Contaminated Land
Air Quality
Environmental Audit

Partnership No: OC 300776

New Settlement Area, Heyford Park
Oxfordshire

Dorchester Phase 2
Remediation Earthworks
Completion Report

For: Urban Regen Ltd.

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Signed For Smith Grant LLP:

	Name	Position	Signature	Date
Author	**D Wayland BSc MSc MCIWEM**	**Consultant**		**28.05.15**
Reviewer	**A F Smith BSc PhD MCIWM SiLC**	**Partner**		**28.05.15**

silc
SPECIALIST IN LAND CONDITION
Anthony Smith
Reg. No. 139s

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1. Introduction

1.1. Planning permission for the redevelopment of the former RAF/USAF Upper Heyford airbase was granted by Cherwell District Council (CDC) on the 2nd November 2012, reference 10/01642/OUT. The site, converted to commercial and residential uses is known as Heyford Park, and is divided between the Flying Field Area (FFA) and New Settlement Area (NSA). Urban Regen Ltd. (URL) was instructed by the consortium of Dorchester Heyford Park Group Ltd and Bovis Homes to carry out demolition, remediation and preparatory earthworks across the NSA to prepare various zones for residential development. Dorchester Group and Bovis have divided the site into a number of development phases, and the URL works are referenced to these various phases.

1.2. The above planning consent contains the following conditions relating to contamination remediation:

24	*No operational development approved by this planning permission shall take place (or such other date or stage in development as may be agreed in writing with the Local Planning Authority), until the following components of a scheme to deal with the risks associated with contamination of the site shall each be submitted to and approved, in writing, by the local planning authority:*
a.	*A preliminary risk assessment which has identified:*
(i)	*- all previous uses.*
(ii)	*- potential contaminants associated with those uses.*
b.	*A conceptual model of the site indicating sources, pathways and receptors.*
c.	*Potentially unacceptable risks arising from contamination at the site.*
d.	*A site investigation scheme, based on (1) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.*
e.	*The site investigation results and the detailed risk assessment (2) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.*
f.	*A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.* *Any changes to these components require the express consent of the local planning authority.* *The scheme shall be implemented as approved.*
25	*Prior to occupation of any new build dwellings, a verification report demonstrating completion of the works set out in the approved remediation strategy and the effectiveness of the remediation shall be submitted to and approved, in writing, by the local planning authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met. It shall also include any plan (a "long-term monitoring and maintenance plan") for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action, as identified in the verification plan, and for the reporting of this to the local planning authority.*

26	*If during development contamination not previously identified is found to be present at the site then no further development within 20m of the contamination shall be carried out until the developer has submitted to and obtained written approval from the local planning authority for an addendum to the method statement. This addendum to the method statement shall detail how this unsuspected contamination will be remediated (if necessary) and thereafter this will be carried out as approved before any development within 20m recommences. Following completion of any such additional remediation, a verification report shall be submitted within 3 months of the completion of the works for the approval of the Local Planning Authority in writing.*

1.3. A Remediation Strategy (ref: EED10658-109_S_12.2.3_FA, September 2012) prepared by Waterman Energy, Environment and Design Ltd. (Waterman) on behalf of Dorchester Group, together with a Demolition and Remediation Method Statement produced by Vertase F.L.I. Ltd. were submitted to the Local Planning Authority (Cherwell District Council). The Council subsequently approved the discharge of Condition 24 on 2/11/12. Whilst the role of Waterman has changed within the remediation scheme, and Vertase FLI is no longer involved in the site, the principles of the remediation strategy remain the same, and have been adopted by URL in their role as Principal Contractor to Dorchester Group and Bovis.

1.4. For clarity, SGP re-submitted an updated Remediation Strategy (R1742-R01-v3) in April 2014 that reflects the changed contractual circumstances with respect to contamination remediation. Approval of the revised Strategy was received from the Cherwell DC EHO in October 2014.

1.5. Smith Grant LLP (SGP) has been instructed by URL to advise upon the implementation of the remediation works and to carry out all necessary inspections and monitoring of the works and to prepare all necessary verification reports as the preparatory earthworks in each phase are completed by URL. This verification reporting is intended to assist in the discharge of Condition 25 (although some aspects can only be completed by the developers). SGP also assesses whether the requirements of Condition 26 relating to previously unidentified contamination need to be invoked.

1.6. This report deals with the completion of remediation by URL for Dorchester Homes (the Developer) across Dorchester Phase D2. The site location is shown below and the site boundary is marked on Drawing D01. SGP understand that remediation earthworks for a parcel of land located in the north-west from the main Phase D2 area will be completed at a later date and will be used to form balancing ponds. An updated version of this report will be issued following completion of works within this area in due course.

1.7. A proposed development layout plan has been provided (see Drawing D03) with the re-development comprising 70 residential units of both semi-detached and terraced housing with private gardens, associated infrastructure, open space and balancing pond.

Figure 1.1 Approximate boundaries of Dorchester: Phase 2

1.8. SGP has inspected the URL preparatory earthworks carried out to date, and has collected samples of the stripped soil surfaces; site won aggregate and collected validation samples following remediation of hydrocarbon impacted area for determination of compliance with the agreed quality standards. This report describes the works carried out, drawing conclusions and making recommendations concerning the further works required by Dorchester Homes in order to fully discharge Planning Conditions 25 and 26.

2. Remediation Strategy

2.1. Expected Contamination

2.1.1. The wider development comprises an area of the former Upper Heyford Airbase, latterly developed and used by the United States Airforce, which has been decommissioned and is used in part for civilian purposes, including commercial and residential uses as part of Heyford Park. Identified known or potential contamination sources determined from the historical uses of the site and site investigations were generally found to be minor, consisting of low-level but pervasive contamination by metals / metalloids and PAHs, with localised hydrocarbons associated with bulk fuel storage tanks and the potential for asbestos in pipe laggings and gaskets, insulation board and cement-bound products, or as dispersed fibre in made ground. The key identified contamination hot-spots in the wider site were associated with bulk underground fuel storage tanks (USTs).

2.1.2. It was previously reported by Waterman that a group of bulk fuel storage tanks known as POL19 lying to the west of D2 had not been included within the previously-completed remediation of other POLs within the Flying Field Area. POL19 was said to have experienced historical leaks of fuel, although further details were not available, and the facility continues to be used for motor vehicle fuel storage by Paragon.

2.1.3. Natural background contamination may be present in the bedrock and soils. The site lies within or adjacent to the "ironstone domain" as described in DEFRA Technical Guidance Sheet TGS01 "Arsenic", July 2012; the site lies within 1km of mapped outcrops of ironstones within the Jurassic sedimentary rocks. Within the ironstone domain, the normal background concentration (NBC) of arsenic is reported to be 220 mg/kg; the NBC is defined as the upper 95% confidence limit of the 95th percentile of topsoil concentrations. The normal background concentration of vanadium within the ironstone domain is reported by BGS to be >128 mg/kg. Both values substantially exceed the Remediation Strategy Table B1 criteria for cover soils.

2.2. Remediation Objectives and Approach

2.2.1. The key contamination remediation objectives are to:

- create a significant betterment of the groundwater environment thereby protecting groundwater quality at and beyond the site boundary;
- remove/remediate significant pollution sources such as hydrocarbon hot-spots, if present, that pose a risk to man and the environment, to the extent feasible;
- break significant or potentially significant future pollutant linkages resulting from the change of landuse, in particular related to shallow garden soils and human exposure;
- carry out further soil investigations/inspections to complete gaps in the existing investigation coverage;
- respond appropriately to contingencies in particular the discovery of previously undisclosed contamination;
- remove development constraints and prepare the site physically to enable residential development;
- manage all emissions to air and water to protect surface waters and groundwater and the atmosphere during the remediation works;
- provide appropriate additional protection measures where necessary, to be implemented during construction, including building gas barriers, water mains protection, and garden / open space soil quality and thickness.

2.2.2. The general requirements for garden and landscaped soils taken from the approved Remediation Strategy are as follows:

- provision of 600mm of clean soil cover over made ground materials within garden areas / 300mm in landscaped areas;

- materials to be used as the garden/landscape soils must be suitable for use and validated, to comply with contamination targets set out in the Remediation Strategy at a rate of 1 sample per 500m^3;
- imported soils used for cover purposes to comply with contamination targets set out in the approved Remediation Strategy at a rate of 1 sample per 250m^3 with a minimum of 3 samples per source;
- in areas where natural uncontaminated soils are present following the site re-grade, clean topsoil may be required as a growing medium but there will be no requirement for a full 600mm of placed soil cover in gardens.

2.2.3. It is confirmed that the Dorchester D2 phase may be classed as "Green" under the NHBC classification scheme, however following the identification of hydrocarbon contamination with elevated volatile readings within the bedrock; it is recommended that precautionary gas protection measures are installed within properties in the north of the development. These recommendations are discussed further in Section 5.

2.3. Site Characterisation

The Dorchester Phase D2 extends to about 2 ha and was previously occupied by 5 buildings, roads, car park area and grassed landscaped areas/verges. Buildings formerly located within the D2 area are detailed in the table below:

Table 2.1 Buildings formerly located within the D2 area

Building Number	Building Use	Date of Construction
32	Commissary	1947
33	Commissary	1947
34	Commissary	1947
35	Commissary	1947
88	Industrial Shed	1986

2.3.1. One underground storage tank for heating oil was present within the D2 phase with UG-NSA-26 located off the south-east corner of building 88 (during remediation works an associated interceptor tank was also found). Ground adjacent was previously investigated by borehole (BH-NSA-23) by Jomas in 2012. No evidence of hydrocarbon contamination was reported with soils screened by a PID reporting concentrations below the limit of detection.

2.3.2. The UST was inspected by SGP on 20th November, 2013 and was found to be empty whilst the adjacent interceptor contained water with a slight sheen. SGP collected water samples from UG-NSA-26 and submitted them for total petroleum hydrocarbons; a concentration of 1.2 mg/l was reported. PID readings of VOCs within the tank headspace measured 419 ppm.

2.3.3. Previous intrusive investigations on the main D2 area conducted by Jomas (2012) reported made ground comprising of gravelly clay with inclusions of concrete brick and wood to a depth of 0.90m bgl within a single entry, located in the north-east corner of the site (TP-NSA-229). Hard-standing of tarmac or concrete appeared to overlay the majority of the site and extended to a maximum depth of 0.6m bgl before encountering a gravel of angular to sub-rounded limestone. Hydrocarbon indicators (olfactory) were reported within TP-NSA 230 and 231 at depth between 0.1m bgl to 1.3m bgl. A maximum PID reading of 238 ppm was reported within TP-NSA 230 at depths of 0.9-1.4m bgl, indicating the presence of significant volatile organic contamination.

2.4. Phase-specific Strategy

2.4.1. It was concluded that Dorchester Phase D2 posed a minor risk of contamination associated with former buildings, UST 26, and potential hydrocarbon areas indicated by the previous site investigation. Dorchester Phase D2 boundary approaches within about 35m of the former airbase underground storage tank farm POL19. Given the POL19 previous and current use, and report of historical leakage, and absence of other known potential sources of hydrocarbons, it was considered possible that the observations of volatile hydrocarbons in TPA-NSA 230 and 231 might be related to POL19.

2.4.2. The site-wide strategy of ensuring clean cover soils to 600mm depth in gardens is considered to be an appropriate approach. No requirement for hydrocarbon remediation of soils or groundwater within Phase D2 was identified within the approved strategy, however further investigation within the areas of elevated PID readings reported by Jomas (TP-NSA-230 and TP-NSA-231) were considered to be necessary in order to confirm the presence or absence of hydrocarbon impacted soils and adoption of suitable remedial measures as necessary.

3. Description of Works

3.1. General Approach

3.1.1. Preparatory works within Phase D2 included:

- asbestos survey and strip in accessible buildings and structures;
- segregation of waste materials including wood, metal and plastic for recovery / disposal;
- demolition of all above ground structures.

3.1.2. Remediation earthworks within Phase D2 included:

- grubbing out of relict ground floor slabs, hard-standing, foundations, roadways and services down to natural strata;
- investigation to confirm the presence and/or absence of potential hydrocarbon hotspots with removal of impacted soils as necessary

- trim site surfaces to approximately -200mm below pre-existing ground levels
- crushing on-site of suitable hard materials (masonry, concrete, brick and tarmacadam) to recover aggregate for reuse.

3.1.3. The UST UG-NSA-26 and interceptor were emptied, cleaned and removed in June 2014 in advance of the general earthworks. The main operations within the Phase D2, including site preparatory works and remediation of hydrocarbon hotspots were carried out commencing in December 2014 and were completed by March 2015.

3.1.4. The existing buildings were previously demolished following an asbestos survey carried out by a specialist sub-contractor. Removal of any asbestos containing material (ACM) from the buildings was carried out prior to demolition; copies of the asbestos survey reports and removal of ACM certificates are retained by URL and are available on request.

3.1.5. Shallow natural deposits of weathered limestone (cobbles of angular limestone in a clay matrix) were present at surface levels following breaking out and removal of concrete hard-standing. Bedrock of intact limestone underlies the weathered natural deposits; this was typically encountered at a depth of approximately 1.5m bgl.

3.1.6. Oversized materials (classed as those which may present an obstacle to sub-surface infrastructure and foundation construction), voids and relict structures such as foundations, drains and redundant infrastructure were removed. Recoverable materials such as concrete, brick and masonry were segregated before crushing to produce aggregate to be used by the developer as bulk fill or construction platform/sub-base under building footprints, roads and private gardens.

3.1.7. An estimated 2,000m^3 of site-generated aggregate has been placed in a temporary stockpile (referred to as D2-Agg1) which is intended to be handed over to the developer for use within the D2 phase.

3.2 Contamination Hot-Spots

3.2.1 Two areas within Phase D2 were determined as potential contamination hotspots through review of the findings from a previous investigation of the site. Jomas (2012) reported the presence of hydrocarbon impacted soils within entries TP-NSA-230 and TP-NSA-231. A moderate to strong hydrocarbon odour was reported with some staining of gravel and a maximum PID reading of 238 ppm.

3.2.2 SGP considered that further investigation to identify the presence/absence of the potential hotspot areas was required so that the need for and scope of appropriate remedial action could be assessed; this is discussed in section 3.6.

3.3 Validation of Formation Level Strata

3.3.1 It is a requirement under the Remediation Strategy that a 600mm cover of clean soils over made ground is placed in garden areas, however due to the contractual requirement to trim development areas by -200mm below previous ground levels, made ground was largely absent due to the shallowness of natural strata following the preparatory works. This meant that a 400mm depth of subsoil will be left which could form part of the full 600mm of garden soil cover after replacement of garden topsoil providing that it is uncontaminated and suitable for such use.

3.3.2 In-situ sampling of the formation level strata was carried out by sampling of the top 400mm at a test frequency of 1 sample per 500m^3, the residual depth 400mm depth equating to 1 sample per 1,250m^2 plan area of development. Thirteen in-situ samples were collected from the exposed formation level within the completed areas with depth validation photos showing the extent of the 0-400mm depth range. Samples were analysed for a suite of contaminants as specified within the Remediation Strategy.

3.4 Site Waste Management

3.4.1 As described, waste materials removed from the Phase included timber and scrap metal which has been removed off-site.

3.4.2 ACM removed prior to demolition works was disposed off-site by a specialist sub-contractor.

3.5 Constraints and Limitations

3.5.1 Remediation earthworks within the Phase were constrained due to the presence of a live water main in the north-east corner within an area of landscaping and a parcel of land to the south due to the presence of trees that are to be retained.

3.6 Hydrocarbon Contamination

3.6.1 Following further investigation within the two areas where Jomas had reported indicators of hydrocarbon contamination, URL under the guidance of SGP carried out a series of trial-pits and trenches in order to delineate the extent of the hydrocarbon impacted soils. It was observed that impacted soils were present generally across the north of the phase and were located nominally 0.5m above bedrock across an approximate area of 1,650m^2.

3.6.2 Contamination indicators observed were a moderate to strong fuel odour; silver/grey impacted clay, black staining on bedrock and PID readings typically between 100-2,000ppm. Following identification and delineation of the impacted area, URL removed the impacted strata for ex-situ treatment. It was considered that the existing acceptability criteria for hydrocarbons set out in the approved Remediation Strategy remained applicable, and that no significant modification to the Strategy was required, although the extent of contamination was greater than appeared likely from the previous site investigations. SGP subsequently attended site to collect validation samples from the sidewalls of the excavation in order to confirm that residual contamination was not present at unacceptable concentrations.

4. Inspections and Testing

4.1. SGP attended the site on seven occasions during the remediation earthworks. The dates and activities carried out in the Phase D2 during SGP attendance, cross referenced to the site inspection photographic record (Appendix A), formation level validation photo record (Appendix B), hotspot remediation photo record (Appendix C) and Analysis Results (Appendix D) are summarised in the table below.

Table 4.1 SGP Inspection Summary

Date	SGP Activities	Record
27/06/2014	Site inspection; supervision of underground storage tank removal (UG-NSA-26) and collection of validation samples	A detailed photographic record; validation samples and laboratory certificates are provided within R1742-R06-UST Remediation Verification Report
13/01/2015	Site inspection following breaking out of hard-standing and re-grade of the site.	Appendix A - Photos: 1-10
19/01/2015	Site inspection; sampling in-situ formation level strata; validate hydrocarbon hotspot following URL remediation; identification and delineation of potential hotspot areas	Appendix B - Photos: 1-13 Appendix C – 19.01.15 Appendix D – Lab Cert: 15/2562, 15-01326, 15-2563
16/02/2015 – 17/02/2015	Site inspection; delineation of hydrocarbon impacted area, validate removal of impacted from one remediation cell; Sample processed aggregate stockpile (D2-Agg1)	Appendix A – Photos 11-15 Appendix C – 16.02.15 – 17.02.15 Appendix D – Lab Cert: 15/3758 & 15-03868
22/02/2015	Site inspection; delineation of hydrocarbon impacted area	Appendix C – 22.02.15 Appendix D – Lab Cert: 15/4007
04/03/2015	Site inspection; collection of validation samples following contamination removal; delineation of hydrocarbon impacted area, collection of in-situ soils to confirm retention	Appendix C – 04.03.15 Appendix D – Lab Cert: 15/4412 & 15/4414
10/03/2015	Site inspection; collection of validation samples following contamination removal	Appendix C – 10.03.15 Appendix D – Lab Cert: 15/4721

4.2. Validation of UST (UG-NSA-26) Removal

4.2.1. SGP attended site on 27.06.14 following the breaking out and removal of UG-NSA-26 to carry out the required inspection and validation procedure as outlined within the Remediation Strategy. Information detailing the screening of excavated arisings, the collection of validation samples and interpretation of the chemical results are discussed in detail within the UST

Remediation Verification Report (R1742-R06). Validation works with the report are supplemented with a detailed photographic record.

4.2.2. Validation samples (4 no.) collected from the sides of the excavation all contained hydrocarbon concentrations below the validation criteria. The sides and base (in bedrock) of the excavation were free from oil-staining, sheen or odour.

4.3. Validation of Formation Level Soils

4.3.1. Sampling and analysis was carried out to determine the suitability of formation level soils to form part of the 600mm soil cover system. Development levels for the site are yet to be confirmed by the developer; however in-situ sampling of the formation level will determine whether a reduced 200mm topsoil cover can be placed within garden areas on the basis that the 400mm thickness of natural strata is chemically suitable for retention.

4.3.2. A total of 13 samples were taken from the stripped soil surfaces within the completed part of the Phase D2 area; sampling locations are reproduced on Drawing D01. On the worst case assumption of the soils forming the lower 400mm of the garden / landscaping cover layer and a total site area of D2: Area 1 of ~16,206m^2, the volume of validated soils is effectively 6,482m^3 and the test rate is equivalent to 1 sample per 498m^3, achieving the specified rate of 1 sample per 500m^3.

4.3.3. All samples were collected by SGP geo-environmental consultants and were placed in appropriate laboratory-provided containers and stored in cooled boxes. Samples submitted for chemical analysis were delivered to Jones Environmental Ltd (JEL) 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.

4.3.4. Chemical laboratory certificate (15-2563) and asbestos laboratory certificates (15-01326) are included within Appendix D. Results are summarised in the table below and are compared to assessment criteria for garden cover soils.

Table 4.2 Analysis Summary for 0-400mm Formation Level Soils

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Residential Use	
			Screening criteria (mg/kg unless stated)	Exceedances
SOM	13	0.2-1.2	-	None
pH	13	8.45-10.18	WRAS <5>8	**All samples exceed a pH of 8**
asbestos fibre*	13	NFD	<0.001%	None
antimony	13	<1-1	550	None
arsenic	13	5-16	32	None
barium	13	7-47	1300	None

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Residential Use	
			Screening criteria (mg/kg unless stated)	Exceedances
beryllium	13	<0.5-0.7	51	None
cadmium	13	<0.1-0.2	10	None
chromium	13	5.8-30.1	3000	None
chromium IV	13	<0.3	4.3	None
cobalt	13	1-6.5	240	None
copper	13	3-11	300	None
lead	13	<5-13	450	None
mercury	13	<1	1	None
molybdenum	13	0.8-3.8	670	None
nickel	13	4.2-17.4	130	None
selenium	13	<1	350	None
vanadium	13	11-34	75	None
water soluble boron	13	0.2-1	291	None
zinc	13	9-57	300	None
naphthalene	13	<0.04	1.5	None
acenaphthylene	13	<0.03-0.76	210	None
acenaphthene	13	<0.05-0.72	170	None
fluorene	13	<0.04	160	None
phenanthrene	13	<0.03-3.87	92	None
anthracene	13	<0.04-2.26	2300	None
fluoranthene	13	<0.03-18.93	260	None
pyrene	13	<0.03-13.78	560	None
benzo(a)anthracene	13	<0.06-11.07	3.1	**1: D2-SS2**
chrysene	13	<0.02-10.9	6	**1: D2-SS2**
benzo(bk)fluoranthene	13	<0.07-24.11	-	-
benzo(a)pyrene	13	<0.04-12.19	0.83	**1: D2-SS2**
indeno(123cd)pyrene	13	<0.04-8.49	3.2	**1: D2-SS2**
dibenzo(ah)anthracene	13	<0.04-0.52	0.76	None
benzo(ghi)perylene	13	<0.04-6.2	44	None
aliphatic C5-C6	13	<0.1	30	None
aliphatic C6-C8	13	<0.1	73	None
aliphatic C8-C10	13	<0.1	19	None
aliphatic C10-C12	13	<0.2	93	None
aliphatic C12-C16	13	<4-7	740	None
aliphatic C16-C21	13	<7	1000	None
aliphatic C21-C35	13	<7-28	1000	None
aromatic C6-C7	13	<0.1	30	None
aromatic C7-C8	13	<0.1	120	None
aromatic C8-C10	13	<0.1	27	None
aromatic C10-C12	13	<0.2	69	None
aromatic C12-C16	13	<4-13	140	None
aromatic C16-C21	13	<7-136	250	None
aromatic C21-C35	13	<7-688	890	None
benzene	13	<0.005	0.08	None
toluene	13	<0.005	120	None

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Residential Use	
			Screening criteria (mg/kg unless stated)	Exceedances
ethylbenzene	13	<0.005	65	None
o-xylene	13	<0.005	45	None
m-xylene	13	<0.005	44	None
p-xylene	13	<0.005	42	None
methyl tert butyl ether	13	<0.005	49	None

4.3.5. Concentrations of all determinants were below their respective assessment criteria for garden soil cover with the exception of multiple PAH exceedances (benzo(a)anthracene, chrysene, benzo(a)pyrene, indeno(123cd)pyrene) with a single sample (D2-SS2). This is discussed below.

4.4. Validation of Formation Level Soils – PAH Exceedances

4.4.1. Following exceedances of multiple PAHs within D2-SS2, four further in-situ samples were collected (D2-SS2A – S2-SS2-D) to delineate the area of impacted soils (lab ref: 15-3758), see D01. Results of the re-samples contained moderately elevated benzo(a)pyrene at 1.24 mg/kg within a single sample (D2-SSA) with all other PAHs below the assessment criteria. It is likely that the elevated PAHs within D2-SS2 and D2-SS2A are attributed to the mixing of residual tarmac/clinker/ash from the overlying made ground / hard-standing and are not truly representative of the surrounding ground.

4.4.2. A PAH ratio analysis was completed on D2-SS2 and D2-SS2A in order to determine the source of the PAHs, a copy of which is provided in Appendix E. Source identification confirms a probable low bio-availability due to the sequestration of PAHs within a carbon or vitrified matrix with BaP concentrations significantly below the DEFRA/CL:AiRE C4SL criterion of 5 mg/kg for garden soils, denoting that there is definitely no significant possibility of significant harm to human health.

4.5. Validation of Formation Level Soils – pH Exceedances

4.5.1. Alkaline soil pH values ranged from 8.45 within D2-SS2 to 10.18 within D2-SS9 with all samples (13) exceeding the former WRAS trigger pH value of >8. Elevated pH in the majority of samples are likely to be attributed to the ubiquitous presence of carbonate limestone identified across the NSA, although the highest pH values are probably also indicative of concrete fragments; the hydroxides in freshly exposed concrete will undergo carbonation over a short period of time, with an accompanying reduction in pH.

4.6. Validation of Site Generated Crushed Aggregate

4.6.1. Sampling analysis was carried out to determine the suitability of crushed recovered aggregate for potential reuse during the development phase.

4.6.2. It is proposed that a stockpile located along the western boundary of Phase D2 is handed over to the developer for use during construction. The stockpile of processed aggregate is approximately 2,000m^3 and is denoted as D2-Agg1. SGP has carried out sampling of the stockpile with four validation samples being submitted for an asbestos screen to Chemtest Laboratories, achieving the required sampling frequency of 1 per 500m^3 with two samples submitted for chemical analysis at Jones Environmental Laboratory. Results are provided in laboratory certificates 15-03868 & 15/3758 (Appendix D) and are summarised in the table below:

Table 4.6 Validation Screening Summary for Aggregate Stockpile D2-Agg1

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Screening criteria (mg/kg unless stated)	Exceedances
SOM	2	0.3-0.6	-	-
pH	2	10.88.11.48	WRAS <5>8	**D2-Agg1-A, D2-Agg1-B**
asbestos fibre*	4	NFD	<0.001%	None
antimony	2	<1-12	550	None
arsenic	2	18.5-26.9	32	None
barium	2	45-91	1300	None
beryllium	2	0.8-1	51	None
cadmium	2	0.4-0.5	10	None
chromium	2	30.8-38.5	3000	None
chromium IV	2	<0.3-0.6	4.3	None
cobalt	2	5.7-6.9	240	None
copper	2	5-9	300	None
lead	2	7-46	450	None
mercury	2	<0.1-0.2	1	None
molybdenum	2	1.3-1.5	670	None
nickel	2	14.2-16.4	130	None
selenium	2	<1-1	350	None
vanadium	2	44-62	75	None
water soluble boron	2	0.2-2.8	291	None
zinc	2	115-154	300	None
naphthalene	2	<0.4	1.5	None
acenaphthylene	2	<0.3-0.07	210	None
acenaphthene	2	<0.5-0.3	170	None
fluorene	2	<0.4-0.28	160	None
phenanthrene	2	1.5-2.56	92	None
anthracene	2	0.49-0.6	2300	None
fluoranthene	2	2.05-3	260	None
pyrene	2	1.71-2.17	560	None
benzo(a)anthracene	2	1.64-1.78	3.1	None
chrysene	2	1.94-2.02	6	None
benzo(bk)fluoranthene	2	3.05-4.17	-	**-**
benzo(a)pyrene	2	1.65-2.76	0.83	**D2-Agg1-A, D2-Agg1-B**
indeno(123cd)pyrene	2	1.11-1.84	3.2	None

Contaminant	**Samples**	**Range of Concentrations (mg/kg unless stated)**	**Screening criteria (mg/kg unless stated)**	**Exceedances**
dibenzo(ah)anthracene	2	0.34-0.47	0.76	None
benzo(ghi)perylene	2	1-1.7	44	None
aliphatic C5-C6	2	<0.1	30	None
aliphatic C6-C8	2	<0.1	73	None
aliphatic C8-C10	2	<0.1	19	None
aliphatic C10-C12	2	<0.2	93	None
aliphatic C12-C16	2	<4	740	None
aliphatic C16-C21	2	<7	1000	None
aliphatic C21-C35	2	<7-37	1000	None
aromatic C6-C7	2	<0.1	30	None
aromatic C7-C8	2	<0.1	12	None
aromatic C8-C10	2	<0.1	27	None
aromatic C10-C12	2	<0.2	69	None
aromatic C12-C16	2	<4-7	140	None
aromatic C16-C21	2	14-32	250	None
aromatic C21-C35	2	77-157	890	None
benzene	2	<0.005	0.08	None
toluene	2	<0.005	120	None
ethylbenzene	2	<0.005	65	None
o-xylene	2	<0.005	45	None
m-xylene	2	<0.005	44	None
p-xylene	2	<0.005	42	None
methyl tert butyl ether	2	<0.005	49	None

4.2.1 All samples collected from D2-Agg1 stockpile were reported as containing ‘no fibres present’, however exceedances of the PAH benzo(a)pyrene was reported in both samples at concentrations above the assessment criteria for material within the capping / garden cover system.

4.2.2 It is likely that the PAH / aromatic hydrocarbon exceedances are attributable to the minor presence of tarmac fragments which have been processed with the concrete hard-standing during crushing. The aggregate is unlikely to be used in garden cover soil and future long-term exposure to residents is considered unlikely; also the results are less than the DEFRA/CL:AiRE C4SL criterion, and therefore the results have no significance for human health.

4.3 Hydrocarbon Impacted Area

4.3.1 Contamination indicators reported by Jomas in trial-pit entries TP-NSA-230 and TP-NSA-231 were further investigated by SGP through a series of trial-pit and trenches on 19.01.15. SGP observed that impacted soils were present as a layer associated with the local perched water table, nominally 0.5m above bedrock, and signified by a moderate to strong fuel (petrol) odour with a silver/grey impacted clay, occasional black staining on bed rock and PID readings typically between 100-2,000 ppm. The disposition of contamination indicated lateral migration of a plume from a remote source outside the phase rather than spreading from a surface source within the phase.

4.3.2 SGP completed further delineation works through the excavation of trial-pits and screening with a PID over three visits (16.02.15, 22.02.15 and 04.03.15) in order to determine the extent of contamination. Upon completion, an area of approximately 1,650m^3 was determined as containing hydrocarbon impacted soils in the north of the phase potentially requiring remediation on the basis of strong odour or visible contamination. The approximate area of the delineated hydrocarbon plume is reproduced in Drawing D02.

4.3.3 In order to progress the works, it was decided to excavated all visibly or odour impacted ground in advance of obtaining and comparing soils results against acceptability criteria. Therefore, following delineation of the impacted area, URL under the guidance of SGP stripped the clean overlying soils which were screened with a PID in order to determine their contamination status. Materials with a PID reading below the limit of detection (<0.1 ppm) were side-cast for re-use.

4.3.4 Contaminated soils determined through visual and olfactory assessment or with elevated PID readings were removed by mechanical excavator and were temporarily stockpiled on hardstanding within the wider NSA area pending further assessment.

