Site	Cliffe House, South View Road, Yeadon, Leeds, LS19 7BF
Client	Balmoral Investments
Date	23/02/2024
Project Reference	100969

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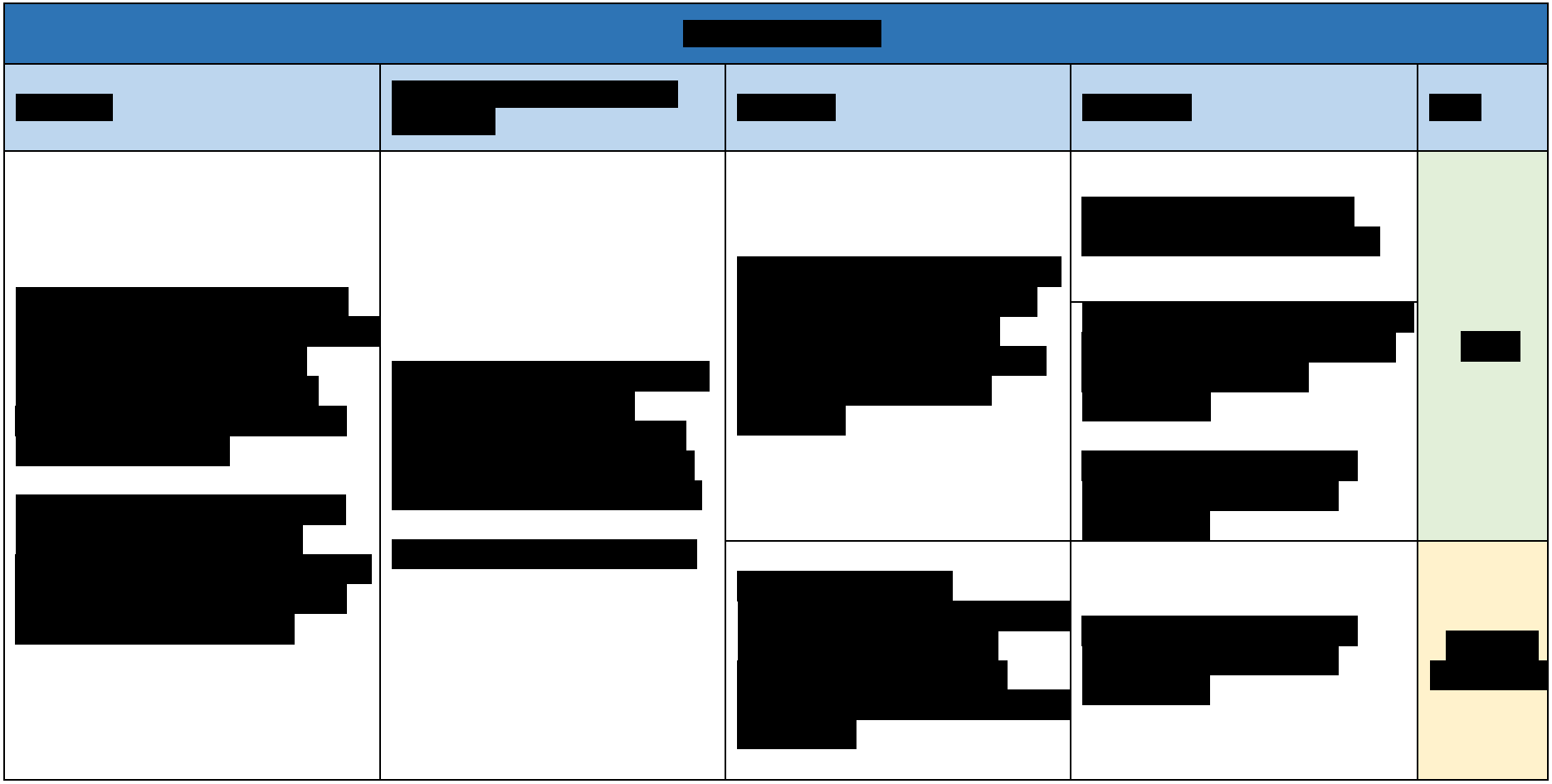

