

Validation Completion Report

For a site at

Gate Street, Openshaw

Undertaken for

J Greenwood Builders Limited

Report Title:	Gate Street, Openshaw Validation Completion Report
Report Reference:	9001G-WML-XX-ZZ-RP-G-0004
Client:	J Greenwood Builders Limited
Issue Date:	15th July 2022
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Revision Status / History

Rev	Date	Issue	Prepared	Checked	Authorised
-	15/07/2022	Original Issue	TJS	SCS	SCS

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1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting (WML) has been commissioned by J Greenwood Builders Ltd to prepare a Completion Report in relation to development of land located on Gate Street, Openshaw.

Proposed Development

- 1.2 The development comprises eleven low rise residential houses with associated soft landscaped private garden areas and hardstanding for car parking.
- 1.3 Plans showing the site location and development by BTP Architects reference GS-BTP-00-SP-DR-A-3373_201, are presented in Appendix 01.

Background

- 1.4 WML were initially commissioned by D J Hughes Construction Limited to undertake a Phase 1 Desk Study and Phase 2 Investigation and Assessment. These culminated in the following reports:
- Phase 1 Desk Study and Preliminary Geoenvironmental Assessment Report, Reference 9001G-WML-00-XX-RP-G-0001, dated September 2019; and
 - Phase 2 Geo-environmental Investigation and Assessment, Reference 9001G-WML-00-XX-RP-G-0002, dated November 2019.
- 1.5 Subsequently WML produced the following report in consideration of the need for remedial measures to be outlined and agreed as a pre-development requirement:
- Remediation Strategy, 9001G-A-WML-00-XX-RP-G-0003A, dated February 2020.
- 1.6 The reports have been presented to Manchester City Council Planning Division in support of Planning Application No. 122030/FO/2018.

Verification

- 1.7 This report presents the compilation of the remediation / validation information obtained during the redevelopment programme associated with the provision of a watching brief for unexpected ground and groundwater contamination, the capping of areas of proposed soft landscaping as identified within the Remediation Strategy and the requirement for suitable selection of water supply pipes.

2.0 SUMMARY OF ENVIRONMENTAL CONDITIONS

- 2.1 The following paragraphs summarise the most relevant findings of the Phase 1 and Phase 2 reports.
- 2.2 The site is indicated by the BGS to be underlain by Devensian Glacial Till deposits comprising mainly clay which may be interbedded with sand and gravel horizons. The superficial deposits are indicated to be underlain by strata of Triassic Chester Formation, which generally comprise red sandstone.
- 2.3 The property is not in a radon affected area as defined by the UK Health Security Agency, as less than 1% of properties are above the action level of exposure.
- 2.4 The superficial deposits underlying the site are classified as a 'Secondary (A) Aquifer'. The underlying bedrock is classified as a 'Principal Aquifer'. The site is not within an Environment Agency Source Protection Zone (SPZ) and there are no groundwater abstraction licences within 500m of the site. There are no recorded surface water features within 250m of the site.
- 2.5 A historic landfill is recorded 89m to the north-east which comprises the filling of a section of the Stockport Branch Canal with inert and liquid sludge some time prior to 1961.
- 2.6 The earliest map dated 1848 indicate the site to have been undeveloped and in rural / agricultural use. A watercourse, extended north-west to south-east across the western section of the site. By 1906 the watercourse was no longer depicted, and may have either been culverted or diverted with the site developed with two rows of terraced residential houses. These extended east to west across the northern and southern sections of the site and separated by Gate Street roughly in the same configuration as recorded on the most recent plans. The site remained relatively unchanged until sometime after 2010 when the structures were completely cleared.

Ground Conditions

- 2.7 Intrusive ground investigations were carried out on the site in October 2019. The scope of works comprised the advancement of 6no windowless sample probeholes to a maximum depth of 5.00 metres below ground level (mbgl).
- 2.8 Ground conditions encountered during the intrusive investigation comprised made ground to depths of between 0.70m and 0.90mbgl, this being underlain by glacial deposits to a maximum proven depth of 5.00 mbgl.
- 2.9 No significant visual and/or olfactory evidence of significant ground contamination was identified during the investigation.
- 2.10 A groundwater seepage was encountered during the formation of location WS2 at a depth of 4.10mbgl, within glacial deposits, with the remainder of exploratory holes found to be dry during formation. During monitoring visits all three standpipes were observed to be dry with one exception (WS1 on the third monitoring visits, where groundwater was recorded at 2.5mbgl). The Phase 2 report concluded that true groundwater rest levels were at in excess of 4.00 mbgl.
- 2.11 Chemical analysis indicated several exceedances of CoC's within the made ground, when compared to the soil screening levels for a residential with homegrown produce end use scenario, which was considered to be appropriate to the proposed development. These related to elevated concentrations of lead and PAH compounds, namely benzo[b]fluoranthene, benzo[a]pyrene and dibenz[a,h]anthracene within samples of made ground. This was determined to be most likely due to the presence of ash and clinker deposits within the made ground matrix.
- 2.12 No asbestos fibres were detected in any of the samples analysed.

- 2.13 Risks to controlled waters were considered to be low, with no environmental remediation considered necessary.
- 2.14 The risk assessment concluded that there would be no mechanism for a direct contact pollution linkage following site development, with the possible exception of exposure pathways where soft landscaped areas are directly underlain by made ground.

Ground Gas Monitoring

- 2.15 Ground gas monitoring was carried out on 6 No. occasions between 21st October 2019 and 13th January 2020. The results indicated that concentrations of methane did not exceed the instrument limit of detection of 0.1% by volume in air (v/v), and peak and steady state carbon dioxide concentrations generally ranged from 0.5% to a maximum concentration of 4.9% v/v.
- 2.16 No detectable ground gas flows were recorded during the monitoring visits.
- 2.17 The results give a maximum individual Q_{hg} value of 0.005l/hr. This indicates the site to classify as Characteristic Situation (CS) 1 – Very Low Gas Risk', with no specific gas protection measures required for the proposed development.

3.0 SUMMARY OF REMEDIATION OBJECTIVES

3.1 The following objectives were outlined in the Remediation Strategy.

Capping Requirements

3.2 As the level of contamination in the Made Ground renders it unsuitable for direct use beneath proposed garden/landscaped areas, the development needed to include the provision of a clean cover over the Made Ground to break the direct contact pollution linkage as set out below.

3.3 Therefore, new landscaped areas will need to be capped with a nominal 600mm clean cover over the existing Made Ground to break the direct contact pollution linkage. The make-up of the 600mm cover would be expected to consist of:

- 150mm (minimum) of clean imported Topsoil; over
- 450mm of clean imported sub-soil.

3.4 The following were to be provided:

- Results of subsequent chemical analysis of imported Topsoil/sub-soil to confirm compliance with the Site Specific Assessment Criteria.
- Records of the volumes and suitability of all imported fill, Topsoil and sub-soil delivered to site in the form of delivery slips and certificates.
- Photographic evidence of suitable sub-soil/Topsoil cover in soft landscaped areas where underlain by Made Ground.

General

3.5 The following additional information was also to be provided.

- Details of any unexpected ground contamination (soil and/or groundwater) and the measures undertaken to deal with this, to include records of excavation, the results of chemical analysis resulting from the removal of contaminated soil and / or groundwater.
- Sample waste management records confirming compliance with Duty of Care regulations.
- Confirmation of potable water supply pipe materials.

3.6 On completion of the Remediation Works, a Validation Report including the information as summarised above was to be submitted to the Local Planning Authority for approval.

3.7 The redevelopment proposals include private garden areas. As such, the applicable Site Specific Assessment Criteria used in this report are those for the 'residential with homegrown produce' scenario.

4.0 VALIDATION

Unforeseen Ground Contamination

- 4.1 No evidence of contamination, unusual ground conditions, organic materials such as peat, and/or asbestos have been reported to WML during the construction phase of the works.
- 4.2 Furthermore, no evidence of such was reported to WML during visits to site to inspect the building construction works.

General Groundworks

- 4.3 Due to the low levels of contamination within the existing topsoil and made ground, together with the limited site area, all site-derived soils were removed from site to an appropriate landfill.
- 4.4 The waste transfer documents can be provided by J Greenwood Limited upon request but were not provided prior to the issue of this report.

Imported Topsoil / Subsoil

- 4.5 No suitable site-won topsoil or subsoil was available for re-use at the site for the capping of proposed soft landscaped areas. Therefore, all topsoil required for use as capping soil was imported to site by DHI Excavations Limited. A copy of chemical analytical data for a sample of the imported topsoil source ('Knutsford Topsoil Stockpile 1'), provided by the supplier, is provided in Appendix 03. This corresponds to a sample collected by DHI Excavations Limited and reported by the analytical laboratory as comprising sandy loam with roots.
- 4.6 Subsoil was imported to the site by PP O'Connor Ltd from the 'Northern Gateway Deeside' site, and a copy of chemical analytical data for a sample of the source material is provided in Appendix 03.
- 4.7 The results of the chemical analyses for both the topsoil and subsoil confirm that none of the determinands exceed the soil screening levels for a 'residential with homegrown produce' as provided within Appendix 07. Therefore, the soil was considered suitable, in terms of contamination levels, for the intended use.
- 4.8 Delivery tickets for imported topsoil and subsoil during June 2022 are presented in Appendix 05. These indicate a rough total of 60 tonnes of subsoil and 48 tonnes of topsoil were received to site.
- 4.9 It should be noted that the delivery tickets for the subsoil, imported by PP O'Connor Ltd, is incorrectly labelled 'topsoil' on the delivery tickets.

WML Site Inspection and Testing

- 4.10 Subsequently, after import and placement of the majority of soils, WML attended site on 22nd June 2022 in order to obtain samples from the emplaced soil in order to submit them for chemical analyses.
- 4.11 During the inspection three samples of imported subsoil (SS P03, SS P05 and SS S07) and three samples of imported topsoil (TS P03, TS P05, and TS P07) were obtained. The samples were submitted for chemical analyses and the test results are presented in Appendix 04.
- 4.12 Comparison of these results with the Assessment Criteria for 'residential with homegrown produce' as provided within Appendix 07 indicates that the relevant criteria were not exceeded. Therefore, the soil was considered suitable, in terms of contamination levels, for the intended use.

