

Site: Morris Street, Radcliffe
Plots: Plots 1-25 Garden and Soft Landscaping
Validations
Date: April 2023



1 INTRODUCTION

LK Consult (LKC) has been appointed by Watson Construction Ltd to validate the depth of the garden cover system laid down at the development at Morris Street, Radcliffe.

Plots 1-25 comprise residential properties with private rear gardens. Plots 15, 16, 17 and 18 have small front gardens. The fronts of the remainder of plots are hard surfaced with no soft landscaping. Soft landscaping areas are present in the proposed bin store areas to the back of Plots 10-14, and along the verge in the south of site, to the side of Plot 18 and the access road. See development plan provided by Watson Construction Ltd in Figures for further detail.

The requirement for remedial works across the site are outlined in the Remediation Strategy carried out by LKC (ref. CL-602-LKC 21 1616-01, dated October 2021).

The Remediation Strategy identified the following remedial works specific to the placement of the capping layer material:

- i) **Private Rear Gardens (Plots 1-14 and Plots 19-25):** Provision of a minimum 600mm thick 'clean' cover system within private rear garden areas, nominally comprising 450mm of subsoil plus 150mm of topsoil underlain by a suitable geotextile membrane.
- ii) **Private Rear Gardens (Plots 15-18):** Provision of 1m thick 'clean' cover system within private rear garden areas comprising high visibility geotextile membrane overlain by 100mm physical break layer.
- iii) **Shared Landscaping:** Provision of a minimum 300mm thick 'clean' cover system within shared soft landscaping areas, nominally comprising 150mm of subsoil plus 150mm of topsoil underlain by a suitable geotextile membrane.
- iv) Chemical analysis of any site won or imported material for use in garden or landscaped areas.

LKC note that it would be acceptable to use all topsoil within the capping layer.

Chemical validation of all imported materials to be used on site is required. Imported soils are to be accompanied by a certificate of analysis and source details. A summary of the required imported material sampling requirements are presented in Table 1-1.

Material Type	Source	Suite of Analysis	Sampling Rate*
Topsoil	Greenfield	Suite A	1 sample per 50m³
	Brownfield / Unknown	Suite B	
Subsoil	Brownfield / Unknown	Suite B	1 sample per 150m³
	Site won natural material / greenfield	Suite A	
	Physical Stone Break Layer	First Generation i.e. quarried sand (subsoil) or stone (break layer)	No testing is required. Certification of material provenance is required.
Recycled Stone (6F2 / screened)		Suite B	1 sample per 100m³

Table 1-1: 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.

2 CAPPING LAYER MATERIAL VALIDATION

Topsoil

Approximately 280m³ of topsoil has been imported to site from Halewood between April 2022 and February 2023. The topsoil was sampled at a rate of 1 sample per 50m³ (minimum of three samples) in line with the remedial requirements. LKC collected 6no. samples from site for testing. The supplier certificates are provided in Appendix A, and testing certificates are provided in Appendix B.

Subsoil

Approximately 190m³ of subsoil was imported to site in August 2022 from Charcoal Lane, Dunham. The subsoil was sampled at a rate of 1 sample per 150m³ (minimum of three samples) in line with the remedial requirements. LKC collected 3no. samples from site for testing. The supplier certificates are provided in Appendix C, and testing certificates are provided in Appendix D.

Stone Break Layer

Stone was imported from Scout Moor Quarry, Lancashire. The stone is first generation material therefore considered exempt from testing. Proof of provenance for the stone material imported is presented in Appendix E.

Soil Risk Assessment

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

- Category 4 Screening Levels (C4SLs).
- LQM Suitable 4 Use Levels (S4ULs).

C4SLs were published in 2013^{1,2}. The change to the contaminated land guidance has changed the evaluation of risk from 'minimal' (referred to as Health Criteria values (HCVs))³ 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 S4ULs⁴. 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^{5,6,7,8}.

¹ Defra (2014). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Policy Companion Document."

² CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."

³ EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.

⁴ LQM (2014). "The LQM/CIEH S4ULs for Human Health Risk Assessment."

⁵ EA (2008). "Updated Technical Background to the CLEA Model." Science Report – SC050021/SR3.

⁶ EA (2008). "Human Health Toxicological Assessment of Contaminants in Soils." Science Report – SC050021/SR2.

⁷ EA (2008). "A Review of Body Weight and Height Data used within the Contaminated Land Exposure Assessment Model (CLEA)." Project SC050021/Technical Review 1.

⁸ EA (2009). "Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values." Science report SC050021/SR7.

An assessment of the data should be undertaken to confirm B(a)P is a suitable surrogate marker by assessing the ratios of carcinogenic PAHs to B(a)P. However, as the majority of the PAHs were recorded as less than detection limits, the assessment could not be undertaken.

The proposed development is for residential houses with gardens, therefore the assessment criteria for residential with plant uptake has been used for Plots 1-25.

All criteria have been generated using the CLEA V1.06/07 model⁹ based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

Appropriate screening values are presented in Appendix F.

The analytical results have been compared to the relevant assessment criteria and no elevated contaminants were identified. Therefore, the topsoil and subsoil is considered suitable for use in the cover system.

3 COVER SYSTEM DEPTH IN REAR GARDEN AREAS

The remedial requirement for the cover system depth in rear gardens is 600mm for Plots 1-4 and 19-25, and 300mm in all front gardens / shared soft landscaping areas. The remedial requirements for the cover system depth in rear gardens of Plots 15-18 is 1000mm.

LKC attended site on 8th June 2022, 27th June 2022, 8th July 2022, 7th February 2023 and 17th February 2023 to inspect the cover system construction. Photographs are provided in Appendix F and the observations are summarised below.

Location	Topsoil Depth (mm)	Subsoil Depth (mm)	Total Depth (mm)	Geotextile Membrane at base	Required Depth (mm)	Pass (✓) or Fail (x)
Plot 1 Rear	150	600	750	Y	600	✓
Plot 2 Rear	180	420	600	Y	600	✓
Plot 3 Rear	150	670	820	Y	600	✓
Plot 4 Rear	150	500	650	Y	600	✓
Plot 5 Rear	150	530	680	Y	600	✓
Plot 6 Rear	150	450	600	Y	600	✓
Plot 7 Rear	150	450	600	Y	600	✓
Plot 8 Rear	250	400	650	Y	600	✓
Plot 9 Rear	150	450	600	Y	600	✓
Plot 10 Rear	250	450	700	Y	600	✓
Plot 11 Rear	280	580	860	Y	600	✓
Plot 12 Rear	500	200	700	Y	600	✓
Plot 13 Rear	480	200	680	Y	600	✓
Plot 14 Rear	400	400	800	Y	600	✓
Plot 15 Front	300	-	300	Y	300	✓

Table 3-1: Cover system construction.

⁹ EA (2008). "CLEA Software (Version 1.05) Handbook." Science Report – SC050021/SR4.

Location	Topsoil Depth (mm)	Subsoil Depth (mm)	Total Depth (mm)	Geotextile Membrane at base	Required Depth (mm)	Pass (✓) or Fail (x)
Plot 15 Rear	1100	-	1100	Y	100	✓
Plot 16-17 Shared Front	300	-	300	Y	300	✓
Plot 16 Rear	1600	-	1600	Y	1000	✓
Plot 17 Rear	400	-	600		1000	✓
Plot 18 Front	300	-	300	Y	300	✓
Plot 18 Rear	1000	-	1000	Y	1000	✓
Plot 19 Rear	800	-	800	Y	600	✓
Plot 20 Rear	860	-	860	Y	600	✓
Plot 21 Rear					600	✓
Plot 22 Rear					600	✓
Plot 23 Rear					600	✓
Plot 24 Rear					600	✓
Plot 25 Rear					600	✓
Soft Landscaping Flood Bund	300	-	300	Y	300	✓
Soft Landscaping Bin Store 1	300	-	300	Y	300	✓
Soft Landscaping Bin Store 2	300	-	300	Y	300	✓

Table 3-1 continued: Cover system construction.

4 CONCLUSIONS

LKC has completed the validation of the cover systems within Plots 1-25 and within the soft landscaping associated with the development, and in the places inspected, chemically suitable material has been laid to an appropriate depth over a geotextile membrane.

