georisk
MANAGEMENT

Innovative Land Development Solutions

VALIDATION REPORT

MOSS FEEDS LIMITED
DILHORNE

Report No: 13239/3
Date: November 2017

Prepared for

C AND C BUILDING SOLUTIONS LIMITED

PROJECT QUALITY ASSURANCE
INFORMATION SHEET

VALIDATION REPORT

MOSS FEEDS LIMITED
DILHORNE

Report Status:	**Final**
Report No:	**13239/3**
Issue Date:	**November 2017**
Prepared For:	**C and C Building Solutions Limited** **110 Uttoxeter Road** **DRAYCOTT** **ST11 9AB**
Prepared By:	**Georisk Management Limited** **Summit Point** **Summit Crescent Industrial Estate** **Smethwick** **BIRMINGHAM** **B66 1BT** **Telephone: 0121 553 4044**
	

Written by:	**Martina Young**
Title:	**Principal Geoenvironmental Engineer**
Contact:	**martina.young@georisk-uk.com**

	

Reviewed by:	**Andy Bonner**
Title:	**Director**
Contact:	**andy.bonner@georisk-uk.com**

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FOREWORD

This report has been prepared for the sole internal use and reliance of the Client(s) named on the Project Quality Assurance Information Sheet. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Georisk Management Ltd (Georisk). If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The report should be read in its entirety, including all associated drawings and appendices. Georisk cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context.

The findings and opinions conveyed in this report are based on information obtained from a variety of sources as detailed within this report and which Georisk believes is reliable. All reasonable care and skill has been applied in examining the information obtained, nevertheless, Georisk cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

The report represents the findings and opinions of experienced geoenvironmental consultants. Georisk does not provide legal advice and the advice of lawyers may also be required.

Any recommendations made or opinions expressed in the Report are based on the exploratory hole records, an examination of samples and the results of the site and laboratory tests. No liability can be accepted for conditions not revealed by the exploratory holes particularly between positions. Whilst every effort is made to ensure accuracy of data supplied any opinion expressed as to the possible configuration of strata between or below investigation locations is for guidance only and no responsibility is accepted as to its accuracy.

Unless otherwise specifically stated, this report assumes that ground levels will not change significantly from those existing at present and that the proposed development will be of two to three storey construction. If this is not to be the case, some modifications to this report may be required.

The groundwater conditions entered on the borehole records and from any monitoring programme are those observed at the time of the investigation. Groundwater levels are susceptible to seasonal fluctuations and may be higher during wetter periods than those encountered during this investigation.

Where the report refers to the potential presence of invasive plant species, such as Japanese Knotweed, or the presence of possible asbestos containing materials, it should be noted that the observations are for information purposes only and should be verified by a suitably qualified expert.

Georisk reserves the right to amend the conclusions and recommendations made in this report in the light of any further or more detailed information that may become available.

VALIDATION REPORT

MOSS FEEDS LIMITED
DILHORNE

1. INTRODUCTION

1.1 Georisk Management Limited (Georisk) has been commissioned by C and C Building Solutions Limited to provide independent validation of the remedial works carried out at the above site in accordance with recommendations made in our Contamination Risk Assessment report, reference 13239/2 dated May 2016. Reference should be made to this report, and the Phase 1 Desk Study Report reference 13239/1 dated February 2014, for background and supporting information.

1.2 This Validation Report has been produced following completion of pre-construction phase remedial works in accordance with the requirements set out in the Outline Remedial Action Plan contained in Report No. 13239/2. The recommendations included TPH impacted soil around BH3 and BH4 to be delineated and removed during site clearance works.

1.3 The site is proposed for a residential development and the proposed layout is included as Appendix A. This report is intended to provide sufficient detail to satisfy the requirements of the Environmental Health Department at Staffordshire Moorlands District Council (SMDC) to enable discharge of contaminated land related planning conditions.

2. THE SITE

2.1 The site is located on the High Street in Dilhorne, Stoke-on-Trent and can be located approximately by National Grid Reference 397460 343760.

