Contaminated Land
Air Quality
Environmental Audit

SMITH GRANT Environmental Consultancy LLP

Partnership No: OC 300776

Our ref: R1742B-L09
Your ref:

14th November 2018

Andy Walker
Urban Regen
23 Springvale
Bolton
BL7 0FS

by e-mail: andy.walker@urbanregen.co.uk

Dear Andy

Upper Heyford – Dorchester Buildings 100-102 In-Situ Validation

SGP has been instructed to produce a validation report for the parcel of land formerly occupied by Buildings 100-102 following the demolition and the removal of the surrounding hardstanding. A site location plan including the location of validation entries is provided within Drawing D01. SGP understand that redevelopment proposals for this phase is for commercial use with areas of soft landscaping and associated areas of hardstanding, although a proposed layout has not been provided.

Background (Hydrock Report)
SGP has been provided with a copy of Hydrock's Ground Investigation Report (ref: HPW-HYD-VCN-GI-RP-GE-1000-P1 - 'Heyford Park - Western Development, Village Centre North', dated August 2018) which encompasses the site and includes a Phase 1 (desk study) and Phase 2 (intrusive) investigation. The report states that the site was previously occupied by brick buildings assumed to have been formally used as offices or for light industrial use. No potentially contaminative activities such as the storage of fuels (ASTs, USTs, boiler house etc.) was identified within previous reporting and on-site sources of contamination were limited to the presence of made ground.

Hydrock's ground investigation included 4 rotary boreholes to a maximum depth of 10m bgl (BH01-BH04) and 2 machine excavated trial-pits to a maximum depth of 0.5m bgl (CBR2 and SA02) within the area covered by this report.

Sampling and analysis consisted of the collection of 2 samples of made ground, 3 of topsoil and 2 of natural limestone deposits for a general suite including TPH and BTEX analysis; following the positive identification of asbestos within 1 of the 7 samples collected quantification analysis was completed.

Recorded ground conditions included:

- Made Ground comprising brown sandy gravel of limestone with man-made constituents including glass and asphalt from surface level to an unproven depth of at least 0.3m bgl (north);
- Topsoil comprising a soft brown clayey and gravelly sand to depths of between 0.2m and 0.5m bgl (south);
- White Limestone Formation directly underlying the Topsoil generally comprising a 0.30m to 0.50m thick layer of weathered bedrock (brown sandy gravelly clay with gravel of limestone)

overlying competent bedrock of interbedded limestone and mudstone to an unproven depth of at least 10m bgl.

Hydrock reported exceedances of the GAC for benzo(a)pyrene within 3 of the 7 soil samples submitted for chemical testing at concentrations between 1.6mg/kg and 2.2mg/kg. 2 of these samples were collected from the Made Ground (SA02-0.2m) and CBR2-0.2m) and 1 was collected from the Topsoil (BH03-0.3m). The sample of topsoil that recorded an exceedance for benzo(a)pyrene also tested positive for the presence of asbestos. Subsequent quantification analysis reported that the concentration of asbestos contained within the sample was below analytical limits of detection (<0.001% mass).

SGP understand that the Hydrock report has been submitted to the Local Authority for comment, however no comment has been received to date. The reported ground conditions and concentrations are consistent with those recorded within the wider Heyford Park area and can be addressed under the approved Remediation Strategy for the site.

Preparatory works are nearing completion and consisted of demolition works of Buildings 100-102 following an asbestos survey and removal, and internal strip of materials for recovery and disposal. Demolition materials and broken out hardstanding (concrete slabs and pavements) were transferred to another phase of works for processing at a later date. Final works are underway and are limited to the breaking out of the slab associated with Building 100.

In-Situ Formation Soil Validation

It is a requirement under the Remediation Strategy that a 600mm cover of clean soils is placed over made ground in gardens, with a reduced thickness of 300mm in landscape areas; however, due to the contractual requirement to trim development areas by -200mm below previous ground levels, made ground appeared absent at formation level in TP1 and TP2. A reworked natural soil including fragments of brick were observed in entries TP3-TP6, however no anthropogenic inclusions such as ash, clinker or slag were observed, and so sampling was completed to determine its suitability for retention in landscaped areas.

