



Green Street, Radcliffe Completion Report – Blocks B and C

Job Number
LKC 21 1581

Report Date
30th January 2026

Client
Watson Construction Ltd



www.thelkgroup.com

Ground Investigation | Land Remediation | Project Management



LK CONSULT

DOCUMENT QUALITY ASSURANCE

Site Address	Land at Green Street, Radcliffe, Manchester M26 3ED
Report Title	Site Completion Report – Blocks B and C
Job Number	LKC 21 1581
Client	Watson Construction Ltd

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Status	Final.		
Written By	Alexander Evans		
Approved By	Colin Crompton		

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1. Introduction

LK Consult Ltd (LKC) has been commissioned to provide Completion Report for Blocks B and C at the development at Green Street, Radcliffe. A Completion Report for Block A will be provided in due course.

A summary of the site details is presented in Table 1-1. A Site Location plan and a Development Phasing Plan indicating the location of Blocks B and C are provided in Appendix A.

Location	Site is bordered by Pilkington Way (A665), Green Street and Blackburn Street, and to the west of The Parish of St Thomas and St John. Centred at approximate National Grid Reference 378386E 407150N.
Area	2.33Ha.
Planning Reference	68998
Development	Blocks B and C comprise residential apartments with communal soft landscaping areas. Block A comprises a mixed use residential and commercial development with undercroft car parking and communal soft landscaping areas.

Table 1-1: Summary of site details.

The aim of this Completion Report will be to demonstrate to the Local Authority that Blocks B and C have been suitably remediated in line with the Remediation and Verification Strategy and in accordance with the National Planning Policy Framework (NPPF)¹.

The Completion Report should be sufficient to support a partial discharge of satisfy Contaminated Land Condition 6 for Blocks B and C. Details are provided in the following Sections.

1.1. Summary of Previous Work

The following reports have been undertaken for the site:

- Preliminary Risk Assessment (PRA) undertaken by LKC (Ref: CL-602-LKC 21 1581-01).
- Final Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy undertaken by LKC (Ref: LKC 21 1581-B1-R2).
- Detailed Remediation and Verification Strategy (Ref: LKC 21 1581-C1-R1)

LKC understand the above reports have been submitted to Bury Council and were sufficient to discharge Condition 5 of planning approval 68998.

1.2. Summary of Required Validation Work

Based upon the findings of the above the following remediation and validation was required for Blocks B and C:

<u>Gas Protection Measures</u> In line with CS2 as per UK guidance^{1,2}. Blocks B and C (Residential building): Passive subfloor ventilation system (150mm void). Carbon dioxide resistant membrane installed as per manufacturer's instructions. Ventilation of confined spaces within the building. All joints and penetrations to be sealed.	Photographic evidence of sub-floor void, ventilation and suitably sealed gas membrane. Validation of gas protection measures should be in line with CIRIA 735³.
<u>Environmental Cover System (areas of shared soft landscaping)</u> The environmental cover system required in areas of shared soft landscaping is as follows: 300mm thick environmental cover system comprising: High visibility geotextile membrane and at least 300mm comprising clean inert fill and sufficient topsoil for a growing medium.	Measuring depth of environmental cover system in at least 1 location per area of general landscaping (number may increase depending on size of area). Photographic evidence of the installation of the high-visibility geotextile membrane. Chemical validation of imported soils: See Section 2-2. Soil results compared to 'Residential without Plant uptake'.
<u>Potable Water Pipes</u> A UU risk assessment has previously been undertaken and barrier pipe is unlikely to be required.	N/A
<u>Unexpected Contamination</u> A watching brief by site workers should be maintained for evidence of contamination during the development works. If in the unlikely event that evidence of contamination is identified, then works in the area will stop pending further sampling and assessment and the Local Authority will be informed.	Statement confirming no unexpected contamination was encountered. Or details of any further testing and assessment as required.

This is detailed in the following Sections.

¹ CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665

² BSI (2015). "Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for new buildings." BS8485:2015.

³ CIRIA (2014). "Good Practice on the Testing and Verification of Protection Systems for Building Against Hazardous Ground Gas". CIRIA C735.

2. Gas Protection Measures

Blocks B and C were constructed with a passively ventilated subfloor void and Visqueen Low Permeability gas membrane.

LKC attended site on 23rd April, 24th June, 12th August and 21st August 2024 to inspect the subfloor void and the gas membrane. The presence of perimeter airbricks was inspected on 16th January 2026.

The inspection noted the following:

- Sufficient membrane overlap had been provided. The membrane was continuous through the cavity wall to the external brickwork.
- The service penetrations were sealed with appropriate tape and top hats.
- Following patching, there were no visible rips or tears or 'puncture points' from the underlying slab were noted.
- Air bricks and telescopic vents were present.

Photographic evidence of gas protection measures is provided in Appendix B.

3. Environmental Cover System

As per the detailed Remediation and Verification Strategy, the imported topsoil and subsoil used in cover systems was subject to chemical testing. In addition, depth checks were performed in soft landscaping areas.

3.1. Sampling Methodology

3.1.1. Topsoil

Approximately 150 tonnes / 75m³ of topsoil was imported to site. The material is "grade 1" from the supplier but the actual source site is unknown.

To comply with the agreed sampling rate for an unknown source of 1 sample per 50m³ or minimum of 3no. samples per source, LKC collected 3no. composite samples of topsoil from site (referenced TS01 to TS03) on 16th January 2026.

To confirm the material was chemically suitable, the samples were tested for soil organic matter (SOM), metals (CLEA metal suite), Polycyclic Aromatic Hydrocarbons (EPA 16 PAHs), Total Petroleum Hydrocarbons (TPH CWC) and asbestos.

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation².

Soil samples of approximately 500g were recovered in amber jars and plastic tubs. All the samples were sent to DETS laboratory for chemical testing.

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

3.1.2. Subsoil

Approximately 80 tonnes / 40m³ of subsoil was imported to site. The material is noted as "as dug virgin soil" from the supplier but the actual source site is unknown.

To comply with the agreed sampling rate for a brownfield / unknown source of 1 sample per 50m³ or minimum of 3no. samples per source, LKC collected 3no. composite samples of subsoil (referenced SS01 to SS003) on 16th January 2026.

To confirm the material was chemically suitable, the samples were tested for soil organic matter (SOM), metals (CLEA metal suite), Polycyclic Aromatic Hydrocarbons (EPA 16 PAHs), Total Petroleum Hydrocarbons (TPH CWC) and asbestos.

Standard sampling protocol and preservation of samples was undertaken as described in the EA guidance on site investigation³.

Soil samples of approximately 500g were recovered in amber jars and plastic tubs. All the samples were sent to DETS laboratory for chemical testing.

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

3.2. Soil Risk Assessment

3.2.1. Methodology

With regards to the soil validation screening values, LKC will use the following hierarchy, which is considered consistent with UK methodology for assessment using minimal or low risk:

- Category 4 Screening Levels (C4SLs)^{4, 5}.
- LQM Suitable 4 Use Levels (S4ULs)^{6, 7, 8, 9}.