4.3.5 Hydrocarbon impacted soils were typically present above the bedrock and so impacted soils were removed down to bedrock in accordance with the Strategy. URL operated within remediation cells in order to allow the segregation of clean soils from the underlying impacted soils. A detailed photographic record during the remedial works is presented in Appendix C.

4.3.6 SGP attended site on three occasions (17.02.15, 04.03.15 and 10.03.15) in order to collect validation samples from the extent of the excavation sidewalls in order to confirm that residual contamination was not present at unacceptable concentrations. Samples were collected 1 per 15m^2 of exposed sidewall in accordance with the strategy, no samples were collected from the base of the excavation due to the presence of bedrock.

4.3.7 During the remediation of the impacted area, SGP collected three validation (lab ref: 15/4414) samples of retained soils outside the delineated area to confirm whether the remediation area required extending. Two samples were collected from main Phase 2 area (D2-HSA and D2-HSB) and one from the parcel of land in the north-west where balancing ponds are to be constructed (D2-HSC). A fourth sample (D2-TP2) is included on the laboratory certificate which is taken from outside the Phase 2 works and is not relevant to this report.

4.3.8 Twenty eight samples were submitted for full TPHCWG banding and BTEX analysis. The results of the validation testing (Report ref: 15-3758, 15-4412, 15-4414 and 15-4721) are compared to assessment criteria set out table B3 of the approved Remediation Strategy, as summarised within Table 4.7 below:

Table 4.7 Validation Screening Summary for Hydrocarbon Removal and Delineation

Contaminant	Samples	Range of Concentrations (mg/kg unless stated)	Table B3	
			Screening criteria* (mg/kg unless stated)	Exceedance Concentration & location
Aliphatic C5-C6	28	<0.1-3.2	-	-
Aliphatic C6-C8	28	<0.1-50.6	-	-
Aliphatic C8-C10	28	<0.1-31	240	None
Aliphatic C10-C12	28	<0.2-188.8	1000	None
Aliphatic C12-C16	28	<4-286	1000	None
Aliphatic C16-C21	28	<7-39	1000	None
Aliphatic C21-C35	28	<7-34	1000	None
Aromatic C6-C7	28	<0.1-0.6	-	-
Aromatic C7-C8	28	<0.1-1.1	-	-
Aromatic C8-C10	28	<0.1-2.2	-	-
Aromatic C10-C12	28	<0.2-20.3	23	None
Aromatic C12-C16	28	<4-65	1000	None
Aromatic C16-C21	28	<7-81	1000	None
Aromatic C21-C35	28	<7-317	1000	None
Benzene	28	<0.005-0.567	0.08 (Table B1)	**3 (HS-SS5, HS-SS6, HS-SS8)**
Toluene	28	<0.005-0.997	120 (Table B1)	None
Ethylbenzene	28	<0.005-0.265	65 (Table B1)	None
m/p-Xylene	28	<0.005-0.208	42 (Table B1)	None
o-xylene	28	<0.005-0.114	44 (Table B1)	None

4.3.9 Hydrocarbon concentrations were below the assessment criteria within all 28 validation samples. No criteria is derived within Table B3 for BTEX compounds and so screening thresholds were utilised from Table B1 (chemical criteria for material in the capping layer). Benzene exceeded the threshold of 0.08 mg/kg within three samples (HS-SS5, SS6 and SS8), and was present up to a maximum of 0.6 mg/kg. Depths of the samples containing elevated benzene were from greater than 0.5m bgl and will not therefore form part of the capping layer.

4.3.10 A single validation sample (DS-HS-SS4, ref: 15/2562) collected following the removal of contaminated soils prior to widespread remediation works contained an elevated concentration (54.7 mg/kg) of the aromatic EC10-12 hydrocarbon, exceeding the criterion of 23 mg/kg. Following this exceedance and the delineation of the wider impacted area, this location was remediated further and re-validated. No exceedances were reported following re-validation.

4.3.11 Hydrocarbons were present within sample D2-HSC located in the area of the proposed balancing ponds at concentrations below the assessment criteria.

5. Conclusions and Recommendations

5.1. Verification of Remediation

5.1.1. The site formation level surfaces and site-won aggregate materials have been inspected and sampled by SGP in accordance with the approved Remediation Strategy. The types of materials encountered during the additional assessment and remediation works carried out in Phase D2 was consistent with those described in the site characterisation, however the spread of a band of hydrocarbon contamination was more extensive than expected.

5.1.2. On the basis that URL has stripped the overall area to -200mm below existing ground levels (development levels are yet to be confirmed), SGP has validated and sampled the formation level surfaces to an average depth of 400mm (see validation photos in Appendix B). A sampling frequency of 1 per 500m^3 of potential cover soil material has been achieved.

5.1.3. Exceedances of the capping layer contamination acceptability criteria were reported within a single location with multiple PAH exceedances. SGP collected further samples within the area and reported concentrations largely below the criteria, concluding that the elevated readings were due to particles of coal/tarmac/clinker mixed into the natural subsoil during the earthworks and sampling, and during sampling and is not truly representative of the ground conditions. One of the re-test samples (D2-SS2A) contained benzo(a)pyrene above the assessment criteria. A PAH ratio plot was produced and confirms a coal signature, the identified sources are likely to be of low significance in terms of solubility and bioavailability due to the sequestration within coal or bitumen, and in light of concentrations below the C4SL value SGP considers that the risk associated to future site occupants to concentrations within the capping layer to be minimal. Both DCLG and NHBC have confirmed that they consider C4SLs as useful in assessing the suitability of soils for planned residential land uses. The concentrations do exceed the approved Remedial Strategy criteria and therefore represent a departure from the Strategy which should be agreed with CDC.

5.1.4. Contamination indicators identified during previous investigations were further investigated and confirmed an area extending to approximately 1,650m^2 to be impacted by hydrocarbons within soils as a layer above the bedrock. URL have completed the remediation works (removal for ex-situ treatment) within the Phase 2 area and validation samples collected from the sides of the excavation confirmed residual concentrations are below the assessment criteria. Preferential migration pathways along relict drains/drainage runs were also removed during contamination removal. Three validation samples contained slightly elevated benzene concentrations compared to the cover soil criterion, but as these results relate to residual soils at over 600mm below finished garden levels they are of no direct relevance. Nevertheless, the presence of residual volatile organic hydrocarbons in some subsoils has implications for future vapour risks and risks to water mains, discussed further in sections 5.3 and 5.4.

5.1.5. No potential sources of contamination were identified within the phase with the exception of a former underground fuel tank and interceptor (UG-NSA-26) which was formerly used for heating oil storage and had been disused for many years prior to remediation. The UST was removed on 27.06.14 by URL with validation samples from the extent of the excavation collected by a SGP consultant. No contamination was identified during the excavation and validation samples were below the respective assessment criteria. The former UG-NSA-26 is located down-gradient from the main phase where hydrocarbon contamination was encountered and is therefore considered unlikely to be the source.

5.1.6. Review of the PID screening carried out during the initial excavation of trial pits / trenches to delineate the area of contamination identified an area of elevated volatiles. Concentrations typically recorded within contaminated strata prior to remediation were between the ranges of 50-150 ppm; however readings of 2,000-3,000 ppm were recorded in the west of the site adjacent to the access road. It was observed within this location that black stained fragments of weathered bedrock were present, distinctly different to the grey/silver contaminated soils encountered elsewhere.

5.1.7. Elevated PID results within this location would imply the contamination migration to have originated from the west with PID readings reducing to the north and east. A potential source has been identified to the west of Dorchester Phase 2, associated with the POL19 fuel storage facility.

5.2. Recovered Materials

5.2.1. Approximately 2,000m^3 recovered aggregate has been generated on site. A total of 4 samples were collected from this stockpile for asbestos screening, achieving the 1 per 500m^3 frequency, and 2 samples have been submitted for chemical analysis. No asbestos fibres have been identified; however exceedances of the PAH benzo(a)pyrene and heavy end aromatic hydrocarbons (EC16-21) mean that the aggregate cannot form part of the garden capping layer.

5.3. Ground Gas / Vapour Hazards

5.3.1. A significant source of hydrocarbon vapours has been identified within the north of the site, associated with a contamination hotspot from a probable fuel spill/leak, considered likely to have originated from the POL19 facility located over 80m to the west of the boundary of residential development within Phase D2.

5.3.2. URL have completed remediation (removal for ex-situ treatment) of the impacted soils within the Phase 2 area, however initial screening of the bedrock by SGP has confirmed that residual vapours may remain, although validation testing of residual soils suggest widespread compliance with validation criteria for volatile hydrocarbon fractions. It is anticipated that contaminated soils exists below the current access road adjacent to Phase 2, which are likely to extend off-site towards the source. Whilst no visible evidence of mobile contaminants was observed (i.e. free product) the potential for vapour migration exists, or further liquid / dissolved phase migration if sources are re-mobilised.

5.3.3. It is therefore recommended that further risk assessment is completed through the installation of monitoring wells to determine the risk associated with residual vapours, or alternatively a precautionary approach should be adopted through the installation of a ventilated void within the floor construction and installation of a gas membrane specific for hydrocarbon resistance within all new buildings.

5.4. Water Main Risk Assessment

5.4.1. The identified hydrocarbon contamination area in the north of the site is considered a significant risk with respect to the laying of water mains in the north of the site. Furthermore, until the source of the hydrocarbon pollution has been confirmed by further investigation of the POL19 area, and until it can be established that there is no longer any risk of a recurrence of hydrocarbon migration, it is recommended that protected pipeline materials are used throughout the Phase D2 development area as a precautionary measure. The appointed water provider should be provided with a copy of this report and consulted with regard to pipeline specification.

5.4.2. Further assessment should be carried out when the pipeline routes are confirmed, and following the completion of groundworks / prior to trench excavation. Also, the measures adopted to protect pipelines may be influenced by the results of further assessment of the potential source area of fuel hydrocarbons suggested as POL19, to the west of the site.

5.5. Sulphates and Concrete

5.5.1. No specific testing has been undertaken for potentially aggressive conditions to concrete. Reference should be made to the preceding site investigation reports.

5.6. Further Requirements

5.6.1. Further assessment of the risk associated with vapours associated with residual contamination within the shallow bedrock should be completed in order to provide recommendations on the requirement for building gas protection measures. A precautionary approach may be adopted through the use of a ventilated sub-floor void and hydrocarbon resistant gas membrane within all properties within the phase. This is outside the scope of the approved Remediation Strategy and so will require approval from the EHO before implementation.

5.6.2. Due to the likely presence of residual low-level hydrocarbons reported within the proposed balancing pond area, it is recommended that the pond base and sides be lined to isolate standing water from the possible formation of hydrocarbon sheens on standing water. A welded butyl liner or similar would provide a barrier to hydrocarbons.

5.6.3. In order to secure completion of remediation in the Dorchester Phase D2 in accordance with the Remediation Strategy, the Developer is required to complete the agreed garden / landscaping cover system. This will entail a minimum further 200mm of clean, validated soils in all garden and landscaped areas.

5.6.4. With the adoption of the above normal practices 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. 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.

5.7. Long-term Management and Monitoring

5.7.1. No specific requirements for long-term monitoring or management have been identified within the site, provided that further investigation, risk assessment and remediation as necessary of the hydrocarbon source thought to be located to the west of Phase D2 is carried out so as to prevent potential further migration of fuel into the Phase. SGP understand that Dorchester has appointed Waterman to conduct an off-site contamination investigation to confirm that POL19 is a source of the reported contamination and to delineate the extent of contamination outside the Phase D2 area.

5.7.2. Existing residual contamination (at the time of SGP validation) has been found to be of generally low significance, low mobility and stable, and is unlikely to become a pollution source in the future, although residual hydrocarbon vapours could potentially give rise to vapour hazards or nuisance odour in unprotected buildings. However, the current vapour levels are expected to quickly reduce due to the accelerated natural degradation and dispersion processes during and following the remediation works.

5.7.3. The implementation of a physical barrier along the western boundary to mitigate the migration of future off-site contamination was not considered necessary or practicable due to the apparently low mobility of residual contamination encountered and due to the presence of shallow bedrock. Bedrock was encountered at approximately 0.5m bgl within the west of the site, and the historical route of migration appears to have been via fissures in the shallow rock. A cut-off wall would be of shallow depth unless trenched into bedrock, and would provide little protection from future potential migration of fuel hydrocarbons.

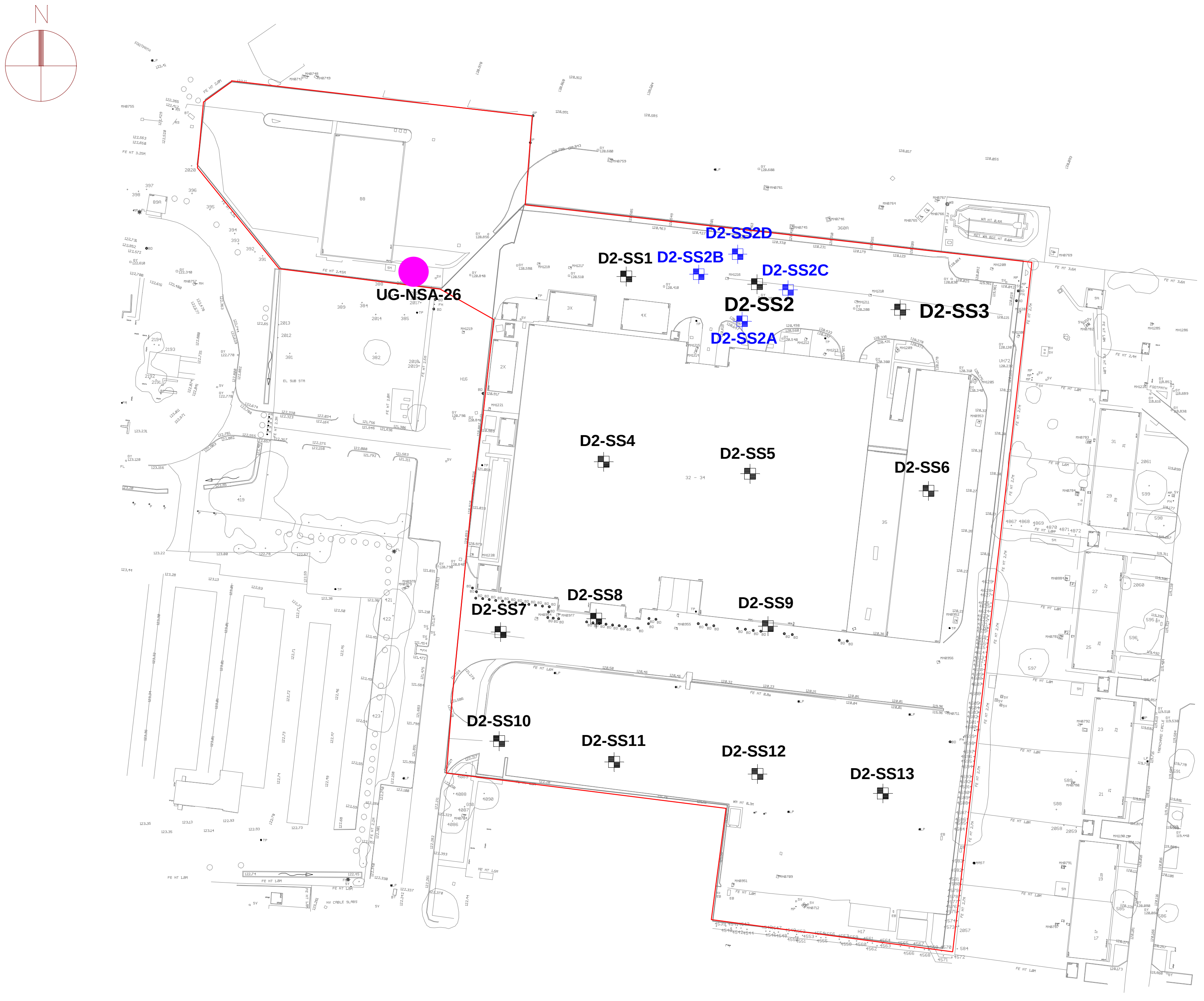
5.8. Limitations

5.8.1. SGP reserves the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines and responses by the statutory and regulatory authorities.

5.9. This report has been prepared by Smith Grant LLP, for the sole and exclusive use of Urban Regen Ltd. and Dorchester Homes, and the benefit of this report may not be assigned to any third party without the prior agreement in writing of Smith Grant LLP.

5.10. Reasonable skill, care and diligence have been exercised within the timescale and budget available, and in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context. This report reviews and relies upon site investigations largely conducted by others. If errors or omissions in previous work have been noted then these have been duly noted, however SGP accepts no responsibility for advice given on the basis of incorrect factual information provided to it.

DRAWINGS



▦ in-situ test (0-0.4m bgl)
▦ in-situ re-test

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SMITH GRANT
Environmental Consultancy
LLP

Station House
Station Road, Ruabon
Wrexham, LL14 6DL
Tel: 01978 822367
Fax: 01978 824718

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

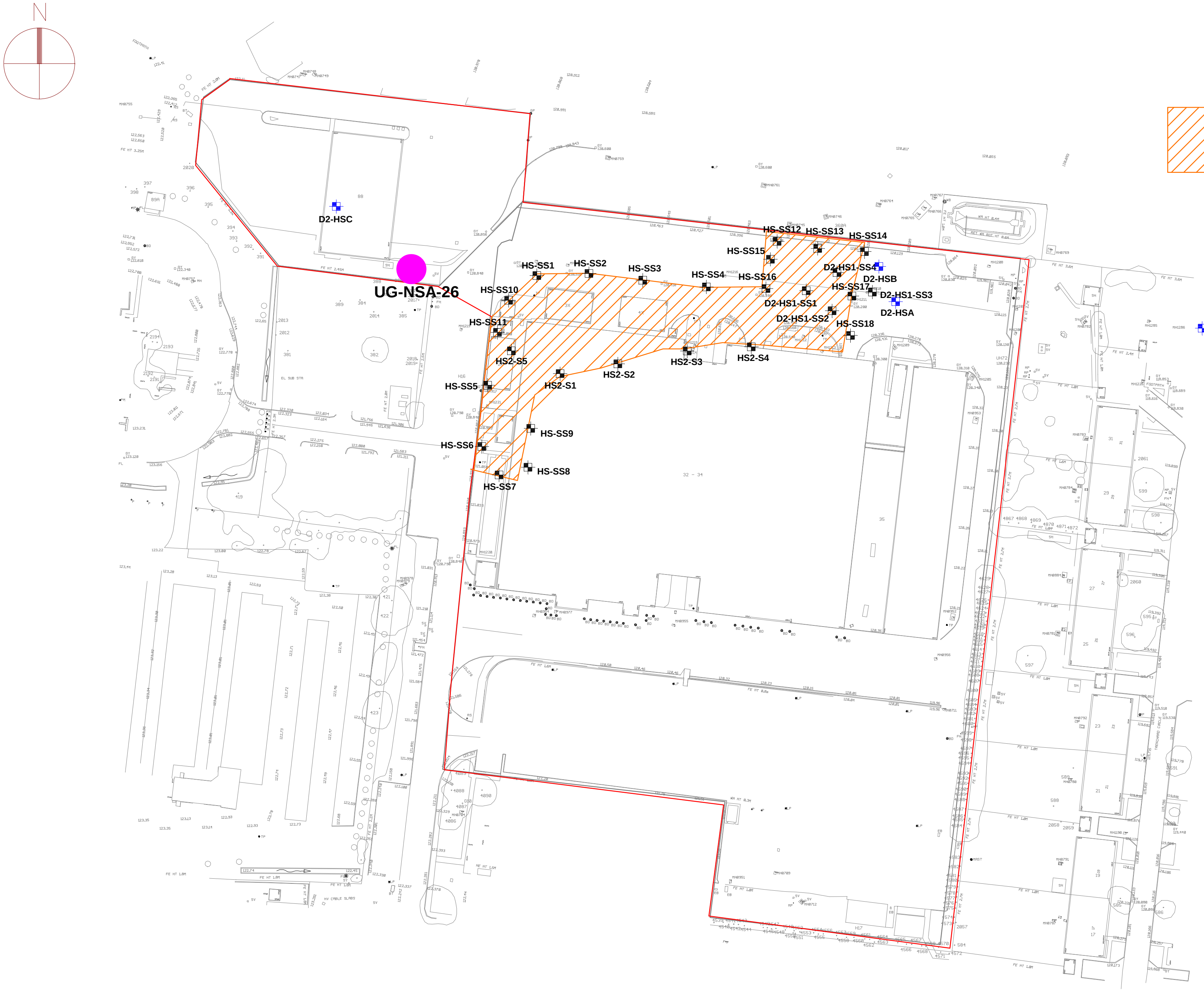
Project:
Dorchester Phase 2
(Former Building 32-34)

Drawing:
In-situ Validation
Sample Locations

Drawn: DW
Checked: AFS

Date: 23.04.2015
Scale: 1:1,250 @ A4

Job No: R1742b
Drg No: D01



▨ **Remediated Hydrocarbon Area**

■ **Validated Side Walls**

■ **Residual soil sample to confirm if exceedance present & required remediation**

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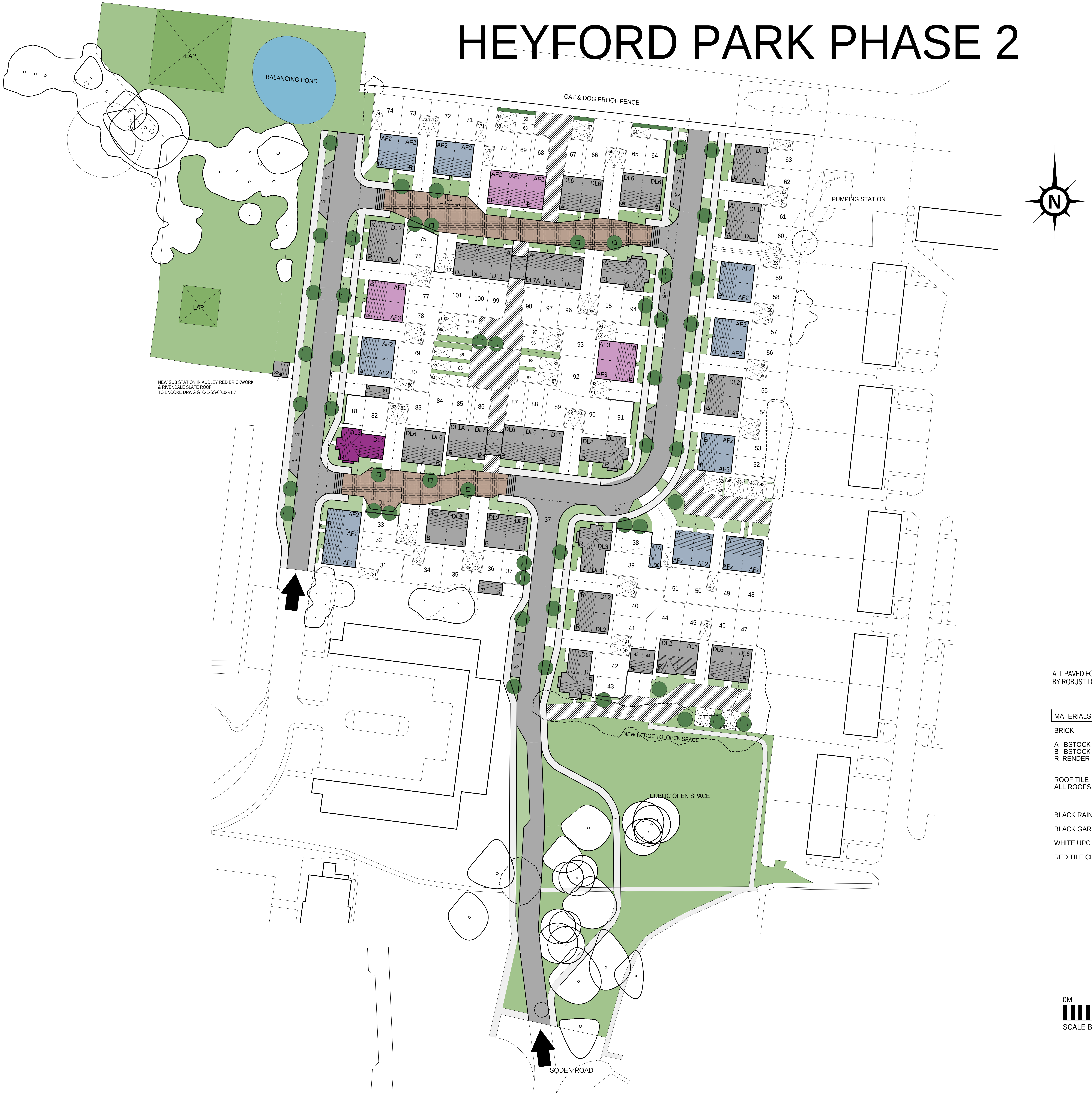
SMITH GRANT
Environmental Consultancy
LLP

Station House
Station Road, Ruabon
Wrexham, LL14 6DL
Tel: 01978 822367
Fax: 01978 824718

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

Project: Dorchester Phase 2 (Former Building 32-34)	
Drawing: Hydrocarbon Remediation & Validation Plan	
Drawn: DW	Checked: AFS
Date: 23.04.2015	Scale: 1:1,250 @ A4
Job No: R1742b	Drg No: D02

HEYFORD PARK PHASE 2



NEW SUB STATION IN AUDLEY RED BRICKWORK
& RIVENDALE SLATE ROOF
TO ENCORE DRWG GTC-E-SS-0010-R1.7

KEY

HOUSETYPE SCHEDULE

TYPE	BED ACCOMODATION / DWELLING TYPE	STOREY HEIGHT	SIZE (SQ FT)	No OF UNITS
DL 1	2 BEDROOM SEMI / TERRACED HOUSE	2	775	11
DL2	3 BEDROOM SEMI / TERRACED HOUSE	2	857	11
DL3	3 BEDROOM SEMI DETACHED HOUSE	2	851	5
DL4	2 BEDROOM SEMI DETACHED HOUSE	2	710	5
DL6	3 BEDROOM SEMI / TERRACED HOUSE	2	857	11
DL7	3 BEDROOM SEMI DETACHED LINKED HOUSE	2	1015	1
DL7 A	3 BEDROOM SEMI DETACHED LINKED HOUSE	2	1015	1
AF2	2 BEDROOM SEMI / TERRACED HOUSE	2	777	22
AF3	3 BEDROOM SEMI / TERRACED HOUSE	2	910	4
TOTAL NO. OF DWELLINGS				71

SITE AREA - 4. 6 ACRES / 1. 86 HECTARE GROSS DEVELOPABLE
DWELLINGS PER ACRE - 15.4 PER ACRE / 38 PER HECTARE GROSS
SQUARE FOOT PER ACRE - 12,539 SQ FT GROSS
TOTAL DWELLING SQUARE FOOTAGE - 57, 680 SQ FT GROSS
TOTAL PARKING SPACES - 177 PRIVATE SPACES / 13 VISITORS

═	DENOTES 1800MM HIGH CLOSE BOARDED FENCE
—·—	DENOTES 1800MM HIGH LARCH LAP FENCE TO REAR
▬	DENOTES 1800MM HIGH SCREEN WALL
- - - -	DENOTES UNMARKED BOUNDARY
— — —	DENOTES 900MM HIGH PROPRIETORY RAILINGS
◜	DENOTES ROBUST LOCKABLE GATE

EXISTING BOUNDARIES WILL GENERALLY BE FENCED WITH
1.8M (6ft) HIGH CLOSE BOARDED FENCING, UNLESS EXISTING
STRUCTURES OR HEDGING ARE DEEMED SATISFACTORY

○	DENOTES EXISTING TREES & HEDGES TO BE RETAINED
◌	DENOTES EXISTING TREES TO BE REMOVED
✳	DENOTES NEW TREE & SHRUB PLANTING
▨	PRIVATE DRIVES IN TARMAC
■	BIN COLLECTION POINT BCP
🟪	AFFORDABLE HOUSING FOR RENT
■	AFFORDABLE SHARED OWNERSHIP
🟪	LANDMARK BUILDING
☒	PARKING SPACE 2.5M X 5.0M
▦	BLOCK PAVING

REVISIONS

AUG 014 REV A PLOTS 14 & 15 SUBSTITUTED TO HOUSE D1 / D2 TYPE SEMI
AUG 014 REV B LAYOUT REDESIGNED TO PLANNERS PRE APP COMMENTS
SEPT 014 REV C LAYOUT REDESIGNED TO ACCOMODATE PUMPING STATION NO BUILD ZONE
SEPT 014 REV D LAYOUT REDESIGNED TO PLANNING & HIGHWAY COMMENTS
OCT 014 REV E LAYOUT REDESIGNED TO PLANNING & HIGHWAY COMMENTS EMAIL 8/10/014
OCT 014 REV F YEB SUB STATION ADDED
NOV 014 REV G LAYOUT REDESIGNED TO PLANNING & HIGHWAY COMMENTS EMAIL17/10/014
NOV 014 REV H PARKING SPACES 54 TO 56 REPOSITIONED PLOT 69 CHANGED TO DL7A
NOV 014 REV I PLOT TYPES REVISED SINGLE GARAGE TO PLOT 8
DEC 014 REV J PLOT SIZES CORRECTED
DEC 014 REV K PLOT NUMBERS CHANGED TO RUN FROM 31 & PHASE REVISED FROM 5a TO 2
JAN 015 REV L FOOTPATHS REVISED PLOT 85 INDICATED AS DL1A 99 DL1 & 98 DL7A
MAR 015 REV M PLOT FOOTPRINTS ADJUSTED TO MATCH ASSEMBLEY DRAWINGS

ALL PAVED FOOTPATH TO REAR OF PROPERTIES TO BE SECURED BY ROBUST LOCKABLE GATES

MATERIALS PALLETTE

BRICK

A IBSTOCK AUDLEY RED MIXTURE
B IBSTOCK LEICESTER WEATHERED RED
R RENDER WEBER CORNISH CREAM REF 2501

ROOF TILE
ALL ROOFS TO HAVE RIVENDALE SLATE GREY

BLACK RAINWATER GOODS

BLACK GARAGE DOORS

WHITE UPC WINDOWS

RED TILE CILLS

0M 10M 20M 30M 40M 50M

SCALE BAR 1 :500

CLIENT DORCHESTER LIVING

DRAWING TITLE SITE LAYOUT

PROJECT:

PROPOSED DEVELOPMENT AT
HEYFORD PARK PHASE 5
UPPER HEYFORD
BICESTER

DRAWING No 014 / 085 / SP / M

DRAWING DATE AUGUST 2014

DRAWN BY IKB

SCALE 1:500 @A1

BARRATON
DESIGN STUDIO

BARRATON DESIGN STUDIO
UNIT 1
BRANCROFT FARM
BAWTRY ROAD
AUSTERFIELD
DONCASTER
SOUTH YORKSHIRE
DN10 6EZ

TEL: 01302 : 771188
EMAIL: ianbarraton30@gmail.com

APPENDIX A

Site Photographs

1.  13.01.15 Stockpile of site won "tarmac" stripped from former car park areas	2.  13.01.15 Stockpiles of site won hard-standing located in the centre and parallel to the western boundary awaiting processing
3.  13.01.15 Stockpile of site won "tarmac" located in the north-west corner of the site	4.  13.01.15 North-westerly view across the site following removal of all above ground structures and hard-standing
5.  13.01.15 Eastern view along the southern boundary	6.  13.01.15 South-east corner of the site, soil mound (background) denotes area not remediated due to trees

7.

13.01.15 Western view along the site's southern boundary

8.

13.01.15 Centre of the site, natural soils of weathered limestone bedrock visible

9.

13.01.15 Southern view down the eastern boundary

10.

13.01.15 North-east corner of the site within location of former HS1

11.

16.02.15 Aggregate stockpile (Agg-1) located in the west of the site

12.

16.02.15 Stockpile of site won tarmac located in the north-west

13.

17.02.15 Western view along the north of the site

14.

17.02.15 Natural strata exposed at site surface following removal of hard-standing

15.

17.02.15 Excavation of hydrocarbon impacted soils in the north-east of the site

No Photo

No Photo

No Photo

APPENDIX B

Formation Level Validation Photo Record

1.

19.01.15 - Cover Validation: D2-SS1

2.

19.01.15 - Cover Validation: D2--SS2

3.

19.01.15 - Cover Validation: D2--SS3

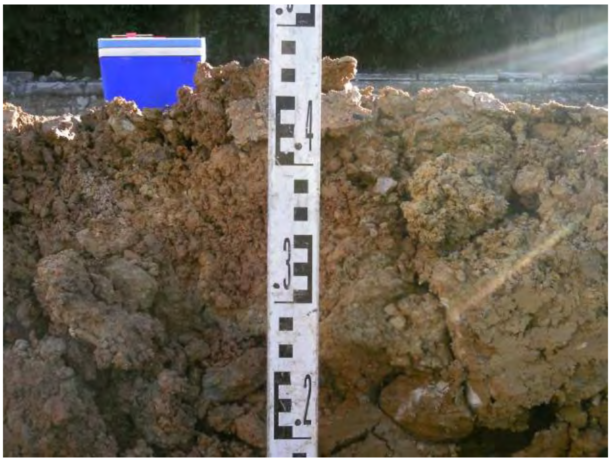
4.

19.01.15 - Cover Validation: D2--SS4

5.

19.01.15 - Cover Validation: D2—SS5

6.



19.01.15 - Cover Validation: D2—SS6

7.

19.01.15 - Cover Validation: D2—SS7

8.

19.01.15 - Cover Validation: D2—SS8

9.

19.01.15 - Cover Validation: D2—SS9

10.

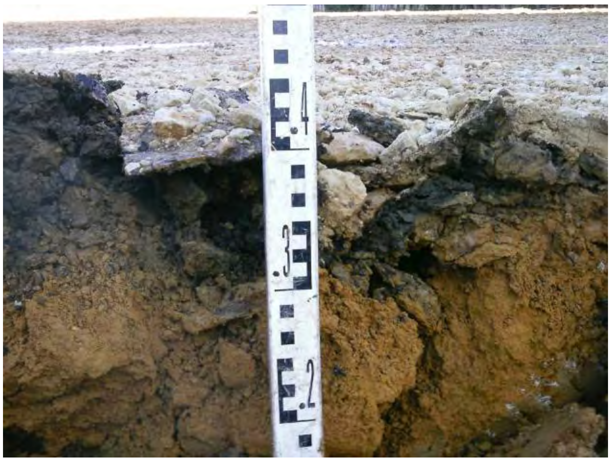
19.01.15 - Cover Validation: D2--SS10

11.

19.01.15 - Cover Validation: D2--SS11

12.

19.01.15 - Cover Validation: D2--SS12

13.  19.01.15 - Cover Validation: D2--SS13	No photo

APPENDIX C

Hotspot Remediation Record

R1742B – Dorchester Phase 2 (D2)

Job number	R1742B	Date	19.01.15	Hotspot Location	North-East (Identified by URL)	Compiled by	DW

Lab ref: 15/2562	Samples: D2-HS1-SS1 – D2-HS1-SS4	
 19.01.15 Excavation of trench 1 to determine location of removed soils (represented by MOT in-fill)	 19.01.15 Continuation of trench 1 (north to south) until granular infill no longer encountered and natural strata remains	 19.01.15 Extent of URL HS1 removal confirmed and validation sample collected from north and southern extent
 19.01.15 Arising screened with a PID (<0.1 ppm)	 19.01.15 Trench 2 excavated (east to west)	No photo

Job number	R1742B	Date	19.01.15	Hotspot Location	HC Hotspot (Jomas TP-NSA-230)	Compiled by	DW

Lab ref: N/A		Samples: N/A
 19.01.15 Trench 3 excavated to confirm presence of hydrocarbon contamination	 19.01.15 stained gravel encountered with moderate hydrocarbon odour	 19.01.15 Trench 3 extended (east to west) to delineate extent of contamination
 19.01.15 Arisings screened with a PID, maximum reading of 100ppm	No photo	No photo

Job number	R1742B	Date	19.01.15	Hotspot Location	HC Hotspot (Jomas TP-NSA-231)	Compiled by	DW

Lab ref: N/A	Samples: N/A	
 19.01.15 Trench 4 excavated to confirm presence of hydrocarbon contamination	 19.01.15 ingress of groundwater clear and free from iridescent sheen, floating product or oil globules	 19.01.15 Trench 4 extending north to south by approximately 15m x 3m
 19.01.15 Arising screened with a PID (<0.1 ppm)	No Photo	No Photo

Job number	R1742B	Date	16.02.15 - 17.02.15	Remediation Works	Impacted Area Delineation, Remediation & Verification	Compiled by	DW

Lab ref: 15/3758	Samples: D2-HS2-S1, S2, S3, S4, S5; D2-SS2A, B, C, D; DS-HS2-HC1, HC2	
 17.02.15 Excavation of trial-pits to delineate the extent of hydrocarbon impacted soils	 17.02.15 Grey/Silver impacted soil at base of trial-pit confirms hydrocarbon impacted soil present	 17.02.15 Trial-pits along the northern boundary confirming impacted soils extend off-site
 17.02.15 Trench from western boundary into site centre	 17.02.15 Trench in location of Jomas TP-NSA-231 reporting elevated hydrocarbons	 17.02.15 Trial-pits within north-east corner of the site

 16.02.15 Exposed contaminated soils awaiting removal	 16.02.15 Black staining observed on granular material	 16.02.15 Removal of impacted soils to treatment/storage area
 16.02.15 Clean soils side cast, contaminated soil removed down to bedrock	 16.02.15 Clean soils side cast pending replacement following contamination removal	 17.02.15 Backfill of excavation area with clean uncontaminated soil

Job number	R1742B	Date	23.02.15	Remediation Works	Impacted Area Delineation, Remediation & Verification	Compiled by	DW

Lab ref: 15/4007		Samples: D2-Cont-1, -2, -3; D2-GW
 23.02.15 Excavation of trench (north to south) in north-east of Phase D2	 23.02.15 Grey hydrocarbon impacted soils encountered (150ppm)	 23.02.15 Side cast over burden to expose soils ~0.5m above bedrock to allow SGP screen with PID
 23.02.15 Clean overburden batoned in order to reduce water percolation during removal	 23.02.15 Adjacent remediation cell requiring pumping following ingress of groundwater	No Photo

Job number	R1742B	Date	04.03.15	Remediation Works	Impacted Area Delineation, Remediation & Verification	Compiled by	DW

Lab ref: 15/4412	Samples: HS-SS1 – HS-SS11


04.03.15 – Contamination removed from remediation cell down to bedrock, validation samples collected


04.03.15 – Clean overburden side cast from remediation cell during contamination removal


04.03.15 – Remaining area awaiting hydrocarbon removal


04.03.15 – Excavation of trial-pits to delineate extent of contamination in the north-west


04.03.15 - Excavation of trial-pits to delineate extent of contamination in the north


04.03.15 – Collection of validation samples along the western boundary following removal

Job number	R1742B

Date	10.03.15	Remediation Works	Impacted Area Delineation, Remediation & Verification	Compiled by	DW

Lab ref: 15/4721	Samples: HS-SS12 – HS-SS18

 10.03.15 – Removal of contamination up to northern boundary	 10.03.15 – Excavation sidewall available for inspection and collection of validation samples	 10.03.15 – Hydrocarbon contamination removed down to solid bedrock
 10.03.15 – Lateral extent of excavation	 10.03.15 – Minor ingress of groundwater at bedrock level, no sheen observed	 10.03.15 – Clean overburden replaced in adjacent remedial cell

APPENDIX D

Chemical Results

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

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 March, 2015
Your reference :	R1742B
Our reference :	Test Report 15/4721 Batch 1
Location :	Upper Heyford
Date samples received :	11th March, 2015
Status :	Final report
Issue :	1

Seven samples were received for analysis on 11th March, 2015 of which seven 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:

R.Millward.

Phil Sommerton BSc
Project Manager

Bob Millward BSc FRSC
Principal Chemist

Client Name: Smith Grant LLP
Reference: R1742B
Location: Upper Heyford
Contact: Scott Miller
JE Job No.: 15/4721

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	9-10	11-12	13-14				LOD/LOR	Units	Method No.
Sample ID	HS2-SS12	HS2-SS13	HS2-SS14	HS2-SS15	HS2-SS16	HS2-SS17	HS2-SS18						
Depth	1.3-1.8	1.5-2.0	2.0-2.5	1.1-1.6	0.9-1.4	1.0-1.5	1.0-1.5						
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J						
Sample Date	10/03/2015	10/03/2015	10/03/2015	10/03/2015	10/03/2015	10/03/2015	10/03/2015						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	11/03/2015	11/03/2015	11/03/2015	11/03/2015	11/03/2015	11/03/2015	11/03/2015						
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	1.8	1.9	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	8.2	12.2	0.2	1.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	66.9	35.2	26.4	15.1	<0.2	<0.2				<0.2	mg/kg	TM5/PM16
>C12-C16 #M	<4	63	40	62	54	6	<4				<4	mg/kg	TM5/PM16
>C16-C21 #M	<7	<7	<7	<7	11	<7	<7				<7	mg/kg	TM5/PM16
>C21-C35 #M	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	140	89	89	81	<19	<19				<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1	<0.1	<0.1	<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	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	0.2	0.3	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	13.2	13.5	<0.2	3.1	<0.2	<0.2				<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	40	27	10	17	<4	<4				<4	mg/kg	TM5/PM16
>EC16-EC21	<7	<7	<7	<7	13	<7	<7				<7	mg/kg	TM5/PM16
>EC21-EC35	<7	<7	<7	<7	<7	<7	<7				<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19	53	41	<19	33	<19	<19				<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	193	130	89	114	<38	<38				<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5	<5	<5	<5	<5				<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	39	45	<5	<5	<5	<5				<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	95	208	<5	<5	<5	<5				<5	ug/kg	TM31/PM12
o-Xylene #	<5	87	114	14	<5	<5	<5				<5	ug/kg	TM31/PM12
Natural Moisture Content	16.4	16.9	13.3	15.2	11.1	10.4	17.1				<0.1	%	PM4/PM0
Sample Type	Clay	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clayey Sand	Clay					None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown					None	PM13/PM0
Other Items	stones and sand	stones	stones	stones	stones	stones	stones and sand					None	PM13/PM0

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Jones Environmental Laboratory **Notification of Deviating Samples**

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

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
15/4721	1	HS2-SS12	1.3-1.8	1-2	GRO	Solid Samples were received at a temperature above 9°C.
15/4721	1	HS2-SS13	1.5-2.0	3-4	GRO	Solid Samples were received at a temperature above 9°C.
15/4721	1	HS2-SS14	2.0-2.5	5-6	GRO	Solid Samples were received at a temperature above 9°C.
15/4721	1	HS2-SS15	1.1-1.6	7-8	GRO	Solid Samples were received at a temperature above 9°C.
15/4721	1	HS2-SS16	0.9-1.4	9-10	GRO	Solid Samples were received at a temperature above 9°C.
15/4721	1	HS2-SS17	1.0-1.5	11-12	GRO	Solid Samples were received at a temperature above 9°C.
15/4721	1	HS2-SS18	1.0-1.5	13-14	GRO	Solid Samples were received at a temperature above 9°C.

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.: 15/4721

SOILS

Please note we are only MCERTS accredited 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 we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

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.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and 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.

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.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
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 a 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
OC	Outside Calibration Range

JE Job No: 15/4721

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM12/PM16	CWG GC-FID			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	
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.			AR	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	Yes	AR	Yes

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

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 : Dan Wayland

Date : 9th March, 2015

Your reference : R1742B

Our reference : Test Report 15/4414 Batch 1

Location : Heyford (Dorchester)

Date samples received : 5th March, 2015

Status : Final report

Issue : 1

Four samples were received for analysis on 5th March, 2015 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:

Bruce Leslie
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland
JE Job No.: 15/4414

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	D2-HSA	D2-HSB	D2-HSC	D2-TP2			
Depth				1.8-2.0			
COC No / misc							
Containers	V J	V J	V J	V J			
Sample Date	04/03/2015	04/03/2015	04/03/2015	04/03/2015			
Sample Type	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1			
Date of Receipt	05/03/2015	05/03/2015	05/03/2015	05/03/2015			
TPH CWG							
Aliphatics							
>C5-C6 #M	<0.1	<0.1	<0.1	50.7	<0.1	mg/kg	TM36/PM12
>C6-C8 #M	0.5	<0.1	0.1	2368.9	<0.1	mg/kg	TM36/PM12
>C8-C10	31.0	1.1	<0.1	1056.3	<0.1	mg/kg	TM36/PM12
>C10-C12 #M	188.8	<0.2	<0.2	322.0	<0.2	mg/kg	TM5/PM16
>C12-C16 #M	286	<4	<4	115	<4	mg/kg	TM5/PM16
>C16-C21 #M	<7	<7	<7	43	<7	mg/kg	TM5/PM16
>C21-C35 #M	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	506	<19	<19	3956	<19	mg/kg	TM5/TM36/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	231.4	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	2.2	<0.1	<0.1	79.8	<0.1	mg/kg	TM36/PM12
>EC10-EC12	20.3	<0.2	<0.2	281.4	<0.2	mg/kg	TM5/PM16
>EC12-EC16	65	<4	<4	115	<4	mg/kg	TM5/PM16
>EC16-EC21	<7	<7	<7	61	<7	mg/kg	TM5/PM16
>EC21-EC35	<7	<7	<7	11	<7	mg/kg	TM5/PM16
Total aromatics C5-35	88	<19	<19	780	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	594	<38	<38	4736	<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	24	15	<5	231485	<5	ug/kg	TM31/PM12
Ethylbenzene #	125	12	<5	48213	<5	ug/kg	TM31/PM12
m/p-Xylene #	399	16	<5	12530	<5	ug/kg	TM31/PM12
o-Xylene #	1665	28	<5	19099	<5	ug/kg	TM31/PM12
Natural Moisture Content	21.0	12.8	19.6	19.3	<0.1	%	PM4/PM0
Sample Type	Clay	Clay	Clay	Clayey Sand		None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Light Brown	Light Brown		None	PM13/PM0
Other Items	stones and sand	stones and sand	stones and sand	stones		None	PM13/PM0

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
15/4414	1	D2-TP2	1.8-2.0	7-8	Gasoline residues

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
15/4414	1	D2-HSA		1-2	GRO	Solid Samples were received at a temperature above 9°C.
15/4414	1	D2-HSB		3-4	GRO	Solid Samples were received at a temperature above 9°C.
15/4414	1	D2-HSC		5-6	GRO	Solid Samples were received at a temperature above 9°C.
15/4414	1	D2-TP2	1.8-2.0	7-8	GRO	Solid Samples were received at a temperature above 9°C.

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.

JE Job No.: 15/4414

SOILS

Please note we are only MCERTS accredited 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 we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

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.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and 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.

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.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
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 a 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
OC	Outside Calibration Range

JE Job No: 15/4414

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM12/PM16	CWG GC-FID			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	
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.			AR	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	Yes	AR	Yes

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

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 :	Dan Wayland
Date :	9th March, 2015
Your reference :	R1742B
Our reference :	Test Report 15/4412 Batch 1
Location :	Heyford (Dorchester)
Date samples received :	5th March, 2015
Status :	Final report
Issue :	1

Eleven samples were received for analysis on 5th March, 2015 of which eleven 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:

Bruce Leslie
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland
JE Job No.: 15/4412

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	9-10	11-12	13-14	15-16	17-18	19-20			
Sample ID	HS-SS1	HS-SS2	HS-SS3	HS-SS4	HS-SS5	HS-SS6	HS-SS7	HS-SS8	HS-SS9	HS-SS10			
Depth	1.0	1.2	1.4	1.6	1.0	0.5	0.5	0.8	1.5	0.5			
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	04/03/2015	04/03/2015	04/03/2015	04/03/2015	04/03/2015	04/03/2015	04/03/2015	04/03/2015	04/03/2015	04/03/2015			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	05/03/2015	05/03/2015	05/03/2015	05/03/2015	05/03/2015	05/03/2015	05/03/2015	05/03/2015	05/03/2015	05/03/2015			
TPH CWG													
Aliphatics													
>C5-C6 $^{\#M}$	<0.1	<0.1	<0.1	<0.1	3.2	0.2	<0.1	1.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 $^{\#M}$	<0.1	<0.1	<0.1	<0.1	50.6	39.9	0.7	21.7	0.2	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	23.5	3.4	<0.1	9.0	0.2	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 $^{\#M}$	<0.2	<0.2	3.7	<0.2	<0.2	13.9	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM16
>C12-C16 $^{\#M}$	<4	<4	18	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>C16-C21 $^{\#M}$	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>C21-C35 $^{\#M}$	34	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	34	<19	22	<19	77	57	<19	32	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1	<0.1	<0.1	<0.1	0.6	0.2	<0.1	0.3	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	<0.1	<0.1	<0.1	1.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 $^{\#M}$	<0.1	<0.1	<0.1	<0.1	0.4	0.2	<0.1	0.2	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12	<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/PM16
>EC12-EC16	8	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>EC16-EC21	81	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>EC21-EC35	317	<7	<7	<7	<7	70	81	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aromatics C5-35	406	<19	<19	<19	<19	70	81	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	440	<38	<38	<38	77	127	81	<38	<38	<38	<38	mg/kg	TM5/TM36/PM12/PM16
MTBE $^{\#}$	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene $^{\#}$	<5	<5	<5	<5	567	245	29	335	<5	<5	<5	ug/kg	TM31/PM12
Toluene $^{\#}$	<5	<5	<5	<5	997	41	<5	269	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene $^{\#}$	<5	<5	<5	<5	56	265	<5	48	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene $^{\#}$	<5	<5	<5	<5	230	<5	<5	92	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene $^{\#}$	<5	<5	<5	<5	89	<5	<5	58	<5	<5	<5	ug/kg	TM31/PM12
Natural Moisture Content	15.6	16.3	20.0	18.2	16.7	17.4	22.5	13.1	17.9	15.5	<0.1	%	PM4/PM0
Sample Type	Clay	Clayey Sand	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay		None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Medium Brown	Light Brown	Light Brown	Light Brown		None	PM13/PM0
Other Items	stones and sand	stones	stones and sand	stone and sand	stones and sand	stones and sand	stones and sand	stones and sand	stones and sand	stones and sand		None	PM13/PM0

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland
JE Job No.: 15/4412

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.	21-22												
Sample ID	HS-SS11												
Depth	1.0												
COC No / misc													
Containers	V J												
Sample Date	04/03/2015												
Sample Type	Soil												
Batch Number	1										LOD/LOR	Units	Method No.
Date of Receipt	05/03/2015												
TPH CWG													
Aliphatics													
>C5-C6 $^{\#M}$	<0.1										<0.1	mg/kg	TM36/PM12
>C6-C8 $^{\#M}$	<0.1										<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1										<0.1	mg/kg	TM36/PM12
>C10-C12 $^{\#M}$	<0.2										<0.2	mg/kg	TM5/PM16
>C12-C16 $^{\#M}$	<4										<4	mg/kg	TM5/PM16
>C16-C21 $^{\#M}$	<7										<7	mg/kg	TM5/PM16
>C21-C35 $^{\#M}$	<7										<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19										<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1										<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1										<0.1	mg/kg	TM36/PM12
>EC8-EC10 $^{\#M}$	<0.1										<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2										<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4										<4	mg/kg	TM5/PM16
>EC16-EC21	<7										<7	mg/kg	TM5/PM16
>EC21-EC35	<7										<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19										<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38										<38	mg/kg	TM5/TM36/PM12/PM16
MTBE $^{\#}$	<5										<5	ug/kg	TM31/PM12
Benzene $^{\#}$	<5										<5	ug/kg	TM31/PM12
Toluene $^{\#}$	<5										<5	ug/kg	TM31/PM12
Ethylbenzene $^{\#}$	<5										<5	ug/kg	TM31/PM12
m/p-Xylene $^{\#}$	<5										<5	ug/kg	TM31/PM12
o-Xylene $^{\#}$	<5										<5	ug/kg	TM31/PM12
Natural Moisture Content	18.5										<0.1	%	PM4/PM0
Sample Type	Clay											None	PM13/PM0
Sample Colour	Light Brown											None	PM13/PM0
Other Items	stones and sand											None	PM13/PM0

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Notification of Deviating Samples

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
15/4412	1	HS-SS1	1.0	1-2	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS2	1.2	3-4	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS3	1.4	5-6	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS4	1.6	7-8	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS5	1.0	9-10	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS6	0.5	11-12	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS7	0.5	13-14	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS8	0.8	15-16	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS9	1.5	17-18	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS10	0.5	19-20	GRO	Solid Samples were received at a temperature above 9°C.
15/4412	1	HS-SS11	1.0	21-22	GRO	Solid Samples were received at a temperature above 9°C.

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.: 15/4412

SOILS

Please note we are only MCERTS accredited 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 we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

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.

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UKAS accreditation applies to surface water and groundwater and 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.

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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.

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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.

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.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
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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 a 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
OC	Outside Calibration Range

JE Job No: 15/4412

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM12/PM16	CWG GC-FID			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	
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.			AR	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	Yes	AR	Yes

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

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 : Dan Wayland

Date : 5th March, 2015

Your reference : R1742B

Our reference : Test Report 15/4007 Batch 1

Location : Heyford (Dorchester)

Date samples received : 24th February, 2015

Status : Final report

Issue : 1

Four samples were received for analysis on 24th February, 2015 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:

Phil Sommerton BSc
Project Manager

Bob Millward BSc FRSC
Principal Chemist

Jones Environmental Laboratory

Client Name:	Smith Grant LLP
Reference:	R1742B
Location:	Heyford (Dorchester)
Contact:	Dan Wayland
JE Job No.:	15/4007

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										
Sample ID	D2-CONT-1	D2-CONT-2	D2-CONT-3										
Depth	1.2-1.4	1.0-1.2	1.0-1.2										
COC No / misc													
Containers	V J	V J	V J										
Sample Date	23/02/2015	23/02/2015	23/02/2015										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	24/02/2015	24/02/2015	24/02/2015								LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 $^{\#M}$	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C6-C8 $^{\#M}$	8.2	19.1	29.7								<0.1	mg/kg	TM36/PM12
>C8-C10	1.9	2.9	4.5								<0.1	mg/kg	TM36/PM12
>C10-C12 $^{\#M}$	2.6	5.5	<0.2								<0.2	mg/kg	TM5/PM16
>C12-C16 $^{\#M}$	<4	<4	<4								<4	mg/kg	TM5/PM16
>C16-C21 $^{\#M}$	<7	<7	<7								<7	mg/kg	TM5/PM16
>C21-C35 $^{\#M}$	<7	<7	<7								<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	28	34								<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC8-EC10 $^{\#M}$	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	<4	<4								<4	mg/kg	TM5/PM16
>EC16-EC21	<7	<7	<7								<7	mg/kg	TM5/PM16
>EC21-EC35	<7	<7	<7								<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19	<19	<19								<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38								<38	mg/kg	TM5/TM36/PM12/PM16
MTBE $^{\#}$	<5	<5	<5								<5	ug/kg	TM31/PM12
Benzene $^{\#}$	<5	<5	<5								<5	ug/kg	TM31/PM12
Toluene $^{\#}$	<5	<5	<5								<5	ug/kg	TM31/PM12
Ethylbenzene $^{\#}$	<5	<5	<5								<5	ug/kg	TM31/PM12
m/p-Xylene $^{\#}$	<5	<5	<5								<5	ug/kg	TM31/PM12
o-Xylene $^{\#}$	<5	<5	<5								<5	ug/kg	TM31/PM12
Natural Moisture Content	18.4	22.2	18.5								<0.1	%	PM4/PM0
Sample Type	Clay	Clay	Clay									None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Light Brown									None	PM13/PM0
Other Items	stones	stones and water	stones									None	PM13/PM0

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland
JE Job No.: 15/4007

Report : **Liquid**

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	7-9												
Sample ID	D2-GW												
Depth													
COC No / misc													
Containers	V G												
Sample Date	23/02/2015												
Sample Type	Ground Water												
Batch Number	1										LOD/LOR	Units	Method No.
Date of Receipt	24/02/2015												
TPH CWG													
Aliphatics													
>C5-C6$^{\#}$	<5										<5	ug/l	TM36/PM12
>C6-C8$^{\#}$	<5										<5	ug/l	TM36/PM12
>C8-C10$^{\#}$	<5										<5	ug/l	TM36/PM12
>C10-C12$^{\#}$	<5										<5	ug/l	TM5/PM30
>C12-C16$^{\#}$	<10										<10	ug/l	TM5/PM30
>C16-C21$^{\#}$	<10										<10	ug/l	TM5/PM30
>C21-C35$^{\#}$	<10										<10	ug/l	TM5/PM30
Total aliphatics C5-35$^{\#}$	<10										<10	ug/l	TM5/TM36/PM30
Aromatics													
>C5-EC7$^{\#}$	<5										<5	ug/l	TM36/PM12
>EC7-EC8$^{\#}$	<5										<5	ug/l	TM36/PM12
>EC8-EC10$^{\#}$	<5										<5	ug/l	TM36/PM12
>EC10-EC12$^{\#}$	<5										<5	ug/l	TM5/PM30
>EC12-EC16$^{\#}$	<10										<10	ug/l	TM5/PM30
>EC16-EC21$^{\#}$	<10										<10	ug/l	TM5/PM30
>EC21-EC35$^{\#}$	<10										<10	ug/l	TM5/PM30
Total aromatics C5-35$^{\#}$	<10										<10	ug/l	TM5/PM30
Total aliphatics and aromatics(C5-35)$^{\#}$	<10										<10	ug/l	TM5/TM36/PM30
MTBE$^{\#}$	<5										<5	ug/l	TM36/PM12
Benzene$^{\#}$	<5										<5	ug/l	TM36/PM12
Toluene$^{\#}$	<5										<5	ug/l	TM36/PM12
Ethylbenzene$^{\#}$	<5										<5	ug/l	TM36/PM12
m/p-Xylene$^{\#}$	<5										<5	ug/l	TM36/PM12
o-Xylene$^{\#}$	<5										<5	ug/l	TM36/PM12

Notification of Deviating Samples

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 15/4007						

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.: 15/4007

SOILS

Please note we are only MCERTS accredited 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 we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

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.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and 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.

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.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
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 a 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
OC	Outside Calibration Range

JE Job No: 15/4007

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	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.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM12/PM16	CWG GC-FID			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	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	
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.			AR	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.	Yes			

JE Job No: 15/4007

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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	Yes	AR	Yes

UKAS
TESTING
2183

Chemtest
The right chemistry to deliver results

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

Final Report

Report Number: 15-03868 Issue-1

Initial Date of Issue: 24-Feb-2015

Client: Smith Grant LLP

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

Contact(s): Dan Wayland

Project: R1742B Heyford Dorchester

Quotation No.:

Date Received: 19-Feb-2015

Order No.: R1742B

Date Instructed: 19-Feb-2015

No. of Samples: 4

Turnaround: (Wkdays) 4

Results Due Date: 24-Feb-2015

Date Approved: 24-Feb-2015

Approved By:

KTJones

Details: Keith Jones, Technical Manager

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Project: R1742B Heyford Dorchester

Client: Smith Grant LLP	**Chemtest Job No.:**				15-03868	15-03868	15-03868	15-03868
Quotation No.:	**Chemtest Sample ID.:**				105191	105192	105193	105194
Order No.: R1742B	Client Sample Ref.:							
	Client Sample ID.:				DZ-Agg1-A	DZ-Agg1-B	DZ-Agg1-C	DZ-Agg1-D
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):							
	Bottom Depth(m):							
	Date Sampled:				16-Feb-15	16-Feb-15	16-Feb-15	16-Feb-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192			-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.02	7.9	7.3	6.7	6.7

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, SVCOs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry 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

Sample Retention and Disposal

All soil samples will be retained for a period of 60 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

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

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 : Dan Wayland

Date : 2nd March, 2015

Your reference : R1742B

Our reference : Test Report 15/3758 Batch 1

Location : Heyford (Dorchester)

Date samples received : 18th February, 2015

Status : Final report

Issue : 1

Thirteen samples were received for analysis on 18th February, 2015 of which thirteen 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:

Bruce Leslie
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name:	Smith Grant LLP	**Report :**	**Solid**
Reference:	R1742B		
Location:	Heyford (Dorchester)	**Solids:**	V=60g VOC jar, J=250g glass jar, T=plastic tub
Contact:	Dan Wayland		
JE Job No.:	15/3758		