2.2 It covers an area of approximately 0.43 hectares and is accessed off the High Street that forms part of the south-eastern site boundary. Agricultural land lies to the north and west with small housing developments to the east and south (Dilhorne village).

2.3 The site formerly operated as a depot with agricultural warehouses used to store feed and packaging. Grains silos, a weighbridge and 2 No. above ground fuel storage tanks were noted during a walkover survey carried out in preparation for the Phase I Desk Study. These features had been demolished by the time of the intrusive investigation in May 2016 and demolition rubble had been stockpiled around the site. The above ground fuel tanks were also noted to have been removed from the site at that time.

2.4 Stockpiled scrap materials, including an old fuel tank, vehicle, engine parts, building materials, tyres, car batteries and oil drums together with demolition rubble, were present at various locations in May 2016. These had been removed by the time of the pre-construction remediation works in September 2017 as shown on the photographic records in Appendix B.

2.5 For full details of the site, reference should be made to the Georisk Phase I Desk Study and Contamination Risk Assessment.

3. REMEDIATION WORK PROPOSALS

3.1 Full details relating to the nature of the required remedial works are included in the Contamination Risk Assessment report, Georisk Report No. 13239/2 dated May 2016. Works have generally been implemented in accordance with the as detailed in Section 8 of that report. The required works are summarised as follows:

- excavation of hydrocarbon impacted soils around BH3 and BH4;
- placement of 600 mm thickness clean imported topsoil in all garden/landscaped areas.

3.2 The importation and placement of clean cover for garden and landscaped areas has not yet been undertaken; this will be reported separately once completed.

4. PRE-CONSTRUCTION REMEDIATION WORKS VALIDATION

4.1 Excavation of Impacted Soils

4.1.1 The ground investigation identified two hotspots of hydrocarbon impact in BH3 and BH4. Following site clearance, Georisk attended site to inspect the removal of the impacted material and to obtain samples from the sides and bases of the excavation. The extent of the excavations together with the sampling locations is shown on Drawing No. 13239/2 in Appendix A. Trial pit logs and photographic records are included in Appendix B.

BH3

4.1.2 The excavation extended along the northern corner of the weighbridge in the centre of the site and extended down to a maximum depth of 2.3 m below existing ground level (begl). Visual evidence of impacted soils together with hydrocarbon odours was identified during this process in the Made Ground and the upper layer of the underlying natural clay. The impacted soil was removed from the excavation and stockpiled on a remnant concrete slab for subsequent removal off-site to a suitably licenced tip. Samples (reference BH3A-BH3E) were obtained from the sides and base of the excavation and sent to an accredited laboratory for testing.

4.1.3 The results of the soil testing from adjacent to the weighbridge is summarised below and compared with assessment criteria for a proposed "residential with plant uptake" end-use assuming a 1 % soil organic matter content.

4.1.4 The results of the confirmatory testing provided by the laboratory are included as Appendix C to this letter report.

Contaminant of Concern	Measured Concentration (mg/kg)		Critical Concentration (S4UL) (mg/kg)	Number of Results that Exceed S4UL
	Min	Max		
TPH Aliphatic Fraction				
C5-C6	<1	-	42	0 (5)
>C6-C8	<1	-	100	0 (5)
>C8-C10	<1	-	27	0 (5)
>C10-C12	<1	30	130	0 (5)
>C12-C16	<1	160	1100	0 (5)
>C16-C35	<1	230	65000	0 (5)

TPH Aromatic Fraction				
C5-C7	<0.1	-	70	0 (5)
>C7-C8	<0.1	-	130	0 (5)
>C8-C10	<0.1	-	34	0 (5)
>C10-C12	<1	3.8	74	0 (5)
>C12-C16	<2	82	140	0 (5)
>C16-C21	<10	9.8	260	0 (5)
>C21-C35	<10	78	1100	0 (5)

Table 1: Summary of chemical test results (BH3 Hotspot)

4.1.5 The majority of test results are below the laboratory limit of detection and all results are below the relevant S4ULs for a proposed residential with plant uptake end use.

4.1.6 Following excavation and removal of hydrocarbon impacted material, the excavation was backfilled with site-won arisings.

