

GREENBUILD CONSULT

**MARDON PARK,
PORT TALBOT SA12 7AX**

REPORT ON GROUND INVESTIGATION

Contract: 70491

Date: September 2018

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REPORT ON GROUND INVESTIGATION

carried out at

**MARDON PARK,
PORT TALBOT SA12 7AX**

Prepared for

**GREENBUILD CONSULT
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Contract No: 70491

Date: September 2018

Report Issue Log

Draft Issue	Issued By	Checked By
Issue Method E/P/D	Date	Date

Final Issue	Issued By	Checked By
Issue Method E/P/D	WHS 6/9/18	VT 6/9/18

Revision	Issued By	Checked By
Issue Method E/P/D	Date	Date

Issue Method: E = Electronic
P = Paper
D = Disc

EXECUTIVE SUMMARY

On the instructions of Green Build Consult, an investigation was undertaken to determine ground conditions to enable a contamination risk assessment to be carried out.

The site is situated on the south western side of Central Avenue, south east of Mardon Park, northwest of Road Number 3, Port Talbot and may be located by National Grid Reference SS 740 926.

Published geology indicates the site to be underlain by Estuarine Alluvium overlying Middle Coal Measures. The Big Coal seam was also indicated to the north of the site.

The site work was carried out on the 21st August 2018 and comprised ten trial pits dug by mechanical excavator to depths of between 1.50m and 1.70m below ground level (bgl).

Made ground was encountered to between 0.40m and 0.80m with an average depth of 0.68m bgl. The made ground generally consisted of gravelly sand with cobbles and boulders. Underlying the made ground, light brown medium sand was encountered to the full depths of TP1, TP2, TP3 and TP8 at 1.50m or 1.70m bgl. The sand was present to between 1.50m bgl in the remaining trial pits where black fibrous peat continued to the full depth so these trial pits at 1.70m bgl. Groundwater was not encountered in any of the trial pits.

The results of the soil analyses, with the exception of lead, have been compared to the recently published S4ULs (Suitable 4 Use Levels) determined by LQM and CIEH. As the CLEA SGV for lead was withdrawn in 2014, DEFRA have produced C4SLs (Category 4 Screening Levels) for lead and a number of other contaminants. As no S4UL has been produced for lead, the C4SL has been adopted.

The assessment did not identify any relevant pollutant linkages at the site. Consequently, remediation is not deemed necessary in relation to the proposed development.

However, current guidance recommends that basic radon protective measures should be installed in the proposed development, in line with the Building Research Establishment, Report BR211.

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1.0 INTRODUCTION

- 1.1 It is understood that the proposed development comprises of a light industrial facility with car parking around the structure.
- 1.2 On the instructions of Green Build Consult, an investigation was undertaken to determine ground conditions to enable a contamination risk assessment to be carried out.
- 1.3 This report should be read in conjunction with the Preliminary Investigation, which was reported under reference 70491 in September 2018.
- 1.4 It is recommended that a copy of this report be submitted to the relevant authorities to enable them to carry out their own site assessments and provide any comments.
- 1.5 This report has been prepared for the sole use of the Client for the purpose described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.
- 1.6 The comments given in this report and the opinions expressed herein are based on the information received, the conditions encountered during site works, and on the results of tests made in the field and laboratory. However, there may be conditions prevailing at the site which have not been disclosed by the investigation and which have not been taken into account in the report.
- 1.7 The comments on groundwater conditions are based on observations made at the time the site work was carried out. It should be noted that groundwater levels vary owing to seasonal or other effects.

2.0 SITE SETTING

2.1 Site Location and Description

- 2.1.1 The site is situated on the south western side of Central Avenue, south east of Mardon Park, northwest of Road Number 3, Port Talbot and may be located by National Grid Reference SS 740 926.
- 2.1.2 The site was sensibly level and vacant consisting mainly of rough grass. A number of trees and an industrial estate were located to the north west of the site and a small electrical substation and a pumping station were present to the north east. The electrical substation and the pumping station were recent installations to supply the industrial estate.
- 2.1.3 A factory producing beauty products was present to the south east of the site and a small pond and trees were located to the north east. The area to the south west was vacant.

2.2 Geological Setting

- 2.2.1 The 1:50000 British Geological Survey map, Sheet No. 247 indicates the site to be underlain by Estuarine Alluvium overlying Middle Coal Measures. The Big Coal seam was also indicated to the north of the site.

3.0 SUMMARY DESK STUDY FINDINGS

- 3.1 A Preliminary Investigation in the form of a desk study and site reconnaissance was carried out in September 2018 in order to assess the potential hazards on and adjacent to the site and prepare a risk assessment for further consideration.
- 3.2 At the time of the walkover survey, the site was sensibly level and vacant consisting mainly of rough grass. A number of trees and an industrial estate were located to the north west of the site and a small electrical substation and a pumping station were present to the north east. The electrical substation and the pumping station were recent installations to supply the industrial estate. A factory producing beauty products was present to the south east of the site and a small pond and trees were located to the north east. The area to the south west was vacant.
- 3.3 The site appeared to have been vacant from before 1880, situated on the south eastern edge of Baglan Bay. A rifle range was indicated on the southern half of the site and the northern quarter was marsh and below the mean high water mark from prior to 1880 until c. 1937. A tramway crossed the central part of the site, generally from east to west, between c. 1918 and c. 1978. Baglan Bay subsequently appeared to have been back filled with material, possibly associated with a steel works located over 500m to the north, which may have also been deposited on the site. The area was then subject to development of the existing industrial estate. A works was indicated to the north west of the site in 1993 and 1995, though no buildings were shown.
- 3.4 The geological map indicated the Big Coal Seam to be present to the north of the site, and the north of the site was identified as a high-risk area as defined by the Coal Authority.
- 3.5 Evidence was identified for the potential for radon to be present at levels for which basic protection measures are recommended. The risk to end-users was considered to be high.
- 3.6 A moderate risk was identified from made ground placed on the site as part of the reclamation of Baglan Bay, together with recent surrounding industrial uses. The former rifle range and tramway were also identified as potential sources of contamination, though considered to represent a relatively low risk.
- 3.7 The potential for the migration of explosive gases from the nearby filled ground was identified, though taking into account the underlying geology, anticipated to comprise relatively impermeable clay, and distance from the site, there was considered unlikely to be a valid pathway and as such, the risk considered to be moderate to low and no further investigation is considered necessary.
- 3.8 The following scope of works was suggested in order to collect the required data:
- The sinking of trial pits for the recovery of samples for geotechnical and chemical contamination analysis.

4.0 SITE WORK

- 4.1 The site work was carried out on the 21st August 2018. The locations of exploratory holes have been planned, where possible, in general accordance with CLR 4, ref. 9.1, and the site work carried out on the basis of the practices set out in BS 10175:2001, ref. 9.2, BS 5930:1999, ref. 9.3, and ISO 1997:2007, ref. 9.4.
- 4.2 Ten trial pits, designated TP1 to TP10, were dug by mechanical excavator at the positions shown on the site plan, Appendix 1, Figure A1.1. The depths of trial pits, descriptions of strata encountered and comments on groundwater conditions are given in the trial pit records, Appendix 2, Figures A2.1 to A2.10. TP10 was carried out on the adjacent site which may be used for an extension to the factory in the future.
- 4.3 Samples for environmental purposes were collected in amber glass jars and kept in a cool box.
- 4.4 The ground levels at the trial pit locations were not determined.

5.0 LABORATORY TESTS

5.1 Chemical Testing

5.1.1 The suite of chemical analyses has been based upon the findings of the preliminary investigation, along with any on-site observations, to investigate the potential sources of contamination identified in the conceptual model. The chemical analyses were carried out on six samples of soil representative of the Made Ground. The nature of the analyses is detailed below:

5.1.2 **Metals Suite** - arsenic, water soluble boron, cadmium, chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium and zinc.

5.1.3 **Organic Suite** - petroleum hydrocarbons – EPH basic carbon banded analysis and polycyclic aromatic hydrocarbons (PAH) – USEPA 16 suite.

5.1.4 **Others** - pH, organic matter content and asbestos.

