

Verification Report

Land at Oxford Road, Gomersal

For PPJ Developments Ltd

Report no: 4910/1

Date: February 2024

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CONTENTS

1 INTRODUCTION 1

1.1 THE COMMISSION AND BRIEF 1
1.2 THE PROPOSED DEVELOPMENT 1

2 BACKGROUND 2

2.1 SITE DESCRIPTION AND HISTORY 2
2.2 GROUND CONDITIONS 2
2.3 HAZARDOUS GAS 2
2.4 CONTAMINATION 2

3 OVERVIEW OF PREPARATORY AND REMEDIATION WORKS 3

3.1 AIMS 3
3.2 SCOPE OF WORKS 3

4 DETAILS OF REMEDIATION WORKS 3

4.1 ENCOUNTERED ASBESTOS SHEETING (UNEXPECTED CONTAMINATION) 3
4.2 SOIL COVER FOR GARDEN AREAS 3
4.3 NEW UTILITIES 5

5 CONCLUSIONS 5

APPENDICES

Appendix A – Drawings

Drawing	Title
4910/1	Site Location Plan
4910/2	Soil Cover Validation Location Plan

Appendix B – Waste Consignment Note

Appendix C – Chemical test results

C (i)	24-02680

Appendix D – Photographs

FOREWORD (verification report)

This report has been prepared for the sole internal use and reliance of the Client named on page 1. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Lithos Consulting Limited (Lithos); such authorisation not to be unreasonably withheld. If any 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.

This report has been reviewed by a Competent Person, as defined in the National Planning Policy Framework. We ensure that all projects are managed by individuals with necessary experience, relevant qualifications, and current membership of a relevant professional organisation. Records of engineers, project managers and reviewers involved in this project are maintained by us. Lithos QA/QC procedures for all our work forms an integral part of our ISO9001 accreditation and as such is regularly audited.

The report should be read in its entirety, including all associated drawings and appendices. Lithos 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 (including review of any third-party reports) are based on information obtained from a variety of sources as detailed within this report, and which Lithos believes are reliable. Reasonable care and skill has been applied in examining the information obtained. Nevertheless, Lithos 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. Lithos does not provide legal advice and the advice of lawyers may also be required.

Lithos standard terms and conditions apply to the report, a copy of the terms and conditions is available on request.

VERIFICATION REPORT
for the
REMEDIATION & PREPARATORY WORKS
of land at
OXFORD ROAD, GOMERSAL

1 INTRODUCTION

1.1 The commission and brief

1.1.1 Lithos Consulting Limited (Lithos) have been commissioned by PPJ Developments Ltd to prepare a Verification Report for land off Oxford Road, Gomersal.

1.1.2 The following third-party reports have previously been produced:

- Phase II Geo Environmental Site Assessment by Met Consultancy Group (Ref. Reference P19-01618), dated November 2020
- Remediation & Verification Strategy: Land at Oxford Road, Gomersal by Delta Simons (Report No. 22-1978.01), dated December 2022

1.1.3 CC Construction (Yorkshire) Ltd carried out enabling, construction and groundworks from 2022 to completion by February 2024.

1.1.4 The purpose of this document is to:

- Summarise the background to the works
- Describe the remediation and ground preparatory works undertaken
- Describe any additions and variations to the works outlined in the Remediation Strategy
- Confirm that the site has been rendered suitable for the proposed redevelopment

1.2 The Proposed development

1.2.1 The proposed residential development comprises eight detached properties with associated gardens and driveways, as shown on Drawing 4910/2 (a copy of which is presented in Appendix A).

1.2.2 Access to the development will be from Oxford Road, Gomersal.

1.2.3 The Local Planning Authority have agreed planning permission for redevelopment of this site under planning consent 2021/62/92981/E. There are several Conditions associated with remediation, most notably:

- Condition 10 – Submission of a Validation Report
- Condition 11 – Unexpected contamination

1.2.4 This report should support the discharge of the above Conditions.

2 BACKGROUND

2.1 Site description and history

2.1.1 Site details are summarised below:

Detail	Remarks
Location	7 km south of Bradford city centre
NGR	SE 204 270
Area	0.45 ha

2.1.2 A location plan is shown as Drawings 4910/1 in Appendix A.

2.1.3 The site has previously been used as care home comprising buildings and landscaped areas that is understood to have been demolished in c. 2019.

2.2 Ground conditions

2.2.1 The ground conditions encountered during MET's investigation in 2020 were:

- **Artificial ground** - Made Ground was identified to depths between 0.5 m below ground level (bgl) to 2.5m bgl (TP07). The Made Ground was predominantly noted to comprise demolition rubble brick, concrete and sandstone. In the south-eastern corner a reddish brown gravelly Made Ground was identified to potentially comprise furnace waste associated with historical coal mining activity in the area; over
- **Superficial deposits** were reported to comprise soft to stiff clay identified across the entire site with typical thicknesses noted to range between 0.75 m and 2.15 m bgl; over
- **Bedrock** was encountered from depths of between 1.6 m and 30 m bgl (unproven). Bedrock was generally noted to comprise interbedded mudstone, siltstone and sandstone with occasional bands of intact coal.

2.3 Hazardous gas

2.3.1 The ground gas monitoring programme by MET concluded that in accordance with the BS8485:2019, the site is classed as Characteristic Situation 1 (**CS1**). As such no gas protection measures were deemed to be required within the new dwellings.

2.3.2 The MET report advised that <1% of properties in the area are above the radon action level and as such radon specific protection measures were not deemed required for new buildings in accordance with BRE publication BR211.

2.4 Contamination

2.4.1 The 2020 Met report identified elevated concentrations of the following contaminants within the Made Ground:

- Heavy metals
- Polyaromatic hydrocarbons (PAHs)
- Total petroleum hydrocarbons (TPH)
- Asbestos fibres

2.4.2 The Conceptual Site Model (CSM) identified the above as presenting a potential significant risk to the end users of the site (the residents) via the inhalation of dusts/fibres, ingestion, direct contact and permeation into water pipes.

2.4.3 Remediation to mitigate these risks was therefore required.

3 OVERVIEW OF PREPARATORY AND REMEDIATION WORKS

3.1 Aims

3.1.1 The aims of the remediation works were to:

- Break the pathways of contamination in the made ground in order to protect environmental receptors, and render the site suitable for the proposed development.
- Satisfy the requirements of the Local Planning Authority and the NHBC

3.2 Scope of works

3.2.1 The Remediation Strategy detailed the works necessary to enable residential development at the site, most notably:

- General site clearance of surface materials and vegetation
- Identification and mitigation of any encountered unexpected contamination
- Provision of a minimum 450 to 600mm thick cover layer of 'clean' soils in all garden and landscaped areas where made ground remained at surface
- Assessment and installation of appropriate potable water supply pipes

4 DETAILS OF REMEDIATION WORKS

4.1 Encountered asbestos sheeting (Unexpected Contamination)

4.1.1 CC Construction encountered cement bonded asbestos sheeting during the clearance works at the site. This material was disposed of by Foxhall Environmental Ltd (refer to the Hazardous Waste Consignment Note (Ref. SIMOND/08779) included in Appendix B.

4.1.2 CC Construction have advised that no other unexpected contamination was encountered during the ground works.

4.2 Soil cover for garden areas

Summary of requirements from the Remediation Strategy

4.2.1 Placement of topsoil and subsoil cover was required in gardens areas where made ground remained:

- Front gardens – 450mm soils
- Back gardens – 600mm soils

4.2.2 Where made ground is present a geofabric marker layer or a hard-dig layer is required at the base of the cover system.

4.2.3 The required Inspection frequency for gardens in the Remediation & Verification Strategy was as follows:

- Front gardens – minimum of one every two gardens
- Back gardens – every plot

Imported soils assessment criteria

4.2.4 The Tier 1 assessment criteria for chemical suitability of imported soils was set out in the Remediation Strategy (Delta Simons) as follows:

Determinant	Target concentrations (mg/kg)
Asbestos	Not detected
Arsenic	37
Cadmium	11
Chromium (III)	910
Chromium (VI)	6
Copper	2,400
Lead	200
Mercury (inorganic)	40
Nickel	130
Selenium	250
Zinc	3,700
Benzo[a]pyrene	2.2
Dibenz[ah]anthracene	0.24
Naphthalene	2.3
Total Petroleum Hydrocarbons (TPH)	500

Topsoil testing

4.2.5 CC Construction have advised that topsoil was imported from Manningham Concrete in Bradford and is understood to be a manufactured topsoil. The soils have been classified as 'manufactured soils' in accordance with YALPAG soil cover guidance document[1].

4.2.6 No subsoils were imported. The subsoil encountered in one plot (plot 5) was deemed to be natural in-situ subsoil.

4.2.7 Chemical testing of the soils was undertaken directly from gardens following placement, to confirm these materials' suitability for use. In accordance with the requirements of the Remediation & Verification Strategy, samples were tested for the following suite:

pH, water-soluble boron, total metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium & zinc), chromium III, chromium VI, asbestos ID, TOC, TPH & speciated PAH

4.2.8 The majority of samples yielded contaminant concentrations below the imported soils assessment criteria (detailed in Section 4.2.4 above) and the chemical laboratory test certificate (ref. 24-02680) is presented in Appendix C.

4.2.9 A slightly elevated arsenic concentration of 47 mg/kg (c.f Tier 1 screening criteria of 37mg/kg) was recorded from the topsoil sample from the rear garden of plot 3. As the result was only slightly above the screening criteria which is considered conservative and does not account for the bioaccessibility of arsenic, the result is not considered to be significant. The imported manufactured topsoil in plot 3 was visually the same as other topsoils from across the site.

[1] *Verification requirements for cover systems, Yorkshire & Lincolnshire Pollution Advisory Group, Version 4.1, June 2021*

4.2.10 The approximate volume of topsoils utilised at the site has been calculated as follows:

- Back gardens are c. 910m^2 (area) x 0.6m (depth) = 550m^3 (volume)
- Front gardens are c. 410m^2 (area) x 0.45m (depth) = 185m^3 (volume)

4.2.11 Based on the above the total volume of imported topsoils is anticipated to be 735m^3.

4.2.12 Testing of 7 topsoil samples therefore equates to a sampling frequency of approximately 1 sample per 105m^3. This frequency is in accordance with the requirements of the YALPAG soil cover guidance document.

Subsoil testing

4.2.13 A sample of the subsoil in Plot 5 was also subject to chemical analysis with all determinands being below the Tier 1 screening criteria.

Soil cover depth checks

4.2.14 The thickness of placed soil cover was checked via inspection pits excavated in each of the rear garden of each plot and from four front gardens. The approximate locations are indicated on Drawing 4910/2 in Appendix A.

4.2.15 Topsoil was encountered to 600mm in the majority of the rear gardens and was identified as dark brown slightly organic slightly silty sandy Clay. The soil is considered fairly typical for a manufactured soil. There was no visual/olfactory evidence of contamination (e.g. fuel/oil or discoloured soils). The soils were also free of physical contaminants such as glass, nails, metal fragments etc.

4.2.16 Subsoil was only encountered in one rear garden (Plot 5) and was identified as a light brown/orange gravelly Clay with cobbles.

4.2.17 Topsoils were encountered to 450mm in the front gardens and were the same soil as from the back gardens i.e. imported manufactured soil type.

4.2.18 A geofabric marker layer was evident at the base of each hand pit.

4.2.19 Selected photographs confirming the soil depths and presence of membrane recorded are presented in Appendix D.

4.3 New utilities

4.3.1 CC Construction have advised that upgraded 'Protectaline' potable water supply pipes have been used in the development.

4.3.2 CC Construction have advised that the services have been laid in dedicated service corridors as per the industry standard.

5 CONCLUSIONS

5.1 The remediation works agreed with Kirklees Council have been carried out to date in accordance with the 'Remediation Strategy' with variations as detailed in this report.

5.2 The site is considered to be suitable for its intended residential use in relation to land contamination, ground gas and radon.

APPENDIX A

DRAWINGS



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LITHOS CONSULTING
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CLIENT	PPJ DEVELOPMENTS
JOB TITLE	OXFORD ROAD, GOMERSAL
DRAWING TITLE	SITE LOCATION PLAN
DRAWN	ET
DATE	30/01/2024
CHECKED	DJ
DATE	30/01/2024
STATUS	FOR COMMENT ☐ DRAFT ☐ FOR APPROVAL ☐ FINAL ☑
SCALE	1:25,000
SHEET	A4
DRAWING NO.	4910/1
REVISION	



NOTES

INDICATIVE INSPECTION PIT LOCATION

LAYOUT BASED ON AHJ ARCHITECTS DRAWING REFERENCE 1626-D-20-004 REV D, DATED 11th JULY 2021.