Report Prepared By:

Hannah Moss
Geo-Environmental Consultant

Report Reviewed By:

Michelle Thorniley
Principal Geo-Environmental Consultant

Enc:

Figure 1: Proposed Development Plan

Appendix A: Supplier Certificates – Topsoil
Appendix B: Certificates of Analysis – Topsoil
Appendix C: Supplier Certificates – Subsoil
Appendix D: Certificates of Analysis – Subsoil
Appendix E: Stone Break Layer Certificates
Appendix F: Generic Assessment Criteria
Appendix G: Plot Photographs

Disclaimer

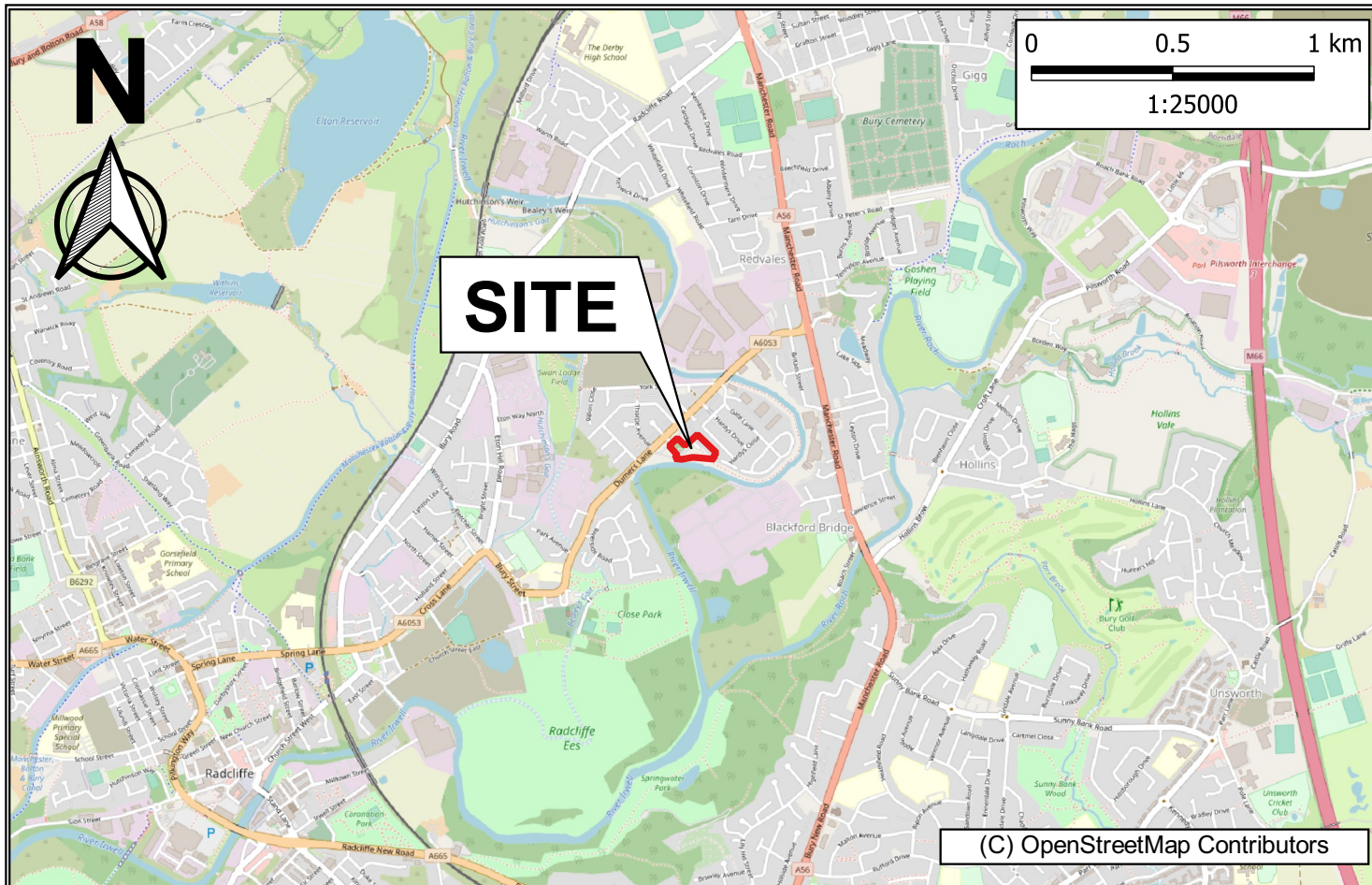
This report has been prepared by LKC who have exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant experienced in preparing reports of a similar scope. However, to the extent that the report is based on or relies upon information contained in records, reports or other materials provided to LKC which have not been independently produced or verified, LKC gives no warranty, representation or assurance as to the accuracy or completeness of such information.

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

Other works including *inter alia* hotspot removal, drainage, soil texture, permitting, invasive species management and geotechnical requirements are out with this scope and should be dealt with by others.

This report is prepared solely for the benefit of Watson Construction Ltd. It may not be relied upon by, or submitted to a third party for their reliance for the purposes of valuation, mortgage, insurance and regulatory approval, until all invoices have been settled in full. Those using this information in subsequent assessments or evaluations do so at their own risk.

FIGURES



Client: Watson Construction Ltd				Title: Site Location & Boundary Plan			
Site: Morris Street, Radcliffe				Scale (see scale bar): 1:25,000 & 1:1,250 @ A4			
Job No.: LKC 21 1616	Drawn By: HF	Checked By: MT	Drawn: Oct 2021	Figure: 1	Revision:		



NOTES

- Do not scale from this drawing
- All dimensions are in meters unless stated otherwise
- This drawing is to be read in conjunction with all relevant drawings and documents associated with this project.
- All surveyed information including levels and layout is provided by others
- All existing and proposed dimensions, levels and locations to be checked and verified by the main contractor on site prior to the commencement of the works and any anomalies reported to the engineer.

KEY

- General
 - Application Boundary
- Road to adoptable standards
 - Macadam carriageway with upstand concrete kerbs
- Parking
 - Macadam with upstand concrete kerbs
- Courtyard, Pedestrian Routes and Patios
 - Tobemore Natural Slab paving
- Entry/Exit
 - Paving transition
 - Granite Setts for delineation of entrance/exit and public highway
- Boundaries
 - Retaining wall, Tobemore, Secure Grand
 - 900mm high Railing
 - Existing fence
 - 1800mm high fence with 300mm concrete gravel board, concrete posts and 1500mm high Flat Top Feather board panel
- Existing Trees
 - Proposed retained trees (subject to TPP, and AIA)
- Proposed Trees
 - Proposed new tree planting to garden and public areas.
- Multistem Shrubs
 - Proposed multistem planting to garden and public areas.
- Native hedge -
 - Buffer planting to private boundaries and to form green corridors and additional habitats across the sites
- Formal hedge
 - Formal hedges (Holly, Beech etc) to property frontages and boundaries
- Native Shrub Mix
 - New shrub mix planting to enhance local biodiversity
- Ground cover
 - Low growing, low maintenance perennial mixes planting to provide back drop and additional habitats
- Wildflower
 - Low maintenance pollinator lawn, and Native Meadow mixes
- Lawn
 - Species rich amenity lawn to gardens and amenity areas
- Tufted ornamental planting
 - Planting around hibernacula with ornamental and long grasses
- Bollard
 - Timber Bollard, Logic - 150mm² x 1000mm
 - Removable Timber Bollard, Logic - 150mm² x 1000mm
- Ecological enhancement
 - Bird boxes to be fixed:
 - Woodstone Sparrow Nest Box x 2 (or similar approved);
 - Schweger No. 24 Brick Box x 2 (or similar approved);
 - Vivara Pro Woodstone Stairing Box x 1 (or similar approved);
 - Bat box to be installed within brickworks:
 - Sagevra Build-in Woodstone Bat Box x 3 (or similar approved);
 - Informal hibernacula deadwood gathered after site clearance, to provide shelter for existing wildlife.



Proposed retaining wall with railing fence along properties on Morris street
Bin Collection Area

Existing boundary fence to remain with no further installation to plots 1 to 9

Proposed ramp and retaining wall with railing fence along properties on Morris street

Bin Collection Area
Public footpath

Granite setts to delineate the transition between shared surface and adopted highway

PL03	11/08/21	Wildflower meadow updated	NP	GB	GB
PL02	28/07/21	Minor changes	NP	PB	PB
PL01	28/07/21	Discharge of conditions	NP	GB	GB
Rev	Date	Description	DRA	CHK	APP

Project
Morris Street Discharge Conditions

Client
Watson Construction Ltd

Drawing Title
General Arrangements Plan

Status	Date	Scale
For Planning	26/07/2021	1:250 @ A1

Drawn	Designed	Checked	Approved
NP	NP	GB	GB

DWG No.	Revision
1828-004-ENZ-XX-00-DR-L-00-001	PL03

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environmental consultants

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APPENDICES

Appendix A – Supplier Certificates - Topsoil

**Dave B**

Cheshire Soils and Aggregates Ltd
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Cheshire
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Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

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e: reception@i2analytical.com

e: dave@cheshiresoils.co.uk

Analytical Report Number : 21-92414

Replaces Analytical Report Number: 21-92414, issue no. 1
Result correction by laboratory.