BH4

4.1.7 The excavation was carried out in the north-eastern part of the site and extended down to a maximum depth of 3.0 m below existing ground level (begl). No visual or olfactory evidence of impacted soils were identified during this process. Samples (reference BH4A-BH4E) were obtained from the sides and base of the excavation and sent to an accredited laboratory for testing.

4.1.8 The results of the soil testing from the vicinity of BH4 is summarised below and compared with assessment criteria for a proposed "residential with plant uptake" end-use assuming a 1 % soil organic matter content.

4.1.9 The results of the confirmatory testing provided by the laboratory are included as Appendix C to this letter report.

Contaminant of Concern	Measured Concentration (mg/kg)		Critical Concentration (S4UL) (mg/kg)	Number of Results that Exceed S4UL
	Min	Max		
TPH Aliphatic Fraction				
C5-C6	<1	-	42	0 (5)
>C6-C8	<1	-	100	0 (5)
>C8-C10	<1	-	27	0 (5)
>C10-C12	<1	-	130	0 (5)
>C12-C16	<1	-	1100	0 (5)
>C16-C35	<1	-	65000	0 (5)
TPH Aromatic Fraction				
C5-C7	<0.1	-	70	0 (5)
>C7-C8	<0.1	-	130	0 (5)
>C8-C10	<0.1	-	34	0 (5)
>C10-C12	<1	-	74	0 (5)
>C12-C16	<2	-	140	0 (5)
>C16-C21	<10	-	260	0 (5)
>C21-C35	<10	-	1100	0 (5)

Table 2: Summary of chemical test results (BH4 Hotspot)

4.1.10 All test results are below the laboratory limit of detection and below the relevant S4ULs for a proposed residential with plant uptake end use.

4.1.11 Following excavation, the excavation was backfilled with site-won arisings.

5. RISK ASSESSMENT

Identified Pollutant Linkages

5.1 Following risk assessment utilising data obtained from the pre-construction remediation validation sampling exercise, and making reference to the findings of earlier assessments, the following remaining pollutant linkages have been identified:

Source	Pathway	Target
Localised elevated levels of lead and presence of asbestos in Made Ground	Dermal contact	Site user: female child 0-6 years
		Site construction worker
	Ingestion	Site user: female child 0-6 years
		Site construction worker
	Consumption of home-grown vegetables grown in Made Ground	Site user: female child 0-6 years
	Ingestion of soil attached to home-grown vegetables	Site user: female child 0-6 years
	Dermal contact with dust derived from Made Ground	Site user: female child 0-6 years
	Ingestion of dust derived from Made Ground	Site user: female child 0-6 years
	Inhalation of dust derived from Made Ground	Site user: female child 0-6 years
	Direct contact	Water supply pipework
Phytotoxic zinc	Uptake by vegetation	Growth of landscaping

Table 3: Remaining Pollutant Linkages

Outstanding Works

5.2 Based on the above, the following construction phase remedial works will be required:

- placement of 600 mm thickness clean imported topsoil in all garden/landscaped areas.

5.3 Placement of the clean cover layer will require validation in terms of thickness and the suitability/quality of the materials placed, in order to satisfy the requirements of the Local Authority and NHBC; refer to Outline Remedial Action Plan in Contamination Risk Assessment report, Georisk Report No. 13239/2 for requirements.