The end use of Blocks B and C is for residential apartments with shared soft landscaping. Therefore, the assessment criteria for residential without plant uptake has been used.

All criteria have been generated using the CLEA V1.06 model¹⁰ based either on 1%, 2.5% and 6% Soil Organic matter (SOM). Results will be compared to the nearest appropriate SOM.

A summary of the Generic Assessment Criteria Values used in this assessment is provided in Appendix D.

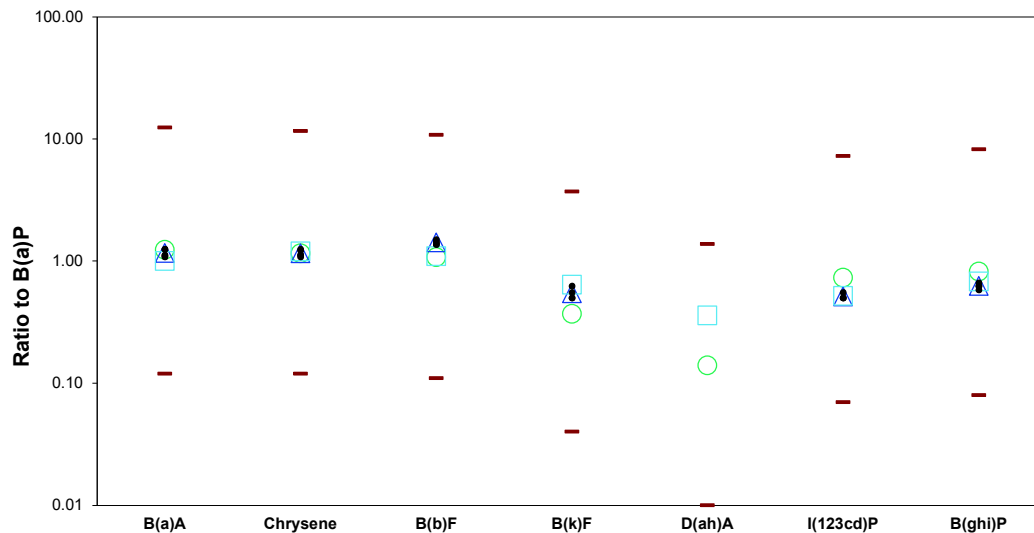
B(a)P as Surrogate Marker

LKC consider the main risk drivers for PAHs are benzo(a)pyrene (B(a)P) and naphthalene. This is due to B(a)P possibly being a carcinogen and most toxic of the PAHs^{11,12} and naphthalene the most volatile and soluble¹³. The C4SLs indicate B(a)P as a surrogate marker for carcinogenic PAHs, if it falls within appropriate limits, since the risk from other non-carcinogenic PAHs are considered negligible¹⁴. For B(a)P to be used as a surrogate marker it should follow the profile described by the HPA (2008)¹⁵ and CL:AIRE (2013). Naphthalene will be treated separately using the LQM S4ULs.

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 most of the topsoil sample PAHs were recorded as less than detection limits, the assessment could not be undertaken.

LKC undertook an assessment of the PAH data for the subsoil with regards to using B(a)P as a surrogate marker for carcinogenic PAHs as per HPA and CL:AIRE guidelines. The primary toxicological study related to Culp *et al*¹⁶, which was based on coal tar mixtures (>80,000mg/kg of total PAHs) fed in food to mice over a two-year carcinogenicity study.

Graph 3-1 summarises the subsoil data with respect to how the ratios of carcinogenic PAHs relate to B(a)P, within the confidence limits provided in the HPA document.



Graph 3-1: The ratio of PAH to B(a)P in soil for subsoil data at the site based on 4 samples (where values were >LOD to allow the calculation of a ratio).

Notes:

B(a)P=Benzo(a)pyrene; D(ah)A=Dibenzo(ah)anthracene; B(a)A=Benzo(a)anthracene; B(b)F=Benzo(b)fluoranthene; B(k)F=Benzo(k)fluoranthene; I(123cd)P=Indeno(123cd)pyrene; B(ghi)P=Benzo(ghi)perylene.

All the data points that could be used to calculate ratios fall inside the upper or lower limits.

Based on this distribution of data LKC considers B(a)P can be used as a surrogate marker for carcinogenic PAHs and the C4SL criteria is suitable for this dataset.

3.2.2. Soil Results Comparison against Generic Assessment Criteria

All analysis sheets are presented in Appendix C. Results have been compared to the relevant assessment criteria and no elevated contaminants were identified in the imported topsoil or subsoil. Therefore, the material is considered suitable for use within the cover system.

3.3. Depth of Cover System

The recommendation for the cover system in soft landscaping areas was that it should comprise a minimum 300mm thickness of suitable soil over a geotextile membrane.

An inspection of the cover system was carried out on the 16th and 28th January 2026. Photographs are provided in Appendix E and the observations are summarised below in Table 3-1. A plan of the inspection locations is provided in Appendix E.

Location	Geotextile Present?	Topsoil Depth (mm)	Subsoil Depth (mm)	Total Depth (mm)	Required Depth (mm)	Pass (✓) / Fail (x)
1	✓	350	130	480	300	✓
2	✓	400	150	550	300	✓
3	✓	300	150	460	300	✓
4	✓	450	140	590	300	✓
5	✓	300	200	500	300	✓
6	✓	300	150	450	300	✓

Table 3-1: Summary of cover system depths.

LKC were able to verify that, in the places inspected within the shared landscaping areas, the cover layer system has been appropriately validated and considered 'suitable for use'.

4. Potable Water Pipes

LKC understand that appropriate pipework has been connected through the site. LKC considers the potable pipework is suitable based on United Utilities (UU) undertaking the connection. UU would not connect and provide a meter point if there were any concerns.

5. Unexpected Contamination

LKC understand that no unexpected contamination was encountered during development works. None was reported by the site manager and none was noted by LKC during site meetings and visits prior to construction.

6. Conclusions

LKC consider that the work onsite to date has been carried out and validated in accordance with the agreed Remediation Strategy.

Based on the above information LKC considers Blocks B and C at the Green Street, Radcliffe development site are 'suitable for use'.

LKC considers there is sufficient information in this report to support an application to discharge the outstanding contaminated land planning Condition 7 for Blocks B and C.

Appendix A – Site Plans



Client: Watson Homes Ltd				Title: Site Location & Boundary Plan		
Site: Green Street, Radcliffe				Scale (see scale bar): 1:25,000 & 1:2,000 @ A4		
Job No.: LKC 21 1581	Drawn By: JW	Checked By: BR	Drawn: Oct 2021	Figure: 1	Revision:	



General Notes
01: Dimensions must not be scaled from this drawing. If in doubt, please ask.
02: All dimensions are in millimetres unless noted otherwise.
03: All dimensions should be verified on site before proceeding with the work.
04: TADW Architects shall be notified in writing of any discrepancies.
05: © TADW Limited (UK) 2015

Legend

Phasing Plan

Phase 1 - Buildings B & C

Phase 2 - Building A - Mixed Use

P1	Phasing Plan Issued	27.01.25	KM	AM
Issue	Description	Date	Drawn	Checked

Drawing Status
P - Planning | T - Tender | C - Construction | R - As Record

PLANNING

tadw architects 

Six St. Petersgate Stockport Cheshire SK1 1HD
Ph 0161 477 6158 Fx 0161 480 8342 mail@tadw.co.uk www.tadw.co.uk

Client	Watson Homes
Job	Green Street Ratcliffe
Title	Development Phasing Plan

Scale 1:250 @ A1

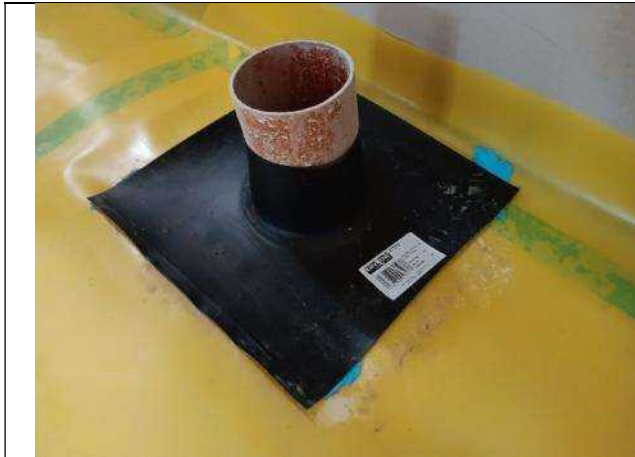
Note - Prints from PDF files may not be to scale, check accuracy against scale



Job Number	Drawing Number	Issue
121305	100	P1

Appendix B – Gas Protection Measures Inspections

		Photograph 1: Subfloor void.
		Photograph 2: Subfloor void and telescopic vents.
		Photograph 3: External airbricks.
		Photograph 4: External airbricks.



Photographs 5-6: Proprietary top hats



Photographs 7-10: Membrane coverage (including pathing / repairs)



Photographs 11-12: Membrane lapped through wall cavity

Appendix C – Certificates of Analysis

Certificate of Analysis

Certificate Number 26-00996

Issued: 26-Jan-26

Client LK Consult Limited
Unit 29
Eton Business Park
Eton Hill Road
Radcliffe
Manchester
M26 2ZS

Our Reference 26-00996

Client Reference ~ LKC 21 1581-D

Order No ~ (not supplied)

Contract Title ~ Green Street, Radcliffe

Description 6 Soil samples.

Date Received 19-Jan-26

Date Started 19-Jan-26

Date Completed 26-Jan-26

Test Procedures Identified by prefix DETSn (details on request).

Notes 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.

Approved By

A handwritten signature in black ink, appearing to read "Louise Cook".

Louise Cook
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 26-00996

Client Ref ~ LKC 21 1581-D

Contract Title ~ Green Street, Radcliffe

Lab No	2626805	2626806	2626807	2626808	2626809	2626810
Sample ID ~	TS01	TS02	TS03	SS01	SS02	SS03
Depth ~						
Other ID ~						
Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date ~	16/01/2026	16/01/2026	16/01/2026	16/01/2026	16/01/2026	16/01/2026
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Preparation									
Moisture Content	DETSC 1004	0.1	%	22	15	18	27	23	25
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	5.0	6.4	4.5	9.9	8.8	9.6
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	1.4			0.4		
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.3	0.2	0.3	0.3	0.3
Chromium	DETSC 2301#	0.15	mg/kg	11	17	13	18	16	22
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	20	25	19	39	35	37
Lead	DETSC 2301#	0.3	mg/kg	28	130	49	100	73	65
Mercury	DETSC 2325#	0.05	mg/kg	0.06	0.07	0.07	0.19	0.28	0.21
Nickel	DETSC 2301#	1	mg/kg	9.0	11	10	14	11	14
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	15	19	14	23	18	21
Zinc	DETSC 2301#	1	mg/kg	72	220	140	96	58	68
Inorganics									
pH	DETSC 2008#		pH	8.9	7.6	7.9	8.0	7.3	7.5
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.8			0.3		
Cyanide, Free	DETSC 2130#	0.1	mg/kg	0.3			0.1		
Organic matter	DETSC 2002#	0.1	%	5.1	6.2	7.2	6.2	6.0	5.4
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	140	140	160	170	73	130
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01		
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01		
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01		
Aliphatic C10-C12: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5			< 1.5		
Aliphatic C12-C16: EH_CU_1D_AL	DETSC 3072#	1.2	mg/kg	< 1.2			< 1.2		
Aliphatic C16-C21: EH_CU_1D_AL	DETSC 3072#	1.5	mg/kg	< 1.5			< 1.5		
Aliphatic C21-C35: EH_CU_1D_AL	DETSC 3072#	3.4	mg/kg	< 3.4			< 3.4		
Aliphatic C35-C40: EH_CU_1D_AL	DETSC 3072*	3.4	mg/kg	< 3.4			< 3.4		
Aliphatic C10-C44: EH_CU_1D_AL	DETSC 3072*	10	mg/kg	< 10			< 10		
Aliphatic C5-C40: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	< 10			< 10		
Aliphatic C5-C44: EH_CU+HS_1D_AL	DETSC 3072*	10	mg/kg	< 10			< 10		
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01		
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01		
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01			< 0.01		
Aromatic C10-C12: EH_CU_1D_AR	DETSC 3072#	0.9	mg/kg	< 0.9			< 0.9		
Aromatic C12-C16: EH_CU_1D_AR	DETSC 3072#	0.5	mg/kg	< 0.5			< 0.5		
Aromatic C16-C21: EH_CU_1D_AR	DETSC 3072#	0.6	mg/kg	< 0.6			< 0.6		
Aromatic C21-C35: EH_CU_1D_AR	DETSC 3072#	1.4	mg/kg	< 1.4			< 1.4		
Aromatic C35-C40: EH_CU_1D_AR	DETSC 3072*	1.4	mg/kg	< 1.4			< 1.4		
Aromatic C10-C44: EH_CU_1D_AR	DETSC 3072*	10	mg/kg	< 10			< 10		

Summary of Chemical Analysis

Soil Samples

Our Ref 26-00996

Client Ref ~ LKC 21 1581-D

Contract Title ~ Green Street, Radcliffe

Lab No	2626805	2626806	2626807	2626808	2626809	2626810
Sample ID ~	TS01	TS02	TS03	SS01	SS02	SS03
Depth ~						
Other ID ~						
Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date ~	16/01/2026	16/01/2026	16/01/2026	16/01/2026	16/01/2026	16/01/2026
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Aromatic C5-C40: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	< 10			< 10		
Aromatic C5-C44: EH_CU+HS_1D_AR	DETSC 3072*	10	mg/kg	< 10			< 10		
TPH Ali/Aro C5-C40: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	< 10			< 10		
TPH Ali/Aro C5-C44: EH_CU+HS_1D_Total	DETSC 3072*	10	mg/kg	< 10			< 10		
Ali/Aro C10-C44: EH_CU_1D_Total	DETSC 3072*	10	mg/kg	< 10			< 10		
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01			< 0.01		
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01			< 0.01		
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01			< 0.01		
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01			< 0.01		
m+p Xylene	DETSC 3321#	0.01	mg/kg	< 0.01			< 0.01		
o Xylene	DETSC 3321#	0.01	mg/kg	< 0.01			< 0.01		
MTBE	DETSC 3321	0.01	mg/kg	< 0.01			< 0.01		
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.09	0.10	0.18	0.20	0.11	0.13
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	0.03	0.04	< 0.03	0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.14	0.18	0.32	0.37	0.23	0.29
Pyrene	DETSC 3303#	0.03	mg/kg	0.12	0.16	0.29	0.34	0.21	0.26
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.04	0.05	0.10	0.13	0.09	0.10
Chrysene	DETSC 3303	0.03	mg/kg	0.05	0.05	0.09	0.13	0.09	0.11
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.07	0.06	0.11	0.17	0.11	0.13
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.06	< 0.03	0.05	0.06	0.04	0.05
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04	0.08	0.12	0.08	0.09
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.04	0.06	0.04	0.05
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	0.05	0.07	0.05	0.06
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.56	0.65	1.3	1.7	1.0	1.3
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.9			1.8		

Summary of Asbestos Analysis Soil Samples

Our Ref 26-00996

Client Ref ~ LKC 21 1581-D

Contract Title ~ Green Street, Radcliffe

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2626805	TS01	SOIL	NAD	none	Vicky Convery
2626806	TS02	SOIL	NAD	none	Vicky Convery
2626807	TS03	SOIL	NAD	none	Vicky Convery
2626808	SS01	SOIL	NAD	none	Vicky Convery
2626809	SS02	SOIL	NAD	none	Vicky Convery
2626810	SS03	SOIL	NAD	none	Vicky Convery

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 26-00996

Client Ref ~ LKC 21 1581-D

Contract ~ Green Street, Radcliffe

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2626805	TS01 SOIL	16/01/26	GJ 250ml, GJ 60ml, PT 1L		
2626806	TS02 SOIL	16/01/26	GJ 250ml, GJ 60ml, PT 1L		
2626807	TS03 SOIL	16/01/26	GJ 250ml, GJ 60ml, PT 1L		
2626808	SS01 SOIL	16/01/26	GJ 250ml, GJ 60ml, PT 1L		
2626809	SS02 SOIL	16/01/26	GJ 250ml, GJ 60ml, PT 1L		
2626810	SS03 SOIL	16/01/26	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

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
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic C10-C12	EH_CU_1D_AL
Aliphatic C12-C16	EH_CU_1D_AL
Aliphatic C16-C21	EH_CU_1D_AL
Aliphatic C21-C35	EH_CU_1D_AL
Aliphatic C35-C40	EH_CU_1D_AL
Aliphatic C10-C44	EH_CU_1D_AL
Aliphatic C5-C40	EH_CU+HS_1D_AL
Aliphatic C5-C44	EH_CU+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic C10-C12	EH_CU_1D_AR
Aromatic C12-C16	EH_CU_1D_AR
Aromatic C16-C21	EH_CU_1D_AR
Aromatic C21-C35	EH_CU_1D_AR
Aromatic C35-C40	EH_CU_1D_AR
Aromatic C10-C44	EH_CU_1D_AR
Aromatic C5-C40	EH_CU+HS_1D_AR
Aromatic C5-C44	EH_CU+HS_1D_AR
TPH Ali/Aro C5-C40	EH_CU+HS_1D_Total
TPH Ali/Aro C5-C44	EH_CU+HS_1D_Total
Ali/Aro C10-C44	EH_CU_1D_Total

Key:

~ Sample details are provided by the client and can affect the validity of the results

* -not accredited.

-MCERTS (accreditation only applies if report carries the MCERTS logo).

\$ -subcontracted.

n/s -not supplied.

I/S -insufficient sample.

U/S -unsuitable sample.

t/f -to follow.

nd -not detected.

End of Report Ver 25.10.03

Appendix D – Generic Assessment Criteria

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}	Source
Metals	Inorganic Arsenic	N/A	37	40	49	640	79	168	DEFRA C4SL
	Beryllium	N/A	1.7	1.7	35	12	2.2	63	LQM S4UL
	Boron	N/A	290	11,000	45	240,000	21,000	46,000	LQM S4UL
	Cadmium	N/A	26	149	4.9	410	220	880	DEFRA C4SL
	Chromium (III)	N/A	910	910	18,000	8,600	1,500	33,000	LQM S4UL
	Chromium (VI)	N/A	21.0	21.0	170.0	49	23.0	250	DEFRA C4SL
	Copper	N/A	2,400	7,100	520	68,000	12,000	44,000	LQM S4UL
	Lead	N/A	200	310	80	2,330	630	1,300	DEFRA C4SL
	Elemental Mercury	N/A	1.2	1.2	21	58 (25.8) ^{vap}	16	30 (25.8) ^{vap}	LQM S4UL
	Inorganic Mercury	N/A	40	56	19	1,100	120	240	LQM S4UL
	Methylmercury	N/A	11	15	6.0	320	40	68	LQM S4UL
	Nickel	N/A	130	180	53	980	230	800	LQM S4UL
	Selenium	N/A	250	430	88	12,000	1,100	1,800	LQM S4UL
	Vanadium	N/A	410	1,200	91	9,000	2,000	5,000	LQM S4UL
	Zinc	N/A	3,700	40,000	620	730,000	81,000	170,000	LQM S4UL
Polycyclic Aromatic Hydrocarbons (PAHs)	Acenaphthene	1%	210	3,000 (57.1) ^{sol}	34	84,000 (57.0) ^{sol}	15,000	29,000	LQM S4UL
		2.5%	510	4,700 (141) ^{sol}	85	97,000 (141) ^{sol}	15,000	30,000	LQM S4UL
		6%	1,100	6,000 (336) ^{sol}	200	100,000	15,000	30,000	LQM S4UL
	Acenaphthylene	1%	170	2,900 (86.1) ^{sol}	28	83,000 (86.1) ^{sol}	15,000	29,000	LQM S4UL
		2.5%	420	4,600 (212) ^{sol}	69	97,000 (212) ^{sol}	15,000	30,000	LQM S4UL
		6%	920	6,000 (506) ^{sol}	160	100,000	15,000	30,000	LQM S4UL
	Anthracene	1%	2,400	31,000 (1.17) ^{vap}	380	520,000	74,000	150,000	LQM S4UL
		2.5%	5,400	35,000	950	540,000	74,000	150,000	LQM S4UL
		6%	11,000	37,000	2,200	540,000	74,000	150,000	LQM S4UL
	Benz(a)anthracene	1%	7.2	11	2.9	170	29	49	LQM S4UL
		2.5%	11	14	6.5	170	29	56	LQM S4UL
		6%	13	15	13	180	29	62	LQM S4UL
	Benzo(a)pyrene (only)	1%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
		2.5%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
		6%	5.0	5.3	5.70	77	10.0	21	DEFRA C4SL
	Benzo(a)pyrene (surrogate marker Coal Tar)	1%	0.8	1.2	0.32	15	2.2	4	LQM S4UL
		2.5%	1.0	1.2	0.67	15	2.2	5	LQM S4UL
		6%	1.1	1.2	1.20	15	2.2	5	LQM S4UL
	Benzo(b)fluoranthene	1%	2.6	3.9	0.99	44	7.1	13	LQM S4UL
		2.5%	3.3	4.0	2.1	44	7.2	15	LQM S4UL
		6%	3.7	4.0	3.9	45	7.2	16	LQM S4UL
	Benzo(ghi)perylene	1%	320	360	290	3,900	640	1,400	LQM S4UL
		2.5%	340	360	470	4,000	640	1,500	LQM S4UL
		6%	350	360	640	4,000	640	1,600	LQM S4UL
	Benzo(k)fluoranthene	1%	77	110	37	1,200	190	370	LQM S4UL
		2.5%	93	110	75	1,200	190	410	LQM S4UL
		6%	100	110	130	1,200	190	440	LQM S4UL
	Chrysene	1%	15	30	4.1	350	57	93	LQM S4UL
		2.5%	22	31	9.4	350	57	110	LQM S4UL
		6%	27	32	19	350	57	120	LQM S4UL
	Dibenzo(ah)anthracene	1%	0.24	0.31	0.14	3.5	0.57	1.1	LQM S4UL
		2.5%	0.28	0.32	0.27	3.6	0.58	1.3	LQM S4UL
		6%	0.3	0.32	0.43	3.6	0.58	1.4	LQM S4UL
	Fluoranthene	1%	280	1,500	52	23,000	3,100	6,300	LQM S4UL
		2.5%	560	1,600	130	23,000	3,100	6,300	LQM S4UL
		6%	890	1,600	290	23,000	3,100	6,400	LQM S4UL
	Fluorene	1%	170	2,800 (36.0) ^{sol}	27	63,000 (30.9) ^{sol}	9,900	20,000	LQM S4UL
		2.5%	400	3,800 (76.5) ^{sol}	67	68,000	9,900	20,000	LQM S4UL
		6%	860	4,500 (183) ^{sol}	160	71,000	9,900	20,000	LQM S4UL
	Indeno(123-cd)pyrene	1%	27	45	9.5	500	82	150	LQM S4UL
		2.5%	36	46	21	510	82	170	LQM S4UL
		6%	41	46	39	510	82	180	LQM S4UL
	Naphthalene	1%	15	15	65	1600 f	11000 f	800 f	C4SL
		2.5%	36	36	130	3700 f	15000 f	1200 f	C4SL
		6%	85	85	200	8400 f	17000 f	1900 f	C4SL
	Phenanthrene	1%	95	1,300 (36.0) ^{sol}	15	22,000	3,100	6,200	LQM S4UL
		2.5%	220	1,500	38	22,000	3,100	6,200	LQM S4UL
		6%	440	1,500	90	22,000	3,100	6,300	LQM S4UL
	Pyrene	1%	620	3,700	110	54,000	7,400	15,000	LQM S4UL
		2.5%	1,200	3,800	270	54,000	7,400	15,000	LQM S4UL
		6%	2,000	3,800	620	54,000	7,400	15,000	LQM S4UL
	Coal Tar (B(a)P as surrogate marker)	1%	0.79	1.2	0.32	15	2.2	4.4	LQM S4UL
		2.5%	0.98	1.2	0.67	15	2.2	4.7	LQM S4UL
		6%	1.1	1.2	1.2	15	2.2	4.8	LQM S4UL

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}	Source
BTEx Compounds	Benzene	1%	0.087	0.38	0.017	27	72	90	LQM S4UL
		2.5%	0.17	0.70	0.034	47	72	100	LQM S4UL
		6%	0.37	1.4	0.075	90	73	110	LQM S4UL
		6%	0.87	3.3	0.180	98	140	230	C4SL
	Toluene	1%	130	880 (869) ^{vap}	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}	LQM S4UL
		2.5%	290	1,900	51	110,000 (1,920) ^{vap}	56,000	95,000 (1,920) ^{vap}	LQM S4UL
		6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}	LQM S4UL
	Ethylbenzene	1%	47	83	16	5,700 (518) ^{vap}	24,000	17,000 (518) ^{vap}	LQM S4UL
		2.5%	110	190	39	13,000 (1,220) ^{vap}	24,000	22,000 (1,220) ^{vap}	LQM S4UL
		6%	260	440	91	27,000 (2,840) ^{vap}	25,000	27,000 (2,840) ^{vap}	LQM S4UL
	o-xylene	1%	60	88	28	6,600 (478) ^{sol}	41,000	17,000 (478) ^{sol}	LQM S4UL
		2.5%	140	210	67	15,000 (1,120) ^{sol}	42,000	24,000 (1,120) ^{sol}	LQM S4UL
		6%	330	480	160	33,000 (2,620) ^{sol}	43,000	33,000 (2,620) ^{sol}	LQM S4UL
	m-xylene	1%	59	82	31	6,200 (625) ^{vap}	41,000	17,000 (625) ^{vap}	LQM S4UL
		2.5%	140	190	74	14,000 (1,470) ^{vap}	42,000	24,000 (1,470) ^{vap}	LQM S4UL
		6%	320	450	170	31,000 (3,460) ^{vap}	43,000	32,000 (3,460) ^{vap}	LQM S4UL
	p-xylene	1%	56	79	29	5,900 (576) ^{sol}	41,000	17,000 (576) ^{sol}	LQM S4UL
		2.5%	130	180	69	14,000 (1,350) ^{sol}	42,000	23,000 (1,350) ^{sol}	LQM S4UL
		6%	310	430	160	30,000 (3,170) ^{sol}	43,000	31,000 (3,170) ^{sol}	LQM S4UL
Petroleum Hydrocarbons	Aliphatic								
	EC 5-6	1%	42	42	730	3,200 (304) ^{sol}	570,000(304) ^{sol}	95,000 (304) ^{sol}	LQM S4UL
	EC>6-8	1%	100	100	2,300	7,800 (144) ^{sol}	600,000	150,000 (144) ^{sol}	LQM S4UL
	EC>8-10	1%	27	27	320	2,000 (78) ^{sol}	13,000	14,000 (78) ^{vap}	LQM S4UL
	EC>10-12	1%	130 (48) ^{vap}	130 (48) ^{vap}	2,200	9,700 (48) ^{sol}	13,000	21,000 (48) ^{vap}	LQM S4UL
	EC>12-16	1%	1,100 (24) ^{sol}	1,100 (24) ^{sol}	11,000	59,000 (24) ^{sol}	13,000	25,000 (24) ^{sol}	LQM S4UL
	EC>16-35	1%	65,000 (8.48)	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f	LQM S4UL
	EC>35-44	1%	65,000 (8.48)	65,000 (8.48) ^{f, sol}	260,000 ^f	160,000 ^f	250,000 ^f	450,000 ^f	LQM S4UL
	Aliphatic								
	EC 5-6	2.5%	78	78	1,700	5,900 (558) ^{sol}	590,000	130,000 (558) ^{sol}	LQM S4UL
	EC>6-8	2.5%	230	230	5,600	17,000 (322) ^{sol}	610,000	220,000 (322) ^{sol}	LQM S4UL
	EC>8-10	2.5%	65	65	770	4,800 (190) ^{vap}	13,000	18,000 (190) ^{vap}	LQM S4UL
	EC>10-12	2.5%	330 (118) ^{vap}	330 (118) ^{vap}	4,400	23,000 (118) ^{vap}	13,000	23,000 (118) ^{vap}	LQM S4UL
	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}	LQM S4UL
	EC>16-35	2.5%	92,000 (21)	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f	LQM S4UL
	EC>35-44	2.5%	92,000 (21)	92,000 (21) ^{f, sol}	270,000 ^f	1,700,000 ^f	250,000 ^f	480,000 ^f	LQM S4UL
	Aliphatic								
	EC 5-6	6%	160	160	3,900	12,000 (1,150) ^{sol}	600,000	180,000 (1,150) ^{sol}	LQM S4UL
	EC>6-8	6%	530	530	13,000	40,000 (736) ^{sol}	620,000	320,000 (736) ^{sol}	LQM S4UL
	EC>8-10	6%	150	150	1,700	11,000 (451) ^{vap}	13,000	21,000 (451) ^{vap}	LQM S4UL
	EC>10-12	6%	760 (283) ^{vap}	760 (283) ^{vap}	7,300	47,000 (283) ^{vap}	13,000	24,000 (283) ^{vap}	LQM S4UL
	EC>12-16	6%	4,300 (142) ^{sol}	4,400 (142) ^{sol}	13,000	90,000 (142) ^{sol}	13,000	26,000 (142) ^{sol}	LQM S4UL
	EC>16-35	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f	LQM S4UL
	EC>35-44	6%	110,000 ^f	110,000 ^f	270,000 ^f	1,800,000 ^f	250,000 ^f	490,000 ^f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	1%	70	370	13	26,000 (1,220) ^{sol}	56,000	76,000 (1,220) ^{sol}	LQM S4UL
	EC>7-8(toluene)	1%	130	860	22	56,000 (869) ^{vap}	56,000	87,000 (869) ^{vap}	LQM S4UL
	EC>8-10	1%	34	47	8.6	3,500 (613) ^{vap}	5,000	7,200 (613) ^{vap}	LQM S4UL
	EC>10-12	1%	74	250	13	16,000 (364) ^{sol}	5,000	9,200 (364) ^{sol}	LQM S4UL
	EC>12-16	1%	140	1,800	23	36,000 (169) ^{sol}	5,100	10,000	LQM S4UL
	EC>16-21	1%	260 ^f	1,900 ^f	46 ^f	28,000 ^f	3,800 ^f	7,600 ^f	LQM S4UL
	EC>21-35	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	EC>35-44	1%	1,100 ^f	1,900 ^f	370 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	2.5%	140	690	27	46,000 (2,260) ^{sol}	56,000	84,000 (2,260) ^{sol}	LQM S4UL
	EC>7-8(toluene)	2.5%	290	1,800	51	110,000 (1,920) ^{sol}	56,000	95,000 (1,920) ^{sol}	LQM S4UL
	EC>8-10	2.5%	83	110	21	8,100 (1,500) ^{vap}	5,000	8,500 (1,500) ^{vap}	LQM S4UL
	EC>10-12	2.5%	180	590	31	28,000 (899) ^{sol}	5,000	9,700 (899) ^{sol}	LQM S4UL
	EC>12-16	2.5%	330	2,300 (419) ^{sol}	57	37,000	5,100	10,000	LQM S4UL
	EC>16-21	2.5%	540 ^f	1,900 ^f	110 ^f	28,000 ^f	3,800 ^f	7,700 ^f	LQM S4UL
	EC>21-35	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	EC>35-44	2.5%	1,500 ^f	1,900 ^f	820 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	Aromatic								
	EC5-7(benzene as non-	6%	300	1,400	57	86,000 (4,710) ^{sol}	56,000	92,000 (4,710) ^{sol}	LQM S4UL
	EC>7-8(toluene)	6%	660	3,900	120	180,000 (4,360) ^{vap}	56,000	100,000 (4,360) ^{vap}	LQM S4UL
	EC>8-10	6%	190	270	51	17,000 (3,580) ^{vap}	5,000	9,300 (3,580) ^{vap}	LQM S4UL
	EC>10-12	6%	380	1,200	4	34,000 (2,150) ^{sol}	5,000	10,000	LQM S4UL
	EC>12-16	6%	660	2,500	130	38,000	5,100	10,000	LQM S4UL
	EC>16-21	6%	930 ^f	1,900 ^f	260 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
	EC>21-35	6%	1,700 ^f	1,900 ^f	1,600 ^f	28,000 ^f	3,800 ^f	7,900 ^f	LQM S4UL
	EC>35-44	6%	1,700 ^f	1,900 ^f	1,600 ^f	28,000 ^f	3,800 ^f	7,900 ^f	LQM S4UL
	Aliphatic +Aromatic >EC44	1%	1,600 ^f	1,900 ^f	1,200 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
		2.5%	1,800 ^f	1,900 ^f	2,100 ^f	28,000 ^f	3,800 ^f	7,800 ^f	LQM S4UL
		6%	1,900 ^f	1,900 ^f	3,000 ^f	28,000 ^f	3,800 ^f	7,900 ^f	LQM S4UL

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}	Source
Chloalkanes and Alkenes & Explosives	1,2 Dichloroethane (DCA)	1%	0.11	0.16	0.05	12.0	300	300	DEFRA C4SL
		2.5%	0.18	0.24	0.10	17.0	310	330	DEFRA C4SL
		6%	0.31	0.41	0.19	29.0	310	330	DEFRA C4SL
	1,1,1 Trichloroethane (TCA)	1%	8.8	9.0	48	660	140,000	57,000 (1,425) ^{vap}	LQM S4UL
		2.5%	18	18	110	1,300	140,000	76,000 (2,915) ^{vap}	LQM S4UL
		6%	39	40	240	3,000	140,000	100,000 (6,392)	LQM S4UL
	1,1,2,2-Tetrachloroethanes (PCA)	1%	1.6	3.9	0.41	270	1,400	1,800	LQM S4UL
		2.5%	3.4	8.0	0.89	550	1,400	2,100	LQM S4UL
		6%	7.5	17	2.0	1,100	1,400	2,300	LQM S4UL
	1,1,1,2-Tetrachloroethanes (PCA)	1%	1.2	1.5	0.79	110	1,400	1,500	LQM S4UL
		2.5%	2.8	3.5	1.9	250	1,400	1,800	LQM S4UL
		6%	6.4	8.2	4.4	560	1,400	2,100	LQM S4UL
	Tetrachloroethene (PCE)	1%	0.31	0.32	2.00	24	3,200	1400	DEFRA C4SL
		2.5%	0.70	0.71	4.8	55	3,300	1900	DEFRA C4SL
		6%	1.60	1.60	11.0	130	3,400	2,500	DEFRA C4SL
	Tetrachloromethane (carbon tetrachloride)	1%	0.03	0.03	0.45	2.9	890	190	LQM S4UL
		2.5%	0.06	0.06	1.0	6.3	920	270	LQM S4UL
		6%	0.13	0.13	2.4	14	950	400	LQM S4UL
	Trichloroethene (TCE)	1%	0.009	0.010	0.032	0.7	76.0	41.0	DEFRA C4SL
		2.5%	0.020	0.020	0.072	1.5	78.0	51.0	DEFRA C4SL
		6%	0.043	0.045	0.160	3.4	79.0	69.0	DEFRA C4SL
	cis 1,2-dichloroethene	1%	0.46	0.50	0.890	38	3,800	2,000	DEFRA C4SL
		2.5%	0.78	0.84	1.70	64	3,800	2,400	DEFRA C4SL
		6%	1.50	1.60	3.60	120	3,900	3,100	DEFRA C4SL
	Trichloromethane (chloroform)	1%	0.91	1.2	0.42	99	2,500	2,600	LQM S4UL
		2.5%	1.7	2.1	0.83	170	2,500	2,800	LQM S4UL
		6%	3.4	4.2	1.7	350	2,500	3,100	LQM S4UL
	Trans-1,2 Dichloroethene	1%	0.9	0.9	3.7	69	13,000	5,600	DEFRA C4SL
		2.5%	1.6	1.7	7.5	120	13,000	7,000	DEFRA C4SL
		6%	3.3	3.4	16.0	260	13,000	9,100	DEFRA C4SL
	Chloroethene (vinyl chloride)	1%	0.006	0.015	0.0017	1.1E+00	7.8	18.0	DEFRA C4SL
		2.5%	0.010	0.019	0.0031	1.4E+00	7.8	19.0	DEFRA C4SL
		6%	0.017	0.029	0.0058	2.20	7.8	19.0	DEFRA C4SL
	2,4,6-Trinitrotoluene (TNT)	1%	1.6	65	0.24	1,000	130	260	LQM S4UL
		2.5%	3.7	66	0.58	1,000	130	270	LQM S4UL
		6%	8.1	66	1.4	1,000	130	270	LQM S4UL
	RDX	1%	120	13,000	17	210,000	26,000	49,000 (18.7) ^{sol}	LQM S4UL
		2.5%	250	13,000	38	210,000	26,000	51,000	LQM S4UL
		6%	540	13,000	85	210,000	27,000	53,000	LQM S4UL
	HMX	1%	5.7	6,700	0.86	110,000	13,000	23,000 (0.35) ^{vap}	LQM S4UL
		2.5%	13	6,700	1.9	110,000	13,000	23,000 (0.39) ^{vap}	LQM S4UL
		6%	26	6,700	3.9	110,000	13,000	24,000 (0.48) ^{vap}	LQM S4UL
Pesticides	Aldrin	1%	5.7	7.3	3.2	170	18	30	LQM S4UL
		2.5%	6.6	7.4	6.1	170	18	31	LQM S4UL
		6%	7.1	7.5	9.8	170	18	31	LQM S4UL
	Dieldrin	1%	0.97	7.0	0.17	170	18	30	LQM S4UL
		2.5%	2.0	7.3	0.41	170	18	30	LQM S4UL
		6%	3.5	7.4	0.96	170	18	31	LQM S4UL
	Atrazine	1%	3.3	610	0.5	9,300	1,200	2,300	LQM S4UL
		2.5%	7.8	620	1.2	9,400	1,200	2,400	LQM S4UL
		6%	17.4	620	2.7	9,400	1,200	2,400	LQM S4UL
	Dichlorvos	1%	3.2E-02	6.4	4.9E-03	140	16	26	LQM S4UL
		2.5%	6.6E-02	6.5	1.0E-02	140	16	26	LQM S4UL
		6%	0.14	6.6	2.2E-02	140	16	27	LQM S4UL
	Endosulfanns (2 isomers)	1%	7.4	160 (3.0E-03) ^{vap}	1.2	5,600 (3.0E-03) ^{vap}	1,200	2,300	LQM S4UL
		2.5%	18	280 (7.0E-03) ^{vap}	2.9	7,400 (7.0E-03) ^{vap}	1,200	2,400	LQM S4UL
		6%	41	410 (1.6E-02) ^{vap}	6.8	8,400 (1.6E-02) ^{vap}	1,200	2,500	LQM S4UL
	Hexachlorocyclohexane (3 isomers), inc Lindane	1%	8.5E-02	3.7	1.3E-02	65	8.1	15	LQM S4UL
		2.5%	0.2	3.8	3.2E-02	65	8.1	15	LQM S4UL
		6%	0.46	3.8	7.7E-02	65	8.1	16	LQM S4UL
Chlorobenzenes	Chlorobenzene	1%	0.46	0.46	5.9	56	11,000	1,300 (675) ^{sol}	LQM S4UL
		2.5%	1.0	1.0	14	130	13,000	2,000 (1,520) ^{sol}	LQM S4UL
		6%	2.4	2.4	32	290	14,000	2,900	LQM S4UL
	Dichlorobenzenes (3 isomers)	1%	23	24	94	2,000 (571) ^{sol}	90,000	24,000 (571) ^{sol}	LQM S4UL
		2.5%	55	57	230	4,800 (1,370) ^{sol}	95,000	36,000 (1,370) ^{sol}	LQM S4UL
		6%	130	130	540	11,000 (3,240) ^{sol}	98,000	51,000 (3,270) ^{sol}	LQM S4UL
	Trichlorobenzenes (3 isomers)	1%	2.6	2.6	55	220	15,000	1,700 (318) ^{vap}	LQM S4UL
		2.5%	6.4	6.4	140	530	17,000	2,600 (786) ^{vap}	LQM S4UL
		6%	15	15	320	1,300	19,000	4,000 (1,880) ^{vap}	LQM S4UL
	Tetrachlorobenzenes (3 isomers)	1%	0.66	0.75	0.38	49 (39.4) ^{vap}	78	110 (39) ^{vap}	LQM S4UL
		2.5%	1.6	1.9	0.90	120 (98.1) ^{vap}	79	120	LQM S4UL
		6%	3.7	4.3	2.2	240 (235) ^{vap}	79	130	LQM S4UL
	Pentachlorobenzene	1%	5.8	19	1.2	640 (43.0) ^{sol}	100	190	LQM S4UL
		2.5%	12	30	3.1	770 (107) ^{sol}	100	190	LQM S4UL
		6%	22	38	7.0	830	100	190	LQM S4UL
	Hexachlorobenzene	1%	1.8 (0.20) ^{vap}	4.1 (0.20) ^{vap}	0.47	110 (0.20) ^{vap}	16	30	LQM S4UL
		2.5%	3.3 (0.50) ^{vap}	5.7 (0.50) ^{vap}	1.1	120	16	30	LQM S4UL
		6%	4.9	6.7 (1.2) ^{vap}	2.5	120	16	30	LQM S4UL

Generic Assessment Criteria Values

Contaminant		SOM	Res +	Res -	Allot.	Comm.	POS _{resi}	POS _{park}	Source
Chlorophenol	Chlorophenols (4 congeners)	1%	0.87 ^g	94	0.13 ^g	3,500	620	1,100	LQM S4UL
		2.5%	2.0	150	0.30	4,000	620	1,100	LQM S4UL
		6%	4.5	210	0.70	4,300	620	1,100	LQM S4UL
	Pentachlorophenol	1%	0.22	27 (16.4) ^{vap}	3.0E-02	400	60	110	LQM S4UL
		2.5%	0.52	29	8.0E-02	400	60	120	LQM S4UL
		6%	1.2	31	0.19	400	60	120	LQM S4UL
Others	Carbon Disulphide	1%	0.14	0.14	4.8	11	11,000	1,300	LQM S4UL
		2.5%	0.29	0.29	10	22	11,000	1,900	LQM S4UL
		6%	0.62	0.62	23	47	11,000	2,700	LQM S4UL
	Hexachlorobutadiene	1%	0.29	0.32	0.25	31	25	48	LQM S4UL
		2.5%	0.7	0.78	0.61	66	25	50	LQM S4UL
		6%	1.6	1.8	1.4	120	25	51	LQM S4UL
	Phenol	1%	120	440 (460)	23	440 ^{dir} (26,000)	440 ^{dir} (10,000)	440 ^{dir} (7,600)	LQM S4UL
		2.5%	200	690	42	690 ^{dir} (30,000)	690 ^{dir} (10,000)	690 ^{dir} (8,300)	LQM S4UL
		6%	380	1,200	83	1,300 ^{dir} (34,000)	1,300 ^{dir} (10,000)	1,300 ^{dir} (9,300)	LQM S4UL

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
f = oral, dermal and inhalation exposures compared to oral HCV
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-tetrachlorophenol

Appendix E- Cover System Validation Photographs



Cover system inspection locations

Location 1



Photograph 1:
View of landscaped area



Photograph 2:
View of cover system excavation in shared landscaping. Geotextile membrane present at base.



Photograph 3:
Depth measurement in shared landscaping.

Location 2



Photograph 1:
View of landscaped area



Photograph 2:
View of cover system excavation in shared landscaping. Geotextile membrane present at base.



Photograph 3:
Depth measurement in shared landscaping.

Location 3



Photograph 1:
View of landscaped area



Photograph 2:
View of cover system excavation in shared landscaping. Geotextile membrane present at base.



Photograph 3:
Depth measurement in shared landscaping.

Location 4



Photograph 1:
View of landscaped area



Photograph 2:
View of cover system excavation in shared landscaping. Geotextile membrane present at base.



Photograph 3:
Depth measurement in shared landscaping.

Location 5



Photograph 1:
View of landscaped area



Photograph 2:
View of cover system excavation in shared landscaping. Geotextile membrane present at base.



Photograph 3:
Depth measurement in shared landscaping.

Location 6



Photograph 1:
View of landscaped area



Photograph 2:
View of cover system excavation in shared landscaping. Geotextile membrane present at base.



Photograph 3:
Depth measurement in shared landscaping.

Appendix F - References

- ¹ DCL (2024). "National Planning Policy Framework." Department of Communities and Local Government.
- ² Environment Agency, 2000, "Technical Aspects of Site Investigation", Technical Report P5-065/TR, Volumes I and II, Text Supplements.
- ³ Environment Agency, 2000, "Technical Aspects of Site Investigation", Technical Report P5-065/TR, Volumes I and II, Text Supplements.
- ⁴ DEFRA, December 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Policy Companion Document.
- ⁵ CL:AIRE, September 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Final Project Report (Revision 2).
- ⁶ Environment Agency, January 2009, "Updated technical background to the CLEA model", Science Report SC050021/SR3.
- ⁷ Environment Agency, January 2009, "Human health toxicological assessment of contaminants in soil", Science Report - Final SC050021/SR2.
- ⁸ Environment Agency, January 2009, "A review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA)", Project SC050021/Final Technical Review 1.
- ⁹ Environment Agency, November 2008, "Compilation of data for priority organic pollutants for derivation of Soil Guideline Values", Science Report SC050021/SR7.
- ¹⁰ Environment Agency, September 2009, "CLEA Software (Version 1.05) Handbook", Science Report SC050021/SR4.
- ¹¹ Environment Agency, April 2002, "Contaminants in soils: collation of toxicological data and intake values for humans. Benzo(a)pyrene", TOX2.
- ¹² U.S. Environmental Protection Agency, September 1984, "Health Effects Assessment for Polycyclic Aromatic Hydrocarbons (PAHs)", EPA/540/1-86/013.
- ¹³ Environment Agency, September 2003, "Review of the Fate and Transport of Selected Contaminants in the Soil Environment", Draft Technical Report P5-079/TR1.
- ¹⁴ CL:AIRE, September 2014, "Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination", SP1010, Final Project Report (Revision 2).
- ¹⁵ Public Health England, September 2017, "Contaminated land information sheet: risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs)".
- ¹⁶ Culp S.J., Gaylor D.W., Sheldon W.G., Goldstein L.S., Beland F.A. , January 1998, "A comparison of the tumors induced by coal tar and benzo[a]pyrene in a 2-year bioassay", Carcinogenesis, Volume 19, P117-124.

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

Manchester (Head Office)

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

0161 763 7200
info@thelkgroup.com

Manchester (Ancoats Office)

84 Silk Street
Ancoats
Manchester
M4 6BJ

0161 763 7200
info@thelkgroup.com

Glasgow

Wright Business Centre
1 Lonmay Road
Glasgow
G33 4EL

0141 773 6269
info@thelkgroup.com

Swindon

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

01793 987390
info@thelkgroup.com