REV.	DESCRIPTION	DATE

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CLIENT

PPJ DEVELOPMENTS

JOB TITLE

OXFORD ROAD, GOMERSAL

DRAWING TITLE

SOIL COVER VALIDATION LOCATION PLAN

DRAWN	DATE	STATUS
ET	30/01/2024	FOR COMMENT ☐
CHECKED	DATE	FOR APPROVAL ☐
DJ	30/01/2024	DRAFT ☐
		FINAL ☑

SCALE	SHEET	DRAWING NO.	REVISION
1:400	A3	4910/2	

APPENDIX B

WASTE CONSIGNMENT NOTE

The Hazardous Waste Regulations 2005: Consignment Note

FOXHALL ENVIRONMENTAL

PART A Notification details

1 Consignment note code: SIMOND/08779

2 The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile):

Simon Dawson, Oxford Road, Gomersal, United Kingdom, BD19 4LA

3 The waste will be taken to (name, address and postcode):

Foxhall Environmental Ltd Foxhall Farm Owler Lane Birstall WF17 9BW

4 The waste producer was (if different from 2) (name, address, postcode, telephone, e-mail, facsimile):

PART B Description of the waste

If continuation sheet used, tick here ☐

1 The process giving rise to the waste(s) was: Removal

2 SIC (2007) for process giving rise to the waste: 39.00 /

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components in the waste and their concentrations are:		Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
			Component	Concentration (% or mg/kg)			
Asbestos	170605		Chrysotile	Less than 25%	Solid	HP5/7	VanVan

The information given below is to be completed for each EWC identified

EWC code	UN identification numbers(s)	Proper shipping name(s)	UN Class(es)	Packing group(s)	Special handling requirements
170605	2590	Chrysotile	9	III	Manual Only

PART C Carrier's certificate

(If more than one carrier is used, please attach schedule for the subsequent carriers. If schedule of carriers is attached tick here: ☐)

I certify that today I collected the consignment and that the details in A2, A3 and B3 are correct and I have been advised of any specific handling requirements

Where this note comprises part of a multiple collection the round number and collection number are:

/

1 Carrier name: Brad Brannan
On behalf of (name, address, postcode, telephone, e-mail, facsimile)

Foxhall Environmental Services Ltd, Owler Lane, Birstall, WF17 9BW, +443301188777, info@foxhall-ltd.co.uk

2 Carrier registration no./reason for exemption: CBDU220386

3 Vehicle registration no. (or mode of transport, if not road): DA18 VRK

Signature

Date: 23-10-2023 Time 15:02

PART D Consignor's certificate

I certify that the information in A, B and C has been completed and is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

1 Consignor name: craig
On behalf of (name, address, postcode, telephone, e-mail, facsimile):

Signature

Date 23-10-2023 Time 15:02

PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)

1 I received this waste at the address given in A3 on: Date Time

2 Vehicle registration no. (or mode of transport is not road):

3 Where waste is rejected please provide details:

Name:
On behalf of (name, address, postcode, telephone, e-mail, facsimile)

I certify that waste/permit exempt waste operation number:

authorises the management of the waste described in B at the address given in A3.

Signature

Where the consignment forms part of a multiple collection, as identified in part C, I certify that the total number of consignments forming the collection are:

Date Time

APPENDIX C

CHEMICAL TEST RESULTS

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

Final Report

Report No.:	24-02680-1
Date of Issue:	12-Feb-2024
Re-Issue Details:	
Client	Lithos Consulting
Client Address:	Walton Road Wetherby LS22 5DZ
Project	4910 Oxford Road, Gomersal
Quotation No.:	Q23-32270
Date Received:	30-Jan-2024
Order No.:	PO21850
Date Instructed:	30-Jan-2024
No. of Samples:	9
Turnaround (Wkdays):	8
Results Due:	08-Feb-2024
Date Approved:	12-Feb-2024
Approved By:	
Details:	Stuart Henderson, Technical Manager Nick Watson, Operations Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: 4910 Oxford Road, Gomersal