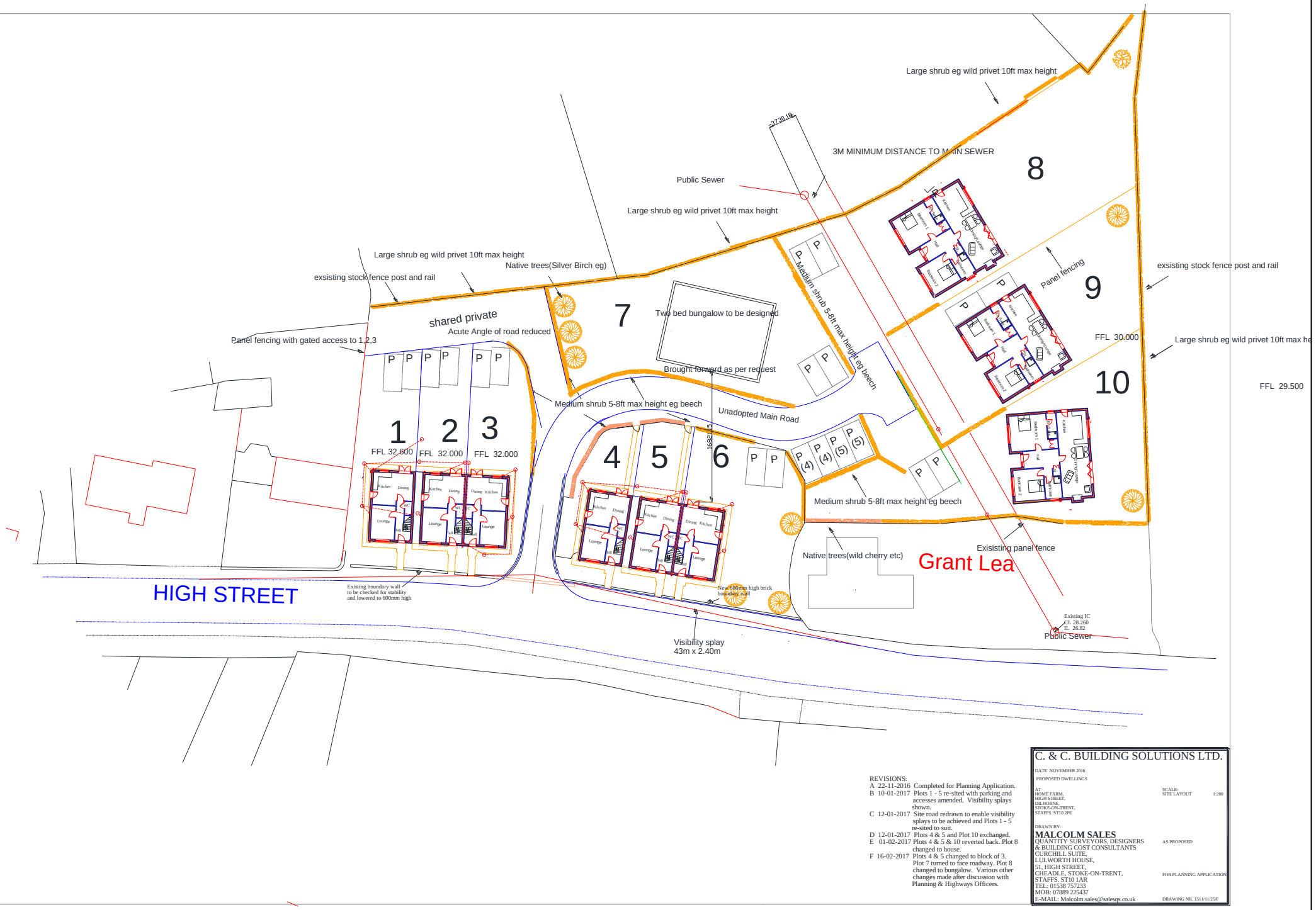
6. CERTIFICATION

6.1 The field observations made by Georisk, supported by validation testing carried out, confirms that the pre-construction remedial works have been satisfactorily carried out in accordance with the Outline Remedial Action Plan. Gross hydrocarbon impacted soils have been excavated to stockpile for subsequent off-site disposal.

6.2 As per the requirements of the Outline Remedial Action Plan, construction phase remedial works will be required (as discussed in Section 5).

APPENDIX A
DRAWINGS

Drawing No.	Drawing Title
1511/11/25/F	Proposed Dwellings by Malcolm Sales dated February 2017
13239/2	Validation Sampling Location Plan



REVISIONS:

A 22-11-2016 Completed for Planning Application.

B 10-01-2017 Plots 1 - 5 re-sited with parking and accesses amended. Visibility splays shown.

C 12-01-2017 Site road redrawn to enable visibility splays to be achieved and Plots 1 - 5 re-sited to suit.