SGP attended site on 19.09.18 and 06.11.18 during the preparatory earthworks to carry out in-situ sampling of the formation level strata through the sampling of the upper 400mm at a test frequency of 1 sample per 500m^3, the residual 400mm depth equating to 1 sample per 1,250m^2 plan area of development.

Six in-situ samples were collected from the exposed formation level soils at accessible locations with depth validation photos showing the 0-400mm depth range appended to this report; a site location plan indicating the approximate location of in-situ validation entries is provided within Drawing D01. Assuming an approximate area of 4,950m^2 the total volume of validated soils is effectively 1,980m^3. With 6 samples collected, the specified sampling rate of 1 sample per 500m^3 has been exceeded (1 per 330m^3 achieved).

Sampled soils comprised two soil types:

- gravel of angular cobbles (weathered bedrock) within a light brown sandy clay matrix, typical of the natural soils encountered across the wider Heyford development (TP1 & 2), and;

- brown (becoming lighter with increased depth) clayey sand with frequent roots, occasional gravel and occasional cobbles of brick and limestone (TP3, TP4, TP5 and TP6);

Samples were collected by SGP and were placed in appropriate laboratory-provided containers and stored in cooled boxes. Samples submitted for chemical analysis were delivered to Exova-Jones

Environmental Ltd (EJEL) within 24 hours of collection and samples for asbestos screen were sent to Chemtest within 48 hours of collection. SGP retains chain of custody documentation.

Chemical laboratory certificates (18-15101 & 18-17881) and asbestos laboratory certificates (18-28893& 18-34841) are attached. Results are summarised in the table below and are compared to assessment criteria for cover soils in accordance with Table B1 of the Waterman's Strategy.

Table 1. Analysis Summary for Formation Level Soils

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Residential Use	
			Screening criteria (mg/kg unless stated)	Exceedances
SOM	6	0.4-3.2%	-	None
pH	6	8.09-8.50	WRAS <5>8	**All**
asbestos fibre	6	No Fibres Detected	<0.001%	None
antimony	6	<1-2	550	None
arsenic	6	13.5-20.8	32	None
barium	6	27-143	1300	None
beryllium	6	0.6-1.4	51	None
cadmium	6	<0.1-0.2	10	None
chromium	6	22-41.8	3000	None
chromium VI	6	<0.3	4.3	None
cobalt	6	4.8-11	240	None
copper	6	5-19	300	None
lead	6	7-68	450	None
mercury	6	<0.1	1	None
molybdenum	6	1-1.4	670	None
nickel	6	11.5-24.8	130	None
selenium	6	<1	350	None
vanadium	6	39-73	75	None
water soluble boron	6	0.8-2.1	291	None
zinc	6	26-106	300	None
naphthalene	6	<0.04-0.77	1.5	None
acenaphthylene	6	<0.03-1.62	210	None
acenaphthene	6	<0.05-3.45	170	None
fluorene	6	<0.04-2.95	160	None
phenanthrene	6	0.06-51.03	92	None
anthracene	6	<0.04-16.24	2300	None
fluoranthene	6	0.13-77.75	260	None
pyrene	6	0.12-63.35	560	None
benzo(a)anthracene	6	0.1-38.14	3.1	None
chrysene	6	0.07-29.75	6	**(1): TP4-S1**
benzo(b)fluoranthene	6	0.09-39.66	5.6	**(1): TP4-S1**
benzo(k)fluoranthene	6	0.04-15.42	8.5	**(1): TP4-S1**
benzo(a)pyrene	6	0.07-30.54	0.83	**(2): TP4-S1 & TP6-S1**
indeno(123cd)pyrene	6	0.05-18.39	3.2	**(1): TP4-S1**