5.1.5 The results of these tests are shown in Appendix 3, Figure A3.1.

6.0 GROUND CONDITIONS ENCOUNTERED

6.1 Made Ground

6.1.1 Made ground was encountered to between 0.40m and 0.80m with an average depth of 0.68m. The made ground generally consisted of gravelly sand with cobbles and boulders. The gravel was composed of blast furnace slag, concrete and brick fragments and the cobbles were slag, brick and concrete and the boulders were concrete.

6.2 Estuarine Alluvium

6.2.1 Below the made ground, light brown medium sand was encountered to the full depths of TP1, TP2, TP3 and TP8 at 1.50m or 1.70m below ground level. The sand was present to between 1.50m in the remaining trial pits where black fibrous peat continued to the full depth so these trial pits at 1.70m deep.

6.3 Groundwater

6.3.1 Groundwater was not encountered in any of the trial pits.

7.0 ENVIRONMENTAL RISK ASSESSMENT IN RELATION TO PROPOSED DEVELOPMENT

7.1 Contaminated Land

7.1.1 The statutory definition of contaminated land is defined in the Environmental Protection Act 1990, ref. 9.5, which was introduced by the Environment Act 1995, ref. 9.6, as;

7.1.2 ‘Land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that –

- significant harm is being caused or there is a significant possibility of such harm being caused; or
- significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused.’

7.2 Risk Assessment

7.2.1 The definition of contaminated land is based on the principles of risk assessment. Risk is defined as a combination of:

- The probability, or frequency of exposure to a substance with the potential to cause harm, and:
- The seriousness of the consequence.

7.3 Pollutant Linkage

7.3.1 The basis of an environmental risk assessment involves identifying a ‘source’ of contamination, a ‘pathway’ along which the contamination may migrate and a ‘receptor’ at risk from the contamination.

7.3.2 Current legislation defines the various elements of the pollution linkage as:

- A contaminant is a substance, which is in or under the ground and which has the potential to cause harm or to cause pollution of controlled waters.
- A pathway is one or more routes through which a receptor is being exposed to, or affected by, a contaminant, or could be so affected.
- A receptor is either a living organism, an ecological system, a piece of land or property, or controlled water.

7.3.3 A pollutant linkage indicates that all three elements have been identified. The site can only be defined as ‘Contaminated Land’ if a pollutant linkage exists and the contamination meets the criteria in Section 7.1 above.

7.3.4 The guidance proposes a four-stage approach for the assessment of contamination and the associated risks. The four stages are listed below:

- Hazard Identification
- Hazard Assessment
- Risk Assessment
- Risk Evaluation

7.3.5 The hazard identification and hazard assessment have been based upon the Preliminary Investigation and formed the conceptual site model, detailed in our report, reference 70491, dated September 2018.

7.3.6 The risk assessment and evaluation stages are presented in this phase 2 interpretive report, after an intrusive ground investigation has taken place.

7.4 Risk Assessment – Human Health

7.4.1 The proposed development consists of a light industrial facility with car parking around the structure. The risk assessment has therefore been based on guidelines for a commercial/industrial end use. Should the proposed development be changed in the future then further risk assessment may be required, particularly should a more sensitive end-use be envisaged.

7.4.2 The results of the soil analyses, with the exception of lead, have been compared to the recently published S4ULs (Suitable 4 Use Levels) determined by LQM and CIEH, ref. 9.9. As the CLEA SGV for lead was withdrawn in 2014, DEFRA have produced C4SLs (Category 4 Screening Levels), ref. 9.11, for lead and a number of other contaminants. As no S4UL has been produced for lead, the C4SL has been adopted.

7.4.3 The Generic Assessment Criteria (GAC) used within this contamination assessment have been tabulated and are detailed within Appendix 4.

7.4.4 The results of chemical analyses have been processed in accordance with recommendations set out in the CIEH and CL:AIRE document ‘Guidance on Comparing Soil Contamination Data with a Critical Concentration’, ref. 9.12. Where the concentrations determined on site are at or below the respective Generic Assessment Criteria, they are considered not to pose a risk and are removed from further consideration, unless otherwise stated.

7.4.5 All of the observed concentrations were below the adopted GAC.

7.5 Risk Assessment - Asbestos

- 7.5.1 Asbestos including Asbestos Containing Soils (ACS) only presents a risk to health if fibres are released into the air. It is generally assumed that only near surface ACS would contribute airborne fibres. However, in instances where gardens are proposed, then there is a risk that ACS could be exposed to the atmosphere through the action of digging.
- 7.5.2 Although no assessment criteria (AC) has been proposed in the new CIRIA C733, ref. 9.16, Ian Farmer Associates has adopted the view that if asbestos is identified within soil then further sampling and testing may be required, specifically to quantify the amount and type of asbestos present. This information may then be used in a Detailed Quantitative Risk Assessment (DQRA) as outlined in CIRIA C733.
- 7.5.3 None of the samples at this site contained asbestos.

7.6 Risk Assessment - Controlled Waters

- 7.6.1 The site is situated above a Secondary A aquifer, though this is overlain by low permeability superficial deposits. As such, any consequence of contamination to the water environment is considered to be minor.
- 7.6.2 A drainage ditch is located in the east of the site and given the relatively impermeable nature of the geological conditions anticipated on site, there is considered to be a low risk to this water body.
- 7.6.3 Given the low concentrations of chemical contaminants identified within the Made Ground across the site and the limited sensitivity of the environmental setting, there is considered to be a low risk to controlled waters.

7.7 Gas Generation

- 7.7.1 Other than radon, no significant sources of ground gas have been identified at the site.
- 7.7.2 The site lies within an area identified as being at risk from radon gas ingress and therefore, current guidance recommends that basic radon protective measures should be installed in the proposed development, in line with the Building Research Establishment, Report BR211.

7.8 Protection Of Services

- 7.8.1 Due to the increasing number of developments being undertaken on potentially contaminated land, the Water Supply Industry has identified the need to protect newly laid water supply pipes. They are likely to impose constraints on the nature of water supply pipes that are to be laid in contaminated land. Current guidance on the selection of materials for water pipes is provided by the UK Water Industry Research Limited, ref. 9.21, which superseded the previous guidance provided by Water Regulations Advisory Scheme, ref. 9.22.

- 7.8.2 The House Builders Federation, in collaboration with Water UK, ref. 9.23, have subsequently provided guidance, part of which includes a basic risk assessment which is tabulated in Appendix 4, Figure A4.1 and based on the contamination test results reviewed above. This assessment indicates no risks to plastic water supply pipes from the concentrations of organic contaminants observed within the Made Ground.

7.9 Risk Evaluation

- 7.9.1 The above assessment has not identified a ‘source – pathway – receptor’ linkage.

7.10 Waste

- 7.10.1 An initial assessment of the likely waste classification for any material to be disposed of has been conducted on the basis of the chemical test results obtained as part of the contamination risk assessment.

Made Ground

- 7.10.2 This assessment has been conducted using the HazWasteOnlinetm tool, ref. 9.24, the output sheets from which are included within Appendix 3, Figure A3.1.

- 7.10.3 None of the samples were indicated likely to be classified as hazardous.

- 7.10.4 All of the samples were initially classified as potentially hazardous due to Hazard Property HP3(i): Flammable. However, maximum TPH concentrations were measured at less than 0.1% and it is unlikely that at these levels materials would be flammable. Therefore, the criteria has been altered to indicate total TPH concentrations less than 500mg/kg (inert soil threshold) in solid samples as non-hazardous.

- 7.10.5 It should be noted that individual tips might require further analysis prior to the disposal of any material from the site. Any such requirements should be clarified with the tip prior to any further analysis being undertaken.

Natural Ground

- 7.10.6 Natural arisings which are not contaminated can be disposed of an inert landfill based on being classified as a natural soil and a listed waste with no requirement for WAC testing.

8.0 MANAGEMENT OF CONTAMINATION

8.1 Remediation and Verification

8.1.1 The risk management framework set out in the Model Procedures for the Management of Land Contamination, CLR 11, ref. 9.25, is applicable to the redevelopment of sites that may be affected by contamination.

8.1.2 The risk management process set out in the Model Procedures has three main components:

- Risk assessment
- Options appraisal
- Implementation

8.1.3 This risk assessment has not identified any relevant pollutant linkages at the site. Consequently, remediation is not deemed necessary in relation to the proposed development.

8.1.4 However, current guidance recommends that basic radon protective measures should be installed in the proposed development, in line with the Building Research Establishment, Report BR211.

