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REMEDIATION & VALIDATION REPORT

MARSHALL CONSTRUCTION (WEST YORKSHIRE) LTD

PROPOSED COMMERCIAL DEVELOPMENT

LAND OFF ESTUARY BOULEVARD

SPEKE

LIVERPOOL

L24 8RL

Project No: 16-433

Prepared By:

John Ditchburn

A handwritten signature in black ink, appearing to read 'J Ditchburn', written over a horizontal line.

Date:

16th March 2017

Approved By:

Terry McMenam

A handwritten signature in black ink, appearing to read 'Terry McMenam', written over a horizontal line.

Date:

16th March 2017

The information and/or advice contained in this Remediation & Validation Report is based solely on, and is limited to, the boundaries of the site, the immediate area around the site, and the historical use(s) unless otherwise stated. This 'Report' has been prepared in order to collate information relating to the physical, environmental and industrial setting of the site, and to highlight, where possible, the likely problems that might be encountered when considering the future development of this site for the proposed end use. All comments, opinions, diagrams, cross sections and/or sketches contained within the report, and/or any configuration of the findings is conjectural and given for guidance only and confirmation of the anticipated ground conditions should be considered before development proceeds. Agreement for the use or copying of this report by any Third Party must be obtained in writing from Arc Environmental Limited (ARC). If a change in the proposed land use is envisaged, then a reassessment of the site should be carried out.

Report Type:- Remediation & Validation Report

Project: - 16-433 – Proposed Commercial Development, Land Off Estuary Boulevard, Speke, Liverpool L24 8RL

Prepared For:- Marshall Construction (West Yorkshire) Ltd.

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1.0 Introduction

February 2017

As requested by Adept Consulting Engineers on behalf of their client Marshall Construction (West Yorkshire) Ltd., a Remediation & Validation Report has been compiled to verify the effective completion of the required remediation works, as outlined within the Remediation Statement completed by Arc Environmental Limited (ref. no. 16-433, August 2016).

The following documents should be read in conjunction with this report and these documents were reviewed prior to the validation works being carried out. Validation works were undertaken to comply with the Remediation Statement produced by Arc Environmental Ltd.

- Arc Environmental Ltd Phase 1: Desk Top Study Report (DTS) (Ref. No: 16-433), May 2016.
- Arc Environmental Ltd Phase 2: Geo-environmental Investigation Report (GIR) (Ref. No: 16-433), June 2016.
- Arc Environmental Ltd Remediation Statement (RS) (Ref. No: 16-433), August 2016.

2.0 Site Details

Table 2.1

Site Name & Address:	Proposed Commercial Development, Land Off Estuary Boulevard, Speke, Liverpool L24 9RL.
National Grid Reference:	341760, 383060 (representative for the central part of the site).
Description of Location:	The site is located in a commercial / industrial setting within Speke, Liverpool.
Site boundaries:	N = Commercial unit, E = A wooded area leading to undeveloped land, S = Garston Shore Road leading to undeveloped land with the River Mersey beyond, W = Estuary Boulevard.
Site Setting:	The site is in a mixed rural and commercial setting.

3.0 Scope of Works

Table 3.1

Client:	Marshall Construction (West Yorkshire) Ltd.
Project type:	Commercial development comprising 3 proposed industrial units with associated car parking, service yards & soft landscaping.
Site Location plan:	See Appendix I.
Layout plan:	See Appendix I.
Investigation Works:	Undertaken During April & July 2014: 24 no. mechanically excavated trial pits (TP's 01 - 12 & TP's A - L) and 16 no. cable percussive borholes (BH's 01 - 11 & BH's A - E) incorporating 7 no. combined ground gas/groundwater monitoring standpipes (BH's 02, 04, 07, 10, A, B & E).
Validation Works:	Final Validation Works Comprised: Validation of the remediation works as outlined in the Remediation Statement involving; • A 'watching brief' to confirm that there are no unknown or unforeseen areas of potential contamination on this site. • Removal of the contaminated trapped surface water within the former backfilled pond. • Excavation and removal of made ground materials within the former pond to be reused across the site. • Backfilling of the former pond with clean, site won material.
Laboratory Testing:	Contamination only.
Reporting:	Validation.

4.0 Remediation Statement Summary

Following completion of the Remediation Statement (RS), a remedial solution was developed and a summary of the Remediation Works detailed within the RS for this site is shown below:

- A 'watching brief' to confirm that there are no unknown or unforeseen areas of potential contamination on this site.
- Removal of the contaminated trapped surface water within the former backfilled pond. The water should be pumped out from the former pond feature, removed from site (via tankers of similar) and disposed of appropriately. The location of the pond feature and estimated size are shown, as an enlarged extract on the Investigation Locations and Revised Proposed Layout Plan (copies in Appendix I), and on the Historic Pond Cross Section drawing, a copy of which is given in Appendix II.
- The made ground within the former pond, which is most likely causing the contamination of the trapped surface water, should be excavated and removed to avoid cross contamination of any new surface water migrating into the former pond feature. The materials requiring excavation and removal comprise the layers identified as STRATA 4 and STRATA 5 on the Historic Pond Cross Sections drawing, a copy of which is attached in Appendix II. These materials can be used as a general fill across any soft landscaping areas of the site or areas where a general granular type fill (Class 1) would be suitable as a subgrade below new buildings and areas of hardstanding.
- Following excavation of the made ground requiring removal (STRATA 4 & STRATA 5), the former pond will be backfilled with a clean inert material, and compacted to achieve a minimum insitu CBR value of 5% at formation level.

5.0 Validation of Remediation Works

These remediation and validation works were undertaken during the construction period, with the remediation works being carried out under the supervision of a suitably qualified Geo-Environmental Engineer.

5.1 Watching Brief for Unknown or Unforeseen Contamination:-

Site visits were undertaken on 7th, 8th, 14th & 15th December 2016 to oversee groundworks across the site. During these site visits and liaison with the groundwork contractors, no unknown or unforeseen contamination was encountered. Photographs of these site visits can be seen in the Photographic Record Sheets attached in Appendix III.