Capping Thickness

- 4.13 The capping thicknesses were also verified by the formation of hand excavated validation pits on 22nd June 2022 by WML. At the time of the verification visit, a soil cover system had been emplaced in all private garden area with the exception of the rear gardens of Plots 8 and 9, to which access was constrained by the presence of the site cabins. Both garden areas had been excavated and prepared for soil import at the time of the visit, and the WML engineer confirmed that approximately 550mm and 600mm of capping material respectively emplaced in each of the gardens would result in levels being commensurate with the paving slabs laid to form the adjacent footpaths.
- 4.14 Subsequent to the visit by WML, soils were imported by the client and emplaced in Plots 8 and 9. The client has provided photographs showing the thickness and distribution of post-import soils in these plots, which are included in Appendix 02.
- 4.15 Selected photographs of the validation pits are provided in Appendix 02 and indicate between 250mm and 400mm of subsoil and between 150mm and 300mm of topsoil across all garden areas. Visually uncontaminated firm clay deposits were encountered beneath the imported subsoil in pits VP02 and VP03, and made ground including brick and concrete gravel and cobbles was observed beneath the imported subsoil in VP01 and VP04.
- 4.16 The imported topsoil generally comprised a dark brown clayey organic fine silty sand. The imported subsoil generally comprised a mid brown, slightly gravelly fine sand.
- 4.17 A drawing, referenced 9001G/SK01 identifying the locations of the validation pits is presented in Appendix 01, and the thicknesses of imported material are summarised below.

Location	Imported Subsoil Thickness (mm)	Imported Subsoil Thickness (mm)	Total Thickness (mm)
VP01 (Plot 03)	400	150	550
VP02 (Plot 05)	350	200	550
VP03 (Plot 07)	300	250	550
VP04 (Plot 11)	250	300	550

- 4.18 The gardens form an area of approximately 170m² with an average combined total thickness of topsoil and subsoil of approximately 550mm.
- 4.19 The volume of emplaced imported subsoil equates to approximately 55m³ and the volume of imported topsoil equates to approximately 38m³, with a total imported soil volume of approximately 93m³. This equates to an approximate ratio of 1 sample per 13m³ of topsoil and 1 sample per 18m³ of subsoil.

Water Supply Pipes

- 4.20 United Utilities Water were consulted with regards the selection of suitable water supply pipe materials for the development. In light of the ground conditions encountered, the requirement for specific materials and measures to protect the water supply from ground contamination was not required. A copy of the United Utilities Risk Assessment is presented in Appendix 06.

5.0 CONCLUSIONS

Capping Requirements for Garden / Landscaped Areas

- 5.1 Clean imported topsoil and subsoil were found to be generally emplaced to depths of at least 550mm. The Topsoil and sub-soil have been confirmed by chemical analysis to generally conform to the appropriate Site Specific Assessment Criteria.
- 5.2 The thickness of capping specified within the original Remediation Strategy required a minimum thickness of 600mm for all landscaped areas. The limited size of the garden areas has limited the available maximum depth to which capping could be installed, resulting in a slight shortfall in the total thickness of capping material placed in the garden areas on site. Furthermore, in two of the four confirmatory hand dug pits excavated in the garden areas (VP02 in Plot 5 and VP03 in Plot 7), the capping material was observed to be underlain by apparently natural or reworked natural glacial till deposits. The minor shortfall in capping material observed was a maximum of 50mm, which is not considered to be sufficient to compromise the efficacy of the cover system for the proposed future use of the site.
- 5.3 Therefore, as far as can be established the pre-occupation works required in relation to the relevant Planning Conditions have been undertaken to a reasonable standard of workmanship and appropriately validated.

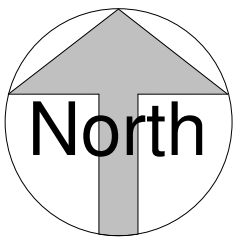
APPENDIX 01

Drawings

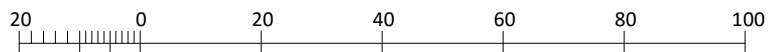


00 Location Plan

1 : 1250



— Site Edged Red



Rev	Date	Int	Description
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RIBA
Chartered Practice

Client:
MSV
Project:
Gate Street Openshaw

Job No:
3373

Scale @ A4:
1 : 1250

Description:
Location Plan

Drawn By: NM Checked By: VS Date: 30/11/18 Status Code: S2 Drawing No: **100** Rev:

Purpose of Issue:
Planning

File Identifier:
GS-BTP-00-LP-DR-A-3373_100



Proposed Site Plan.
1 : 200

- To comply with Security by Design requirements:**
- Lighting to all roads should be to adoptable standards (to comply with BS 5489).
 - Fittings should produce 'white' light, as opposed to yellow/orange light. Metal halide (or bulbs with a comparable output) should be used, as these offer superior colour rendition over alternatives such as high and low pressure sodium bulbs.
 - Lighting fixtures must not be positioned to provide climbing aids over boundary treatments. Electrical and architectural layouts should be developed together to avoid this.

2	25/01/21	HP	Updated drawing to reflect correct number of fence piers
1	06/03/20	HP	Amendments following SBD requirements and bike racks as per Planning Condition 10
Rev	Date	Int	Description

btp
ARCHITECTS

RIBA
Chartered Practice

Client:
MSV

Project:
Gate Street Openshaw

Description:
Proposed Site Plan

Purpose of Issue:			
Building Regulations			
Drawn By:	Checked By:	Date:	Scale @ A2:
HP	SD	05/11/19	As indicated
Job No:	Status Code:	Drawing No:	Rev:
3373	S2	201	2
File Identifier:			
GS-BTP-00-SP-DR-A-3373_201			
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GENERAL NOTES

1. DO NOT SCALE FROM THIS DRAWING WORK TO FIGURED DIMENSIONS ONLY.
2. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS ALLOWED WITHOUT PRIOR PERMISSION IN WRITING.
3. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND THE SPECIFICATION.
4. THE CONTRACTOR SHALL INCORPORATE ALL THE REQUIREMENTS OF THE PRE-TENDER STAGE HEALTH & SAFETY PLAN.

KEY



Rev.	Amendment	Date	By	Chkd
Project GATE STREET				
Client J GREENWOOD BUILDERS LTD				
Title VALIDATION PIT LOCATION PLAN				
Drawn TJS	Checked SCS	Date 15/07/2022	Scale 1:200@A2	
WML CONSULTING Chartered Civil and Structural Engineers No.8 Oak Green Earl Road Stanley Green Business Park Cheadle Hulme Cheshire SK8 6QL Tel 0161 482 0600 Fax 0161 486 9210 e-mail info@wmlconsulting.com www.wmlconsulting.com				
Job No. 9001G		Drawing No. VR-01-		

APPENDIX 02

Photographs



Photograph 1
150mm of topsoil emplaced in VP01.



Photograph 2
400mm of subsoil emplaced in VP01.



Photograph 3
Landscaped area showing VP01 location (rear garden of Plot 03).



Photograph 4
200mm of topsoil emplaced in VP02.



Photograph 5
350mm of subsoil emplaced in VP02.



Photograph 6
Landscaped area showing VP02 location.



Photograph 7
250mm of topsoil emplaced in VP03.



Photograph 8
300mm of subsoil emplaced in VP03.



Photograph 9
Landscaped area showing VP03 location.



Photograph 10
200mm of topsoil emplaced in VP04.



Photograph 11
350mm of subsoil exposed in VP04.



Photograph 12
Landscaped area showing VP04 location.



Photograph 13
Overview of rear garden of Plot 01.



Photograph 14
Overview of rear garden of Plot 04.



Photograph 15
Overview of rear garden of Plot 06.



Photograph 16
Overview of rear garden of Plot 10.



Photograph 17
Overview of rear garden of Plot 08 prior to soil import.



Photograph 18
Overview of rear garden of Plot 08 taken 12/07/22.



Photograph 19
Overview of rear garden of Plot 09 prior to soil import.



Photograph 20
Overview of rear garden of Plot 09 taken 12/07/22.

APPENDIX 03

Chemical Analyses from Source



ANALYTICAL TEST REPORT

Contract no: 98890

Contract name: Northern Gateway Deeside

Client reference: -

Clients name: PP O'Connor

Clients address: 61 Mosley Road
Trafford Park
Manchester
M17 1GJ

Samples received: 29 July 2021

Analysis started: 29 July 2021

Analysis completed: 05 August 2021

Report issued: 05 August 2021

Notes: Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key: U UKAS accredited test
M MCERTS & UKAS accredited test
\$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAD No Asbestos Detected

Approved by:

Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
98890-1	P1ATS1	-	Sandy Clayey Loam	-	-	10.9
98890-2	P1ATS2	-	Sandy Clayey Loam with Roots	-	-	10.5
98890-3	P1ATS3	-	Sandy Clayey Loam with Roots	-	-	10.7
98890-4	P1ATS4	-	Sandy Clayey Loam with Roots	-	-	10.5
98890-5	P1ATS5	-	Sandy Clayey Loam	-	-	11.1
98890-6	P1ATS6	-	Sandy Clayey Loam	-	-	10.6
98890-7	P1ATS7	-	Sandy Clayey Loam with Roots	-	-	10.3
98890-8	P1ATS8	-	Sandy Clayey Loam with Roots	-	-	10.3
98890-9	P1ATS9	-	Sandy Clayey Loam	-	-	11.2
98890-10	P1ATS10	-	Sandy Clayey Loam	-	-	10.7
98890-11	P1BTS1	-	Sandy Clayey Loam with Roots	-	-	10.4
98890-12	P1BTS2	-	Sandy Clayey Loam	-	-	10.0
98890-13	P1BTS3	-	Sandy Clayey Loam with Roots	-	-	9.8
98890-14	P1BTS4	-	Sandy Clayey Loam with Roots	-	-	10.4
98890-15	P1BTS5	-	Sandy Clayey Loam with Roots	-	-	10.3