8.1.5 An important part of the risk management process is identifying and informing all stakeholders with an interest in the outcome of the risk management project. To this end, if the regulators have not yet been contacted with regard to the redevelopment of this site, it is recommended that they be supplied with a copy of both the Preliminary Investigation report and this Phase 2 Ground Investigation report in order to enable liaison to be undertaken with them.

8.2 Management of Unidentified Sources of Contamination

8.2.1 There is the possibility that sources of contamination may be present on the site, which were not detected during the investigation. Should such contamination be identified or suspected during the site clearance or ground works, these should be dealt with accordingly. A number of options are available for handling this material, which include:

- The removal from site and disposal to a suitably licensed tip of all material suspected of being contaminated. The material would need to be classified prior to disposal.
- Short-term storage of the suspected material while undertaking verification testing for potential contamination. The storage area should be a contained area to ensure that contamination does not migrate and affect other areas of the site. Depending upon the amounts of material under consideration, this could be either a skip or a lined area.

- Having a suitably experienced environmental engineer either on-call or with a watching brief for the visual and olfactory assessment of the material, and sampling for verification purposes.

8.3 Consultation

8.3.1 During the development of a site, consultation may be required for a number of reasons with a number of regulatory Authorities. The following provides an indication as to the most likely Authorities with which consultation may be required.

- **Local Authority.** There may be a planning condition regarding contamination and consultation will be required with a designated Contaminated Land Officer within the Environmental Health Department. The Local Authority is generally concerned with human health risks. Some Authorities now require 'Completion Certificates' to be signed off following remediation works.
- **Environment Agency.** Where a site is situated above an aquifer, within a groundwater protection zone or has been designated as a special site, the Environment Agency is likely to be involved to ensure that controlled waters are protected.

8.3.2 Based on the results of any consultation, there may be specific remediation requirements imposed by one or more of the Authorities.

8.4 Risk Management During Site Works

8.4.1 During ground works, some simple measures may have to be put in place to mitigate the risk of any known or previously unidentified contamination affecting the site workers and the environs. The majority of the proposed measures represent good practice for the construction industry and include:

- Informing the site workers of the contamination on site and the potential health effects from exposure.
- Where appropriate, the provision of suitable Personal Protective Equipment (PPE) for workers who may be potentially impacted by working in areas of the contamination.
- Ensuring good hygiene is enforced on site and washing facilities are maintained on the site. Workers are discouraged from smoking, eating or drinking without washing their hands first.
- Dust monitoring, and if necessary, suppression measures should be put into practice where contamination is becoming airborne.

8.4.2 Where contaminated materials are being removed from the site they should be disposed of at a suitably licensed landfill, with a 'duty of care' system in place and maintained throughout the disposal operations.

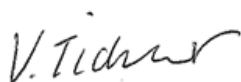
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For and on behalf of Ian Farmer Associates (1998) Limited



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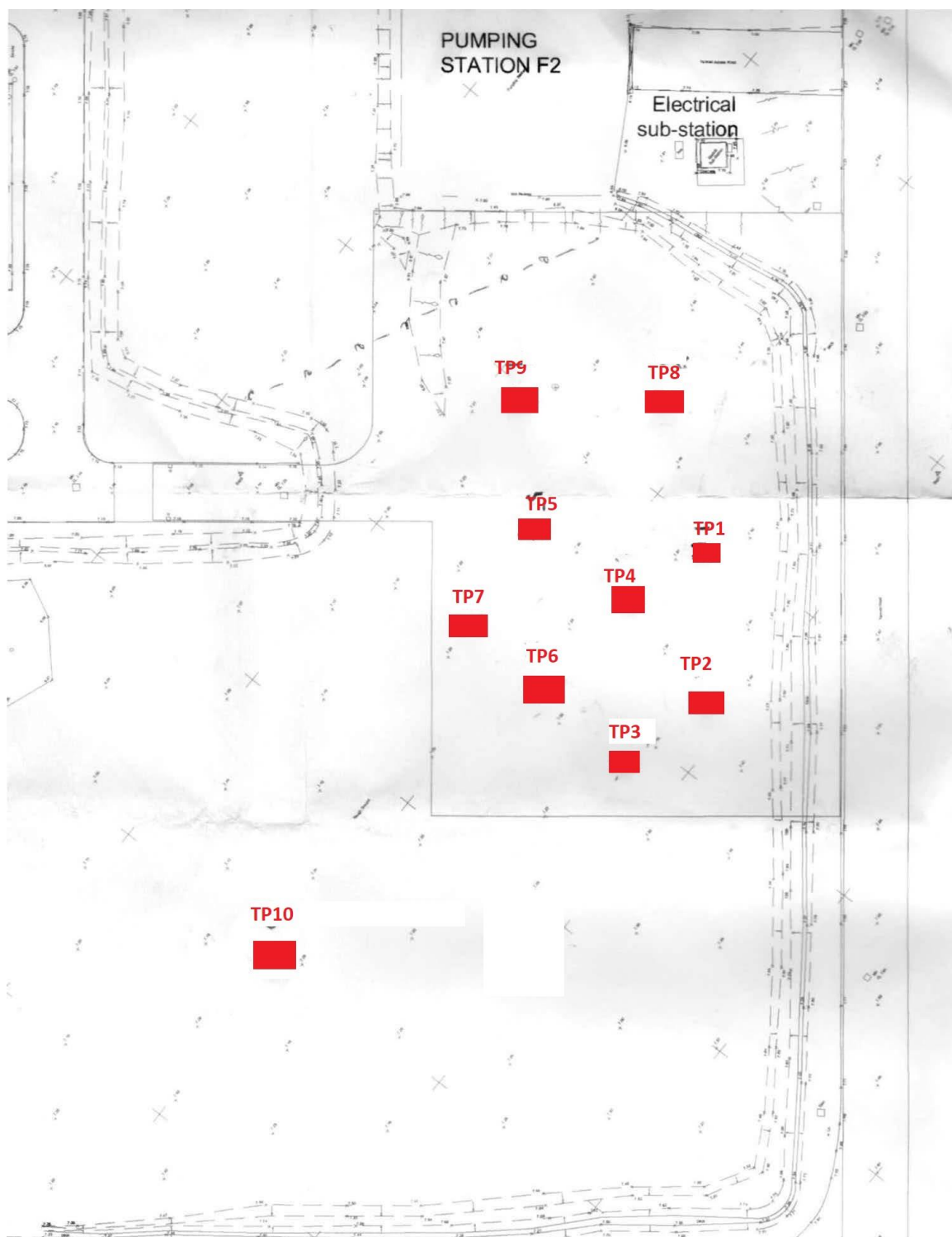


William H Sell
Regional Manager
BSc(Hons) FGS

APPENDIX 1
DRAWINGS

Job No: 70491

Site: Mardon Park, Port Talbot



Site Plan

**Figure
A1.1**



APPENDIX 2

SITE WORK

Borehole Log

Borehole No.

TP 1

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

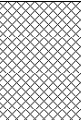
Level:

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Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.80			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.50	ES		1.50			Loose light yellowish brown medium grained SAND	1
								End of borehole at 1.50 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.1



Borehole Log

Borehole No.

TP 2

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

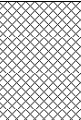
Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.80			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.50	ES		1.50			Loose light yellowish brown medium grained SAND	1
								End of borehole at 1.50 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.2



Borehole Log

Borehole No.

TP 3

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.60			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.50 1.60	ES ES		1.70			Loose light yellowish brown medium grained SAND	1
								End of borehole at 1.70 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.3



Borehole Log

Borehole No.

TP 4

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

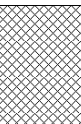
Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50 - 1.50	ES		0.80			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.50	ES		1.50 1.70			Loose Light brown medium grained SAND	
								Black organic fibrous PEAT	
								End of borehole at 1.70 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.4

Borehole Log

Borehole No.

TP 5

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

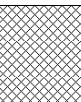
Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.70			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.50	ES		1.50 1.70			Loose light yellowish brown medium grained SAND	
								Black organic fibrous PEAT	
								End of borehole at 1.70 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.5



Borehole Log

Borehole No.

