soils LIMITED

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Mr. Peter Taylor

By Email only: [redacted]

Our Ref. 15306/LR

December 2016

RE: Land north of Mayflower Way, off Roundstone Lane, Angmering, West Sussex.

Dear Mr Taylor,

We are writing in regards to the intrusive investigation undertaken by Soils Limited at the above site on 22nd November 2016.

Brief

The Soils Limited quotation (reference Q17034/Rev2.01 dated 9th November 2016) set the scope of the investigation. The investigation was to comprise machine excavated trial pits and to conduct infiltration testing in accordance with the principles of BRE Digest 365 Soakaway design:2016, and retrieve soil samples for chemical laboratory analysis.

General

The site was located at land north of Mayflower Way, off Roundstone Lane, Angmering, West Sussex, BN16 4AY and had an O.S. Land Ranger Grid Reference of TQ 072 033.

A Site Location Map has been provided in Figure 1.

Anticipated Geology

The 1:50,000 BGS Geology map showed the site to be situated on the bedrock of the Lewes Nodular Chalk Formation with the superficial deposits of River Terrace Deposits overlying.

River Terrace Deposits

River Terrace Deposits are superficial deposits of Quaternary age that lie along the margins of rivers and are predominantly found in the southern part of West Sussex, along the coastal plain and are typically less than 10m thick. The composition of the River Terrace Gravel varies greatly, depending on the source material available in the river's catchment. Deposits generally consist of sands and gravels of roughly bedded flint or chert commonly in a matrix of silts and clays. In West Sussex the rivers flow mainly south over the Weald Clay, which contains some sandstones and limestone that could be incorporated into the river gravel.

Lewes Nodular Chalk Fm.

The Lewes Nodular Chalk Formation is composed of hard to very hard nodular chalks and hardgrounds with interbedded soft to medium hard chalks (some grainy) and marls; some griotte

chalks. The softer chalks become more abundant towards the top. Nodular chalks are typically lumpy and iron-stained. Brash is rough and flaggy or rubbly, and tends to be dirty. First regular seams of nodular flint, some large, commence near the base and continue throughout.

This formation can exhibit occasional erosional features such as pipes, swallow holes and solution cavities, usually in-filled with drift deposits. The features sometimes manifest themselves at the surface as shallow circular depressions and solution features may be reactivated by the concentrated ingress of water from leaking drains or soakaways. This reactivation may lead to surface collapse.

Site Works

Site works were undertaken on 22nd November 2016 and comprised the excavation of ten trial pits (TP1 – TP10). Following construction of the trial holes, infiltration tests broadly in accordance with the principles of BRE 365 were carried out in three trial pits (TP1 – TP3). Due to slow infiltration, infiltration testing could only be carried out once within these trial pits, with the exception of TP1 where infiltration testing was carried out twice.

A trial hole location plan is presented in Figure 2.

The trial pits were backfilled with arisings immediately after completion of testing and were mounded over to allow for future settlement.

Ground Conditions

The ground conditions encountered during the site investigation have been summarized in Table 1 and comprised:

Made Ground (MG)

River Terrace Deposits (RTD)

The ground conditions encountered in the trial holes are summarized in Table 1.

Table 1. Ground Conditions

Strata	Epoch	Depth Encountered (m bgl)		Typical Thickness (m)	Typical Description
		Top	Bottom		
MG	Recent	0.00	0.30 – 1.00	0.80	Black and brown slightly clayey gravelly sandy SILT. Gravel is fine to cobble sized fragments of flint, brick, concrete, glass and occasional fine ash. Occasional roots and rootlets.
RTD[2]	Quaternary	0.30	1.80[1] – 2.80[1]	Not Proven	Soft light brown slightly gravelly silty CLAY. Gravel is fine to medium angular to rounded flints.

Note: [1] Final depth of trial hole. [2] Base of strata not encountered

Infiltration Testing

Infiltration tests were performed in trial pits TP1, TP2 and TP3, to provide guidance on the suitability of the ground for the adoption of a surface water drainage system. The tests were undertaken within the River Terrace Deposits to depths of 2.20m, 2.63m and 2.90m below ground level (bgl). The test at 2.90m bgl (TP1) was undertaken within soils showing a higher percentage of coarse gravels than the overlying soil. The tests comprised piping clean water via a water tanker into the open trial hole, the drop in water level (head) over time was then recorded to give an indication of soakage potential.

BRE 365 states that for an accurate infiltration rate to be obtained, a soakage pit needs to be filled three times in quick succession. Each test is completed once 75% of the water present has drained away, to determine whether the underlying ground conditions were suitable for surface water drainage.

Table 2. Infiltration Test Results

Trial Hole (Test No.)	Test Stratum	Test Depth (m bgl)	Infiltration Rate (m/sec)	Notes
TP1 (1)	RTD	2.90	6.26×10^{-5}	
TP1 (2)	RTD	2.90	2.45×10^{-5}	Data extrapolated after 110 mins
TP2	RTD	2.20	6.17×10^{-7}	Data extrapolated after 190 mins
TP3	RTD	2.63	2.64×10^{-6}	Data extrapolated after 160 mins

Contamination Testing

The Phase I Desk Study undertaken by Soils Limited (report ref: 15306/DS dated November 2016) identified a low to moderate risk of ground contamination and from pervious usage of the site and offsite sources.

Determination of Chemical Analysis

The driver for determination of the analysis suite was the information obtained from the Phase I Desk Study and Phase II Intrusive Investigation. Table 3 outlines the specification for each sample tested.

Table 3. Chemical Analysis Specification

Substance	Locations:Depths (m bgl)							
	SP1 [S]	SP2 [S]	TP2:0.20 [S]	TP3:0.10 [S]	TP5:0.20 [S]	TP5:0.90 [S]	TP7:0.20 [S]	TP7:1.20 [S]
Asbestos Screen	✓	✓	✓	✓	✓	✓	✓	✓
Total Phenols	✓	✓	✓	✓	✓	✓	✓	✓
Total Cyanide	✓	✓	✓	✓	✓	✓	✓	✓
Organic Matter	✓	✓	✓	✓	✓	✓	✓	✓
pH	✓	✓	✓	✓	✓	✓	✓	✓
Metals	✓	✓	✓	✓	✓	✓	✓	✓
Metalloids	✓	✓	✓	✓	✓	✓	✓	✓
Organics	✓	✓	✓	✓	✓	✓	✓	✓
PAHs	✓	✓	✓	✓	✓	✓	✓	✓
TPH-CWG	✓	✓	✓	✓	✓		✓	✓
BTEX	✓	✓	✓	✓	✓		✓	✓
WAC	✓	✓						

Notes: **Metals**: Cd, Cr, Pb, Hg, Ni, Se, CN, S, Cu, Zn, Bo, V. **metalloids**: As. **organics**: USEPA 16 speciated PAH, TPH-CWG (speciated TPH), BTEX, VOC/SVOC **Asbestos screening** was undertaken in accordance with HSG 248. [S] = Soil sample. [W] = Water sample. [L] = Leachate.

Assessment Criteria

The assessment criteria used to determine risks to human health are derived and explained at in Appendix C.

Representative Contamination Criteria – Soil

It is proposed to redevelop the site as a residential development. On this basis, the results of the laboratory analysis undertaken were compared against Category 4 Screening Levels (C4SL's), where there are no published C4SLs, Suitable 4 Use Level (S4UL) and Soil Guideline Values (SGV) have been adopted to assess the risk to human health based on a residential with plant uptake end use.

Table 6.1 outlines the samples that have exceeded their relevant assessment criteria. The full laboratory report is presented in Appendix B.

Table 6.1 Summary of Chemical Analysis of Soils Sample Exceedance

Substance	Sample locations where adopted SGV, C4SL or S4UL were exceeded for the 'Residential with Plant Uptake' land-use scenario
Lead	654mg/kg against 200mg/kg – TP3:0.10 (C4SL)
TPHs	Aliphatic >C5 – C6 137mg/kg against 78mg/kg – TP7:1.20 (S4UL) Aliphatic >C10-C12 394mg/kg against 330mg/kg – TP7:0.20(S4UL) Aliphatic >C10-C12 2021mg/kg against 330mg/kg – TP7:1.20(S4UL) Aliphatic >C12-C16 3768mg/kg against 2400mg/kg – TP7:1.20(S4UL) Aromatic >C10-C12 689mg/kg against 180mg/kg – TP7:1.20(S4UL) Aromatic >C12-C16 443mg/kg against 330mg/kg – TP7:0.20(S4UL) Aromatic >C12-C16 1995mg/kg against 330mg/kg – TP1.20(S4UL) Aromatic >C16-C21 672mg/kg against 540mg/kg – TP1.20(S4UL)

To assess the potential toxicity to the human health receptor from the concentrations of organic compounds tested for, Soil Organic Matter (SOM) tests were undertaken on the samples submitted for chemical testing, which revealed SOM values of between 1.2 and 2.8%. For each soil sample tested, the Soil Organic Matter recorded was used to derive the appropriate guideline value for organic determinants.

In summary, one of the samples tested showed concentrations in excess of the relevant C4SL for a residential with plant uptake land-use scenario for Lead. In TP3 at 0.10m bgl, lead was recorded at a concentration of 654mg/kg against the residential with plant uptake end-use C4SL of 200mg/kg. Two samples tested showed concentrations in excess of adopted S4UL guideline values for Total Petroleum Hydrocarbons. TP7 showed elevated levels of Aliphatic C10 – C12 at 0.20m bgl and C8 – C16 at 1.20m bgl. TP7 also recorded elevated levels of Aromatic C12 – C16 at 0.20m bgl and C10 – C21 at 1.20m bgl.

None of the other substances tested recorded concentrations above the residential with plant uptake end-use screening values.

Asbestos

No Asbestos Containing Material (ACM) was detected within the samples provided to the laboratory. If encountered, care must be taken to ensure any such material is separated and disposed of in an appropriate manner to a licensed waste facility.

Tier 1 Quantitative Risk Assessment

A Quantitative risk assessment has been undertaken for both risks to human health and groundwater based on the results of the chemical analysis undertaken on the soil.

Human Heath

Three samples tested showed concentrations in excess of the relevant screening levels for residential with plant uptake land use scenario. TP3 at 0.10m bgl, lead was recorded in exceedance of the relevant guideline values and samples from TP7 recorded exceedances in TPH concentrations.

At the time of reporting, the proposed development is in a conceptual stage and the layout has not been finalised. Therefore, it is not possible to determine where the identified contamination lies within the proposed development.

The lead identified within TP3 at 0.10m bgl poses a risk to the human health receptor, due to the shallow depth, via dermal, ingestion and inhalation pathways, if situated within a garden area.

The hydrocarbon contamination identified within TP7 represents a risk to the human health receptor via dermal, inhalation and ingestion pathways if situated in gardens or soft landscaping areas. It also poses risk to human health receptor via inhalation pathway if situated within a building footprint. Hydrocarbon contamination poses further risk to services and therefore the local authority may require upgraded fresh water pipes to be installed.

The Tier 1 Quantitative risk assessment therefore established that there is a risk to the human health receptors of construction workers or future end-users and remedial works will be required to remove the risk to human health.

Risk to Groundwater

The site is situated on bedrock with a Principal Aquifer designation. The full extent of the hydrocarbon contamination identified within the soils of TP7 has not been established and it therefore potentially represents a risk to the underlying principle aquifer.

Risk Based Hazard Assessment of Waste

The analysis results of the chemical laboratory testing undertaken as part of report, prepared by QTS Environmental Ltd were used for the Hazardous Waste Classification process. The determination of the hazardous waste classification process is outlined in Appendix D.2.

Soil based stockpiles located on site were tested as samples SP1 and SP2 and did not record any determinants in exceedance of their relevant EQS. Concrete based stockpiles were visually inspected onsite and no hazardous substances were identified.

Full results of the hazardous waste classification tool are given in Appendix D.1. with the samples classified as hazardous outlined in Table 6.3.

Table 6.3 Risk Based Hazard Assessment of Waste

Trial Hole	Depth (m bgl)	Certificate	Description (general)	Type/Waste Code	HazWasteOnline Classification Hazardous Waste
TP7	0.20	15306	Brown sandy clay with stones and vegetation	17 05 03*	Hazardous
TP7	1.20	15306	Brown clay	17 05 03*	Hazardous

Note: 17 05 03* (Soil and stones containing hazardous substances)

Asbestos was not encountered during the intrusive investigation. Waste containing asbestos would either need to be pre-treated on-site, removing the asbestos, before removing to landfill or sent to a specialist landfill which can deal with waste containing asbestos.

Soakaway Design

Given the observed infiltration over the test period, it is considered that the site would be suitable for the adoption of a surface water soak away system, located within the cohesionless strata relating to the River Terrace Deposits.

Where infiltration was observed, infiltration rates varied between 6.26 $x10^{-5}$ and 6.17 $x10^{-7}$ ms^{-1}. In the case of TP1 (2), TP2 and TP3, data has been extrapolated to calculate infiltration rates and therefore should be used with caution. It is recommended that the most conservative value of **6.17 $x10^{-7}$ ms^{-1}** be used for design purposes. The results from groundwater monitoring previously conducted should be taken into consideration when designing the soakaway as the base of any soakaway structure should be of the order of 1.00m above the phreatic zone.

Occasional erosional features, such as pipes, swallow holes and solution cavities, usually in-filled with drift deposits, are found in the chalk underlying the River Terrace Deposits within this area. These features sometimes manifesting themselves' at the surface, as shallow circular depressions.

Dissolution features can form due to manmade features such as Deneholes. These features can then be reactivated or caused to collapse by the concentrated ingress of water from leaking drains or soakaways.

In line with current guidance (BRE Digest 365, NHBC and CIRIA C574) soakaways should be located remote from the proposed foundations, ideally greater than 20m away from the face of any existing or proposed footing.

In respect to the control of drainage CIRIA C574, Engineering in Chalk; 2002 states;

- "Concentrated ingress of water into the chalk can initiate new dissolution features, particularly in low-density chalk, and destabilise the loose backfill of existing ones. For this reason, any

soakaways should be sited well away from foundations for structures, roads or railways, as indicated below:

- In areas where dissolution features are known to be prevalent, soakaways should be avoided if at all possible but, if unavoidable, should be sited at least 20m away from any foundations;

- Where the chalk is of low density, or its density is not known, soakaways should be sited at least 10m away from any foundations;

- Where the chalk is of medium density (or higher), the closest part of the soakaway should be at least 5m away from any foundations.

- For drainage systems, flexible jointed pipes should be used wherever possible; particular care should be taken for the avoidance of leaks in both water supply and drainage pipework.

As the Chalk is a vitally important aquifer, the Environment Agency and local authority must be consulted when planning soakaway installations where chalk lies below the site even where it is mantled with superficial deposits. Surface water drainage systems cannot be situated within an area of contamination

Consultation with the Environment Agency must be sought regarding any use which may have an impact on groundwater resources.

Chemical Analysis

Soil chemical analysis recorded Lead in one sample and Hydrocarbon contamination in two samples with concentrations over their representative guideline values. The Tier 1 Quantitative risk assessment has established that there is a risk from soils on site to the human health of future site users and construction workers and controlled waters. It is recommended a Remediation Strategy is produced to address the contamination identified in this report.

The following attachments make up the remainder of this letter report.

Figure 1. Site Location Plan
Figure 2. Trial Hole Location Plan
Appendix A. Field Data
Appendix B. Laboratory Results
Appendix C. General Assessment Criteria
Appendix D.1 Waste Classification Report
Appendix D.2 Determination of Hazardous Waste Classification

Should you have any further queries, please do not hesitate to contact the undersigned.

Yours sincerely

[redacted]

Tim Rudkin MSc., FGS
Graduate Geo-Environmental Engineer
[redacted]

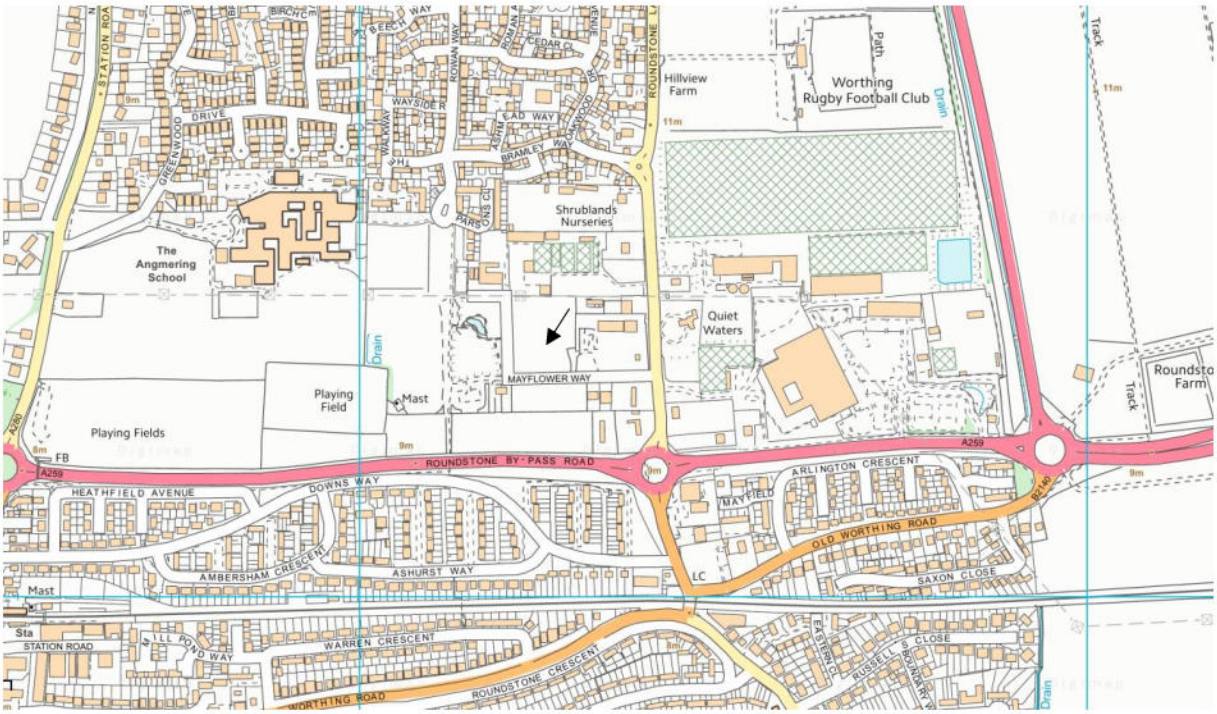


Figure 1 - Site Location Plan

N

Project
Land North of Mayflower Way

Date
November 2016

Client
Mr Peter Taylor

Job Number
15306

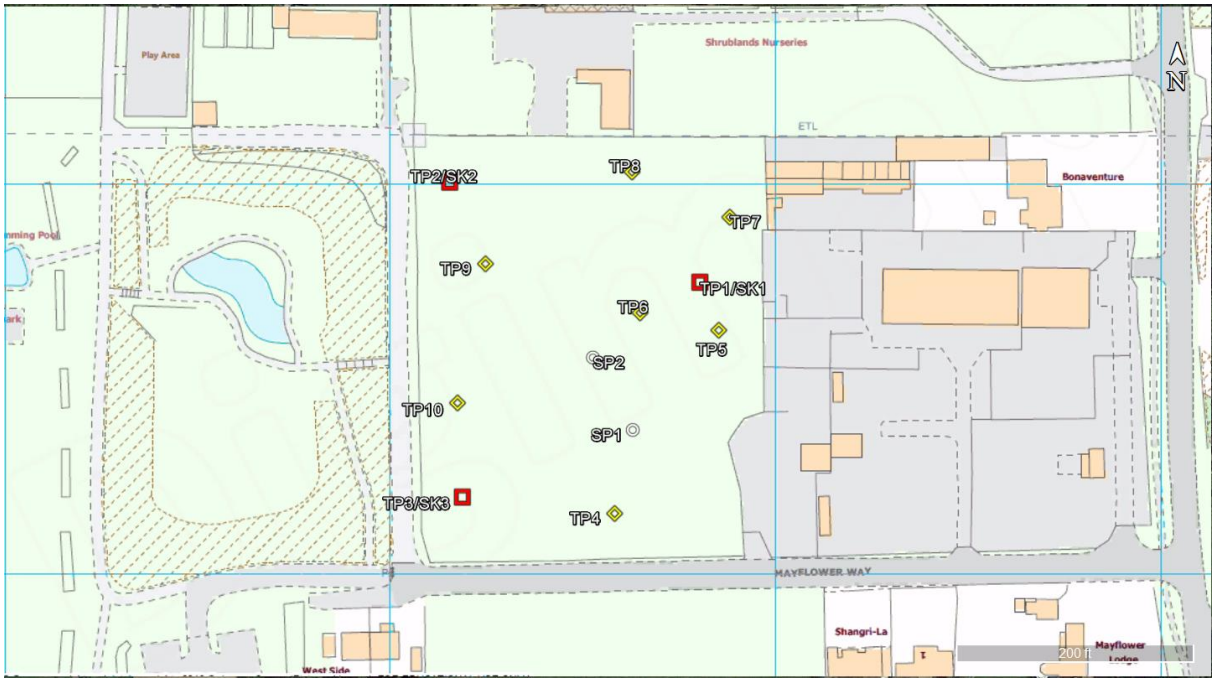


Figure 2 – Trial Hole Location Plan

N

Project
Land North of Mayflower Way

Date
November 2016

Client
Mr Peter Taylor

Job Number
15306

Appendix A – Field Data

Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No.
SP1
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	J+B					

General Remarks:
Stockpile

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited

Newton House Tadworth KT20 5SR

[redacted]

Trial Pit Log

Trial Pit No.
SP2
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	J+B					

General Remarks:
Stockpile

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP1**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	J+D					Black and brown slightly gravelly SILT. Gravel is fine to coarse fragments of concrete, flint and brick and occasional ash. MADE GROUND
	0.40	J+D					
	1.00	J+D		1.00			Soft light brown very silty CLAY
	1.20	J+D					
	1.90	J+D		1.80			Soft light brown slight silty CLAY
	2.30	J+D					*Rare fine to coarse sub-angular flint gravels*
	2.60	J+D		2.60			Soft light greyish brown slightly gravelly sandy CLAY. Gravel is fine to coarse angular fragments of flint. Sand is fine
	2.90	J+D		2.80			End of Pit at 2.90m

General Remarks:
No roots observed

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP10**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	J+D		0.30			Dark brown gravelly SILT. Gravel is fine to coarse fragments of flint, brick and concrete. Frequent decomposed plant material. MADE GROUND
	0.50	J+B					Light orangish brown slightly gravelly SILT. Gravel is rare fine to coarse angular flint fragments. Rare rootlets.
	1.20	D		1.20			Firm light orangish slightly silty CLAY.
	1.70	D		1.80			End of Pit at 1.80m

General Remarks:

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP2**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	J+D					Soft grey gravelly silty CLAY. Gravel is fine to coarse flint, brick and concrete. Organic odour. Occasional fine to medium roots and rootlets. MADE GROUND
	0.50 - 0.80	B					*Concrete and brick slab*
	0.80	J+D		0.90			Soft light brown slightly sandy CLAY. Sand is fine. Rare fine to coarse rootlets to 1.50m bgl.
	1.40	J+D					
	1.80	J+D					
	2.20	J+D		2.20			End of Pit at 2.20m

General Remarks:

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP3**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	J+D					Brown slightly clayey gravelly sandy SILT. Gravel is fine to cobble sized fragments of flint, brick, concrete, glass and occasional fine ash. Occasional roots and rootlets. MADE GROUND
	0.30 - 0.50	B					
	0.50	J					
	0.80	J		0.80			Brown slightly gravelly clayey SILT. Gravel is fine to medium fragments of ash and brick. Soft light orangish brown slightly silty CLAY.
				1.00			Soft light orangish brown slightly silty CLAY.
	1.30	D					
	2.00	D					
							Becoming slightly gravelly. Gravel is fine to coarse sub-angular flint
	2.60	D		2.60			End of Pit at 2.60m

General Remarks:

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP4**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	J+D					Brown slightly sandy gravelly SILT. Gravel is fine to coarse sub-angular fragments of brick, flint, tile and glass and fine ash. Sand is fine to coarse. Occasional rootlets. MADE GROUND
	0.70	J+D		0.70			Fine light brown slightly gravelly slightly sandy SILT. Gravel is rare fragments of brick, tile and chalk. Sand is fine to medium.
							Concrete
	1.10	J+D		1.10			Light brown slightly sandy SILT. Sand is fine.
	1.40	D		1.40			End of Pit at 1.40m

1
2
3
4
5

General Remarks:

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited

Newton House Tadworth KT20 5SR

[redacted]

Trial Pit Log

Trial Pit No. **TP5**

Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP

Scale: 1:25

Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	J+D					Brown slightly gravelly SILT. Gravel is fine to coarse sub-angular fragments of chalk, brick, concrete and occasional fine ash and glass. Occasional roots and rootlets. MADE GROUND *Tarmac Cobbles*
	0.60	J+D					*Frequent fine to coarse fragments of ash.* *Concrete block*
	0.90	J+D		0.80			Soft light orangey brown slightly sandy CLAY. Sand is fine.
	1.30 - 1.60	B					
	1.40	D					
	1.90	D		1.90			End of Pit at 1.90m

General Remarks:

Groundwater Remarks:

Sample Type

D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP6**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	J+D					Brown gravelly SILT. Gravel is fine to coarse flint, brick, glass, concrete, ash and wood. Occasional black staining. MADE GROUND
	0.50	D+B					
				0.80			Soft light brown slightly gravelly silty CLAY. Gravel is fine to coarse fragments of flint. Rare black staining.
	1.20	D					
	1.70	D		1.70			End of Pit at 1.70m

General Remarks:

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP7**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.70	J+B					Soft black slightly silty gravelly CLAY. Gravel is fine to coarse fragments of brick, concrete, clinker and fine ash. Distinct hydrocarbon type odour. Frequent decomposed plant material. Occasional rootlets. MADE GROUND
	0.80	J+D					*Layer of black plastic film with fibres*
				1.00			Soft light brown slightly gravelly silty CLAY. Gravel is fine to coarse fragments of flint.
	1.20	J+D					
	1.80	J+D		1.80			End of Pit at 1.80m

1
2
3
4
5

General Remarks:
Tank location

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP8**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	J+D		0.30			Brown gravelly SILT with pockets of CLAY. Gravel is fine to coarse fragments of flint, brick and concrete. MADE GROUND
	0.50 - 0.80	B+J					Light orangish brown slightly clayey SILT. Occasional rootlets.
							Percentage clay increases with depth
	1.50	D					
	2.00	D		2.00			End of Pit at 2.00m

General Remarks:

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Newton House Tadworth KT20 5SR
[redacted]

Trial Pit Log

Trial Pit No. **TP9**
Sheet 1 of 1

Project Name:	Land North of Mayflower Way, off Roundstone Lane, Angmering,	Project No.: 15306	Method:
			Plant:
Location:	Land North of Mayflower Way, off Roundstone Lane, Angmering		Support:
Client:		Trial Pit Length: m	Trial Pit Width: m
Dates:	24-11-2016	Level:	Co-ords:

Hole Type: TP
Scale: 1:25
Logged By:

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	J+D					Very soft brown gravelly CLAY. Gravel is fine to coarse brick, concrete and flint. Frequent decomposed wood material and organic odour. Occasional fine to coarse rootlets. MADE GROUND
				0.30			Light orangish brown slightly gravelly SILT. Gravel is rare fine to coarse flint fragments. Occasional fine to coarse rootlets becoming fine at 1m bgl.
	0.50	J+B					
	1.10	D					
				1.40			Firm light orangish brown silty CLAY. Rare rootlets observed.
	1.70	D		1.70			End of Pit at 1.70m

General Remarks:

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soakaway Calculations

Soakaway Test No.	TP1 Test1
Contract:	Mayflower Way
Contract No.	15306

Field Test

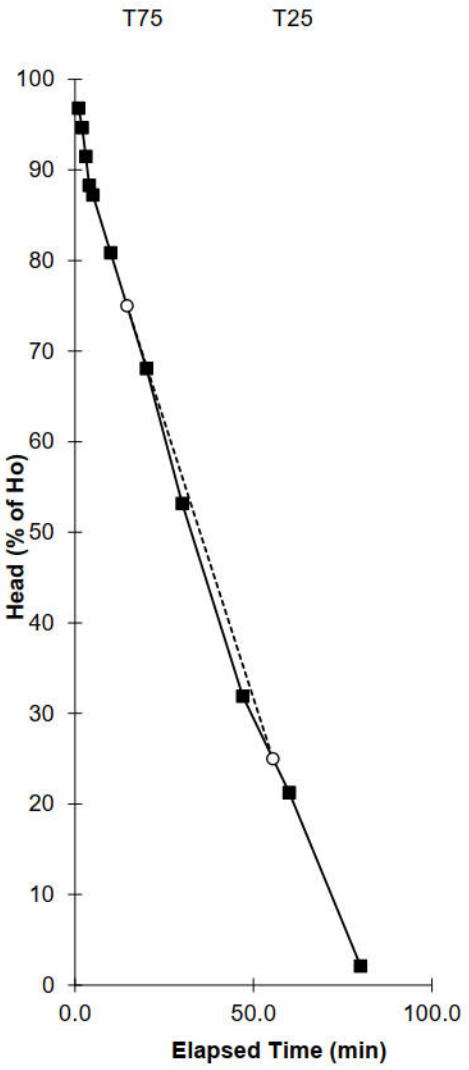
Trial Pit Log (include details of groundwater):
See trial Pit record

Depth of Pit	2.90 m
Width of Pit	0.60 m
Length of Pit	1.90 m
Depth of Pit Soaked	0.94 m
ap50	3.49 m2
Vp75-25	0.5358 m3
t75-25	40.9 min
water used	1.0716 m3
f	6.261E-05 m/sec.

Field Data

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
1.96	0	100	0.94
1.99	1.0	97	0.91
2.01	2.0	95	0.89
2.04	3.0	91	0.86
2.07	4.0	88	0.83
2.08	5.0	87	0.82
2.14	10.0	81	0.76
2.26	20.0	68	0.64
2.40	30.0	53	0.50
2.60	47.0	32	0.30
2.70	60.0	21	0.20
2.88	80.0	2	0.02

T75	14.583	75
T25	55.450	25
T75-25	40.867	Derived from Best Fit



Comments

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR

[redacted]

Soakaway Calculations

Soakaway Test No.	TP1 Test1
Contract:	Mayflower Way
Contract No.	15306

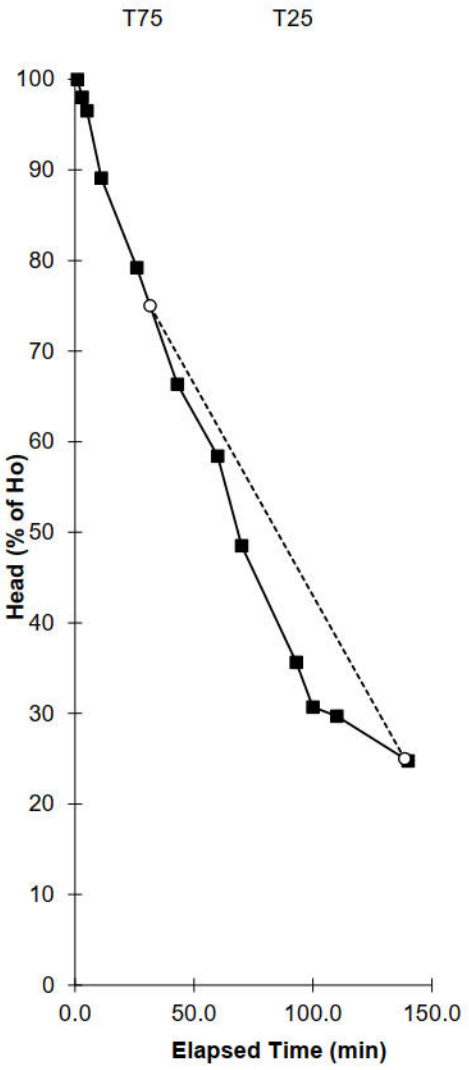
Field Test

Trial Pit Log (include details of groundwater):
See trial Pit record

Depth of Pit	2.90 m
Width of Pit	0.60 m
Length of Pit	1.90 m
Depth of Pit Soaked	1.01 m
ap50	3.665 m2
Vp75-25	0.5757 m3
t75-25	106.9 min
water used	1.1514 m3
f	2.448E-05 m/sec.

Field Data

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
1.89	0	100	1.01
1.89	1.0	100	1.01
1.91	3.0	98	0.99
1.93	5.0	97	0.98
2.00	11.0	89	0.90
2.10	26.0	79	0.80
2.23	43.0	66	0.67
2.31	60.0	58	0.59
2.41	70.0	49	0.49
2.54	93.0	36	0.36
2.59	100.0	31	0.31
2.60	110.0	30	0.30
2.65	140.0	25	0.25



T75	31.558	75
T25	138.500	25
T75-25	106.942	Derived from Best Fit

Comments

Extrapolated past 110 mins

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR

[redacted]

Soakaway Calculations

Soakaway Test No.	TP2 Test 1
Contract:	Mayflower Way
Contract No.	15306

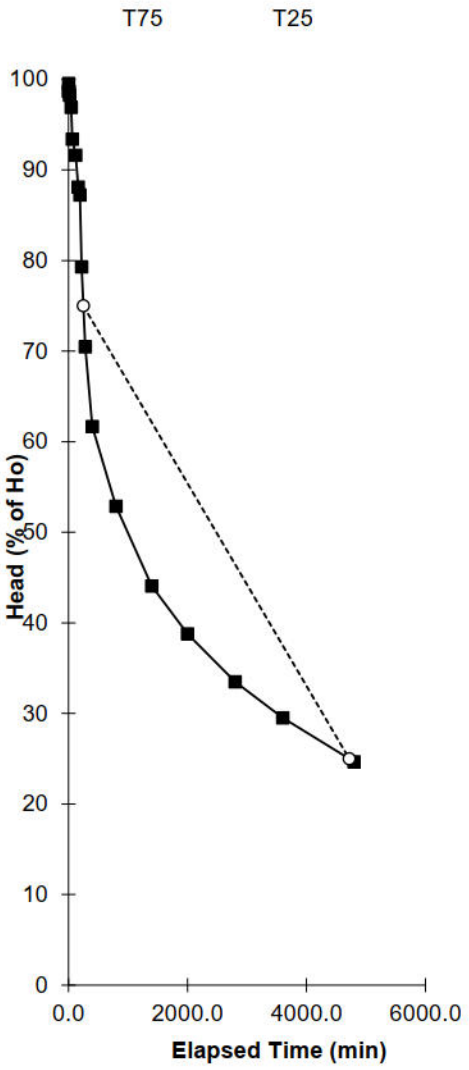
Field Test

Trial Pit Log (include details of groundwater):
See trial Pit record

Depth of Pit	2.20 m
Width of Pit	0.60 m
Length of Pit	2.10 m
Depth of Pit Soaked	1.14 m
ap50	4.3245 m2
Vp75-25	0.71505 m3
t75-25	4468.9 min
water used	1.4301 m3
f	6.167E-07 m/sec.

Field Data

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
1.07	0	100	1.135
1.07	1.0	100	1.13
1.08	2.0	99	1.12
1.08	3.0	99	1.12
1.08	5.0	99	1.12
1.09	15.0	98	1.12
1.10	45.0	97	1.10
1.14	65.0	93	1.06
1.16	120.0	92	1.04
1.20	165.0	88	1.00
1.21	190.0	87	0.99
1.30	220.0	79	0.90
1.40	280.0	70	0.80
1.50	400.0	62	0.70
1.60	800.0	53	0.60
1.70	1400.0	44	0.50
1.76	2000.0	39	0.44
1.82	2800.0	33	0.38
1.87	3600.0	30	0.34
1.92	4800.0	25	0.28



T75	249.250	75
T25	4718.182	25
T75-25	4468.932	Derived from Best Fit

Comments

Extrapolated after 190 mins

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR

[redacted]

Soakaway Calculations

Soakaway Test No.	TP3 Test 1
Contract:	Mayflower Way
Contract No.	15306

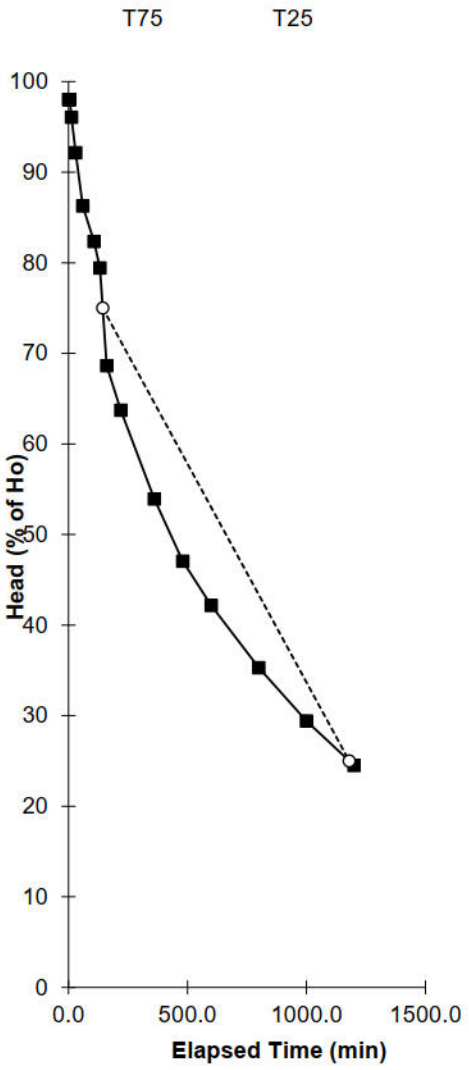
Field Test

Trial Pit Log (include details of groundwater):
See trial Pit record

Depth of Pit	2.63 m
Width of Pit	0.60 m
Length of Pit	2.50 m
Depth of Pit Soaked	1.02 m
ap50	4.662 m2
Vp75-25	0.765 m3
t75-25	1036.5 min
water used	1.5300 m3
f	2.638E-06 m/sec.

Field Data

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
1.61	0	100	1.02
1.63	1.0	98	1.00
1.63	2.0	98	1.00
1.63	3.0	98	1.00
1.63	4.0	98	1.00
1.63	5.0	98	1.00
1.65	13.0	96	0.98
1.69	30.0	92	0.94
1.75	60.0	86	0.88
1.79	107.0	82	0.84
1.82	132.0	79	0.81
1.93	160.0	69	0.70
1.98	220.0	64	0.65
2.08	360.0	54	0.55
2.15	480.0	47	0.48
2.20	600.0	42	0.43
2.27	800.0	35	0.36
2.33	1000.0	29	0.30
2.38	1200.0	25	0.25



T75	143.455	75
T25	1180.000	25
T75-25	1036.545	Derived from Best Fit

Comments

Extrapolated after 160 mins

SOILS LIMITED
Newton House, Cross Road, Tadworth
Surrey, KT20 5SR

[redacted]

Appendix B – Laboratory Results

Tim Rudkin
Soils Ltd
Newton House
Cross Road
Tadworth
Surrey
KT20 5SR

QTS Environmental Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
[redacted]

QTS Environmental Report No: 16-52293

Site Reference:	Mayflower Way
Project / Job Ref:	15306
Order No:	17632
Sample Receipt Date:	30/11/2016
Sample Scheduled Date:	30/11/2016
Report Issue Number:	1
Reporting Date:	06/12/2016

Authorised by:
[redacted]
Russell Jarvis
Associate Director of Client Services

Authorised by:
[redacted]
Ela Mysiara
Inorganics & ICP Section Head

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
[redacted]

4480

Soil Analysis Certificate							
QTS Environmental Report No: 16-52293		**Date Sampled**	24/11/16	24/11/16	24/11/16	24/11/16	24/11/16
Soils Ltd		**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Mayflower Way		**TP / BH No**	SP1	SP2	TP2	TP3	TP5
Project / Job Ref: 15306		**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17632		**Depth (m)**	None Supplied	None Supplied	0.20	0.10	0.20
Reporting Date: 06/12/2016		**QTSE Sample No**	240807	240808	240809	240810	240811
Determinand	**Unit**	**RL**	**Accreditation**				
Asbestos Screen	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	**MCERTS**	8.1	7.9	8.0	7.8	8.0
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	83	53	62	45	110
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.08	0.05	0.06	0.05	0.11
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter	%	< 0.1	**MCERTS**	2.1	1.2	2.6	2.4	2.8
Total Organic Carbon (TOC)	%	< 0.1	**MCERTS**	1.2	0.7	1.5	1.4	1.6
Antimony (Sb)	mg/kg	< 1	NONE	1.7	1.2	1.9	6.5	2.4
Arsenic (As)	mg/kg	< 2	**MCERTS**	10	7	12	13	11
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6	< 0.5	0.7	0.7	0.7
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	< 0.2	< 0.2	0.3	< 0.2
Chromium (Cr)	mg/kg	< 2	**MCERTS**	17	12	20	16	20
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	24	134	31	62	33
Lead (Pb)	mg/kg	< 3	**MCERTS**	64	39	58	654	115
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	11	9	15	11	13
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	33	20	31	25	32
Zinc (Zn)	mg/kg	< 3	**MCERTS**	84	55	98	286	132
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Analysis carried out on the dried sample is corrected for the stone content

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification)

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Asbestos Analyst: Rosie Head

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis [(S)]

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
[redacted]

4480

Soil Analysis Certificate							
QTS Environmental Report No: 16-52293	**Date Sampled**	24/11/16	24/11/16	24/11/16			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied			
Site Reference: Mayflower Way	**TP / BH No**	TP5	TP7	TP7			
Project / Job Ref: 15306	**Additional Refs**	None Supplied	None Supplied	None Supplied			
Order No: 17632	**Depth (m)**	0.90	0.20	1.20			
Reporting Date: 06/12/2016	**QTSE Sample No**	240812	240813	240814			

Determinand	Unit	RL	Accreditation					
Asbestos Screen	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	8.2	7.9	7.3		
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	18	28	23		
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.02	0.03	0.02		
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5		
Organic Matter	%	< 0.1	MCERTS	1.4	2.5	2.5		
Total Organic Carbon (TOC)	%	< 0.1	MCERTS	0.8	1.4	1.4		
Antimony (Sb)	mg/kg	< 1	NONE	1.5	2.2	4.9		
Arsenic (As)	mg/kg	< 2	MCERTS	10	5	8		
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6	< 0.5	0.6		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	19	8	19		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	25	17	22		
Lead (Pb)	mg/kg	< 3	MCERTS	29	52	27		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	13	5	11		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE	27	12	28		
Zinc (Zn)	mg/kg	< 3	MCERTS	44	134	78		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Analysis carried out on the dried sample is corrected for the stone content

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification)

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Asbestos Analyst: Rosie Head

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis [(S)]

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
[redacted]

4480

Soil Analysis Certificate - Speciated PAHs							
QTS Environmental Report No: 16-52293		**Date Sampled**	24/11/16	24/11/16	24/11/16	24/11/16	24/11/16
Soils Ltd		**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Mayflower Way		**TP / BH No**	SP1	SP2	TP2	TP3	TP5
Project / Job Ref: 15306		**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17632		**Depth (m)**	None Supplied	None Supplied	0.20	0.10	0.20
Reporting Date: 06/12/2016		**QTSE Sample No**	240807	240808	240809	240810	240811
Determinand	**Unit**	**RL**	**Accreditation**				
Naphthalene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	**MCERTS**	0.30	< 0.1	0.90	0.28	0.16
Anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	0.20	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	**MCERTS**	1.32	0.24	1.81	0.99	1.12
Pyrene	mg/kg	< 0.1	**MCERTS**	1.28	0.21	1.59	0.92	1.15
Benzo(a)anthracene	mg/kg	< 0.1	**MCERTS**	0.57	< 0.1	0.58	0.39	0.46
Chrysene	mg/kg	< 0.1	**MCERTS**	0.64	0.14	0.63	0.44	0.52
Benzo(b)fluoranthene	mg/kg	< 0.1	**MCERTS**	1.24	0.21	1.07	0.98	1.03
Benzo(k)fluoranthene	mg/kg	< 0.1	**MCERTS**	0.44	< 0.1	0.36	0.37	0.35
Benzo(a)pyrene	mg/kg	< 0.1	**MCERTS**	0.81	0.16	0.67	0.60	0.67
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	**MCERTS**	0.53	< 0.1	0.35	0.27	0.40
Dibenz(a,h)anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	**MCERTS**	0.58	< 0.1	0.38	0.30	0.45
Total EPA-16 PAHs	mg/kg	< 1.6	**MCERTS**	7.7	< 1.6	8.6	5.5	6.3

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
[redacted]

4480

Soil Analysis Certificate - Speciated PAHs							
QTS Environmental Report No: 16-52293	**Date Sampled**	24/11/16	24/11/16	24/11/16			
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied			
Site Reference: Mayflower Way	**TP / BH No**	TP5	TP7	TP7			
Project / Job Ref: 15306	**Additional Refs**	None Supplied	None Supplied	None Supplied			
Order No: 17632	**Depth (m)**	0.90	0.20	1.20			
Reporting Date: 06/12/2016	**QTSE Sample No**	240812	240813	240814			

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.31	1.38		
Acenaphthylene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.18	0.63		
Acenaphthene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.15	0.51		
Fluorene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.54	2.08		
Phenanthrene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.99	3.02		
Anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	0.23		
Fluoranthene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.72	0.15		
Pyrene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.72	0.41		
Benzo(a)anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.22	< 0.1		
Chrysene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.31	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.37	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.13	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.21	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.19	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	**MCERTS**	< 0.1	0.24	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	**MCERTS**	< 1.6	5.3	8.4		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Soil Analysis Certificate - TPH LQM Banded							
QTS Environmental Report No: 16-52293		**Date Sampled**	24/11/16	24/11/16	24/11/16	24/11/16	24/11/16
Soils Ltd		**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Mayflower Way		**TP / BH No**	SP1	SP2	TP2	TP3	TP5
Project / Job Ref: 15306		**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17632		**Depth (m)**	None Supplied	None Supplied	0.20	0.10	0.20
Reporting Date: 06/12/2016		**QTSE Sample No**	240807	240808	240809	240810	240811
Determinand	**Unit**	**RL**	**Accreditation**				
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	**MCERTS**	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C35	mg/kg	< 10	**MCERTS**	< 10	< 10	< 10	< 10	< 10
Aliphatic >C35 - C44	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C44)	mg/kg	< 30	NONE	< 30	< 30	< 30	< 30	< 30
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21	mg/kg	< 3	**MCERTS**	3	< 3	4	< 3	3
Aromatic >C21 - C35	mg/kg	< 10	**MCERTS**	11	< 10	12	< 10	24
Aromatic >C35 - C44	mg/kg	< 10	NONE	< 10	< 10	< 10	< 10	< 10
Aromatic (>C5 - C44)	mg/kg	< 30	NONE	< 30	< 30	< 30	< 30	< 30
Total >C5 - C44	mg/kg	< 60	NONE	< 60	< 60	< 60	< 60	< 60

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Soil Analysis Certificate - TPH LQM Banded								
QTS Environmental Report No: 16-52293		**Date Sampled**	24/11/16	24/11/16				
Soils Ltd		**Time Sampled**	None Supplied	None Supplied				
Site Reference: Mayflower Way		**TP / BH No**	TP7	TP7				
Project / Job Ref: 15306		**Additional Refs**	None Supplied	None Supplied				
Order No: 17632		**Depth (m)**	0.20	1.20				
Reporting Date: 06/12/2016		**QTSE Sample No**	240813	240814				
Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aliphatic >C8 - C10	mg/kg	< 2	**MCERTS**	20	137			
Aliphatic >C10 - C12	mg/kg	< 2	**MCERTS**	394	2021			
Aliphatic >C12 - C16	mg/kg	< 3	**MCERTS**	734	3768			
Aliphatic >C16 - C35	mg/kg	< 10	**MCERTS**	227	1414			
Aliphatic >C35 - C44	mg/kg	< 10	NONE	< 10	< 10			
Aliphatic (C5 - C44)	mg/kg	< 30	NONE	1375	7340			
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01			
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05			
Aromatic >C8 - C10	mg/kg	< 2	**MCERTS**	< 2	20			
Aromatic >C10 - C12	mg/kg	< 2	**MCERTS**	148	689			
Aromatic >C12 - C16	mg/kg	< 2	**MCERTS**	443	1995			
Aromatic >C16 - C21	mg/kg	< 3	**MCERTS**	153	672			
Aromatic >C21 - C35	mg/kg	< 10	**MCERTS**	38	163			
Aromatic >C35 - C44	mg/kg	< 10	NONE	< 10	< 10			
Aromatic (>C5 - C44)	mg/kg	< 30	NONE	781	3538			
Total >C5 - C44	mg/kg	< 60	NONE	2157	10878			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Soil Analysis Certificate - BTEX / MTBE							
QTS Environmental Report No: 16-52293		**Date Sampled**	24/11/16	24/11/16	24/11/16	24/11/16	24/11/16
Soils Ltd		**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Mayflower Way		**TP / BH No**	SP1	SP2	TP2	TP3	TP5
Project / Job Ref: 15306		**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 17632		**Depth (m)**	None Supplied	None Supplied	0.20	0.10	0.20
Reporting Date: 06/12/2016		**QTSE Sample No**	240807	240808	240809	240810	240811
Determinand	**Unit**	**RL**	**Accreditation**				
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5	< 5	< 5	< 5

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Soil Analysis Certificate - BTEX / MTBE								
QTS Environmental Report No: 16-52293		**Date Sampled**	24/11/16	24/11/16				
Soils Ltd		**Time Sampled**	None Supplied	None Supplied				
Site Reference: Mayflower Way		**TP / BH No**	TP7	TP7				
Project / Job Ref: 15306		**Additional Refs**	None Supplied	None Supplied				
Order No: 17632		**Depth (m)**	0.20	1.20				
Reporting Date: 06/12/2016		**QTSE Sample No**	240813	240814				
Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/kg	< 2	**MCERTS**	< 2	< 2			
Toluene	ug/kg	< 5	**MCERTS**	< 5	< 5			
Ethylbenzene	ug/kg	< 2	**MCERTS**	< 2	< 2			
p & m-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2			
o-xylene	ug/kg	< 2	**MCERTS**	< 2	< 2			
MTBE	ug/kg	< 5	**MCERTS**	< 5	< 5			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING 4480

Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

				Landfill Waste Acceptance Criteria Limits		
QTS Environmental Report No: 16-52293	**Date Sampled**	24/11/16		**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Soils Ltd	**Time Sampled**	None Supplied				
Site Reference: Mayflower Way	**TP / BH No**	SP1				
Project / Job Ref: 15306	**Additional Refs**	None Supplied				
Order No: 17632	**Depth (m)**	None Supplied				
Reporting Date: 06/12/2016	**QTSE Sample No**	240807				
Determinand	**Unit**	**MDL**				
TOC[MU]	%	< 0.1	1.2	3%	5%	6%
Loss on Ignition	%	< 0.01	2.90	--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05	6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1	1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10	500	--	--
Total PAH[MU]	mg/kg	< 1.7	7.7	100	--	--
pH[MU]	pH Units	N/a	8.1	--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	1.3	--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]	< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]	0.03	< 0.02		0.2	20	100	300
Cadmium[U]	< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]	< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]	< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]	< 0.005	< 0.005		< 0.01	0.01	0.2	2
Molybdenum[U]	0.004	0.003		< 0.1	0.5	10	30
Nickel[U]	< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]	< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]	< 0.005	< 0.005		< 0.06	0.06	0.7	5
Selenium[U]	< 0.005	< 0.005		< 0.1	0.1	0.5	7
Zinc[U]	< 0.005	< 0.005		< 0.2	4	50	200
Chloride[U]	15	3		0	800	15000	25000
Fluoride[U]	1.5	1.2		12.2	**10**	150	500
Sulphate[U]	60	9		132	1000	20000	50000
TDS	234	96		1067	4000	60000	100000
Phenol Index	< 0.01	< 0.01		< 0.5	1	-	-
DOC	7.1	4.5		46.6	500	800	1000
Leach Test Information							
Sample Mass (kg)	0.20						
Dry Matter (%)	89.7						
Moisture (%)	11.6						
Stage 1							
Volume Eluate L2 (litres)	0.33						
Filtered Eluate VE1 (litres)	0.14						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and QTS Environmental cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3

				Landfill Waste Acceptance Criteria Limits		
QTS Environmental Report No: 16-52293	**Date Sampled**	24/11/16		**Inert Waste Landfill**	**Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Soils Ltd	**Time Sampled**	None Supplied				
Site Reference: Mayflower Way	**TP / BH No**	SP2				
Project / Job Ref: 15306	**Additional Refs**	None Supplied				
Order No: 17632	**Depth (m)**	None Supplied				
Reporting Date: 06/12/2016	**QTSE Sample No**	240808				
Determinand	**Unit**	**MDL**				
TOC[MU]	%	< 0.1	0.7	3%	5%	6%
Loss on Ignition	%	< 0.01	1.75	--	--	10%
BTEX[MU]	mg/kg	< 0.05	< 0.05	6	--	--
Sum of PCBs	mg/kg	< 0.1	< 0.1	1	--	--
Mineral Oil[MU]	mg/kg	< 10	< 10	500	--	--
Total PAH[MU]	mg/kg	< 1.7	< 1.7	100	--	--
pH[MU]	pH Units	N/a	7.9	--	>6	--
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	1	--	To be evaluated	To be evaluated

Eluate Analysis	**2:1 mg/l**	**8:1 mg/l**		**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)**		
Arsenic[U]	< 0.01	< 0.01		< 0.2	0.5	2	25
Barium[U]	0.10	0.04		0.4	20	100	300
Cadmium[U]	< 0.0005	< 0.0005		< 0.02	0.04	1	5
Chromium[U]	< 0.005	< 0.005		< 0.20	0.5	10	70
Copper[U]	< 0.01	< 0.01		< 0.5	2	50	100
Mercury[U]	< 0.005	< 0.005		< 0.01	0.01	0.2	2
Molybdenum[U]	0.006	0.002		< 0.1	0.5	10	30
Nickel[U]	< 0.007	< 0.007		< 0.2	0.4	10	40
Lead[U]	< 0.005	< 0.005		< 0.2	0.5	10	50
Antimony[U]	< 0.005	< 0.005		< 0.06	0.06	0.7	5
Selenium[U]	< 0.005	< 0.005		< 0.1	0.1	0.5	7
Zinc[U]	0.007	< 0.005		< 0.2	4	50	200
Chloride[U]	5	1		0	800	15000	25000
Fluoride[U]	< 0.5	< 0.5		2.9	10	150	500
Sulphate[U]	604	66		0	1000	20000	50000
TDS	664	161		2044	4000	60000	100000
Phenol Index	< 0.01	< 0.01		< 0.5	1	-	-
DOC	12.7	5.7		62.6	500	800	1000
Leach Test Information							
Sample Mass (kg)	0.20						
Dry Matter (%)	87.2						
Moisture (%)	14.6						
Stage 1							
Volume Eluate L2 (litres)	0.32						
Filtered Eluate VE1 (litres)	0.15						

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and QTS Environmental cannot be held responsible for any discrepencies with current legislation
M Denotes MCERTS accredited test
U Denotes ISO17025 accredited test

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Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-52293	
Soils Ltd	
Site Reference: Mayflower Way	
Project / Job Ref: 15306	
Order No: 17632	
Reporting Date: 06/12/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
240807	SP1	None Supplied	None Supplied	10.3	Brown sandy clay with stones
240808	SP2	None Supplied	None Supplied	12.8	Brown clay with stones
240809	TP2	None Supplied	0.20	13.8	Brown clayey sand with stones
240810	TP3	None Supplied	0.10	16.1	Brown sandy clay with brick and concrete
240811	TP5	None Supplied	0.20	17.4	Brown clayey sand with stones and brick
240812	TP5	None Supplied	0.90	17	Brown clay
240813	TP7	None Supplied	0.20	14.4	Brown sandy clay with stones and vegetation
240814	TP7	None Supplied	1.20	16.9	Brown clay

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

Insufficient Sample I/S

Unsuitable Sample U/S

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Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-52293
Soils Ltd
Site Reference: Mayflower Way
Project / Job Ref: 15306
Order No: 17632
Reporting Date: 06/12/2016

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

D Dried
AR As Received

Appendix C – General Assessment Criteria

HUMAN HEALTH RISK ASSESSMENT

1.1 Introduction

Human Health Generic Quantitative Risk Assessment (GQRA) involves the comparison of contaminant concentrations measured in soil at the site with Generic Assessment Criteria (GAC).

GAC are conservative values adopted to ensure that they are applicable to the majority of possible contaminated site. These values may be published Contaminated Land Exposure Assessment Model (CLEA) derived GAC derived by a third party or the Environment Agency/ DEFRA. It is imperative to the risk assessor to understand the uncertainties and limitations associated with these GAC to ensure that they are used appropriately. Where the adoption of a GAC is not appropriate, for instance when the intended land-use is at variance the CLEA standard land-uses, then a Detailed Quantitative Risk Assessment (DQRA) may be undertaken to develop site specific values for relevant soil contaminants based on the site specific conditions.

1.2 General Assessment Criteria

The Contaminated Land Regime reflects the UK Government's stated objectives of achieving sustainable development through the 'suitable for use approach'.

1.2.1 Contaminated Land Exposure Assessment Model (CLEA)

Current United Kingdom risk assessment practice is based on the Contaminated Land Exposure Assessment Model (CLEA).

The CLEA Guidance comprises the following documents:
• EA Science Report SC050021/SR2: Human health toxicological assessment of contaminants in soil.
• EA Science Report SC050021/SR3: Updated technical background to the CLEA model.
• EA CLEA Bulletin (2009).
• CLEA software version 1.04 (2009)
• Toxicological reports and SGV technical notes.

The CLEA guidance and tools:
1. do not cover other types of risk to humans, such as fire, suffocation or explosion, or short-term and acute exposures.
2. do not cover risks to the environment, such as groundwater, ecosystems or buildings.
3. do not provide a definitive test for telling when human health risks are significant.
4. are not a legal requirement in assessing land contamination risks. They are not part of the legal regime for Part 2A of the Environmental Protection Act 1990.

1.3 Soil Guideline Values (2009)

The EA are publishing a series of SGV reports for a selection of common contaminants relevant to the assessment of land contamination.
SGV's are generic assessment criteria based on CLEA standard land-uses and can be used to simplify the assessment of human health risks from long-term exposure to

chemical contamination in soil. They do not cover short-term exposure (i.e. construction and maintenance workers), acute exposure or other risks such as fire, suffocation or explosion, as might arise from an accumulation of gases such as methane and carbon dioxide, or either odour or aesthetic issues.

SGV's represent 'trigger values', indicators that soil concentrations above the SGV level may pose a possibility of *significant harm* to human health. The converse, where soil concentrations are less that the SGV, is that the long-term human health risks are considered to be tolerable or minimal.

The CLEA guidance derives soil concentrations of contaminants above which (in the opinion of the EA) there may be a concern that warrants further investigation. It does not provide a definitive test for establishing that the risk is significant.

1.4 Ongoing development of CLEA based guidance

The EA is involved in a programme of publishing SGV's and related toxicity data (the TOX reports). As at July 2009 ten SGV's and matching TOX reports had been published. Soil Assessment Criteria (SAC's) may be derived using toxicity data from the updated TOX reports, where these are published, or from the original TOX reports. SGV reports also take account of recent updates for plant uptake and other factors.

- GAC's developed by CLEA guidance and given in this report will need to be assessed against updated TOX reports and SGV's when these are published.
- SGV reports may give values that differ from the GAC's used in this report.
- These variations may materially alter the remediation requirement for the site, requiring either an increase or decrease in the extent, type and cost of remediation.

1.5 Phytotoxicity

CLEA guidance only addresses human health toxicity; assessment of plant toxicity (phytotoxicity) is based on threshold trigger values obtained from the following source:

ICRCL 70/90: *Notes on the restoration and aftercare of metalliferous mining sites for pasture and grazing*.

1.6 Other Generic Assessment Criteria

If an SGV is not available for a substance identified in the soil then the range of Generic Assessment Criteria published from a collaborative research by Land Quality Management Limited (LQM) and the Chartered Institute of Environmental Health (CIEH) are used for example. In the case of Lead, Category 4 screening levels (C4SLs) have replaced the AtRisk Soil SSV.

1.6.1 EIC/AGS/CL: AIRE

The report represents the collaborative effort of risk assessors from 26 EIC and AGS member companies to produce generic assessment criteria (GAC) for soils for human health risk assessment. The project involved the collation and review of physico-chemical data, toxicological data and information on background

exposure for 44 contaminants sometimes encountered on land affected by contamination in the UK and the derivation of GAC for 351 of these using the CLEA model (v1.06). The GAC are intended to complement soil guideline values (SGV) produced by the Environment Agency of England and Wales and the 2nd edition GAC produced by LQM and CIEH (Nathanail et al, 2009). All three sets of assessment criteria have been derived in general accordance with the Environment Agency of England and Wales Contaminated Land Exposure Assessment (CLEA) guidance and thus the combined efforts of these three groups have resulted in a useful set of screening criteria for the assessment of risks to human health from soil contamination for more than 120 potentially contaminative substances.

1.6.2 CL: AIRE Category 4 screening levels (C4SLs) (2014)

A new statutory DEFRA guidance recently (i.e. August 2014) published some GACs with a more pragmatic (but still strongly precautionary) approach in their derivation called the Category 4 screening levels (C4SLs). These values provide a higher simple test for deciding that land is suitable for use and definitely not contaminated land. They are intended as generic screening values, (ii) they describe a level of risk that whilst above 'minimal' is still 'low' and (iii) they provide a 'higher simple test' for deciding that land is suitable for use and definitely not contaminated. These values were derived for four generic land uses: residential, commercial, allotments, and public open space.

1.6.3 LQM/CIEH Suitable 4 Use Level (S4UL) (2015)

The new S4UL's ((Nathanail *et al*, 2015), was developed for around 85 substances and are intended to enable a screening assessment of the risks posed by soil quality on development sites. The updated LQM/CIEH GAC publication was developed to accommodate recent developments in the understanding of chemical, toxicological and routine exposure to soil-based contaminants. The S4ULs were:

- based on Health Criteria Values, updated to reflect changes since 2009
- derived for the standard CLEA land uses and the two public open space scenarios developed by Defra SP1010
- developed for ca 85 substances (those previously covered by the LQM/CIEH GAC and the SGV substances);
- Compliant with SR2 and the long standing principle of 'suitable for use' and reflecting changes to exposure parameters produced by Defra SP1010.

For derivation of these Generic Assessment Criteria reference must be made to: Nathanial, P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A., Ogden, R., Scott, D. *The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (3nd edition)*. **Land Quality Press**. 2015.

1.7 Standard Land-use Scenarios

The standard land-use scenarios used to develop conceptual exposure models are presented in the following sections:

1.7.1 Residential

Generic scenario assumes a typical two-storey house built on a ground bearing slab with a private garden having a lawn, flowerbeds and a small fruit and vegetable patch.

- Critical receptor is a young female child (zero to six years old)
- Exposure duration is six years.
- Exposure pathways include direct soil and indoor dust ingestion, consumption of home-grown produce and any adhering soil, skin contact with soils and indoor dust and inhalation of indoor and outdoor dust and vapours.
- Building type is a two-storey small terraced house.

A sub-set of this land-use is residential apartments with communal landscaped gardens where the consumption of home grown vegetables will not occur.

1.7.2 Allotments

Provision of open space (about 250sq.m) commonly made available to tenants by the local authority to grow fruit and vegetable for their own consumption. Typically, there are a number of plots to a site which may have a total area of up to 1 hectare. The tenants are assumed to be adults and that young children make occasional accompanied visits.

Although some allotment holders may choose to keep animals including rabbits, hens, and ducks, potential exposure to contaminated meat and eggs is not considered.

- Critical receptor is a young female child (zero to six years old)
- Exposure duration is six years.
- Exposure pathways include direct soil ingestion, consumption of homegrown produce and any adhering soil, skin contact with soils and inhalation of outdoor dust and vapours.
- There is no building.

1.7.3 Commercial/Industrial

The generic scenario assumes a typical commercial or light industrial property comprising a three-storey building at which employees spend most time indoors and are involved in office-based or relatively light physical work.

- Critical receptor is a working female adult (aged 16 to 65 years old).
- Exposure duration is a working lifetime of 49 years.
- Exposure pathways include direct soil and indoor dust ingestion, skin contact with soils and dusts and inhalation of dust and vapours.
- Building type is a three-storey office (pre 1970).

1.7.4 Public Open Space within Residential Area

The generic scenario refers to any grassed area 0.05 ha and that is close to Housing.

- Grassed area of up to 0.05 ha and a considerable proportion of this (up to 50%) may be bare soil
- Predominantly used by children for playing and may be used for activities such as a football kick about
- Sufficiently close proximity to home for tracking back of soil to occur, thus indoor exposure pathways apply
- older children as the critical receptor on basis that they will use site most frequently (Age class 4-9)
- ingestion rate 75 $mg.day^{-1}$

1.7.5 *Public Open Space Park*

This generic scenario refers to any public park that is more than 0.5ha in area:

- Public park (>0.5 ha), predominantly grassed and may also contain children's play equipment and border areas of soil containing flowers or shrubs (75% cover)
- Female child age classes 1-6
- Soil ingestion rate of 50 $mg.day^{-1}$
- Occupancy period outdoors = 2 $hours.day^{-1}$
- Exposure frequency of 170 days.year-1 for age classes 2-18 and 85
- $days.year^{-1}$ for age class 1
- Outdoor exposure pathways only (no tracking back).

1.8 Detailed Quantitative Risk Assessments (DQRA)

Where the adoption of an SGV/GAC is not appropriate, for instance when the intended land-use is at variance the CLEA standard land-uses, then a DQRA may be undertaking to develop site specific values for relevant soil contaminants.

- Establishing the plausibility that generic exposure pathways exist in practice by measurement and observation.
- Developing more accurate parameters using site data.

1.9 Current Criteria

Table 1 presents the current Generic Assessment Criteria and reference should be made to the original publications if needed**.**

1.10 Statistical Tests

DEFRA R&D Publication CLR 7 (DOE 1994) and CL: AIRE Category 4 screening levels (C4SLs) (2014) addressed the statistical treatment of test results and their comparison to Soil Guideline Values.

Consideration must be given to the appropriate area of land to be considered termed the critical averaging area.

For a communal open space or commercial land-use, the critical averaging area will depend on the proposed layout. For a residential use with private gardens the averaging area is the individual plot.

It may be appropriate to compare the upper 95th percentile concentration with the Soil Guideline Value, subject to applying a statistical test to establish that the range of concentrations are reasonably consistent and belonging to the same underlying distribution of data.

The DEFRA discussion paper Assessing risks from land contamination – a proportionate approach ('the way forward') (CLAN06/2006) aimed to increase understanding of the role that statistics can play in quantifying the uncertainty attached to the estimates of the mean concentration of contaminants in soil. In direct response CLAIRE/CIEH published a joint report, *Guidance in comparing soil contamination data with a critical concentration* (CLAIRE/CIEH 2008). A software implementation of the statistical techniques given in the report was published by ESI International (2008).

Treatment of Hot-Spots
• A statistical test is applied to establish whether the data is a part of a single set, or whether data outliers are present.
• Provided that the data is based on random sampling and no distinct contamination source was present at the sampling location, the hot-spot(s) may be excluded and the mean of the remaining data assessed.

Land Use				Residential With or Without Plant Uptake						Allotments			Commercial			Public Open Space (POS)								
				With home-grown produce			Without home-grown produce									Residential			Park					
			SOM	1.0	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	Name	Authority	Date
Type	Contaminants	Species	Year																					
	Antimony		2010						550						7500							EIC/AGS/ CL:AIRE	EIC/AGS/ CL:AIRE	2010
Metals	Arsenic		2014			37			40			49			640			79			168	C4SL	DEFRA	2014
			2015			37			40			40			640			79			170	S4UL	LQM/CIEH	2015
	Beryllium		2015			1.7			1.7			35			12			2.2			63	S4UL	LQM/CIEH	2015
	Boron		2015			290			11000			45			240000			21000			46000	S4UL	LQM/CIEH	2015
	Cadmium		2015			11			85			1.9			190			120			532	S4UL	LQM/CIEH	2015
			2014			26			149			4.9			410			220			880	C4SL	DEFRA	2014
	Chromium	III	2015			910			910			18000			8600			1500			33000	S4UL	LQM/CIEH	2015
		IV	2014			21			21			170			49			23			250	C4SL	DEFRA	2014
		IV	2015			6			6			1.8			33			7.7			220	S4UL	LQM/CIEH	2015
	Copper		2015			2400			7100			520			68000			12000			44000	S4UL	LQM/CIEH	2015
	Lead					200			310			80			2330			630			1300	C4SL	DEFRA	2014
	Mercury	Elemental	2012			1.0			1.0			26			26							SGV	DEFRA	2012
			2015			1.2			1.2			21			58			16			30	S4UL	LQM/CIEH	2015
		Inorganic	2012			170			170			80			36000							SGV	DEFRA	2012
			2015			40			56			19			1100			120			240	S4UL	LQM/CIEH	2015
		Methyl	2012			11			11			8			410							SGV	DEFRA	2012
			2015			11			15			6			320			40			68	S4UL	LQM/CIEH	2015
	Nickel		2012			130			130			230			1800							SGV	DEFRA	2012
			2015			130			180			53			980			230			800	S4UL	LQM/CIEH	2015
	Selenium		2012			350			350			120			13000							SGV	DEFRA	2012
			2015			250			430			88			12000			1100			1800	S4UL	LQM/CIEH	2015
	Vanadium		2015			410			1200			91			9000			2000			5000	S4UL	LQM/CIEH	2015
	Zinc		2015			3700			40000			620			730000			81000			170000	S4UL	LQM/CIEH	2015
BTEX & MTBE	Benzene		2012			0.33			0.33			0.07			95							SGV	DEFRA	2012
			2014			0.87			3.3			0.18			98			140			230	C4SL	DEFRA	2014
			2015	0.087	0.17	0.37	0.38	0.7	1.4	0.017	0.034	0.075	27	47	90	72	72	73	90	100	110	S4UL	LQM/CIEH	2015
	Toluene		2012			610			610			120			4400							SGV	DEFRA	2012
			2015	130	290	660	880	1900	3900	22	51	120	65000	110000	180000	56000	56000	56000	87000	95000	100000	S4UL	LQM/CIEH	2015
	Ethylbenzene		2012			350			350			90			2800							SGV	DEFRA	2012
			2015	47	110	260	83	190	440	16	39	91	4700	13000	27000	24000	24000	25000	17000	22000	27000	S4UL	LQM/CIEH	2015
	Xylenes	o-xylene	2012			250			250			160			2600							SGV	DEFRA	2012
			2015	60	140	330	88	210	480	28	67	160	6600	15000	33000	41000	42000	43000	17000	24000	33000	S4UL	LQM/CIEH	2015
		m-xylene	2012			240			240			180			3500							SGV	DEFRA	2012
			2015	59	140	320	82	190	450	31	74	170	6200	14000	31000	41000	42000	43000	17000	24000	32000	S4UL	LQM/CIEH	2015
		p-xylene	2012			230			230			160			3200							SGV	DEFRA	2012
			2015	56	130	310	79	180	310	29	69	160	5900	14000	30000	41000	42000	43000	17000	23000	31000	S4UL	LQM/CIEH	2015
Petroleum Hydrocarbons Fractions	Aliphatic >C5 - C6		2015	42	78	160	42	78	160	730	1700	3900	3200	5900	12000	570000	590000	600000	95000	130000	180000	S4UL	LQM/CIEH	2015
	Aliphatic >C6 - C8		2015	100	230	530	100	230	530	2300	5600	13000	7800	17000	40000	600000	610000	620000	150000	220000	320000	S4UL	LQM/CIEH	2015
	Aliphatic >C8 - C10		2015	27	65	150	27	65	150	320	770	1700	2000	4800	11000	13000	13000	13000	14000	18000	21000	S4UL	LQM/CIEH	2015
	Aliphatic >C10 - C12		2015	130	330	760	130	330	770	2200	4400	7300	9700	23000	47000	13000	13000	13000	21000	23000	24000	S4UL	LQM/CIEH	2015
	Aliphatic >C12 - C16		2015	1100	2400	4300	1100	2400	4400	11000	13000	13000	59000	82000	90000	13000	13000	13000	25000	25000	26000	S4UL	LQM/CIEH	2015
	Aliphatic >C16 - C35		2015	65000	92000	110000	65000	92000	110000	260000	270000	270000	1600000	1700000	1800000	250000	250000	250000	450000	480000	490000	S4UL	LQM/CIEH	2015
	Aliphatic >C35 - C44		2015	65000	92000	140000	65000	92000	110000	260000	270000	270000	1600000	1700000	1800000	250000	250000	250000	450000	480000	490000	S4UL	LQM/CIEH	2015
	Aromatic >C5 - C7		2015	70	140	300	370	690	1400	13	27	57	26000	46000	86000	56000	56000	56000	76000	84000	92000	S4UL	LQM/CIEH	2015
	Aromatic >C7 - C8		2015	130	290	660	860	1800	3900	22	51	120	56000	110000	180000	56000	56000	56000	87000	95000	100000	S4UL	LQM/CIEH	2015
	Aromatic >C8 - C10		2015	34	83	190	47	110	270	8.6	21	51	3500	8100	17000	5000	5000	5000	7200	8500	9300	S4UL	LQM/CIEH	2015
	Aromatic >C10 - C12		2015	74	180	380	250	590	1200	13	31	74	16000	28000	34000	5000	5000	5000	9200	9700	10000	S4UL	LQM/CIEH	2015
	Aromatic >C12 - C16		2015	140	330	660	1800	2300	2500	23	57	130	36000	37000	38000	5100	5100	5000	10000	10000	10000	S4UL	LQM/CIEH	2015
	Aromatic >C16 - C21		2015	260	540	930	1900	1900	1900	46	110	260	28000	28000	28000	3800	3800	3800	7600	7700	7800	S4UL	LQM/CIEH	2015

Land Use			Residential With or Without Plant Uptake						Allotments			Commercial			Public Open Space (POS)								
			With home-grown produce			Without home-grown produce									Residential			Park					
		SOM	1.0	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	Name	Authority	Date
Type	Contaminants Species	Year																					
	Aromatic >C21 - C35	2015	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900	S4UL	LQM/CIEH	2015
	Aromatic >C34 - C44	2015	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900	S4UL	LQM/CIEH	2015
	Aliphatic + Aromatic >C44 - C70		1600	1800	1900	1900	1900	1900	1200	2100	3000	28000	28000	28000	3800	3800	3800	7800	7800	7900	S4UL	LQM/CIEH	2015
Polycyclic Aromatic Hydrocarbons (PAH's) (mg/kg)	Acenaphthene	2015	210	510	1100	3000	4700	6000	34	85	200	84000	97000	100000	15000	15000	15000	29000	30000	30000	S4UL	LQM/CIEH	2015
	Acenaphthylene	2015	170	420	920	2900	4600	6000	28	69	160	83000	97000	100000	15000	15000	15000	29000	30000	30000	S4UL	LQM/CIEH	2015
	Anthracene	2015	2400	5400	11000	31000	35000	37000	380	950	2200	520000	54000	540000	74000	74000	74000	150000	150000	150000	S4UL	LQM/CIEH	2015
	Benzo(a)anthracene	2015	7.2	11	13	11	14	15	2.9	6.5	13	170	170	180	29	29	29	49	56	62	S4UL	LQM/CIEH	2015
	Benzo(a)pyrene	2014			5			5.3			5.7			76			10			21	C4SL	DEFRA	2014
		2015	2.2	2.7	3	3.2	3.2	3.2	0.97	2	3.5	35	35	36	5.7	5.7	5.7	11	12	13	S4UL	LQM/CIEH	2015
	Benzo(b)fluoranthene	2015	2.6	3.3	3.7	3.9	4.0	4.0	0.99	2.1	3.9	44	44	45	7.1	7.2	7.2	13	15	16	S4UL	LQM/CIEH	2015
	Benzo(ghi)perylene	2015	320	340	250	360	360	360	290	470	640	3900	4000	4000	640	640	640	1400	1500	1600	S4UL	LQM/CIEH	2015
	Benzo(k)fluoranthene	2015	77	93	100	110	110	110	37	75	130	1200	1200	1200	190	190	190	370	410	440	S4UL	LQM/CIEH	2015
	Chrysene	2015	15	22	27	30	31	32	4.1	9.4	19	350	350	350	57	57	57	93	110	120	S4UL	LQM/CIEH	2015
	Dibenz(a,h)anthracene	2015	0.24	0.28	0.3	0.31	0.32	0.32	0.14	0.27	0.43	3.5	3.6	3.6	0.57	0.57	0.58	1.1	1.3	1.4	S4UL	LQM/CIEH	2015
	Fluoranthene	2015	280	560	890	1500	1600	1600	52	130	290	23000	23000	23000	3100	3100	3100	6300	6300	6400	S4UL	LQM/CIEH	2015
	Fluorene	2015	170	400	860	2800	3800	4500	27	67	160	63000	68000	71000	9900	9900	9900	20000	20000	20000	S4UL	LQM/CIEH	2015
	Indeno(1,2,3-cd)pyrene	2015	27	36	41	45	46	46	9.5	21	39	500	510	510	82	82	82	150	170	180	S4UL	LQM/CIEH	2015
	Naphthalene	2015	2.3	5.6	13	2.3	5.6	13	4.1	10	24	190	460	1100	4900	4900	4900	1200	1900	3000	S4UL	LQM/CIEH	2015
	Phenanthrene	2015	95	220	440	1300	1500	1500	15	38	90	22000	22000	23000	3100	3100	3100	6200	6200	6300	S4UL	LQM/CIEH	2015
	Pyrene	2015	620	1200	2000	3700	3800	3800	110	270	620	54000	54000	54000	7400	7400	4700	15000	15000	15000	S4UL	LQM/CIEH	2015
	Coal Tar(Bap as surrogate matter)	2015	0.79	0.98	1.1	1.2	1.2	1.2	0.32	0.67	1.2	15	15	15	2.2	2.2	2.2	4.4	4.7	4.8	S4UL	LQM/CIEH	2015
Chloroalkanes & alkenes	1,2 Dichloroethane	2015	0.0071	0.011	0.019	0.0092	0.013	0.023	0.0046	0.0083	0.016	0.67	0.97	1.7	29	29	29	21	24	28	S4UL	LQM/CIEH	2015
	1,1,1 Trichloroethane	2015	8.8	18	39	9	18	40	48	110	240	660	1300	3000	140000	140000	140000	57000	76000	100000	S4UL	LQM/CIEH	2015
	1,1,2,2 Tetrachloroethane	2015	1.6	3.4	7.5	3.9	8	17	0.41	0.89	2	270	550	1100	1400	1400	1400	1800	2100	2300	S4UL	LQM/CIEH	2015
	1,1,1,2 Tetrachloroethane	2015	1.2	2.8	6.4	1.5	3.5	8.2	0.79	1.9	4.4	110	250	560	1400	1400	1400	1500	1800	2100	S4UL	LQM/CIEH	2015
	Tetrachloroethene	2015	0.18	0.39	0.9	0.18	0.4	0.92	0.65	1.5	3.6	19	42	95	1400	1400	1400	810	1100	1500	S4UL	LQM/CIEH	2015
	Tetrachloromethane (Carbon Tetrachloride)	2015	0.026	0.056	0.13	0.026	0.056	0.13	0.45	1	2.4	2.9	6.3	14	890	920	950	190	270	400	S4UL	LQM/CIEH	2015
	Trichloroethene	2015	0.016	0.034	0.075	0.017	0.036	0.08	0.041	0.091	0.21	1.2	2.6	5.7	120	120	120	70	91	120	S4UL	LQM/CIEH	2015
	Trichloromethane	2015	0.91	1.7	3.4	1.2	2.1	4.2	0.42	0.83	1.7	99	170	350	2500	2500	2500	2600	2800	3100	S4UL	LQM/CIEH	2015
	Vinyl Chloride (cloroethene)	2015	0.00064	0.00087	0.0014	0.00077	0.001	0.0015	0.00055	0.001	0.0018	0.059	0.077	0.12	3.5	3.5	3.5	4.8	5	5.4	S4UL	LQM/CIEH	2015
Explosives	2,4,6 Trinitrotoluene	2015	1.6	3.7	8.1	65	66	66	0.24	0.58	1.4	1000	1000	1000	130	130	130	260	270	270	S4UL	LQM/CIEH	2015
	RDX (Hexogen/Cyclonite/1,3,5-trinitro-1,3,5-triazacyclohexane)	2015	120	250	540	13000	13000	13000	17	38	85	210000	210000	210000	26000	26000	27000	49000	51000	53000	S4UL	LQM/CIEH	2015
	HMX (Octogen/1,3,5,7-tetrenitro-1,3,5,7-tetrazacyclo-octane)	2015	5.7	13	26	6700	6700	6700	0.86	1.9	3.9	110000	110000	110000	13000	13000	13000	23000	23000	24000	S4UL	LQM/CIEH	2015
Pesticides	Aldrin	2015	5.7	6.6	7.1	7.3	7.4	7.5	3.2	6.1	9.6	170	170	170	18	18	18	30	31	31	S4UL	LQM/CIEH	2015
	Dieldrin	2015	0.97	2	3.5	7	7.3	7.4	0.17	0.41	0.96	170	170	170	18	18	18	30	30	31	S4UL	LQM/CIEH	2015
	Atrazine	2015	3.3	7.6	17.4	610	620	620	0.5	1.2	2.7	9300	9400	9400	1200	1200	1200	2300	2400	2400	S4UL	LQM/CIEH	2015
	Dichlorvos	2015	0.032	0.066	0.14	6.4	6.5	6.6	0.0049	0.01	0.022	140	140	140	16	16	16	26	26	27	S4UL	LQM/CIEH	2015
	Alpha - Endosulfan	2015	7.4	18	41	160	280	410	1.2	2.9	6.8	5600	7400	8400	1200	1200	1200	2400	2400	2500	S4UL	LQM/CIEH	2015
	Beta - Endosulfan	2015	7	17	39	190	320	440	1.1	2.7	6.4	6300	7800	8700	1200	1200	1200	2400	2400	2500	S4UL	LQM/CIEH	2015
	Alpha -Hexachlorocyclohexanes	2015	0.23	0.55	1.2	6.9	9.2	11	0.035	0.087	0.21	170	180	180	24	24	24	47	48	48	S4UL	LQM/CIEH	2015
	Beta -Hexachlorocyclohexanes	2015	0.085	0.2	0.46	3.7	3.8	3.8	0.013	0.032	0.077	65	65	65	8.1	8.1	8.1	15	15	16	S4UL	LQM/CIEH	2015
	Gamma -Hexachlorocyclohexanes	2015	0.06	0.14	0.33	2.9	3.3	3.5	0.0092	0.023	0.054	67	69	70	8.2	8.2	8.2	14	15	15	S4UL	LQM/CIEH	2015
Chlorobenzenes	Chlorobenzene	2015	0.46	1	2.4	0.46	1	2.4	5.9	14	32	56	130	290	11000	13000	14000	1300	2000	2900	S4UL	LQM/CIEH	2015
	1,2-Dichlorobenzene	2015	23	55	130	24	57	130	94	230	540	2000	4800	11000	90000	95000	98000	24000	36000	51000	S4UL	LQM/CIEH	2015
	1,3-Dichlorobenzene	2015	0.4	1	2.3	0.44	1.1	2.5	0.25	0.6	1.5	30	73	170	300	300	300	390	440	470	S4UL	LQM/CIEH	2015
	1,4-Dichlorobenzene	2015	61	150	350	61	150	350	15	37	88	4400	10000	25000	17000	17000	1700	36000	36000	36000	S4UL	LQM/CIEH	2015
	1,2,3,-Trichlorobenzene	2015	1.5	3.6	8.6	1.5	3.7	8.8	4.7	12	28	102	250	590	1800	1800	1800	770	1100	1600	S4UL	LQM/CIEH	2015
	1,2,4,-Trichlorobenzene	2015	2.6	6.4	15	2.6	6.4	15	55	140	320	220	530	1300	15000	17000	19000	1700	2600	4000	S4UL	LQM/CIEH	2015
	1,3,5,-Trichlorobenzene	2015	0.33	0.81	1.9	0.33	0.81	1.9	4.7	12	28	23	55	130	1700	1700	1800	380	580	860	S4UL	LQM/CIEH	2015

Land Use			Residential With or Without Plant Uptake						Allotments			Commercial			Public Open Space (POS)								
			With home-grown produce			Without home-grown produce									Residential			Park					
		SOM	1.0	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	1	2.5	6	Name	Authority	Date
Type	Contaminants Species	Year																					
	1,2,3,4,-Tetrachlorobenzene	2015	15	36	78	24	56	120	4.4	11	26	1700	3080	4400	830	830	830	*1500*	*1600*	*1600*	S4UL	LQM/CIEH	2015
	1,2,3,5,- Tetrachlobenzene	2015	0.66	1.6	3.7	0.75	1.9	4.3	0.38	0.9	2.2	*49*	*120*	*240*	78	79	79	*110*	*120*	*130*	S4UL	LQM/CIEH	2015
	1,2,4, 5,- Tetrachlobenzene	2015	0.33	0.77	1.6	0.73	1.7	3.5	0.06	0.16	0.37	*42*	*72*	*96*	13	13	13	25	26	26	S4UL	LQM/CIEH	2015
	Pentachlrobenzene	2015	5.8	12	22	19	30	38	1.2	3.1	7	*640*	*770*	*830*	100	100	100	190	190	190	S4UL	LQM/CIEH	2015
	Hexachlorobenzene	2015	*1.8*	*3.3*	4.9	*4.1*	*5.7*	*6.7*	0.47	1.1	2.5	*110*	120	120	16	16	16	30	30	30	S4UL	LQM/CIEH	2015
Phenols & Chlorophenols																							
	Phenols	2012			420			420			280			*3200*							SGV	DEFRA	2012
		2015	120	200	380	440	690	1200	23	42	83	*440*	*690*	*1300*	*440*	*690*	*1300*	*440*	*690*	*1300*	S4UL	LQM/CIEH	2015
	Chlorophenols (4 Congeners)	2015	0.87	2	4.5	94	150	210	0.13	0.3	0.7	3500	4000	4300	620	620	620	1100	1100	1100	S4UL	LQM/CIEH	2015
	Pentachlorophenols	2015	0.22	0.52	1.2	27	29	31	0.03	0.08	0.19	400	400	400	60	60	60	110	120	120	S4UL	LQM/CIEH	2015
Others																							
	Carbon Disulphide	2015	0.14	0.29	0.62	0.14	0.29	0.62	4.8	10	23	11	22	47	11000	11000	12000	1300	1900	2700	S4UL	LQM/CIEH	2015
	Hexachloro-1,3-Butadiene	2015	0.29	0.7	1.6	0.32	0.78	1.8	0.25	0.61	1.4	31	66	120	25	25	25	48	50	51	S4UL	LQM/CIEH	2015
	Sum of PCDDs, PCDFs and dioxin-like PCB's.	2012			8			8			8			240							SGV	DEFRA	2012

NOTE

Priority	Guideline (mg kg^{-1})
1	Site Specific Assessment Criteria (SSAC) (Soils Limited)
2	2014: Category 4 Screening Level (C4SL) (Contaminated Land: Application in Real Environment (CL:ARE), 2014)
3	2012: Soil Guideline Value (SGV) (Environment Agency, 2009)
4	2015: Suitable 4 Use Level (S4UL) (Nathanail *et al*, 2015)

For Generic Risk Assessment, the values in Bold have priority

Appendix D.1 – Waste Classification Report

HazWasteOnline™

Waste Classification Report

2FCG4-67AMG-6T9PU

Job name

15306 Mayflower Way

Waste Stream

Default Contaminated Land

Comments

Project

Site

Classified by

Name:
Ainsworth, Rob
Date:
08/12/2016 11:54 UTC
Telephone:
[redacted]

Company:
Soils Ltd
Thomas Telford House
Sun Valley Business Park, Winnall Close
Winchester
SO23 0LB

Report

Created by: Ainsworth, Rob
Created date: 08/12/2016 11:54 UTC

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazardous properties	Page
1	SP1/		Non Hazardous		2
2	SP2/		Non Hazardous		4
3	TP2/0.20		Non Hazardous		6
4	TP3/0.10		Non Hazardous		8
5	TP5/0.20		Non Hazardous		10
6	TP5/0.90		Non Hazardous		12
7	TP7/0.20		Hazardous	HP 3(i), HP 7, HP 11	14
8	TP7/1.20		Hazardous	HP 3(i), HP 7, HP 11	17

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	20
Appendix B: Rationale for selection of metal species	22
Appendix C: Version	22

Classification of sample: SP1/

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

Sample details

Sample Name:
SP1/
Sample Depth:
0 m
Moisture content: **0%**
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
antimony trioxide: (Cation conc. entered: 1.7 mg/kg, converted to compound conc.:2.035 mg/kg or 0.000204%)
arsenic trioxide: (Cation conc. entered: 10 mg/kg, converted to compound conc.:13.203 mg/kg or 0.00132%)
benzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: 0.57 mg/kg or 0.000057%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.81 mg/kg or 0.000081%)
benzo[b]fluoranthene: (Whole conc. entered as: 1.24 mg/kg or 0.000124%)
benzo[ghi]perylene: (Whole conc. entered as: 0.58 mg/kg or 0.000058%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.44 mg/kg or 0.000044%)
beryllium oxide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:1.665 mg/kg or 0.000167%)
diboron trioxide; boric oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<3.22 mg/kg or <0.000322%) IGNORED Because: "<LOD"
cadmium oxide: (Cation conc. entered: <0.2 mg/kg, converted to compound conc.:<0.228 mg/kg or <0.0000228%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 17 mg/kg, converted to compound conc.:24.846 mg/kg or 0.00248%)
chromium(VI) oxide: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.846 mg/kg or <0.000385%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: 0.64 mg/kg or 0.000064%)
dicopper oxide; copper (I) oxide: (Cation conc. entered: 24 mg/kg, converted to compound conc.:27.021 mg/kg or 0.0027%)
salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.768 mg/kg or <0.000377%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 1.32 mg/kg or 0.000132%)
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: 0.53 mg/kg or 0.000053%)
lead chromate: (Cation conc. entered: 64 mg/kg, converted to compound conc.:99.828 mg/kg or 0.00998%, Note 1 conc.: 0.0064%)
mercury dichloride: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.353 mg/kg or <0.000135%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel chromate: (Cation conc. entered: 11 mg/kg, converted to compound conc.:32.739 mg/kg or 0.00327%)
pH: (Whole conc. entered as: 8.1 pH, converted to conc.:8.1 pH or 8.1 pH)

phenanthrene: (Whole conc. entered as: 0.3 mg/kg or 0.00003%)
phenol: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: 1.28 mg/kg or 0.000128%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <3 mg/kg, converted to compound conc.:<7.661 mg/kg or <0.000766%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <5 mg/kg or <0.0005%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <60 mg/kg or <0.006%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
zinc chromate: (Cation conc. entered: 84 mg/kg, converted to compound conc.:233.028 mg/kg or 0.0233%)

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dicopper oxide; copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chromate"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead chromate"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "lead chromate"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"

Determinand notes

Note 1 , used on:

determinand: "lead chromate"

Note A , used on:

determinand: "zinc chromate"

Classification of sample: SP2/

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

Sample details

Sample Name:
SP2/
Sample Depth:
0 m
Moisture content: **0%**
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
antimony trioxide: (Cation conc. entered: 1.2 mg/kg, converted to compound conc.:1.437 mg/kg or 0.000144%)
arsenic trioxide: (Cation conc. entered: 7 mg/kg, converted to compound conc.:9.242 mg/kg or 0.000924%)
benzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.16 mg/kg or 0.000016%)
benzo[b]fluoranthene: (Whole conc. entered as: 0.21 mg/kg or 0.000021%)
benzo[ghi]perylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
beryllium oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.388 mg/kg or <0.000139%) IGNORED Because: "<LOD"
diboron trioxide; boric oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<3.22 mg/kg or <0.000322%) IGNORED Because: "<LOD"
cadmium oxide: (Cation conc. entered: <0.2 mg/kg, converted to compound conc.:<0.228 mg/kg or <0.0000228%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 12 mg/kg, converted to compound conc.:17.539 mg/kg or 0.00175%)
chromium(VI) oxide: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.846 mg/kg or <0.000385%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: 0.14 mg/kg or 0.000014%)
dicopper oxide; copper (I) oxide: (Cation conc. entered: 134 mg/kg, converted to compound conc.:150.869 mg/kg or 0.0151%)
salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.768 mg/kg or <0.000377%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 0.24 mg/kg or 0.000024%)
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
lead chromate: (Cation conc. entered: 39 mg/kg, converted to compound conc.:60.833 mg/kg or 0.00608%, Note 1 conc.: 0.0039%)
mercury dichloride: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.353 mg/kg or <0.000135%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel chromate: (Cation conc. entered: 9 mg/kg, converted to compound conc.:26.786 mg/kg or 0.00268%)

pH: (Whole conc. entered as: 7.9 pH, converted to conc.:7.9 pH or 7.9 pH)
phenanthrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
phenol: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: 0.21 mg/kg or 0.000021%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (
Cation conc. entered: <3 mg/kg, converted to compound conc.:<7.661 mg/kg or <0.000766%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <5 mg/kg or <0.0005%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <60 mg/kg or <0.006%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
zinc chromate: (Cation conc. entered: 55 mg/kg, converted to compound conc.:152.578 mg/kg or 0.0153%)

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dicopper oxide; copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chromate"

Determinand notes

Note 1 , used on:

determinand: "lead chromate"

Note A , used on:

determinand: "zinc chromate"

Classification of sample: TP2/0.20

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

Sample details

Sample Name:
TP2/0.20
Sample Depth:
0 m
Moisture content: **0%**
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: 0.2 mg/kg or 0.00002%)
antimony trioxide: (Cation conc. entered: 1.9 mg/kg, converted to compound conc.:2.274 mg/kg or 0.000227%)
arsenic trioxide: (Cation conc. entered: 12 mg/kg, converted to compound conc.:15.844 mg/kg or 0.00158%)
benzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: 0.58 mg/kg or 0.000058%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.67 mg/kg or 0.000067%)
benzo[b]fluoranthene: (Whole conc. entered as: 1.07 mg/kg or 0.000107%)
benzo[ghi]perylene: (Whole conc. entered as: 0.38 mg/kg or 0.000038%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.36 mg/kg or 0.000036%)
beryllium oxide: (Cation conc. entered: 0.7 mg/kg, converted to compound conc.:1.943 mg/kg or 0.000194%)
diboron trioxide; boric oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<3.22 mg/kg or <0.000322%) IGNORED Because: "<LOD"
cadmium oxide: (Cation conc. entered: <0.2 mg/kg, converted to compound conc.:<0.228 mg/kg or <0.0000228%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 20 mg/kg, converted to compound conc.:29.231 mg/kg or 0.00292%)
chromium(VI) oxide: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.846 mg/kg or <0.000385%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: 0.63 mg/kg or 0.000063%)
dicopper oxide; copper (I) oxide: (Cation conc. entered: 31 mg/kg, converted to compound conc.:34.903 mg/kg or 0.00349%)
salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.768 mg/kg or <0.000377%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 1.81 mg/kg or 0.000181%)
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: 0.35 mg/kg or 0.000035%)
lead chromate: (Cation conc. entered: 58 mg/kg, converted to compound conc.:90.469 mg/kg or 0.00905%, Note 1 conc.: 0.0058%)
mercury dichloride: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.353 mg/kg or <0.000135%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel chromate: (Cation conc. entered: 15 mg/kg, converted to compound conc.:44.644 mg/kg or 0.00446%)
pH: (Whole conc. entered as: 8 pH, converted to conc.:8 pH or 8 pH)

phenanthrene: (Whole conc. entered as: 0.9 mg/kg or 0.00009%)
phenol: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: 1.59 mg/kg or 0.000159%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <3 mg/kg, converted to compound conc.:<7.661 mg/kg or <0.000766%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <5 mg/kg or <0.0005%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <60 mg/kg or <0.006%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
zinc chromate: (Cation conc. entered: 98 mg/kg, converted to compound conc.:271.866 mg/kg or 0.0272%)

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dicopper oxide; copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chromate"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead chromate"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "lead chromate"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"

Determinand notes

Note 1 , used on:

determinand: "lead chromate"

Note A , used on:

determinand: "zinc chromate"

Classification of sample: TP3/0.10

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

Sample details

Sample Name:
TP3/0.10
Sample Depth:
0 m
Moisture content: **0%**
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
antimony trioxide: (Cation conc. entered: 6.5 mg/kg, converted to compound conc.:7.781 mg/kg or 0.000778%)
arsenic trioxide: (Cation conc. entered: 13 mg/kg, converted to compound conc.:17.164 mg/kg or 0.00172%)
benzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: 0.39 mg/kg or 0.000039%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.6 mg/kg or 0.00006%)
benzo[b]fluoranthene: (Whole conc. entered as: 0.98 mg/kg or 0.000098%)
benzo[ghi]perylene: (Whole conc. entered as: 0.3 mg/kg or 0.00003%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.37 mg/kg or 0.000037%)
beryllium oxide: (Cation conc. entered: 0.7 mg/kg, converted to compound conc.:1.943 mg/kg or 0.000194%)
diboron trioxide; boric oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<3.22 mg/kg or <0.000322%) IGNORED Because: "<LOD"
cadmium oxide: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.343 mg/kg or 0.0000343%)
chromium(III) oxide: (Cation conc. entered: 16 mg/kg, converted to compound conc.:23.385 mg/kg or 0.00234%)
chromium(VI) oxide: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.846 mg/kg or <0.000385%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: 0.44 mg/kg or 0.000044%)
dicopper oxide; copper (I) oxide: (Cation conc. entered: 62 mg/kg, converted to compound conc.:69.805 mg/kg or 0.00698%)
salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.768 mg/kg or <0.000377%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 0.99 mg/kg or 0.000099%)
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: 0.27 mg/kg or 0.000027%)
lead chromate: (Cation conc. entered: 654 mg/kg, converted to compound conc.:1020.119 mg/kg or 0.102%, Note 1 conc.: 0.0654%)
mercury dichloride: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.353 mg/kg or <0.000135%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel chromate: (Cation conc. entered: 11 mg/kg, converted to compound conc.:32.739 mg/kg or 0.00327%)
pH: (Whole conc. entered as: 7.8 pH, converted to conc.:7.8 pH or 7.8 pH)
phenanthrene: (Whole conc. entered as: 0.28 mg/kg or 0.000028%)

phenol: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: 0.92 mg/kg or 0.000092%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <3 mg/kg, converted to compound conc.:<7.661 mg/kg or <0.000766%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <5 mg/kg or <0.0005%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <60 mg/kg or <0.006%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
zinc chromate: (Cation conc. entered: 286 mg/kg, converted to compound conc.:793.406 mg/kg or 0.0793%)

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dicopper oxide; copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chromate"

Determinand notes

Note 1 , used on:

determinand: "lead chromate"

Note A , used on:

determinand: "zinc chromate"

Classification of sample: TP5/0.20

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

Sample details

Sample Name:
TP5/0.20
Sample Depth:
0 m
Moisture content: **0%**
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
antimony trioxide: (Cation conc. entered: 2.4 mg/kg, converted to compound conc.:2.873 mg/kg or 0.000287%)
arsenic trioxide: (Cation conc. entered: 11 mg/kg, converted to compound conc.:14.524 mg/kg or 0.00145%)
benzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: 0.46 mg/kg or 0.000046%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.67 mg/kg or 0.000067%)
benzo[b]fluoranthene: (Whole conc. entered as: 1.03 mg/kg or 0.000103%)
benzo[ghi]perylene: (Whole conc. entered as: 0.45 mg/kg or 0.000045%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.35 mg/kg or 0.000035%)
beryllium oxide: (Cation conc. entered: 0.7 mg/kg, converted to compound conc.:1.943 mg/kg or 0.000194%)
diboron trioxide; boric oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<3.22 mg/kg or <0.000322%) IGNORED Because: "<LOD"
cadmium oxide: (Cation conc. entered: <0.2 mg/kg, converted to compound conc.:<0.228 mg/kg or <0.0000228%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 20 mg/kg, converted to compound conc.:29.231 mg/kg or 0.00292%)
chromium(VI) oxide: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.846 mg/kg or <0.000385%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: 0.52 mg/kg or 0.000052%)
dicopper oxide; copper (I) oxide: (Cation conc. entered: 33 mg/kg, converted to compound conc.:37.154 mg/kg or 0.00372%)
salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.768 mg/kg or <0.000377%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 1.12 mg/kg or 0.000112%)
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: 0.4 mg/kg or 0.00004%)
lead chromate: (Cation conc. entered: 115 mg/kg, converted to compound conc.:179.379 mg/kg or 0.0179%, Note 1 conc.: 0.0115%)
mercury dichloride: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.353 mg/kg or <0.000135%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel chromate: (Cation conc. entered: 13 mg/kg, converted to compound conc.:38.691 mg/kg or 0.00387%)
pH: (Whole conc. entered as: 8 pH, converted to conc.:8 pH or 8 pH)

phenanthrene: (Whole conc. entered as: 0.16 mg/kg or 0.000016%)
phenol: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: 1.15 mg/kg or 0.000115%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <3 mg/kg, converted to compound conc.:<7.661 mg/kg or <0.000766%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <5 mg/kg or <0.0005%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <60 mg/kg or <0.006%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
zinc chromate: (Cation conc. entered: 132 mg/kg, converted to compound conc.:366.187 mg/kg or 0.0366%)

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dicopper oxide; copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chromate"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead chromate"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "lead chromate"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"

Determinand notes

Note 1 , used on:

determinand: "lead chromate"

Note A , used on:

determinand: "zinc chromate"

Classification of sample: TP5/0.90

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

Sample details

Sample Name:
TP5/0.90
Sample Depth:
0 m
Moisture content: **0%**
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
antimony trioxide: (Cation conc. entered: 1.5 mg/kg, converted to compound conc.:1.796 mg/kg or 0.00018%)
arsenic trioxide: (Cation conc. entered: 10 mg/kg, converted to compound conc.:13.203 mg/kg or 0.00132%)
benzo[a]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[b]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
beryllium oxide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:1.665 mg/kg or 0.000167%)
diboron trioxide; boric oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<3.22 mg/kg or <0.000322%) IGNORED Because: "<LOD"
cadmium oxide: (Cation conc. entered: <0.2 mg/kg, converted to compound conc.:<0.228 mg/kg or <0.0000228%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 19 mg/kg, converted to compound conc.:27.77 mg/kg or 0.00278%)
chromium(VI) oxide: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.846 mg/kg or <0.000385%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
dicopper oxide; copper (I) oxide: (Cation conc. entered: 25 mg/kg, converted to compound conc.:28.147 mg/kg or 0.00281%)
salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.768 mg/kg or <0.000377%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
lead chromate: (Cation conc. entered: 29 mg/kg, converted to compound conc.:45.235 mg/kg or 0.00452%, Note 1 conc.: 0.0029%)
mercury dichloride: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.353 mg/kg or <0.000135%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
nickel chromate: (Cation conc. entered: 13 mg/kg, converted to compound conc.:38.691 mg/kg or 0.00387%)
pH: (Whole conc. entered as: 8.2 pH, converted to conc.:8.2 pH or 8.2 pH)
phenanthrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
phenol: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"

pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <3 mg/kg, converted to compound conc.:<7.661 mg/kg or <0.000766%) IGNORED Because: "<LOD"
zinc chromate: (Cation conc. entered: 44 mg/kg, converted to compound conc.:122.062 mg/kg or 0.0122%)

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dicopper oxide; copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chromate"

Determinand notes

Note 1 , used on:

determinand: "lead chromate"

Note A , used on:

determinand: "zinc chromate"

Classification of sample: TP7/0.20

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

Sample details

Sample Name:
TP7/0.20
Sample Depth:
0 m
Moisture content: **0%**
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.216%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.216%)

Hazard properties (substances considered hazardous until shown otherwise)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.216%)

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: 0.15 mg/kg or 0.000015%)
acenaphthylene: (Whole conc. entered as: 0.18 mg/kg or 0.000018%)
anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
antimony trioxide: (Cation conc. entered: 2.2 mg/kg, converted to compound conc.:2.634 mg/kg or 0.000263%)
arsenic trioxide: (Cation conc. entered: 5 mg/kg, converted to compound conc.:6.602 mg/kg or 0.00066%)
benzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: 0.22 mg/kg or 0.000022%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.21 mg/kg or 0.000021%)
benzo[b]fluoranthene: (Whole conc. entered as: 0.37 mg/kg or 0.000037%)
benzo[ghi]perylene: (Whole conc. entered as: 0.24 mg/kg or 0.000024%)

benzo[k]fluoranthene: (Whole conc. entered as: 0.13 mg/kg or 0.000013%)
beryllium oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.388 mg/kg or <0.000139%) IGNORED Because: "<LOD"
diboron trioxide; boric oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<3.22 mg/kg or <0.000322%) IGNORED Because: "<LOD"
cadmium oxide: (Cation conc. entered: <0.2 mg/kg, converted to compound conc.:<0.228 mg/kg or <0.0000228%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 8 mg/kg, converted to compound conc.:11.692 mg/kg or 0.00117%)
chromium(VI) oxide: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.846 mg/kg or <0.000385%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: 0.31 mg/kg or 0.000031%)
dicopper oxide; copper (I) oxide: (Cation conc. entered: 17 mg/kg, converted to compound conc.:19.14 mg/kg or 0.00191%)
salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.768 mg/kg or <0.000377%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 0.72 mg/kg or 0.000072%)
fluorene: (Whole conc. entered as: 0.54 mg/kg or 0.000054%)
indeno[123-cd]pyrene: (Whole conc. entered as: 0.19 mg/kg or 0.000019%)
lead chromate: (Cation conc. entered: 52 mg/kg, converted to compound conc.:81.11 mg/kg or 0.00811%, Note 1 conc.: 0.0052%)
mercury dichloride: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.353 mg/kg or <0.000135%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: 0.31 mg/kg or 0.000031%)
nickel chromate: (Cation conc. entered: 5 mg/kg, converted to compound conc.:14.881 mg/kg or 0.00149%)
pH: (Whole conc. entered as: 7.9 pH, converted to conc.:7.9 pH or 7.9 pH)
phenanthrene: (Whole conc. entered as: 0.99 mg/kg or 0.000099%)
phenol: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: 0.72 mg/kg or 0.000072%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <3 mg/kg, converted to compound conc.:<7.661 mg/kg or <0.000766%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <5 mg/kg or <0.0005%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 2157 mg/kg or 0.216%)
xylene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
zinc chromate: (Cation conc. entered: 134 mg/kg, converted to compound conc.:371.736 mg/kg or 0.0372%)

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "acenaphthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dicopper oxide; copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluorene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "naphthalene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chromate"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead chromate"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "lead chromate"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"

Determinand notes

Note 1 , used on:

determinand: "lead chromate"

Note A , used on:

determinand: "zinc chromate"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: TP7/1.20

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

Sample details

Sample Name:
TP7/1.20
Sample Depth:
0 m
Moisture content: **0%**
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.088%)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.088%)

Hazard properties (substances considered hazardous until shown otherwise)

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

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.088%)

Determinands (Moisture content: 0%, no correction)

acenaphthene: (Whole conc. entered as: 0.51 mg/kg or 0.000051%)
acenaphthylene: (Whole conc. entered as: 0.63 mg/kg or 0.000063%)
anthracene: (Whole conc. entered as: 0.23 mg/kg or 0.000023%)
antimony trioxide: (Cation conc. entered: 4.9 mg/kg, converted to compound conc.:5.866 mg/kg or 0.000587%)
arsenic trioxide: (Cation conc. entered: 8 mg/kg, converted to compound conc.:10.563 mg/kg or 0.00106%)
benzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[b]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"

benzo[k]fluoranthene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
beryllium oxide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:1.665 mg/kg or 0.000167%)
diboron trioxide; boric oxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<3.22 mg/kg or <0.000322%) IGNORED Because: "<LOD"
cadmium oxide: (Cation conc. entered: <0.2 mg/kg, converted to compound conc.:<0.228 mg/kg or <0.0000228%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 19 mg/kg, converted to compound conc.:27.77 mg/kg or 0.00278%)
chromium(VI) oxide: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.846 mg/kg or <0.000385%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
dicopper oxide; copper (I) oxide: (Cation conc. entered: 22 mg/kg, converted to compound conc.:24.77 mg/kg or 0.00248%)
salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex: (Cation conc. entered: <2 mg/kg, converted to compound conc.:<3.768 mg/kg or <0.000377%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 0.15 mg/kg or 0.000015%)
fluorene: (Whole conc. entered as: 2.08 mg/kg or 0.000208%)
indeno[123-cd]pyrene: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
lead chromate: (Cation conc. entered: 27 mg/kg, converted to compound conc.:42.115 mg/kg or 0.00421%, Note 1 conc.: 0.0027%)
mercury dichloride: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.353 mg/kg or <0.000135%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: 1.38 mg/kg or 0.000138%)
nickel chromate: (Cation conc. entered: 11 mg/kg, converted to compound conc.:32.739 mg/kg or 0.00327%)
pH: (Whole conc. entered as: 7.3 pH, converted to conc.:7.3 pH or 7.3 pH)
phenanthrene: (Whole conc. entered as: 3.02 mg/kg or 0.000302%)
phenol: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: 0.41 mg/kg or 0.000041%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <3 mg/kg, converted to compound conc.:<7.661 mg/kg or <0.000766%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <5 mg/kg or <0.0005%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 10878 mg/kg or 1.088%)
xylene: (Whole conc. entered as: <2 mg/kg or <0.0002%) IGNORED Because: "<LOD"
zinc chromate: (Cation conc. entered: 78 mg/kg, converted to compound conc.:216.383 mg/kg or 0.0216%)

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "acenaphthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dicopper oxide; copper (I) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluorene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "naphthalene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc chromate"

Determinand notes

Note 1 , used on:

determinand: "lead chromate"

Note A , used on:

determinand: "zinc chromate"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Appendix A: Classifier defined and non CLP determinands

acenaphthene (CAS Number: 83-32-9)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, N; R50/53, N; R51/53
Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Aquatic Chronic 2; H411

acenaphthylene (CAS Number: 208-96-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R22, R26, R27, R36, R37, R38
Hazard Statements: Acute Tox. 4; H302, Acute Tox. 1; H330, Acute Tox. 1; H310, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315

anthracene (CAS Number: 120-12-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, R43, N; R50/53
Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

benzo[ghi]perylene (CAS Number: 191-24-2)

Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23/07/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

chromium(III) oxide (CAS Number: 1308-38-9)

Conversion factor: 1.462
Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20, R22, R36, R37, R38, R42, R43, R50/53, R60, R61
Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Resp. Sens. 1; H334, Skin Sens. 1; H317, Repr. 1B; H360FD, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

dicopper oxide; copper (I) oxide (CAS Number: 1317-39-1)

CLP index number: 029-002-00-X
Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9)
Additional Risk Phrases: N; R50/53, N; R50/53>= 0.25%
Additional Hazard Statement(s): None.
Reason:
10/10/2016 - N; R50/53 hazard statement sourced from: WM3 v1 still uses ecotoxic risk phrases
10/10/2016 - N; R50/53>= 0.25% hazard statement sourced from: WM3 v1 still uses ecotoxic risk phrases

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

CLP index number: 006-007-00-5
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Risk Phrases: None.
Additional Hazard Statement(s): EUH032>= 0.2%
Reason:
14/12/2015 - EUH032>= 0.2% hazard statement sourced from: WM3, Table C12.2

ethylbenzene (CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2; H351
Reason:
03/06/2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

fluoranthene (CAS Number: 206-44-0)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xn; R22, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

fluorene (CAS Number: 86-73-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

indeno[123-cd]pyrene (CAS Number: 193-39-5)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R40
Hazard Statements: Carc. 2; H351

pH (CAS Number: PH)

Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: None.
Hazard Statements: None.

phenanthrene (CAS Number: 85-01-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R22, R36, R37, R38, R40, R43, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Carc. 2; H351, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Skin Irrit. 2; H315

pyrene (CAS Number: 129-00-0)

Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xi; R36/37/38, N; R50/53
Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

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

Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R10, R45, R46, R51/53, R63, R65
Hazard Statements: Flam. Liq. 3; H226, Asp. Tox. 1; H304, STOT RE 2; H373, Muta. 1B; H340, Carc. 1B; H350, Repr. 2; H361d, Aquatic Chronic 2; H411

Appendix B: Rationale for selection of metal species

C14: Step 5

from section: WM3: C14 in the document: "WM3 - Waste Classification"

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..."

Note 1

from section: 1.1.3.2, Annex VI in the document: "CLP Regulation"

"The concentration stated or, in the absence of such concentrations, the generic concentrations of this Regulation (Table 3.1) or the generic concentrations of Directive 1999/45/EC (Table 3.2), are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture."

Note A

from section: 1.1.3.1, Annex VI in the document: "CLP Regulation"

"Without prejudice to Article 17(2), the name of the substance must appear on the label in the form of one of the designations given in Part 3. In Part 3, use is sometimes made of a general description such as '... compounds' or '... salts'. In this case, the supplier is required to state on the label the correct name, due account being taken of section 1.1.1.4."

WM3: Unknown oil

from section: Chapter 3: 4. Waste oils and other wastes containing or contaminated with oil in the document: "WM3 - Waste Classification"

"If the identity of the oil is unknown, and the petroleum group cannot be established, then the oil contaminating the waste can be classified as non-carcinogenic due to the presence of oil if all three of the following criteria are met:

- the waste contains **benzo[a]pyrene (BaP)** at a concentration of less than 0.01% (1/10,000th) of the TPH concentration (This is the carcinogenic limit specified in table 3.2 of the CLP for BaP)
- this has been determined by an appropriate and representative sampling approach in accordance with the principles set out in Appendix D, and
- the analysis clearly demonstrates, for example by carbon bands or chromatograph, and the laboratory has reasonably concluded that the hydrocarbons present have not arisen from petrol or diesel

"

Appendix C: Version

This classification utilises the following guidance and legislation:

- WM3 - Waste Classification - May 2015
- CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
- 1st ATP - Regulation 790/2009/EC of 10 August 2009
- 2nd ATP - Regulation 286/2011/EC of 10 March 2011
- 3rd ATP - Regulation 618/2012/EU of 10 July 2012
- 4th ATP - Regulation 487/2013/EU of 8 May 2013
- Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
- 5th ATP - Regulation 944/2013/EU of 2 October 2013
- 6th ATP - Regulation 605/2014/EU of 5 June 2014
- WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
- Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
- 7th ATP - Regulation 2015/1221/EU of 24 July 2015
- 8th ATP - Regulation (EU) 2016/918 of 19 May 2016
- 9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
- POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
- 1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
- 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015
HazWasteOnline Classification Engine Version: 2016.317.3166.6295 (12 Nov 2016)
HazWasteOnline Database: 2016.315.3165.6292 (10 Nov 2016)

Appendix D.2 – Determination of Hazardous Waste Classification

Software such as the HazWasteOnline produced Hazardous Waste Classification Tool, enables soils 'total' chemical testing data to be used to identify the classification of waste soils in accordance with Environment Agency guidance. The HazWasteOnline Hazardous Waste Classification Tool was designed primarily for the classification of soil wastes as identified by the European Waste Catalogue (EWC) Chapter 17 - Construction and demolition wastes (including contaminated soils).

The classification of waste as either hazardous or non-hazardous must be conducted in accordance with the 2003 Environment Agency publication Interpretation of the Definition and Classification of Hazardous Waste (Technical Guidance WM2). This establishes the regulatory framework and allows classification of wastes based on their various risk phrases. Additional guidance provided by the 2007 Environment Agency publication 'How to Find Out if Waste Oil and Wastes that Contain Oil Are Hazardous' (HWR08) provides further clarification on the classification methodology for hydrocarbon contamination.

As part of the Hazardous Waste Classification process, contaminant compounds are selected based on historical and contemporary land-use. The inclusion of such data on the input form enables the correct waste classification to be determined. For example, in cases of land associated with former gasworks, the classification of coal-tar contaminated soils can be partially determined using total PAH concentrations as opposed to TPH concentrations as coal-tar may be deemed a "substance". Hazardous (HWR08) provides further clarification on the classification methodology for hydrocarbon contamination.