Chemtech Environmental Limited

SOILS

Lab number Sample id Depth (m) Date sampled			98890-1 P1ATS1 - 27/07/2021	98890-2 P1ATS2 - 27/07/2021	98890-3 P1ATS3 - 27/07/2021	98890-4 P1ATS4 - 27/07/2021	98890-5 P1ATS5 - 27/07/2021	98890-6 P1ATS6 - 27/07/2021
Test	Method	Units						
Arsenic (total)	CE127 ^M	mg/kg As	10	11	9.5	9.8	9.8	9.9
Cadmium (total)	CE127 ^M	mg/kg Cd	0.3	0.3	0.3	0.3	0.3	0.2
Chromium (total)	CE127 ^M	mg/kg Cr	44	53	51	54	52	55
Copper (total)	CE127 ^M	mg/kg Cu	11	11	10	10	9.8	9.8
Lead (total)	CE127 ^M	mg/kg Pb	49	54	48	50	48	63
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	18	18	17	18	17	18
Selenium (total)	CE127 ^M	mg/kg Se	1.3	1.3	1.2	1.3	1.2	1.2
Zinc (total)	CE127 ^M	mg/kg Zn	80	87	79	82	78	86
pH	CE004 ^M	units	7.8	7.9	7.8	7.9	7.9	8.0
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	14	11	13	12	13	11
Sulphate (total)	CE154	mg/kg SO ₄	366	318	355	313	327	288
Cyanide (total)	CE077	mg/kg CN	<1	<1	<1	<1	<1	<1
PAH								
Naphthalene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluorene	CE087 ^U	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Phenanthrene	CE087 ^M	mg/kg	0.05	0.08	0.07	0.04	0.04	0.05
Anthracene	CE087 ^U	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluoranthene	CE087 ^M	mg/kg	0.08	0.13	0.12	0.08	0.08	0.09
Pyrene	CE087 ^M	mg/kg	0.07	0.12	0.11	0.07	0.07	0.07
Benzo(a)anthracene	CE087 ^U	mg/kg	0.05	0.07	0.07	0.04	0.05	0.05
Chrysene	CE087 ^M	mg/kg	0.06	0.07	0.07	0.05	0.05	0.05
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.06	0.08	0.08	0.05	0.06	0.07
Benzo(k)fluoranthene	CE087 ^M	mg/kg	<0.03	0.03	<0.03	<0.03	<0.03	<0.03
Benzo(a)pyrene	CE087 ^U	mg/kg	0.05	0.07	0.07	0.05	0.05	0.05
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.05	0.06	0.05	0.04	0.04	0.05
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.04	0.05	0.05	0.04	0.04	0.04
PAH (total of USEPA 16)	CE087	mg/kg	0.51	0.75	0.68	0.47	0.48	0.51
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	-	-	-	-	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	-	-	-	-	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	-	-	-	-	-	-
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	-	-	-	-	-	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	-	-	-	-	-

Chemtech Environmental Limited

SOILS

Lab number			98890-1	98890-2	98890-3	98890-4	98890-5	98890-6
Sample id			P1ATS1	P1ATS2	P1ATS3	P1ATS4	P1ATS5	P1ATS6
Depth (m)			-	-	-	-	-	-
Date sampled			27/07/2021	27/07/2021	27/07/2021	27/07/2021	27/07/2021	27/07/2021
Test	Method	Units						
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	-	-	-	-	-
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C10-C12)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C12-C16)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C16-C35)	CE068	mg/kg	-	-	-	-	-	-
EPH Aliphatic (>C35-C44)	CE068	mg/kg	-	-	-	-	-	-
Subcontracted analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD

Chemtech Environmental Limited

SOILS

Lab number Sample id Depth (m) Date sampled			98890-7 P1ATS7 - 27/07/2021	98890-8 P1ATS8 - 27/07/2021	98890-9 P1ATS9 - 27/07/2021	98890-10 P1ATS10 - 27/07/2021	98890-11 P1BTS1 - 27/07/2021	98890-12 P1BTS2 - 27/07/2021
Test	Method	Units						
Arsenic (total)	CE127 ^M	mg/kg As	9.3	11	-	-	10	11
Cadmium (total)	CE127 ^M	mg/kg Cd	0.2	0.3	-	-	0.3	0.3
Chromium (total)	CE127 ^M	mg/kg Cr	45	54	-	-	56	60
Copper (total)	CE127 ^M	mg/kg Cu	9.2	11	-	-	11	13
Lead (total)	CE127 ^M	mg/kg Pb	46	56	-	-	51	57
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5	-	-	<0.5	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	17	18	-	-	18	19
Selenium (total)	CE127 ^M	mg/kg Se	1.2	1.3	-	-	1.3	1.2
Zinc (total)	CE127 ^M	mg/kg Zn	73	90	-	-	82	93
pH	CE004 ^M	units	7.9	7.9	-	-	7.9	7.9
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	10	11	-	-	11	12
Sulphate (total)	CE154	mg/kg SO ₄	288	313	-	-	295	337
Cyanide (total)	CE077	mg/kg CN	<1	<1	-	-	<1	<1
PAH								
Naphthalene	CE087 ^M	mg/kg	<0.02	<0.02	-	-	<0.02	<0.02
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	-	-	<0.02	<0.02
Acenaphthene	CE087 ^M	mg/kg	<0.02	<0.02	-	-	<0.02	<0.02
Fluorene	CE087 ^U	mg/kg	<0.02	<0.02	-	-	<0.02	<0.02
Phenanthrene	CE087 ^M	mg/kg	0.08	0.07	-	-	0.06	0.07
Anthracene	CE087 ^U	mg/kg	<0.02	<0.02	-	-	<0.02	<0.02
Fluoranthene	CE087 ^M	mg/kg	0.13	0.11	-	-	0.10	0.11
Pyrene	CE087 ^M	mg/kg	0.11	0.10	-	-	0.08	0.09
Benzo(a)anthracene	CE087 ^U	mg/kg	0.07	0.06	-	-	0.06	0.06
Chrysene	CE087 ^M	mg/kg	0.07	0.06	-	-	0.05	0.06
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.08	0.08	-	-	0.07	0.07
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.03	0.03	-	-	0.03	<0.03
Benzo(a)pyrene	CE087 ^U	mg/kg	0.07	0.07	-	-	0.06	0.06
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.06	0.05	-	-	0.05	0.05
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	<0.02	-	-	<0.02	<0.02
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.05	0.05	-	-	0.05	0.05
PAH (total of USEPA 16)	CE087	mg/kg	0.75	0.69	-	-	0.59	0.61
TPH								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	-	<0.01	<0.01	-	-
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	-	<0.01	<0.01	-	-
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	-	<0.01	<0.01	-	-
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	-	-	<1	<1	-	-
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	-	-	<1	<1	-	-
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	-	-	<1	<1	-	-
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	-	-	<1	<1	-	-
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	-	-	<1	<1	-	-
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	-	<0.1	<0.1	-	-

Chemtech Environmental Limited

SOILS

Lab number			98890-7	98890-8	98890-9	98890-10	98890-11	98890-12
Sample id			P1ATS7	P1ATS8	P1ATS9	P1ATS10	P1BTS1	P1BTS2
Depth (m)			-	-	-	-	-	-
Date sampled			27/07/2021	27/07/2021	27/07/2021	27/07/2021	27/07/2021	27/07/2021
Test	Method	Units						
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	-	<0.1	<0.1	-	-
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	-	<0.1	<0.1	-	-
EPH Aliphatic (>C10-C12)	CE068	mg/kg	-	-	<4	<4	-	-
EPH Aliphatic (>C12-C16)	CE068	mg/kg	-	-	<4	<4	-	-
EPH Aliphatic (>C16-C35)	CE068	mg/kg	-	-	19	30	-	-
EPH Aliphatic (>C35-C44)	CE068	mg/kg	-	-	<10	<10	-	-
Subcontracted analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	-	-	NAD	NAD

Chemtech Environmental Limited

SOILS

Lab number			98890-13	98890-14	98890-15
Sample id			P1BTS3	P1BTS4	P1BTS5
Depth (m)			-	-	-
Date sampled			27/07/2021	27/07/2021	27/07/2021
Test	Method	Units			
Arsenic (total)	CE127 ^M	mg/kg As	10	13	-
Cadmium (total)	CE127 ^M	mg/kg Cd	0.3	0.3	-
Chromium (total)	CE127 ^M	mg/kg Cr	55	73	-
Copper (total)	CE127 ^M	mg/kg Cu	11	14	-
Lead (total)	CE127 ^M	mg/kg Pb	58	64	-
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5	<0.5	-
Nickel (total)	CE127 ^M	mg/kg Ni	19	24	-
Selenium (total)	CE127 ^M	mg/kg Se	1.1	1.3	-
Zinc (total)	CE127 ^M	mg/kg Zn	86	100	-
pH	CE004 ^M	units	8.1	8.1	-
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	13	12	-
Sulphate (total)	CE154	mg/kg SO ₄	294	277	-
Cyanide (total)	CE077	mg/kg CN	<1	<1	-
PAH					
Naphthalene	CE087 ^M	mg/kg	<0.02	<0.02	-
Acenaphthylene	CE087 ^M	mg/kg	<0.02	<0.02	-
Acenaphthene	CE087 ^M	mg/kg	<0.02	<0.02	-
Fluorene	CE087 ^U	mg/kg	<0.02	<0.02	-
Phenanthrene	CE087 ^M	mg/kg	0.06	0.05	-
Anthracene	CE087 ^U	mg/kg	<0.02	<0.02	-
Fluoranthene	CE087 ^M	mg/kg	0.10	0.08	-
Pyrene	CE087 ^M	mg/kg	0.09	0.07	-
Benzo(a)anthracene	CE087 ^U	mg/kg	0.06	0.05	-
Chrysene	CE087 ^M	mg/kg	0.06	0.05	-
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.08	0.06	-
Benzo(k)fluoranthene	CE087 ^M	mg/kg	<0.03	<0.03	-
Benzo(a)pyrene	CE087 ^U	mg/kg	0.06	0.05	-
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.05	0.04	-
Dibenz(ah)anthracene	CE087 ^M	mg/kg	<0.02	<0.02	-
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.04	0.04	-
PAH (total of USEPA 16)	CE087	mg/kg	0.61	0.49	-
TPH					
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	-	-	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	-	-	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	-	-	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	-	-	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	-	-	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	-	-	<1
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	-	-	<1
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	-	-	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	-	-	<0.1