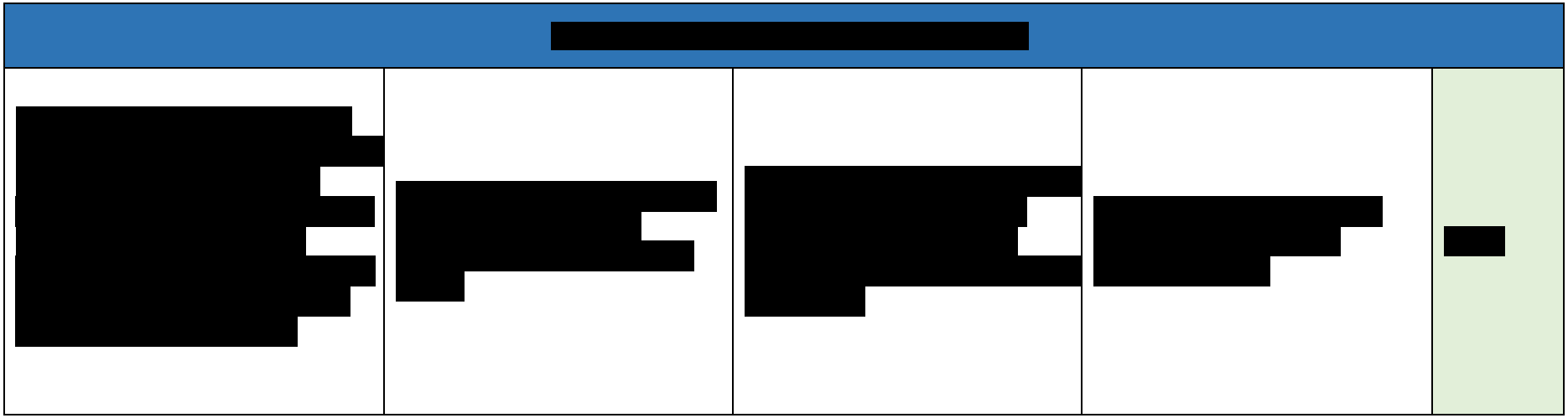

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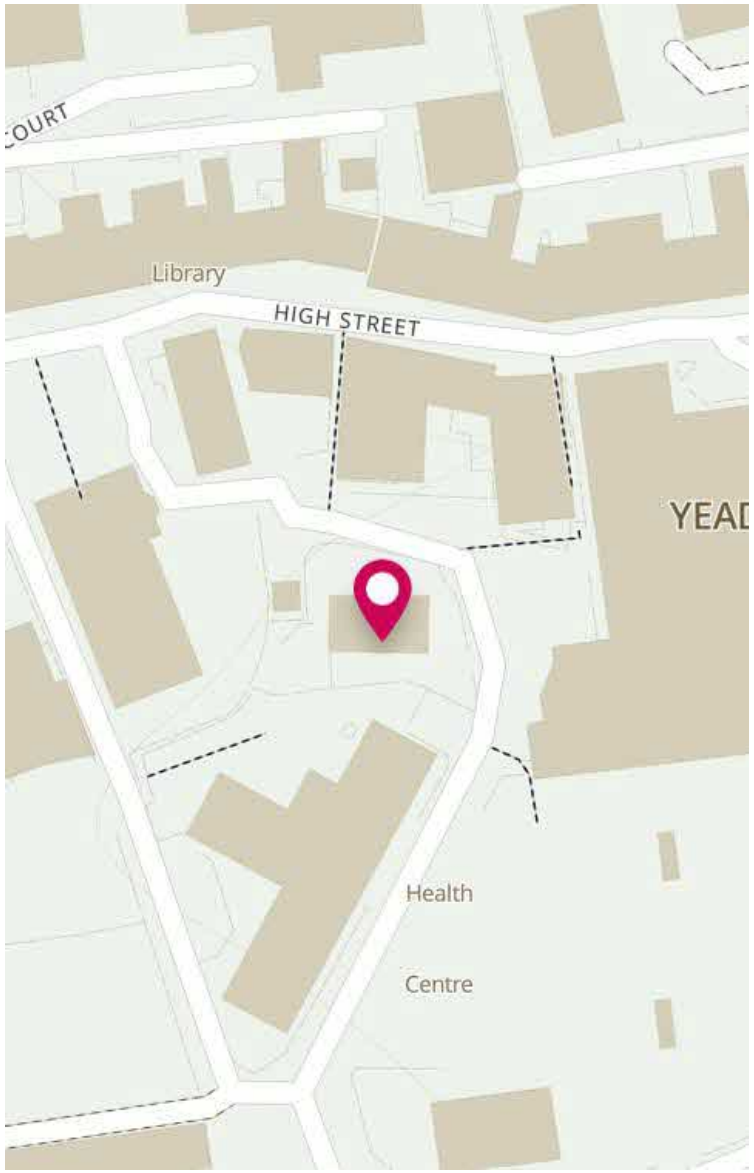
Dice Environmental

APPENDIX A



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Dice Environmental

Title
Site Location

Reference
100969

Date
21/02/2024

Site Address

Cliffe House,
Yeadon,
Leeds,
LS19 7PP

Legend

Approximate Site Centre

Scale
NTS

Drawn
AMD

Figure Number
Fig.1

Dice Environmental

Title
Site Boundary

Reference
100969

Date
21/02/2024

Site Address

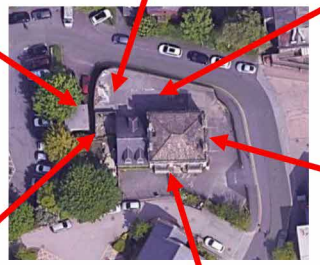
Cliffe House,
Yeadon,
Leeds,
LS19 7PP

Legend

Scale
NTS

Drawn
AMD

Figure Number
Fig.2



Dice Environmental

Title
Photos

Reference
100969

Date
21/02/2024

Site Address

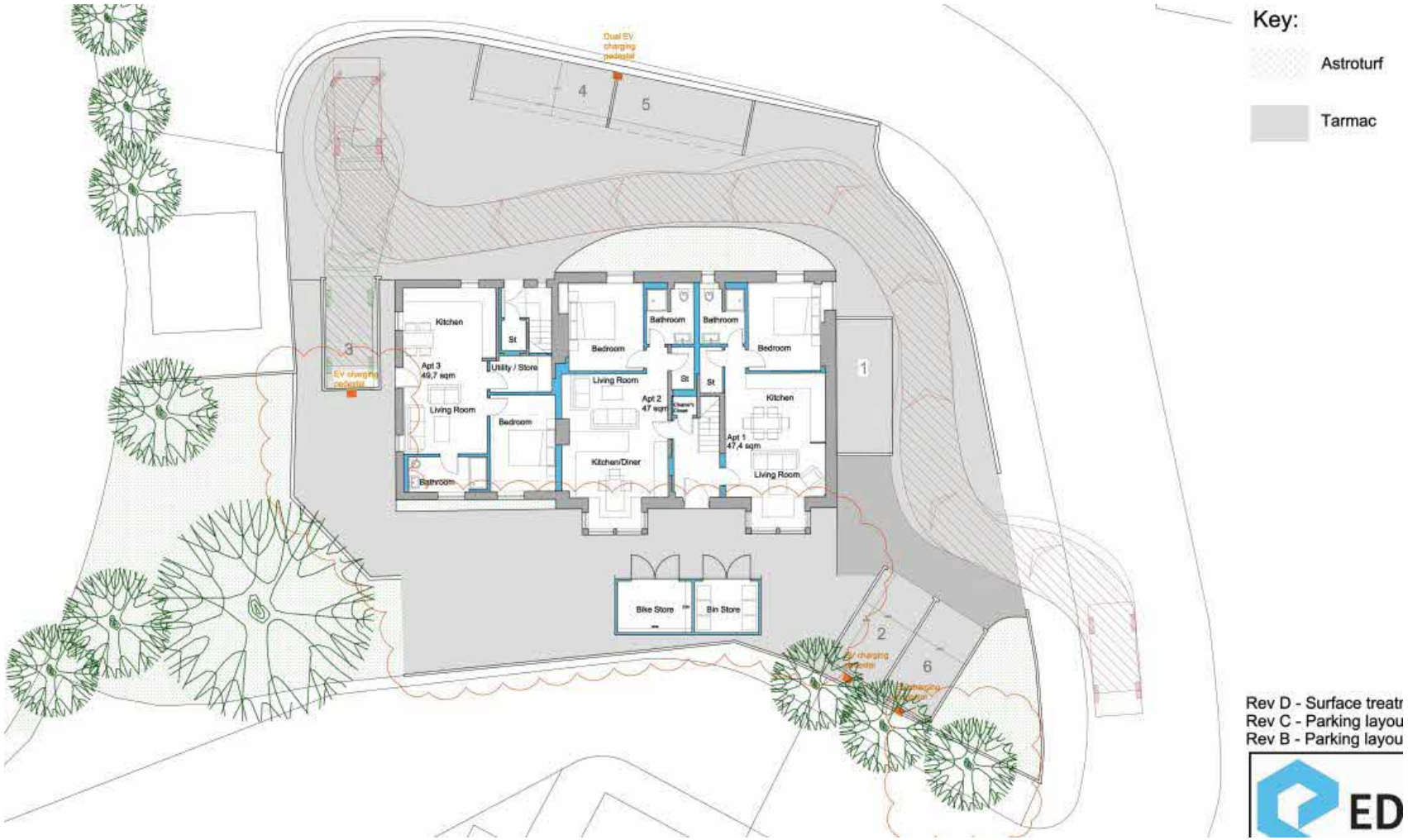
Cliffe House,
Yeadon,
Leeds,
LS19 7PP

Legend

Scale
NTS

Drawn
AMD

Figure Number
Fig.3



Dice Environmental

Title
Development Proposal

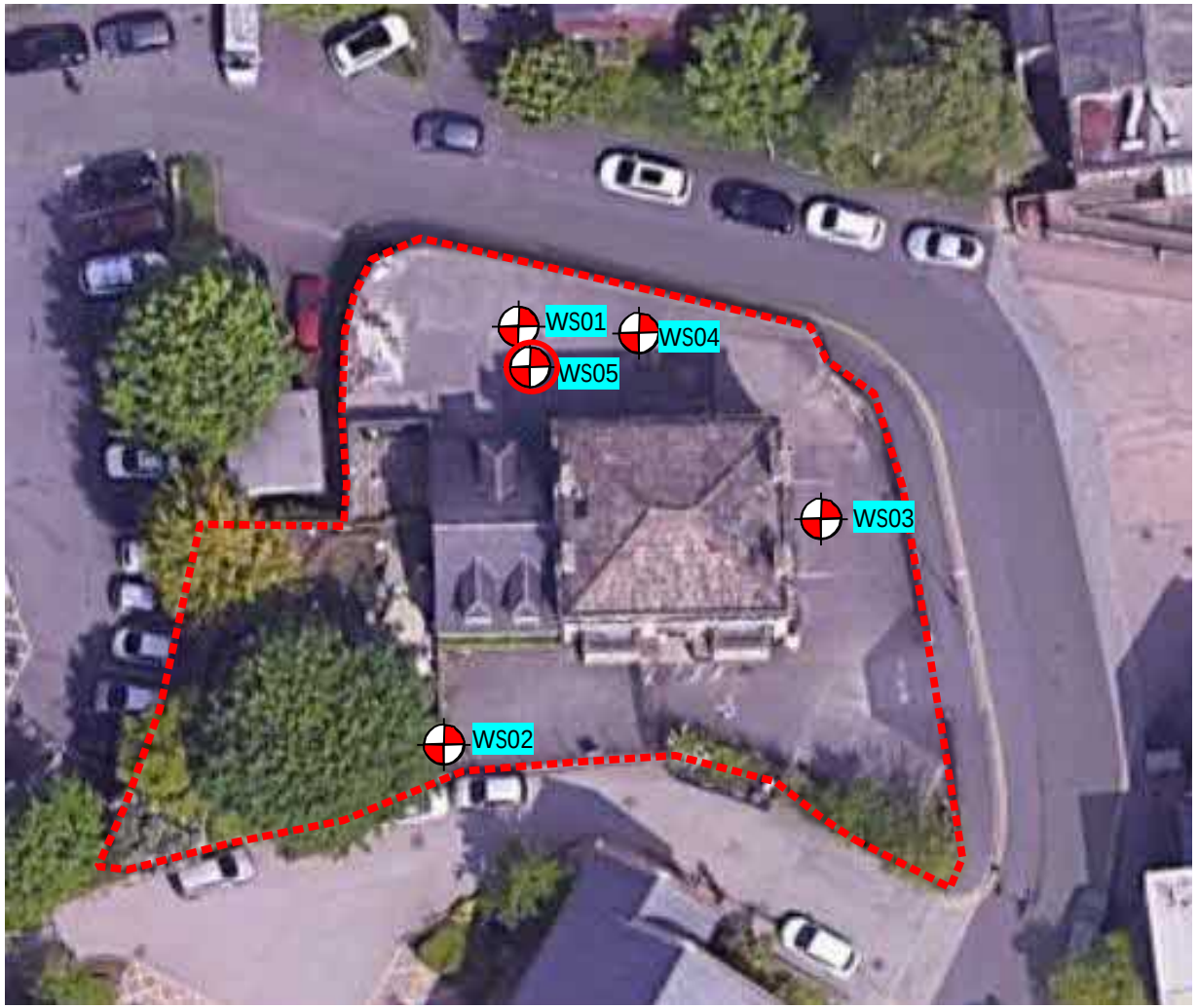
Reference	Date
100969	21/02/2024

Site Address

Cliffe House,
Yeadon,
Leeds,
LS19 7PP

Legend

Scale	Drawn	Figure Number
NTS	AMD	Fig.4



Dice Environmental

Title
SI Plan

Reference
100969

Date
21/02/2024

Site Address

Cliffe House,
Yeadon,
Leeds,
LS19 7PP

Legend

Borehole location

Indicates installed boreholes for ground water and ground gas monitoring

Scale
NTS

Drawn
AMD

Figure Number
Fig.5

APPENDIX B


Well


Well


Well


Well


Well

Dice Environmental

APPENDIX C

ANALYTICAL TEST REPORT

Contract no: 130271(1)

Contract name: Cliffe House

Client reference: 100969

Clients name: Dice Environmental

Clients address: 167 Kennington Road
Nottingham
NG8 1QE

Samples received: 05 February 2024

Analysis started: 05 February 2024

Analysis completed: 15 February 2024

Report issued: 15 February 2024

This is a supplementary report to report number 130271 issued 12 February 2024.

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

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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.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
130271-1	WS01 ES	0.50	Sandy Clay with Gravel	-	-	15.1
130271-2	WS01 ES	1.50	Sandy Loamy Clay with Gravel	-	-	21.4
130271-3	WS01 ES	2.20	Sandy Clay with Gravel	-	-	17.7
130271-4	WS02 ES+O	0.10	Sandy Loam with Gravel & Roots	-	-	19.8
130271-5	WS02 ES+O	0.60	Sandy Clay with Gravel & Roots	-	-	15.1
130271-6	WS03 ES+O	0.30	Sandy Clay with Gravel	-	-	6.2
130271-7	WS03 ES	0.70	Sand with Gravel	-	-	5.4

Chemtech Environmental Limited

SOILS

Lab number			130271-1	130271-2	130271-3	130271-4	130271-5	130271-6
Sample id			WS01 ES	WS01 ES	WS01 ES	WS02 ES+O	WS02 ES+O	WS03 ES+O
Depth (m)			0.50	1.50	2.20	0.10	0.60	0.30
Date sampled			31/01/2024	31/01/2024	31/01/2024	31/01/2024	31/01/2024	31/01/2024
Test	Method	Units						
Moisture Content	CE001	% w/w	15	21	-	20	-	6.2
Arsenic (total)	CE264[M]	mg/kg As	7.1	36	-	4.9	-	5.9
Cadmium (total)	CE264[M]	mg/kg Cd	<1.6	2.2	-	<1.6	-	<1.6
Chromium (total)	CE264[U]	mg/kg Cr	39	46	-	19	-	11
Chromium (VI)	CE263	mg/kg CrVI	<0.04	0.3	-	<0.04	-	<0.04
Copper (total)	CE264[M]	mg/kg Cu	24	107	-	57	-	17
Lead (total)	CE264[U]	mg/kg Pb	21	1186	-	31	-	17
Mercury (total)	CE264[U]	mg/kg Hg	<0.7	<0.7	-	<0.7	-	<0.7
Nickel (total)	CE264[M]	mg/kg Ni	28	33	-	10	-	14
Selenium (total)	CE264	mg/kg Se	<3	<3	-	<3	-	<3
Zinc (total)	CE264[M]	mg/kg Zn	81	315	-	120	-	205
pH	CE004 [M]	units	9.2	8.0	-	8.1	-	7.8
Sulphate (2:1 water soluble)	CE061 [U]	mg/l SO_4	18	142	-	47	-	31
Sulphate (acid extractable)	CE062 [M]	mg/kg SO_4	162	636	-	516	-	745
Total Organic Carbon (TOC)	CE197	% w/w C	0.5	2.4	0.6	3.0	0.6	0.6
Estimate of OMC (calculated from TOC)	CE197	% w/w	0.9	4.2	1.0	5.2	1.0	1.0
PAH								
Naphthalene	CE087 [M]	mg/kg	<0.02	0.03	-	<0.02	-	<0.02
Acenaphthylene	CE087 [M]	mg/kg	<0.02	0.02	-	0.02	-	<0.02
Acenaphthene	CE087 [M]	mg/kg	<0.02	<0.02	-	<0.02	-	<0.02
Fluorene	CE087 [U]	mg/kg	<0.02	<0.02	-	<0.02	-	<0.02
Phenanthrene	CE087 [M]	mg/kg	<0.02	0.10	-	0.29	-	<0.02
Anthracene	CE087 [U]	mg/kg	<0.02	0.05	-	0.11	-	<0.02
Fluoranthene	CE087 [M]	mg/kg	0.03	0.34	-	0.50	-	0.04
Pyrene	CE087 [M]	mg/kg	0.03	0.32	-	0.43	-	0.04
Benzo(a)anthracene	CE087 [U]	mg/kg	0.04	0.23	-	0.36	-	0.03
Chrysene	CE087 [M]	mg/kg	<0.03	0.24	-	0.28	-	<0.03
Benzo(b)fluoranthene	CE087 [M]	mg/kg	0.02	0.21	-	0.29	-	0.03
Benzo(k)fluoranthene	CE087 [M]	mg/kg	<0.03	0.10	-	0.14	-	<0.03
Benzo(a)pyrene	CE087 [U]	mg/kg	0.02	0.19	-	0.27	-	0.03
Indeno(123cd)pyrene	CE087 [M]	mg/kg	<0.02	0.16	-	0.13	-	<0.02
Dibenz(ah)anthracene	CE087 [M]	mg/kg	<0.02	0.04	-	0.04	-	<0.02
Benzo(ghi)perylene	CE087 [M]	mg/kg	<0.02	0.16	-	0.14	-	<0.02
PAH (total of USEPA 16)	CE087	mg/kg	<0.34	2.20	-	2.99	-	<0.34
TPH								
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)	CE250	mg/kg	-	<0.5	-	2	-	1
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	-	<1	-	6	-	3
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	-	<2	-	17	-	4

Chemtech Environmental Limited

SOILS

Lab number			130271-1	130271-2	130271-3	130271-4	130271-5	130271-6
Sample id			WS01 ES	WS01 ES	WS01 ES	WS02 ES+O	WS02 ES+O	WS03 ES+O
Depth (m)			0.50	1.50	2.20	0.10	0.60	0.30
Date sampled			31/01/2024	31/01/2024	31/01/2024	31/01/2024	31/01/2024	31/01/2024
Test	Method	Units						
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	-	<5	-	127	-	56
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	-	<1.5	-	28	-	15
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)	CE250	mg/kg	-	<0.5	-	3	-	<0.5
EPH Aliphatic (>C12-C16)	CE250	mg/kg	-	<0.5	-	2	-	1
EPH Aliphatic (>C16-C35)	CE250	mg/kg	-	<4.5	-	33	-	17
EPH Aliphatic (>C35-C44)	CE250	mg/kg	-	<1	-	3	-	4
Subcontracted Analysis								
Asbestos (qualitative)	$	-	NAD	NAD	-	NAD	-	NAD

Chemtech Environmental Limited

SOILS

Lab number			130271-7
Sample id			WS03 ES
Depth (m)			0.70
Date sampled			31/01/2024
Test	Method	Units	
Moisture Content	CE001	% w/w	-
Arsenic (total)	CE264[M]	mg/kg As	-
Cadmium (total)	CE264[M]	mg/kg Cd	-
Chromium (total)	CE264[U]	mg/kg Cr	-
Chromium (VI)	CE263	mg/kg CrVI	-
Copper (total)	CE264[M]	mg/kg Cu	-
Lead (total)	CE264[U]	mg/kg Pb	-
Mercury (total)	CE264[U]	mg/kg Hg	-
Nickel (total)	CE264[M]	mg/kg Ni	-
Selenium (total)	CE264	mg/kg Se	-
Zinc (total)	CE264[M]	mg/kg Zn	-
pH	CE004 [M]	units	-
Sulphate (2:1 water soluble)	CE061 [U]	mg/l SO_4	-
Sulphate (acid extractable)	CE062 [M]	mg/kg SO_4	-
Total Organic Carbon (TOC)	CE197	% w/w C	0.4
Estimate of OMC (calculated from TOC)	CE197	% w/w	0.7
PAH			
Naphthalene	CE087 [M]	mg/kg	-
Acenaphthylene	CE087 [M]	mg/kg	-
Acenaphthene	CE087 [M]	mg/kg	-
Fluorene	CE087 [U]	mg/kg	-
Phenanthrene	CE087 [M]	mg/kg	-
Anthracene	CE087 [U]	mg/kg	-
Fluoranthene	CE087 [M]	mg/kg	-
Pyrene	CE087 [M]	mg/kg	-
Benzo(a)anthracene	CE087 [U]	mg/kg	-
Chrysene	CE087 [M]	mg/kg	-
Benzo(b)fluoranthene	CE087 [M]	mg/kg	-
Benzo(k)fluoranthene	CE087 [M]	mg/kg	-
Benzo(a)pyrene	CE087 [U]	mg/kg	-
Indeno(123cd)pyrene	CE087 [M]	mg/kg	-
Dibenz(ah)anthracene	CE087 [M]	mg/kg	-
Benzo(ghi)perylene	CE087 [M]	mg/kg	-
PAH (total of USEPA 16)	CE087	mg/kg	-
TPH			
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	-
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	-
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	-

Chemtech Environmental Limited

SOILS

Lab number			130271-7
Sample id			WS03 ES
Depth (m)			0.70
Date sampled			31/01/2024
Test	Method	Units	
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	-
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-
EPH Aliphatic (>C10-C12)	CE250	mg/kg	-
EPH Aliphatic (>C12-C16)	CE250	mg/kg	-
EPH Aliphatic (>C16-C35)	CE250	mg/kg	-
EPH Aliphatic (>C35-C44)	CE250	mg/kg	-
Subcontracted Analysis			
Asbestos (qualitative)	$	-	-

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE001	Moisture Content	Gravimetry, reported on Wet Weight basis	As received		0.1	% w/w
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.8	mg/kg As
CE264	Cadmium (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cd
CE264	Chromium (total)	Aqua Regia Extraction, ICPOES	Dry	U	2	mg/kg Cr
CE263	Chromium (VI)	Discrete Analyser	Dry			mg/kg CrVI
CE264	Copper (total)	Aqua Regia Extraction, ICPOES	Dry	M	1.6	mg/kg Cu
CE264	Lead (total)	Aqua Regia Extraction, ICPOES	Dry	U	2.3	mg/kg Pb
CE264	Mercury (total)	Aqua Regia Extraction, ICPOES	Dry	U	0.7	mg/kg Hg
CE264	Nickel (total)	Aqua Regia Extraction, ICPOES	Dry	M	2.1	mg/kg Ni
CE264	Selenium (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Se
CE264	Zinc (total)	Aqua Regia Extraction, ICPOES	Dry	M	4	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE062	Sulphate (acid extractable)	HCl extract, analysed by ICP-OES	Dry	M	100	mg/kg SO_4
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.016	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.015	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.013	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.013	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.014	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.017	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.017	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.016	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.012	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.028	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.025	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.019	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.019	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.017	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.019	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.028	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		0.5	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		2	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		5	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1.5	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		0.5	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		0.5	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		4.5	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-
$	Asbestos (quantitative)	HSG 248, Microscopy & Gravimetry	Dry	U	0.001	% w/w

Chemtech Environmental Limited

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)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
130271-1	WS01 ES	0.50	N	
130271-2	WS01 ES	1.50	N	
130271-3	WS01 ES	2.20	N	
130271-4	WS02 ES+O	0.10	N	
130271-5	WS02 ES+O	0.60	N	
130271-6	WS03 ES+O	0.30	N	
130271-7	WS03 ES	0.70	N	

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

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.

Soil/Solid samples will be disposed of 4 weeks from initial receipt unless otherwise agreed.

Waters and leachate samples will be disposed of 2 weeks from report issue unless otherwise agreed.

DEFRA Licence for the introduction and movement within England of prohibited soil for chemical and physical analysis Licence No: 132693/469907-0

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

Moisture Content Calculated on a Wet Weight basis

Dice Environmental

APPENDIX D

Dice Environmental

Rational and full list of General Assessment Criteria used by Dice Environmental.

Determinand	Allotment	R_WHP	R_{WO}HP	Commercial/ Industrial	POSresi	POSpark
Metals						
Arsenic (**Inorganic**) [a, b, c]	43	37	40	640	79	170
Beryllium [a, b, d, e]	35	1.7	1.7	12	2.2	63
Boron [a, b, d]	45	290	11000	240000	21000	46000
Cadmium (**pH6-8**) [a, b, d, f]	1.9	11	85	190	120	560
Chromium (trivalent) [a, b, d, g]	18000	910	910	8600	1500	33000
Chromium (hexavalent) [a, b, c]	1.8[h]	6[i]	6[i]	33[i]	7.7[i]	220[i]
Copper [a, b, c]	520	2400	7100	68000	12000	44000
Mercury (elemental) [a, b, c, j]	21	1.2	1.2	58[vap] (25.8)	16	30[vap] (25.8)
Mercury (inorganic) [a, b, c]	19	40	56	1100	120	240
Methylmercury [a, b, c]	6	11	15	320	40	68
Nickel [a, b, c]	230[k]	180[e]	180[e]	980[e]	230[e]	3400[k]
Selenium [a, b, c]	88	250	430	12000	1100	1800
Vanadium [a, b, c, i, j]	91	410	1200	9000	2000	5000
Zinc [a, b, c]	620	3700	40000	730000	81000	170000
BTEX Compounds (SOM 1%/ 2.5%/ 6%)						
Benzene [a, b, l, m]	0.017/0.034/ 0.075	0.087/0.17/ 0.37	0.38/0.7/1.4	27 / 47 / 90	72 / 72 / 73	90 / 100 / 110
Toluene [a, b, l, m]	22 / 51 / 120	130 / 290 / 660	800[vap] (869) /1900/3900	56000[vap] (869) / 110000[vap] 1920)/ 180000[vap] (4360)	56000 / 56000 / 56000	87000[vap](869)/ 95000[vap](1920)/ 100000[vap](4360)
Ethylbenzene [a, b, l, m]	16 / 39 / 91	47 / 110 / 260	83 / 190 / 440	5700[vap] (518) / 13000[vap] (1220) / 27000[vap] (2840)	24000 / 24000 / 25000	17000[vap] (518) / 22000[vap](1220) / 27000[vap] (2840)
O – Xylene [a, b, l, m, n]	28 / 67 / 160	60 / 140 / 330	88 / 210 / 480	6600[sol] (478) / 15000[sol] (1120) / 33000[sol] (2620)	41000 / 42000 / 43000	17000[sol] (478) / 24000[sol] (1120) / 33000[sol] (2620)
M – Xylene [a, b, l, m, n]	31 / 74 / 170	59 / 140 / 320	82 / 190 / 450	6200[vap] (625) / 14000[vap] (1470) / 31000[vap] (3460)	41000 / 42000 / 43000	17000[vap] (625) / 24000[vap](1470) / 32000[vap] (3460)
P – Xylene [a, b, l, m, n]	29 / 69 / 160	56 / 130 / 310	79 / 180 / 430	5900[sol] (576) / 14000[sol] (1350) / 30000[sol] (3170)	41000 / 42000 / 43000	17000[sol] (576) / 23000[sol] (1350) / 31000[sol] (3170)
Polycyclic Aromatic Hydrocarbons (SOM 1%/ 2.5%/ 6%) [a, b, l, p]						
Acenaphthene	34 / 85 / 200	210 / 510 / 1100	3000[sol](57.0)/ 4700[sol] (141)/ 6000[sol] (336)	84000[sol] (57.0)/ 97000[sol] (141)/ 100000	15000 / 15000 / 15000	29000/ 30000/ 30000
Acenaphthylene	28 / 69 / 160	170 / 420 / 920	2900[sol](86.1)/ 4600[sol] (212)/ 6000[sol] (506)	83000[sol] (86.1)/ 97000[sol] (212)/ 100000	15000 / 15000 / 15000	29000 / 30000 / 30000
Anthracene	380 / 950 / 2200	2400 / 5400 / 11000	31000[sol](1.17 /35000/ 37000	520000/ 540000/ 540000	74000 / 74000 / 74000	150000 / 150000 / 150000
Benz(a)anthracene	2.9 / 6.5 / 13	7.2 / 11 / 13	11 / 14 / 15	170 / 170 / 180	29 / 29 / 29	49 / 56 / 62
Benzo(a)pyrene (Bap)	0.97 / 2.0 / 3.5	2.2 / 2.7 / 3.0	3.2 / 3.2 / 3.2	35 / 35 / 36	5.7/ 5.7/5.7	11 / 12 / 13
Benzo(b)fluoranthene	0.99 / 2.1 / 3.9	2.6 / 3.3 / 3.7	3.9 / 4.0 / 4.0	44 / 44 / 45	7.1/7.2/7.2	13 / 15 / 16
Benzo(g,h,i)perylene	290 / 470 / 640	320 / 340 / 350	360/360 / 360	3900/4000/ 4000	640/640/640	1400/1500/ 1600
Benzo(k)fluoranthene	37 / 75 / 130	77 / 93 / 100	110/ 110 / 110	1200/ 1200/1200	190/190/190	370 / 410 / 440
Chrysene	4.1 / 9.4 / 19	15 / 22 / 27	30 / 31 / 32	350 / 350 / 350	57 / 57 / 57	93 / 110 / 120
Dibenzo(ah)anthracene	0.14 / 0.27 / 0.43	0.24 / 0.28 / 0.3	0.31/0.32/ 0.32	3.5 / 3.6 / 3.6	0.57/0.57/0.58	1.1 / 1.3 / 1.4
Fluoranthene	52 / 130 / 290	280 / 560 / 890	1500/1600/ 1600	23000/23000/ 23000	3100/3100/ 3100	6300 / 6300 / 6400
Fluorene	27 / 67 / 160	170 / 400 / 860	2800[sol] (30.9) /3800[sol] (76.5) /4500[sol] (183)	63000[sol] (30.9) / 68000 / 71000	9900 / 9900 / 9900	20000 / 20000 / 20000
Indeno(1,2,3-cd)pyrene	9.5 / 21 / 39	27 / 36 / 41	45 / 46 / 46	500 / 510 / 510	82 / 82 / 82	150 / 170 / 180
Naphthalene [q]	4.1 / 10 / 24	2.3 / 5.6 / 13	2.3 / 5.6 / 13	190[sol] (76.4) / 460[sol] (183) / 1100[sol] (432)	4900/ 4900/ 4900	1200[sol] (76.4) / 1900[sol] (183) / 3000
Phenanthrene	15 / 38 / 90	95 / 220 / 440	1300[sol](36.0)/ 1500/1500	22000 / 22000 / 23000	3100 / 3100 / 3100	6200 / 6200 / 6300
Pyrene	110 / 270 / 620	620 / 1200 / 2000	3700 / 3800 / 3800	54000 / 54000 / 54000	7400 / 7400 / 7400	15000 / 15000 / 15000
Coal Tar (Bap as surrogate marker)	0.32 / 0.67 / 1.2	0.79 / 0.98 / 1.1	1.2 / 1.2 / 1.2	15 / 15 / 15	2.2 / 2.2 / 2.2	4.4 / 4.7 / 4.8
Explosives [a, b, l, p]						
2, 4, 6 Trinitrotoluene	0.24 / 0.58 / 1.40	1.6 / 3.7 / 8.0	65 / 66 / 66	1000/1000/1000	130/130 / 130	260 / 270 / 270
RDX (Royal Demolition Explosive $C_3H_6N_6O_6$)	17 / 38 / 85	120 / 250 / 540	13000 / 13000 / 13000	210000 / 210000 / 210000	26000/26000/ 27000	49000[sol] (18.7) / 51000 / 53000
HMX (High Melting Explosive $C_4H_8N_8O_8$)	0.86 / 1.9 / 3.9	5.7 / 13 / 26	6700 / 6700 / 6700	110000 / 110000 / 110000	13000 / 13000 / 13000	23000[vap] (0.35) /23000[vap] (0.39) /24000[vap] (0.48)

Determinand	Allotment	R_WHP	R_{WO}HP	Commercial/ Industrial	POSresi	POSpark
Petroleum Hydrocarbons (SOM 1%/ 2.5%/ 6%) [a, b, l, m]						
Aliphatic EC 5-6	730 / 1700 / 3900	42 / 78 / 160	42 / 78 / 160	3200[sol] (304) / 5900[sol] (558) / 12000[sol] (1150)	570000[sol](304 590000 / 600000	95000[sol] (304) / 130000[sol] (558)/ 180000[sol](1150)
Aliphatic EC >6-8	2300 / 5600 / 13000	100 / 230 / 530	100 / 230 / 530	7800[sol] (144) / 17000[sol] (322) / 40000[sol] (736)	600000 / 610000 / 620000	150000[sol] (144) 220000[sol] (322)/ 320000[sol] (736)
Aliphatic EC >8-10	320 / 770 / 1700	27 / 65 / 150	27 / 65 / 150	2000[sol] (78) / 4800[vap] (190) / 11000[vap] (451)	13000 / 13000 / 13000	14000[sol] (78) / 18000[vap] (190) / 21000[vap] (451)
Aliphatic EC >10-12	2200 / 4400 / 7300	130v[ap] (48) / 330[vap] (118) / 760[vap] (283)	130v[ap] (48) / 330[vap] (118) / 770[vap] (283)	9700[sol] (48) / 23000[vap] (118) / 47000[vap] (283)	13000 / 13000 / 13000	21000[sol] (48) / 23000[vap] (118) / 24000[vap] (283)
Aliphatic EC >12-16	11000 / 13000 / 13000	1100[sol] (24) / 2400[sol] (59) / 4300[sol] (142)	1100[sol] (24) / 2400[sol] (59) / 4400[sol] (142)	59000[sol] (24) / 82000[sol] (59) / 90000[sol] (142)	13000 / 13000 / 13000	25000[sol] (24) / 25000[sol] (59) / 26000[sol] (142)
Aliphatic EC >16-35 °	260000 / 270000 / 270000	65000[sol](8.48 92000[sol] (21) 110000	65000[sol](8.48 92000[sol] (21) 110000	1600000 / 1700000 / 1800000	250000 / 250000 / 250000	450000 / 480000 / 490000
Aliphatic EC >35-44 °	260000 / 270000 / 270000	65000[sol](8.48 92000[sol] (21) / 110000	65000[sol](8.48 92000[sol] (21) 110000	1600000 / 1700000 / 1800000	250000 / 250000 / 250000	450000 / 480000 / 490000
Aromatic EC 5-7 (benzene)	13 / 27 / 57	70 / 140 / 300	370 / 690 / 1400	260000[sol] (1220) / 46000[sol] (2260) / 86000[sol] (4710)	56000 / 56000 / 56000	76000[sol] (1220) /84000[sol](2260)/ 92000[sol] (4710)
Aromatic EC >7-8 (toluene)	22 / 51 / 120	130 / 290 / 660	860 / 1800 / 3900	56000[vap] (869)/ 110000[sol] (1920)/ 180000[vap] (4360)	56000 / 56000 / 56000	87000[vap](869) / 95000[sol] (1920)/ 100000[vap](4360)
Aromatic EC >8-10	8.6 / 21 / 51	34 / 83 / 190	47 / 110 / 270	3500[vap] (613) / 8100[vap] (1500) / 17000[vap] (3580)	5000 / 5000 / 5000	7200[vap](613) / 8500[vap] (1500) / 9300[vap] (3580)
Aromatic EC >10-12	13 / 31 / 74	74 / 180 / 380	250 / 590 / 1200	16000[sol] (364) / 28000[sol] (899) / 34000[sol] (2150)	5000 / 5000 / 5000	9200[sol] (364) / 97000[sol] (899) / 10000
Aromatic EC >12-16	23 / 57 / 130	140 / 330 / 660	1800 / 2300[sol] (419) / 2500	36000[sol] (169) / 37000 / 38000	5100 / 5100 / 5000	10000 / 10000 / 10000
Aromatic EC >16-21 °	46 / 110 / 260	260 / 540 / 930	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7600 / 7700 / 7800
Aromatic EC >21-35 °	370 / 820 / 1600	1100 / 1500 / 1700	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7800 / 7800 / 7900
Aromatic EC >35-44 °	370 / 820 / 1600	1100 / 1500 / 1700	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7800 / 7800 / 7900
Aliphatic+Aromatic EC >44-70 °	1200 / 2100 / 3000	1600 / 1800 / 1900	1900 / 1900 / 1900	28000 / 28000 / 28000	3800 / 3800 / 3800	7800 / 7800 / 7900
Chloroalkanes & Chloroalkenes (SOM 1%/ 2.5%/ 6%) [a, b, l, p]						
1,2-Dichloroethane	0.0046 / 0.0083 / 0.016	0.0071 / 0.011 / 0.019	0.092 / 0.013 / 0.023	0.67 / 0.97 / 1.7	29 / 29 / 29	21 / 24 / 28
1,1,1 Trichloroethane (TCA)	48 / 110 / 240	8.8 / 18 / 39	9.0 / 18 / 40	660 / 1300 / 3000	140000 / 140000 / 140000	57000[vap](1425) 76000[vap](2915)/ 100000[vap](6392
1,1,1,2 Tetrachloroethane	0.79 / 1.9 / 4.4	1.2 / 2.8 / 6.4	1.5 / 3.5 / 8.2	110 / 250 / 560	1400 / 1400 / 1400	1500 / 1800 / 2100
1,1,2,2 Tetrachloroethane	0.41 / 0.89 / 2.0	1.6 / 3.4 / 7.5	3.9 / 8.0 / 17	270 / 550 / 1100	1400 / 1400 / 1400	1800 / 2100 / 2300
Tetrachloroethene (PCE)	0.65 / 1.5 / 3.6	0.18 / 0.39 / 0.90	0.18 / 0.4 / 0.92	19 / 42 / 95	1400 / 1400 / 1400	810[sol](424)/1100 [sol] (951)/1500
Tetrachloromethane (Carbon Tetrachloride)	0.45 / 1.0 / 2.4	0.026 / 0.056 / 0.13	0.026 / 0.056 / 0.13	2.9 / 6.3 / 14	890 / 920 / 950	190 / 270 / 400
Trichloroethene (TCE)	0.041 / 0.091 / 0.21	0.016 / 0.034 / 0.075	0.017 / 0.036 / 0.080	1.2 / 2.6 / 5.7	120 / 120 / 120	70 / 91 / 120
Trichloromethane (Chloroform)	0.42 / 0.83 / 1.7	0.91 / 1.7 / 3.4	1.2 / 2.1 / 4.2	99 / 170 / 350	2500 / 2500 / 2500	2600 / 2800 / 3100
Chloroethene (Vinyl Chloride)	0.00055/ 0.001/ 0.0018	0.00064 / 0.00087/ 0.0014	0.00077 / 0.001 / 0.0015	0.059 / 0.077 / 0.12	3.5 / 3.5 / 3.5	4.8 / 5.0 / 5.4
Phenol & Chlorophenols [a, b, l, p]						
Phenol	23 /42 / 83	120 / 200/380	440/690 /1200	440[dir] (26000) / 690[dir] (30000) / 1300[dir] (34000)	440[dir] (10000)/ 690[dir](10000) 1300[dir](10000)	440[dir] (7600) / 690[dir] (8300) / 1300[dir] (93000)
Chlorophenols (excluding PCP) [r]	0.13[s] / 0.3 / 0.7	0.87[s] / 2.0 / 4.5	94 / 150 / 210	3500 / 4000 / 4300	620/ 620 / 620	1100/1100/ 1100
Pentachlorophenol (PCP)	0.03 / 0.08 / 0.19	0.22/ 0.52 / 1.2	27[vap] (16.4) / 29 / 31	400 / 400 / 400	60 / 60 / 60	110 / 120 / 120
Other [a, b, l, p]						
Carbon Disulphide	4.8 / 10 / 23	0.14/0.29 /0.62	0.14/0.29 /0.62	11 / 22 / 47	11000 / 11000 / 12000	1300 / 1900 / 2700
Hexachlorobutadiene (HCBD)	0.25/0.61/1.4	0.29/0.7/1.6	0.32/0.78/1.8	31 / 66 / 120	25 / 25 / 25	48 / 50 / 51

Determinand	Allotment	R_WHP	R_{WO}HP	Commercial/ Industrial	POSresi	POSpark
Pesticides (SOM 1%/ 2.5%/ 6%) [a, b, l, p]						
Aldrin	3.2 / 6.1 / 9.6	5.7/ 6.6 /7.1	7.3 / 7.4 / 7.5	170 / 170 / 170	18 / 18 / 18	30 / 31 / 31
Atrazine	0.5 / 1.2 / 2.7	3.3/7.6/17.4	610/ 620 / 620	9300 / 9400 / 9400	1200/1200 /1200	2300 / 2400 / 2400
Dichlorvos	0.0049/0.010/ 0.022	0.032/0.066/ 0.14	6.4 / 6.5 / 6.6	140 / 140 / 140	16 / 16 / 16	26 / 26 / 27
Dieldrin	0.17/0.41/0.96	0.97/ 2 / 3.5	7.0 / 7.3 / 7.4	170 / 170 / 170	18 / 18 / 18	30 / 30 / 31
Alpha - Endosulfan	1.2 / 2.9 / 6.8	7.4 / 18 / 41	160^{vap} (0.003)/ 280^{vap} (0.007)/ 410^{vap} (0.016)	5600^{vap} (0.003) / 7400^{vap} (0.007) / 8400^{vap} (0.016)	1200 / 1200 / 1200	2400 / 2400 / 2500
Beta - Endosulfan	1.1 / 2.7 / 6.4	7.0 / 17 / 39	190^{vap}(0.00007) /320^{vap}(0.0002) /440^{vap}(0.0004)	6300^{vap}(0.00007) /7800^{vap}(0.0002) / 8700	1200 / 1200 / 1200	2400 / 2400 / 2500
Alpha-Hexachlorocyclohexane	0.035/0.087/ 0.21	0.23/0.55 / 1.2	6.9 / 9.2 / 11	170 / 180 / 180	24 / 24 / 24	47 / 48 / 48
Beta - Hexachlorocyclohexane	0.013/0.032/ 0.077	0.085 / 0.2/ 0.46	3.7 / 3.8 / 3.8	65 / 65 / 65	8.1 / 8.1 / 8.1	15 / 15 / 16
Gamma – Hexachlorocyclohexane	0.0092 / 0.023 / 0.054	0.06/0.14/ 0.33	2.9 / 3.3 / 3.5	67 / 69 / 70	8.2 / 8.2 / 8.2	14 / 15 / 15
Chlorobenzenes [a, b, l, p]						
Chlorobenzene	5.9 / 14 / 32	0.46 / 1.0 / 2.4	0.46 / 1.0 / 2.4	56 / 130 / 290	11000 / 13000 / 14000	1300^{sol}(675)/ 2000^{sol}(1520)/ 2900
1,2-dichlorobenzene (1,2-DCB)	94 / 230 / 540	23 / 55 / 130	24 / 57 / 130	2000^{sol} (571) / 4800^{sol} (1370) / 11000^{sol} (3240)	90000 / 95000 / 98000	24000^{sol} (571) / 36000^{sol} (1370) /51000^{sol} (3240)
1,3-dichlorobenzene (1,3-DCB)	0.25 / 0.6 / 1.5	0.4 / 1.0 / 2.3	0.44/1.1 / 2.5	30 / 73 / 170	300/ 300 / 300	390 / 440 / 470
1-4-dichlorobenzene (1,4-DCB)	15^{i} / 37^{i} / 88 ^{i}	61^{q} / 150^{q} /350 ^{q}	61^{q}/150^{q}/350^{q}	4400^{vap,q} (224) / 10000^{vap,q} (540) / 25000^{vap,q} (1280)	17000^{i} / 17000^{i} / 17000^{i}	36000^{vap,i} (224) 36000^{vap,i}(540)/ 36000^{vap,i}(1280)
1,2,3-Trichlorobenzene	4.7 / 12 / 28	1.5 / 3.6 / 8.6	1.5 / 3.7 / 8.8	102 / 250 / 590	1800 / 1800 / 1800	770^{vap} (134) / 1100^{vap} (330) / 1600^{vap} (789)
1,2,4- Trichlorobenzene	55 / 140 / 320	2.6 / 6.4 / 15	2.6 / 6.4 / 15	220 / 530 / 1300	15000 / 17000 / 19000	1700^{vap} (318) / 2600^{vap} (786) / 4000^{vap} (1880)
1,3,5- Trichlorobenzene	4.7 / 12 / 28	0.33 / 0.81 / 1.9	0.33 / 0.81 / 1.9	23 / 55 / 130	1700 / 1700 / 1800	380^{vap} (36.7) / 580^{vap} (90.8) / 860^{vap} (217)
1,2,3,4-Tetrachlorobenzene	4.4 / 11 / 26	15 / 36 / 78	24 / 56 / 120	1700^{vap} (122) / 3080^{vap} (304) / 4400^{vap} (728)	830 / 830 / 830	1500^{vap} (122) / 1600 / 1600
1,2,3,5- Tetrachlorobenzene	0.38 / 0.90 / 2.2	0.66 / 1.6 / 3.7	0.75 / 1.9 / 4.3	49^{vap} (39.4) / 120^{vap} (98.1) / 240^{vap} (235)	78 / 79 / 79	110^{vap} (39) / 120 / 130
1,2,4,5- Tetrachlorobenzene	0.06 / 0.16 / 0.37	0.33 / 0.77 / 1.6	0.73 / 1.7 / 3.5	42^{sol} (19.7) / 72^{sol} (49.1) / 96	13 / 13 / 13	25 / 26 / 26
Pentachlorobenzene (P_ECB)	1.2 / 3.1 / 7.0	5.8 / 12 / 22	19 / 30 / 38	640^{sol} (43.0) / 770^{sol} (107) / 830	100 / 100 / 100	190 / 190 / 190
Hexachlorobenzene (HCB)	0.47 / 1.1 / 2.5	1.8^{vap} (0.20) / 3.3^{vap} (0.5) / 4.9	4.1^{vap} (0.20) / 5.7^{vap} (0.5) / 6.7^{vap} (1.2)	110^{vap} (0.20) / 120 / 120	16 / 16 / 16	30 / 30 / 30

R_WHP Residential with homegrown produce
R_{WO}HP Residential without homegrown produce
POSresi public open spaces near residential housing
POSpark public open space for recreational use but not dedicated sports pitches
SOM Soil Organic Matter – ***the S4UL for all organic compounds will vary according to SOM***

a Based on a sandy loam soil as defined in SR3 (Environment Agency, 2009b) and 6% soil organic matter (SOM)
b Figures rounded to two significant figures
c Based only on a comparison of oral and dermal soil exposure with oral Index Dose
d The background ADE is limited to being no larger than the contribution from the relevant soil ADE
e Based on comparison of inhalation exposure with inhalation TDI only
f Based on a lifetime exposure via the oral, dermal and inhalation pathways
g Based on localised effects comparing inhalation exposure with inhalation ID only
h Based on comparison of inhalation exposure with inhalation ID
i Based on comparison of oral and dermal exposure with oral TDI
j Based on comparison of oral, dermal and inhalation exposure with inhalation TDI
k Based on comparison of all exposure pathways with oral TDI
l S4ULs assume that free phase contamination is not present
m S4ULs based on a sub-surface soil to indoor air correction factor of 10
n The HCV applied is based on the intake of total Xylene and therefore exposure should not consider an isomer in isolation
o Oral, dermal and inhalation exposure compared with oral HCV
p S4ULs based on a sub-surface soil to indoor air correction factor of 1
q Based on a comparison of inhalation exposure with the inhalation TDI for localised effects
r Based on 2,4-dichlorophenol unless otherwise stated
s Based on 2,3,4,6-tetrachlorophenol
vap S4UL presented exceeded the vapour saturation limit, which is presented in brackets
sol S4UL presented exceeds the solubility saturation limit, which is presented in brackets
dir S4ULs based on a threshold protective of direct skin contact, guideline in brackets based on the health effects following long term exposure provided for illustration only

Category 4 Screening Levels (C4SL) – Table taken from SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (Department for Environmental, Food and Rural Affairs December 2014).

	Residential (with home-grown produce)	Residential (without home-grown produce)	Allotments	Commercial	Public Open Space 1	Public Open Space 2
Arsenic	37	40	49	640	79	170
Benzene	0.87	3.3	0.18	98	140	230
Benzo(a)pyrene	5.0	5.3	5.7	77	10	21
Cadmium	22	150	3.9	410	220	880
Chromium VI	21	21	170	49	21	250
Lead	200	310	80	2300	630	1300

All in mg/kg
Public Open Space 1 – for grassed area adjacent to residential housing
Public Open Space 2 - Park Type Public Open Space Scenario

Dice Environmental

APPENDIX E

Dice Environmental

GROUNDWATER / GAS MONITORING RECORD SHEET

Client:	Balmoral Investments	**Job No:**	100969	**Instruments Used:**	GFM 435
Project:	Cliffe House	**Date:**	14-Feb-24	**Monitored By:**	MD
Weather:	Wind, rain & cloud				

Installation No.	Peak[1]		Steady[2]			Total gas flow rate	Atmospheric Pressure	Minutes Monitored	Methane		Carbon Dioxide		Groundwater depth	Vapours
	CH_4	CO_2	CH_4	CO_2	O_2				GSV	CS	GSV	CS		
	(% vol)	(% vol)	(% vol)	(% vol)	(% vol)	(l/hr)	(mbar)						(m)	(ppm)
WS05	0.0	0.0	0.0	0.0	19.3	0.1	973	5	0	CS1	0	CS1	1.65	0.5