D 12-01-2017 Plots 4 & 5 and Plot 10 exchanged.

E 01-02-2017 Plots 4 & 5 & 10 reverted back. Plot 8 changed to house.

F 16-02-2017 Plots 4 & 5 changed to block of 3. Plot 7 turned to face roadway. Plot 8 changed to bungalow. Various other changes made after discussion with Planning & Highways Officers.

C. & C. BUILDING SOLUTIONS LTD.

DATE NOVEMBER 2016

PROPOSED DWELLINGS

AT
HOME FARM,
HIGH STREET,
DILHORNE,
STOKE-ON-TRENT,
STAFFS. ST10 2PE

SCALE:
SITE LAYOUT 1:200

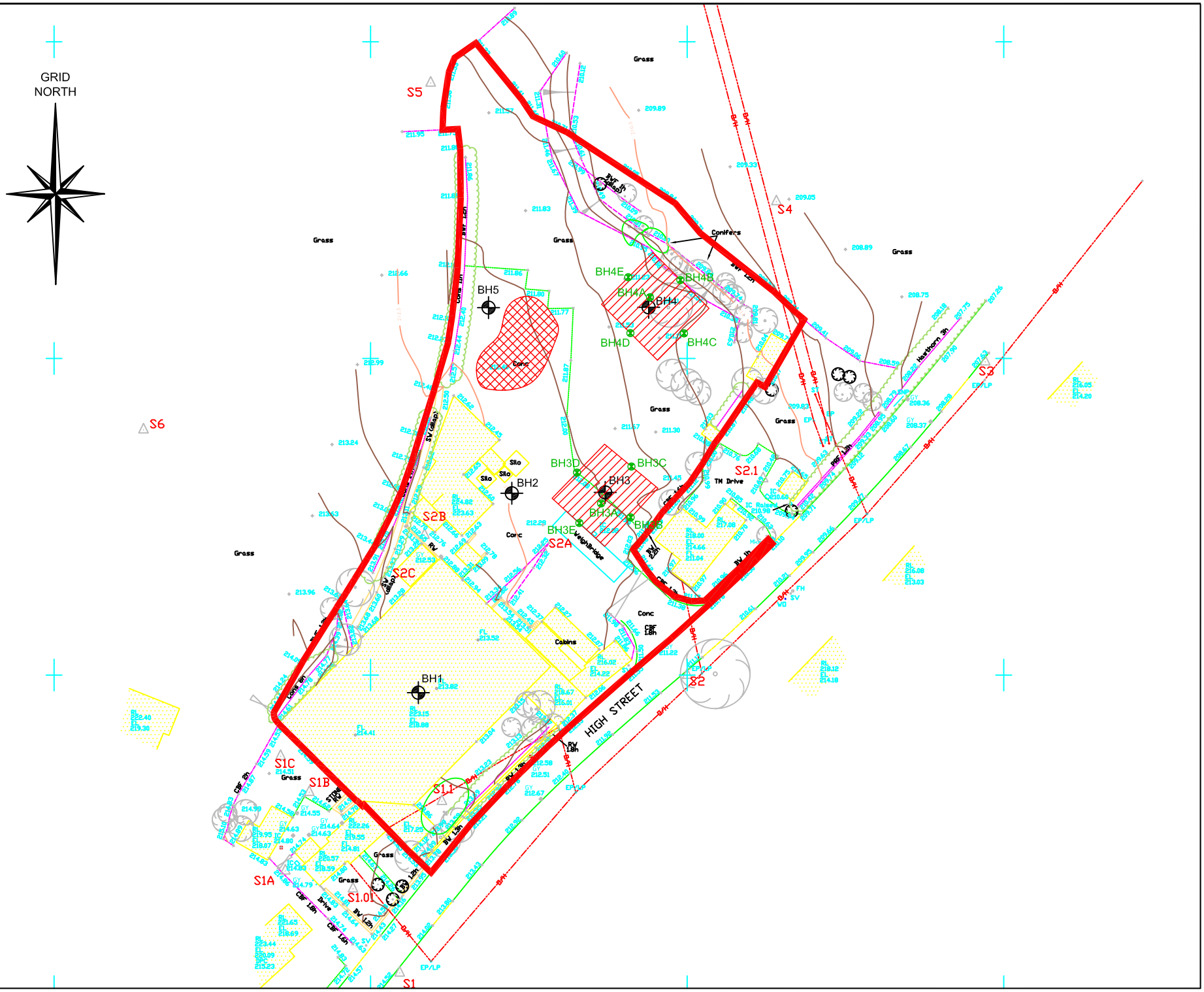
DRAWN BY:

MALCOLM SALES
QUANTITY SURVEYORS, DESIGNERS & BUILDING COST CONSULTANTS
CURCHILL SUITE,
LULWORTH HOUSE,
51, HIGH STREET,
CHEADLE, STOKE-ON-TRENT,
STAFFS. ST10 1AR
TEL: 01538 757233
MOB: 07889 225437
E-MAIL: Malcolm.sales@salesqs.co.uk

AS PROPOSED

FOR PLANNING APPLICATION

DRAWING NR. 1511/11/25/F



Notes

This drawing is the copyright of georisk management ltd and may not be reproduced, copied or used without express written permission.

This drawing is to be read in conjunction with all development drawings, and designers risk assessments.

This drawing must not be scaled. Work to figured dimensions only.

KEY:

- BH1 — Dynamic Percussive Sampling Borehole (Georisk; April 2016)
- Site Boundary
- Validation Sample Reference
- Approximate Extent of Hotspot Excavation
- Approximate Extent of Stockpiled Arisings

Rev	Date	Description	Initials

Client

C AND C BUILDING SOLUTIONS LIMITED

georisk MANAGEMENT

Summit Point, Summit Crescent, Smethwick, Birmingham B66 1BT
t. 0121 553 4044, f. 0121 553 1112
www.georisk-uk.com, email. enquiries@georisk-uk.com

Contract

HIGH STREET, DILHORNE

Drawing Title

HOTSPOT PLAN

Drawing Status	FINAL		
Drawn By	BP	Date	29/09/16
Checked/Approved	MY	Date	29/09/16
Scale	NTS	Drawing Number	13239/2

APPENDIX B
TRIAL PIT LOGS AND PHOTOGRAPHIC RECORDS

PHOTOGRAPHIC RECORD

Date: 28 September 2017	**Site: Moss Feeds Limited, Dilhorne** **Hotspot BH3**

Georisk Management, Summit Point, Summit Crescent, Smethwick, Birmingham B66 1BT.
t. 0121 553 4044 f. 0121 553 1112 e. enquiries@georisk-uk.com w. www.georisk-uk.com
Registered in England No.5136960

PHOTOGRAPHIC RECORD

Date: 28 September 2017	**Site: Moss Feeds Limited, Dilhorne** **Hotspot BH3**

Impacted material adjacent to weighbridge

Georisk Management, Summit Point, Summit Crescent, Smethwick, Birmingham B66 1BT.
t. 0121 553 4044 f. 0121 553 1112 e. enquiries@georisk-uk.com w. www.georisk-uk.com
Registered in England No.5136960

PHOTOGRAPHIC RECORD

Date: 28 September 2017	**Site: Moss Feeds Limited, Dilhorne** **Hotspot BH3**

No visual or olfactory evidence of contamination below 1.5 m begl.

Georisk Management, Summit Point, Summit Crescent, Smethwick, Birmingham B66 1BT.
t. 0121 553 4044 f. 0121 553 1112 e. enquiries@georisk-uk.com w. www.georisk-uk.com
Registered in England No.5136960

PHOTOGRAPHIC RECORD

Date: 28 September 2017	**Site: Moss Feeds Limited, Dilhorne** **Hotspot BH4**

Natural clay underlying the Made Ground. No visual or olfactory evidence of contamination.