Project / Site name:	Halewood	Samples received on:	11/08/2021
Your job number:		Samples instructed on/ Analysis started on:	11/08/2021
Your order number:		Analysis completed by:	31/08/2021
Report Issue Number:	2	Report issued on:	31/08/2021
Samples Analysed:	1 soil sample		

Signed: 

Zina Abdul Razzak
Senior Quality Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 21-92414

Project / Site name: Halewood

Lab Sample Number				1969314
Sample Reference				Sample
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				10/08/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	13
Total mass of sample received	kg	0.001	NONE	2.0

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.5
Organic Matter (automated)	%	0.1	MCERTS	3.3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.81
Pyrene	mg/kg	0.05	MCERTS	0.75
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.39
Chrysene	mg/kg	0.05	MCERTS	0.37
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.43
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.24
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.40
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.24
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.27

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	3.90
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.70
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0
Chromium (III)	mg/kg	1	NONE	24
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	60
Lead (aqua regia extractable)	mg/kg	1	MCERTS	58
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	27
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0

Analytical Report Number: 21-92414

Project / Site name: Halewood

Lab Sample Number				1969314
Sample Reference				Sample
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				10/08/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	11
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	17

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 21-92414
Project / Site name: Halewood

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1969314	Sample	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 21-92414

Project / Site name: Halewood

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Dave B

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Analytical Report Number : 21-92416

Project / Site name:	Halewood	Samples received on:	11/08/2021
Your job number:		Samples instructed on/ Analysis started on:	11/08/2021
Your order number:		Analysis completed by:	20/08/2021
Report Issue Number:	1	Report issued on:	20/08/2021
Samples Analysed:	1 soil sample		

Signed: *VA. Czerwińska*

Agnieszka Czerwińska
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

i2 Analytical

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Certificate of Analysis									
BS 3882:2015 Specification For Topsoil									
	Pass BS 3882 for Multipurpose Topsoil; Calcareous;						client		
Report No:	21-92416					Cheshire Soils and Aggregates Ltd			
Location	Halewood								
Lab Reference (Sample Number)	1969316								
Sampling Date	10/08/2021								
Sample ID	Sample								
Depth (m)	0.00			Compliant with range (Y/N)					
		unit	Result	Multi-P	Acid	Calc	Low-F	Low-F(a)	Low-F(c)
Soil texture	<2mm fraction	%m/m	SANDY LOAM	Y	Y	Y	Y	Y	Y
Maximum coarse fragment content:	>2mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
	>20mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
	>50mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
Mass loss on ignition		%	4.80						
	Clay 5-20%		Y	Y	Y	Y	Y	Y	Y
	Clay 20-35%		-	-	-	-	-	-	-
Soil pH:		pH	7.60	Y	N	Y	Y	N	Y
Carbonate:		%m/m	1.80	-	-	Y	-	-	Y
Available plant nutrients	Nitrogen	%m/m	0.22	Y	Y	Y	-	-	-
	Extractable Phosphate (as P)	mg/l	41.00	Y	Y	Y	N	N	N
	Extractable Potassium	mg/l	189.00	Y	Y	Y	-	-	-
	Extractable Magnesium	mg/l	77.00	Y	Y	Y	-	-	-
Carbon: Nitrogen Ratio:		:1	13.00	Y	Y	Y	Y	Y	Y
Conductivity		us/cm	1900.00	Y	-	-	-	-	-
Phytotoxic contaminants:	** Total Zinc	mg/kg	110.00	Y	Y	Y	Y	Y	Y
	** Total Copper	mg/kg	61.00	Y	Y	Y	Y	Y	Y
	** Total Nickel	mg/kg	27.00	Y	Y	Y	Y	Y	Y
Visible contaminants:	>2mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
	Plastics	%m/m	0.00	Y	Y	Y	Y	Y	Y
	Sharps	no. in 1 kg	0.00	Y	Y	Y	Y	Y	Y
Compliance:				Pass	Fail	Pass	Fail	Fail	Fail
Results are expressed on a dry weight basis, after correction for moisture content where applicable Stated limits are for guidance only and 12 cannot be held responsible for any discrepancies with current legislation									

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

Analytical Report Number : 21-92416

Project / Site name: Halewood

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1969316	Sample	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 21-92416

Project / Site name: Halewood

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Geotechnical Testing in Soil	See attached geotechnical report	See attached geotechnical report		W	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Textural Classification Diagram	Textural classification Diagram	BS3882:2015		D	NONE
Carbon to Nitrogen Ratio (Topsoil - BS3882:2015)	Carbon to Nitrogen ratio (:1) calculated using Loss on Ignition.	BS3882:2015	L01TS2015	W	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Kjeldahl nitrogen in soil	Determination of total nitrogen using the Kjeldahl-digestion method and colorimetric determination.	In house method based on BS 7755-3.7:1995 &	L087-PL	D	NONE
Topsoil	See attached report.	BS 3882: 2015	PL	W	NONE
Mass loss on ignition (Topsoil - BS3882)	Determination of Loss on Ignition as per BS 3882:2015.	BS3882:2015	L047-PL	D	NONE
Carbonate (Topsoil - BS3882)	Determination of Carbonate as per BS 3882:2015.	BS3882:2015	L034-PL	D	NONE
Phosphorus as PO4 (BS3882/BS8601)	Determination of the extractable phosphorus in soil, in accordance with BS3882:2007 methodology.	BS3882:2015 & BS8601:2013	L082-PL	D	NONE
Coarse Fragment and Contaminant Analysis	Determination of >2mm contaminants	BS3882:2007 & BS8601:2013 & PAS 100:2005	L01TS	D	NONE
Nitrogen (TKN)	Determination of total nitrogen by Kjeldahl method.	BS3882:2007	L087-PL	D	NONE
Conductivity (BS3882/BS8601)	Determination of the conductivity of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
pH (BS3882/BS8601)	Determination of the pH of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
Extractable/Available Metals (BS3882/BS8601)	Determination of the extractable metals in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L038-PL	D	NONE

Analytical Report Number : 21-92416

Project / Site name: Halewood

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sodium (exchangeable %)	Determination of exchangeable sodium (%) by calculation, in accordance with BS3882:2007 methodology.	BS3882:2007	L028-PL	D	NONE
Textural Classification (BS3882/BS8601)	Determination of the textural classification of soil following BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L01TS	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Appendix B – Certificates of Analysis – Topsoil



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M26 2ZS

Derwentside Environmental Testing Services Ltd
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Rose Lane Industrial Estate
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Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-01019

Site Reference: Morris St, Radcliffe

Project / Job Ref: LKC 21 1616

Order No: LKC211616HM

Sample Receipt Date: 26/01/2023

Sample Scheduled Date: 26/01/2023

Report Issue Number: 1

Reporting Date: 02/02/2023

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



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Maidstone
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Soil Analysis Certificate						
DETS Report No: 23-01019	Date Sampled	25/01/23	25/01/23	25/01/23		
LK Consult Limited	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Morris St, Radcliffe	TP / BH No	TS1	TS2	TS3		
Project / Job Ref: LKC 21 1616	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: LKC211616HM	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 02/02/2023	DETS Sample No	630320	630321	630322		

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	8.1	8.0	8.1		
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1		
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1		
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	119	259	74		
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.12	0.26	0.07		
Organic Matter (SOM)	%	< 0.1	MCERTS	5.9	4.4	7.3		
Arsenic (As)	mg/kg	< 2	MCERTS	3	2	3		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	1.4		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	7	7	8		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	15	15	18		
Lead (Pb)	mg/kg	< 3	MCERTS	22	20	32		
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	6	7	8		
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Vanadium (V)	mg/kg	< 1	MCERTS	7	6	9		
Zinc (Zn)	mg/kg	< 3	MCERTS	44	47	58		
Total Phenols (monohydric)	mg/kg	< 1	NONE	< 2	< 2	< 2		

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



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-01019	Date Sampled	25/01/23	25/01/23	25/01/23		
LK Consult Limited	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Morris St, Radcliffe	TP / BH No	TS1	TS2	TS3		
Project / Job Ref: LKC 21 1616	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: LKC211616HM	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 02/02/2023	DETS Sample No	630320	630321	630322		

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	0.24	0.27	0.36	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.38	0.39	0.60	
Pyrene	mg/kg	< 0.1	MCERTS	0.35	0.34	0.51	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.17	0.16	0.25	
Chrysene	mg/kg	< 0.1	MCERTS	0.18	0.19	0.25	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.18	0.18	0.27	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.16	0.15	0.24	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.13	0.12	0.19	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	1.8	1.8	2.7	



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Soil Analysis Certificate - TPH LQM Banded

DETS Report No: 23-01019	Date Sampled	25/01/23	25/01/23	25/01/23		
LK Consult Limited	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Morris St, Radcliffe	TP / BH No	TS1	TS2	TS3		
Project / Job Ref: LKC 21 1616	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: LKC211616HM	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 02/02/2023	DETS Sample No	630320	630321	630322		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aliphatic >C16 - C35 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10		
Aliphatic >C35 - C44 : EH_CU_1D_AL	mg/kg	< 10	NONE	< 10	< 10	< 10		
Aliphatic (C5 - C44) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 30	NONE	< 30	< 30	< 30		
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	< 3	< 3		
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	21	< 10		
Aromatic >C35 - C44 : EH_CU_1D_AR	mg/kg	< 10	NONE	< 10	< 10	< 10		
Aromatic (>C5 - C44) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 30	NONE	< 30	< 30	< 30		
Total >C5 - C44 : HS_1D_MS+EH_CU_1D_Tot al	mg/kg	< 60	NONE	< 60	< 60	< 60		



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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-01019	Date Sampled	25/01/23	25/01/23	25/01/23		
LK Consult Limited	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Morris St, Radcliffe	TP / BH No	TS1	TS2	TS3		
Project / Job Ref: LKC 21 1616	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: LKC211616HM	Depth (m)	None Supplied	None Supplied	None Supplied		
Reporting Date: 02/02/2023	DETS Sample No	630320	630321	630322		