5.2 Removal of Contaminated Trapped Surface Water Within Former Pond:-

An excavation of c.3.50m depth was undertaken in the centre of the former pond feature on 2nd December 2016 to allow for the removal of the contaminated trapped surface water to be pumped directly into dedicated tankers. A total of c.4,000 litres of contaminated water was pumped from the former pond into a BOS Waste Oils Ltd tanker on 2nd December 2016 and taken to Oil Salvage Ltd in Bootle for disposal. A further c.14,000 litres of contaminated water was pumped into an Avanti Environmental Group tanker on 12th December 2016 and taken to Adler & Allan Ltd, in Manchester for disposal. The consignment notes for the removal of contaminated water can be seen in Appendix IV. Photographs of these site visits can also be seen in the Photographic Record Sheets attached in Appendix III

5.0 Validation of Remediation Works (Cont'd)

5.3 Removal of Made Ground Materials From Within Former Pond Following Removal of Contaminated Trapped Surface Water:-

Following removal of the contaminated trapped surface water from within the former pond, the made ground materials were excavated and placed within a bunded area on site to be reused at a later date across the site. Site visits were undertaken on the 7th, 8th, 14th & 15th December to witness the excavation of the made ground materials. Photographs of these site visits can be seen in the Photographic Record Sheets attached in Appendix III.

An excavation of c.3.50m depth x c.10m wide x 15m length (c.525m³) was undertaken to remove all made ground materials from within the former pond and taken to a dedicated bunded area on site. The black made ground was easily identifiable within the excavation with natural brown clayey deposits encountered in the base and sides of the excavation. Visually clean water ingresses were noted from the side walls into the base of the excavation during the works.

5.4 Validation Screening of Remaining Water Within Former Pond Following Removal of Contaminated Water:-

Following the removal of c.18,000 litres of contaminated water and c.525m³ of made ground materials from within the former pond feature, three water samples were taken from the clean water which was noted to be infiltrating from the sides of the excavation.

The water samples were screened initially for TPH & BTEX suites as a marker screen, with the results summarised in Table 5.1 below. The results can also be seen in the Chemtech Environmental Limited analytical test report (Report No. 62695) attached in Appendix V.

Table 5.1

Analyte	Critical Conc. (C _c) mg/kg	Max. Conc. (C _M) (µg/l)	Has max. C _C Value Been Exceeded	Number of samples ≥ C _C
BTEX				
Benzene	50 ⁽¹⁾	<1	NO	0
Toluene	50 ⁽¹⁾	<1	NO	0
Ethylbenzene	500 ⁽¹⁾	<1	NO	0
m & p-Xylene	30 ⁽¹⁾	<1	NO	0
o-Xylene	30 ⁽¹⁾	<1	NO	0
Speciated TPH's				
TPH Aliphatic (C5-C6)	10 ⁽²⁾	<1	NO	0
TPH Aliphatic (C6-C8)	10 ⁽²⁾	<1	NO	0
TPH Aliphatic (C8-C10)	10 ⁽²⁾	<1	NO	0
TPH Aliphatic (C10-C12)	10 ⁽²⁾	<1	NO	0
TPH Aliphatic (C12-C16)	10 ⁽²⁾	<1	NO	0
TPH Aliphatic (C16-C35)	10 ⁽²⁾	<1	NO	0
TPH Aliphatic (C35-C44)	10 ⁽²⁾	<1	NO	0
TPH Aromatic (C5-C7)	10 ⁽²⁾	<1	NO	0
TPH Aromatic (C7-C8)	10 ⁽²⁾	<1	NO	0
TPH Aromatic (C8-C10)	10 ⁽²⁾	<1	NO	0
TPH Aromatic (C10-C12)	10 ⁽²⁾	<1	NO	0
TPH Aromatic (C12-C16)	10 ⁽²⁾	<1	NO	0
TPH Aromatic (C16-C21)	10 ⁽²⁾	<1	NO	0
TPH Aromatic (C21-C35)	10 ⁽²⁾	<1	NO	0
TPH Aromatic (C35-C44)	10 ⁽²⁾	<1	NO	0

⁽¹⁾ = UK EQS for Freshwater, ⁽²⁾ = UK Drinking Water Standard.

5.0 Validation of Remediation Works (Cont'd)

5.4 Validation Screening of Remaining Water Within Former Pond Following Removal of Contaminated Water (Cont'd):-

- The C_M values for the TPH's & BTEX within the water samples, do not exceed the chosen C_C values for this site.

When considering these results, and following the removal of the contaminated trapped water and made ground from the former pond feature, it can be seen that the ingressing water recorded into the former pond feature is uncontaminated. Therefore, no further remedial works are deemed necessary regarding contaminated water within the former pond feature.

5.5 Validation Screening of Site Won Materials To Be Used To Backfill Former Pond Feature:-

A representative from Arc Environmental Limited visited site on Tuesday 15th December 2016 in order to recover samples of site won materials used to backfill the former pond excavation.

Based on the Yorkshire & Humberside Pollution Advisory Council (YHPAC) 'Verification for Cover Systems', October 2014 and as detailed within the Remediation Strategy, three representative samples of site won natural lime stabilised sand and one representative sample of site won crushed concrete (6F2) were collected for confirmatory laboratory analysis before backfilling of the pond, and were dispatched to Chemtech Environmental Limited. To ascertain the suitability of these materials used to backfill the former pond feature, the soils were screened for the following range of analytes;

- Arsenic, Cadmium, Chromium (III & VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Sulphur, Cyanide and Total Organic Carbon.
- Speciated Polycyclic Aromatic Hydrocarbons (PAH's), based on the current USEPA 16 PAH's + Benzo(j)fluoranthene.
- Speciated Total Petroleum Hydrocarbons (TPH's - full Ali & Aro EC split), Benzene, Toluene, Ethylbenzene & m, p & o-Xylene (BTEX).
- Asbestos presence.

A summary of the results, based on the soil concentrations recorded can be seen in Table 5.2 on the following page. The results can also be seen in the Chemtech Environmental Limited analytical test report (Report No. 62695) attached in Appendix V. The results have been assessed against the most up to date and appropriate assessment criteria.