Georisk Management, Summit Point, Summit Crescent, Smethwick, Birmingham B66 1BT.
t. 0121 553 4044 f. 0121 553 1112 e. enquiries@georisk-uk.com w. www.georisk-uk.com
Registered in England No.5136960

PHOTOGRAPHIC RECORD

Date: 28 September 2017	**Site: Moss Feeds Limited, Dilhorne** **Stockpiled impacted strata**

Impacted material stockpiled on concrete slab for off-site disposal

Georisk Management, Summit Point, Summit Crescent, Smethwick, Birmingham B66 1BT.
t. 0121 553 4044 f. 0121 553 1112 e. enquiries@georisk-uk.com w. www.georisk-uk.com
Registered in England No.5136960

PHOTOGRAPHIC RECORD

Date: 28 September 2017	**Site: Moss Feeds Limited, Dilhorne** **Current Site Layout**

Georisk Management, Summit Point, Summit Crescent, Smethwick, Birmingham B66 1BT.
t. 0121 553 4044 f. 0121 553 1112 e. enquiries@georisk-uk.com w. www.georisk-uk.com
Registered in England No.5136960

PHOTOGRAPHIC RECORD

Date: 28 September 2017	**Site: Moss Feeds Limited, Dilhorne** **Current Site Layout**

Georisk Management, Summit Point, Summit Crescent, Smethwick, Birmingham B66 1BT.
t. 0121 553 4044 f. 0121 553 1112 e. enquiries@georisk-uk.com w. www.georisk-uk.com
Registered in England No.5136960

APPENDIX C
CHEMICAL TEST RESULTS

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

Final Report

Report No.:	17-25885-1
Initial Date of Issue:	06-Oct-2017
Client	Georisk Management Limited
Client Address:	Summit Point Summit Crescent Industrial Est Smethwick Birmingham B66 1BT
Contact(s):	Martina Young
Project	13239 High Street, Dilhorne

Quotation No.:		**Date Received:**	02-Oct-2017
Order No.:	13239	**Date Instructed:**	02-Oct-2017
No. of Samples:	11		
Turnaround (Wkdays):	5	**Results Due:**	06-Oct-2017
Date Approved:	06-Oct-2017		

Approved By:

Details: Robert Monk, Technical Manager

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 13239 High Street, Dilhorne

Client: Georisk Management Limited		**Chemtest Job No.:**			17-25885	17-25885	17-25885	17-25885	17-25885	17-25885	17-25885	17-25885
Quotation No.:		**Chemtest Sample ID.:**			519173	519174	519175	519176	519177	519178	519179	519180
Order No.: 13239		Client Sample Ref.:			BH3-A	BH3-B	BH3-C	BH3-D	BH3-E	BH4-A	BH4-B	BH4-C
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Date Sampled:			28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017
		Asbestos Lab:										
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A								
Asbestos Identification	U	2192	%	0.001								
Moisture	N	2030	%	0.020	20	20	28	26	27	24	24	22
Stones	N	2030	%	0.020								
pH	U	2010		N/A								
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40								
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010								
Cyanide (Total)	U	2300	mg/kg	0.50								
Arsenic	U	2450	mg/kg	1.0								
Cadmium	U	2450	mg/kg	0.10								
Chromium	U	2450	mg/kg	1.0								
Copper	U	2450	mg/kg	0.50								
Mercury	U	2450	mg/kg	0.10								
Nickel	U	2450	mg/kg	0.50								
Lead	U	2450	mg/kg	0.50								
Selenium	U	2450	mg/kg	0.20								
Zinc	U	2450	mg/kg	0.50								
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	11	< 1.0	< 1.0	30	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	95	< 1.0	< 1.0	160	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	150	9.4	< 1.0	230	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	30	< 1.0	< 1.0	32	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	280	9.4	< 5.0	450	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	32	< 1.0	< 1.0	82	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	4.8	< 1.0	< 1.0	9.8	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	2.1	< 1.0	< 1.0	78	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	39	< 5.0	< 5.0	170	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	320	< 10	< 10	620	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10								
Acenaphthylene	U	2700	mg/kg	0.10								
Acenaphthene	U	2700	mg/kg	0.10								

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 13239 High Street, Dilhorne

