

Andy Walker  
Urban Regen



## APPENDIX B



# Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

Unit 3 Deeside Point  
Zone 3  
Deeside Industrial Park  
Deeside  
CH5 2UA

Smith Grant LLP  
Station House  
Station Road  
Ruabon  
Wrexham  
LL14 6DL

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



**Attention :** Dan Wayland  
**Date :** 7th June, 2018  
**Your reference :** R1742B  
**Our reference :** Test Report 18/7823 Batch 1  
**Location :** Heyford (Dorchester)  
**Date samples received :** 22nd May, 2018  
**Status :** Final report  
**Issue :** 1

Twenty samples were received for analysis on 22nd May, 2018 of which twenty were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

**Compiled By:**



**Phil Sommerton BSc**

Project Manager

Client Name: Smith Grant LLP  
 Reference: R1742B  
 Location: Heyford (Dorchester)  
 Contact: Dan Wayland  
 JE Job No.: 18/7823

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	Please see attached notes for all abbreviations and acronyms		
Sample ID	PH9-S1A	PH9-S1B	PH9-S2A	PH9-S2B	PH9-S3A	PH9-S3B	PH9-S4A	PH9-S4B	PH9-S5A	PH9-S5B			
Depth	0.00-0.20	0.20-0.60	0.00-0.30	0.30-0.70	0.00-0.20	0.20-0.60	0.00-0.20	0.20-0.60	0.00-0.30	0.30-0.70			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	LOD/LOR	Units	Method No.
Antimony	2	2	2	2	2	2	3	3	2	2	<1	mg/kg	TM30/PM15
Arsenic <sup>#M</sup>	15.9	17.1	16.2	19.1	21.6	16.5	17.4	18.1	19.3	25.1	<0.5	mg/kg	TM30/PM15
Barium <sup>#M</sup>	68	68	62	49	59	51	61	69	63	95	<1	mg/kg	TM30/PM15
Beryllium	1.1	1.2	1.3	1.3	1.1	1.0	1.1	1.0	1.1	1.0	<0.5	mg/kg	TM30/PM15
Cadmium <sup>#M</sup>	0.1	0.1	<0.1	<0.1	0.2	0.2	0.1	<0.1	0.1	0.1	<0.1	mg/kg	TM30/PM15
Chromium <sup>#M</sup>	42.2	43.2	42.5	47.0	38.8	34.9	38.6	39.8	43.5	45.1	<0.5	mg/kg	TM30/PM15
Cobalt <sup>#M</sup>	8.5	9.3	9.4	9.3	8.2	6.5	8.3	9.4	8.0	6.8	<0.5	mg/kg	TM30/PM15
Copper <sup>#M</sup>	15	14	10	11	10	9	12	27	11	18	<1	mg/kg	TM30/PM15
Lead <sup>#M</sup>	21	24	17	11	38	42	36	35	35	32	<5	mg/kg	TM30/PM15
Mercury <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum <sup>#M</sup>	1.9	1.9	1.8	1.9	1.5	1.6	1.9	2.0	1.8	2.1	<0.1	mg/kg	TM30/PM15
Nickel <sup>#M</sup>	24.2	23.0	26.3	27.2	22.4	16.3	22.5	22.3	22.0	18.3	<0.7	mg/kg	TM30/PM15
Selenium <sup>#M</sup>	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Vanadium	55	57	54	55	54	50	55	57	54	69	<1	mg/kg	TM30/PM15
Water Soluble Boron <sup>#M</sup>	1.2	1.2	1.1	0.7	0.9	1.1	1.6	1.4	1.8	1.1	<0.1	mg/kg	TM74/PM32
Zinc <sup>#M</sup>	64	68	64	52	78	63	71	59	67	122	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene <sup>#M</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	0.06	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	<0.03	0.05	<0.03	0.07	<0.03	mg/kg	TM4/PM8
Acenaphthene <sup>#M</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.23	<0.05	0.23	<0.05	mg/kg	TM4/PM8
Fluorene <sup>#M</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.12	<0.04	0.15	<0.04	mg/kg	TM4/PM8
Phenanthrene <sup>#M</sup>	0.11	<0.03	<0.03	<0.03	0.12	0.70	0.06	2.24	0.07	2.93	<0.03	mg/kg	TM4/PM8
Anthracene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	0.06	0.22	<0.04	0.87	<0.04	0.69	<0.04	mg/kg	TM4/PM8
Fluoranthene <sup>#M</sup>	0.42	0.11	0.09	<0.03	0.51	1.56	0.21	6.08	0.22	3.88	<0.03	mg/kg	TM4/PM8
Pyrene <sup>#</sup>	0.37	0.11	0.09	<0.03	0.50	1.34	0.20	4.91	0.20	3.14	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene <sup>#</sup>	0.21	0.08	0.08	<0.06	0.30	0.63	0.12	2.15	0.13	1.31	<0.06	mg/kg	TM4/PM8
Chrysene <sup>#M</sup>	0.21	0.07	0.06	<0.02	0.31	0.66	0.12	2.15	0.13	1.48	<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene <sup>#M</sup>	0.43	0.14	0.11	<0.07	0.67	1.26	0.25	3.83	0.26	2.88	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene <sup>#</sup>	0.23	0.08	0.06	<0.04	0.39	0.70	0.14	2.22	0.15	1.54	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene <sup>#M</sup>	0.19	0.06	<0.04	<0.04	0.29	0.49	0.10	1.49	0.12	1.19	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	0.06	0.10	<0.04	0.28	<0.04	0.19	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene <sup>#</sup>	0.17	0.06	<0.04	<0.04	0.28	0.47	0.09	1.33	0.10	1.04	<0.04	mg/kg	TM4/PM8
PAH 16 Total	2.3	0.7	<0.6	<0.6	3.5	8.2	1.3	28.0	1.4	20.7	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.31	0.10	0.08	<0.05	0.48	0.91	0.18	2.76	0.19	2.07	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.12	0.04	0.03	<0.02	0.19	0.35	0.07	1.07	0.07	0.81	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	89	91	90	89	89	90	84	90	91	88	<0	%	TM4/PM8

**Client Name:** Smith Grant LLP  
**Reference:** R1742B  
**Location:** Heyford (Dorchester)  
**Contact:** Dan Wayland  
**JE Job No.:** 18/7823

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	Please see attached notes for all abbreviations and acronyms		
Sample ID	PH9-S1A	PH9-S1B	PH9-S2A	PH9-S2B	PH9-S3A	PH9-S3B	PH9-S4A	PH9-S4B	PH9-S5A	PH9-S5B			
Depth	0.00-0.20	0.20-0.60	0.00-0.30	0.30-0.70	0.00-0.20	0.20-0.60	0.00-0.20	0.20-0.60	0.00-0.30	0.30-0.70			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	LOD/LOR	Units	Method No.
TPH CWG													
<b>Aliphatics</b>													
>C5-C6 <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 <sup>#M</sup>	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 <sup>#M</sup>	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 <sup>#M</sup>	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 <sup>#M</sup>	<7	<7	<7	<7	<7	<7	<7	<7	<7	11	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	mg/kg	TM5/PM8/PM16/PM12/PM11
<b>Aromatics</b>													
>C5-EC7 <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 <sup>#</sup>	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 <sup>#</sup>	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 <sup>#</sup>	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 <sup>#</sup>	<7	<7	<7	<7	<7	<7	<7	<7	<7	78	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 <sup>#</sup>	<19	<19	<19	<19	<19	<19	<19	<19	<19	78	<19	mg/kg	TM5/PM8/PM16/PM12/PM11
Total aliphatics and aromatics(C5-35)	<38	<38	<38	<38	<38	<38	<38	<38	<38	78	<38	mg/kg	TM5/PM8/PM16/PM12/PM11
MTBE <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Natural Moisture Content	10.7	12.6	11.2	12.4	10.2	10.8	10.6	12.5	12.1	13.2	<0.1	%	PM4/PM0
Hexavalent Chromium <sup>#</sup>	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Organic Matter	1.8	1.9	1.5	0.6	1.5	1.2	2.6	1.4	2.4	1.2	<0.2	%	TM21/PM24
Electrical Conductivity @ 25C (5:1 ext)	204	192	203	157	203	176	236	175	234	191	<100	uS/cm	TM76/PM58
pH <sup>#M</sup>	8.18	8.25	8.12	8.31	8.25	8.24	8.10	8.46	8.06	8.38	<0.01	pH units	TM73/PM11
Sample Type	Clayey Loam	Clayey Loam	Loam	Clay	Clayey Loam	Clay	Clayey Loam	Clay	Clayey Loam	Clayey Loam		None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown		None	PM13/PM0
Other Items	stones, vegetation, carbon	stones, vegetation	vegetation, stones	vegetation, stones	vegetation, stones	stones	stones, vegetation	loam, stones, vegetation	vegetation, stones	stones, vegetation		None	PM13/PM0

**Client Name:** Smith Grant LLP  
**Reference:** R1742B  
**Location:** Heyford (Dorchester)  
**Contact:** Dan Wayland  
**JE Job No.:** 18/7823

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40	Please see attached notes for all abbreviations and acronyms		
Sample ID	PH9-S6A	PH9-S6B	PH9-S7A	PH9-S7B	PH9-S8A	PH9-S8B	PH9-S9A	PH9-S10A	PH9-S11A	PH9-S12A			
Depth	0.00-0.20	0.20-0.60	0.00-0.20	0.20-0.60	0.00-0.20	0.20-0.60	0.00-0.60	0.30-0.70	0.30-0.70	0.30-0.70			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	LOD/LOR	Units	Method No.
Antimony	3	3	3	2	2	2	5	2	1	2	<1	mg/kg	TM30/PM15
Arsenic <sup>#M</sup>	23.0	22.4	21.1	14.3	15.2	15.1	52.1	15.5	17.3	15.1	<0.5	mg/kg	TM30/PM15
Barium <sup>#M</sup>	68	119	65	81	60	52	107	61	51	67	<1	mg/kg	TM30/PM15
Beryllium	1.2	1.2	1.4	1.4	0.9	1.0	3.0	1.4	0.9	1.0	<0.5	mg/kg	TM30/PM15
Cadmium <sup>#M</sup>	0.1	0.2	0.1	0.2	0.2	<0.1	<0.1	0.1	0.1	0.2	<0.1	mg/kg	TM30/PM15
Chromium <sup>#M</sup>	45.3	40.3	43.1	34.8	36.9	34.7	82.2	45.5	32.3	33.7	<0.5	mg/kg	TM30/PM15
Cobalt <sup>#M</sup>	9.7	12.5	8.8	6.9	7.6	7.4	13.6	10.6	6.3	7.1	<0.5	mg/kg	TM30/PM15
Copper <sup>#M</sup>	11	12	29	57	12	11	13	18	11	14	<1	mg/kg	TM30/PM15
Lead <sup>#M</sup>	42	59	88	40	22	17	84	21	23	23	<5	mg/kg	TM30/PM15
Mercury <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Molybdenum <sup>#M</sup>	2.0	1.9	2.3	2.6	1.8	1.7	1.9	1.2	1.5	1.4	<0.1	mg/kg	TM30/PM15
Nickel <sup>#M</sup>	26.3	31.6	24.0	21.7	18.3	18.1	51.5	23.1	16.5	16.9	<0.7	mg/kg	TM30/PM15
Selenium <sup>#M</sup>	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	mg/kg	TM30/PM15
Vanadium	61	57	60	42	52	53	119	62	47	47	<1	mg/kg	TM30/PM15
Water Soluble Boron <sup>#M</sup>	1.7	1.1	1.7	1.3	1.8	1.2	2.9	3.4	0.9	1.2	<0.1	mg/kg	TM74/PM32
Zinc <sup>#M</sup>	75	80	128	204	87	61	174	67	64	67	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene <sup>#M</sup>	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	0.08	<0.03	<0.03	<0.03	<0.03	0.08	0.07	<0.03	mg/kg	TM4/PM8
Acenaphthene <sup>#M</sup>	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	0.09	0.06	<0.05	mg/kg	TM4/PM8
Fluorene <sup>#M</sup>	<0.04	<0.04	<0.04	0.06	<0.04	<0.04	<0.04	<0.04	0.06	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene <sup>#M</sup>	0.07	0.22	0.24	1.09	0.07	<0.03	0.26	0.06	0.79	0.66	<0.03	mg/kg	TM4/PM8
Anthracene <sup>#</sup>	<0.04	0.08	0.09	0.43	<0.04	<0.04	0.09	<0.04	0.34	0.22	<0.04	mg/kg	TM4/PM8
Fluoranthene <sup>#M</sup>	0.24	0.92	0.95	3.47	0.28	<0.03	0.61	0.18	3.11	1.64	<0.03	mg/kg	TM4/PM8
Pyrene <sup>#</sup>	0.22	0.84	0.87	3.15	0.26	<0.03	0.50	0.18	2.88	1.42	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene <sup>#</sup>	0.15	0.47	0.47	1.61	0.15	<0.06	0.28	0.12	1.42	1.03	<0.06	mg/kg	TM4/PM8
Chrysene <sup>#M</sup>	0.15	0.46	0.46	1.64	0.17	<0.02	0.28	0.11	1.55	1.01	<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene <sup>#M</sup>	0.34	1.12	1.09	3.50	0.39	<0.07	0.55	0.26	3.58	1.90	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene <sup>#</sup>	0.18	0.63	0.59	2.03	0.21	<0.04	0.29	0.13	2.00	0.98	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene <sup>#M</sup>	0.12	0.48	0.44	1.60	0.18	<0.04	0.21	0.11	1.55	0.74	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene <sup>#</sup>	<0.04	0.09	0.09	0.27	<0.04	<0.04	<0.04	<0.04	0.28	0.14	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene <sup>#</sup>	0.11	0.40	0.40	1.36	0.18	<0.04	0.19	0.10	1.51	0.69	<0.04	mg/kg	TM4/PM8
PAH 16 Total	1.6	5.7	5.7	20.4	1.9	<0.6	3.3	1.3	19.2	10.6	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.24	0.81	0.78	2.52	0.28	<0.05	0.40	0.19	2.58	1.37	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.10	0.31	0.31	0.98	0.11	<0.02	0.15	0.07	1.00	0.53	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	88	91	91	96	90	90	84	90	89	101	<0	%	TM4/PM8

**Client Name:** Smith Grant LLP  
**Reference:** R1742B  
**Location:** Heyford (Dorchester)  
**Contact:** Dan Wayland  
**JE Job No.:** 18/7823

**Report : Solid**

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40	Please see attached notes for all abbreviations and acronyms		
Sample ID	PH9-S6A	PH9-S6B	PH9-S7A	PH9-S7B	PH9-S8A	PH9-S8B	PH9-S9A	PH9-S10A	PH9-S11A	PH9-S12A			
Depth	0.00-0.20	0.20-0.60	0.00-0.20	0.20-0.60	0.00-0.20	0.20-0.60	0.00-0.60	0.30-0.70	0.30-0.70	0.30-0.70			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	22/05/2018	LOD/LOR	Units	Method No.
TPH CWG													
<b>Aliphatics</b>													
>C5-C6 <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 <sup>#M</sup>	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>C12-C16 <sup>#M</sup>	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16
>C16-C21 <sup>#M</sup>	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
>C21-C35 <sup>#M</sup>	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TMS/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	mg/kg	TMS/PM8/PM16
<b>Aromatics</b>													
>C5-EC7 <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 <sup>#</sup>	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 <sup>#</sup>	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 <sup>#</sup>	<7	<7	<7	20	<7	<7	<7	<7	9	<7	<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 <sup>#</sup>	<7	17	<7	91	<7	<7	<7	<7	97	70	<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-35 <sup>#</sup>	<19	<19	<19	111	<19	<19	<19	<19	106	70	<19	mg/kg	TMS/PM8/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38	111	<38	<38	<38	<38	106	70	<38	mg/kg	TMS/PM8/PM16
MTBE <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene <sup>#</sup>	<5	<5	<5	<5	<5	<5	58	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene <sup>#</sup>	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Natural Moisture Content	12.4	11.9	12.0	10.9	10.1	12.8	21.7	22.1	10.7	10.6	<0.1	%	PM4/PM0
Hexavalent Chromium <sup>#</sup>	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Organic Matter	2.5	1.7	3.8	1.8	3.3	1.2	3.6	2.7	1.3	1.7	<0.2	%	TM21/PM24
Electrical Conductivity @ 25C (5:1 ext)	244	214	238	166	252	191	248	247	123	197	<100	uS/cm	TM76/PM58
pH <sup>#M</sup>	8.10	8.23	7.98	8.30	7.74	8.29	7.77	7.53	8.26	8.47	<0.01	pH units	TM73/PM11
Sample Type	Clayey Loam	Clayey Loam	Loam	Clayey Loam	Loam	Clayey Loam	Clayey Loam	Clay	Clayey Loam	Clayey Loam		None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown		None	PM13/PM0
Other Items	vegetation, stones	stones, vegetation	stones, vegetation	stones, vegetation	vegetation, stones, carbon	stones	stones, vegetation	loam, stones	stones, vegetation, brick fragment	stones, vegetation		None	PM13/PM0



## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/7823

### SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

### WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

### DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

### DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

### BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.



**ABBREVIATIONS and ACRONYMS USED**

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 18/7823

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes

JE Job No: 18/7823

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes
TM76	Modified US EPA method 120.1. Determination of Specific Conductance by Metrohm automated probe analyser.	PM58	Dried and ground solid samples are extracted with water in a 5:1 water to solid ratio, the samples are shaken on an orbital shaker.			AD	Yes



## Final Report

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**Report No.:** 18-14613-1

**Initial Date of Issue:** 31-May-2018

**Client:** Smith Grant LLP

**Client Address:** Station House, Station Road  
Ruabon  
Wrexham  
LL14 6DL

**Contact(s):** Dan Wayland

**Project:** R17426 Heyford Park (Dorchester)

**Quotation No.:** **Date Received:** 24-May-2018

**Order No.:** **Date Instructed:** 24-May-2018

**No. of Samples:** 20

**Turnaround (Wkdays):** 5 **Results Due:** 31-May-2018

**Date Approved:** 31-May-2018

**Approved By:**

**Details:** Glynn Harvey, Laboratory Manager

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## Results - Soil

<b>Client: Smith Grant LLP</b>	<b>Chemtest Job No.:</b>				18-14613	18-14613	18-14613	18-14613	18-14613	18-14613	18-14613	18-14613	18-14613
Quotation No.:	<b>Chemtest Sample ID.:</b>				627756	627757	627758	627759	627760	627761	627762	627763	627764
	Client Sample ID.:				PH9-S1A	PH9-S1B	PH9-S2A	PH9-S2B	PH9-S3A	PH9-S3B	PH9-S4A	PH9-S4B	PH9-S5A
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.0	0.2	0.0	0.3	0.0	0.2	0.0	0.2	0.0
	Bottom Depth (m):				0.2	0.6	0.3	0.7	0.2	0.6	0.2	0.6	0.3
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected

## Results - Soil

Client: Smith Grant LLP		Chemtest Job No.:		18-14613	18-14613	18-14613	18-14613	18-14613	18-14613	18-14613	18-14613	18-14613	18-14613
Quotation No.:		Chemtest Sample ID.:		627765	627766	627767	627768	627769	627770	627771	627772	627773	
		Client Sample ID.:		PH9-S5B	PH9-S6A	PH9-S6B	PH9-S7A	PH9-S7B	PH9-S8A	PH9-S8B	PH9-S9A	PH9-S10A	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.3	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.3	
		Bottom Depth (m):		0.7	0.2	0.6	0.2	0.6	0.2	0.6	0.6	0.7	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected

<b>Client: Smith Grant LLP</b>	<b>Chemtest Job No.:</b>		18-14613	18-14613		
Quotation No.:	<b>Chemtest Sample ID.:</b>		627774	627775		
	Client Sample ID.:		PH9-S11A	PH9-S12A		
	Sample Type:		SOIL	SOIL		
	Top Depth (m):		0.3	0.3		
	Bottom Depth (m):		0.7	0.7		
	Asbestos Lab:		COVENTRY	COVENTRY		
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected

SOP	Title	Parameters included	Method summary
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry



## **Report Information**

### **Key**

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

### **Sample Deviation Codes**

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

### **Sample Retention and Disposal**

---

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

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

Charges may apply to extended sample storage

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

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)

Andy Walker  
Urban Regen



## APPENDIX C

# Contaminated Land Assessment - Statistical Spreadsheet

Ref: R1742b  
 Site: Heyford  
 Substance: Beryllium

Date: 06.08.18  
 Author: DW

data entry (maximum 200 values)

identifier	observed value
Ph9-S1A	15.90
PH9-S2A	16.20
PH9-S3A	21.60
PH9-S4A	17.40
PH9-S5A	19.3
PH9-S6A	23.0
PH9-S7A	21.1
PH9-S8A	15.2

planning or Part IIA scenario:

select units:

select significance level (P):   
(P 0.05 should be used by default)

enter critical concentration (Cc):  mg/kg  
(SGV / GAC)

total number of observations:

number of non-detects:

mg/kg

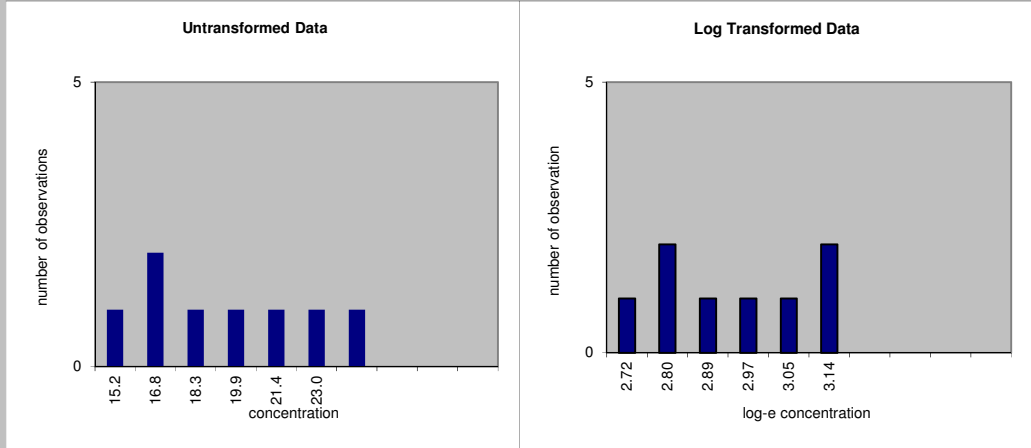
mg/kg  
(typically 50% of the m.d.l.)

**calculate**

The null hypothesis ( $H_0$ ) is that the true mean is equal to or greater than the critical concentration at a confidence level of 95%

# Contaminated Land Assessment - Statistical Spreadsheet

## 1. Data review bell-shaped histograms indicate a normal-type distribution



Use log-transformed data?

no

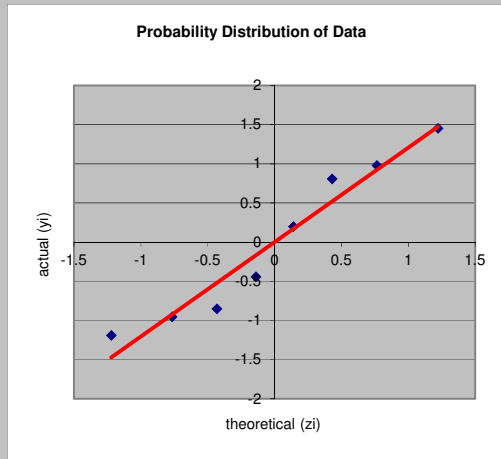
## 2. Check for statistical outliers Grubbs Test - assumes that data other than outlier(s) are normally distributed

$T_{crit} = 2.03$      $T_n = 1.45$     log transformed  $T_n = 1.38$

maximum value 23 mg/kg is not an outlier

*note: outliers should only be removed in particular circumstances*

## 3. Assessment of normal distribution



### Shapiro-Wilk normality test

W = 0.562

significance level	0.01	0.05
critical level	0.749	0.818

W is less than the critical value at 5% significance level

Are data points aligned close to red line, indicating a normal distribution?

yes

**Non-parametric testing (Chebychev Theorem) is appropriate**

## 4. Significance Tests Against Critical Value

Non-parametric Chebychev Test

sample mean = 18.7125 mg/kg      sample unbiased standard deviation = 2.95 mg/kg

k statistic = -17.515      critical value = -4.360

k statistic is less than critical value      **null hypothesis can be rejected**

upper confidence limit (UCL 0.95) = 23.26 mg/kg

# Contaminated Land Assessment - Statistical Spreadsheet

Ref: R1742b  
 Site: Heyford  
 Substance: Beryllium

Date: 06.08.18  
 Author: DW

data entry (maximum 200 values)

identifier	observed value
Ph9-S1A	1.10
PH9-S2A	1.30
PH9-S3A	1.10
PH9-S4A	1.10
PH9-S5A	1.1
PH9-S6A	1.2
PH9-S7A	1.4
PH9-S8A	0.9

planning or Part IIA scenario:

select units:

select significance level (P):   
(P 0.05 should be used by default)

enter critical concentration (Cc):  mg/kg  
(SGV / GAC)

total number of observations:

number of non-detects:

mg/kg

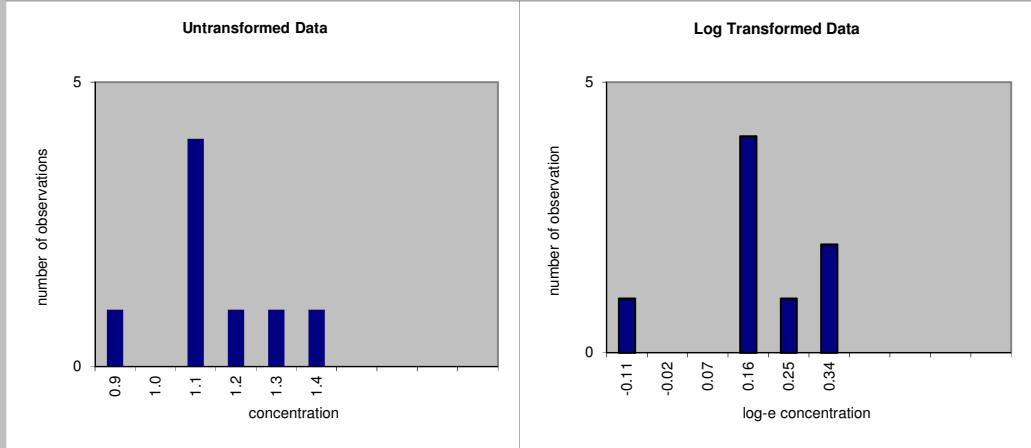
mg/kg  
(typically 50% of the m.d.l.)

**calculate**

The null hypothesis ( $H_0$ ) is that the true mean is equal to or greater than the critical concentration at a confidence level of 95%

# Contaminated Land Assessment - Statistical Spreadsheet

## 1. Data review bell-shaped histograms indicate a normal-type distribution



Use log-transformed data?

no ▼

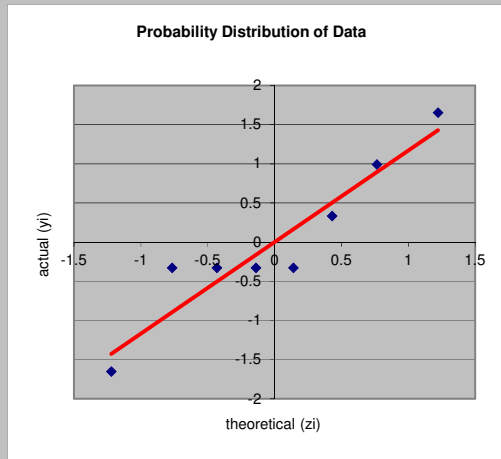
## 2. Check for statistical outliers Grubbs Test - assumes that data other than outlier(s) are normally distributed

$T_{crit} =$  2.03      $T_n =$  1.65     log transformed  $T_n =$  1.54

maximum value 1.4 mg/kg is not an outlier

*note: outliers should only be removed in particular circumstances*

## 3. Assessment of normal distribution



### Shapiro-Wilk normality test

W = 0.917

significance level	0.01	0.05
critical level	0.749	0.818

data do not significantly vary from a normal distribution

Are data points aligned close to red line, indicating a normal distribution?

yes ▼

**One-sample T test is appropriate**

## 4. Significance Tests Against Critical Value

One-sample T Test

sample mean = 1.15 mg/kg     sample unbiased standard deviation = 0.15 mg/kg

t statistic = -10.290     critical value = -1.895

t statistic is less than critical value     **null hypothesis can be rejected**

upper confidence limit (UCL 0.95) = 1.25 mg/kg

Job name	Upper Heyford (Dorchester)
Job no.	R1742b
Date:	18.07.18
Author:	DW
Laboratory:	Exova Jones
Lab. Reference:	18-7823



**PAH concentrations**

sample identity	Ph9-S4	Ph9-S11																	
phenanthrene	2.24	0.79																	
anthracene	0.87	0.34																	
fluoranthene	6.08	3.11																	
pyrene	4.91	2.88																	
benz(a)anthracene	2.15	1.42																	
chrysene	2.15	1.55																	

PAH units

**PAH ratios**

phe/ant	2.575	2.324																	
flu/pyr	1.238	1.080																	
baa/chr	1.000	0.916																	