Client: Lithos Consulting			**Chemtest Job No.:**			24-02680	24-02680	24-02680	24-02680	24-02680	24-02680	24-02680	24-02680
Quotation No.: Q23-32270			**Chemtest Sample ID.:**			1759775	1759776	1759777	1759778	1759779	1759781	1759782	1759783
			Client Sample ID.:			PLOT 1 T/S	PLOT 2 T/S	PLOT 3 T/S	PLOT 4 T/S	PLOT 5 T/S	PLOT 7 T/S	PLOT 8 T/S	PLOT 5 S/S
			Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Date Sampled:			26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024
			Asbestos Lab:			DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type		U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	26	23	38	25	22	22	23	20
Soil Colour		N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones and Roots	Stones and Roots	Stones and Roots	Stones and Roots	Stones and Roots	Stones and Roots	Stones, Roots and Wood	None
Soil Texture		N	2040		N/A	Loam	Loam	Sand	Loam	Loam	Loam	Loam	Clay
pH at 20C		M	2010		4.0	8.4	8.4	7.8	8.1	8.2	8.1	8.2	7.9
Total Organic Carbon		M	2625	%	0.20	6.9	4.0	8.9	6.7	4.4	5.6	5.5	0.38
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	21	< 1.0	< 1.0	< 1.0	< 1.0	
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	20	< 1.0	< 1.0	< 1.0	< 1.0	
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	15	< 1.0	< 1.0	< 1.0	< 1.0	
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	11	24	< 1.0	11	9.9	8.2	
TPH >C21-C35	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	200	290	< 1.0	170	46	180	
Total TPH >C6-C35 NC	EH_1D_Total	U	2670	mg/kg	10.0	< 10	210	370	< 10	180	56	190	
Coronene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's		N	2800	mg/kg	2.0	< 2.0	2.8	9.9	< 2.0	< 2.0	< 2.0	< 2.0	2.3
Arsenic		M	2455	mg/kg	0.5	3.6	3.1	47	4.4	3.6	4.8	4.6	8.8
Boron (Hot Water Soluble)		M	2120	mg/kg	0.40	1.2	0.90	5.1	1.7	2.1	1.9	1.9	< 0.40
Cadmium		M	2455	mg/kg	0.10	0.30	0.29	0.70	0.33	0.26	0.29	0.21	< 0.10
Chromium		M	2455	mg/kg	0.5	8.3	7.2	37	8.9	6.9	8.3	8.8	25
Chromium (Trivalent)		N	2490	mg/kg	1.0	8.3	7.2	37	8.9	6.9	8.3	8.8	25
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Copper		M	2455	mg/kg	0.50	16	15	500	22	17	20	16	19
Lead		M	2455	mg/kg	0.50	49	28	170	36	38	35	24	26
Mercury		M	2455	mg/kg	0.05	< 0.05	< 0.05	1.1	< 0.05	< 0.05	0.05	< 0.05	< 0.05
Nickel		M	2455	mg/kg	0.50	8.0	6.5	30	8.2	7.4	9.5	10	19
Selenium		M	2455	mg/kg	0.25	0.37	0.32	1.0	0.39	0.25	0.47	0.35	0.77
Zinc		M	2455	mg/kg	0.50	62	56	280	69	60	63	56	52
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	0.34	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10	0.12	0.27	0.94	< 0.10	< 0.10	0.13	< 0.10	0.18
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10	0.20	0.95	< 0.10	< 0.10	< 0.10	< 0.10	0.20
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	0.34	1.3	< 0.10	< 0.10	0.26	< 0.10	0.16
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	0.18	0.60	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	0.12	0.40	< 0.10	< 0.10	< 0.10	< 0.10	0.12
Chrysene		M	2800	mg/kg	0.10	0.14	0.29	0.94	< 0.10	< 0.10	0.16	< 0.10	0.22

Results - Soil

Project: 4910 Oxford Road, Gomersal

Client: Lithos Consulting			**Chemtest Job No.:**			24-02680	24-02680	24-02680	24-02680	24-02680	24-02680	24-02680	24-02680
Quotation No.: Q23-32270			**Chemtest Sample ID.:**			1759775	1759776	1759777	1759778	1759779	1759781	1759782	1759783
					Client Sample ID.:	PLOT 1 T/S	PLOT 2 T/S	PLOT 3 T/S	PLOT 4 T/S	PLOT 5 T/S	PLOT 7 T/S	PLOT 8 T/S	PLOT 5 S/S
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Date Sampled:	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024	26-Jan-2024
					Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**								
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	0.24	0.54	1.7	0.20	0.48	0.40	0.18	0.50
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	0.21	0.58	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.23
Phenanthrene		M	2800	mg/kg	0.10	< 0.10	0.25	0.82	0.11	0.23	0.18	0.11	0.30
Pyrene		M	2800	mg/kg	0.10	0.24	0.44	1.3	0.22	0.40	0.32	0.17	0.37

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	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.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2455	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.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	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-MS	

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"
SOP	Standard operating procedure
LOD	Limit of detection

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 30 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

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water

Report Information

RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

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

APPENDIX D

PHOTOGRAPHS



Photo 1: *Plot 1 depth check (rear garden)*



Photo 2: *Plot 1 membrane (rear garden)*



Photo 3: *Plot 3 depth check and membrane (rear garden)*



Photo 4: *Plot 6 depth check and membrane (rear garden)*



Photo 5: *Plot 7 depth check (rear garden)*



Photo 6: *Plot 7 membrane*



Photo 7: *Plot 8 depth check and membrane*



Photo 8: *Plot 3 (front garden)*



Photo 9: *Plot 1 (front garden)*



Photo 10: *Plot 8 (front garden)*