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5		
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5		



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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 23-01019	
LK Consult Limited	
Site Reference: Morris St, Radcliffe	
Project / Job Ref: LKC 21 1616	
Order No: LKC211616HM	
Reporting Date: 02/02/2023	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
630320	TS1	None Supplied	None Supplied	13.3	Black loamy sand with vegetation
630321	TS2	None Supplied	None Supplied	11.2	Black loamy sand
630322	TS3	None Supplied	None Supplied	25	Black loamy sand with vegetation

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

Insufficient Sample ^{U/S}

Unsuitable Sample ^{U/S}



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-01019

LK Consult Limited

Site Reference: Morris St, Radcliffe

Project / Job Ref: LKC 21 1616

Order No: LKC211616HM

Reporting Date: 02/02/2023

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



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List of HWOL Acronyms and Operators	
DETS Report No: 23-01019	
LK Consult Limited	
Site Reference: Morris St, Radcliffe	
Project / Job Ref: LKC 21 1616	
Order No: LKC211616HM	
Reporting Date: 02/02/2023	

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH LQM - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH LQM - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH LQM - Aliphatic >C16 - C35 - EH_CU_1D_AL
TPH LQM - Aliphatic >C35 - C44 - EH_CU_1D_AL
TPH LQM - Aliphatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AL
TPH LQM - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH LQM - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH LQM - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH LQM - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH LQM - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH LQM - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH LQM - Aromatic >C35 - C44 - EH_CU_1D_AR
TPH LQM - Aromatic >C5 - C44 - HS_1D_MS+EH_CU_1D_AR
TPH LQM - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH LQM - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH LQM - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH LQM - Total >C5 - C44 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

Final Report

Report No.:	22-14246-1		
Initial Date of Issue:	25-Apr-2022		
Client	LK Consult		
Client Address:	Unit 29 Eton Business Park Eton Hill Road Radcliffe Manchester Lancashire M26 2ZS		
Contact(s):	Contaminated Land Hannah Moss		
Project	LKC 21 1616 Morris Street, Radcliffe		
Quotation No.:		Date Received:	14-Apr-2022
Order No.:	740191	Date Instructed:	20-Apr-2022
No. of Samples:	3		
Turnaround (Wkdays):	5	Results Due:	26-Apr-2022
Date Approved:	25-Apr-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: LKC 21 1616 Morris Street, Radcliffe

Client: LK Consult	Chemtest Job No.:				22-14246	22-14246	22-14246
Quotation No.:	Chemtest Sample ID.:				1412046	1412047	1412048
	Client Sample ID.:				SP101	SP102	SP103
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				08-Apr-2022	08-Apr-2022	08-Apr-2022
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	23	24	27
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH	U	2010		4.0	7.2	7.4	7.4
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.037	0.033	0.046
Arsenic	U	2450	mg/kg	1.0	2.8	2.6	4.4
Cadmium	U	2450	mg/kg	0.10	0.13	0.12	0.15
Chromium	U	2450	mg/kg	1.0	11	10	13
Copper	U	2450	mg/kg	0.50	15	15	19
Mercury	U	2450	mg/kg	0.10	< 0.10	0.10	0.11
Nickel	U	2450	mg/kg	0.50	7.6	6.9	8.5
Lead	U	2450	mg/kg	0.50	27	26	35
Selenium	U	2450	mg/kg	0.20	0.20	< 0.20	0.25
Vanadium	U	2450	mg/kg	5.0	8.5	7.3	11
Zinc	U	2450	mg/kg	0.50	26	25	34
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	4.8	5.2	6.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.21	0.30	0.38
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.10
Fluoranthene	U	2800	mg/kg	0.10	0.56	0.83	0.92
Pyrene	U	2800	mg/kg	0.10	0.54	0.79	0.77
Benzo[a]anthracene	U	2800	mg/kg	0.10	0.26	0.35	0.35
Chrysene	U	2800	mg/kg	0.10	0.29	0.41	0.45
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	0.41	0.49	0.54
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	0.11	0.20	0.19
Benzo[a]pyrene	U	2800	mg/kg	0.10	0.35	0.48	0.52
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	0.24	0.32	0.39
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	0.12	0.14	0.13
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	0.26	0.33	0.36
Total Of 16 PAH's	N	2800	mg/kg	2.0	3.4	4.6	5.1

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
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.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

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

Charges may apply to extended sample storage

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

customerservices@chemtest.com

Appendix C – Supplier Certificates – Subsoil

Dave B

Cheshire Soils and Aggregates Ltd
Unit 3B, Thelwall Lane
Warrington
Cheshire
WA4 1TB

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: dave@cheshiresoils.co.uk

Analytical Report Number : 21-10823

Project / Site name:	Charcoal Lane	Samples received on:	17/09/2021
Your job number:	DUNHAM	Samples instructed on/ Analysis started on:	17/09/2021
Your order number:		Analysis completed by:	24/09/2021
Report Issue Number:	1	Report issued on:	24/09/2021
Samples Analysed:	1 soil sample		

Signed: *Karolina Marek*

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 21-10823

Project / Site name: Charcoal Lane

Lab Sample Number				2015977
Sample Reference				Sample
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				16/09/2021
Time Taken				1700
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	12
Total mass of sample received	kg	0.001	NONE	2.0

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.5
Organic Matter (automated)	%	0.1	MCERTS	0.4

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.6
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.52
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0
Chromium (III)	mg/kg	1	NONE	18
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	7.8
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	18
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	33

Analytical Report Number: 21-10823

Project / Site name: Charcoal Lane

Lab Sample Number				2015977
Sample Reference				Sample
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				16/09/2021
Time Taken				1700
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 21-10823
Project / Site name: Charcoal Lane

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2015977	Sample	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 21-10823

Project / Site name: Charcoal Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

TEST CERTIFICATE

Specification for Subsoil

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS



Tested in Accordance with: BS 8601: 2013

Client: Cheshire Soils and Aggregates Ltd
Client Address: Unit 3B, Thelwall Lane, Warrington,
Cheshire, WA4 1TB

Contact: Dave B
Site Address: Charcoal Lane

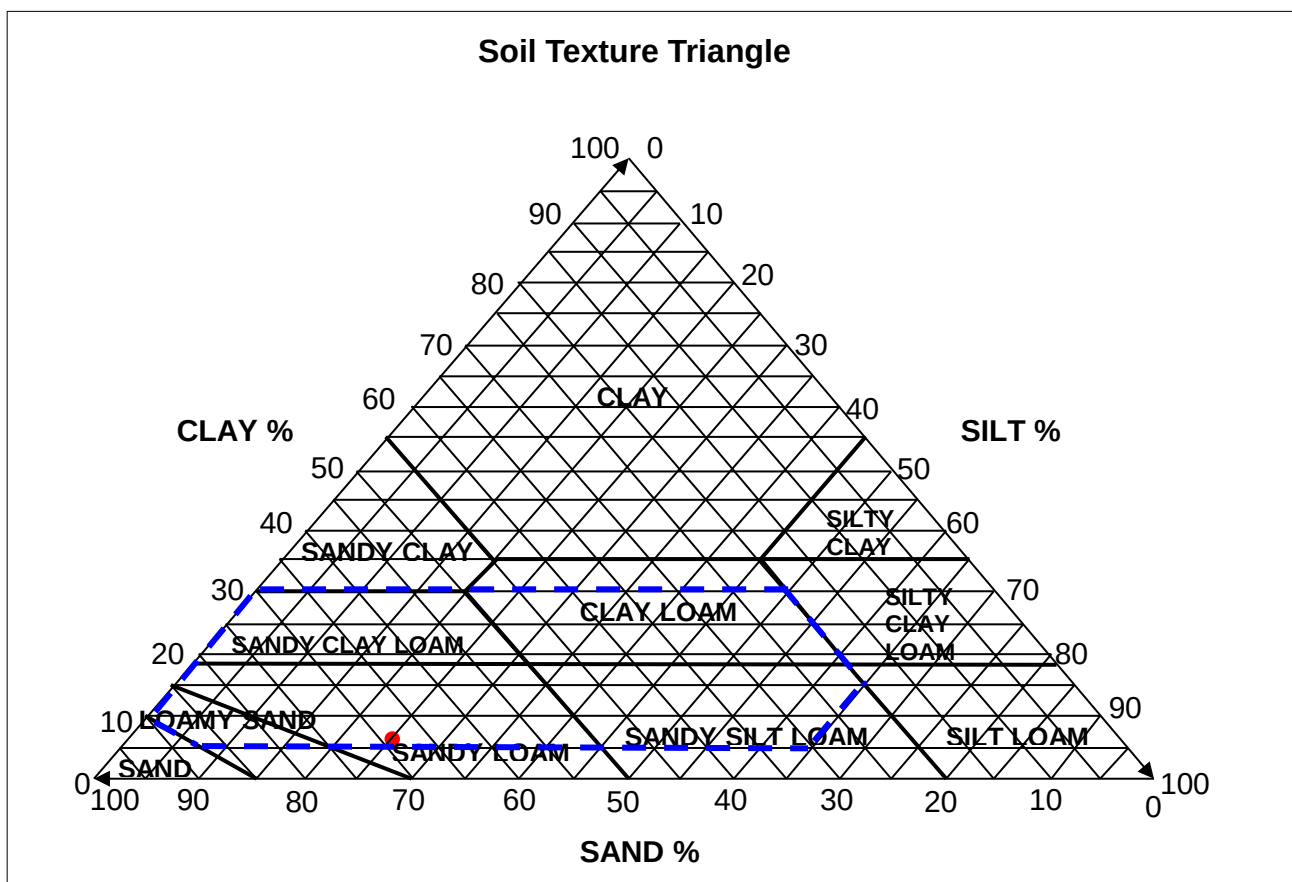
Client Reference: DUNHAM
Job Number: 21-10825
Date Sampled: 16/09/2021
Date Received: 17/09/2021
Date Tested: 21/09/2021
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2015994
Hole No.: Sample
Sample Reference: Not Given
Sample Description: SANDY LOAM