TP 6

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

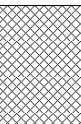
Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.80			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.50	ES		1.50 1.70			Loose light yellowish brown medium grained SAND	
								Black organic fibrous PEAT	
								End of borehole at 1.70 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks

Ground water not encountered

Fig A2.6



Borehole Log

Borehole No.

TP 7

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.60			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.50	ES		1.50 1.70			Loose light yellowish brown medium grained SAND	
								Black organic fibrous PEAT	
								End of borehole at 1.70 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.7



Borehole Log

Borehole No.

TP 8

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

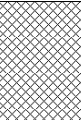
Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.80			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.50	ES		1.70			Loose light brown medium grained SAND with frequent 1 to 2m lengths of rotted wood and sub angular boulders of light concrete	2
								End of borehole at 1.70 m	3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.8



Borehole Log

Borehole No.

TP 9

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.50			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.00	ES		1.50			Loose light yellowish brown medium grained SAND	
					1.70			Black organic fibrous PEAT	
								End of borehole at 1.70 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.9



Borehole Log

Borehole No.

TP 10

Sheet 1 of 1

Project Name: Mardon Park

Project No.
70491

Co-ords: -

Hole Type

Location: Port Talbot

Level:

Scale
1:50

Client: GBC

Dates: 21/08/2018 -

Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.40			Compacted brown clayey gravelly medium to coarse SAND with high cobble content medium boulder content. Gravel is angular to sub angular fine to coarse slag, concrete brick fragments, cobbles are sub angular slag, bricks concrete, boulders are sub angular concrete	1
		1.00	ES		1.50 1.70				
								Black organic fibrous PEAT End of borehole at 1.60 m	2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks
Ground water not encountered

Fig A2.10



APPENDIX 2

GENERAL NOTES ON SITE WORKS

A2.1 SITE WORK

A2.1.1 General

Site work is carried out in general accordance with the guidelines given in ISO 1997, 9.4 and BS 5930, ref. 9.3.

A2.1.2 Trial Pits

Shallow trial pits are generally dug by mechanical excavator, however, in difficult access locations or adjacent to structures, such pits may be hand dug. Pits are best used where the ground will stand unsupported and generally, the maximum depth of machine dug pits is 4m to 5m. Where personnel are required to enter pits, it is essential that side support is provided. Entry by personnel into unsupported pits deeper than 1.2m is not allowed for health and safety reasons.

Trial pits allow the in-situ condition of the ground to be examined both laterally and vertically and also allow discontinuities to be recorded. The field record should give the orientation of the pit with details of which face was logged, assessment of stability of sides of pit and groundwater as well as the strata encountered. Photographs of the pit should also be taken.

In-situ testing, such as hand penetrometer, hand vane, Macintosh probe, or similar, can be undertaken in the sides or base of pits while both disturbed and undisturbed samples recovered.

It is generally advisable to backfill the pits as soon as possible, open pits should not be left unattended.

A2.2 SAMPLES

A2.2.1 General

Samples have been recovered and stored in accordance with the guidelines given in ISO 22475-1:2006, ref. 9.27 and BS 5930, ref. 9.3.

ES represents sample recovered in an amber jar, generally for environmental analysis

D represents small disturbed sample

W represents water sample

▽ represents water strike

▼ represents level to which water rose

A2.3 DESCRIPTION OF SOILS

A2.3.1 General

The procedures and principles given in ISO 14688 Parts 1 and 2, ref. 9.28, supplemented by section 6 of BS 5930, ref. 9.3 have been used in the soil descriptions contained within this report.

|

APPENDIX 3
CHEMICAL TESTS

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 18/06735
Issue Number: 1

Date: 03 September, 2018

Client: Ian Farmer Associates (Harpenden)
1A Batford Mill
Lower Luton Road
Harpenden
Hertfordshire
UK
AL5 5BZ

Project Manager: Bill Sell/Victoria Tickner
Project Name: Mard
Project Ref: 70491
Order No: 60515
Date Samples Received: 22/08/18
Date Instructions Received: 23/08/18
Date Analysis Completed: 03/09/18

Prepared by:



Holly Neary-King
Sales Executive

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 18/06735

Client Project Name: Mard

Client Project Ref: 70491

Lab Sample ID	18/06735/3	18/06735/5	18/06735/7	18/06735/13	18/06735/15	18/06735/17			Units	Method ref
Client Sample No										
Client Sample ID	TP2	TP3	TP4	TP7	TP8	TP9				
Depth to Top	0.50	0.50	0.50	0.50	0.50	0.50				
Depth To Bottom										
Date Sampled	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	5A	5A	1A	1A	5A	5A				
% Stones >10mm _A	30.3	27.0	44.6	15.8	21.2	19.7			% w/w	A-T-044
pH _D ^{M#}	9.22	9.04	9.30	9.39	8.66	9.98			pH	A-T-031s
Arsenic _D ^{M#}	8	5	3	4	6	<1			mg/kg	A-T-024s
Boron (water soluble) _D ^{M#}	<1.0	1.0	<1.0	<1.0	<1.0	4.8			mg/kg	A-T-027s
Cadmium _D ^{M#}	0.6	0.7	<0.5	0.6	0.6	2.0			mg/kg	A-T-024s
Copper _D ^{M#}	31	17	45	4	15	11			mg/kg	A-T-024s
Chromium _D ^{M#}	38	112	73	139	29	582			mg/kg	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1	<1			mg/kg	A-T-040s
Lead _D ^{M#}	27	37	11	17	28	23			mg/kg	A-T-024s
Mercury _D	0.23	<0.17	<0.17	<0.17	<0.17	<0.17			mg/kg	A-T-024s
Nickel _D ^{M#}	7	9	4	5	9	24			mg/kg	A-T-024s
Selenium _D [#]	<1	<1	<1	2	<1	3			mg/kg	A-T-024s
Zinc _D ^{M#}	196	115	33	51	106	75			mg/kg	A-T-024s

Envirolab Job Number: 18/06735

Client Project Name: Mard

Client Project Ref: 70491

Lab Sample ID	18/06735/3	18/06735/5	18/06735/7	18/06735/13	18/06735/15	18/06735/17			Units	Method ref
Client Sample No										
Client Sample ID	TP2	TP3	TP4	TP7	TP8	TP9				
Depth to Top	0.50	0.50	0.50	0.50	0.50	0.50				
Depth To Bottom										
Date Sampled	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	5A	5A	1A	1A	5A	5A				
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	-	-	NAD	NAD	NAD				A-T-045
Asbestos ACM - Suitable for Water Absorption Test?	N/A	-	-	N/A	N/A	N/A				
EPH Banded 5										
>C10-C12 _A ^{M#}	<1	<1	<1	<1	<1	<1			mg/kg	A-T-007s
>C12-C16 _A ^{M#}	<2	4	<2	<2	<2	<2			mg/kg	A-T-007s
>C16-C24 _A ^{M#}	5	21	3	3	6	10			mg/kg	A-T-007s
>C24-C36 _A ^{M#}	23	108	16	14	45	82			mg/kg	A-T-007s

Envirolab Job Number: 18/06735

Client Project Name: Mard

Client Project Ref: 70491

Lab Sample ID	18/06735/3	18/06735/5	18/06735/7	18/06735/13	18/06735/15	18/06735/17			Units	Method ref
Client Sample No										
Client Sample ID	TP2	TP3	TP4	TP7	TP8	TP9				
Depth to Top	0.50	0.50	0.50	0.50	0.50	0.50				
Depth To Bottom										
Date Sampled	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18	21-Aug-18				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	5A	5A	1A	1A	5A	5A				
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	0.02	<0.01	<0.01	<0.01	0.02			mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-019s
Anthracene _A ^{M#}	<0.02	0.04	<0.02	<0.02	<0.02	0.04			mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.05	0.19	0.15	0.20	0.09	0.34			mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.05	0.24	0.20	0.36	0.11	0.55			mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.07	0.28	0.23	0.37	0.15	0.60			mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	0.16	0.13	0.24	0.08	0.36			mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	0.13	0.11	0.16	<0.07	0.27			mg/kg	A-T-019s
Chrysene _A ^{M#}	0.07	0.24	0.19	0.28	0.12	0.46			mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	<0.04	0.06	<0.04	0.09			mg/kg	A-T-019s
Fluoranthene _A ^{M#}	<0.08	0.27	0.18	0.18	0.12	0.39			mg/kg	A-T-019s
Fluorene _A ^{M#}	<0.01	0.02	<0.01	<0.01	<0.01	<0.01			mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.04	0.17	0.14	0.26	0.09	0.39			mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03			mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.04	0.13	0.06	0.04	0.05	0.16			mg/kg	A-T-019s
Pyrene _A ^{M#}	<0.07	0.22	0.19	0.20	0.11	0.40			mg/kg	A-T-019s
Total PAH-16MS _A ^{M#}	0.32	2.11	1.58	2.35	0.92	4.07			mg/kg	A-T-019s

REPORT NOTES

General:

This report shall not be reproduced, except in full, without written approval from Envirolab.

