oxide }				20	mg/kg	1.462	21.046	mg/kg	0.0021 %	✓	
		215-160-9	1308-38-9									
4	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									
5	copper { dicopper oxide; copper (I) oxide }				110	mg/kg	1.126	89.17	mg/kg	0.00892 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	590	mg/kg		424.8	mg/kg	0.0425 %	✓	
	082-001-00-6											
7	mercury { mercury dichloride }				0.75	mg/kg	1.353	0.731	mg/kg	0.0000731 %	✓	
	080-010-00-X	231-299-8	7487-94-7									
8	nickel { nickel chromate }				34	mg/kg	2.976	72.859	mg/kg	0.00729 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
9	selenium { selenium compounds with the exception of cadmium selenosulfide and those specified elsewhere in this Annex }				1	mg/kg	2.554	1.839	mg/kg	0.000184 %	✓	
	034-002-00-8											
10	zinc { zinc oxide }				430	mg/kg	1.245	385.363	mg/kg	0.0385 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
11	pH		PH		7.5	pH		7.5	pH	7.5 pH		
12	naphthalene				3.2	mg/kg		2.304	mg/kg	0.00023 %	✓	
	601-052-00-2	202-049-5	91-20-3									
13	acenaphthylene				0.81	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
	CLP index number	EC Number	CAS Number							
14	acenaphthene	201-469-6	83-32-9		2.2 mg/kg		1.584 mg/kg	0.000158 %	✓	
15	fluorene	201-695-5	86-73-7		1.9 mg/kg		1.368 mg/kg	0.000137 %	✓	
16	phenanthrene	201-581-5	85-01-8		22 mg/kg		15.84 mg/kg	0.00158 %	✓	
17	anthracene	204-371-1	120-12-7		5.7 mg/kg		4.104 mg/kg	0.00041 %	✓	
18	fluoranthene	205-912-4	206-44-0		38 mg/kg		27.36 mg/kg	0.00274 %	✓	
19	pyrene	204-927-3	129-00-0		33 mg/kg		23.76 mg/kg	0.00238 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6		19 mg/kg		13.68 mg/kg	0.00137 %	✓	
21	chrysene	601-048-00-0	205-923-4		18 mg/kg		12.96 mg/kg	0.0013 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9		22 mg/kg		15.84 mg/kg	0.00158 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6		8.1 mg/kg		5.832 mg/kg	0.000583 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		20 mg/kg		14.4 mg/kg	0.00144 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		14 mg/kg		10.08 mg/kg	0.00101 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8		2.4 mg/kg		1.728 mg/kg	0.000173 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		11 mg/kg		7.92 mg/kg	0.000792 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8		21 mg/kg	1.785	26.992 mg/kg	0.0027 %	✓	
Total:								0.121 %		

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: HD107-982456-06/03/2020-0.0



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

Sample details

Sample Name:	LoW Code:	
HD107-982456-06/03/2020-0.0	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)
0.0-0.30 m		
Moisture content:		
27%		
(wet weight correction)		

Hazard properties

None identified

Determinands

Moisture content: 27% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }				17 mg/kg	1.32	16.385 mg/kg	0.00164 %		✓	
	033-003-00-0	215-481-4	1327-53-3								
2	cadmium { cadmium oxide }				0.91 mg/kg	1.142	0.759 mg/kg	0.0000759 %		✓	
	048-002-00-0	215-146-2	1306-19-0								
3	chromium in chromium(III) compounds { chromium(III) oxide }				28 mg/kg	1.462	29.874 mg/kg	0.00299 %		✓	
		215-160-9	1308-38-9								
4	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								
5	copper { dicopper oxide; copper (I) oxide }				56 mg/kg	1.126	46.026 mg/kg	0.0046 %		✓	
	029-002-00-X	215-270-7	1317-39-1								
6	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	1200 mg/kg		876 mg/kg	0.0876 %		✓	
	082-001-00-6										
7	mercury { mercury dichloride }				0.47 mg/kg	1.353	0.464 mg/kg	0.0000464 %		✓	
	080-010-00-X	231-299-8	7487-94-7								
8	nickel { nickel chromate }				27 mg/kg	2.976	58.662 mg/kg	0.00587 %		✓	
	028-035-00-7	238-766-5	14721-18-7								
9	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.85 mg/kg	2.554	1.585 mg/kg	0.000158 %		✓	
	034-002-00-8										
10	zinc { zinc oxide }				330 mg/kg	1.245	299.852 mg/kg	0.03 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
11	pH		PH		7.8 pH		7.8 pH	7.8 pH			
12	naphthalene				1.3 mg/kg		0.949 mg/kg	0.0000949 %		✓	
	601-052-00-2	202-049-5	91-20-3								
13	acenaphthylene				1.6 mg/kg		1.168 mg/kg	0.000117 %		✓	
		205-917-1	208-96-8								