Depth Top [m]: 0.00
Depth Base [m]: Not Given
Sample Type: D



Sample Proportion	% dry mass
Sand	69.2
Silt	23.4
Clay	7.4

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

Anna Wiczorek
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

**Dave B**

Cheshire Soils and Aggregates Ltd
Unit 3B, Thelwall Lane
Warrington
Cheshire
WA4 1TB

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: dave@cheshiresoils.co.uk

Analytical Report Number : 21-10825

Project / Site name:	Charcoal Lane	Samples received on:	17/09/2021
Your job number:	DUNHAM	Samples instructed on/ Analysis started on:	17/09/2021
Your order number:		Analysis completed by:	29/09/2021
Report Issue Number:	1	Report issued on:	29/09/2021
Samples Analysed:	1 soil sample		

Signed:

Joanna Wawrzeczko
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

i2 Analytical

7 Woodshots Meadow
Croxy Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404

Fax: 01923 237404

email:reception@i2analytical.com

Certificate of Analysis						
BS 8601:2013 Specification For Subsoil						
Report No:	21-10825			Cheshire Soils and Aggregates Ltd Unit 3B, Thelwall Lane Warrington Cheshire WA4 1TB		
Location	Charcoal Lane					
Lab Reference (Sample Number)	2015994					
Sampling Date	16/09/2021					
Sample ID	Sample					
Depth (m)						
Texture		unit	Result	Compliant with range (Y/N)		
	Clay	%w/w	7.40	Multipurpose subsoil	Specific purpose subsoil	
	Silt	%w/w	23.40		Acidic	Calcareous
	Sand	%w/w	69.2		Y	Y
	Texture Class		SANDY LOAM	Y	Y	Y
Mass Loss on Ignition		%	1.02	Y	Y	Y
Coarse fragment content	>2mm	%w/w	1.30	Y	Y	Y
	>20mm	%w/w	0.00	Y	Y	Y
	>75mm	%w/w	0.00	Y	Y	Y
Soil pH		pH	7.80	Y	N	Y
Carbonate		%	1.40	-	-	Y
Exchangable Sodium Percentage		%	2.10	Y	Y	Y
Phytotoxic contaminants	Total Zinc	mg/kg	32.00	Y	Y	Y
	Total Copper	mg/kg	17.00	Y	Y	Y
	Total Nickel	mg/kg	14.00	Y	Y	Y
Visible contaminants	>2mm	%w/w	0.00	Y	Y	Y
	Plastics	%w/w	0.00	Y	Y	Y
	Sharps	%w/w	0.00	Y	Y	Y
Available plant nutrients	Phosphorus	mg/l	16.00			
	Potassium	mg/l	87.60			
	Magnesium	mg/l	88.00			
Additional analysis	Available Sodium	mg/l	38.00			
	Available Calcium	mg/l	1300.00			
	Conductivity	uS/cm	1900.00			
	Conductivity CaSO4 Adj.	uS/cm	< 10			
Compliance				Pass	Fail	Pass
Pass BS 8601						

Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

* = UKAS accredited

** = MCERTS accredited



Analytical Report Number : 21-10825
Project / Site name: Charcoal Lane

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2015994	Sample	None Supplied	None Supplied	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 21-10825

Project / Site name: Charcoal Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Geotechnical Testing in Soil	See attached geotechnical report	See attached geotechnical report		W	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
75 mm Coarse Fraction - BS8601 Subsoil	Determination of > 75 mm fraction by gravimetry.	BS8601:2013		D	NONE
Carbonate - BS8601 Subsoil	Determination of soil carbonate content	BS8601:2013	L034-PL	D	NONE
Loss on Ignition - BS8601	Determination of Loss on Ignition as defined in BS8601	BS8601:2013		D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Subsoil	See attached report.	BS 8601: 2013	PL	W	NONE
Textural Classification Diagram	-	BS8601:2013		D	NONE
Conductivity (BS3882/BS8601)	Determination of the conductivity of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
pH (BS3882/BS8601)	Determination of the pH of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
Phosphorus (BS3882/BS8601)	Determination of the extractable phosphorus in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L038-PL	D	NONE
Extractable/Available Metals (BS3882/BS8601)	Determination of the extractable metals in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L038-PL	D	NONE
Sodium (exchangeable %)	Determination of exchangeable sodium (%) by calculation, in accordance with BS3882:2007 methodology.	BS3882:2007	L028-PL	D	NONE
Textural Classification (BS3882/BS8601)	Determination of the textural classification of soil following BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L01TS	D	NONE
Coarse Fragment and Contaminant Analysis	Determination of >2mm contaminants	BS3882:2007 & BS8601:2013 & PAS 100:2005	L01TS	D	NONE



Analytical Report Number : 21-10825
Project / Site name: Charcoal Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Appendix D – Certificates of Analysis – Subsoil



Final Report

Report No.: 22-21086-1

Initial Date of Issue: 14-Jun-2022

Client LK Consult

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

Contact(s): Contaminated Land
Hannah Moss

Project LKC 21 1616 Morris Street, Radcliffe

Quotation No.: **Date Received:** 08-Jun-2022

Order No.: 740333 **Date Instructed:** 08-Jun-2022

No. of Samples: 3

Turnaround (Wkdays): 5 **Results Due:** 14-Jun-2022

Date Approved: 14-Jun-2022

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: LKC 21 1616 Morris Street, Radcliffe

Client: LK Consult	Chemtest Job No.:				22-21086	22-21086	22-21086
Quotation No.:	Chemtest Sample ID.:				1443189	1443190	1443191
	Client Sample ID.:				SP101	SP102	SP103
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				06-Jun-2022	06-Jun-2022	06-Jun-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	13	10	13
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Roots and Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand
Chromatogram (TPH)	N			N/A	See Attached	See Attached	See Attached
pH	M	2010		4.0	7.1	7.0	7.1
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.73	0.77	0.72
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.033	0.025	0.024
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	3.9	3.5	3.2
Cadmium	M	2455	mg/kg	0.10	0.24	0.21	0.21
Chromium	M	2455	mg/kg	0.5	8.9	8.4	8.2
Copper	M	2455	mg/kg	0.50	29	26	27
Mercury	M	2455	mg/kg	0.05	0.15	0.15	0.11
Nickel	M	2455	mg/kg	0.50	8.4	8.0	7.9
Lead	M	2455	mg/kg	0.50	30	29	26
Selenium	M	2455	mg/kg	0.25	0.26	< 0.25	< 0.25
Vanadium	U	2455	mg/kg	0.5	8.4	7.5	7.4
Zinc	M	2455	mg/kg	0.50	42	39	35
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	2.9	3.1	2.6
Diesel Present	N	2670		N/A	False	False	False
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: LKC 21 1616 Morris Street, Radcliffe

Client: LK Consult	Chemtest Job No.:				22-21086	22-21086	22-21086
Quotation No.:	Chemtest Sample ID.:				1443189	1443190	1443191
	Client Sample ID.:				SP101	SP102	SP103
	Sample Type:				SOIL	SOIL	SOIL
	Date Sampled:				06-Jun-2022	06-Jun-2022	06-Jun-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	1.4	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	1.3	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	3.7	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	2.9	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	22	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	6.4	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	38	0.54	0.64
Pyrene	M	2800	mg/kg	0.10	33	0.50	0.64
Benzo[a]anthracene	M	2800	mg/kg	0.10	17	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	15	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	17	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	6.7	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	15	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	7.7	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	1.5	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	6.7	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	200	< 2.0	< 2.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