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure and there is insufficient sample to repeat the analysis. These are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

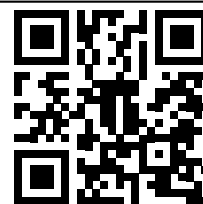
Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Waste Classification Report



3YWEG-FBJL7-3Z4M4

Job name

70491 Mardon Park

Description/Comments

Project

Site

Waste Stream Template

Example waste stream template for contaminated soils

Classified by

Name:
Victoria Tickner
Date:
05 Sep 2018 15:55 GMT
Telephone:
01582 460018

Company:
Ian Farmer Associates
1A Baford Mill
Lower Luton Road
Harpenden
AL5 5BZ

Report

Created by: Victoria Tickner
Created date: 05 Sep 2018 15:55 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP2	0.50	Non Hazardous		2
2	TP3	0.50	Non Hazardous		4
3	TP4	0.50	Non Hazardous		6
4	TP7	0.50	Non Hazardous		8
5	TP8	0.50	Non Hazardous		10
6	TP9	0.50	Non Hazardous		12

Appendices	Page
Appendix A: Classifier defined and non CLP determinands	14
Appendix B: Rationale for selection of metal species	15
Appendix C: Version	16

Classification of sample: TP2

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

Sample details

Sample Name:	LoW Code:
TP2	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.50 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	8 mg/kg	1.32	10.563	mg/kg	0.00106 %		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	<1 mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	0.6 mg/kg	1.142	0.685	mg/kg	0.0000685 %		
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9	38 mg/kg	1.462	55.539	mg/kg	0.00555 %		
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1 mg/kg	1.923	<1.923	mg/kg	<0.000192 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	31 mg/kg	1.126	34.903	mg/kg	0.00349 %		
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	27 mg/kg	1.56	42.115	mg/kg	0.0027 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	0.23 mg/kg	1.353	0.311	mg/kg	0.0000311 %		
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	7 mg/kg	2.976	20.834	mg/kg	0.00208 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			<1 mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11	zinc { zinc chromate }	024-007-00-3			196 mg/kg	2.774	543.733	mg/kg	0.0544 %		
12	TPH (C6 to C40) petroleum group			TPH	28 mg/kg		28	mg/kg	0.0028 %		
13	confirm TPH has NOT arisen from diesel or petrol				☒						
14	pH				9.22 pH		9.22	pH	9.22 pH		
15	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.03 mg/kg		<0.03	mg/kg	<0.000003 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	phenanthrene	201-581-5	85-01-8		0.04 mg/kg		0.04 mg/kg	0.000004 %		
20	anthracene	204-371-1	120-12-7		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
21	fluoranthene	205-912-4	206-44-0		<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
22	pyrene	204-927-3	129-00-0		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.05 mg/kg		0.05 mg/kg	0.000005 %		
24	chrysene	601-048-00-0	205-923-4		0.07 mg/kg		0.07 mg/kg	0.000007 %		
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.07 mg/kg		0.07 mg/kg	0.000007 %		
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.05 mg/kg		0.05 mg/kg	0.000005 %		
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.04 mg/kg		0.04 mg/kg	0.000004 %		
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
Total:								0.073 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because Solid, not liquid. Not deemed flammable at concentrations observed. Inert soil threshold adopted.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0028%)

Classification of sample: TP3

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

Sample details

Sample Name:	LoW Code:
TP3	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.50 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	5 mg/kg	1.32	6.602	mg/kg	0.00066 %		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	1 mg/kg	3.22	3.22	mg/kg	0.000322 %		
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	0.7 mg/kg	1.142	0.8	mg/kg	0.00008 %		
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9	112 mg/kg	1.462	163.694	mg/kg	0.0164 %		
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1 mg/kg	1.923	<1.923	mg/kg	<0.000192 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	17 mg/kg	1.126	19.14	mg/kg	0.00191 %		
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	37 mg/kg	1.56	57.713	mg/kg	0.0037 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.17 mg/kg	1.353	<0.23	mg/kg	<0.000023 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	9 mg/kg	2.976	26.786	mg/kg	0.00268 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			<1 mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11	zinc { zinc chromate }	024-007-00-3			115 mg/kg	2.774	319.027	mg/kg	0.0319 %		
12	TPH (C6 to C40) petroleum group		TPH		133 mg/kg		133	mg/kg	0.0133 %		
13	confirm TPH has NOT arisen from diesel or petrol				☒						
14	pH		PH		9.04 pH		9.04	pH	9.04 pH		
15	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.03 mg/kg		<0.03	mg/kg	<0.000003 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		0.02 mg/kg		0.02 mg/kg	0.000002 %		
18	fluorene	201-695-5	86-73-7		0.02 mg/kg		0.02 mg/kg	0.000002 %		
19	phenanthrene	201-581-5	85-01-8		0.13 mg/kg		0.13 mg/kg	0.000013 %		
20	anthracene	204-371-1	120-12-7		0.04 mg/kg		0.04 mg/kg	0.000004 %		
21	fluoranthene	205-912-4	206-44-0		0.27 mg/kg		0.27 mg/kg	0.000027 %		
22	pyrene	204-927-3	129-00-0		0.22 mg/kg		0.22 mg/kg	0.000022 %		
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.19 mg/kg		0.19 mg/kg	0.000019 %		
24	chrysene	601-048-00-0	205-923-4		0.24 mg/kg		0.24 mg/kg	0.000024 %		
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.28 mg/kg		0.28 mg/kg	0.000028 %		
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.13 mg/kg		0.13 mg/kg	0.000013 %		
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.24 mg/kg		0.24 mg/kg	0.000024 %		
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.17 mg/kg		0.17 mg/kg	0.000017 %		
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		0.16 mg/kg		0.16 mg/kg	0.000016 %		
Total:								0.0716 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because Solid, not liquid. Not deemed flammable at concentrations observed. Inert soil threshold adopted.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0133%)

Classification of sample: TP4

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

Sample details

Sample Name:	LoW Code:	
TP4	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.50 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	3 mg/kg	1.32	3.961	mg/kg	0.000396 %		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	<1 mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	<0.5 mg/kg	1.142	<0.571	mg/kg	<0.0000571 %		<LOD
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9	73 mg/kg	1.462	106.694	mg/kg	0.0107 %		
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1 mg/kg	1.923	<1.923	mg/kg	<0.000192 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	45 mg/kg	1.126	50.665	mg/kg	0.00507 %		
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	11 mg/kg	1.56	17.158	mg/kg	0.0011 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.17 mg/kg	1.353	<0.23	mg/kg	<0.000023 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	4 mg/kg	2.976	11.905	mg/kg	0.00119 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			<1 mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
11	zinc { zinc chromate }	024-007-00-3			33 mg/kg	2.774	91.547	mg/kg	0.00915 %		
12	TPH (C6 to C40) petroleum group			TPH	19 mg/kg		19	mg/kg	0.0019 %		
13	confirm TPH has NOT arisen from diesel or petrol				☒						
14	pH				9.3 pH		9.3	pH	9.3 pH		
15	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.03 mg/kg		<0.03	mg/kg	<0.000003 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	phenanthrene	201-581-5	85-01-8		0.06 mg/kg		0.06 mg/kg	0.000006 %		
20	anthracene	204-371-1	120-12-7		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
21	fluoranthene	205-912-4	206-44-0		0.18 mg/kg		0.18 mg/kg	0.000018 %		
22	pyrene	204-927-3	129-00-0		0.19 mg/kg		0.19 mg/kg	0.000019 %		
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.15 mg/kg		0.15 mg/kg	0.000015 %		
24	chrysene	601-048-00-0	205-923-4		0.19 mg/kg		0.19 mg/kg	0.000019 %		
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.23 mg/kg		0.23 mg/kg	0.000023 %		
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.11 mg/kg		0.11 mg/kg	0.000011 %		
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.2 mg/kg		0.2 mg/kg	0.00002 %		
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.14 mg/kg		0.14 mg/kg	0.000014 %		
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		0.13 mg/kg		0.13 mg/kg	0.000013 %		
Total:								0.0305 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because Solid, not liquid. Not deemed flammable at concentrations observed. Inert soil threshold adopted.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0019%)

Classification of sample: TP7

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

Sample details

Sample Name:	LoW Code:	
TP7	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.50 m		

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	4 mg/kg	1.32	5.281	mg/kg	0.000528 %		
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	<1 mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	0.6 mg/kg	1.142	0.685	mg/kg	0.0000685 %		
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9	139 mg/kg	1.462	203.156	mg/kg	0.0203 %		
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1 mg/kg	1.923	<1.923	mg/kg	<0.000192 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	4 mg/kg	1.126	4.504	mg/kg	0.00045 %		
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	17 mg/kg	1.56	26.517	mg/kg	0.0017 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.17 mg/kg	1.353	<0.23	mg/kg	<0.000023 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	5 mg/kg	2.976	14.881	mg/kg	0.00149 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			2 mg/kg	2.554	5.107	mg/kg	0.000511 %		
11	zinc { zinc chromate }	024-007-00-3			51 mg/kg	2.774	141.481	mg/kg	0.0141 %		
12	TPH (C6 to C40) petroleum group		TPH		17 mg/kg		17	mg/kg	0.0017 %		
13	confirm TPH has NOT arisen from diesel or petrol				☒						
14	pH		PH		9.39 pH		9.39	pH	9.39 pH		
15	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.03 mg/kg		<0.03	mg/kg	<0.000003 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	phenanthrene	201-581-5	85-01-8		0.04 mg/kg		0.04 mg/kg	0.000004 %		
20	anthracene	204-371-1	120-12-7		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
21	fluoranthene	205-912-4	206-44-0		0.18 mg/kg		0.18 mg/kg	0.000018 %		
22	pyrene	204-927-3	129-00-0		0.2 mg/kg		0.2 mg/kg	0.00002 %		
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.2 mg/kg		0.2 mg/kg	0.00002 %		
24	chrysene	601-048-00-0	205-923-4		0.28 mg/kg		0.28 mg/kg	0.000028 %		
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.37 mg/kg		0.37 mg/kg	0.000037 %		
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.16 mg/kg		0.16 mg/kg	0.000016 %		
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.36 mg/kg		0.36 mg/kg	0.000036 %		
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.26 mg/kg		0.26 mg/kg	0.000026 %		
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.06 mg/kg		0.06 mg/kg	0.000006 %		
30	benzo[ghi]perylene	205-883-8	191-24-2		0.24 mg/kg		0.24 mg/kg	0.000024 %		
Total:								0.0417 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because Solid, not liquid. Not deemed flammable at concentrations observed. Inert soil threshold adopted.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0017%)

Classification of sample: TP8

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

Sample details

Sample Name:	LoW Code:
TP8	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.50 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	6 mg/kg	1.32	7.922 mg/kg	0.000792 %			
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %			<LOD
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	0.6 mg/kg	1.142	0.685 mg/kg	0.0000685 %			
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9	29 mg/kg	1.462	42.385 mg/kg	0.00424 %			
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1 mg/kg	1.923	<1.923 mg/kg	<0.000192 %			<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	15 mg/kg	1.126	16.888 mg/kg	0.00169 %			
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	28 mg/kg	1.56	43.675 mg/kg	0.0028 %			
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.17 mg/kg	1.353	<0.23 mg/kg	<0.000023 %			<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	9 mg/kg	2.976	26.786 mg/kg	0.00268 %			
10	selenium { selenium compounds with the exception of cadmium selenide and those specified elsewhere in this Annex }	034-002-00-8			<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %			<LOD
11	zinc { zinc chromate }	024-007-00-3			106 mg/kg	2.774	294.06 mg/kg	0.0294 %			
12	TPH (C6 to C40) petroleum group			TPH	51 mg/kg		51 mg/kg	0.0051 %			
13	confirm TPH has NOT arisen from diesel or petrol				☒						
14	pH				8.66 pH		8.66 pH	8.66 pH			
15	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
18	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	phenanthrene	201-581-5	85-01-8		0.05 mg/kg		0.05 mg/kg	0.000005 %		
20	anthracene	204-371-1	120-12-7		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
21	fluoranthene	205-912-4	206-44-0		0.12 mg/kg		0.12 mg/kg	0.000012 %		
22	pyrene	204-927-3	129-00-0		0.11 mg/kg		0.11 mg/kg	0.000011 %		
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.09 mg/kg		0.09 mg/kg	0.000009 %		
24	chrysene	601-048-00-0	205-923-4		0.12 mg/kg		0.12 mg/kg	0.000012 %		
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.15 mg/kg		0.15 mg/kg	0.000015 %		
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.07 mg/kg		<0.07 mg/kg	<0.000007 %		<LOD
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.11 mg/kg		0.11 mg/kg	0.000011 %		
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.09 mg/kg		0.09 mg/kg	0.000009 %		
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
30	benzo[ghi]perylene	205-883-8	191-24-2		0.08 mg/kg		0.08 mg/kg	0.000008 %		
Total:								0.0477 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because Solid, not liquid. Not deemed flammable at concentrations observed. Inert soil threshold adopted.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0051%)

Classification of sample: TP9

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

Sample details

Sample Name:	LoW Code:
TP9	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.50 m	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% No Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number								
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3	<1 mg/kg	1.32	<1.32	mg/kg	<0.000132 %		<LOD
2	boron { diboron trioxide; boric oxide }	005-008-00-8	215-125-8	1303-86-2	4.8 mg/kg	3.22	15.455	mg/kg	0.00155 %		
3	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0	2 mg/kg	1.142	2.285	mg/kg	0.000228 %		
4	chromium in chromium(III) compounds { chromium(III) oxide }		215-160-9	1308-38-9	582 mg/kg	1.462	850.625	mg/kg	0.0851 %		
5	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<1 mg/kg	1.923	<1.923	mg/kg	<0.000192 %		<LOD
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1	11 mg/kg	1.126	12.385	mg/kg	0.00124 %		
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	23 mg/kg	1.56	35.876	mg/kg	0.0023 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7	<0.17 mg/kg	1.353	<0.23	mg/kg	<0.000023 %		<LOD
9	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7	24 mg/kg	2.976	71.43	mg/kg	0.00714 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8			3 mg/kg	2.554	7.661	mg/kg	0.000766 %		
11	zinc { zinc chromate }	024-007-00-3			75 mg/kg	2.774	208.061	mg/kg	0.0208 %		
12	TPH (C6 to C40) petroleum group			TPH	92 mg/kg		92	mg/kg	0.0092 %		
13	confirm TPH has NOT arisen from diesel or petrol				☒						
14	pH				9.98 pH		9.98	pH	9.98 pH		
15	naphthalene	601-052-00-2	202-049-5	91-20-3	<0.03 mg/kg		<0.03	mg/kg	<0.000003 %		<LOD

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	CLP index number	EC Number	CAS Number							
16	acenaphthylene	205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
17	acenaphthene	201-469-6	83-32-9		0.02 mg/kg		0.02 mg/kg	0.000002 %		
18	fluorene	201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
19	phenanthrene	201-581-5	85-01-8		0.16 mg/kg		0.16 mg/kg	0.000016 %		
20	anthracene	204-371-1	120-12-7		0.04 mg/kg		0.04 mg/kg	0.000004 %		
21	fluoranthene	205-912-4	206-44-0		0.39 mg/kg		0.39 mg/kg	0.000039 %		
22	pyrene	204-927-3	129-00-0		0.4 mg/kg		0.4 mg/kg	0.00004 %		
23	benzo[a]anthracene	601-033-00-9	200-280-6		0.34 mg/kg		0.34 mg/kg	0.000034 %		
24	chrysene	601-048-00-0	205-923-4		0.46 mg/kg		0.46 mg/kg	0.000046 %		
25	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.6 mg/kg		0.6 mg/kg	0.00006 %		
26	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.27 mg/kg		0.27 mg/kg	0.000027 %		
27	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.55 mg/kg		0.55 mg/kg	0.000055 %		
28	indeno[123-cd]pyrene	205-893-2	193-39-5		0.39 mg/kg		0.39 mg/kg	0.000039 %		
29	dibenz[a,h]anthracene	601-041-00-2	200-181-8		0.09 mg/kg		0.09 mg/kg	0.000009 %		
30	benzo[ghi]perylene	205-883-8	191-24-2		0.36 mg/kg		0.36 mg/kg	0.000036 %		
Total:								0.129 %		

Key

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

Supplementary Hazardous Property Information

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

Force this Hazardous property to non hazardous because Solid, not liquid. Not deemed flammable at concentrations observed. Inert soil threshold adopted.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0092%)

Appendix A: Classifier defined and non CLP determinands

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

Conversion factor: 1.462

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

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

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

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

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

■ **confirm TPH has NOT arisen from diesel or petrol**

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

■ **pH** (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

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

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

■ **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

■ **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

■ **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 06 Aug 2015

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

■ **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

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

Data source date: 17 Jul 2015

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

▪ **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

▪ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

▪ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

▪ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

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

boron {diboron trioxide; boric oxide}

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

cadmium {cadmium oxide}

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

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

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

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

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments (edit as required)

copper {dicopper oxide; copper (I) oxide}

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

lead {lead chromate}

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

mercury {mercury dichloride}

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

nickel {nickel chromate}

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

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil. (edit as required)

zinc {zinc chromate}

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

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.1, May 2018**

HazWasteOnline Classification Engine Version: 2018.247.3619.7425 (04 Sep 2018)

HazWasteOnline Database: 2018.247.3619.7425 (04 Sep 2018)

This classification utilises the following guidance and legislation:

WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018

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

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

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

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

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

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

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

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

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

1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010

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

APPENDIX 4
CONTAMINATION ASSESSMENT

APPENDIX 4

GENERAL NOTES ON CONTAMINATION ASSESSMENT

A4.1 STATUTORY FRAMEWORK AND DEFINITIONS

A4.1.1 The statutory definition of contaminated land is defined in the Environmental Protection Act 1990, ref. 9.5, which was introduced by the Environment Act 1995, ref. 9.6;

‘Land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that –

(a) significant harm is being caused or there is a significant possibility of such harm being caused; or

(b) pollution of controlled waters is being, or is likely to be, caused.’

A4.1.2 The UK guidance on the assessment of contaminated has developed as a direct result of the introduction of these two Acts. The technical guidance supporting the new legislation has been summarised in a number of key documents collectively known as the Contaminated Land Reports (CLRs), a proposed series of twelve documents. Seven were originally published in March 1994, four more were published in April 2002, while the last remaining guidance document, CLR 11, ref. 9.25 was published in 2004. In 2008 CLR reports 7 to 10 were withdrawn by DEFRA and the Environment Agency and updated version of CLR 9 and 10 were produced in the form of Science Reports SR2, ref. 9.13 and SR3, ref. 9.7.

A4.1.3 In establishing whether a site fulfils the statutory definition of ‘contaminated land’ it is necessary to identify, whether a pollutant linkage exists in respect of the land in question and whether the pollutant linkage:

- is resulting in significant harm being caused to the receptor in the pollutant linkage,
- presents a significant possibility of significant harm being caused to that receptor,
- is resulting in the pollution of the controlled waters which constitute the receptor, or
- is likely to result in such pollution.

A4.1.4 A ‘pollutant linkage’ may be defined as the link between a contaminant ‘source’ and a ‘receptor’ by means of a ‘pathway’.

A4.2 ASSESSMENT METHODOLOGY

A4.2.1 The guidance proposes a four-stage assessment process for identifying potential pollutant linkages on a site. These stages are set out in the table below:

No.	Process	Description
1	Hazard Identification	Establishing contaminant sources, pathways and receptors (the conceptual model).
2	Hazard Assessment	Analysing the potential for unacceptable risks (what linkages could be present, what could be the effects).
3	Risk Estimation	Trying to establish the magnitude and probability of the possible consequences (what degree of harm might result and to what receptors, and how likely is it).
4	Risk Evaluation	Deciding whether the risk is unacceptable.

A4.2.2 Stages 1 and 2 develop a '*conceptual model*' based upon information collated from desk based studies, and frequently a walkover of the site. The walkover survey should be conducted in general accordance with CLR 2, ref. 9.30. The formation of a conceptual model is an iterative process and as such, it should be updated and refined throughout each stage of the project to reflect any additional information obtained.

A4.2.3 The extent of the desk studies and enquiries to be conducted should be in general accordance with CLR 3, ref. 9.31. The information from these enquiries is presented in a desk study report with recommendations, if necessary, for further work based upon the conceptual model. CLR 8, ref. 9.32, together with specific DoE 'Industry Profiles' provides guidance on the nature of contaminants relating to specific industrial processes. Although CLR 8 has been withdrawn, no replacement guidance has been published that lists the contaminants likely to be present on contaminated sites and as such the guidance relating to this issue of CLR 8 is considered to still be relevant.

A4.2.4 If potential pollutant linkages are identified within the conceptual model, a Phase 2 site investigation and report will be recommended. The investigation should be planned in general accordance with CLR 4, ref. 9.1. The number of exploratory holes and samples collected for analysis should be consistent with the size of the site and the level of risk envisaged. This will enable a contamination risk assessment to be conducted, at which point the conceptual model can be updated and relevant pollutant linkages can be identified.

A4.2.5 A two-stage investigation may be more appropriate where time constraints are less of an issue. The first stage investigation being conducted as an initial assessment for the presence of potential sources, a second being a more refined investigation to delineate wherever possible the extent of the identified contamination.

A4.2.6 All site works should be in general accordance with the British Standards, BS 5930:1999, ref. 9.3, ISO 1997, ref. 9.4 and BS 10175:2001, ref. 9.2.

A4.2.7 The generic contamination risk assessment screens the results of the chemical analysis against generic guidance values which are dependent on the proposed end-use of the development.

A4.2.8 The end-use may be defined as one of the following ref. 9.11;

- Residential with homegrown produce – domestic low rise and low density housing with gardens where vegetable may be grown for home consumption
- Residential without homegrown produce – domestic low density and low density housing where no gardens are present.
- Allotments – specific areas where vegetables are grown for home consumption.
- Public open space in close proximity to residential housing – includes the predominantly grassed area adjacent to high density housing and the central green area around which houses are developed. This land-use includes the smaller areas commonly incorporated in newer developments as informal grassed areas or more formal landscaped areas with a mixture of open space and covered soil with planting.

- Public open space in use as general parkland – provided for recreational use and may be used for family visits and picnics, children’s play area, sports grounds and dog walking.
- Commercial – industrial premises where there is limited exposure to soil.

A4.2.9 Exposure pathways for each type of end-use are given below:

Standard Land Use	Oral Routes			Dermal Routes		Inhalation Routes			
	Direct soil & dust ingestion	Consumption of homegrown produce	Soil attached to homegrown produce	Indoor	Outdoor	Indoor dust	Outdoor dust	Indoor vapour	Outdoor vapour
Residential with homegrown produce	✓	✓	✓	✓	✓	✓	✓	✓	✓
Residential without homegrown produce	✓	X	X	✓	✓	✓	✓	✓	✓
Allotments	✓	✓	✓	X	✓	X	✓	✓	✓
Public open space – adjacent to dwellings	✓	X	X	✓	✓	✓	✓	X	✓
Public open space – parkland	✓	X	X	X	✓	X	✓	X	✓
Commercial	✓	X	X	✓	X	✓	X	✓	X

A4.2.10 Soils will be compared to Suitable 4 Use Levels (S4ULs) published by LQM ref. 9.9 Assessment Criteria. However, no S4UL has been produced for lead and, therefore, the DEFRA C4SL has been adopted ref. 9.11. Where no S4UL or C4SL is available, the assessment criteria (AC) are generated using the Contaminated Land Exposure Assessment (CLEA) Software Version 1.06, ref. 9.10. Toxicological and physico-chemical/fate and transport data used to generate the AC has been derived from a hierarchy of data sources as follows:

1. Environment Agency or Department of Environment Food and Rural Affairs (DEFRA) documents;
2. Other documents produced by UK Government or state organisations;
3. European institution documents;
4. International organisation documents;
5. Foreign government institutions.

A4.2.11 In the case of the majority of contaminants considered, the toxicological data has been drawn from the relevant CLR 9 TOX report, or updated toxicological data published by the Environment Agency (2009), ref. 9.8, where available. Where no TOX report is available reference has been made to the health criteria values, derived for use in Land Quality Press (2006), ref. 9.14, as this is considered to represent a peer reviewed data source. Similarly, fate and transport data has been derived in the first instance from Environment Agency (2003), ref. 9.33 and for contaminants not considered in this document the fate and transport data used in previous versions of the CLEA model has been used.

- A4.2.12 Chemical laboratory test results are processed as follows. A statistical analysis of the results is conducted, as detailed in CIEH and CL:AIRE 'Guidance on Comparing Soil Contamination Data with a Critical Concentration', ref. 9.9. Individual concentrations are compared to the selected guideline values to identify concentrations of contaminants that are above the selected screening criteria.
- A4.2.13 Where the risk estimation identifies significant concentrations of one or more contaminants, a further risk evaluation needs to be undertaken.
- A4.2.14 The risk evaluation will address the potential pollutant linkages between an identified source of contamination and the likely receptors both on and off site.
- A4.2.15 The potential receptors include:
- 1) Humans – current site occupants, construction workers, future site users and neighbouring site users.
 - 2) Controlled Waters – surface water and groundwater resources
 - 3) Plants – current and future site vegetation
 - 4) Building materials
- A4.2.16 The potential hazards to be considered in relation to contamination are:
- a) Ingestion and inhalation.
 - b) Uptake of contaminants via cultivated vegetables.
 - c) Dermal contact
 - d) Phytotoxicity (the prevention or inhibition of plant growth)
 - e) Contamination of water resources
 - f) Chemical attack on building materials and services
 - g) Fire and explosion
- A4.2.17 Dependent on the outcome of the initial, generic contamination risk assessment, further detailed assessment of the identified risks may be required.

A4.3 Generic Guidance Values Used Within Contamination Risk Assessment

Commercial End Use

Commercial	Determinant	Guidance Value (mg/kg)	Guidance Value (mg/kg)	Guidance Value (mg/kg)	Primary Data Source
		1% SOM	2.5% SOM	6% SOM	
PAH	Acenaphthene	84000	97000	100000	LQM/CIEH S4UL
	Acenaphthylene	83000	97000	100000	LQM/CIEH S4UL
	Anthracene	520000	540000	540000	LQM/CIEH S4UL
	Benzo(a)anthracene	170	170	180	LQM/CIEH S4UL
	Benzo(a)pyrene	35	35	36	LQM/CIEH S4UL
	Benzo(b)fluoranthene	44	44	45	LQM/CIEH S4UL
	Benzo(ghi)perylene	3900	4000	4000	LQM/CIEH S4UL
	Benzo(k)fluoranthene	1200	1200	1200	LQM/CIEH S4UL
	Chrysene	350	350	350	LQM/CIEH S4UL
	Dibenzo(ah)anthracene	3.5	3.6	3.6	LQM/CIEH S4UL
	Fluoranthene	23000	23000	23000	LQM/CIEH S4UL
	Fluorene	63000	68000	71000	LQM/CIEH S4UL
	Indeno(123-cd)pyrene	500	510	510	LQM/CIEH S4UL
	Naphthalene	190	460	1100	LQM/CIEH S4UL
	Phenanthrene	22000	22000	23000	LQM/CIEH S4UL
	Pyrene	54000	54000	54000	LQM/CIEH S4UL
Other Organics	Phenol	760	1500	3200	LQM/CIEH S4UL
Metals	Arsenic	640	640	640	LQM/CIEH S4UL
	Beryllium	12	12	12	LQM/CIEH S4UL
	Boron	240000	240000	240000	LQM/CIEH S4UL
	Cadmium	190	190	190	LQM/CIEH S4UL
	Chromium (III)	8600	8600	8600	LQM/CIEH S4UL
	Chromium (VI)	49	49	49	LQM/CIEH S4UL
	Copper	68000	68000	68000	LQM/CIEH S4UL
	Lead	2330	2330	2330	DEFRA C4SL
	Mercury	58	58	58	LQM/CIEH S4UL
	Nickel	980	980	980	LQM/CIEH S4UL
	Selenium	12000	12000	12000	LQM/CIEH S4UL
	Vanadium	9000	9000	9000	LQM/CIEH S4UL
	Zinc	730000	730000	730000	LQM/CIEH S4UL

Commercial	Guidance Value (mg/kg)	Guidance Value (mg/kg)	Guidance Value (mg/kg)	Primary Data Source
	1% SOM	2.5% SOM	6% SOM	
Aliphatic				
EC 5-6	3200 (304)	5900 (558)	12000 (1150)	LQM/CIEH S4UL
EC >6-8	7800 (144)	17000 (322)	40000 (736)	LQM/CIEH S4UL
EC >8-10	2000 (78)	4800 (190)	11000 (451)	LQM/CIEH S4UL
EC >10-12	9700 (48)	23000 (118)	47000 (283)	LQM/CIEH S4UL
EC >12-16	59000 (24)	82000 (59)	90000 (142)	LQM/CIEH S4UL
EC >16-35	1600000	1700000	1800000	LQM/CIEH S4UL
EC >35-44	1600000	1700000	1800000	LQM/CIEH S4UL
Aromatic				
EC 5-7 (benzene)	26000 (1220)	46000 (2260)	86000 (4710)	LQM/CIEH S4UL
EC >7-8 (toluene)	56000 (869)	110000 (1920)	180000 (4360)	LQM/CIEH S4UL
EC >8-10	3500 (613)	8100 (1500)	17000 (3580)	LQM/CIEH S4UL
EC >10-12	16000 (364)	28000 (899)	34000 (2150)	LQM/CIEH S4UL
EC >12-16	36000 (169)	37000	38000	LQM/CIEH S4UL
EC >16-21	28000	28000	28000	LQM/CIEH S4UL
EC >21-35	28000	8000	28000	LQM/CIEH S4UL
EC >35-44	28000	28000	28000	LQM/CIEH S4UL
Aliphatic and Aromatic				
EC >44-70	28000	28000	28000	LQM/CIEH S4UL
BTEX				
Benzene	27	47	90	LQM/CIEH S4UL
Toluene	56000	110000	180000	LQM/CIEH S4UL
Ethylbenzene	5700	13000	27000	LQM/CIEH S4UL
m/p Xylenes	5900	14000	30000	LQM/CIEH S4UL
o Xylene	17000	24000	33000	LQM/CIEH S4UL

SOM = Soil Organic Matter

Values in brackets indicate the vapour saturation limit where this is exceeded by the GAC or SGV

Test Group	Testing Required?	PE Threshold	Metal Pipe/ Barrier Pipe	Limit of Detection	UKAS Accredited	Maximum concentration at proposed pipeline depth See Note [2]	Maximum site concentration See Note [3]	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where PRA has identified land potentially affected by contamination	0.5	Pass					
Total BTEX & MTBE		0.1	Pass					
Total SVOCs (excluding PAHs and those substance marked with an *)		2	Pass					
EC5-EC10 aliphatic & aromatic hydrocarbons		2	Pass					
EC10-EC16 aliphatic & aromatic hydrocarbons		10	Pass	2	Y		4	
EC16-EC40 aliphatic & aromatic hydrocarbons		500	Pass	2	Y		129	
Phenols (from SVOC analysis)		2	Pass					
Cresols & chlorinated phenols (from SVOC analysis)		2	Pass					
Ethers*	Only where identified	0.5	Pass					
Nitrobenzene*		0.5	Pass					
Ketones*		0.5	Pass					
Aldehydes*		0.5	Pass					
Amines*		Fail	Pass					
Corrosive		Pass	See Note[1]	-	Y		9.98	
All concentrations in mg/kg Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity >400uS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity >400uS/cm. For copper, corrosive if pH<5 or >8 and Eh positive. Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level. Note [3] Also state if liquid free product is present in soil or groundwater.								
 PRELIMINARY RISK ASSESSMENT - WATER SUPPLY PIPES							Job No: 70491	
Mardon Park, Port Talbot, SA12 7AX							Fig. No: A4.1	