Chemtech Environmental Limited

SOILS

Lab number			98890-13	98890-14	98890-15
Sample id			P1BTS3	P1BTS4	P1BTS5
Depth (m)			-	-	-
Date sampled			27/07/2021	27/07/2021	27/07/2021
Test	Method	Units			
VPH Aliphatic (>C6-C8)	CE067	mg/kg	-	-	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	-	-	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	-	-	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	-	-	<4
EPH Aliphatic (>C16-C35)	CE068	mg/kg	-	-	14
EPH Aliphatic (>C35-C44)	CE068	mg/kg	-	-	<10
Subcontracted analysis					
Asbestos (qualitative)	\$	-	NAD	NAD	-

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO ₄
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO ₄
CE077	Cyanide (total)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	As received		4	mg/kg

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-
\$	Asbestos (quantitative)	HSG 248, Microscopy & Gravimetry	Dry	U	0.001	% w/w

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
98890-1	P1ATS1	-	N	
98890-2	P1ATS2	-	N	
98890-3	P1ATS3	-	N	
98890-4	P1ATS4	-	N	
98890-5	P1ATS5	-	N	
98890-6	P1ATS6	-	N	
98890-7	P1ATS7	-	N	
98890-8	P1ATS8	-	N	
98890-9	P1ATS9	-	N	
98890-10	P1ATS10	-	N	
98890-11	P1BTS1	-	N	
98890-12	P1BTS2	-	N	
98890-13	P1BTS3	-	N	
98890-14	P1BTS4	-	N	
98890-15	P1BTS5	-	N	

DECLARATION OF COMPLIANCE (BS3882:2015)



Lab ref 99708-1
Contract name Northern Gateway Deeside
Sample ID Deeside 01
OS Grid reference Not supplied
Date sampled 17 August 2021

Date received 23 August 2021
Analysis started 23 August 2021
Analysis completed 31 August 2021
Report issued 31 August 2021

Test	Units	Result	Compliant with Multipurpose? (Y/N)	Compliant with specific purpose? (Y/N)				
				Acidic	Calcareous	Low Fertility	Low F Acidic	Low F Calcareous
Texture								
Clay content	% w/w	18	Y	Y	Y	Y	Y	Y
Silt content	% w/w	48	Y	Y	Y	Y	Y	Y
Sand content	% w/w	34	Y	Y	Y	Y	Y	Y
Soil texture	class	SANDY SILT LOAM						

Stone content								
>2mm	% w/w	2	Y	Y	Y	Y	Y	Y
>20mm	% w/w	0	Y	Y	Y	Y	Y	Y
>50mm	% w/w	0	Y	Y	Y	Y	Y	Y

Mass loss on ignition								
Clay 5-20%	% w/w	3.3	Y	Y	Y	Y	Y	Y
Clay 20-35%	% w/w	-	-	-	-	-	-	-
pH	pH units	7.7	Y	N	Y	Y	N	Y
Carbonate (calcareous only)	% w/w	0.7			N			N
Nitrogen (total)	% w/w N	0.18	Y	Y	Y			
Carbon:Nitrogen ratio	-	9.5	Y	Y	Y	Y	Y	Y
Phosphorus (extractable)	mg/l P	22	Y	Y	Y	N	N	N
Potassium (extractable)	mg/l K	193	Y	Y	Y			
Magnesium (extractable)	mg/l Mg	340	Y	Y	Y			
Electrical conductivity	µS/cm	95	Y					

Phytotoxic contaminants (by soil pH)								
Copper (Nitric acid extract)	mg/kg Cu	50	Y	Y	Y	Y	Y	Y
Nickel (Nitric acid extract)	mg/kg Ni	22	Y	Y	Y	Y	Y	Y
Zinc (Nitric acid extract)	mg/kg Zn	134	Y	Y	Y	Y	Y	Y

VISIBLE CONTAMINANTS								
(air-dried soil)	% w/w	0	Y	Y	Y	Y	Y	Y
...of which plastics	% w/w	0	Y	Y	Y	Y	Y	Y
Sharps	% w/w	0	Y	Y	Y	Y	Y	Y

DECLARATION

I certify that this sample has been analysed in accordance with BS3882:2015.

Signature

Name

J. Campbell

Position

John Campbell
Director

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 Tel 01207 528578 Email customerservices@chemtech-env.co.uk
 Vat Reg No. 772 5703 18 Registered in England number 4284013

DECLARATION OF COMPLIANCE (BS3882:2015)



Lab ref 99708-2
Contract name Northern Gateway Deeside
Sample ID Deeside 02
OS Grid reference Not supplied
Date sampled 17 August 2021

Date received 23 August 2021
Analysis started 23 August 2021
Analysis completed 31 August 2021
Report issued 31 August 2021

Test	Units	Result	Compliant with Multipurpose? (Y/N)	Compliant with specific purpose? (Y/N)				
				Acidic	Calcareous	Low Fertility	Low F Acidic	Low F Calcareous
Texture								
Clay content	% w/w	19	Y	Y	Y	Y	Y	Y
Silt content	% w/w	49	Y	Y	Y	Y	Y	Y
Sand content	% w/w	32	Y	Y	Y	Y	Y	Y
Soil texture	class	SANDY SILT LOAM						

Stone content								
>2mm	% w/w	2	Y	Y	Y	Y	Y	Y
>20mm	% w/w	0	Y	Y	Y	Y	Y	Y
>50mm	% w/w	0	Y	Y	Y	Y	Y	Y

Mass loss on ignition								
Clay 5-20%	% w/w	3.7	Y	Y	Y	Y	Y	Y
Clay 20-35%	% w/w	-	-	-	-	-	-	-
pH	pH units	7.8	Y	N	Y	Y	N	Y
Carbonate (calcareous only)	% w/w	1.0			Y			Y
Nitrogen (total)	% w/w N	0.19	Y	Y	Y			
Carbon:Nitrogen ratio	-	10.5	Y	Y	Y	Y	Y	Y
Phosphorus (extractable)	mg/l P	19	Y	Y	Y	Y	Y	Y
Potassium (extractable)	mg/l K	193	Y	Y	Y			
Magnesium (extractable)	mg/l Mg	326	Y	Y	Y			
Electrical conductivity	µS/cm	97	Y					

Phytotoxic contaminants (by soil pH)								
Copper (Nitric acid extract)	mg/kg Cu	27	Y	Y	Y	Y	Y	Y
Nickel (Nitric acid extract)	mg/kg Ni	24	Y	Y	Y	Y	Y	Y
Zinc (Nitric acid extract)	mg/kg Zn	125	Y	Y	Y	Y	Y	Y

VISIBLE CONTAMINANTS								
(air-dried soil)	% w/w	0	Y	Y	Y	Y	Y	Y
...of which plastics	% w/w	0	Y	Y	Y	Y	Y	Y
Sharps	% w/w	0	Y	Y	Y	Y	Y	Y

DECLARATION

I certify that this sample has been analysed in accordance with BS3882:2015.

Signature

Name

J. Campbell

Position

John Campbell
Director

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DECLARATION OF COMPLIANCE (BS3882:2015)



Lab ref 107504-1
Contract name Knutsford Topsoil
Sample ID Sample 1
OS Grid reference Not supplied
Date sampled 24 March 2022

Date received 25 March 2022
Analysis started 25 March 2022
Analysis completed 01 April 2022
Report issued 01 April 2022

Test	Units	Result	Compliant with Multipurpose? (Y/N)	Compliant with specific purpose? (Y/N)				
				Acidic	Calcareous	Low Fertility	Low F Acidic	Low F Calcareous
Texture								
Clay content	% w/w	13	Y	Y	Y	Y	Y	Y
Silt content	% w/w	25	Y	Y	Y	Y	Y	Y
Sand content	% w/w	62	Y	Y	Y	Y	Y	Y
Soil texture	class	-						

Stone content								
>2mm	% w/w	3	Y	Y	Y	Y	Y	Y
>20mm	% w/w	0	Y	Y	Y	Y	Y	Y
>50mm	% w/w	0	Y	Y	Y	Y	Y	Y

Mass loss on ignition								
Clay 5-20%	% w/w	8.8	Y	Y	Y	Y	Y	Y
Clay 20-35%	% w/w	-	-	-	-	-	-	-
pH	pH units	8.5	Y	N	Y	Y	N	Y
Carbonate (calcareous only)	% w/w CaCO ₃	1.2			Y			Y
Nitrogen (total)	% w/w N	2.91	Y	Y	Y			
Carbon:Nitrogen ratio	-	1.0	Y	Y	Y	Y	Y	Y
Phosphorus (extractable)	mg/l P	109	Y	Y	Y	N	N	N
Potassium (extractable)	mg/l K	447	Y	Y	Y			
Magnesium (extractable)	mg/l Mg	71	Y	Y	Y			
Electrical conductivity	µS/cm	94	Y					

Phytotoxic contaminants (by soil pH)								
Copper (Nitric acid extract)	mg/kg Cu	14	Y	Y	Y	Y	Y	Y
Nickel (Nitric acid extract)	mg/kg Ni	9	Y	Y	Y	Y	Y	Y
Zinc (Nitric acid extract)	mg/kg Zn	30	Y	Y	Y	Y	Y	Y

VISIBLE CONTAMINANTS								
(air-dried soil)	% w/w	<0.1	Y	Y	Y	Y	Y	Y
...of which plastics	% w/w	<0.1	Y	Y	Y	Y	Y	Y
Sharps	% w/w	None	Y	Y	Y	Y	Y	Y

DECLARATION

I certify that this sample has been analysed in accordance with BS3882:2015.