TPH Chromatogram on Soil Sample: 1443189

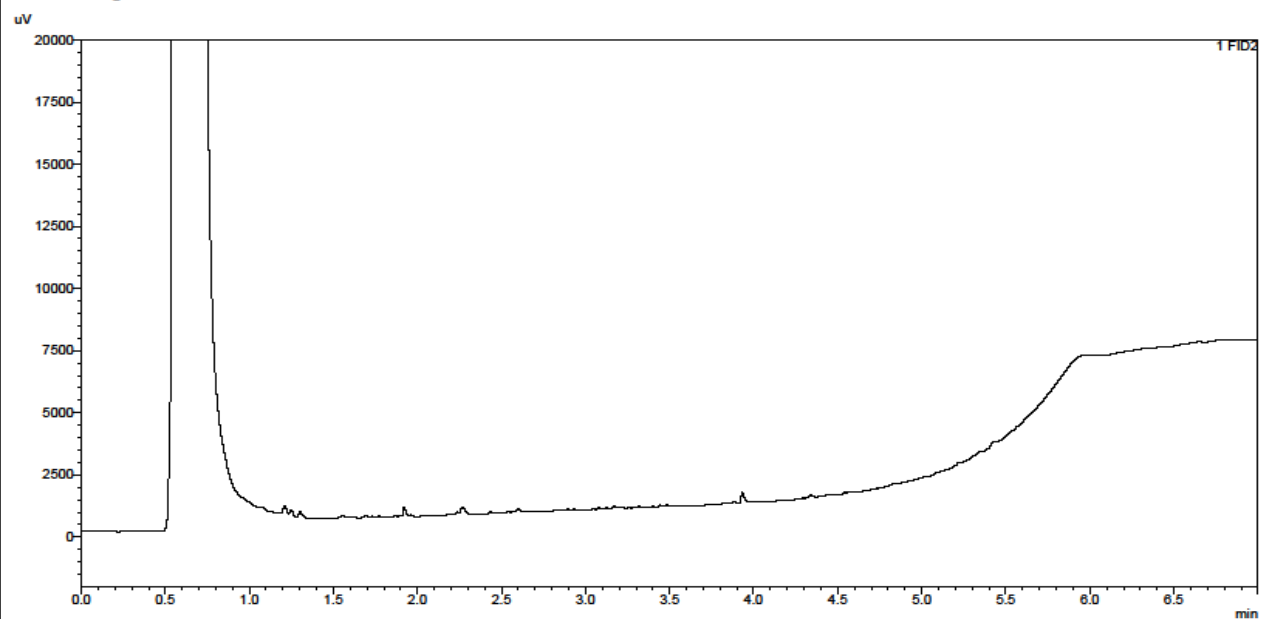
<Sample Information>

Sample Name : Back 1443189 22-21086
Data Filename : 2022-06-08_08062022_Back 1443189 22-21086_100.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 125
Date Acquired : 09/08/2022 02:11:39
Date Processed : 09/09/2022



Chemtest

<Chromatogram>



TPH Chromatogram on Soil Sample: 1443190

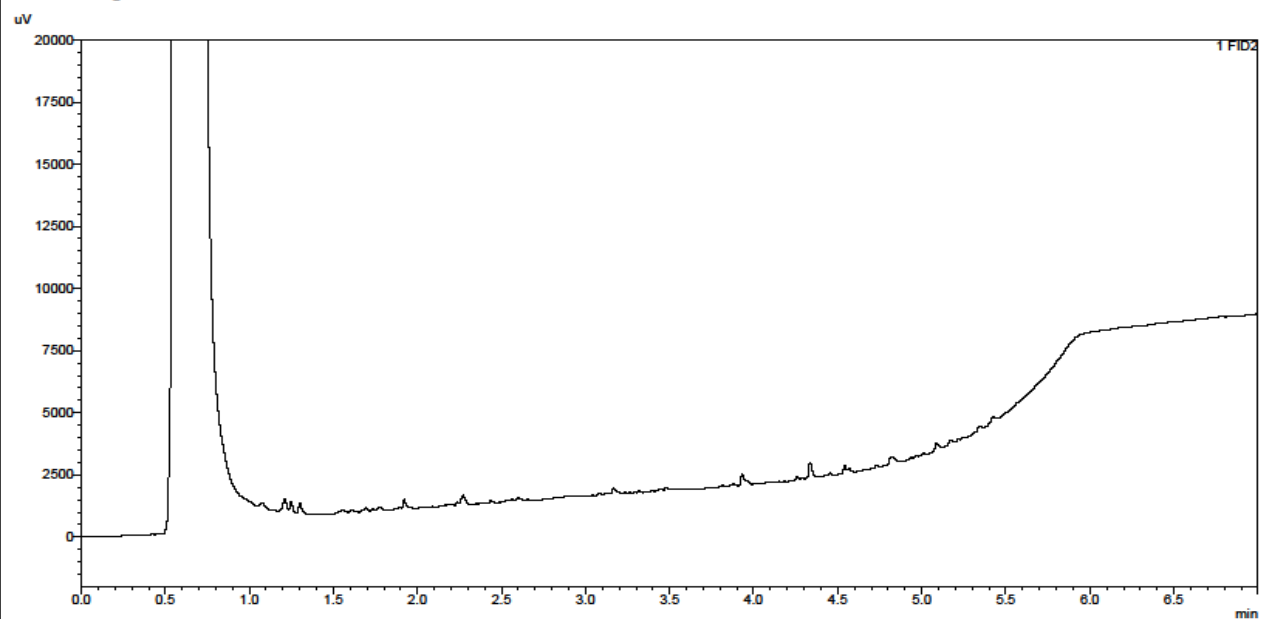
<Sample Information>

Sample Name : Back 1443190 22-21086
Data Filename : 2022-06-08_08062022_Back 1443190 22-21086_102.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 126
Date Acquired : 08/08/2022 02:25:14
Date Processed : 08/08/2022



Chemtest

<Chromatogram>



TPH Chromatogram on Soil Sample: 1443191

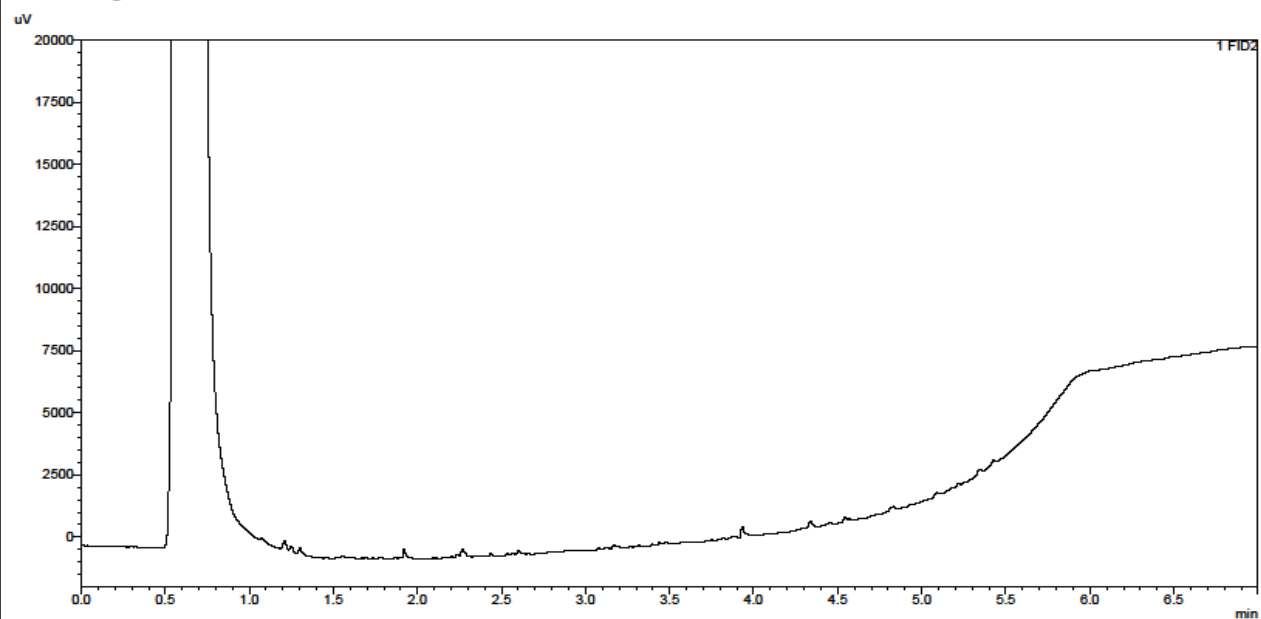
<Sample Information>

Sample Name : Back 1443191 22-21086
Data Filename : 2022-06-08_08062022_Back 1443191 22-21086_104.gcd
Method Filename : TPH 12m Fast OSv2.gcm
Sample # : 127
Date Acquired : 08/08/2022 02:38:30
Date Processed : 08/08/2022



Chemtest

<Chromatogram>



TPH Interpretation

Job	Sample	Matrix	Location	Sample Ref	Sample ID	Sample Depth (m)	Gasoline / Diesel Present	TPH Interpretation
22-21086	1443189	S			SP101		No	N/A
22-21086	1443190	S			SP102		No	N/A
22-21086	1443191	S			SP103		No	N/A

Test Methods

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

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

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

Charges may apply to extended sample storage

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

customerservices@chemtest.com

Appendix E – Stone Break Layer Certificates



No:	06706
Date:	30/6/22
Licence No:	OC2035899

Unit 21 Landgate Industrial Estate, Wigan, WN4 0BW
Office: 01942 727825 • Email: info@civils.co.uk

Collected From:

SCOUTMOOR

Delivered to:

MORRIS ST

Driver Name:

DEAN

Vehicle Reg:

YN68YBY

1 x 8 Wheeler Load
Description
MOT

Print Name:

Signature:

Job Title:



No:	06705
Date:	30/6/22
Licence No:	OC2035899

Unit 21 Landgate Industrial Estate, Wigan, WN4 0BW
Office: 01942 727825 • Email: info@civils.co.uk

Collected From:

SCOUTMOOR

Delivered to:

MORRIS ST

Driver Name:

DEAN

Vehicle Reg:

YN68YBY

1 x 8 Wheeler Load
Description
MOT

Print Name:

Signature:

Job Title:

Appendix F – Generic Assessment Criteria

CATEGORY 4 SCREENING LEVELS

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

Tetrachlorethene (PCE) – 1% SOM	0.31 mg/kg	0.32 mg/kg	2.0 mg/kg	24 mg/kg	3,200 mg/kg	1,400 mg/kg
Tetrachlorethene (PCE) – 2.5% SOM	0.70 mg/kg	0.71 mg/kg	4.8 mg/kg	55 mg/kg	3,300 mg/kg	1,900 mg/kg
Tetrachlorethene (PCE) – 6% SOM	1.6 mg/kg	1.6 mg/kg	11 mg/kg	130 mg/kg	3,400 mg/kg	2,500 mg/kg
Trichlorethene (TCE) – 1% SOM	0.0093 mg/kg	0.0097 mg/kg	0.032 mg/kg	0.73 mg/kg	76 mg/kg	41 mg/kg
Trichlorethene (TCE) – 2.5% SOM	0.020 mg/kg	0.020 mg/kg	0.072 mg/kg	1.5 mg/kg	78 mg/kg	54 mg/kg
Trichlorethene (TCE) – 6% SOM	0.043 mg/kg	0.045 mg/kg	0.16 mg/kg	3.4 mg/kg	79 mg/kg	69 mg/kg
Vinyl Chloride (VC) – 1%SOM	0.0064 mg/kg	0.015 mg/kg	0.0017 mg/kg	1.1 mg/kg	7.8 mg/kg	18 mg/kg
Vinyl Chloride (VC) – 2.5%SOM	0.010 mg/kg	0.019 mg/kg	0.0031 mg/kg	1.4 mg/kg	7.8 mg/kg	19 mg/kg
Vinyl Chloride (VC) – 6%SOM	0.017 mg/kg	0.029 mg/kg	0.0058 mg/kg	2.2 mg/kg	7.8 mg/kg	19 mg/kg

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

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

All GAC are based on sandy loam soils with a pH 7.			LQM Generic Assessment Criteria (mg/kg) Dry weight soil					
Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Metals	Inorganic Arsenic	6%	37	40	43	640	79	170
	Beryllium	6%	1.7	1.7	35	12	2.2	63
	Boron	6%	290	11,000	45	240,000	21,000	46,000
	Cadmium	6%	11	85	1.9	190	120	532
	Chromium (III)	6%	910	910	18,000	8,600	1,500	33,000
	Chromium (VI)	6%	6.0	6.0	1.8	33	7.7	220
	Copper	6%	2,400	7,100	520	68,000	12,000	44,000
	Elemental Mercury	6%	1.2	1.2	21	58 (25.8) ^{vap}	16	30 (25.8) ^{vap}
	Inorganic Mercury	6%	40	56	19	1,100	120	240
	Methylmercury	6%	11	15	6.0	320	40	68
	Nickel (update 2015)	6%	126	181	53	983	231	804
	Selenium	6%	250	430	88	12,000	1,100	1,800
	Vanadium	6%	410	1,200	91	9,000	2,000	5,000
Zinc	6%	3,700	40,000	620	730,000	81,000	170,000	
BTEX Compounds	Benzene	1%	0.087	0.38	0.017	27	72	90
		2.5%	0.17	0.70	0.034	47	72	100
		6%	0.37	1.4	0.075	90	73	110
	Toluene	1%	130	880 (869) ^{vap}	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}
		2.5%	290	1,900	51	110,000 (1,920) ^{vap}	56,000	95,000 (1,920) ^{vap}
		6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}
	Ethylbenzene	1%	47	83	16	5,700 (518) ^{vap}	24,000	17,000 (518) ^{vap}
		2.5%	110	190	39	13,000 (1,220) ^{vap}	24,000	22,000 (1,220) ^{vap}
		6%	260	440	91	27,000 (2,840) ^{vap}	25,000	27,000 (2,840) ^{vap}
	o-xylene	1%	60	88	28	6,600 (478) ^{sol}	41,000	17,000 (478) ^{sol}
		2.5%	140	210	67	15,000 (1,120) ^{sol}	42,000	24,000 (1,120) ^{sol}
		6%	330	480	160	33,000 (2,620) ^{sol}	43,000	33,000 (2,620) ^{sol}
	m-xylene	1%	59	82	31	6,200 (625) ^{vap}	41,000	17,000 (625) ^{vap}
		2.5%	140	190	74	14,000 (1,470) ^{vap}	42,000	24,000 (1,470) ^{vap}
		6%	320	450	170	31,000 (3,460) ^{vap}	43,000	32,000 (3,460) ^{vap}
	p-xylene	1%	56	79	29	5,900 (576) ^{sol}	41,000	17,000 (576) ^{sol}
		2.5%	130	180	69	14,000 (1,350) ^{sol}	42,000	23,000 (1,350) ^{sol}
		6%	310	430	160	30,000 (3,170) ^{sol}	43,000	31,000 (3,170) ^{sol}

NOTES

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

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

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

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

NOTES

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

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

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

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

Contaminant	SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}
Aliphatic							
EC 5-6	1%	42	42	730	3,200 (304) ^{sol}	570,000(304) ^{sol}	95,000 (304) ^{sol}
EC>6-8	1%	100	100	2,300	7,800 (144) ^{sol}	600,000	150,000 (144) ^{sol}
EC>8-10	1%	27	27	320	2,000 (78) ^{sol}	13,000	14,000 (78) ^{vap}
EC>10-12	1%	130 (48) ^{vap}	130 (48) ^{vap}	2,200	9,700 (48) ^{sol}	13,000	21,000 (48) ^{vap}
EC>12-16	1%	1,100 (24) ^{sol}	1,100 (24) ^{sol}	11,000	59,000 (24) ^{sol}	13,000	25,000 (24) ^{sol}
EC>16-35	1%	65,000 (8.48) ^{f, sol}	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f
EC>35-44	1%	65,000 (8.48) ^{f, sol}	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f
Aliphatic							
EC 5-6	2.5%	78	78	1,700	5,900 (558) ^{sol}	590,000	130,000 (558) ^{sol}
EC>6-8	2.5%	230	230	5,600	17,000 (322) ^{sol}	610,000	220,000 (322) ^{sol}
EC>8-10	2.5%	65	65	770	4,800 (190) ^{vap}	13,000	18,000 (190) ^{vap}
EC>10-12	2.5%	330 (118) ^{vap}	330 (118) ^{vap}	4,400	23,000 (118) ^{vap}	13,000	23,000 (118) ^{vap}
EC>12-16	2.5%	2,400 (59) ^{sol}	2,400 (59) ^{sol}	13,000	82,000 (59) ^{sol}	13,000	25,000 (59) ^{sol}
EC>16-35	2.5%	92,000 (21) ^{f, sol}	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f
EC>35-44	2.5%	92,000 (21) ^{f, sol}	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f
Aliphatic							
EC 5-6	6%	160	160	3,900	12,000 (1,150) ^{sol}	600,000	180,000 (1,150) ^{sol}
EC>6-8	6%	530	530	13,000	40,000 (736) ^{sol}	620,000	320,000 (736) ^{sol}
EC>8-10	6%	150	150	1,700	11,000 (451) ^{vap}	13,000	21,000 (451) ^{vap}
EC>10-12	6%	760 (283) ^{vap}	760 (283) ^{vap}	7,300	47,000 (283) ^{vap}	13,000	24,000 (283) ^{vap}
EC>12-16	6%	4,300 (142) ^{sol}	4,400 (142) ^{sol}	13,000	90,000 (142) ^{sol}	13,000	26,000 (142) ^{sol}
EC>16-35	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f
EC>35-44	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f
Aromatic							
EC5-7(benzene as non-threshold)	1%	70	370	13	26,000 (1,220) ^{sol}	56,000	76,000 (1,220) ^{sol}
EC>7-8(toluene)	1%	130	860	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}
EC>8-10	1%	34	47	8.6	3,500 (613) ^{vap}	5,000	7,200 (613) ^{vap}
EC>10-12	1%	74	250	13	16,000 (364) ^{sol}	5,000	9,200 (364) ^{sol}
EC>12-16	1%	140	1,800	23	36,000 (169) ^{sol}	5,100	10,000
EC>16-21	1%	260 ^f	1,900 ^f	46 ^f	28,000 ^f	3,800 ^f	7,600 ^f
EC>21-35	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f
EC>35-44	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f
Aromatic							
EC5-7(benzene as non-threshold)	2.5%	140	690	27	46,000 (2,260) ^{sol}	56,000	84,000 (2,260) ^{sol}
EC>7-8(toluene)	2.5%	290	1,800	51	110,000 (1,920) ^{sol}	56,000	95,000 (1,920) ^{sol}
EC>8-10	2.5%	83	110	21	8,100 (1,500) ^{vap}	5,000	8,500 (1,500) ^{vap}
EC>10-12	2.5%	180	590	31	28,000 (899) ^{sol}	5,000	9,700 (899) ^{sol}
EC>12-16	2.5%	330	2,300 (419) ^{sol}	57	37,000	5,100	10,000
EC>16-21	2.5%	540 ^f	1,900 ^f	110 ^f	28,000 ^f	3,800 ^f	7,700 ^f
EC>21-35	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f
EC>35-44	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f
Aromatic							
EC5-7(benzene as non-threshold)	6%	300	1,400	57	86,000 (4,710) ^{sol}	56,000	92,000 (4,710) ^{sol}
EC>7-8(toluene)	6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}
EC>8-10	6%	190	270	51	17,000 (3,580) ^{vap}	5,000	9,300 (3,580) ^{vap}
EC>10-12	6%	380	1,200	74	34,000 (2,150) ^{sol}	5,000	10,000
EC>12-16	6%	660	2,500	130	38,000	5,100	10,000
EC>16-21	6%	930 ^f	1,900 ^f	260 ^f	28,000 ^f	3,800 ^f	7,800 ^f
EC>21-35	6%	1,700 ^f	1,900 ^f	1,600 ^f	28,000 ^f	3,800 ^f	7,900 ^f
EC>35-44	6%	1,700 ^f	1,900 ^f	1,600 ^f	28,000 ^f	3,800 ^f	7,900 ^f
Aliphatic +Aromatic >EC44	1%	1,600 ^f	1,900 ^f	1,200 ^f	28,000 ^f	3,800 ^f	7,800 ^f
	2.5%	1,800 ^f	1,900 ^f	2,100 ^f	28,000 ^f	3,800 ^f	7,800 ^f
	6%	1,900 ^f	1,900 ^f	3,000 ^f	28,000 ^f	3,800 ^f	7,900 ^f

NOTES

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

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

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

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

NOTES

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

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

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 – Plot Photographs

Plot 1 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 1. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 1.



Photograph 3:

View of rear garden of Plot 1.

Plot 2 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 2. White geotextile membrane at base.



Photograph 2:
Depth measurement in rear garden of Plot 2.



Photograph 3:
View of rear garden of Plot 2.

Plot 3 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 3. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 3.



Photograph 3:

View of rear garden of Plot 3.

Plot 4 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 4. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 4.



Photograph 3:

View of rear garden of Plot 4.

Plot 5 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 5. White geotextile membrane at base.



Photograph 2:
Depth measurement in rear garden of Plot 5.



Photograph 3:
View of rear garden of Plot 5.

Plot 6 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 6. White geotextile membrane at base.



Photograph 2:
Depth measurement in rear garden of Plot 6.



Photograph 3:
View of rear garden of Plot 6.

Plot 7 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 7. White geotextile membrane at base.



Photograph 2:
Depth measurement in rear garden of Plot 7.



Photograph 3:
View of rear garden of Plot 7.

Plot 8 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 8. White geotextile membrane at base.



Photograph 2:
Depth measurement in rear garden of Plot 8.



Photograph 3:
View of rear garden of Plot 8.

Plot 9 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 9. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 9.



Photograph 3:

View of rear garden of Plot 9.

Plot 10 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 10. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 10.



Photograph 3:

View of rear garden of Plot 10.

Plot 11 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 11. White geotextile membrane at base.



Photograph 2:
Depth measurement in rear garden of Plot 11.



Photograph 3:
View of rear garden of Plot 11.

Plot 12 Rear Garden

	Photograph 1: View of soil in capping layer excavation in rear garden of Plot 12. Orange geotextile membrane at base.
	Photograph 2: Depth measurement in rear garden of Plot 12.
	Photograph 3: View of rear garden of Plot 12.

Plot 13 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 13. Orange geotextile membrane at base.



Photograph 2:
Depth measurement in rear garden of Plot 13.



Photograph 3:
View of rear garden of Plot 13.

Plot 14 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 14. Black geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 14.



Photograph 3:

View of rear garden of Plot 14.

Plot 15-16 Front Garden



Photograph 1:
View of soil in capping layer excavation in front garden of Plot 15-16. White geotextile membrane at base.



Photograph 2:
Depth measurement in front garden of Plot 15-16.



Photograph 3:
View of front garden of Plot 15-16.

Plot 15 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 15. MOT at base.



Photograph 2:
Depth measurement in rear garden of Plot 15.



Photograph 3:
View of rear garden of Plot 15.

Plot 16 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 16. MOT at base.



Photograph 2:
Depth measurement in rear garden of Plot 16.



Photograph 3:
View of rear garden of Plot 16.

Plot 17 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 17. MOT at base.



Photograph 2:

Depth measurement in rear garden of Plot 17.



Photograph 3:

View of rear garden of Plot 17.

Plot 17 Front Garden



Photograph 1:

View of soil in capping layer excavation in front garden of Plot 17. White geotextile membrane at base.



Photograph 2:

Depth measurement in front garden of Plot 17.



Photograph 3:

View of front garden of Plot 17.

Plot 18 Front Garden



Photograph 1:
View of soil in capping layer excavation in front garden of Plot 18. Black geotextile membrane at base.



Photograph 2:
Depth measurement in front garden of Plot 18.



Photograph 3:
View of front garden of Plot 18.

Plot 18 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 18. MOT at base.



Photograph 2:
Depth measurement in rear garden of Plot 18.



Photograph 3:
View of rear garden of Plot 18.

Evidence of Hi-Visibility Geotextile Membrane and Break Layer – Plots 15-18
Rear

	Photograph 3: View of geotextile membrane being laid at base of cover system across rears of Plots 15-18.
	Photograph 3: View of geotextile membrane being laid at base of cover system across rears of Plots 15-18.

Plot 19 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 19. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 19.



Photograph 3:

View of rear garden of Plot 19.

Plot 20 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 20. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 20.



Photograph 3:

View of rear garden of Plot 20.

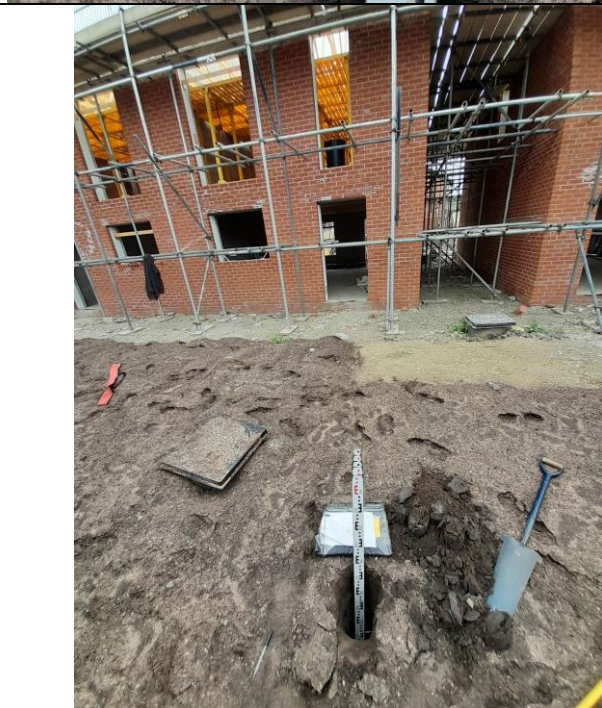
Plot 21 Rear Garden



Photograph 1:
View of soil in capping layer excavation in rear garden of Plot 21. White geotextile membrane at base.



Photograph 2:
Depth measurement in rear garden of Plot 21.



Photograph 3:
View of rear garden of Plot 21.

Plot 22 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 22. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 22.



Photograph 3:

View of rear garden of Plot 22.

Plot 23 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 23. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 23.



Photograph 3:

View of rear garden of Plot 23.

Plot 24 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 24. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 24.



Photograph 3:

View of rear garden of Plot 24.

Plot 25 Rear Garden



Photograph 1:

View of soil in capping layer excavation in rear garden of Plot 25. White geotextile membrane at base.



Photograph 2:

Depth measurement in rear garden of Plot 25.



Photograph 3:

View of rear garden of Plot 25.

Soft Landscaping



Photograph 1:

View of soil in capping layer excavation in soft landscaping. White geotextile membrane at base.



Photograph 2:

Depth measurement in soft landscaping.



Photograph 3:

View of soft landscaping.



Photograph 1:

View of soil in capping layer excavation in soft landscaping. White geotextile membrane at base.



Photograph 2:
Depth measurement in bin store soft landscaping.



Photograph 3:
View of soft landscaping in bin store area.



Photograph 4:
View of depth measurement in verge soft landscaping with evidence of white geotextile membrane at base.



Photograph 5:
View of depth measurement in verge soft landscaping.



Photograph 6:
View of soft landscaping in verge area.