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
14	acenaphthene	201-469-6	83-32-9		3.7 mg/kg		2.701 mg/kg	0.00027 %	✓	
15	fluorene	201-695-5	86-73-7		4.9 mg/kg		3.577 mg/kg	0.000358 %	✓	
16	phenanthrene	201-581-5	85-01-8		65 mg/kg		47.45 mg/kg	0.00475 %	✓	
17	anthracene	204-371-1	120-12-7		22 mg/kg		16.06 mg/kg	0.00161 %	✓	
18	fluoranthene	205-912-4	206-44-0		100 mg/kg		73 mg/kg	0.0073 %	✓	
19	pyrene	204-927-3	129-00-0		84 mg/kg		61.32 mg/kg	0.00613 %	✓	
20	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	48 mg/kg		35.04 mg/kg	0.0035 %	✓	
21	chrysene	601-048-00-0	205-923-4	218-01-9	42 mg/kg		30.66 mg/kg	0.00307 %	✓	
22	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	51 mg/kg		37.23 mg/kg	0.00372 %	✓	
23	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	20 mg/kg		14.6 mg/kg	0.00146 %	✓	
24	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	44 mg/kg		32.12 mg/kg	0.00321 %	✓	
25	indeno[123-cd]pyrene	205-893-2	193-39-5		31 mg/kg		22.63 mg/kg	0.00226 %	✓	
26	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	5.6 mg/kg		4.088 mg/kg	0.000409 %	✓	
27	benzo[ghi]perylene	205-883-8	191-24-2		25 mg/kg		18.25 mg/kg	0.00183 %	✓	
28	vanadium { divanadium pentaoxide; vanadium pentoxide }	023-001-00-8	215-239-8	1314-62-1	32 mg/kg	1.785	41.702 mg/kg	0.00417 %	✓	
Total:								0.177 %		

Key

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

Appendix A: Classifier defined and non CLP determinands

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

Conversion factor: 1.462

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: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

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

CLP index number: 082-001-00-6

Description/Comments: Least-worst case: Lead REACH Consortium considers some lead compounds Carcinogenic category 2B

Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium

www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

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

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

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

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

CLP index number: 601-023-00-4

Description/Comments:

Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)

Additional Hazard Statement(s): Carc. 2 H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

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

CLP index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s):

14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

■ **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: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

▪ **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 Chronic 1 H410 , Aquatic Acute 1 H400

▪ **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: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

▪ **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: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

▪ **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: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

▪ **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: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

▪ **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 Chronic 1 H410 , Aquatic Acute 1 H400

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

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

boron {diboron trioxide; boric oxide}

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

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

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

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

chromium in chromium(VI) compounds {chromium(VI) 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 (edit as required)

copper {dicopper oxide; copper (I) oxide}

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

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

Next worse case based on absence of CrVI and ash based source

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {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. (edit as required)

zinc {zinc oxide}

Next worse case based on absence of CrVI and ash based source

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

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

vanadium {divanadium pentaoxide; vanadium pentoxide}

worst case/most likely scenario

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**
HazWasteOnline Classification Engine Version: 2020.88.4220.8373 (28 Mar 2020)
HazWasteOnline Database: 2020.88.4220.8373 (28 Mar 2020)

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 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
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Appendix H

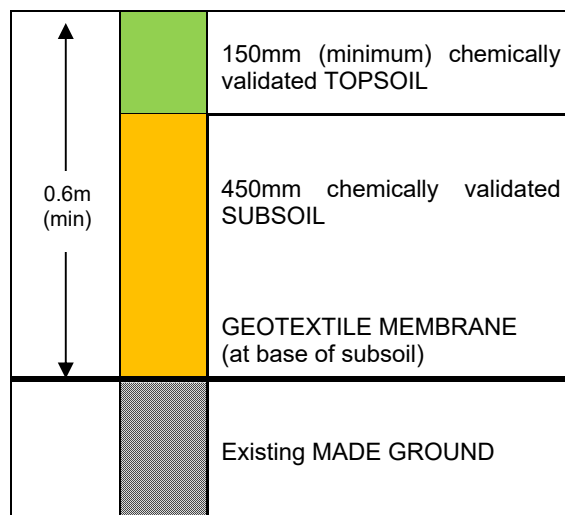
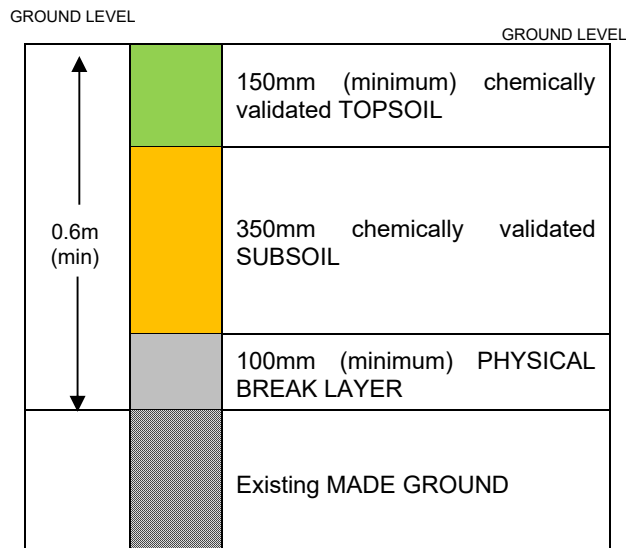
Environmental Cover System Construction

Private Gardens

Shared Landscaping

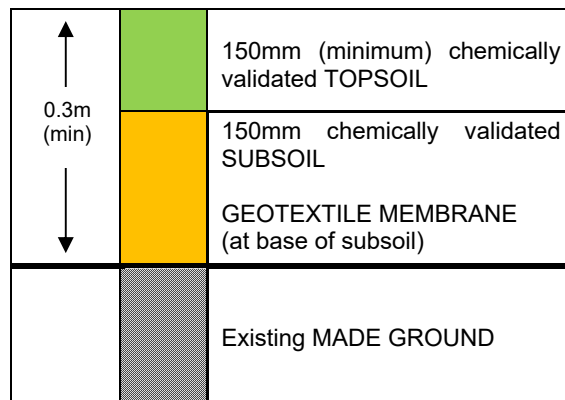
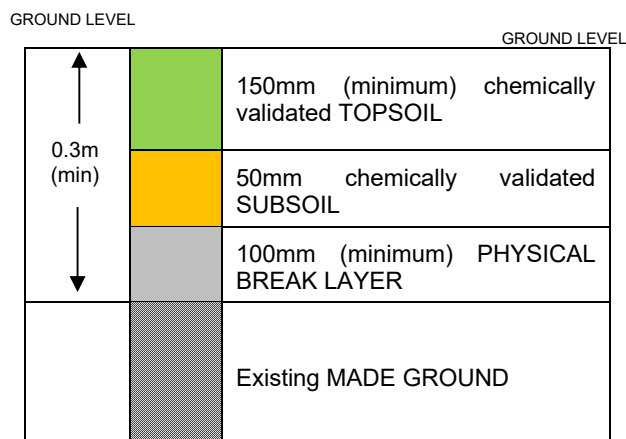
PRIVATE BACK GARDENS:

Either (physical break layer)
Or (geotextile membrane)



PRIVATE FRONT GARDENS / SHARED LANDSCAPING:

Either (physical break layer)
Or (geotextile membrane)



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