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20			
Sample ID	D2-HS2-S1	D2-HS2-S2	D2-HS2-S3	D2-HS2-S4	D2-HS2-S5	D2-AGG1-A	D2-AGG1-B	D2-SS2A	D2-SS2B	D2-SS2C			
Depth	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5			0-0.4	0-0.4	0-0.4			
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	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015	17/02/2015	17/02/2015	17/02/2015			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015			
Antimony	-	-	-	-	-	12	<1	-	-	-	<1	mg/kg	TM30/PM15
Arsenic $^{\#M}$	-	-	-	-	-	18.5	26.9	-	-	-	<0.5	mg/kg	TM30/PM15
Barium $^{\#M}$	-	-	-	-	-	91	45	-	-	-	<1	mg/kg	TM30/PM15
Beryllium	-	-	-	-	-	0.8	1.0	-	-	-	<0.5	mg/kg	TM30/PM15
Cadmium $^{\#M}$	-	-	-	-	-	0.5	0.4	-	-	-	<0.1	mg/kg	TM30/PM15
Chromium $^{\#M}$	-	-	-	-	-	30.8	38.5	-	-	-	<0.5	mg/kg	TM30/PM15
Cobalt $^{\#M}$	-	-	-	-	-	5.7	6.9	-	-	-	<0.5	mg/kg	TM30/PM15
Copper $^{\#M}$	-	-	-	-	-	9	5	-	-	-	<1	mg/kg	TM30/PM15
Lead $^{\#M}$	-	-	-	-	-	46	7	-	-	-	<5	mg/kg	TM30/PM15
Mercury $^{\#M}$	-	-	-	-	-	0.2	<0.1	-	-	-	<0.1	mg/kg	TM30/PM15
Molybdenum $^{\#M}$	-	-	-	-	-	1.5	1.3	-	-	-	<0.1	mg/kg	TM30/PM15
Nickel $^{\#M}$	-	-	-	-	-	14.2	16.4	-	-	-	<0.7	mg/kg	TM30/PM15
Selenium $^{\#M}$	-	-	-	-	-	1	<1	-	-	-	<1	mg/kg	TM30/PM15
Vanadium	-	-	-	-	-	44	62	-	-	-	<1	mg/kg	TM30/PM15
Water Soluble Boron $^{\#M}$	-	-	-	-	-	0.2	2.8	-	-	-	<0.1	mg/kg	TM74/PM32
Zinc $^{\#M}$	-	-	-	-	-	115	154	-	-	-	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene $^{\#M}$	-	-	-	-	-	<0.40$_{A}$	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	-	-	-	-	<0.30$_{A}$	0.07	0.06	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene $^{\#M}$	-	-	-	-	-	<0.50$_{A}$	0.30	0.07	0.16	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene $^{\#M}$	-	-	-	-	-	<0.40$_{A}$	0.28	0.05	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene $^{\#M}$	-	-	-	-	-	1.50$_{A}$	2.56	0.32	0.11	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene $^{\#}$	-	-	-	-	-	0.49$_{A}$	0.60	0.21	0.12	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene $^{\#M}$	-	-	-	-	-	2.05$_{A}$	3.00	1.34	1.01	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene $^{\#}$	-	-	-	-	-	1.71$_{A}$	2.17	1.09	0.84	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene $^{\#}$	-	-	-	-	-	1.78$_{A}$	1.64	0.83	0.56	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene $^{\#M}$	-	-	-	-	-	1.94$_{A}$	2.02	0.82	0.55	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene $^{\#M}$	-	-	-	-	-	4.17$_{A}$	3.05	1.89	0.98	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene $^{\#}$	-	-	-	-	-	2.76$_{A}$	1.65	1.24	0.64	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene $^{\#M}$	-	-	-	-	-	1.84$_{A}$	1.11	0.88	0.44	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene $^{\#}$	-	-	-	-	-	0.47$_{A}$	0.34	0.18	0.07	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene $^{\#}$	-	-	-	-	-	1.70$_{A}$	1.00	0.76	0.35	<0.04	<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	-	-	-	-	20.4$_{A}$	19.8	9.7	5.8	<0.6	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-	-	-	-	3.00$_{A}$	2.20	1.36	0.71	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-	-	-	-	1.17$_{A}$	0.85	0.53	0.27	<0.02	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-	-	-	-	102$_{A}$	108	103	101	101	<0	%	TM4/PM8

Jones Environmental Laboratory

Client Name:	Smith Grant LLP	**Report :**	**Solid**
Reference:	R1742B		
Location:	Heyford (Dorchester)	**Solids:**	V=60g VOC jar, J=250g glass jar, T=plastic tub
Contact:	Dan Wayland		
JE Job No.:	15/3758		

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	LOD/LOR	Units	Method No.
Sample ID	D2-HS2-S1	D2-HS2-S2	D2-HS2-S3	D2-HS2-S4	D2-HS2-S5	D2-AGG1-A	D2-AGG1-B	D2-SS2A	D2-SS2B	D2-SS2C			
Depth	1-1.5	1-1.5	1-1.5	1-1.5	1-1.5			0-0.4	0-0.4	0-0.4			
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	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015	16/02/2015	17/02/2015	17/02/2015	17/02/2015			
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	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015	18/02/2015			
TPH CWG													
Aliphatics													
>C5-C6 $^{\#M}$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 $^{\#M}$	3.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10	0.9	<0.1	<0.1	<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	<0.2	<0.2	-	-	-	<0.2	mg/kg	TM5/PM16
>C12-C16 $^{\#M}$	<4	<4	<4	<4	<4	<4	<4	-	-	-	<4	mg/kg	TM5/PM16
>C16-C21 $^{\#M}$	<7	<7	<7	<7	<7	<7	<7	-	-	-	<7	mg/kg	TM5/PM16
>C21-C35 $^{\#M}$	<7	<7	<7	<7	<7	37	<7	-	-	-	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	37	<19	-	-	-	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1	<0.1	<0.1	<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	<0.1	<0.1	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 $^{\#M}$	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	<4	<4	<4	<4	7	<4	-	-	-	<4	mg/kg	TM5/PM16
>EC16-EC21	<7	<7	<7	<7	<7	32	14	-	-	-	<7	mg/kg	TM5/PM16
>EC21-EC35	<7	<7	<7	<7	<7	157	77	-	-	-	<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19	<19	<19	<19	<19	196	91	-	-	-	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38	<38	<38	233	91	-	-	-	<38	mg/kg	TM5/TM36/PM12/PM16
MTBE $^{\#}$	<5	<5	<5	<5	<5	<5	<5	-	-	-	<5	ug/kg	TM31/PM12
Benzene $^{\#}$	<5	<5	<5	<5	<5	<5	<5	-	-	-	<5	ug/kg	TM31/PM12
Toluene $^{\#}$	<5	<5	<5	<5	<5	<5	<5	-	-	-	<5	ug/kg	TM31/PM12
Ethylbenzene $^{\#}$	89	<5	<5	<5	<5	<5	<5	-	-	-	<5	ug/kg	TM31/PM12
m/p-Xylene $^{\#}$	32	<5	<5	<5	<5	<5	<5	-	-	-	<5	ug/kg	TM31/PM12
o-Xylene $^{\#}$	67	<5	<5	<5	<5	<5	<5	-	-	-	<5	ug/kg	TM31/PM12
PCBs (Total vs Aroclor 1254)	-	-	-	-	-	<10	<10	-	-	-	<10	ug/kg	TM16/PM8
Natural Moisture Content	16.9	15.0	15.5	15.8	18.6	14.8	9.6	13.9	17.7	11.7	<0.1	%	PM4/PM0
Hexavalent Chromium $^{\#}$	-	-	-	-	-	0.6	<0.3	-	-	-	<0.3	mg/kg	TM38/PM20
Free Cyanide	-	-	-	-	-	<0.5	<0.5	-	-	-	<0.5	mg/kg	TM89/PM45
Complex Cyanide	-	-	-	-	-	<0.5	<0.5	-	-	-	<0.5	mg/kg	TM89/PM45
Organic Matter	-	-	-	-	-	0.6	0.3	-	-	-	<0.2	%	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	-	-	-	-	-	2333	1469	-	-	-	<100	uS/cm	TM76/PM58
pH $^{\#M}$	-	-	-	-	-	10.88	11.48	-	-	-	<0.01	pH units	TM73/PM11
Sample Type	Clay	Clay	Clay	Clay	Clay	Clayey Sand	Sand	Clay	Clay	Clayey Sand		None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown		None	PM13/PM0
Other Items	STONES AND SAND	STONES AND SAND	STONES	STONES	STONES	STONES	STONES	STONES AND SAND	STONES AND SAND	STONES		None	PM13/PM0

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland
JE Job No.: 15/3758

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.	21-22	23-24	25-26								LOD/LOR	Units	Method No.
Sample ID	D2-SS2D	D2-HS2-HC1	D2-HS2-HC2										
Depth	0-0.4	1.0-1.5	1.0-1.5										
COC No / misc													
Containers	V J	V J	V J										
Sample Date	17/02/2015	17/02/2015	17/02/2015										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	18/02/2015	18/02/2015	18/02/2015										
Antimony	-	-	-								<1	mg/kg	TM30/PM15
Arsenic #M	-	-	-								<0.5	mg/kg	TM30/PM15
Barium #M	-	-	-								<1	mg/kg	TM30/PM15
Beryllium	-	-	-								<0.5	mg/kg	TM30/PM15
Cadmium #M	-	-	-								<0.1	mg/kg	TM30/PM15
Chromium #M	-	-	-								<0.5	mg/kg	TM30/PM15
Cobalt #M	-	-	-								<0.5	mg/kg	TM30/PM15
Copper #M	-	-	-								<1	mg/kg	TM30/PM15
Lead #M	-	-	-								<5	mg/kg	TM30/PM15
Mercury #M	-	-	-								<0.1	mg/kg	TM30/PM15
Molybdenum #M	-	-	-								<0.1	mg/kg	TM30/PM15
Nickel #M	-	-	-								<0.7	mg/kg	TM30/PM15
Selenium #M	-	-	-								<1	mg/kg	TM30/PM15
Vanadium	-	-	-								<1	mg/kg	TM30/PM15
Water Soluble Boron #M	-	-	-								<0.1	mg/kg	TM74/PM32
Zinc #M	-	-	-								<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #M	<0.04	-	-								<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	-	-								<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	-	-								<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	-	-								<0.04	mg/kg	TM4/PM8
Phenanthrene #M	<0.03	-	-								<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	-	-								<0.04	mg/kg	TM4/PM8
Fluoranthene #M	<0.03	-	-								<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	-	-								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	-	-								<0.06	mg/kg	TM4/PM8
Chrysene #M	<0.02	-	-								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	<0.07	-	-								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	-	-								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	<0.04	-	-								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	-	-								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	-	-								<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	-	-								<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	-	-								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	-	-								<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	-	-								<0	%	TM4/PM8

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland
JE Job No.: 15/3758

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.	21-22	23-24	25-26									
Sample ID	D2-SS2D	D2-HS2-HC1	D2-HS2-HC2									
Depth	0-0.4	1.0-1.5	1.0-1.5									
COC No / misc												
Containers	V J	V J	V J									
Sample Date	17/02/2015	17/02/2015	17/02/2015									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1								LOD/LOR	Units	Method No.
Date of Receipt	18/02/2015	18/02/2015	18/02/2015										
TPH CWG												
Aliphatics												
>C5-C6 $^{\#M}$	-	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C6-C8 $^{\#M}$	-	0.9	0.7								<0.1	mg/kg	TM36/PM12
>C8-C10	-	0.3	7.1								<0.1	mg/kg	TM36/PM12
>C10-C12 $^{\#M}$	-	<0.2	225.1								<0.2	mg/kg	TM5/PM16
>C12-C16 $^{\#M}$	-	<4	337								<4	mg/kg	TM5/PM16
>C16-C21 $^{\#M}$	-	<7	76								<7	mg/kg	TM5/PM16
>C21-C35 $^{\#M}$	-	<7	88								<7	mg/kg	TM5/PM16
Total aliphatics C5-35	-	<19	734								<19	mg/kg	TM5/TM36/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	0.4								<0.1	mg/kg	TM36/PM12
>EC10-EC12	-	<0.2	37.7								<0.2	mg/kg	TM5/PM16
>EC12-EC16	-	<4	149								<4	mg/kg	TM5/PM16
>EC16-EC21	-	<7	52								<7	mg/kg	TM5/PM16
>EC21-EC35	-	<7	40								<7	mg/kg	TM5/PM16
Total aromatics C5-35	-	<19	279								<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	-	<38	1013								<38	mg/kg	TM5/TM36/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 $^{\#}$	-	16	126								<5	ug/kg	TM31/PM12
m/p-Xylene $^{\#}$	-	<5	<5								<5	ug/kg	TM31/PM12
o-Xylene $^{\#}$	-	<5	238								<5	ug/kg	TM31/PM12
PCBs (Total vs Aroclor 1254)	-	-	-								<10	ug/kg	TM16/PM8
Natural Moisture Content	17.0	13.8	22.0								<0.1	%	PM4/PM0
Hexavalent Chromium $^{\#}$	-	-	-								<0.3	mg/kg	TM38/PM20
Free Cyanide	-	-	-								<0.5	mg/kg	TM89/PM45
Complex Cyanide	-	-	-								<0.5	mg/kg	TM89/PM45
Organic Matter	-	-	-								<0.2	%	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	-	-	-								<100	uS/cm	TM76/PM58
pH $^{\#M}$	-	-	-								<0.01	pH units	TM73/PM11
Sample Type	Sand	Clay	Clay									None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Medium Brown									None	PM13/PM0
Other Items	STONES	STONES	STONES									None	PM13/PM0

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

Client Name: Smith Grant LLP
Reference: R1742B
Location: Heyford (Dorchester)
Contact: Dan Wayland

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 15/3758						

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.: 15/3758

SOILS

Please note we are only MCERTS accredited 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 we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

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.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and 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.

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.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
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 a 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
OC	Outside Calibration Range
A	x10 Dilution

JE Job No: 15/3758

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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.				
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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM12/PM16	CWG GC-FID			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	
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
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.	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: 15/3758

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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	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	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.			AR	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	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 samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes		AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D. 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

JE Job No: 15/3758

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.			AR	Yes

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

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 : Dan Wayland

Date : 30th January, 2015

Your reference : R1742B (Dorchester)

Our reference : Test Report 15/2563 Batch 1

Location : Heyford Phase D2

Date samples received : 20th January, 2015

Status : Final report

Issue : 1

Thirteen samples were received for analysis on 20th January, 2015 of which thirteen 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:

Bruce Leslie
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Smith Grant LLP
Reference: R1742B (Dorchester)
Location: Heyford Phase D2
Contact: Dan Wayland
JE Job No.: 15/2563

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	9-10	11-12	13-14	15-16	17-18	19-20			
Sample ID	D2-SS1	D2-SS2	D2-SS3	D2-SS4	D2-SS5	D2-SS6	D2-SS7	D2-SS8	D2-SS9	D2-SS10			
Depth	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4			
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	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015			
Antimony	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Arsenic $^{\#M}$	5.0	5.2	6.3	6.0	8.6	5.1	5.1	12.2	8.2	12.4	<0.5	mg/kg	TM30/PM15
Barium $^{\#M}$	7	35	12	16	18	47	8	24	31	16	<1	mg/kg	TM30/PM15
Beryllium	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	0.6	<0.5	0.6	<0.5	mg/kg	TM30/PM15
Cadmium $^{\#M}$	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.1	mg/kg	TM30/PM15
Chromium $^{\#M}$	5.8	12.0	9.9	9.6	19.4	10.9	6.1	21.3	16.7	25.1	<0.5	mg/kg	TM30/PM15
Cobalt $^{\#M}$	1.0	2.0	1.8	3.1	4.7	2.3	2.9	4.2	3.2	3.4	<0.5	mg/kg	TM30/PM15
Copper $^{\#M}$	3	5	4	5	6	4	4	9	5	9	<1	mg/kg	TM30/PM15
Lead $^{\#M}$	<5	13	12	6	6	11	5	7	9	6	<5	mg/kg	TM30/PM15
Mercury $^{\#M}$	<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 $^{\#M}$	1.6	0.8	1.2	0.8	1.3	0.8	1.2	1.9	1.0	3.8	<0.1	mg/kg	TM30/PM15
Nickel $^{\#M}$	4.2	4.9	5.4	6.5	9.3	4.8	5.0	11.9	7.5	12.9	<0.7	mg/kg	TM30/PM15
Selenium $^{\#M}$	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM30/PM15
Vanadium	11	16	15	19	25	14	12	34	26	22	<1	mg/kg	TM30/PM15
Water Soluble Boron $^{\#M}$	0.2	0.5	0.5	0.4	0.3	0.4	0.2	0.5	1.0	0.5	<0.1	mg/kg	TM74/PM32
Zinc $^{\#M}$	9	28	16	17	17	23	9	22	57	16	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene $^{\#M}$	<0.04	<0.40$_A$	<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	0.76$_A$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene $^{\#M}$	<0.05	0.72$_A$	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene $^{\#M}$	<0.04	<0.40$_A$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene $^{\#M}$	0.16	3.87$_A$	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.09	<0.03	<0.03	mg/kg	TM4/PM8
Anthracene $^{\#}$	0.05	2.26$_A$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Fluoranthene $^{\#M}$	0.42	18.93$_A$	0.09	<0.03	<0.03	0.04	<0.03	0.05	0.22	<0.03	<0.03	mg/kg	TM4/PM8
Pyrene $^{\#}$	0.27	13.78$_A$	0.08	<0.03	<0.03	0.04	<0.03	0.03	0.20	<0.03	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene $^{\#}$	0.15	11.07$_A$	0.07	<0.06	<0.06	<0.06	<0.06	<0.06	0.11	<0.06	<0.06	mg/kg	TM4/PM8
Chrysene $^{\#M}$	0.25	10.90$_A$	0.07	<0.02	<0.02	0.03	<0.02	0.02	0.13	<0.02	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene $^{\#M}$	0.25	24.11$_A$	0.08	<0.07	<0.07	<0.07	<0.07	<0.07	0.14	<0.07	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene $^{\#}$	0.14	12.19$_A$	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene $^{\#M}$	0.07	8.49$_A$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	<0.04	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene $^{\#}$	<0.04	0.52$_A$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene $^{\#}$	0.04	6.20$_A$	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.04	<0.04	<0.04	mg/kg	TM4/PM8
PAH 16 Total	1.8	113.8$_A$	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	1.0	<0.6	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.18	17.36$_A$	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	0.10	<0.05	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.07	6.75$_A$	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	94	100$_A$	97	99	96	95	96	98	97	96	<0	%	TM4/PM8

Client Name:	Smith Grant LLP	**Report :**	**Solid**
Reference:	R1742B (Dorchester)		
Location:	Heyford Phase D2	**Solids:**	V=60g VOC jar, J=250g glass jar, T=plastic tub
Contact:	Dan Wayland		
JE Job No.:	15/2563		

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	LOD/LOR	Units	Method No.
Sample ID	D2-SS1	D2-SS2	D2-SS3	D2-SS4	D2-SS5	D2-SS6	D2-SS7	D2-SS8	D2-SS9	D2-SS10			
Depth	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4	0.0-0.4			
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	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015	19/01/2015			
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	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015	20/01/2015			
TPH CWG													
Aliphatics													
>C5-C6 $^{\#M}$	<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 $^{\#M}$	<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 $^{\#M}$	<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/PM16
>C12-C16 $^{\#M}$	<4	7	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>C16-C21 $^{\#M}$	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>C21-C35 $^{\#M}$	<7	28	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	35	<19	<19	<19	<19	<19	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<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	<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 $^{\#M}$	<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	<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/PM16
>EC12-EC16	<4	13	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM16
>EC16-EC21	<7	136	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
>EC21-EC35	<7	688	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19	837	<19	<19	<19	<19	<19	<19	<19	<19	<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	872	<38	<38	<38	<38	<38	<38	<38	<38	<38	mg/kg	TM5/TM36/PM12/PM16
MTBE $^{\#}$	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene $^{\#}$	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene $^{\#}$	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene $^{\#}$	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
m/p-Xylene $^{\#}$	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
o-Xylene $^{\#}$	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM31/PM12
PCBs (Total vs Aroclor 1254)	<10	<100$_{A}$	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Natural Moisture Content	9.5	9.1	10.8	12.3	12.6	10.9	10.3	15.5	11.5	23.4	<0.1	%	PM4/PM0
Hexavalent Chromium $^{\#}$	<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
Free Cyanide	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Complex Cyanide	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Organic Matter	0.2	1.2	0.2	0.2	0.2	0.7	0.2	0.4	0.4	0.3	<0.2	%	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	103	138	183	141	146	182	123	153	389	202	<100	uS/cm	TM76/PM58
pH $^{\#M}$	8.78	8.45	9.21	8.82	8.58	9.26	8.83	8.82	10.18	8.52	<0.01	pH units	TM73/PM11
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Sand		None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Medium Brown	Light Brown	Light Brown	Light Brown		None	PM13/PM0
Other Items	STONES AND SAND	STONES AND SAND	STONES AND SAND	STONES AND SAND	STONES AND SAND	STONES AND SAND	STONES AND SAND	STONES AND SAND	STONES AND SAND	STONES		None	PM13/PM0

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Smith Grant LLP
Reference: R1742B (Dorchester)
Location: Heyford Phase D2
Contact: Dan Wayland
JE Job No.: 15/2563

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.	21-22	23-24	25-26							LOD/LOR	Units	Method No.
Sample ID	D2-SS11	D2-SS12	D2-SS13									
Depth	0.0-0.4	0.0-0.4	0.0-0.4									
COC No / misc												
Containers	V J	V J	V J									
Sample Date	19/01/2015	19/01/2015	19/01/2015									
Sample Type	Soil	Soil	Soil									
Batch Number	1	1	1									
Date of Receipt	20/01/2015	20/01/2015	20/01/2015									
Antimony	<1	1	<1							<1	mg/kg	TM30/PM15
Arsenic #M	12.4	12.6	16.0							<0.5	mg/kg	TM30/PM15
Barium #M	21	19	41							<1	mg/kg	TM30/PM15
Beryllium	0.6	0.7	0.6							<0.5	mg/kg	TM30/PM15
Cadmium #M	<0.1	<0.1	0.2							<0.1	mg/kg	TM30/PM15
Chromium #M	23.2	30.1	22.5							<0.5	mg/kg	TM30/PM15
Cobalt #M	4.1	3.8	6.5							<0.5	mg/kg	TM30/PM15
Copper #M	9	10	11							<1	mg/kg	TM30/PM15
Lead #M	6	7	7							<5	mg/kg	TM30/PM15
Mercury #M	<0.1	<0.1	<0.1							<0.1	mg/kg	TM30/PM15
Molybdenum #M	2.6	3.4	2.7							<0.1	mg/kg	TM30/PM15
Nickel #M	12.5	12.9	17.4							<0.7	mg/kg	TM30/PM15
Selenium #M	<1	<1	<1							<1	mg/kg	TM30/PM15
Vanadium	30	28	33							<1	mg/kg	TM30/PM15
Water Soluble Boron #M	0.4	0.7	0.4							<0.1	mg/kg	TM74/PM32
Zinc #M	18	17	32							<5	mg/kg	TM30/PM15
PAH MS												
Naphthalene #M	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Acenaphthene #M	<0.05	<0.05	<0.05							<0.05	mg/kg	TM4/PM8
Fluorene #M	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Phenanthrene #M	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Fluoranthene #M	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	<0.03	<0.03							<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	<0.06	<0.06							<0.06	mg/kg	TM4/PM8
Chrysene #M	<0.02	<0.02	<0.02							<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #M	<0.07	<0.07	<0.07							<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #M	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	<0.04							<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	<0.6	<0.6							<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	<0.05	<0.05							<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	<0.02	<0.02							<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	90	92	90							<0	%	TM4/PM8

Client Name: Smith Grant LLP
Reference: R1742B (Dorchester)
Location: Heyford Phase D2
Contact: Dan Wayland
JE Job No.: 15/2563

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.	21-22	23-24	25-26								LOD/LOR	Units	Method No.
Sample ID	D2-SS11	D2-SS12	D2-SS13										
Depth	0.0-0.4	0.0-0.4	0.0-0.4										
COC No / misc													
Containers	V J	V J	V J										
Sample Date	19/01/2015	19/01/2015	19/01/2015										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	20/01/2015	20/01/2015	20/01/2015										
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>C12-C16 #M	<4	<4	<4								<4	mg/kg	TM5/PM16
>C16-C21 #M	<7	<7	<7								<7	mg/kg	TM5/PM16
>C21-C35 #M	<7	<7	<7								<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	<19	<19								<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1	<0.1								<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	<0.2	<0.2								<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	<4	<4								<4	mg/kg	TM5/PM16
>EC16-EC21	<7	<7	<7								<7	mg/kg	TM5/PM16
>EC21-EC35	<7	<7	<7								<7	mg/kg	TM5/PM16
Total aromatics C5-35	<19	<19	<19								<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38								<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<5	<5	<5								<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5								<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5								<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5								<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5								<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5								<5	ug/kg	TM31/PM12
PCBs (Total vs Aroclor 1254)	<10	<10	<10								<10	ug/kg	TM16/PM8
Natural Moisture Content	19.2	20.6	18.2								<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3								<0.3	mg/kg	TM38/PM20
Free Cyanide	<0.5	<0.5	<0.5								<0.5	mg/kg	TM89/PM45
Complex Cyanide	<0.5	<0.5	<0.5								<0.5	mg/kg	TM89/PM45
Organic Matter	0.3	0.3	0.5								<0.2	%	TM21/PM24
Electrical Conductivity @25C (5:1 ext)	139	233	229								<100	uS/cm	TM76/PM58
pH #M	8.80	8.76	8.88								<0.01	pH units	TM73/PM11
Sample Type	Clay	Sand	Sand									None	PM13/PM0
Sample Colour	Light Brown	Light Brown	Light Brown									None	PM13/PM0
Other Items	STONES AND SAND	CHALK	STONES									None	PM13/PM0

Notification of Deviating Samples

Client Name: Smith Grant LLP
Reference: R1742B (Dorchester)
Location: Heyford Phase D2
Contact: Dan Wayland

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 15/2563						

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.

SOILS

Please note we are only MCERTS accredited 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 we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

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.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and 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.

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.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
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 a 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
OC	Outside Calibration Range
A	x10 Dilution

JE Job No: 15/2563

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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.				
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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM12/PM16	CWG GC-FID			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	
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
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.	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: 15/2563

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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	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	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.			AR	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	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 samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes		AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D. 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

JE Job No: 15/2563

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.			AR	Yes

Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

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

4225

Attention : Dan Wayland

Date : 26th January, 2015

Your reference : R1742B (Dorchester)

Our reference : Test Report 15/2562 Batch 1

Location : Heyford Phase D2

Date samples received : 20th January, 2015

Status : Final report

Issue : 1

Four samples were received for analysis on 20th January, 2015 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:

Bruce Leslie
Project Co-ordinator

Bob Millward BSc FRSC
Principal Chemist

Client Name: Smith Grant LLP
Reference: R1742B (Dorchester)
Location: Heyford Phase D2
Contact: Dan Wayland
JE Job No.: 15/2562

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	D2-HS1-SS1	D2-HS1-SS2	D2-HS1-SS3	D2-HS1-SS4									
Depth	1.5	1.5	1.5	1.5									
COC No / misc													
Containers	V J	V J	V J	V J									
Sample Date	19/01/2015	19/01/2015	19/01/2015	19/01/2015									
Sample Type	Soil	Soil	Soil	Soil									
Batch Number	1	1	1	1									
Date of Receipt	20/01/2015	20/01/2015	20/01/2015	20/01/2015									
TPH CWG													
Aliphatics													
>C5-C6 $^{\#M}$	<0.1	<0.1	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>C6-C8 $^{\#M}$	0.3	<0.1	<0.1	1.5							<0.1	mg/kg	TM36/PM12
>C8-C10	1.3	<0.1	<0.1	6.5							<0.1	mg/kg	TM36/PM12
>C10-C12 $^{\#M}$	59.8	<0.2	<0.2	134.4							<0.2	mg/kg	TM5/PM16
>C12-C16 $^{\#M}$	109	<4	<4	202							<4	mg/kg	TM5/PM16
>C16-C21 $^{\#M}$	39	<7	<7	74							<7	mg/kg	TM5/PM16
>C21-C35 $^{\#M}$	15	<7	<7	23							<7	mg/kg	TM5/PM16
Total aliphatics C5-35	224	<19	<19	441							<19	mg/kg	TM5/TM36/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	0.6							<0.1	mg/kg	TM36/PM12
>EC10-EC12	19.4	<0.2	<0.2	54.7							<0.2	mg/kg	TM5/PM16
>EC12-EC16	59	<4	<4	117							<4	mg/kg	TM5/PM16
>EC16-EC21	54	<7	13	51							<7	mg/kg	TM5/PM16
>EC21-EC35	171	<7	72	<7							<7	mg/kg	TM5/PM16
Total aromatics C5-35	303	<19	85	223							<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	527	<38	85	664							<38	mg/kg	TM5/TM36/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	115							<5	ug/kg	TM31/PM12
m/p-Xylene $^{\#}$	82	<5	<5	314							<5	ug/kg	TM31/PM12
o-Xylene $^{\#}$	39	<5	<5	125							<5	ug/kg	TM31/PM12
Natural Moisture Content	28.4	19.0	12.4	14.0							<0.1	%	PM4/PM0
Organic Matter	3.7	0.5	<0.2	0.2							<0.2	%	TM21/PM24
Sample Type	Clay	Clay	Clayey Sand	Clay								None	PM13/PM0
Sample Colour	Medium Brown	Light Brown	Light Brown	Light Brown								None	PM13/PM0
Other Items	stones	stones and sand	stones	stones								None	PM13/PM0

Jones Environmental Laboratory

Notification of Deviating Samples

Client Name: Smith Grant LLP
Reference: R1742B (Dorchester)
Location: Heyford Phase D2
Contact: Dan Wayland

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 15/2562						

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.: 15/2562

SOILS

Please note we are only MCERTS accredited 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 we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

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.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and 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.

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.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
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 a 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
OC	Outside Calibration Range

JE Job No: 15/2562

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (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.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			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.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID.	PM12/PM16	CWG GC-FID			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.	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
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.			AR	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	Yes	AR	Yes

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TESTING
2183

Final Report

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Report Number:	15-01326 Issue-1		
Initial Date of Issue:	28-Jan-15		
Client:	Smith Grant LLP		
Client Address:	Station House, Station Road Ruabon Wrexham LL14 6DL		
Contact(s):	Dan Wayland		
Project:	R1742b (Dorchester) Heyford Phase D2		
Quotation No.:		**Date Received:**	22-Jan-15
Order No.:		**Date Instructed:**	22-Jan-15
No. of Samples:	13	**Results Due:**	28-Jan-15
Turnaround: (Weekdays)	5		
Date Approved:	28-Jan-15		
Approved By:			
Details:	Darrell Hall, Laboratory Director		

Results Summary - Soil

Project: R1742b (Dorchester) Heyford Phase D2

Client: Smith Grant LLP	**Chemtest Job No.:**				15-01326	15-01326	15-01326	15-01326	15-01326	15-01326	15-01326	15-01326	15-01326	15-01326
Quotation No.:	**Chemtest Sample ID.:**				92311	92312	92313	92314	92315	92316	92317	92318	92319	92320
Order No.:	Client Sample Ref.:				D2	D2	D2	D2	D2	D2	D2	D2	D2	D2
	Client Sample ID.:				SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0	0	0	0	0	0	0	0	0	0
	Bottom Depth(m):				0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
	Date Sampled:				19-Jan-15	19-Jan-15	19-Jan-15	19-Jan-15	19-Jan-15	19-Jan-15	19-Jan-15	19-Jan-15	19-Jan-15	19-Jan-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
ACM Type	U	2192			-	-	-	-	-	-	-	-	-	-
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	No Asbestos Detected

Results Summary - Soil

Project: R1742b (Dorchester) Heyford Phase D2

Client: Smith Grant LLP	**Chemtest Job No.:**				15-01326	15-01326	15-01326
Quotation No.:	**Chemtest Sample ID.:**				92321	92322	92323
Order No.:	Client Sample Ref.:				D2	D2	D2
	Client Sample ID.:				SS11	SS12	SS13
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0	0	0
	Bottom Depth(m):				0.4	0.4	0.4
	Date Sampled:				19-Jan-15	19-Jan-15	19-Jan-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192			-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected

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, SVCOs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry 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

Sample Retention and Disposal

All soil samples will be retained for a period of 60 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

APPENDIX E

PAH Ratio Plot

Job name	Heyford: Dorchester D2
Job no.	R1742
Date:	10.04.15
Author:	DW
Laboratory:	Jones
Lab. Reference:	15-0136 & 15/3758

SMITH GRANT
Environmental Consultancy
LLP

PAH concentrations

sample identity	D2-SS2	D2-SS2A																		
phenanthrene	3.87	0.32																		
anthracene	2.26	0.21																		
fluoranthene	18.93	1.34																		
pyrene	13.78	1.09																		
benz(a)anthracene	11.07	0.83																		
chrysene	10.9	0.82																		

PAH units	mg/kg

PAH ratios

phe/ant	1.712	1.524																		
flu/pyr	1.374	1.229																		
baa/chr	1.016	1.012