Signature

Name

Rachael Burton

Position

Reporting Team Lead

Unit 6 Parkhead, Greencroft Industrial Park, Stanley, County Durham, DH9 7YB
 Tel 01207 528578 Email customerservices@chemtech-env.co.uk
 Vat Reg No. 772 5703 18 Registered in England number 4284013



ANALYTICAL TEST REPORT

Contract no: 107504

Contract name: Knutsford Topsoil

Client reference: Stockpile 1

Clients name: DHI Excavations

Clients address: 11-13 Church Street
Farnworth
Bolton
BL4 8AG

Samples received: 25 March 2022

Analysis started: 25 March 2022

Analysis completed: 01 April 2022

Report issued: 01 April 2022

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
\$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing
NAD	No Asbestos Detected

Approved by:

Rachael Burton

Reporting Team Lead

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
107504-1	Sample 1	-	Sandy Loam with Roots	-	-	16.8

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SOILS

Lab number Sample id Depth (m) Date sampled			107504-1 Sample 1 - 24/03/2022
Test	Method	Units	
Arsenic (total)	CE127 ^M	mg/kg As	5.4
Barium (total)	CE127 ^M	mg/kg Ba	41
Cadmium (total)	CE127 ^M	mg/kg Cd	<0.2
Chromium (total)	CE127 ^M	mg/kg Cr	26
Copper (total)	CE127 ^M	mg/kg Cu	13
Lead (total)	CE127 ^M	mg/kg Pb	29
Mercury (total)	CE127 ^M	mg/kg Hg	<0.5
Nickel (total)	CE127 ^M	mg/kg Ni	8.6
Selenium (total)	CE127 ^M	mg/kg Se	0.5
Vanadium (total)	CE127 ^M	mg/kg V	19
Zinc (total)	CE127 ^M	mg/kg Zn	36
pH	CE004 ^M	units	8.5
Sulphate (total)	CE062 ^M	mg/kg SO ₄	584
Cyanide (free)	CE077	mg/kg CN	<1
Cyanide (total)	CE077	mg/kg CN	<1
Phenols (total)	CE078	mg/kg PhOH	<0.5
PAH			
Naphthalene	CE087 ^M	mg/kg	<0.02
Acenaphthylene	CE087 ^M	mg/kg	<0.02
Acenaphthene	CE087 ^M	mg/kg	<0.02
Fluorene	CE087 ^U	mg/kg	<0.02
Phenanthrene	CE087 ^M	mg/kg	0.06
Anthracene	CE087 ^U	mg/kg	<0.02
Fluoranthene	CE087 ^M	mg/kg	0.15
Pyrene	CE087 ^M	mg/kg	0.14
Benzo(a)anthracene	CE087 ^U	mg/kg	0.13
Chrysene	CE087 ^M	mg/kg	0.16
Benzo(b)fluoranthene	CE087 ^M	mg/kg	0.22
Benzo(k)fluoranthene	CE087 ^M	mg/kg	0.07
Benzo(a)pyrene	CE087 ^U	mg/kg	0.12
Indeno(123cd)pyrene	CE087 ^M	mg/kg	0.09
Dibenz(ah)anthracene	CE087 ^M	mg/kg	0.02
Benzo(ghi)perylene	CE087 ^M	mg/kg	0.08
PAH (total of USEPA 16)	CE087	mg/kg	1.22
TPH			
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<1
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<1
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1

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SOILS

Lab number Sample id Depth (m) Date sampled			107504-1 Sample 1 - 24/03/2022
Test	Method	Units	
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	1
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10
Total Aromatic (>C5-C44)	CE225	mg/kg	<19
Total Aliphatic (>C5-C44)	CE225	mg/kg	<19
Total Aliphatic/Aromatic (>C5-C44)	CE225	mg/kg	<19
Volatiles			
Vinyl chloride	CE174	mg/kg	<0.01
1,1-Dichloroethene	CE174	mg/kg	<0.01
Trans-1,2-Dichloroethene	CE174	mg/kg	<0.01
Cis-1,2-Dichloroethene	CE174	mg/kg	<0.01
1,1,1-Trichloroethane	CE174	mg/kg	<0.01
Carbon tetrachloride	CE174	mg/kg	<0.01
1,2-Dichloroethane	CE174	mg/kg	<0.01
Trichloroethene	CE174	mg/kg	<0.01
1,1,2-Trichloroethane	CE174	mg/kg	<0.01
Tetrachloroethene	CE174	mg/kg	<0.01
1,1,1,2-Tetrachloroethane	CE174	mg/kg	<0.01
Subcontracted analysis			
Asbestos (qualitative)	\$	-	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Barium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ba
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Vanadium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg V
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE062	Sulphate (total)	Acid extraction, ICP-OES	Dry	M	100	mg/kg SO ₄
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE077	Cyanide (total)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE078	Phenols (total)	Extraction, Continuous Flow Colorimetry	As received		0.5	mg/kg PhOH
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg
CE225	Total Aromatic (>C5-C44)	Sum of Aromatic VPH (>C5-C10) & EPH (>C10-C44)	As received		19	mg/kg
CE225	Total Aliphatic (>C5-C44)	Sum of Aliphatic VPH (>C5-C10) & EPH (>C10-C44)	As received		19	mg/kg
CE225	Total Aliphatic/Aromatic (>C5-C44)	Sum of Aliphatic & Aromatic VPH (>C5-C10) & EPH (>C10-C44)	As received		19	mg/kg
CE174	Vinyl chloride	Headspace GC-MS	As received		0.01	mg/kg
CE174	1,1-Dichloroethene	Headspace GC-MS	As received		0.01	mg/kg
CE174	Trans-1,2-Dichloroethene	Headspace GC-MS	As received		0.01	mg/kg
CE174	Cis-1,2-Dichloroethene	Headspace GC-MS	As received		0.01	mg/kg
CE174	1,1,1-Trichloroethane	Headspace GC-MS	As received		0.01	mg/kg
CE174	Carbon tetrachloride	Headspace GC-MS	As received		0.01	mg/kg
CE174	1,2-Dichloroethane	Headspace GC-MS	As received		0.01	mg/kg
CE174	Trichloroethene	Headspace GC-MS	As received		0.01	mg/kg
CE174	1,1,2-Trichloroethane	Headspace GC-MS	As received		0.01	mg/kg
CE174	Tetrachloroethene	Headspace GC-MS	As received		0.01	mg/kg
CE174	1,1,1,2-Tetrachloroethane	Headspace GC-MS	As received		0.01	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
107504-1	Sample 1	-	N	

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

APPENDIX 04

Chemical Analyses from Site

FINAL ANALYTICAL TEST REPORT

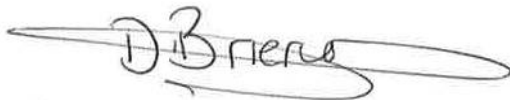
Envirolab Job Number: 22/06191
Issue Number: 1

Date: 01 July, 2022

Client: WML Construction
No 8 Oak Green
Earl Road
Stanley Green Business Park
Cheadle Hulme
Cheshire
SK8 6QL

Project Manager: Thomas Sheen
Project Name: Gate Street, Openshaw
Project Ref: 10475G
Order No: 10475G
Date Samples Received: 24/06/22
Date Instructions Received: 24/06/22
Date Analysis Completed: 01/07/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/06191

Client Project Name: Gate Street, Openshaw

Client Project Ref: 10475G

Lab Sample ID	22/06191/1	22/06191/2	22/06191/3	22/06191/4	22/06191/5	22/06191/6		Units	Limit of Detection	Method ref
Client Sample No	1	1	1	1	1	1				
Client Sample ID	TS P03	SS P03	TS P05	SS P05	TS P07	SS P07				
Depth to Top	0.00	0.20	0.00	0.20	0.00	0.30				
Depth To Bottom	0.10	0.30	0.10	0.30	0.10	0.40				
Date Sampled	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	5AE	5E	5E	5E	5AE	5AE				
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		% w/w	0.1	A-T-044
pH _D ^{M#}	6.52	7.03	6.89	7.78	6.83	7.64		pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01	0.02	<0.01	0.06	0.03	0.07		g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	750	710	760	600	870	740		mg/kg	200	A-T-028s
Sulphur (total) _D	506	445	521	393	541	448		mg/kg	50	A-T-024s
Cyanide (total) _A ^{M#}	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		mg/kg	0.2	A-T-050s
Organic Matter _D ^{M#}	8.2	6.5	8.0	3.8	9.1	4.7		% w/w	0.1	A-T-032 OM
Arsenic _D ^{M#}	14	8	14	3	13	6		mg/kg	1	A-T-024s
Boron (water soluble) _D	<1.0	1.1	<1.0	<1.0	<1.0	1.6		mg/kg	1	A-T-027s
Cadmium _D ^{M#}	1.0	0.9	1.0	0.7	1.0	0.8		mg/kg	0.5	A-T-024s
Copper _D ^{M#}	42	31	42	22	208	21		mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-040s
Lead _D ^{M#}	89	79	91	71	95	71		mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17		mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	18	17	19	16	19	16		mg/kg	1	A-T-024s
Selenium _D ^{M#}	1	<1	<1	<1	2	<1		mg/kg	1	A-T-024s
Vanadium _D ^{M#}	33	29	36	24	34	27		mg/kg	1	A-T-024s
Zinc _D ^{M#}	84	89	89	88	85	94		mg/kg	5	A-T-024s

Envirolab Job Number: 22/06191

Client Project Name: Gate Street, Openshaw

Client Project Ref: 10475G

Lab Sample ID	22/06191/1	22/06191/2	22/06191/3	22/06191/4	22/06191/5	22/06191/6		Units	Limit of Detection	Method ref
Client Sample No	1	1	1	1	1	1				
Client Sample ID	TS P03	SS P03	TS P05	SS P05	TS P07	SS P07				
Depth to Top	0.00	0.20	0.00	0.20	0.00	0.30				
Depth To Bottom	0.10	0.30	0.10	0.30	0.10	0.40				
Date Sampled	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	5AE	5E	5E	5E	5AE	5AE				
Asbestos in Soil (inc. matrix)										
Asbestos in soil _D [#]	NAD	NAD	NAD	NAD	NAD	NAD				A-T-045
Asbestos Matrix (visual) _D	-	-	-	-	-	-				A-T-045
Asbestos Matrix (microscope) _D	-	-	-	-	-	-				A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	N/A	N/A	N/A	N/A				A-T-045

Envirolab Job Number: 22/06191

Client Project Name: Gate Street, Openshaw

Client Project Ref: 10475G

Lab Sample ID	22/06191/1	22/06191/2	22/06191/3	22/06191/4	22/06191/5	22/06191/6		Units	Limit of Detection	Method ref
Client Sample No	1	1	1	1	1	1				
Client Sample ID	TS P03	SS P03	TS P05	SS P05	TS P07	SS P07				
Depth to Top	0.00	0.20	0.00	0.20	0.00	0.30				
Depth To Bottom	0.10	0.30	0.10	0.30	0.10	0.40				
Date Sampled	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22	22-Jun-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	5AE	5E	5E	5E	5AE	5AE				
PAH-16MS										
Acenaphthene _A ^{M#}	0.10	0.03	0.09	0.02	0.10	0.04		mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	0.14	0.04	0.12	0.07	0.14	0.07		mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.38	0.09	0.26	0.22	0.35	0.23		mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.36	0.06	0.24	0.23	0.47	0.26		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.43	0.09	0.28	0.28	0.51	0.29		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.20	<0.05	0.12	0.14	0.33	0.15		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.14	<0.07	0.09	0.08	0.16	0.09		mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	0.48	0.11	0.37	0.29	0.48	0.32		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	0.99	0.23	0.78	0.52	0.83	0.57		mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	0.06	0.03	0.05	0.02	0.06	0.02		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.24	<0.03	0.14	0.18	0.40	0.18		mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	0.64	0.20	0.55	0.26	0.62	0.29		mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	0.91	0.20	0.71	0.48	0.80	0.52		mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	5.07	1.08	3.80	2.79	5.25	3.03		mg/kg	0.01	A-T-019s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Subscript "A" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.

EPH CWG results have humics mathematically subtracted through instrument calculation

TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these

humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client:	WML Construction , No 8 Oak Green, Earl Road, Stanley Green Business Park, Cheadle Hulme, Cheshire, SK8 6QL	Project No:	22/06191
Project:	Gate Street, Openshaw	Date Received:	24/06/2022 (am)
Clients Project No:	10475G	Cool Box Temperatures (°C):	17.3

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/06191/1	22/06191/2	22/06191/3	22/06191/4	22/06191/5	22/06191/6
Client Sample No	1	1	1	1	1	1
Client Sample ID/Depth	TS P03 0.00-0.10m	SS P03 0.20-0.30m	TS P05 0.00-0.10m	SS P05 0.20-0.30m	TS P07 0.00-0.10m	SS P07 0.30-0.40m
Date Sampled	22/06/22	22/06/22	22/06/22	22/06/22	22/06/22	22/06/22
A-T-019s	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
A-T-024s	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
A-T-026s	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
A-T-027s	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
A-T-028s	30/06/2022	30/06/2022	30/06/2022	30/06/2022	30/06/2022	30/06/2022
A-T-031s	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
A-T-032 OM	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
A-T-040s	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
A-T-042sTCN	01/07/2022	01/07/2022	01/07/2022	01/07/2022	01/07/2022	01/07/2022
A-T-044	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
A-T-045	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
A-T-050s	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022	28/06/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX 05

Capping Soil Import Dockets

P.P. O'CONNOR

Committed To Excellence

R-7493

Conveyance Note

No 356031

61 Mosley Road, Trafford Park
Manchester M17 1GJ

This material has been produced in accordance with P.P. O'Connor's
Protocol for the production of Recycled Aggregates

Delivery Code

P35

Waste Carriers Licence Number CBDU101751		Contract No:	
Customers Name: J A YATES			
Drivers Name		Vehicle Registration	
I DAVISON		MIA XES	
Delivery/Collection Address		Signature	
GATE ST OPENSHAW		[Signature]	
Delivery/Collection Address		Date and Time	
		01/06/22	
Off Site Material Category		Weight	Tonne
Spoil - inert		GROSS WEIGHT OF VEHICLE	32000
Spoil - Non Hazardous			
Spoil - Hazardous			
Other - State			
Imported Materials		TARE WEIGHT OF VEHICLE	12000
Material	Description	NETT WEIGHT	20000
Recycled Aggregate			
Quarried Aggregate			
Other State	TOP SOIL		
TIME ON SITE	0955	STATE REASON FOR WAITING TIME	
TIME OFF SITE	10		
WAITING TIME			
DAYWORK			
CUSTOMERS SIGNATURE		PRINT NAME	
[Signature]		Milner	

Conditions of Sale: It is essential that all of the written particulars entered above should be checked by the consignee note once signed by the consignee represents formal acceptance of the materials in good order and condition, and/or the removal off site of the waste produced, and subsequent complaints and or claims cannot be accepted by P.P. O'Connor. All complaints, whatever in nature must be made to the driver of the vehicle and be confirmed in writing to P.P. O'Connor immediate.

P.P.O'Connor's Terms and Conditions prevail at all times

E16

P.P. O'CONNOR

Committed To Excellence

R-7493

Conveyance Note

No 356028

61 Mosley Road, Trafford Park
Manchester M17 1GJ

This material has been produced in accordance with P.P. O'Connor's
Protocol for the production of Recycled Aggregates

Delivery Code

P35

Waste Carriers Licence Number CBDU101751

Contract No:

Customers Name:

JA YATES

Drivers Name

Vehicle Registration

Signature

1 DAWSON

MMA053

Date and Time

Delivery/Collection Address

GATE ST
OPENSHAW

01/06/22

Off Site Material Category

Weight

Tonne

Spoil - inert

Spoil - Non
Hazardous

Spoil -
Hazardous

Other - State

GROSS WEIGHT OF
VEHICLE

32000

TARE WEIGHT OF
VEHICLE

12000

NETT WEIGHT

20000

Imported Materials

- Material

Description

Recycled
Aggregate

Quarried
Aggregate

Other State

TOP SOIL

TIME ON SITE

TIME OFF SITE

WAITING TIME

DAYWORK

CUSTOMERS SIGNATURE

STATE REASON FOR WAITING TIME

PRINT NAME

Conditions of Sale: It is essential that all of the written particulars entered above should be checked by the consignee note once signed by the consignee represents formal acceptance of the materials in good order and condition, and/or the removal off site of the waste produced, and subsequent complaints and or claims cannot be accepted by P.P. O'Connor. All complaints, whatever in nature must be made to the driver of the vehicle and be confirmed in writing to P.P. O'Connor immediate.

P.P.O'Connor's Terms and Conditions prevail at all times

No 361351

61 Mosley Road, Trafford Park
Manchester M17 1GJ

This material has been produced in accordance with P.P. O'Connor's
Protocol for the production of Recycled Aggregates

Delivery Code

P35

Waste Carriers Licence Number CBDU101751		Contract No:	
Customers Name: J A Yates			
Drivers Name	Vehicle Registration	Signature	
Charley	MR 21 BZM		
Delivery/Collection Address		Date and Time	
Gate 8T. Openshawe.		06 06 22	
Off Site Material Category		Weight	Tonne
Spoil - inert		GROSS WEIGHT OF VEHICLE	32000
Spoil - Non Hazardous			
Spoil - Hazardous			
Other - State			
Imported Materials		TARE WEIGHT OF VEHICLE	12000.
- Material	Description	NETT WEIGHT	20000.
Recycled Aggregate			
Quarried Aggregate			
Other State	Topsoil.		
TIME ON SITE		STATE REASON FOR WAITING TIME	
TIME OFF SITE			
WAITING TIME			
DAYWORK			
CUSTOMERS SIGNATURE		PRINT NAME	

Conditions of Sale: It is essential that all of the written particulars entered above should be checked by the consignee note once signed by the consignee represents formal acceptance of the materials in good order and condition, and/or the removal off site of the waste produced, and subsequent complaints and or claims cannot be accepted by P.P. O'Connor. All complaints, whatever in nature must be made to the driver of the vehicle and be confirmed in writing to P.P. O'Connor immediate.

P.P.O'Connor's Terms and Conditions prevail at all times

DHI Excavations Ltd**Collection / Delivery Note****Bulk Excavation • Demolition • Aggregates • Soils • Grab Hire • Tipper Hire**

11 - 13 Church Street, Farnworth, Bolton, BL4 8AG

Tel: 0161 794 4550 • fax: 0161 790 8088 • mobile: 07921 833673

Email: enquiries@dhiexcavations.co.uk Web: www.dhiexcavations.co.uk

No: 297806

Date: 12-7-22

WCL No: CB/DU181466

SIC CODE:

Customer:

J. GREENWOODS

Location:

GATE ST, OPENSHAW

Vehicle Reg:

NK17 LBA

Driver Name:

ANDY

Vehicle Type:

8W TIPPER

6W GRAB

8W GRAB

OTHER

Material:

Weight: Weight:

TONNE / KG

DELAYS OR WAITING TIME

TOP
SOIL

Gross:

BS 3882

ARR

DEP

HR

EWC Code:

Tare:

REASON FOR DELAY:

Net:

DELIVERED

Daywork:

Hours Worked:

Travel Time:

Total Time:

Consignee Signature:

N. GAGLIARDI

Time:

Print Name:

N. GAGLIARDI

Conditions of Sale: It is essential that all written particulars entered above should be carefully checked by the consignee since this delivery note, once signed by the consignee represents formal acceptance of the material in good order and condition and subsequent complaints cannot be accepted. All complaints whether in respect of material or circumstance of delivery must be made to the driver of the vehicle and confirmed in writing direct to the company immediately.

DHI Excavations Ltd

Bulk Excavation • Demolition • Aggregates • Soils • Grab Hire • Tipper Hire

11 - 13 Church Street, Farnworth, Bolton. BL4 8AG

Tel: 0161 794 4550 • fax: 0161 790 8088 • mobile: 07921 833673

Email: enquiries@dhiexcavations.co.uk Web: www.dhiexcavations.co.uk

Collection / Delivery Note

No: 261234

Date: 8/16/22

WCI No: CB/DU181466

SIC CODE:

Customer: J. Greenwood

Location: Gate St Openshaw

Vehicle Reg: PE67 WKP

Driver Name: Craig

Vehicle Type:	8W TIPPER	6W GRAB	8W GRAB	OTHER
	☒	☐	☐	☐

Material: TOP SOIL Weight: TONNE / KG DELAYS OR WAITING TIME
Delivered
 Gross: _____ ARR _____ DEP _____ HR
 Tare: _____ REASON FOR DELAY:
 EWC Code: _____ Net: _____

Daywork: _____ Hours Worked: _____ Travel Time: _____ Total Time: _____

Consignee Signature: N. [Signature] Time: _____

Print Name: _____

Conditions of Sale: It is essential that all written particulars entered above should be carefully checked by the consignee since this delivery note, once signed by the consignee represents formal acceptance of the material in good order and condition and subsequent complaints cannot be accepted. All complaints whether in respect of material or circumstance of delivery must be made to the driver of the vehicle and confirmed in writing direct to the company immediately

DHI Excavations Ltd

Bulk Excavation • Demolition • Aggregates • Soils • Grab Hire • Tipper Hire

11 - 13 Church Street, Farnworth, Bolton. BL4 8AG

Tel: 0161 794 4550 • fax: 0161 790 8088 • mobile: 07921 833673

Email: enquiries@dhiexcavations.co.uk Web: www.dhiexcavations.co.uk

Collection / Delivery Note

No: 262777

Date: 8/06/22

WCI No: CB/DU181466

SIC CODE:

Customer: J GREENWOODS

Location: GATE ST, OPENSRAW M11 2

Vehicle Reg: Y1K64 SUM

Driver Name: K LONGFIELD

Vehicle Type:	8W TIPPER	6W GRAB	8W GRAB	OTHER
	☒	☐	☐	☐

Material: TOPSOIL Weight: TONNE / KG DELAYS OR WAITING TIME
bs 3882 1 x 8W LOAD DEL
 Gross: _____ ARR _____ DEP _____ HR
 Tare: _____ REASON FOR DELAY:
 EWC Code: _____ Net: _____

Daywork: _____ Hours Worked: _____ Travel Time: _____ Total Time: _____

Consignee Signature: N. [Signature] Time: _____

Print Name: _____

Conditions of Sale: It is essential that all written particulars entered above should be carefully checked by the consignee since this delivery note, once signed by the consignee represents formal acceptance of the material in good order and condition and subsequent complaints cannot be accepted. All complaints whether in respect of material or circumstance of delivery must be made to the driver of the vehicle and confirmed in writing direct to the company immediately

APPENDIX 06

United Utilities Risk Assessment

Supplementary guidance for the selection of water pipes in land potentially affected by contamination

Introduction

In January 2011, UK Water Industry Research (UKWIR) published “Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites” (Ref 10/WM/03/21; the ‘UKWIR Guidance’). Its aim is to ensure that the correct materials are selected for water pipes and components to be used below ground in brownfield sites to protect the quality of drinking water whilst taking into account the service life of the water distribution system. It supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 “Laying Pipes in Contaminated Land” which has been withdrawn.

The UKWIR Guidance is for use by developers, self-lay organisations, water companies and consultants when planning, designing and constructing water mains and/or services in brownfield sites. It defines brownfield sites as “land or premises that have previously been used or developed. They may also be vacant or derelict. However, they are not necessarily contaminated.” The UKWIR Guidance states that it does not apply to greenfield sites; however, we consider this supplementary guidance and the relevant sections of the UKWIR guidance as being equally suitable for application to those greenfield sites considered to be potentially affected by contamination. Where greenfield sites are not affected by contamination a preliminary risk assessment (see below) will suffice.

The UKWIR Guidance also states that there should be no departure from its provisions “*except where formally approved by the Water Company, such departure being technically justifiable or representing advances in knowledge or product development*”.

We have adopted the UKWIR Guidance in principle and produced this company specific supplementary guidance (the ‘UUW Guidance’) which includes the Risk Assessment for Water Pipes (the ‘RA’).

This guidance does not cover operative safety, health exposure modelling or accidental pipe damage.

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

Any application for new water supplies to a development (construction of new properties, or renovation or conversion of existing buildings) in land potentially affected by contamination shall include a completed RA.

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication “Model Procedures for the Management of Land Contamination” (ref: CLR11) that sets out whether the land through

which the pipes are to be laid may be affected by contamination. The application of the source, pathway, receptor concept will be an integral part of any pipeline risk assessment. For each potential source (the contamination) and each potential receptor (the water pipe), consideration shall be given to whether a potential pathway between source and receptor exists, or may exist in the future, linking the two. There are normally only three pathways by which contamination may come into contact with water pipes. These are direct contact with the soil or backfill, an excessive vapour phase or a contaminated groundwater regime. If none of these conditions exist on site (adopting the source, pathway, receptor concept) then it is likely that extended and/or targeted soil testing will not be required and a simple risk assessment will suffice. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. The testing requirements are as described in the following section.

The signatories of the Water Supply Application Form and the RA must ensure that all assessments of land condition have been carried out in accordance with applicable current standards and guidelines by or under the direction of a suitably qualified competent person.

We require the competent person to be a) a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or b) a Specialist in Land Condition (SiLC) with appropriate geo-environmental experience.

How to contact us about the information in this leaflet



DeveloperServicesWater@uuplc.co.uk



0345 072 6067

Opening hours:
8am-5pm Mon to Thurs
8am-4.30pm Fri

Testing Requirements

The soil, rock and if appropriate groundwater tests that are required on all sites where the potential for organic contamination has been identified in the desk study and where water pipes are proposed to be laid must be accredited by United Kingdom Accreditation Service (UKAS) as a minimum and where commercially available the Environment Agency's Monitoring Certification Service (MCERTS). These accredited tests should be undertaken for:

Banded hydrocarbons EC5-EC10, EC10-EC16, EC16-EC40 (Total aliphatic and aromatic hydrocarbons for each banding may be summed). Aliphatic/aromatic fractionation and subsequent banding may be required should a more detailed site specific risk assessment be undertaken. The bandings have been amended to take into account readily available laboratory tests. The equivalent carbon number (EC) is used to assess petroleum hydrocarbon mixtures rather than the actual number of carbon atoms in the molecule in line with guidance issued by the Environment Agency (2005).

Volatile organic compounds (VOCs) (method by head space or purge & trap GCMS) with tentative identification of compounds greater than 20µg/kg. The method used should be capable of detecting a wide range of compounds listed in US EPA Method 8260C or similar. The method should include analysis of naphthalene.

BTEX (Benzene, toluene, ethyl benzene and xylenes) plus MTBE (Methyl-tertiary butyl ether) (by head space GCMS)

Semi-Volatile Organic Compounds (SVOCs) (method by GCMS) with tentative identification of compounds greater than 20µg/kg The method used should be capable of detecting the compounds listed in US EPA Method 8270D or similar. The total concentration of SVOCs excludes polycyclic aromatic hydrocarbons, ethers, nitrobenzene, ketones, aldehydes, phenols, cresols and chlorinated phenols. Phenols, cresols and chlorinated phenols which are detected by the SVOC analysis are given their own assessment criteria.

We do not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in the RA below replaces Table 3.1 of the UKWIR Guidance.

Where previous site uses include the use, storage, treatment, disposal or manufacture of any of the following, appropriate testing for these substances will be required:

- Ethers, nitrobenzene, ketones, aldehydes and amines. Note that the presence of amines on any site at the proposed pipe depth +/- 1.0m precludes the use of polyethylene. The methods of analysis and method of calculation of total concentrations of these compounds will need to be agreed with UUW.

To comply with the testing requirements, the suites of tests that are required on all brownfield sites where wrapped steel, wrapped ductile iron or copper pipes are to be laid as minimum must include:

- pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

Where required a sufficient number of test results should be obtained from the material in which the pipes are to be laid. CLAIRE/CIEH 2008 "Guidance on comparing soil contamination data with a critical concentration" may be used, where appropriate, to justify the number of soil samples tested; however, this statistical model should not be used on heterogeneous materials or used to average test results from different types of materials.

Further guidance on representative sampling is contained within BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites, the Department of the Environment's Contaminated Land Research Report "Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4; 1994) and the Environment Agency's "Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination" (ref: R&D Technical Report P5-066/TR; 2000).

Where remediation has been carried out on the site, the test results obtained from validation samples will be used in the assessment. Where a horizontal capping system has been or will be employed using materials spread across a site, sufficient samples will need to be taken to characterise the capping material used and the results presented to UUW. However, the sufficiency of sampling on the horizontal capping system, in which the pipeline will be placed, may be assessed on the basis of the source, quantity and type of materials used.