Client: Georisk Management Limited			**Chemtest Job No.:**		17-25885	17-25885	17-25885	17-25885	17-25885	17-25885	17-25885	17-25885
Quotation No.:			**Chemtest Sample ID.:**		519173	519174	519175	519176	519177	519178	519179	519180
Order No.: 13239			Client Sample Ref.:		BH3-A	BH3-B	BH3-C	BH3-D	BH3-E	BH4-A	BH4-B	BH4-C
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Date Sampled:		28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017	28-Sep-2017
			Asbestos Lab:									
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Fluorene	U	2700	mg/kg	0.10								
Phenanthrene	U	2700	mg/kg	0.10								
Anthracene	U	2700	mg/kg	0.10								
Fluoranthene	U	2700	mg/kg	0.10								
Pyrene	U	2700	mg/kg	0.10								
Benzo[a]anthracene	U	2700	mg/kg	0.10								
Chrysene	U	2700	mg/kg	0.10								
Benzo[b]fluoranthene	U	2700	mg/kg	0.10								
Benzo[k]fluoranthene	U	2700	mg/kg	0.10								
Benzo[a]pyrene	U	2700	mg/kg	0.10								
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10								
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10								
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10								
Total Of 16 PAH's	U	2700	mg/kg	2.0								
Total Phenols	U	2920	mg/kg	0.30								

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 13239 High Street, Dilhorne

Client: Georisk Management Limited		**Chemtest Job No.:**			17-25885	17-25885	17-25885
Quotation No.:		**Chemtest Sample ID.:**			519181	519182	519183
Order No.: 13239		Client Sample Ref.:			BH4-D	BH4-E	Stockpile 1
		Sample Type:			SOIL	SOIL	SOIL
		Date Sampled:			28-Sep-2017	28-Sep-2017	28-Sep-2017
		Asbestos Lab:					COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A			-
Asbestos Identification	U	2192	%	0.001			No Asbestos Detected
Moisture	N	2030	%	0.020	26	25	16
Stones	N	2030	%	0.020			< 0.020
pH	U	2010		N/A			9.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40			0.74
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010			1.3
Cyanide (Total)	U	2300	mg/kg	0.50			< 0.50
Arsenic	U	2450	mg/kg	1.0			36
Cadmium	U	2450	mg/kg	0.10			1.1
Chromium	U	2450	mg/kg	1.0			13
Copper	U	2450	mg/kg	0.50			33
Mercury	U	2450	mg/kg	0.10			0.12
Nickel	U	2450	mg/kg	0.50			15
Lead	U	2450	mg/kg	0.50			140
Selenium	U	2450	mg/kg	0.20			< 0.20
Zinc	U	2450	mg/kg	0.50			140
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	14
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	100
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	530
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	890
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	410
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	1900
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	8.7
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	240
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	100
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	160
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	500
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	2400
Naphthalene	U	2700	mg/kg	0.10			< 0.10
Acenaphthylene	U	2700	mg/kg	0.10			< 0.10
Acenaphthene	U	2700	mg/kg	0.10			< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 13239 High Street, Dilhorne

Client: Georisk Management Limited			**Chemtest Job No.:**		17-25885	17-25885	17-25885
Quotation No.:			**Chemtest Sample ID.:**		519181	519182	519183
Order No.: 13239			Client Sample Ref.:		BH4-D	BH4-E	Stockpile 1
			Sample Type:		SOIL	SOIL	SOIL
			Date Sampled:		28-Sep-2017	28-Sep-2017	28-Sep-2017
			Asbestos Lab:				COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Fluorene	U	2700	mg/kg	0.10			< 0.10
Phenanthrene	U	2700	mg/kg	0.10			< 0.10
Anthracene	U	2700	mg/kg	0.10			< 0.10
Fluoranthene	U	2700	mg/kg	0.10			< 0.10
Pyrene	U	2700	mg/kg	0.10			< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10			< 0.10
Chrysene	U	2700	mg/kg	0.10			< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10			< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10			< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10			< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10			< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10			< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10			< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0			< 2.0
Total Phenols	U	2920	mg/kg	0.30			< 0.30

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk