



APPENDIX C

COAL AUTHORITY MINING REPORT



The Coal
Authority

Resolving the **impacts** of mining

CON29M Non-Residential Mining Report

MINERS ROAD
LLAY INDUSTRIAL ESTATE
LLAY
WREXHAM



Date of enquiry: 21 August 2018
Date enquiry received: 21 August 2018
Issue date: 21 August 2018

Our reference: 51001899649001
Your reference: 177493550_2|

CON29M Non-Residential Mining Report

This report is based on, and limited to, the records held by the Coal Authority, at the time we answer the search.

Client name

LANDMARK INFORMATION GROUP LIMITED

Enquiry address

MINERS ROAD, LLAY INDUSTRIAL ESTATE, LLAY,
WREXHAM

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

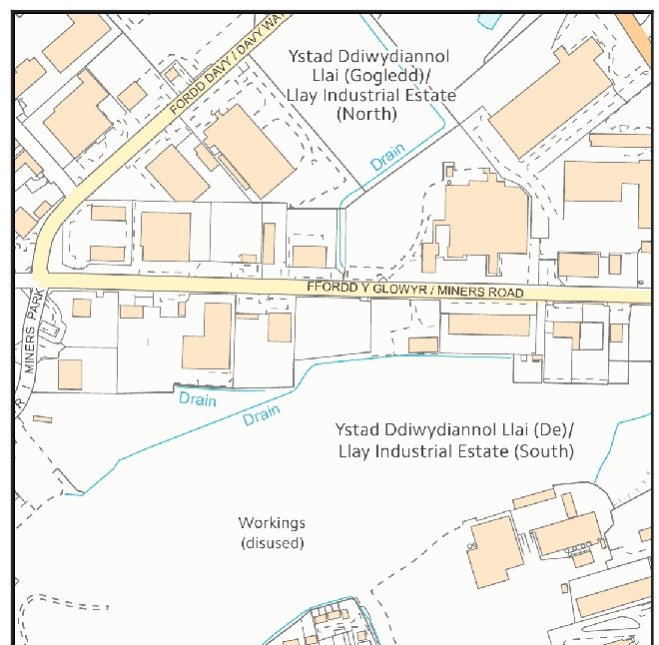
200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 /company/the-coal-authority

 /thecoalauthority

 /coalauthority



Approximate position of property



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Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	Yes
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 6 seams of coal at 570m to 810m depth, and last worked in 1966.

Any movement in the ground due to coal mining activity should have stopped.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6. Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7. Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

12. Withdrawal of support

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13. Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14. Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Additional remarks

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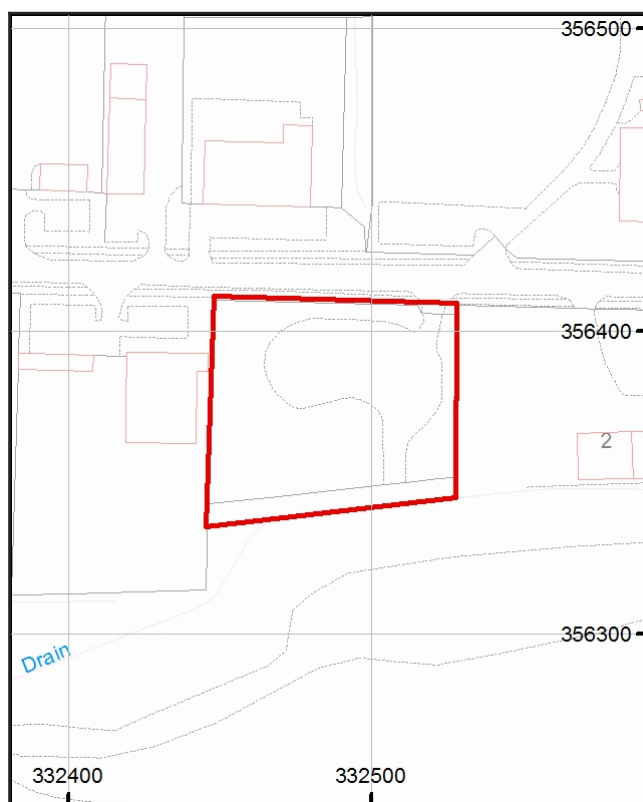
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



How to contact us

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200 Lichfield Lane
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Nottinghamshire
NG18 4RG

www.groundstability.com

 /company/the-coal-authority

 /thecoalauthority

 /coalauthority



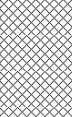
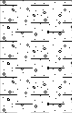
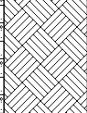
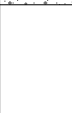
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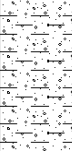


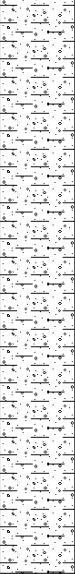
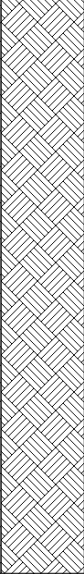
APPENDIX D

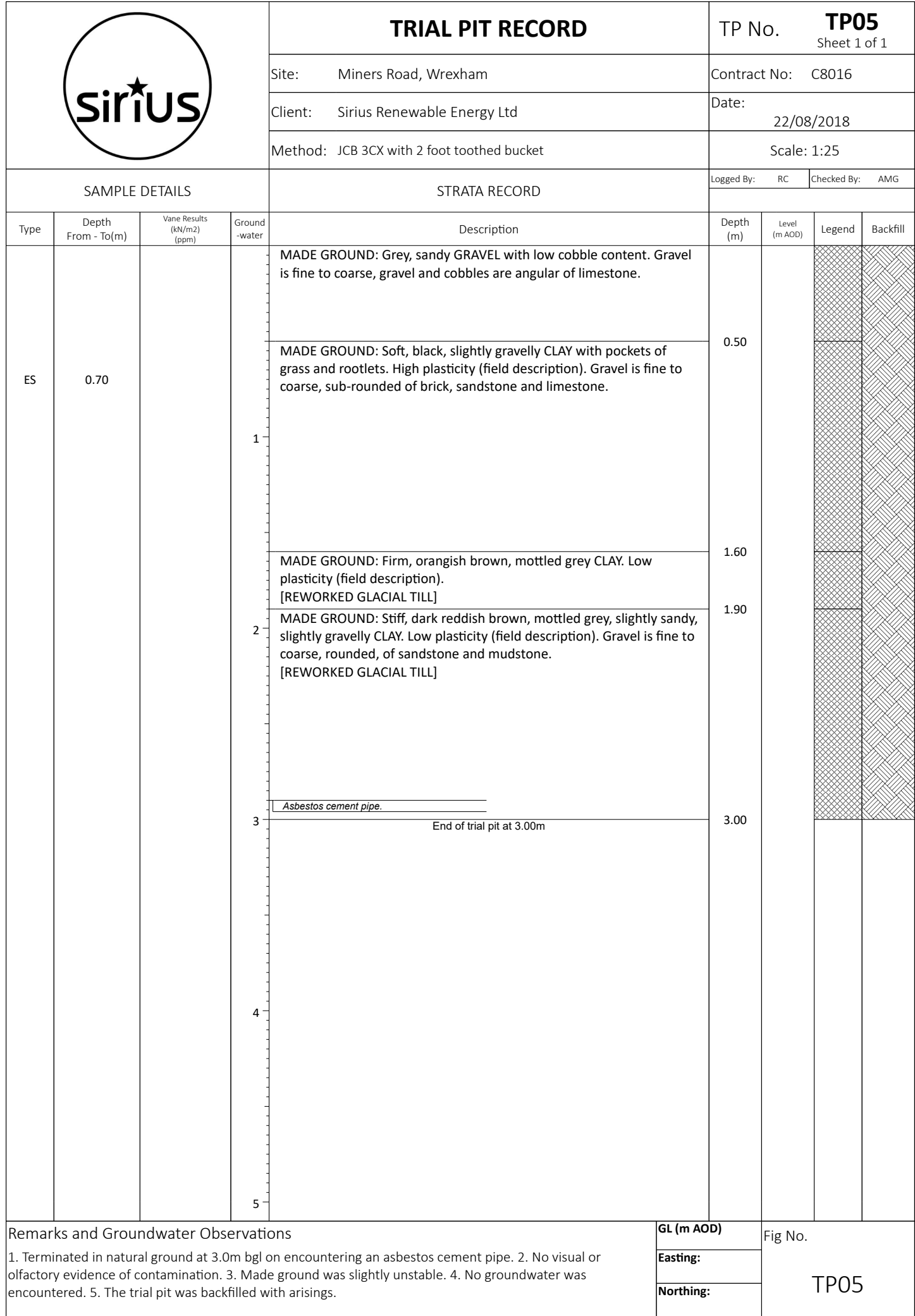
EXPLORATORY HOLE LOGS

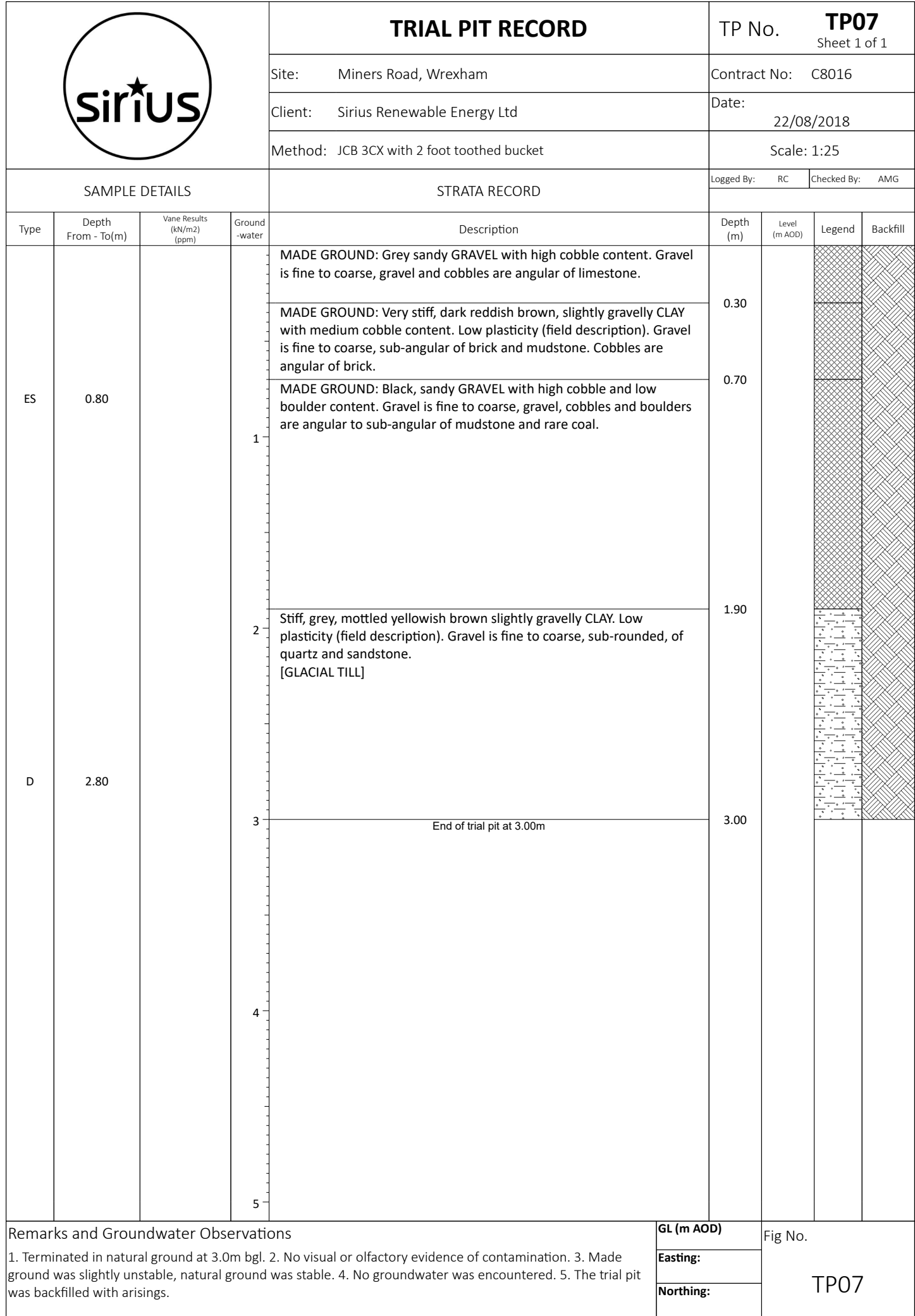
				TRIAL PIT RECORD		TP No. TP01 Sheet 1 of 1		
				Site: Miners Road, Wrexham		Contract No: C8016		
				Client: Sirius Renewable Energy Ltd		Date: 22/08/2018		
				Method: JCB 3CX with 2 foot toothed bucket		Scale: 1:25		
SAMPLE DETAILS				STRATA RECORD		Logged By: RC Checked By: AMG		
Type	Depth From - To(m)	Vane Results (kN/m2) (ppm)	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Backfill
ES	1.00		1	MADE GROUND: Grey sandy GRAVEL with occasional rootlets. Gravel is fine to coarse, angular of limestone.	0.40			
				MADE GROUND: Dark grey to black, sandy GRAVEL with ash. Gravel is fine to coarse, angular of limestone and brick.				
				MADE GROUND: Stiff, dark grey, friable slightly gravelly CLAY with ash. Low plasticity (field description). Gravel is fine to coarse, rounded to angular, of quartz, coal, mudstone and brick.				
D	1.60		2	Stiff, reddish brown, mottled grey, slightly gravelly, slightly sandy CLAY. Low plasticity (field description). Gravel is fine to coarse, rounded of sandstone and mudstone. [GLACIAL TILL]	1.50			
			3	End of trial pit at 3.00m	3.00			
			4					
			5					
Remarks and Groundwater Observations 1. Terminated in natural ground at 3.0m bgl. 2. No visual or olfactory evidence of contamination. 3. Made ground was slightly unstable, natural ground was stable. 4. No groundwater was encountered. 5. The trial pit was backfilled with arisings.					GL (m AOD)		Fig No. TP01	
					Easting:			
					Northing:			

				TRIAL PIT RECORD		TP No. TP02 Sheet 1 of 1		
				Site: Miners Road, Wrexham		Contract No: C8016		
				Client: Sirius Renewable Energy Ltd		Date: 22/08/2018		
				Method: JCB 3CX with 2 foot toothed bucket		Scale: 1:25		
SAMPLE DETAILS				STRATA RECORD		Logged By: RC Checked By: AMG		
Type	Depth From - To(m)	Vane Results (kN/m2) (ppm)	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Backfill
ES	0.30			MADE GROUND: Cream and grey COBBLES with much sandy gravel, and low boulder content. Gravel is fine to coarse, angular of brick and concrete. Cobbles are sub-rounded to angular of asphalt, concrete paving slab and brick. Boulders are sub-rounded of sandstone.	0.50			
				End of trial pit at 0.50m				
			1					
			2					
			3					
			4					
			5					
Remarks and Groundwater Observations 1. Trial pit excavated into a stockpile. 2. No visual or olfactory evidence of contamination. 3. Made ground was slightly unstable. 4. No groundwater was encountered. 5. The trial pit was backfilled with arisings.					GL (m AOD)		Fig No. TP02	
					Easting:			
					Northing:			

				TRIAL PIT RECORD		TP No. TP03 Sheet 1 of 1			
				Site: Miners Road, Wrexham		Contract No: C8016			
				Client: Sirius Renewable Energy Ltd		Date: 22/08/2018			
				Method: JCB 3CX with 2 foot toothed bucket		Scale: 1:25			
SAMPLE DETAILS				STRATA RECORD		Logged By: RC		Checked By: AMG	
Type	Depth From - To(m)	Vane Results (kN/m2) (ppm)	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Backfill	
ES	1.10		1	MADE GROUND: Grey sandy GRAVEL with medium cobble content. Gravel is fine to coarse, sub-angular of brick and concrete. Cobbles are angular of brick.	0.50				
				MADE GROUND: Black sandy GRAVEL. Gravel is fine to coarse, sub-angular of coal and mudstone.					
D	2.30		2	Stiff, reddish brown, mottled grey, slightly gravelly, slightly sandy CLAY. Low plasticity (field description). Friable. Gravel is fine to coarse, rounded of sandstone and mudstone. [GLACIAL TILL]	1.40				
				End of trial pit at 2.90m					
			3		2.90				
			4						
			5						
Remarks and Groundwater Observations 1. Terminated in natural ground at 2.9m bgl. 2. No visual or olfactory evidence of contamination. 3. Made ground was slightly unstable, natural ground was stable. 4. No groundwater was encountered. 5. The trial pit was backfilled with arisings.					GL (m AOD)		Fig No. TP03		
					Easting:				
					Northing:				

				TRIAL PIT RECORD		TP No. TP04 Sheet 1 of 1		
				Site: Miners Road, Wrexham		Contract No: C8016		
				Client: Sirius Renewable Energy Ltd		Date: 22/08/2018		
				Method: JCB 3CX with 2 foot toothed bucket		Scale: 1:25		
SAMPLE DETAILS				STRATA RECORD		Logged By: RC Checked By: AMG		
Type	Depth From - To(m)	Vane Results (kN/m2) (ppm)	Ground -water	Description	Depth (m)	Level (m AOD)	Legend	Backfill
ES	0.30			MADE GROUND: Grey, sandy GRAVEL with medium cobble content. Gravel is fine to coarse, gravel and cobbles are angular of limestone.	0.30			
D	0.70			MADE GROUND: Firm, black, slightly sandy CLAY with ash and occasional pockets of grass and moss. High plasticity (field description).				
					0.90			
			1	Stiff, reddish brown, mottled grey, slightly gravelly, slightly sandy CLAY. Low plasticity (field description). Friable. Gravel is fine to coarse, rounded of sandstone and mudstone. [GLACIAL TILL]				
D	1.70							
			2					
				End of trial pit at 2.80m	2.80			
			3					
			4					
			5					
Remarks and Groundwater Observations 1. Terminated in natural ground at 2.8m bgl. 2. No visual or olfactory evidence of contamination. 3. Made ground was slightly unstable, natural ground was stable. 4. No groundwater was encountered. 5. The trial pit was backfilled with arisings.					GL (m AOD)		Fig No. TP04	
					Easting:			
					Northing:			







APPENDIX E

SIRIUS QUALITATIVE RISK ASSESSMENT METHODOLOGY



Qualitative Risk Assessment Methodology

The approach adopted by Sirius for the qualitative assessment of risk is based upon that given in Annex 4 of NHBC-Environment Agency-CIEH “Guidance for the Safe Development of Housing on Land Affected by Contamination” (2008) and is consistent with other current guidance.

The risk posed by viable contaminant linkages is based upon the consideration of both:

- a) the magnitude of the potential consequence (i.e. its severity); and,
- b) the probability (likelihood) of that consequence being realised.

The classifications used in this report for consequence and probability are given in Tables 1 and 2, respectively. The derived risk classifications are defined in Table 3.

Where there is no viable contaminant linkage there is no potential risk.

Table 1. Classification of Consequence

Classification	Definition
Severe	Contaminant concentrations at the receptor that are likely to result in “significant harm” to human health (as defined in Part 2A of the Environmental Protection Act 1990). Major pollution of controlled waters that could have persistent and/or extensive effects on water quality, for example fish kills, closure of an abstraction, or substantial deterioration in quality of the receiving water body. Major impact on receptor amenity value or major damage to agriculture or commerce. Major damage to an ecosystem that is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population. Catastrophic damage to crops, buildings or property.
Medium	Elevated concentrations at the receptor that might result in “significant harm” to human health (as defined in Part 2A of the Environmental Protection Act 1990). A pollution incident that has significant effect on water quality or abstraction potential. An incident that has a marked effect on receptor amenity value, agriculture or commerce. Damage to an ecosystem that may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Significant damage to crops, buildings or property.



Classification	Definition
Mild	Potential human health impact at the receptor point but unlikely to be classified as “significant harm” (as defined in Part 2A of the Environmental Protection Act 1990). Pollution of water that will have a small or short-lived effect on water quality and marginal effects on its amenity or resource value or its use in agriculture or commerce. Minor or short-lived damage to ecosystems, which is unlikely to result in a substantial adverse change Minor damage to crops, buildings or property
Minor	No potential measurable detrimental human health impacts at the receptor point. Impact on water that will have no or minimal effect on water quality or use. No or minor and easily repairable effects on buildings, structures and services.

Table 2. Classification of Probability

Classification	Definition
High	An impact is already occurring or is very likely in the short-term and almost inevitable over the long-term.
Medium	It is probable that an event would occur. This is not inevitable but possible in the short-term and likely over the long-term.
Low	Circumstances are possible under which an event could occur. However, it is by no means certain that an event will take place, even over the long-term.
Unlikely	Circumstances are such that it is improbable that an event would occur even over the very long-term.

Table 3. Risk Classification

Probability	Consequence			
	<i>Severe</i>	<i>Medium</i>	<i>Mild</i>	<i>Minor</i>
High	Very High	High	Moderate	Low
Medium	High	Moderate	Low to Moderate	Low
Low	Moderate	Low to Moderate	Low	Very Low
Unlikely	Low to Moderate	Low	Very Low	Negligible



Table 4 provides a context for interpretation of the risk classification categories. The definitions provided are based on those given in CIRIA (2001) "Contaminated Land Risk Assessment. A Guide to Good Practice", Report C552.

Table 4. Interpretation of Risk Classification Categories

Risk Classification	Definition
Very High	There is a high probability that severe harm to one or more identified receptors could occur or there is evidence that this is already happening. This risk is likely to result in a substantial liability. Urgent investigation and remediation are likely to be required.
High	Harm is likely to be caused to one or more identified receptors. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short-term and are likely over the longer term.
Moderate	It is possible that harm could be caused to one or more identified receptors. However, it is relatively unlikely that such harm would be severe. Investigation is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low	It is possible that harm could be caused to one or more identified receptors but it is likely that this harm, if realised, would normally be mild. No further investigation is considered necessary to assess risk or environmental liability but investigations could be undertaken if desired to confirm 'baseline' conditions for the purposes of liability management. Remedial works are unlikely to be required.
Very Low	There is a low probability that harm could be caused to one or more identified receptors. In the event of such harm being realised, it is likely to be mild, at worst. No further investigation is considered necessary to assess risk or environmental liability but investigations could be undertaken if desired to confirm 'baseline' conditions for the purposes of liability management. Remedial works are very unlikely to be required.
Negligible	It is unlikely that harm could be caused to one or more identified receptors. In the event of harm being realised, it is likely to be minor. No further investigation is considered necessary to assess risk or environmental liability. Remedial works are not expected.



APPENDIX F

LABORATORY TEST RESULTS



Amended Report

Report No.:	18-25766-2		
Initial Date of Issue:	30-Aug-2018	Date of Re-Issue:	03-Sep-2018
Client	Sirius Geotechnical Ltd		
Client Address:	4245 Park Approach Thorpe Park Leeds West Yorkshire LS15 8GB		
Contact(s):	Adrian Grant Richard Caine		
Project	C8016 - Miners Road, Liay		
Quotation No.:		Date Received:	28-Aug-2018
Order No.:	17406/C8016/RC 17423/C8016/RC	Date Instructed:	28-Aug-2018
No. of Samples:	7		
Turnaround (Wkdays):	5	Results Due:	03-Sep-2018
Date Approved:	03-Sep-2018		
Approved By:	 		
Details:	Glynn Harvey, Laboratory Manager Robert Monk, Technical Manager		

Results - Soil

Project: C8016 - Miners Road, Liay

Client: Sirius Geotechnical Ltd	Chemtest Job No.:				18-25766	18-25766	18-25766	18-25766	18-25766	18-25766	18-25766
Quotation No.:	Chemtest Sample ID.:				677665	677666	677667	677668	677670	677671	677672
	Client Sample ID.:				TP01	TP02	TP03	TP04	TP06	TP07	SP01
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	0.30	1.10	0.30	1.30	0.80	0.10
	Date Sampled:				22-Aug-2018	22-Aug-2018	22-Aug-2018	22-Aug-2018	22-Aug-2018	22-Aug-2018	22-Aug-2018
	Asbestos Lab:				COVENTRY	COVENTRY		COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD							
ACM Type	U	2192		N/A	Fibres/Clumps	-		-	-		-
Asbestos Identification	U	2192	%	0.001	Chrysotile	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
Asbestos by Gravimetry	U	2192	%	0.001	0.087						
Total Asbestos	N	2192	%	0.001	0.087						
Moisture	N	2030	%	0.020	7.6	3.9	9.9	4.9	7.5	6.0	
Soil Colour	N	2040		N/A	Black	Brown	Black	Brown	Black	Black	
Other Material	N	2040		N/A	NONE	Stones	Stones	Stones	Stones	Stones	
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	
pH	M	2010		N/A	8.4	10.7	8.1		7.6	7.9	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.088	0.38	0.029	0.050	0.21	0.067	
Sulphate (Total)	M	2430	%	0.010	0.35	0.30	2.9		0.41	0.44	
Arsenic	M	2450	mg/kg	1.0	8.7	16	27		26	9.6	
Cadmium	M	2450	mg/kg	0.10	0.16	0.21	0.16		0.40	0.13	
Chromium	M	2450	mg/kg	1.0	14	25	6.7		8.9	9.1	
Copper	M	2450	mg/kg	0.50	46	21	94		31	49	
Mercury	M	2450	mg/kg	0.10	0.11	< 0.10	0.45		< 0.10	0.15	
Nickel	M	2450	mg/kg	0.50	24	26	34		13	40	
Lead	M	2450	mg/kg	0.50	26	27	45		41	25	
Selenium	M	2450	mg/kg	0.20	0.92	< 0.20	2.5		< 0.20	0.94	
Zinc	M	2450	mg/kg	0.50	57	69	54		59	64	
Total Organic Carbon	M	2625	%	0.20	12	0.51	35		24	12	
Florisil Cleanup	N		-	N/A				Done		Done	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0				< 1.0		< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0				< 1.0		< 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0				< 1.0		< 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0				< 1.0		< 1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0				< 1.0		< 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0				< 1.0		< 1.0	
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0				< 1.0		< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0				< 1.0		< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0				< 5.0		< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0				< 1.0		< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0				< 1.0		< 1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0				< 1.0		< 1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0				< 1.0		< 1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0				< 1.0		< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0				2.5		< 1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0				< 1.0		< 1.0	

Results - Soil

Project: C8016 - Miners Road, Liay

Client: Sirius Geotechnical Ltd	Chemtest Job No.:				18-25766	18-25766	18-25766	18-25766	18-25766	18-25766	18-25766
Quotation No.:	Chemtest Sample ID.:				677665	677666	677667	677668	677670	677671	677672
	Client Sample ID.:				TP01	TP02	TP03	TP04	TP06	TP07	SP01
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.00	0.30	1.10	0.30	1.30	0.80	0.10
	Date Sampled:				22-Aug-2018	22-Aug-2018	22-Aug-2018	22-Aug-2018	22-Aug-2018	22-Aug-2018	22-Aug-2018
	Asbestos Lab:				COVENTRY	COVENTRY		COVENTRY	COVENTRY		COVENTRY
Determinand	Accred.	SOP	Units	LOD							
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0				< 1.0		< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0				< 5.0		< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0				< 10		< 10	
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Fluoranthene	M	2700	mg/kg	0.10	0.86	0.28	< 0.10		< 0.10	0.46	
Pyrene	M	2700	mg/kg	0.10	1.3	0.36	< 0.10		< 0.10	0.92	
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	
Total Of 16 PAH's	M	2700	mg/kg	2.0	2.2	< 2.0	< 2.0		< 2.0	< 2.0	
Benzene	M	2760	µg/kg	1.0				< 1.0		< 1.0	
Toluene	M	2760	µg/kg	1.0				< 1.0		< 1.0	
Ethylbenzene	M	2760	µg/kg	1.0				< 1.0		< 1.0	
m & p-Xylene	M	2760	µg/kg	1.0				< 1.0		< 1.0	
o-Xylene	M	2760	µg/kg	1.0				< 1.0		< 1.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0				< 1.0		< 1.0	
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30		< 0.30	< 0.30	

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
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
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.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
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
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	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-FID
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.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

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

customerservices@chemtest.com



APPENDIX G

SIRIUS GENERIC ASSESSMENT CRITERIA



SIRIUS GENERIC ASSESSMENT CRITERIA

Context

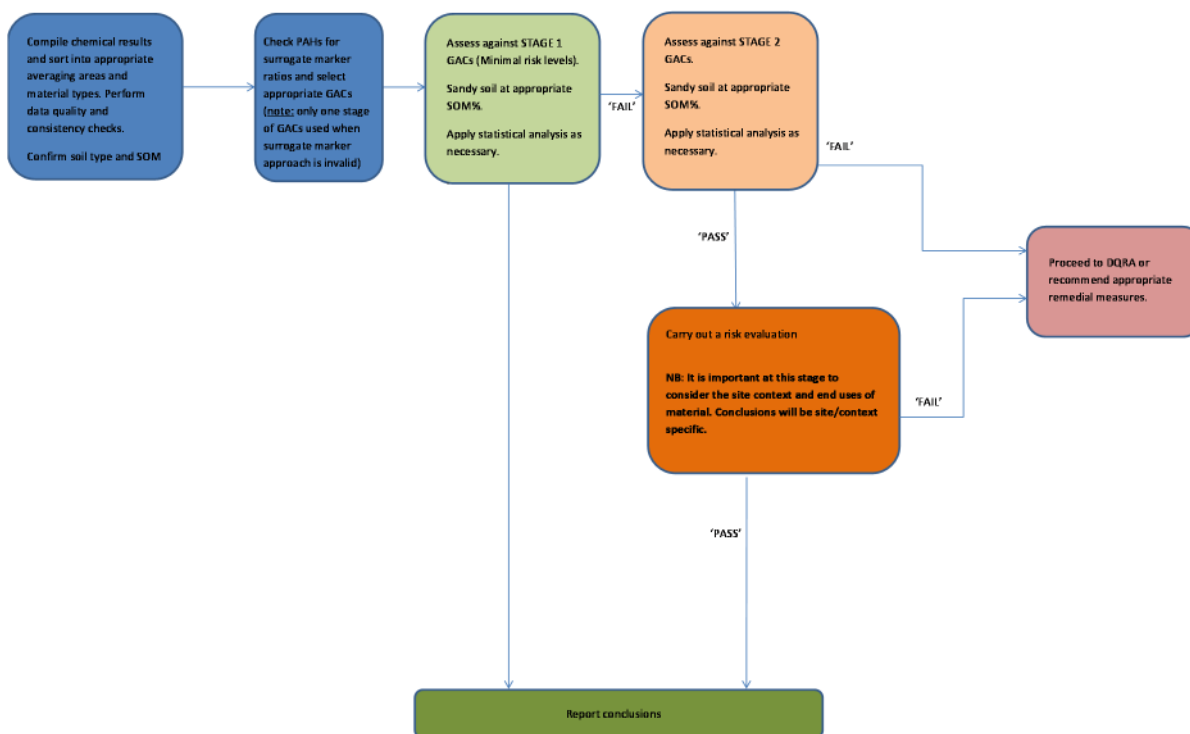
The framework for conducting site investigations, risk assessments and undertaking any necessary remedial works in the UK is provided by Environment Agency report CLR11 “Model Procedures for the Management of Contaminated Land”. This presents a phased approach to risk assessment, involving: identification and qualitative assessment of potential pollutant linkages (source-pathway-receptor relationships) by means of a Conceptual Site Model; Generic Quantitative Risk Assessment (GQRA) of potentially significant pollutant links by comparing contaminant concentrations with appropriate Generic Assessment Criteria (GAC) values; and, if required, a Detailed Quantitative Risk Assessment (DQRA) based on site-specific conditions.

Assessment of Risk to Human Health

Introduction

A staged approach to GQRA has been adopted by Sirius for the evaluation of soil concentration data, as shown schematically in Figure 1.

Figure 1. GQRA Process.





The first stage of GQRA comprises assessment of the data against GAC values derived using toxicological parameter values based on “minimum risk”. Any contaminants exceeding their GACs at this stage are further assessed against Stage 2 GACs, which have been derived using Low Level of Toxicological Concern (LLTC) criteria, where these are available.

With appropriate justification, a contaminant concentration that does not exceed the relevant Stage 2 GAC value may be considered to indicate that the land is “suitable for use”. The appropriate use of LLTC-based criteria within the planning regime is considered reasonable by government agencies, as most recently highlighted in the letter (dated 3rd September 2014) to all local authorities from Lord de Mauley, Parliamentary Under Secretary at DEFRA.

A narrative “risk evaluation” must therefore accompany any Stage 2 assessment to justify the conclusions drawn. Where appropriate, this may provide a basis for eliminating from further consideration those contaminants whose concentrations do not exceed the applicable Stage 2 GAC value.

For the specific case of lead, the Category 4 Screening Level criteria given in CL:AIRE (2014)¹ have been adopted directly as GACs, as these are considered to be based on expert interpretation of current toxicological evidence.

In some areas, background concentrations of lead, other metals and metalloids, and/or individual PAHs may exceed their respective GACs and it may be appropriate to consider relative site and background concentration data as part of a more detailed assessment of the data.

Derivation of GACs

Except where otherwise stated, GACs have been derived by Sirius using CLEA version 1.071.

The GAC values have been derived for a sandy soil type, which will be conservative for the majority of soils (including made ground) encountered on historically contaminated sites. For organic contaminants of concern, criteria have been derived for a number of Soil Organic Matter (SOM) contents.

Genotoxic PAHs are assessed by the “Surrogate Method” using benzo(a)pyrene. Further information on this approach is given below.

Unless specifically stated, chemical properties and Health Criteria Values (HCVs) were obtained from:

- Environment Agency Science Report SC050021 series;
- Nathanail *et al.* (2009) “The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment”, 2nd edition, Land Quality Press, Nottingham;
- CL:AIRE - AGS - EIC (2010) “Soil Generic Assessment Criteria for Human Health Risk Assessment”. CL:AIRE, London.

GACs for arsenic, benzene, benzo(a)pyrene, cadmium and chromium (VI) have been derived using the

¹ CL:AIRE (2014) “Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination”, Report SP1010, rev. 2.



Low Level of Toxicological Concern (LLTC) criteria given in CL:AIRE (2013). These criteria are considered a reasonable basis for assessment as they are still highly precautionary and definitely do not approach an intake level that could be defined as approaching Significant Possibility of Significant Harm to human health in the context of Part 2A of the Environmental Protection Act 1990. It must be further understood that the GACs derived will still incorporate a residual level of conservatism resulting from the exposure parameters used and the assumptions inherent in the model algorithms.

GACs for Genotoxic PAHs

Our approach to the assessment of genotoxic PAHs retains the use of benzo(a)pyrene as a surrogate marker. This approach for genotoxic PAHs is recommended by the HPA (2010)², which we consider to be the authoritative current guidance produced by a UK expert body and note that it was retained in the DEFRA Category 4 Screening Levels project (CL:AIRE, 2014).

The surrogate marker approach allows the assessment of the combined carcinogenic risk associated with all genotoxic PAHs³ present as a mixture within soil, even though detailed toxicological information for many of the individual compounds may be lacking. The approach is based on determining the risk posed by the genotoxic PAH mixture using the concentration of benzo(a)pyrene present as an indicator.

To use the GAC for benzo(a)pyrene as a surrogate marker, a number of requirements must be met (HPA, 2010):

- Benzo(a)pyrene must be present in all soil samples containing genotoxic PAHs for which this method of assessment is being used;
- A similar profile of the genotoxic PAHs relative to benzo(a)pyrene should be present in all of the samples being assessed;
- The PAH profile of PAHs in the soil samples should be similar to that present in the pivotal toxicity study on which toxicological criterion for benzo(a)pyrene was based (Culp *et al.*, 1998⁴). Table 1 provides the basis for defining the acceptable range.

Data indicate that contaminated soils in the UK generally meet these criteria⁵ but the assessor must review their dataset before adopting this approach. If the above criteria are not met, then the surrogate marker approach must not be adopted and individual GAC or SSAC values are to be applied.

² HPA (2010) "Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)", version 5.

³ The genotoxic PAHs included in the USEPA PAH 16 analysis reported by analytical labs are: benz[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[g,h,i]perylene, benzo(a)pyrene, chrysene, dibenz[a,h]anthracene and indeno[1,2,3-c,d]pyrene.

⁴ Culp, S. *et al.* (1998) Carcinogenesis, 19, 117-124.

⁵ Bull, S. & Collins, C. (2013) Environ. Geochem. Health, 31, 101-109.



Table 1. Profile of Genotoxic PAHs Relative to Benzo(a)pyrene that are Considered Acceptable for Application of Benzo(a)pyrene as a Surrogate Marker.

PAH	Acceptable Ratio of PAH Concentration to Benzo(a)pyrene for Application of Surrogate Marker Assessment	
	Lower Limit	Upper Limit
Benz[a]anthracene	0.12	12.43
Benzo[b]fluoranthene	0.11	10.85
Benzo[k]fluoranthene	0.04	3.72
Benzo[g,h,i]perylene	0.08	8.22
Chrysene	0.12	11.61
Dibenz[a,h]anthracene	0.01	1.38
Indeno[1,2,3-c,d]pyrene	0.07	7.27

For further information see: HPA (2010).

Soil Criteria Set for Purposes Other Than Human Health Protection

The Sirius GACs for sulphate, total organic carbon (TOC) and calorific value are set on basis of risks other than human health and their exceedance does not indicate a potential risk to future site users:

- The GAC for sulphate content is based on potential detrimental effects on buried concrete⁶ and must be assessed with reference to the soil pH;
- The GAC for TOC content is provided for indicative assessment of disposal options if off-site landfill of soil were to be considered. This GAC is set at the 'Inert' waste threshold and should be considered as being applied for information purposes only;
- The GAC for calorific value is set to assist in an initial assessment of the potential fire risk posed by made ground or natural soils containing elevated concentrations of potentially combustible organic matter.

Assessment criteria more stringent than those for human health may be set for specific purposes, for example, elimination of nuisance odours or ensuring that potentially mobile free-phase organic products are not present.

Controlled Waters

The Environment Agency's "Remedial Targets Methodology" (2006) provides a framework for assessing the potential for pollution of controlled waters and for deriving remedial target concentrations in soil and groundwater.

There are no generic groundwater or surface water quality standards that are applicable to all sites. Drinking Water Standards and Environmental Quality Standards (EQS) are used by Sirius as assessment criteria where they are appropriate to the contaminant linkages under consideration. Given that these standards apply at the receptor point, this is a conservative approach for samples collected at a source or along a transport pathway.

⁶ BRE (2005) "Concrete in Aggressive Ground", Special Digest No. 1; 3rd Edition.



Soil Leachability

Sirius specifies that the analytical laboratory undertakes leachate preparation by BS EN 12475-2:2002. Where specific circumstances require a different method to be used, then this will be explained and justified within the report body text.

The results of leachate analysis are compared to the relevant GAC values for controlled waters.

The Sirius Group

Stage 1 Generic Assessment Criteria for Soils

Revision:

20th August 2015

Parameter	Residential (mg/kg, unless otherwise stated)						Commercial / Industrial (mg/kg, unless otherwise stated)			Note
	With Homegrown Produce			Without Homegrown Produce						
	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	
Metals/Metalloids										
Arsenic (inorganic)	37			40			630			[1]
Cadmium	11			85			190			[2]
Chromium (III)	910			4000			8600			
Chromium (VI)	6.0			6.1			33			[3]
Copper	200			7100			68000			[4]
Lead	200			310			2300			[5]
Mercury (inorganic)	40			56			1100			[6]
Nickel	130			180			980			[7]
Selenium	250			430			12000			
Vanadium	410			1200			9000			
Zinc	450			40000			750000			[4]
Other Inorganics										
pH	<5 or >9			<5 or >9			<5 or >9			
Total Sulphate	2400			2400			2400			[8]
Water-Soluble Sulphate	0.5 g/l			0.5 g/l			0.5 g/l			[8]
Free Cyanide	34			34			1400			[9]
Organics										
PAHs										
Acenaphthene	200	490	920	2000	3600	4900	75000	92000	100000	
Acenaphthylene	170	400	760	2000	3600	4900	76000	93000	100000	
Anthracene	2300	5300	9400	30000	34000	36000	520000	540000	540000	[10]
Benzo(a)anthracene	Assessed using benzo(a)pyrene as a surrogate marker									[10]
Benzo(a)pyrene	2.1	2.1	2.2	2.3	2.3	2.3	27	27	27	[11]
Benzo(b)fluoranthene	Assessed using benzo(a)pyrene as a surrogate marker									[10]
Benzo(k)fluoranthene	Assessed using benzo(a)pyrene as a surrogate marker									[10]
Benzo(g,h,i)perylene	Assessed using benzo(a)pyrene as a surrogate marker									[10]
Chrysene	Assessed using benzo(a)pyrene as a surrogate marker									[10]
Dibenzo(a,h)anthracene	Assessed using benzo(a)pyrene as a surrogate marker									[10]
Fluoranthene	280	560	820	1500	1600	1600	23000	23000	23000	
Fluorene	170	390	730	2200	3400	4000	60000	67000	70000	
Indeno(1,2,3-c,d)pyrene	Assessed using benzo(a)pyrene as a surrogate marker									[10]
Naphthalene	1.0	2.3	4.6	1.0	2.4	4.7	110	260	510	
Phenanthrene	95	220	380	1300	1400	1500	22000	22000	23000	
Pyrene	620	1200	1900	3700	3800	3800	54000	54000	54000	
BTEx and related										
Benzene	0.063	0.13	0.24	0.16	0.30	0.38	15	28	49	
Toluene	100	240	460	370	830	1100	33000	68000	110000	
Ethylbenzene	26	62	120	34	81	110	3200	7400	14000	
Xylenes (total)	28	67	130	33	78	110	3200	7700	15000	[12]
1,2,4-trimethylbenzene	0.22	0.53	1.1	0.24	0.58	1.2	39	93	170	
Iso-propylbenzene	6.6	16	32	6.8	17	33	1300	3100	6100	
Propylbenzene	21	51	100	23	57	110	3800	9100	17000	
Styrene	6.9	16	32	21	49	93	3100	6100	9500	
TPH										
Aliphatic EC 5-6	24	41	68	24	41	48	2400	4100	6900	
Aliphatic EC >6-8	53	110	210	53	110	150	5300	11000	21000	
Aliphatic EC >8-10	13	31	61	13	31	43	1300	3100	6000	
Aliphatic EC >10-12	62	150	300	62	150	220	6100	15000	28000	
Aliphatic EC >12-16	510	1200	2300	510	1200	1700	43000	72000	85000	
Aliphatic EC >16-35	41000	70000	90000	42000	70000	80000	>1E6	>1E6	>1E6	[13]
Aromatic EC >5-7	53	110	200	150	300	380	15000	28000	48000	
Aromatic EC >7-8	100	240	460	370	820	1100	33000	68000	110000	
Aromatic EC >8-10	20	48	94	22	54	75	2200	5200	9800	
Aromatic EC >10-12	63	150	290	120	290	400	11000	22000	30000	
Aromatic EC >12-16	140	320	570	1100	1900	2100	35000	37000	37000	
Aromatic EC >16-21	260	540	840	1800	1900	1900	28000	28000	28000	
Aromatic EC >21-35	1100	1500	1700	1900	1900	1900	28000	28000	28000	
Chlorinated Organics										
Chlorobenzene	0.19	0.44	0.86	0.19	0.45	0.87	31	71	140	
Dichloromethane (DCM)	0.47	0.78	1.2	1.2	1.7	2.4	250	340	470	
1,1-dichloroethane (DCA)	1.4	2.4	4.0	1.4	2.4	4.1	260	420	690	
1,2-dichloroethane (DCA)	0.0031	0.0048	0.0076	0.0035	0.0053	0.0084	0.34	0.51	0.81	
1,1-dichloroethene (DCE)	0.15	0.26	0.45	0.15	0.26	0.46	24	43	74	
cis -1,2-dichloroethene (DCE)	0.066	0.12	0.20	0.069	0.12	0.21	14	23	38	
trans -1,2-dichloroethene (DCE)	0.11	0.21	0.38	0.12	0.22	0.39	21	37	65	
Pentachlorophenol	0.21	0.52	1.0	27	30	31	400	400	400	
1,1,1,2-tetrachloroethane	0.56	1.3	2.6	0.63	1.5	2.9	59	140	270	
1,1,2,2-tetrachloroethane	0.98	2.1	4.0	1.6	3.4	6.3	150	310	570	

The Sirius Group

Stage 1 Generic Assessment Criteria for Soils

Parameter	Residential (mg/kg, unless otherwise stated)						Commercial / Industrial (mg/kg, unless otherwise stated)			Note
	With Homegrown Produce			Without Homegrown Produce						
	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	1% SOM	2.5% SOM	5% SOM	
Tetrachloroethene (PCE)	0.074	0.17	0.32	0.07	0.17	0.33	10	23	45	
Tetrachloromethane (CT)	0.011	0.024	0.046	0.011	0.024	0.046	1.6	3.6	6.9	
1,1,1-trichloroethane (TCA)	3.7	7.8	15	3.8	7.9	15	370	770	1400	
1,1,2-trichloroethane (TCA)	0.39	0.85	1.6	0.51	1.1	2.0	89	180	320	
Trichloroethene (TCE)	0.0070	0.015	0.028	0.0071	0.015	0.68	1.5	2.8	44	
Trichloromethane (CF)	0.43	0.80	1.4	0.48	0.89	53	98	170	300	
Vinyl Chloride	0.00034	0.00045	0.00062	0.00037	0.00048	0.00066	0.038	0.049	0.068	
Miscellaneous Organics										
Carbon disulphide	0.066	0.13	0.25	0.066	0.13	0.25	6.7	14	25	
Di-(2-ethylhexyl)-phthalate	290	660	1100	3900	4000	4100	85000	85000	8600	
MTBE	31	55	94	39	68	120	7400	12000	19000	
Phenol	110	190	330	420	440	440	440			[14]
Methylphenols (cresols), total	78	170	330	5600	8200	9900	160000	170000	18000	[15]
2,4-dimethylphenol (m-xylene)	18	43	82	200	430	720	15000	23000	28000	
Other Parameters										
TOC	3% w/w			3% w/w			3% w/w			[16]
Calorific Value	2 MJ/kg			2 MJ/kg			2 MJ/kg			[17]
Asbestos	Fibres present			Fibres present			Fibres present			

All concentration-based criteria are rounded to 2 significant figures.

The criteria assume a sandy soil type, which will be conservative for the great majority of soils (including made ground) encountered on historically contaminated sites.

Except where otherwise stated, criteria have been derived by Sirius using CLEA version 1.06. Parameters for the land use cases are consistent with those given in Environment Agency (2009) "Updated Technical Background to the CLEA Model", report SC050021/SR3 but updated (where relevant) for respiration rate, exposure frequency for dermal contact outdoors, soil adherence factors for children, and plant uptake concentration factors given in CL:AIRE (2014) and Nathanail *et al.*, (2015). No correction has been made for the "Top Two" crop types in the Residential with Homegrown Produce land use and the criteria will therefore be conservative in this regard.

Health Criteria Values (HCVs) and (except where specifically noted) chemical property data were obtained from:

- Environment Agency Science Report SC050021 Series;
- Nathanail *et al.* (2015);
- CL:AIRE-AGS-EIC (2010).

Footnotes

[1] Based on oral GAC as this is the lower GAC and reflects a cancer risk many orders of magnitude greater than for inhalation.

[2] Determined for lifetime exposure. Plant uptake concentration factors applied were as given in CL:AIRE (2014). The GAC values are based on data for soils having a pH value in the range 6-8; caution should be applied in applying them at pH values outside this range, especially at pH values <5.

[3] Both oral and inhalation HCVs are based on local toxicological effects and therefore the lowest (oral) GAC value is adopted.

[4] For the Residential with Homegrown Produce land use, the GAC values for Cu and Zn are based on potential phytotoxic effects and have been set at the maximum allowable concentrations for sewage sludge-amended soils presented in the "Sludge (Use in Agriculture) Regulations" (SI 1263/1989); these criteria may also be applied in any land use where plants are to be grown. The equivalent GAC values for human health protection in the Residential with Homegrown Produce land use are around an order of magnitude greater.

[5] The Category 4 Screening Levels for lead defined in CL:AIRE (2013) have been adopted directly to provide an acceptable basis for initial assessment of data. Where background concentrations of lead exceed the GAC value, then site-specific evaluation will be required.

[6] The SGV for mercury is based on inorganic mercury which represents the most common form encountered within the environment. This is considered appropriate for most sites as: "...the SGV for inorganic mercury can normally be compared with chemical analysis for total mercury content because the equilibrium concentrations of elemental and methylmercury compounds are likely to be very low" (Environment Agency report SC050021/Mercury SGV). Analysis and specific assessment for elemental or methylated forms of mercury will need to be considered if historical land use or site-specific factors indicate that these forms of mercury are likely to be present.

[7] Toxicological effects by inhalation are localised, therefore the lower of the GAC values for oral and inhalation HCVs have been adopted.

[8] BRE (2005). Sulphate is not considered to pose a potential risk to human health under normal circumstances – this GAC applies to construction cases only and is set at the upper limit for DS-1 Design Sulphate Class concrete.

[9] GAC calculated for acute risk. Further information can be provided upon request.

[10] The genotoxic PAHs (benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene) are routinely assessed using benzo(a)pyrene as a surrogate (HPA (2010) "Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs)", version 5). Separate information on this approach is provided.

[11] Calculated using a 'minimum risk' oral index dose derived from the application of a 10,000x safety factor to the BMD10 presented in CL:AIRE (2014) for benzo(a)pyrene as a surrogate marker and the inhalation index dose specified in CL:ARE (2014) and Nathanail *et al.* (2015). As a conservative measure, the GAC is based on combined exposure pathways to account for systemic carcinogenic effects. Further information on the derivation can be provided upon request.

[12] For screening purposes, a single GAC has been set for total xylene. This is the lowest of the values calculated for the three individual xylene isomers.

[13] "No GAC" indicates that no value has been specified for this land use as the TDSI cannot be exceeded at achievable soil concentrations.

[14] 440mg/kg is the minimum concentration that is protective for direct skin contact with phenol (See Environment Agency SR050021/Phenol SGV) and is adopted where GACs for chronic exposure are higher.

[15] For screening purposes, a single GAC has been set for total methylphenol. This is the lowest of the values calculated for the three individual methylphenol isomers.

[16] The Hazardous Waste (England and Wales) Regulations 2005. TOC content in itself does not represent a potential risk to human health. This GAC is provided for indicative assessment of disposal options, in the case that off-site landfill of soil is undertaken. This GAC is specified at the 'Inert' waste threshold and should be considered as for information purposes only.

[17] ICRL (1986) Guidance Note 61/84, 2nd Edition, Notes on the Fire Hazards of Contaminated Land. Calorific value is not an indication of direct human health risk but may be useful in assessment of the potential fire risk posed by made ground or natural soils containing elevated concentrations of potentially combustible organic matter.

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