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Residential Use	
			Screening criteria (mg/kg unless stated)	Exceedances
dibenzo(ah)anthracene	6	<0.04-4.99	0.76	**(1): TP4-S1**
benzo(ghi)perylene	6	0.05-17.55	44	None
aliphatic C5-C6	6	<0.1	30	None
aliphatic C6-C8	6	<0.1	73	None
aliphatic C8-C10	6	<0.1	19	None
aliphatic C10-C12	6	<0.2	93	None
aliphatic C12-C16	6	<4	740	None
aliphatic C16-C21	6	<7	1000	None
aliphatic C21-C35	6	<7	1000	None
aromatic C5-C7	6	<0.1	30	None
aromatic C7-C8	6	<0.1	120	None
aromatic C8-C10	6	<0.1	27	None
aromatic C10-C12	6	<0.2	69	None
aromatic C12-C16	6	<4-37	140	None
aromatic C16-C21	6	<7-332	250	**(1): TP4-S1**
aromatic C21-C35	6	<7-694	890	None
benzene	6	<5	0.08	None
toluene	6	<5	120	None
ethylbenzene	6	<5	65	None
o-xylene	6	<5	45	None
m-xylene	6	<5	44	None
p-xylene	6	<5	42	None
methyl tert butyl ether	6	<5	49	None

Elevated pH in excess of the former WRAS trigger pH value of >8 was reported within all six samples with concentrations ranging between 8.09 and 8.50. Alkaline soil pH is likely to be attributed to the ubiquitous presence of carbonate limestone identified across the New Settlement Area (NSA) and is consistent with concentrations reported across the wider development area.

Exceedances were reported for a range of PAHs and the aromatic hydrocarbon range C16-21 within sample TP4-S1 with concentrations up to 37 times the assessment criteria with respect to benzo(a)pyrene; a minor exceedance for benzo(a)pyrene was also recorded within sample TP6-S1 at 1.15mg/kg.

Conclusions

SGP conclude that site preparatory works have been completed within the Dorchester Buildings 100-102 area with the exception of the removal of hardstanding associated with Building 100 which is nearing completion.

Although no potentially contaminative uses of the site were identified in the previous reporting, contamination has been identified through in-situ validation of formation soils with exceedances for a range of PAHs, the aromatic hydrocarbon range C16-21 and pH. High pH is associated with the presence of limestone bedrock and is typical to natural soil pH concentrations across the wider Heyford development area. The reported exceedances with respect to PAHs and hydrocarbons

indicate that the soils which appear to be reworked natural soils with inclusions of brick are unsuitable to be retained within the soil cover system for the site.

Recovered hardstanding and demolition materials have been transferred to another phase of works within the wider Heyford development for processing at a later date. Once processed these materials will be sampled in accordance with the Strategy and reported within the respective phase completion reporting.

Recommendations

Due to the reported exceedances within formation soils which are attributed to reworked natural soils, the developer is required to place a 300mm clean soil cover within all areas of soft landscaping. Soils placed within the cover system must be verified in accordance of the approved Strategy with imported soils sampled at a frequency of 1 per 250m^3 (minimum 3 samples per single source) and compliant with the criteria detailed in Table 6.2 of the Strategy. Independent depth validation following placement of the soil cover is also required with 1 entry per 50m grid space.

With the adoption of the above normal practice for Brownfield development, and on the information available to it, SGP concludes that the preparatory remedial works have been completed in accordance with the agreed strategy with the exception of final demolition works associated with Building 100 which are nearing completion. It is not anticipated that the final preparatory works will affect the conclusion and recommendations made within this assessment. In the event that any previously undisclosed contamination or suspect materials are identified then this should be assessed by an appropriately qualified and experienced person