The contamination screening has identified that none of the maximum concentration (C_M) values for the contaminants displayed in Table 5.2 exceed the critical concentration (C_C) values associated with the current designated end-use of Commercial. It has therefore been determined that the materials which have been used to backfill the former pond feature are appropriate for use.

5.0 Validation of Remediation Works (Cont'd)

5.5 Validation Screening of Site Won Materials To Be Used To Backfill Former Pond Feature (Cont'd):-

Table 5.2

Analyte	Critical Conc. (C _C) mg/kg	Max. Conc. (C _M) recorded (mg/kg)	Has max. C _C Value Been Exceeded	Number of samples >C _C
Generic				
Arsenic	640 ⁽¹⁾	7.8	NO	0
Cadmium	190 ⁽¹⁾	0.2	NO	0
Chromium III	8600 ⁽¹⁾	82	NO	0
Chromium VI	33 ⁽¹⁾	<1	NO	0
Copper	68000 ⁽¹⁾	23	NO	0
Lead	2330 ⁽²⁾	32	NO	0
Mercury	1100 ⁽¹⁾	<0.5	NO	0
Nickel	980 ⁽¹⁾	16	NO	0
Selenium	12000 ⁽¹⁾	0.5	NO	0
Zinc	730000 ⁽¹⁾	36	NO	0
Cyanide	34 ⁽³⁾	<1	NO	0
Speciated PAH's				
Acenaphthene	100000 ⁽¹⁾	0.81	NO	0
Acenaphthylene	100000 ⁽¹⁾	0.02	NO	0
Anthracene	540000 ⁽¹⁾	2.92	NO	0
Benzo(a)anthracene	180 ⁽¹⁾	3.77	NO	0
Benzo(a)pyrene	36 ⁽¹⁾	2.80	NO	0
Benzo(b)fluoranthene	45 ⁽¹⁾	3.55	NO	0
Benzo(ghi)perylene	4000 ⁽¹⁾	1.36	NO	0
Benzo(k)fluoranthene	1200 ⁽¹⁾	1.60	NO	0
Chrysene	350 ⁽¹⁾	3.29	NO	0
Dibenz(ab)anthracene	3.6 ⁽¹⁾	0.45	NO	0
Fluoranthene	23000 ⁽¹⁾	9.28	NO	0
Fluorene	71000 ⁽¹⁾	0.81	NO	0
Indeno(123cd)pyrene	510 ⁽¹⁾	1.70	NO	0
Naphthalene	1100 ⁽¹⁾	0.11	NO	0
Phenanthrene	23000 ⁽¹⁾	9.21	NO	0
Pyrene	54000 ⁽¹⁾	6.69	NO	0
Speciated TPH's				
Aliphatic EC5-EC6	12000 ⁽¹⁾	<0.1	NO	0
Aliphatic EC6-EC8	40000 ⁽¹⁾	<0.1	NO	0
Aliphatic EC8-EC10	11000 ⁽¹⁾	<0.1	NO	0
Aliphatic EC10-EC12	47000 ⁽¹⁾	<4	NO	0
Aliphatic EC12-EC16	90000 ⁽¹⁾	24	NO	0
Aliphatic EC16-EC35	1800000 ⁽¹⁾	309	NO	0
Aliphatic EC35-EC44	1800000 ⁽¹⁾	98	NO	0
Aromatic EC5-EC7	86000 ⁽¹⁾	<0.01	NO	0
Aromatic EC7-EC8	180000 ⁽¹⁾	<0.01	NO	0
Aromatic EC8-EC10	17000 ⁽¹⁾	<0.01	NO	0
Aromatic EC10-EC12	34000 ⁽¹⁾	<1	NO	0
Aromatic EC12-EC16	38000 ⁽¹⁾	2	NO	0
Aromatic EC16-EC21	28000 ⁽¹⁾	32	NO	0
Aromatic EC21-EC35	28000 ⁽¹⁾	25	NO	0
Aromatic EC35-EC44	28000 ⁽¹⁾	2	NO	0
BTEX				
Benzene	90 ⁽¹⁾	<0.01	NO	0
Toluene	180000 ⁽¹⁾	<0.01	NO	0
Ethylbenzene	270000 ⁽¹⁾	<0.01	NO	0
m & p-Xylene	30000 ⁽¹⁾	<0.02	NO	0
o-Xylene	33000 ⁽¹⁾	<0.01	NO	0
Asbestos	Presence	No Asbestos Detected	~	~

⁽¹⁾ = The LQM / CIEH Suitable 4 Use Levels – Commercial based on 6% SOM, ⁽²⁾ = CL:AIRE Category 4 Screening Levels – Commercial, ⁽³⁾ = ATRISKSM. Soil Screening Values (2015).

Report Type:- Remediation & Validation Report

Project: - 16-433 – Proposed Commercial Development, Land Off Estuary Boulevard, Speke, Liverpool L24 8RL

Prepared For:- Marshall Construction (West Yorkshire) Ltd.

6.0 Conclusions

These Remediation and Validation Works were undertaken in accordance with the Remediation Statement compiled for this site, and comprised the following:

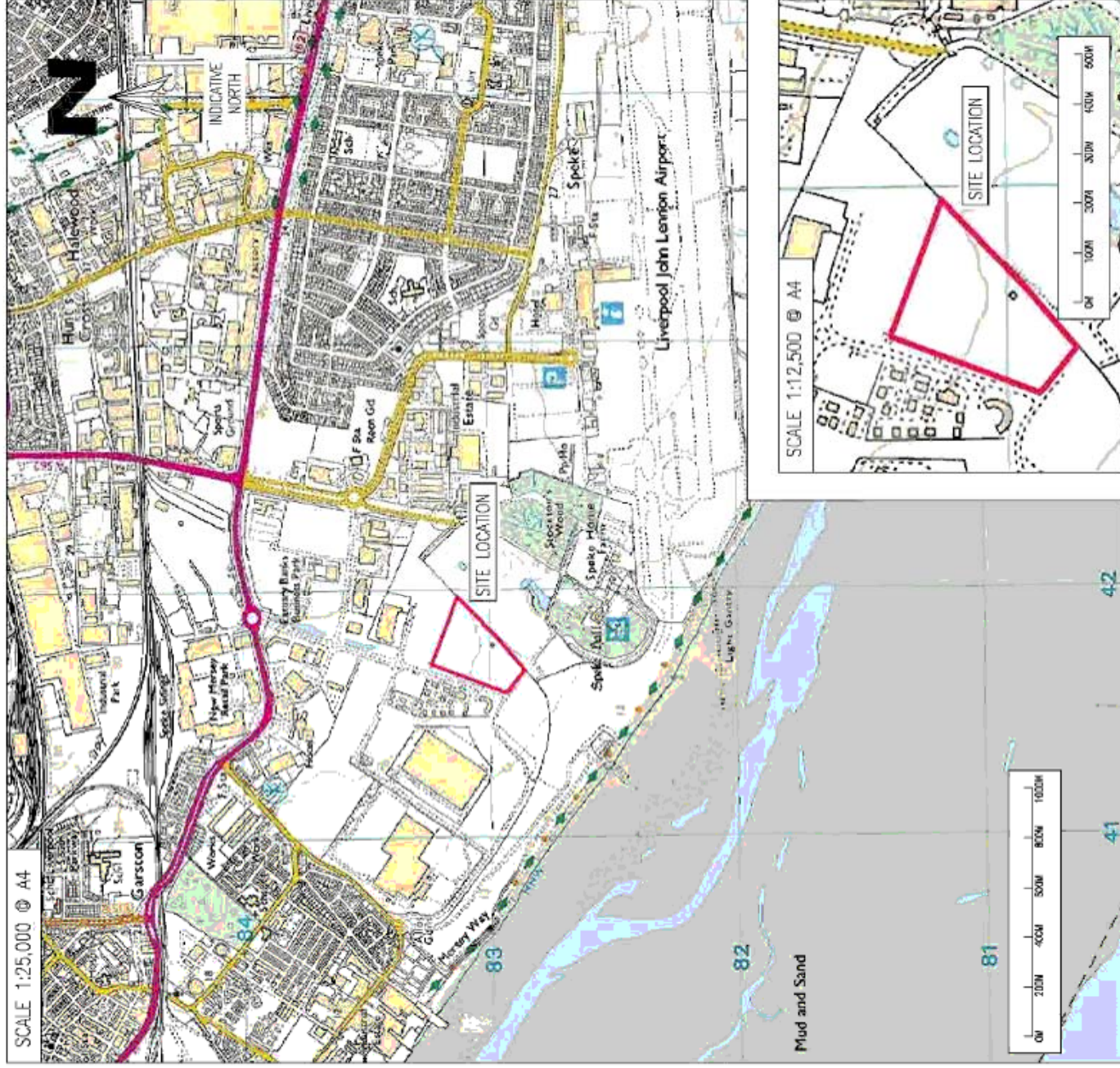
- A 'watching brief' during the initial site strip, comprising periodical site attendance and photographic records, to confirm that no unknown or unforeseen contamination was present across the site.
- Removal of c.18,000 litres of contaminated trapped surface water from the former pond feature.
- Validation screening to verify that only non-contaminated water remained on site, once all the trapped contaminated surface water had been removed.
- Validation screening of on site won materials used to backfill the former pond.

When considering the above, it is in the opinion of Arc Environmental Ltd, that the remediation and validation works have been fulfilled, in accordance with the Remediation Statement, with no further remedial works being required.

END OF REPORT

APPENDIX I

**Site Location Plan
Development Layout Plan,
Investigation Locations
Revised Proposed Site Layout Plan**



Client:

ADEPT CONSULTING ENGINEERS LTD

Project Title:

Proposed Commercial Development
Estuary Boulevard
Speke, Liverpool, L524 8RL

Drawing Title:

Location Plan

Job Reference:

16-433

Drawing Number:

-

Revision:

-

Drawn by:

P.D

Date:

23.05.16

Scale of A4:

As Shown

Checked by:

M.P.B

Approved by:

M.P.B

The contractor shall check all dimensions on site before commencement of any works. No dimension to be scaled on this drawing.

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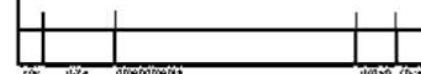


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LEGEND	
	APPROXIMATE SITE BOUNDARY



Client
ADEPT CONSULTING ENGINEERS LTD

Project Title:
Proposed Commercial Development
Estuary Boulevard
Speke, Liverpool, L24 8PL

Drawing Title:
Proposed Development Layout Plan

Scale of A3:	Date:	Drawn by:	Approved by:
M/S 43	25.05.16	P.O.	MP8

Job Ref:	Drawn by:	Rev:
16-433	-	-



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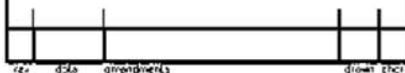
e-mail: admin@arc-environmental.com

web: www.arc-environmental.com

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LEGEND	
	SITE BOUNDARY
	CABLE PERCUSSIVE BOREHOLE POSITIONS
	TRIAL PIT POSITIONS
	ADDITIONAL CABLE PERCUSSIVE BOREHOLE POSITIONS
	ADDITIONAL TRIAL PIT POSITIONS
	ADDITIONAL CABLE PERCUSSIVE BOREHOLE POSITIONS
	TRIAL PIT POSITIONS



Client:
ADEPT CONSULTING ENGINEERS LTD

Project Title:
Proposed Commercial Development
Hercules Drive
Speke, Liverpool, L24 8AD

Drawing Title:
Investigation Locations and Revised
Proposed Site Layout

Scale at A3: 1:1250 @ A3 Date: 15.06.16 Drawn by: P.D. Approved by: M.P.B.

Job No: 16-433 Rev: -



SITE LAY
SCA SCALE 1:1250 @ A3

APPENDIX II

Historic Pond Cross Sections (Phase 3)

APPENDIX III

Photographic Record Sheets



ARC ENVIRONMENTAL LTD

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The contractor shall check all dimensions on site before commencement of any works. No dimensions to be scaled off this drawing.

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SITE WORKS PHOTOGRAPHIC DETAIL

PLATES 1-10:
SHOWING WATCHING BRIEF CARRIED OUT ACROSS THE WHOLE OF THE SITE AREA TO DETERMINE WHETHER ANY UNFORESEEN CONTAMINATION WAS PRESENT ON SITE. NO RESIDUAL VISUAL EVIDENCE OF CONTAMINATION WAS NOTED DURING ARC ENVIRONMENTAL'S ATTENDANCE ON SITE.

PLATES 11-16:
SHOWING REMOVAL OF IMPACTED TRAPPED SURFACE WATER INFILTRATION FROM WITHIN THE LOCATION OF THE FORMER HISTORIC POND ON SITE USING DEDICATED TANKER.

PLATES 17-25:
SHOWING REMOVAL OF IMPACTED MADE GROUND MATERIALS FROM WITHIN THE FORMER POND LOCATION FOLLOWING REMOVAL OF THE CONTAMINATED TRAPPED SURFACE WATER. SAMPLES WERE TAKEN OF WATER INFILTRATES FLOWING INTO THE 'CLEAN' EXCAVATION BASE FOR CONTAMINATION SCREENING AND LABORATORY TESTING APPEARS TO INDICATE NO FURTHER ELEVATED LEVELS OF CONTAMINANTS WERE PRESENT WITHIN THE REMAINING TRAPPED SURFACE WATER ON SITE.

rev.	date	amendments	arcen check

Client:

ADEPT CONSULTING ENGINEERS LTD

Project Title:

Proposed Commercial Development

Estuary Boulevard

Speke, Liverpool, L24 8RL

Drawing Title:

Remediation and Validation Works Record Sheet

Scale at A3: N/A Date: 14.03.17 Drawn by: P.B. Approved by: M.P.B.

Job Ref: 16_433 Drg no: Rev:

APPENDIX IV

Trapped Contaminated Water Assignment Notes

The Hazardous Waste Regulations 2005: Consolidation Note

Consignee → White · Consignee → Pink Carrier → Yellow

PART A Notification details

I. Consignment Note Code	AKK038/F4574
--------------------------	--------------

3. Premises code (where applicable):

2. The waste described below is to be removed from (name, address, postcode, telephone, e-mail, fax/telex):

4 The waste will be taken to (name, address, postcode):
 After & Allan Ltd - Manchester, 3 Halfcunt St, Worsley, M13 9PL

Eastbridge Software, Hurricane Drive, Suite, Liverpool, LA 9811

5 The waste producer was (if different from 2) (name, address, postcode, telephone, e-mail, facsimile):

PART B Description of the vessels

¹ The percent giving rise to the waste(s) was:

2.50C for the proceeds going into the waste.

12027-48, 1174

2. WASTE DETAILS (where more than one waste type is collected all of the information shown below must be completed for each EMC identified)

[illegible]

The information given below is to be completed for each EWC identified above

[illegible]

PART C: Continuation of Declaration

entity that hereby collected the consignment and that this details in A2, A4 and B3 are correct and I have been ahead of any specific handling requirements.

This is a digital non-complex part of a multiple collection and no self collection no bar.

Carrier name: D. & D.

in behalf of (name), address, city, state, zip, telephone, e-mail, facsimile:

East Environmental Group Ltd (EEOG), Chantry Wood Road, Knowsley Industrial Park, Merseyside L33 7SG, 0151 549 2227, 0151 546 2245, enquiries@eastenvironmental.co.uk

1 Consignor name: **Avela Thelma**

On behalf of Institute, address, postcode, telephone, e-mail, facsimile:

Earthworks! Solutions, Hurricane Drive, Sooke, British Columbia, V24 3R1.

*avien registration no. 214580 for examination; cf. BUJ765981

*Carroll Technologies not involved in development

Vermeulen

Volume

Date _____

12-19-16 / Tied

Time = 1:20:15

Time: 12:15

PARTICIPANT consent was obtained from all participants before any data was collected. All of the information given below must be read and understood by each participant.

[illegible]

received this waste at the address given in A4 on:

Where waste is rejected please provide details:

where a consignment forms part of a multiple collection, as identified in Part C, in such a way that the total number of consignments forming the collection are:

2. Vehicle registration no:

Consignee Name:

Can BeFried? ©

Authority that waste management licence/authorised exemption no(s):

values the management of the waste described in B at the address given in A4.

Cluster

Time $\rightarrow$ Data $\rightarrow$ Time



PART A Notification Details

1. Consignment note code W125110152125
2. The waste described below is to be removed from:
(Name, address, postcode, telephone, e-mail, facsimile)
W125110152125
3. Premises code (where applicable) W125110152125
4. The waste will be taken to:
(Name, address and postcode)
W125110152125
5. The waste producer was (if different from 2):
(Name, address, postcode, telephone, e-mail, facsimile):
W125110152125

PART B Description of the Waste

Description waste	EW/C Code	UN Code	Container type	Component	Phys. form	Haz Code	Quantity
Waste oil	13.02.05	U/C		Oil	Liquid	HP7	
Hydraulic oil	13.02.05	U/C		Oil	Liquid	HP7	
Antifreeze	16.01.14	U/C		Glycol Water	Liquid	HP5	
Cont. fuels	13.07.03	1993		Diesel Petrol mix	Liquid	HP7 HP3	
Thinner	08.01.07	1263		Thinners	Liquid	HP14	
Empty drums	15.01.04	U/C		Metal	Solid	HP3	
Brake fluid	16.01.13	U/C		B/F	Liquid	HP5	
Oil/Water	13.05.07	U/C		Oil Water	Liquid	HP7	
Cutting oils	12.01.09	U/C		Oil Water	Liquid	HP7	

PART C Carrier's Certificate

If more than one carrier is used, please attach schedule for subsequent carriers. If a schedule of carriers is attached tick here ☐

I certify that today I collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements.

Carrier Name: BOS Waste Oils WA6 9BA
On behalf of (see address in section A2)

Carrier Registration No.: Reason for exemption:
B/DU61753

Vehicle Registration No.: (for mode of transport, if not road):
W125110152125

Signature: [Signature]

Date: 21/12/16 Time: PM

PART D Consignor's Certificate

I certify that the information in A, B and C above is correct, that the carrier is registered exempt and was advised to the appropriate precautionary measure. All of the wastes packaged and labelled correctly and the carrier has been advised of any special handling requirements. I confirm that I have fulfilled my duty to apply the waste agreement hierarchy as required by reg. 12 of the Waste (England & Wales) reg. 2011. I declare to my knowledge there are no prescribed substances in the waste produced by us and collected by BOS Waste Oils Ltd. (please see E.C. directive 76/464 E.C.)

1. Consignor's Name: [Signature]

On behalf of (Name, address, postcode, telephone, e-mail, facsimile):
W125110152125

Signature: [Signature]

Date: 21/12/16 Time: PM

PART E Consignee's Certificate

I received all the consignments as described in Part B

Where waste is rejected please provide details:

I declare that the waste permit number W125110152125 at this address given in Part A

Consignee's Name: [Signature]
On behalf of (see address in section A4)

3. Waste Management Operation
4. Vehicle Registration No. W125110152125
authorises the management of the consignments as described in

Signature: [Signature]

Date: 21/12/16 Time: PM

APPENDIX V

Laboratory Screening Results



2531



ANALYTICAL TEST REPORT

Contract no: 62695
Contract name: Speke
Client reference: 16-433
Clients name: ARC Environmental
Clients address: Solum House, Unit 1 Elliott Court
St Johns Road
Meadowfield
DH7 8PN

Samples received: 16 December 2016

Analysis started: 16 December 2016

Analysis completed 19 December 2016

Report issued: 19 December 2016

Notes:

Opinions and interpretations expressed herein are outside the UKAS accreditation scope. Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling. Methods, procedures and performance data are available on request. Results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without prior written approval. Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed. BTEX compounds are identified by retention time only and may include interference from co-eluting compounds.

Key:

U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAD No Asbestos Detected

Approved by:

Dave Bowerbank
Customer Services Co-ordinator

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
62695-1	Treated Sand Stockpile 1	-	Sandy Clay	-	-	15.4
62695-2	Treated Sand Stockpile 2	-	Sandy Clay	-	-	13.7
62695-3	Treated Sand Stockpile 3	-	Sandy Clay	-	-	14.1

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SOILS

Lab number	62695-1 Ireated Sand Stockpile 1 15/12/2016			62695-2 Ireated Sand Stockpile 2 15/12/2016			62695-3 Ireated Sand Stockpile 3 15/12/2016		
Sample id									
Depth (m)									
Date sampled	15/12/2016			15/12/2016			15/12/2016		
Test	Method	Units		Method	Units		Method	Units	
Arsenic (total)	CE127 ^M	mg/kg As		CE127 ^M	mg/kg As	5.9	CE127 ^M	mg/kg As	4.5
Cadmium (total)	CE127 ^M	mg/kg Cd		CE127 ^M	mg/kg Cd	<0.2	CE127 ^M	mg/kg Cd	<0.2
Chromium (total)	CE127 ^M	mg/kg Cr		CE127 ^M	mg/kg Cr	82	CE127 ^M	mg/kg Cr	66
Chromium (III)	-	mg/kg CrIII		-	mg/kg CrIII	82	-	mg/kg CrIII	66
Chromium (VI)	CE146	mg/kg CrVI		CE146	mg/kg CrVI	<1	CE146	mg/kg CrVI	<1
Copper (total)	CE127 ^M	mg/kg Cu		CE127 ^M	mg/kg Cu	21	CE127 ^M	mg/kg Cu	20
Lead (total)	CE127 ^M	mg/kg Pb		CE127 ^M	mg/kg Pb	32	CE127 ^M	mg/kg Pb	23
Mercury (total)	CE127 ^M	mg/kg Hg		CE127 ^M	mg/kg Hg	<0.5	CE127 ^M	mg/kg Hg	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni		CE127 ^M	mg/kg Ni	14	CE127 ^M	mg/kg Ni	12
Selenium (total)	CE127 ^M	mg/kg Se		CE127 ^M	mg/kg Se	0.4	CE127 ^M	mg/kg Se	0.4
Zinc (total)	CE127 ^M	mg/kg Zn		CE127 ^M	mg/kg Zn	22	CE127 ^M	mg/kg Zn	17
pH	CE004 ^M	units		CE004 ^M	units	12.6	CE004 ^M	units	12.7
Sulphate (2:1 water soluble)	CE061 ^M	mg/l SO ₄		CE061 ^M	mg/l SO ₄	16	CE061 ^M	mg/l SO ₄	<10
Cyanide (free)	CE077	mg/kg CN		CE077	mg/kg CN	<1	CE077	mg/kg CN	<1
Total Organic Carbon (TOC)	CE072 ^M	% w/w C		CE072 ^M	% w/w C	0.86	CE072 ^M	% w/w C	0.77
PAH									
Acenaphthene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.10	CE087 ^M	mg/kg	0.24
Acenaphthylene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	<0.01	CE087 ^M	mg/kg	<0.01
Anthracene	CE087 ^U	mg/kg		CE087 ^U	mg/kg	0.24	CE087 ^U	mg/kg	0.58
Benzo(a)anthracene	CE087 ^U	mg/kg		CE087 ^U	mg/kg	0.43	CE087 ^U	mg/kg	0.80
Benzo(a)pyrene	CE087 ^U	mg/kg		CE087 ^U	mg/kg	0.36	CE087 ^U	mg/kg	0.67
Benzo(b)fluoranthene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.47	CE087 ^M	mg/kg	0.82
Benzo(ghi)perylene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.22	CE087 ^M	mg/kg	0.38
Benzo(k)fluoranthene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.20	CE087 ^M	mg/kg	0.37
Chrysene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.40	CE087 ^M	mg/kg	0.72
Dibenz(ah)anthracene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.06	CE087 ^M	mg/kg	0.10
Fluoranthene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.99	CE087 ^M	mg/kg	1.95
Fluorene	CE087 ^U	mg/kg		CE087 ^U	mg/kg	0.08	CE087 ^U	mg/kg	0.25
Indeno(123cd)pyrene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.23	CE087 ^M	mg/kg	0.41
Naphthalene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.04	CE087 ^M	mg/kg	0.07
Phenanthrene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.76	CE087 ^M	mg/kg	1.92
Pyrene	CE087 ^M	mg/kg		CE087 ^M	mg/kg	0.83	CE087 ^M	mg/kg	1.53
PAH (total of USEPA 16)	CE087	mg/kg		CE087	mg/kg	5.40	CE087	mg/kg	10.82
Benzo(j)fluoranthene	CE087	mg/kg		CE087	mg/kg	0.06	CE087	mg/kg	0.14
PAH (total of OIL 8)	CE087	mg/kg		CE087	mg/kg	2.21	CE087	mg/kg	4.03
BTEX & TPH									
Benzene	CE057 ^U	mg/kg		CE057 ^U	mg/kg	<0.01	CE057 ^U	mg/kg	<0.01
Toluene	CE057 ^U	mg/kg		CE057 ^U	mg/kg	<0.01	CE057 ^U	mg/kg	<0.01
Ethylbenzene	CE057 ^U	mg/kg		CE057 ^U	mg/kg	<0.01	CE057 ^U	mg/kg	<0.01
m & p-Xylene	CE057 ^U	mg/kg		CE057 ^U	mg/kg	<0.02	CE057 ^U	mg/kg	<0.02

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SOILS

Lab number	62695-1 Ireated Sand Stockpile 1 15/12/2016			62695-2 Ireated Sand Stockpile 2 15/12/2016	62695-3 Ireated Sand Stockpile 3 15/12/2016
Sample id					
Depth (m)					
Date sampled					
Test	Method	Units			
o-Xylene	CE057 u	mg/kg	<0.01	<0.01	<0.01
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	<4	<4	<4
EPH Aliphatic (>C16-C35)	CE068	mg/kg	68	65	114
EPH Aliphatic (>C35-C44)	CE068	mg/kg	31	31	66
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	3	3	6
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	4	5	7
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1
Subcontracted analysis					
Asbestos (qualitative)	\$	-	NAD	NAD	NAD

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WATERS

Lab number	62695-4	62695-5	62695-6
Sample Id	Pond Water A	Pond Water B	Pond Water C
Depth (m)	-	-	-
Date sampled	15/12/2016	15/12/2016	15/12/2016
Time sampled	-	-	-
Test	Method	Units	
BTEX & TPH			
Benzene	CE057 ^u	µg/l	<1
Toluene	CE057 ^u	µg/l	<1
Ethylbenzene	CE057 ^u	µg/l	<1
m & p-Xylene	CE057 ^u	µg/l	<1
o-Xylene	CE057 ^u	µg/l	<1
VPH Aliphatic (>C5-C6)	CE067	µg/l	<1
VPH Aliphatic (>C6-C8)	CE067	µg/l	<1
VPH Aliphatic (>C8-C10)	CE067	µg/l	<1
EPH Aliphatic (>C10-C12)	CE161	µg/l	<1
EPH Aliphatic (>C12-C16)	CE161	µg/l	<1
EPH Aliphatic (>C16-C35)	CE161	µg/l	<1
EPH Aliphatic (>C35-C44)	CE161	µg/l	<1
VPH Aromatic (>EC5-EC7)	CE067	µg/l	<1
VPH Aromatic (>EC7-EC8)	CE067	µg/l	<1
VPH Aromatic (>EC8-EC10)	CE067	µg/l	<1
EPH Aromatic (>EC10-EC12)	CE161	µg/l	<1
EPH Aromatic (>EC12-EC16)	CE161	µg/l	<1
EPH Aromatic (>EC16-EC21)	CE161	µg/l	<1
EPH Aromatic (>EC21-EC35)	CE161	µg/l	<1
EPH Aromatic (>EC35-EC44)	CE161	µg/l	<1

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SOLIDS

Lab number	62695-7		
Sample id	Crushed Concrete Stockpile A		
Depth (m)	-		
Date sampled	15/12/2016		
Test	Method	Units	
Arsenic (total)	CE127	mg/kg As	7.8
Cadmium (total)	CE127	mg/kg Cd	0.2
Chromium (total)	CE127	mg/kg Cr	70
Chromium (III)	-	mg/kg CrIII	70
Chromium (VI)	CE146	mg/kg CrVI	<1
Copper (total)	CE127	mg/kg Cu	23
Lead (total)	CE127	mg/kg Pb	22
Mercury (total)	CE127	mg/kg Hg	<0.5
Nickel (total)	CE127	mg/kg Ni	16
Selenium (total)	CE127	mg/kg Se	0.5
Zinc (total)	CE127	mg/kg Zn	36
pH	CE004	units	11.1
Sulphate (2:1 water soluble)	CE061	mg/l SO ₄	15
Cyanide (free)	CE077	mg/kg CN	<1
Total Organic Carbon (TOC)	CE072	% w/w C	0.68
PAH			
Acenaphthene	CE087	mg/kg	0.81
Acenaphthylene	CE087	mg/kg	0.02
Anthracene	CE087	mg/kg	2.92
Benzo(a)anthracene	CE087	mg/kg	3.77
Benzo(a)pyrene	CE087	mg/kg	2.80
Benzo(b)fluoranthene	CE087	mg/kg	3.55
Benzo(ghi)perylene	CE087	mg/kg	1.36
Benzo(k)fluoranthene	CE087	mg/kg	1.60
Chrysene	CE087	mg/kg	3.29
Dibenz(ah)anthracene	CE087	mg/kg	0.45
Fluoranthene	CE087	mg/kg	9.28
Fluorene	CE087	mg/kg	0.81
Indeno(123cd)pyrene	CE087	mg/kg	1.70
Naphthalene	CE087	mg/kg	0.11
Phenanthrene	CE087	mg/kg	9.21
Pyrene	CE087	mg/kg	6.69
PAH (total of USEPA 16)	CE087	mg/kg	48.4
Benzo(j)fluoranthene	CE087	mg/kg	1.38
PAH (total of OIL 8)	CE087	mg/kg	18.6
BTEX & TPH			
Benzene	CE057	mg/kg	<0.01
Toluene	CE057	mg/kg	<0.01
Ethylbenzene	CE057	mg/kg	<0.01

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SOLIDS

Lab number	62695-7		
Sample id	Crushed Concrete Stockpile A		
Depth (m)	-		
Date sampled	15/12/2016		
Test	Method	Units	
m & p-Xylene	CE057	mg/kg	<0.02
o-Xylene	CE057	mg/kg	<0.01
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	24
EPH Aliphatic (>C16-C35)	CE068	mg/kg	309
EPH Aliphatic (>C35-C44)	CE068	mg/kg	98
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	2
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	32
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	25
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	2
Subcontracted analysis			
Asbestos (qualitative)	\$	-	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
-	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	Wet	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO ₄
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	Wet		1	mg/kg CN
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry	M	0.1	% w/w C
CE087	Acenaphthene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	Wet	U	0.02	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	Wet	U	0.01	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Naphthalene	Solvent extraction, GC-MS	Wet	M	0.01	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	Wet	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	Wet		0.27	mg/kg
CE087	Benzo(j)fluoranthene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	PAH (total of OIL 8)	Solvent extraction, GC-MS	Wet		0.15	mg/kg
CE057	Benzene	Headspace GC-FID	Wet	U	0.01	mg/kg
CE057	Toluene	Headspace GC-FID	Wet	U	0.01	mg/kg
CE057	Ethylbenzene	Headspace GC-FID	Wet	U	0.01	mg/kg
CE057	m & p-Xylene	Headspace GC-FID	Wet	U	0.02	mg/kg
CE057	o-Xylene	Headspace GC-FID	Wet	U	0.01	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	Wet		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	Wet		4	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	Wet		10	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	Wet		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	Wet		1	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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METHOD DETAILS

METHOD	WATERS	METHOD SUMMARY	STATUS	LOD	UNITS
CE057	Benzene	Headspace GC-FID	U	1	µg/l
CE057	Toluene	Headspace GC-FID	U	1	µg/l
CE057	Ethylbenzene	Headspace GC-FID	U	1	µg/l
CE057	m & p-Xylene	Headspace GC-FID	U	2	µg/l
CE057	o-Xylene	Headspace GC-FID	U	1	µg/l
CE067	VPH Aliphatic (> C5-C6)	Headspace GC-FID		1	µg/l
CE067	VPH Aliphatic (> C6-C8)	Headspace GC-FID		1	µg/l
CE067	VPH Aliphatic (> C8-C10)	Headspace GC-FID		1	µg/l
CE161	EPH Aliphatic (> C10-C12)	Solvent extraction, GC-FID		1	µg/l
CE161	EPH Aliphatic (> C12-C16)	Solvent extraction, GC-FID		1	µg/l
CE161	EPH Aliphatic (> C16-C35)	Solvent extraction, GC-FID		1	µg/l
CE161	EPH Aliphatic (> C35-C44)	Solvent extraction, GC-FID		1	µg/l
CE067	VPH Aromatic (> EC5-EC7)	Headspace GC-FID		1	µg/l
CE067	VPH Aromatic (> EC7-EC8)	Headspace GC-FID		1	µg/l
CE067	VPH Aromatic (> EC8-EC10)	Headspace GC-FID		1	µg/l
CE161	EPH Aromatic (> EC10-EC12)	Solvent extraction, GC-FID		1	µg/l
CE161	EPH Aromatic (> EC12-EC16)	Solvent extraction, GC-FID		1	µg/l
CE161	EPH Aromatic (> EC16-EC21)	Solvent extraction, GC-FID		1	µg/l
CE161	EPH Aromatic (> EC21-EC35)	Solvent extraction, GC-FID		1	µg/l
CE161	EPH Aromatic (> EC35-EC44)	Solvent extraction, GC-FID		1	µg/l

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METHOD DETAILS

METHOD	SOLIDS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry		1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry		0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry		1	mg/kg Cr
-	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry		1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry		1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry		0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry		1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry		0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry		5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	Wet		-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO ₄
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	Wet		1	mg/kg CN
CE072	Total Organic Carbon (TOC)	Removal of IC by acidification, Carbon Analyser	Dry		0.1	% w/w C
CE087	Acenaphthene	Solvent extraction, GC-MS	Wet		0.01	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	Wet		0.01	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	Wet		0.01	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	Wet		0.01	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Naphthalene	Solvent extraction, GC-MS	Wet		0.01	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	Wet		0.27	mg/kg
CE087	Benzo(j)fluoranthene	Solvent extraction, GC-MS	Wet		0.02	mg/kg
CE087	PAH (total of OIL 8)	Solvent extraction, GC-MS	Wet		0.15	mg/kg
CE057	Benzene	Headspace GC-FID	Wet		0.01	mg/kg
CE057	Toluene	Headspace GC-FID	Wet		0.01	mg/kg
CE057	Ethylbenzene	Headspace GC-FID	Wet		0.01	mg/kg
CE057	m & p-Xylene	Headspace GC-FID	Wet		0.02	mg/kg
CE057	o-Xylene	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	Wet		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	Wet		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	Wet		4	mg/kg

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METHOD DETAILS

METHOD	SOLIDS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	Wet		4	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	Wet		10	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	Wet		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	Wet		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	Wet		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	Wet		1	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

- N No (not deviating sample)
- Y Yes (deviating sample)
- NSD Sampling date not provided
- NST Sampling time not provided (waters only)
- EHT Sample exceeded holding time(s)
- IC Sample not received in appropriate containers
- HP Headspace present in sample container
- NCF Sample not chemically fixed (where appropriate)
- IT Sample not cooled
- OR Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
62695-1	Treated Sand Stockpile 1	-	N	
62695-2	Treated Sand Stockpile 2	-	N	
62695-3	Treated Sand Stockpile 3	-	N	
62695-4	Pond Water A	-	N	
62695-5	Pond Water B	-	N	
62695-6	Pond Water C	-	N	