Detection Limits

Only positive concentrations, ie those above the limit of detection should be used in summation of VOC and SVOC (or other test groups of compounds ie phenols, cresols and chlorinated phenols). Laboratory methods shall provide a minimum limit of detection of 10µg/kg for each individual VOC or SVOC (or other test groups of compounds) quantitatively detected in accordance with the methods described above. For tentatively identified compounds (TICs), only those compounds with a concentration of 20µg/kg or greater shall be used in the summation of VOC and SVOC (or other test groups of compounds).

Protective Measures

Where polyethylene, ductile iron, steel or copper pipes are to be laid on a brownfield site or other land potentially affected by contamination (whether or not it has been remediated) and where the concentrations exceed the generic guideline values set out in Table 1 of the RA, the developer shall provide either:

- a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or
- b) more suitable pipe materials; or
- c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

Liquid free phase product (e.g. oil or free solvent layers) shall not remain in the ground or groundwater in the vicinity of water pipes, whether barrier pipe or any other pipe materials are used.

When designing pipe routes on land potentially affected by contamination, new preferential contamination pathways along the route of new water pipes shall not be created. Particular measures may be required to prevent the possible migration of contamination through pipe bedding and into controlled waters.

References

BS10175: 2011

"Investigation of Potentially Contaminated Sites Code of Practice"

CLAIRE/CIEH

"Guidance on comparing soil contamination data with a critical concentration" 2008

Department of the Environment Contaminated Land Research Report

"Sampling strategies for contaminated land"
prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4) 1994

Environment Agency

"Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination"
(ref: R&D Technical Report P5-066/TR) 2000

Environment Agency

"Model Procedures for the Management of Land Contamination" (ref: CLR11), 2004

Environment Agency P5-080/TR3

"The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils", 2005

UK Water Industry Research (UKWIR)

"Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21) January 2011

Water Regulations Advisory Scheme (WRAS)

Information and Guidance Note 9-04-03

"Laying Pipes in Contaminated Land" 2002

Frequently asked questions

Why has UUW published supplementary guidance to the 'UKWIR Guidance for the Selection of Water Pipes to be used in Brownfield Sites'?

UUW agrees with the UKWIR Guidance in principle; we have published supplementary guidance to clarify some of the areas in which it will operate.

Does the UKWIR Guidance only apply to 'brownfield sites'?

Yes, the UKWIR Guidance does apply to brownfield sites; in addition United Utilities Water will apply this guidance and the UUW supplementary guidance to any greenfield sites which are potentially affected by contamination.

Who is responsible for completing/ signing the Risk Assessment for Water Pipes (RA)?

This may be the Developer, the Developers representative, or the competent person directing the land assessment. The signatory of the Risk Assessment for Water Pipes (RA) must ensure that all land assessments have been carried out in accordance with current standards and guidelines by or under the direction of a suitably qualified competent person. For water supply applications on land potentially affected by contamination, UUW requires the competent person to be either a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or a Specialist in Land Condition (SiLC). This level of competency is intended to promote good practice and high professional standards and is no greater than that required for planning purposes by Local Authorities.

Do we need to agree the number and location of soil samples with the Water Company as indicated by the UKWIR guidance following the Preliminary Risk Assessment (PRA)?

Where a preliminary risk assessment (PRA) highlights the need for a site investigation UUW considers it is a responsibility of the qualified competent person directing the land assessment to determine the location and frequency of sampling. UUW's role would be to confirm that the appropriate

choice of pipe material has been made on the basis of the information provided.

What do we do if the pipe route is not known when the Site Investigation report is commissioned?

Where the route of the pipe is not known at the site investigation stage, then any resultant pipe selection needs to take account of any contamination found on the site. Consideration should be given to identifying the route and depth of the pipeline at the site investigation stage to avoid unnecessary testing.

Is it acceptable not to undertake a site investigation and specify the use of barrier pipe which seems to be suitable for all conditions?

Not all brownfield land is contaminated, and because of that a default to barrier pipe is not an acceptable approach to UUW, due to the possibility of higher installation and future maintenance costs. The approach as to whether a site investigation is needed should be risk based. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the ground materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials.

Examples where defaulting to barrier pipe would not be acceptable:

- Where a capping layer (non-contaminated) is introduced within which the pipes will be installed.
- Sites with a potential low risk for contamination.
- Where liquid free phase product (e.g. oil or free solvent layers) is in the ground or groundwater in the vicinity of water pipes.
- Where the route of the pipe could be diverted to another suitable location free from contamination.

Are UUW employees who will assess the Design Proposals for contaminated sites suitably qualified?

It is the role of the Developer's suitably qualified competent person to deal with or direct the assessment of land. UUW's role is to assess the Risk Assessment for Water

Pipes and supporting Site Assessment Report (SAR) which is provided with any new water supply application (ie. it has been provided in the correct format, proposals for pipe selection are included, the methodology is in line with the UKWIR Guidance and UUW Supplementary Guidance, it has been directed by a suitably qualified competent person etc.). If UUW do need to provide assistance or information in deciding pipe materials then the assessment would be carried out under the direction of a suitably qualified competent person.

What happens to existing PE that is in the ground under the "old" guidelines?

The latest UKWIR guidance and UUW's supplementary guidance are intended to be used to decide what pipe materials will be used for new water mains and services. It will have no effect for developers with regard to any parts of UUW's existing network.

Will the Developer be required to submit a fully completed Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, for both the option of a mains requisition application and the option of a self-lay application?

Yes, UUW expect the 'Developer', as defined in UUW Supplementary Guidance, to submit a Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, in respect of any water pipes being installed on the development irrespective of who is to install them.

Does Table 1 in UUW's Risk Assessment for Water Pipes (RA) replace any of the tables to be completed in the Site Assessment Report (SAR) as required in the UKWIR Guidance?

UUW does not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in UUW's RA replaces Table 3.1 of the UKWIR Guidance.

Have any other Water Companies adopted the UKWIR Guidance yet?

You will need to contact the water company concerned if you are intending to install water pipes outside UUW's licensed area.

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

Risk assessment for water pipes (RA)

The risk assessment for water pipes will help you choose appropriate materials for your development. We are happy to deal with a risk assessment for water pipes in advance of any formal application for a new water supply.

If you need any help completing the form please call us on **0345 072 6067**.

Section 1: Development details

Development name <i>(if it has one)</i>	
Development address	
OS Grid reference <i>(mid point)</i>	
Developer's name	
UUW reference number <i>(for UU use only)</i>	

Please provide details below of the current and historical use of the site and adjacent sites.

If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.

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Section 2: Preliminary risk assessment

Has your desk study and site walkover identified any land potentially affected by contamination?	☐ Yes ☐ No
If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i>	

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Section 3: Intrusive site investigation																									
Have you completed any intrusive site investigation?	☐ Yes ☐ No																								
Have you completed any none intrusive site investigation?	☐ Yes ☐ No																								
Date(s) when the site investigation(s) undertaken	<table><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>																								
At what level has groundwater been encountered?	<table><tr><td></td><td>metres below ground level or</td></tr><tr><td colspan="2">☐ Not encountered</td></tr></table>		metres below ground level or	☐ Not encountered																					
	metres below ground level or																								
☐ Not encountered																									
Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing. <i>If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.</i>																									
If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE. Please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i>																									
Section 4: Site remediation																									
Please provide details below of any site remediation (which may include a change in site levels) already completed. <i>If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.</i>																									
Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☐ Yes ☐ No ☐ N/A																								
Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection. <i>If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.</i>																									

Section 5: Final use of site

Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection.

If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.

What water pipe materials are intended to be used on site?

☐ PE ☐ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B
Other (please specify):

Section 6: Additional information

Please use the section below to provide any additional details to support your intended pipe selection.

Section 7: Risk assessor

Name and relevant qualifications of person directing the risk assessment for water pipes

Name and address of risk assessor's company

Date risk assessment performed

D	D	M	M	Y	Y	Y	Y
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Section 8: Declaration

I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and UUW's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information. I understand that failure to supply any of the required information may delay my application being processed.

Name

Company

Telephone

Date

D	D	M	M	Y	Y	Y	Y
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Please email the completed form and supporting information to **DeveloperServicesWater@uuplc.co.uk** or post to us at United Utilities Water, Developer Services, Second floor Grasmere House, Lingley Mere, Warrington WA5 3LP.



About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
Registered in England and Wales. Registered Number 2366678.

Table 1 - Pipe selection risk assessment summary (PSRAS)

1. Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2. If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below?

☐ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

All concentrations in mg/kg								
Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth See Note [2]	Maximum site concentration See Note [3]	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass					
Total BTEX & MTBE		0.1	Pass					
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass					
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass					
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass					
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass					
Phenols* (from SVOC analysis)		2	Pass					
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass					
Ethers*	Only where identified	0.5	Pass					
Nitrobenzene*		0.5	Pass					
Ketones*		0.5	Pass					
Aldehydes*		0.5	Pass					
Amines		Fail	Pass					
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]					

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.

APPENDIX 07

Soil Assessment Criteria

Site Specific Assessment Criteria for Residential (with homegrown produce) assuming a 1% SOM for Hydrocarbons

Contaminant	Assessment Criteria for Residential (mg/kg)
Metals	
Arsenic	37
Boron	290
Cadmium	26
Chromium III	910
Chromium VI	6
Copper	2,400
Lead*	200
Mercury	1.2
Nickel	130
Selenium	250
Vanadium	410
Zinc	3,700
Non – Metals	
Phenol	120
Polyaromatic Hydrocarbons (PAH)	
Benz[a]anthracene	7.2
Benzo[a]pyrene	2.2
Benzo[b]fluoranthene	2.6
Benzo[ghi]perylene	320
Benzo[k]fluoranthene	77
Chrysene	15
Dibenz[ah]anthracene	0.24
Fluoranthene	280
Indeno[123-cd]pyrene	27
Naphthalene	2.3
Pyrene	620

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* Where not included in the S4UL's criteria for a limited number of contaminants, namely lead, have been derived by DEFRA in their document entitled SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination, April 2014.