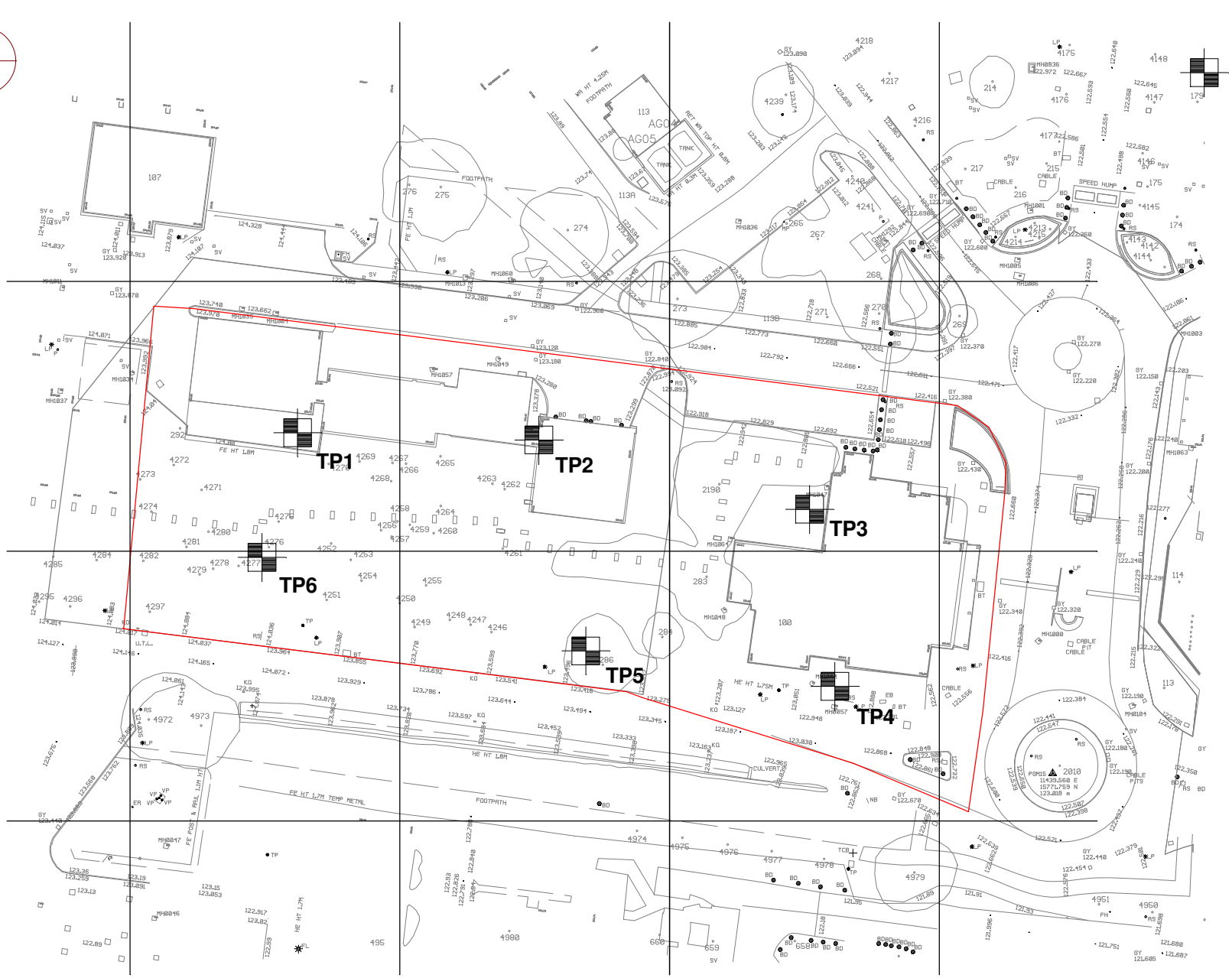
Yours sincerely
for: Smith Grant LLP

[redacted]

S D Miller BSc

Attached:

Drawing D01
L09-Validation Photos
Lab Certificates: 18-15101, 18-17881, 18-28893 & 18-34841



SMITH GRANT Environmental Consultancy LLP
Smith Grant LLP
Station House, Station Road
Ruabon, Wrexham LL14 6DL

Tel: 01978 822367
Fax: 01978 8247182

www.smithgrant.co.uk
email: consult@smithgrant.co.uk

Project:	Heyford (Dorchester)
Drawing:	Buildings 100-102 In-Situ Subsoil Sampling Locations
Drawn: SM	Checked: DW
Date: 07.11.18	Scale: 1:750 @ A4
Job No: R1742B	Drg No: L09-D01

1.

19.09.18 – TP1 Location.

2.

19.09.18 – TP1 Depth.

3.

19.09.18 – TP1 Soil profile.

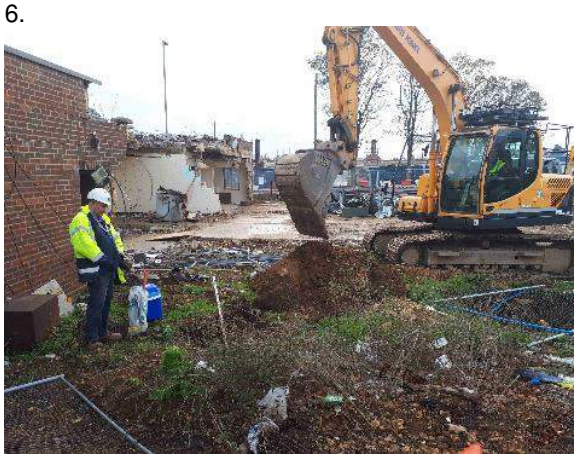
4.

19.09.18 – TP2 Location.

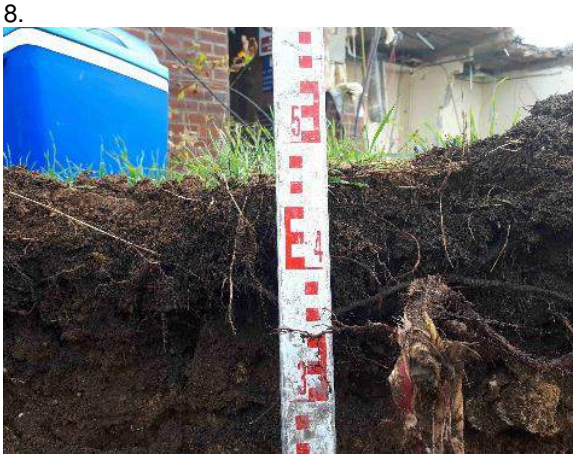
5.

19.09.18 – TP2 Depth and Soil profile.

6.



06.11.18 – TP3 Location.

7.  06.11.18 – TP3 Soil profile.	8.  06.11.18 – TP3 depth.
9.  06.11.18 – TP4 Location.	10.  06.11.18 – TP4 Soil profile.
11.  06.11.18 – TP4 depth.	12.  06.11.18 – TP5 Location

13.

06.11.18 – TP5 depth.

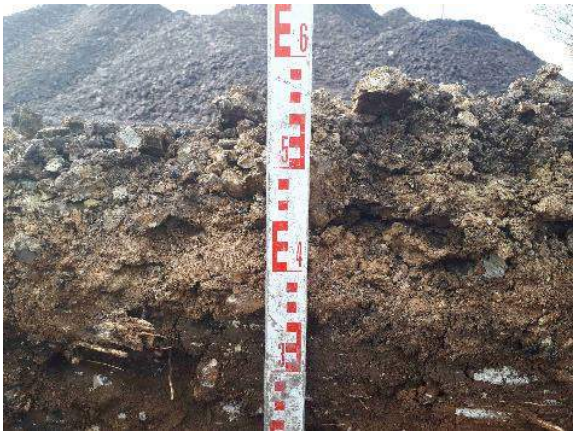
14.

06.11.18 – TP5 Soil profile - weathered bedrock at base

15.

06.11.18 – TP6 Location.

16.



06.11.18 – TP6 depth.

17.

06.11.18 – TP6 Soil profile

18.

19.09.18 – View west from centre of northern boundary.

19.

19.09.18 – View southwest from centre of northern boundary.

20.

19.09.18 – View south from centre of northern boundary.

21.

19.09.18 – View southeast from centre of northern boundary – demolition of Building 100 in progress.

22.

06.11.18 – View southwest from centre-west of northern boundary.

23.

06.11.18 – View southeast from centre-west of northern boundary.

24.

06.11.18 – View south from centre of northern boundary.

25.  06.11.18 – View southeast from centre of northern boundary.	26.  06.11.18 – View southeast from centre-east of northern boundary.

Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

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

Attention :	Scott Miller
Date :	4th October, 2018
Your reference :	R1742B
Our reference :	Test Report 18/15101 Batch 1
Location :	Heyford Dorchester
Date samples received :	21st September, 2018
Status :	Final report
Issue :	1

Two samples were received for analysis on 21st September, 2018 of which two 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:

[redacted]

Phil Sommerton BSc
Project Manager

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford Dorchester
Contact: Scott Miller
JE Job No.: 18/15101

Report : Solid

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

J E Sample No.	1-2	3-4											
Sample ID	B101/102-TP1-SS	B101/102-TP2-SS											
Depth	0-0.40	0-0.40											
COC No / misc													
Containers	V J	V J											
Sample Date	19/09/2018	19/09/2018											
Sample Type	Sand	Sand											
Batch Number	1	1											
Date of Receipt	21/09/2018	21/09/2018											

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Antimony	<1	2									<1	mg/kg	TM30/PM15
Arsenic #M	13.5	17.6									<0.5	mg/kg	TM30/PM15
Barium #M	37	69									<1	mg/kg	TM30/PM15
Beryllium	0.6	0.8									<0.5	mg/kg	TM30/PM15
Cadmium #M	0.1	<0.1									<0.1	mg/kg	TM30/PM15
Chromium #M	22.0	29.4									<0.5	mg/kg	TM30/PM15
Cobalt #M	4.8	7.7									<0.5	mg/kg	TM30/PM15
Copper #M	5	7									<1	mg/kg	TM30/PM15
Lead #M	7	20									<5	mg/kg	TM30/PM15
Mercury #M	<0.1	<0.1									<0.1	mg/kg	TM30/PM15
Molybdenum #M	1.1	1.2									<0.1	mg/kg	TM30/PM15
Nickel #M	11.5	16.0									<0.7	mg/kg	TM30/PM15
Selenium #M	<1	<1									<1	mg/kg	TM30/PM15
Vanadium	39	62									<1	mg/kg	TM30/PM15
Water Soluble Boron #M	0.8	0.9									<0.1	mg/kg	TM74/PM32
Zinc #M	26	41									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #M	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #M	0.06	0.08									<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #M	0.13	0.19									<0.03	mg/kg	TM4/PM8
Pyrene #	0.12	0.18									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.10	0.12									<0.06	mg/kg	TM4/PM8
Chrysene #M	0.07	0.09									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	0.13	0.15									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.07	0.09									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	0.06	0.05									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.10	0.05									<0.04	mg/kg	TM4/PM8
PAH 16 Total	0.8	1.0									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.09	0.11									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.04	0.04									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	95	96									<0	%	TM4/PM8

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford Dorchester
Contact: Scott Miller
JE Job No.: 18/15101

Report : Solid

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

J E Sample No.	1-2	3-4									LOD/LOR	Units	Method No.
Sample ID	B101/102-TP1-SS	B101/102-TP2-SS											
Depth	0-0.40	0-0.40											
COC No / misc													
Containers	V J	V J											
Sample Date	19/09/2018	19/09/2018											
Sample Type	Sand	Sand											
Batch Number	1	1											
Date of Receipt	21/09/2018	21/09/2018											
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #M	<4	<4									<4	mg/kg	TM5/PM8/PM16
>C16-C21 #M	<7	<7									<7	mg/kg	TM5/PM8/PM16
>C21-C35 #M	<7	<7									<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19									<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4									<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	<7									<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7									<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19	<19									<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38									<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE #	<5	<5									<5	ug/kg	TM31/PM12
Benzene #	<5	<5									<5	ug/kg	TM31/PM12
Toluene #	<5	<5									<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5									<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5									<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5									<5	ug/kg	TM31/PM12
Natural Moisture Content	5.8	9.4									<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3									<0.3	mg/kg	TM38/PM20
Organic Matter	0.4	0.5									<0.2	%	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	213	344									<100	uS/cm	TM76/PM58
pH #M	8.38	8.50									<0.01	pH units	TM73/PM11
Sample Type	Sand	Sand										None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown										None	PM13/PM0
Other Items	roots, stones	stones, roots										None	PM13/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford Dorchester
Contact: Scott Miller

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 18/15101						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/15101

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 overesitimate 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.

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: 18/15101

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	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 BS 7755-3:1995, ISO10694:1995 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: 18/15101

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	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 Methyltertbutylether, 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 Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	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

Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

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

Attention :	Scott Miller
Date :	13th November, 2018
Your reference :	R1742B
Our reference :	Test Report 18/17881 Batch 1
Location :	Heyford
Date samples received :	6th November, 2018
Status :	Final report
Issue :	1

Four samples were received for analysis on 6th November, 2018 of which four 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:

[redacted]

Phil Sommerton BSc
Project Manager

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford
Contact: Scott Miller
JE Job No.: 18/17881

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							LOD/LOR	Units	Method No.
Sample ID	TP3-S1	TP4-S1	TP5-S1	TP6-S1									
Depth	0.00-0.40	0.00-0.40	0.00-0.40	0.00-0.40									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	06/11/2018	06/11/2018	06/11/2018	06/11/2018									
Sample Type	Clay	Clay	Clay	Clay									
Batch Number	1	1	1	1									
Date of Receipt	06/11/2018	06/11/2018	06/11/2018	06/11/2018									
Antimony	<1	2	<1	2							<1	mg/kg	TM30/PM15
Arsenic #M	18.0	19.8	20.2	20.8							<0.5	mg/kg	TM30/PM15
Barium #M	75	139	91	143							<1	mg/kg	TM30/PM15
Beryllium	1.0	1.2	1.3	1.4							<0.5	mg/kg	TM30/PM15
Cadmium #M	0.1	0.2	<0.1	0.2							<0.1	mg/kg	TM30/PM15
Chromium #M	29.5	38.7	38.7	41.8							<0.5	mg/kg	TM30/PM15
Cobalt #M	7.3	9.9	10.8	11.0							<0.5	mg/kg	TM30/PM15
Copper #M	13	19	13	17							<1	mg/kg	TM30/PM15
Lead #M	25	53	25	68							<5	mg/kg	TM30/PM15
Mercury #M	<0.1	<0.1	<0.1	<0.1							<0.1	mg/kg	TM30/PM15
Molybdenum #M	1.0	1.1	1.2	1.4							<0.1	mg/kg	TM30/PM15
Nickel #M	17.6	21.9	23.7	24.8							<0.7	mg/kg	TM30/PM15
Selenium #M	<1	<1	<1	<1							<1	mg/kg	TM30/PM15
Vanadium	53	67	73	73							<1	mg/kg	TM30/PM15
Water Soluble Boron #M	1.1	1.6	2.1	1.9							<0.1	mg/kg	TM74/PM32
Zinc #M	59	106	56	89							<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #M	<0.04	0.77 AA	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.05	1.62 AA	0.03	0.15							<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	3.45 AA	<0.05	<0.05							<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	2.95 AA	<0.04	0.06							<0.04	mg/kg	TM4/PM8
Phenanthrene #M	0.23	51.03 AA	0.16	1.12							<0.03	mg/kg	TM4/PM8
Anthracene #	0.09	16.24 AA	0.07	0.37							<0.04	mg/kg	TM4/PM8
Fluoranthene #M	0.76	77.75 AA	0.41	2.70							<0.03	mg/kg	TM4/PM8
Pyrene #	0.69	63.35 AA	0.38	2.33							<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.47	38.14 AA	0.23	1.58							<0.06	mg/kg	TM4/PM8
Chrysene #M	0.37	29.75 AA	0.20	1.31							<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	0.87	55.08 AA	0.48	2.35							<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.45	30.54 AA	0.27	1.15							<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	0.32	18.39 AA	0.20	0.78							<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.08	4.99 AA	<0.04	0.21							<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.32	17.55 AA	0.20	0.77							<0.04	mg/kg	TM4/PM8
PAH 16 Total	4.7	411.6 AA	2.6	14.9							<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.63	39.66 AA	0.35	1.69							<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.24	15.42 AA	0.13	0.66							<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	104	98 AA	102	102							<0	%	TM4/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford
Contact: Scott Miller
JE Job No.: 18/17881

Report : Solid

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

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-2	3-4	5-6	7-8							LOD/LOR	Units	Method No.
Sample ID	TP3-S1	TP4-S1	TP5-S1	TP6-S1									
Depth	0.00-0.40	0.00-0.40	0.00-0.40	0.00-0.40									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	06/11/2018	06/11/2018	06/11/2018	06/11/2018									
Sample Type	Clay	Clay	Clay	Clay									
Batch Number	1	1	1	1									
Date of Receipt	06/11/2018	06/11/2018	06/11/2018	06/11/2018									
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	<0.1	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<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	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	<0.2	<0.2	<0.2							<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #M	<4	<4	<4	<4							<4	mg/kg	TM5/PM8/PM16
>C16-C21 #M	<7	<7	<7	<7							<7	mg/kg	TM5/PM8/PM16
>C21-C35 #M	<7	<7	<7	<7							<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19							<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2 SV	<0.2	<0.2 SV	<0.2 SV							<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4 SV	37	<4 SV	<4 SV							<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7 SV	332	<7 SV	<7 SV							<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7 SV	694	<7 SV	<7 SV							<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19 SV	1063	<19 SV	<19 SV							<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38 SV	1063	<38 SV	<38 SV							<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE #	<5	<5	<5	<5							<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5							<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5	<5							<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5	<5							<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5	<5							<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5	<5							<5	ug/kg	TM31/PM12
Natural Moisture Content	12.8	12.7	9.8	11.6							<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3							<0.3	mg/kg	TM38/PM20
Organic Matter	2.0	2.5	1.7	3.2							<0.2	%	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	166	127	156	159							<100	uS/cm	TM76/PM58
pH #M	8.22	8.26	8.09	8.09							<0.01	pH units	TM73/PM11
Sample Type	Clay	Clay	Clay	Clay								None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Light Brown	Light Brown								None	PM13/PM0
Other Items	stones and sand	stones, sand and roots	stones	stones and sand								None	PM13/PM0

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford
Contact: Scott Miller

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 18/17881						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/17881

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 overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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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.

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REPORTS FROM THE SOUTH AFRICA LABORATORY

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JE Job No: 18/17881

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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 BS 7755-3:1995, ISO10694:1995 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: 18/17881

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	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 Methyltertbutylether, 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. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	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. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	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. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	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 Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	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

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	18-28893-1
Initial Date of Issue:	26-Sep-2018
Client	Smith Grant LLP
Client Address:	Station House, Station Road Ruabon Wrexham LL14 6DL
Contact(s):	Scott Miller
Project	R1742B Heyford Dorchester

Quotation No.:	Q15-02887	**Date Received:**	21-Sep-2018
Order No.:		**Date Instructed:**	21-Sep-2018
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	27-Sep-2018
Date Approved:	26-Sep-2018		

Approved By:

[redacted]

Details: Glynn Harvey, Laboratory Manager

Results - Soil

Project: R1742B Heyford Dorchester

Client: Smith Grant LLP			**Chemtest Job No.:**		18-28893	18-28893
Quotation No.: Q15-02887			**Chemtest Sample ID.:**		692995	692996
			Client Sample ID.:		TP1-SS	TP2-SS
			Sample Location:		B101/102	B101/102
			Sample Type:		SOIL	SOIL
			Date Sampled:		19-Sep-2018	19-Sep-2018
			Asbestos Lab:		DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected

Test Methods

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

Report Information

Key

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

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.com

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	18-34841-1		
Initial Date of Issue:	12-Nov-2018		
Client	Smith Grant LLP		
Client Address:	Station House, Station Road Ruabon Wrexham LL14 6DL		
Contact(s):	Scott Miller		
Project	R1742B Heyford (Dorchester)		
Quotation No.:	Q15-02887	**Date Received:**	08-Nov-2018
Order No.:		**Date Instructed:**	08-Nov-2018
No. of Samples:	4		
Turnaround (Wkdays):	5	**Results Due:**	14-Nov-2018
Date Approved:	12-Nov-2018		
Approved By:	[redacted]		
Details:	Glynn Harvey, Laboratory Manager		

Results - Soil

Project: R1742B Heyford (Dorchester)

Client: Smith Grant LLP					**Chemtest Job No.:**	18-34841	18-34841	18-34841	18-34841
Quotation No.: Q15-02887					**Chemtest Sample ID.:**	720991	720992	720993	720994
					Sample Location:	TP3-S1	TP4-S1	TP5-S1	TP6-S1
					Sample Type:	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.0	0.0	0.0	0.0
					Bottom Depth (m):	0.4	0.4	0.4	0.4
					Date Sampled:	06-Nov-2018	06-Nov-2018	06-Nov-2018	06-Nov-2018
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM
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

Test Methods

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

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customerservices@chemtest.com