

Validation Completion Report

For a site at

St Thomas, Hazelbottom

Undertaken for

John Southworth Builders Ltd

Report Title:	St Thomas, Hazelbottom Validation Completion Report
Report Reference:	8243G-WML-00-XX-RP-G-0001
Client:	John Southworth Builders Ltd
Issue Date:	11th December 2019
Drafted By:	T P Booth <i>TP Booth</i>
Checked By:	S C Seddon <i>S. Seddon</i>
Authorised By:	S C Seddon <i>S. Seddon</i>

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Revision Status / History

Rev	Date	Issue	Prepared	Checked	Authorised
-	11/12/2019	Final	TPB	SCS	SCS

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1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting (WML) has been commissioned by John Southworth Builders Ltd to prepare a Validation Completion Report in relation to development the former St Thomas' School, located between Chataway Road and Hazelbottom Road, Manchester, M8 5UU.

Proposed Development

- 1.2 The development comprised the construction of twelve low-rise residential structures. External areas comprise hardstanding for access and parking together with private gardens.
- 1.3 A copy of the development by the architects Pozzoni, referenced P4674-01_8000, dated January 2018, is presented in Appendix 01.

Background

- 1.4 WML were initially commissioned by Mosscafe St Vincent's Housing Group 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 Geo-environmental Assessment, Reference 7540/G/01, dated March 2017.
 - Phase 2 Geo-environmental Investigation and Assessment, Reference 7540/G/02, dated October 2017.
- 1.5 Subsequently the following report was commissioned by John Southworth Builders Ltd in consideration of Condition 4a, on the Pozzoni Planning tracker, which outlines the need for remedial measures to be outlined and agreed as a pre-development requirement.
- Remediation Strategy, Reference 7453/G/04, dated February 2018.
- 1.6 The reports have been presented to Manchester City Council Planning Division in support of Planning Application No. 1117159/FO/2017.

Verification

- 1.7 This report presents the compilation of the remediation / validation information obtained during the redevelopment programme associated with the validation of ground gas protection measures and capping of landscaped areas as identified within the Remediation Strategy.

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 British Geological Survey (BGS) plans indicate that the site is underlain by alluvium, Glaciofluvial sand and gravel and at greater depths by cohesive Glacial Till. The drift deposits are underlain at greater depths by sandstone of the Chester Pebble Beds formation.
- 2.3 In consideration of the underlying geology, risks of subsidence from coal mining are considered low and can be discounted.
- 2.4 The property is not in a Radon Affected Area as defined by the Health Protection Agency.
- 2.5 The alluvium is classified by the Environment Agency as a Secondary A Aquifer. The underlying bedrock is classified as a Principal Aquifer. Intervening geology is likely to include glacial till which is relatively impermeable and therefore have no hydrogeological importance.
- 2.6 There are no Environment Agency Source Protection Zones (SPZ) within 500m of the site. There are no active groundwater abstraction licences within 1km of the site.
- 2.7 There are 4no recorded detailed river network features within 250m of the site. These all relate to the River Irk, some 105m east at its closest point.
- 2.8 There are 2no Environment Agency recorded historic landfills within 250m of the site. These relate to unknown waste types at Abraham Moss Centre approximately 77m west and inert wastes at Harpurhey Road around 195m east although no further information is available.
- 2.9 There is 1no site that has been determined as potentially Contaminated Land under Section 78R of the Environmental Protection Act 1990 within 250m of the study site. This relates to former mill ponds at Harpurhey Reservoir 105m east of the site, possibly associated with historical landfilling, although no further information is known.
- 2.10 Historically, the main part of the site was developed as a school sometime prior to 1893, although the north-eastern section was occupied by terraced residential properties. By 1970 the residential structures had been cleared. Sometime between the latest map of 2014 and the site inspection of March 2017 the site has been cleared and has since remained undeveloped.

Ground Conditions

- 2.11 Ground conditions encountered during the WML intrusive investigations comprised made ground to depths of between 0.30m and 1.60mbgl underlain by mixed granular and cohesive alluvium to 0.90m and 2.00mbgl. These were in turn underlain by glaciofluvial sand and gravel to a proven depth of 15.00mbgl.
- 2.12 No significant visual and/or olfactory evidence of significant ground contamination was identified during the investigation.
- 2.13 Standing groundwater levels were recorded at depths of between 1.75m and 3.10mbgl.
- 2.14 Chemical analysis indicated several exceedances of CoC's within the made ground, when compared to the LQM/CIEH reference values for 'residential with homegrown produce'. These relate in the main to arsenic, lead and PAH compounds, most likely due to the presence of ash and clinker within the made ground matrix. In addition 3no samples of made ground, namely TP1 at 0.30m; TP3 at 0.60m and TP6 at 0.40m were found to contain fibres of chrysotile (white) asbestos.

Ground Gas Monitoring

- 2.15 Ground gas monitoring was undertaken within 3no standpipes, primarily for methane and carbon dioxide, with associated flow rates, on 6no occasions between 16th October 2017 and 4th January 2018.
- 2.16 The results indicate no detectable concentrations of methane with carbon dioxide concentrations generally ranging from 0.4% to 8.8% by volume in air (v/v). No detectable positive ground gas flows were recorded during the monitoring visits.
- 2.17 The site classified as Characteristic Situation (CS) 2 – 'Low Gas Risk'. In addition, when compared to CIRIA C665:2007, the monitoring results give worst case gas screening values (GSV's) of Amber 1 in eleven out of eighteen gas monitoring situations.

3.0 SUMMARY OF REMEDIATION OBJECTIVES

3.1 The following objectives were outlined in the Remediation Strategy.

- Where required, documentation in relation to asbestos control measures.
- Details of any unexpected ground contamination 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.
- 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.
- Sample waste management records confirming compliance with Duty of Care regulations;
- Where appropriate, survey plans indicating spot levels in proposed landscaped areas taken before and after up-filling with imported sub-soil/Topsoil.
- Alternatively and where appropriate, photographic evidence of suitable sub-soil/Topsoil cover in garden/landscaped areas underlain by in situ made ground.
- Confirmation of potable water supply pipe materials.
- Details of the as built ground gas protection measures, to include as built drawings and records of the gas protection measures; materials specifications including sample photographs; plot specific Gas Validation Inspection Records with photographs of the installations, to include sealing details to penetrations, corner details and joints, telescopic vent details etc; defect repair details and subsequent photographs.

3.2 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.

4.0 VALIDATION

Asbestos Control Measures

- 4.1 During the Phase 2 investigations 3no samples of made ground, namely TP1 at 0.30m; TP3 at 0.60m and TP6 at 0.40m were found to contain fibres of chrysotile (white) asbestos. Therefore, prior to the main stage of groundworks, the removal of the localised asbestos was required in conjunction with an asbestos specialist.
- 4.2 Subsequently on 7th January 2019 the areas around TP1, TP2 and TP3 were excavated under supervision of the asbestos consultants, Northstar, who were also employed to carry out Reassurance Boundary Air Testing during excavation works.
- 4.3 The results of the air monitoring undertaken by Northstar are presented in Appendix 03 and show that all results were below the relevant limits of quantification during excavation.
- 4.4 It was also confirmed that in addition to the air monitoring, further control measures were put in place for the duration of excavation works in these areas. These included:
- Fenced exclusion zone (demarcating asbestos work areas);
 - Dampening of soils containing asbestos (when required);
 - Provision of appropriate PPE to trained staff (tyre 5-6 disposable overalls & FFP3 face fitted masks);
 - Onsite planning to avoid cross contamination (during plant/machinery movement and during excavations).
- 4.5 Photographs of the excavations, as provided by John Southworth's are reproduced as Plates 1, 2 and 3 in Appendix 02.

Waste Soils Removal

- 4.6 Subsequently, the materials, delineated from the areas identified to contain localised asbestos fibres within the Phase 2 investigations, were removed from site on 10th January 2019 by the waste carrier RTK Grab Hire to their facility located at:-
- Wellington Street
Bury
BL8 2BD
- 4.7 Based on vehicle size (2no loads of a 4-wheel lorry) an estimated 36tonnes or 12m³ of waste soils was removed as part of the delineation exercise.
- 4.8 Copy of the waste transfer dockets as provided are presented in Appendix 04.

Gas Protection Measures

- 4.9 Details of the gas protection measures installed, including edge details, are presented on the Alderburgh drawing, referenced TD-G-02, in Appendix 03.
- 4.10 In spring 2019 gas protection measures were installed by the groundworkers under supervision of John Southworth Builders Ltd. Photographs of the installation details have been provided by John Southworth Builders Ltd as verification evidence and are presented in Appendix 05.
- 4.11 The photographs indicate the construction to include a lapped, taped and sealed Alderprufe GRA gas resistant membrane laid above a suspended beam and block floor. The membrane was sealed

around all penetrations and to DPC, and was of a width which minimises the number of lapped and taped joints.

- 4.12 It is understood from John Southworth Builders Ltd that a 300mm clean air void has been formed beneath the concrete beam and block floor with internal sleeper walls include air bricks for cross ventilation. The sub-slab void is connected to the external air brick with periscopic vents on opposing sides of the structures.
- 4.13 The gas membrane datasheets are presented in Appendix 05.
- 4.14 Additional photographs of the external air vents, taken by WML during a site inspection in November 2019 are provided in Appendix 02.

Imported Topsoil / Subsoil

- 4.15 No suitable site-won topsoil or subsoil was available for re-use at the site for the capping of proposed garden areas.
- 4.16 Therefore, all topsoil and subsoil required for use as capping soil was imported to site. Test certificates provided by the supplier, Freeland Horticulture Ltd, presented in Appendix 06, indicated the topsoil was considered suitable, in terms of contamination levels, for a residential end-use.
- 4.17 WML attended site on 29th November 2019 in order to obtain samples from of emplaced soil for analyses and check the thickness of the capping strata within completed plots.
- 4.18 During the inspection four samples of the imported topsoil (Plot 5 – 0.10, Plot 7 – 0.10, Plot 10 – 0.10 and Plot 12 – 0.10), three samples of the imported subsoil (Plot 1 – 0.20, Plot 7 – 0.30 and Plot 12 – 0.30) and three samples of the imported granular break layer (Plot 5 – 0.50, Plot 7 – 0.50 and Plot 10 – 0.50) were obtained. The samples, were submitted for chemical analyses and the test results are presented in Appendix 07.
- 4.19 Comparison of these results with the most stringent Assessment Criteria for 'residential with home-grown produce' as provided within Appendix 08, indicates that majority of the relevant criteria were not exceeded with the following very localised exceptions:-

Contaminant	Number of Samples Exceeding SL	SL (mg/kg)	Recorded Concentrations (mg/kg)	Samples
Benzo[b]fluoranthene	1	2.6	4.0	Plot 7 at 0.10m (TS)
Dibenz[a,h]anthracene	1	0.24	0.52	

- 4.20 The exceedences of benzo[b]fluoranthene and dibenz[a,h]anthracene are very slight and localised to a single sample of topsoil. On closer examination it is inferred that that these are likely attributed to localised fragments of ash entrained within the soil matrix. This would confirm to a degree the site observations, in that no visual or olfactory evidence of hydrocarbon contamination was identified indicating the presence of ash and clinker within the granular made ground. Therefore, the soil was considered suitable, in terms of contamination levels, for the intended use.
- 4.21 Delivery tickets for the imported capping soils are available from John Southworth Builders Ltd on request.

Capping Thickness

- 4.22 The capping thicknesses were verified by the formation of hand excavated validation pits in selected gardens, on 29th November 2019 by WML.
- 4.23 Selected photographs of the validation pits are provided in Appendix 02 and indicate between 600mm and 650mm of clean capping in garden areas. The clean capping comprised between 150mm and 200mm of topsoil underlain by between 400mm and 500mm of subsoil including a granular break layer between 100mm and 200mm thick. A drawing showing the locations of the validation pits is presented in Appendix 01.
- 4.24 The gardens form an area of approximately 1876m² with an average thickness of topsoil of 190mm, subsoil of 250mm and a granular break layer 180mm thick. This indicates the volume of emplaced imported soils to be around 1163m³ confirming sampling and testing to have been undertaken at a ratio of 1 sample per 89m³ of topsoil and 1 sample per 135m³ of subsoil.
- 4.25 The imported topsoil generally comprised a dark brown organic sand. The imported subsoil generally comprised an orange brown, slightly gravelly, sand. The imported granular break layer generally comprised grey gravel.

Unexpected Ground Contamination

- 4.26 It is understood from site management that no unforeseen ground contamination, requiring specific consideration, was encountered during the development groundwork's.

Water Supply Pipes

- 4.27 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.
- 4.28 A copy of the UU Risk Assessment for is included within Appendix 09.

5.0 CONCLUSIONS

Gas Protection Measures

- 5.1 As far as can be established the pre-occupation works as identified within the Updated Ground Gas Risk Assessment have been undertaken to a reasonable standard of workmanship and appropriately validated.

Capping Requirements for Garden / Landscaped Areas

- 5.2 Clean imported topsoil and subsoil were generally emplaced to depths of between 600mm and 650mm with the basal 100mm to 200mm of the subsoil comprising a granular break layer. The Topsoil and sub-soil have been confirmed by chemical analysis to conform to appropriate site specific assessment criteria with two very localised and minor exceptions.
- 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



Notes
The Contractor is to check all dimensions and conditions on site before commencing. Do not scale from this drawing.
This drawing remains the copyright of POZZONI Architecture Ltd.

Scale Bars TO BE USED ONLY AS GUIDANCE

1:5	mm	50	150	250
1:10	mm	100	300	500
1:20	mm	200	600	1000
1:50	mm	500	1500	2500

LEGEND

- Red line site boundary
- Outline of existing car parking area
- Existing Tree
- Existing Tree to be Removed

BOUNDARY KEY

Boundary Type A
A = 435mm brick with vertical railing with hairpin tops above and brick piers (O/A height 900mm).

Boundary Type B
1800m close boarded timber fence

Boundary Type C
1100mm vertical railing with hairpin tops

SCHEDULE OF ACCOMMODATION

Plot	Description	Count	Dwg. No.
01 - 08	3 Bed 5 Person	8	1301
09 - 10	2 Bed 4 Person	2	1302
11 - 12	2 Bed 4 Person	2	1300

Rev	Description	By	Date
Client	St Vincent's Housing Association		
Job	St Thomas' School Site		
Drawing	Tender - Site Plan		
Scale	PZ 1:1	Rev	
Date	30/01/18	Scale	As indicated @ A1
By	LB	TDY	Approved
Project Status	Planning	Tender	Construction
	Design	Contract	As Built

pozzoni

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115 Golden Lane
London
EC1Y 0TJ

Woodville House
2 Woodville Road
Altrincham
WA14 2FH

+44 20 7078 0079
architects@pozzoni.co.uk

+44 161 928 7848
www.pozzoni.co.uk

5 10 15 20 25

North

P:\MCAD\4651-4700\4674\PAL\Design\Modals\E4674 - Manchester Infill Sites - St Thomas' School, Chataway Road_Corrected.rvt
08/02/2018 12:37:56



REV	ISSUE REVISION.	00-00-00	BY	Chkd	Project	Client				WMLCONSULTING 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			
					ST THOMAS' SCHOOL	MSV HOUSING GROUP							
					Status	ASBESTOS LOCATION PLAN							
Rev.	Amendment	Date	By	Chkd	FINAL	Drawn	Checked	Date	Scale	Job No.	7540G	Drawing No.	SK02
						SCS	PGD	27/10/2017	1:500@A3				



GENERAL NOTES

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

KEY

- SITE BOUNDARY
- PLOT 7
- VALIDATION PITS

P1	FIRST PRELIMINARY ISSUE	AUG '19	SCS	PGD
Rev.	Amendment	Date	By	Chkd

Project	ST THOMAS , HAZELBOTTOM			
Client	JOHN SOUTHWORTH BUILDERS LTD			
Title	VALIDATION PIT LOCATION PLAN			

Drawn	Checked	Date	Scale
SCS	PGD	06-12-19	1:500@A3

WML CONSULTING
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Job No.	8243G	Drawing No.	VR-01.
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APPENDIX 02

Photographs



Photograph 1
Area of TP1 excavated to 0.60mbgl into the natural Alluvial Sand.



Photograph 2
Area of TP3 excavated to formation level.



Photograph 3
Area of TP6 excavated to the top of the natural strata.



Photograph 4
Plot 1 showing 200mm of subsoil overlying a 200mm granular break layer, prior to the emplacement of the topsoil.



Photograph 5
Plot 1 showing pit location prior to the emplacement of topsoil.



Photograph 6
Plot 1 after 200mm of topsoil emplaced overlying the subsoil and granular break layer.



Photograph 7
Plot 5 showing 250mm of topsoil, 200mm of subsoil and a 200mm granular break layer.



Photograph 8
Plot 5 showing pit location.



Photograph 9
Plot 7 showing 200mm of topsoil, 200mm of subsoil and 200mm granular break layer.



Photograph 10
Plot 7 showing pit location.



Photograph 11
Plot 10 showing 150mm of topsoil, 250mm of subsoil and a 200mm granular break layer.



Photograph 12
Plot 10 showing pit location. The locations of the external sub-slab vents are also indicated in blue.



Photograph 13
Plot 12 showing 150mm of topsoil, 400mm of subsoil and 100mm granular break layer.



Photograph 14
Plot 12 showing pit location.

APPENDIX 03

Northstar Records

Certificate of Analysis



Northstar Environmental Ltd
Suite A1 (First Floor)
Beech House
Oaklands Office Park
Hooton Road
Hooton
Cheshire
CH66 7NZ
0151 538 3141

Certificate No:

J027922/AS01



Date:

07 Jan 2019

Tests carried out in accordance with North Star Environmental in-house Technical Procedures NSDOC 46, 47 & HSE Guidance HSG 248. All four stages of the clearance procedure, air sampling & fibre counting have been accredited by UKAS

Email: info@northstarenvironmental.co.uk Website: www.northstarenvironmental.co.uk

Client	Removal Contractor	Site Address	Description of Work Area & Works Carried Out
John Southworth Builders Ltd 10 Charles St Dukinfield Cheshire SK16 4SD	John Southworth Builders Ltd 10 Charles St Dukinfield Cheshire SK16 4SD	St Thomas Nunthorpe Drive Crumpsall M8 5UU	Reassurance air monitoring during excavation works of contaminated grounds. St thomas School grounds.
Contact: Sam Wallwork	Contact: Sam Wallwork	Supervisor:	ian pyatt

Air Sampling and Fibre Counting Details

Microscope No:			NSM9	Graticule Diameter (µm)		100		NPL Test Slide			NSTS10		BTT		NSBTT11		
Flow Meter			NSFM19	Pressure (Mb) (Cal/Samp)		1020	1023.3	Fifth Line Visible			Yes		Exposed Filter Diameter		22.0mm		
Flow Meter Calib Date			2019-02-19	Temp (C) (Cal/Samp)		23	9	Stage Micrometer			NSSM12		Filter Analysis Location		DG17 ABZ		
Sample No	Pump Ref	Cowl Ref	Location		Start Time Min	Start Flow L/Min	During Time Min	During Flow L/Min	End Time Min	End Flow L/Min	Ave Flow L/Min	Sample Vol Litres	No. of Fibres	No. of Fields	Limit of Quantification f/cm³	Fibre Conc f/cm³	Reported Fibre Conc f/cm³
AS001951	NSAP 19	9A	Adjacent to TP6		09:07	10.0	N/A	N/A	10:05	9.8	9.9	574	2.5	200	0.01	0.0010	< 0.01
AS001952	NSAP 27	9B	Adjacent to TP6		09:09	10.0	N/A	N/A	10:05	10.0	10.0	560	2	200	0.01	0.0008	< 0.01
AS001953	NSAP 47	9C	Adjacent to TP6		09:10	10.0	N/A	N/A	10:06	9.8	9.9	554	2	200	0.01	0.0008	< 0.01
AS001955	NSAP 19	9A	Adjacent to TP1		10:25	10.0	N/A	N/A	11:20	9.8	9.9	545	3	200	0.01	0.0013	< 0.01
AS001956	NSAP 27	9B	Adjacent to TP1		10:26	10.0	N/A	N/A	11:20	10.0	10.0	540	2	200	0.01	0.0008	< 0.01
AS001957	NSAP 47	9C	Adjacent to TP1		10:26	10.0	N/A	N/A	11:20	9.8	9.9	535	2	200	0.01	0.0009	< 0.01
AS001959	NSAP 19	9B	Adjacent to TP3		12:50	10.0	N/A	N/A	13:50	9.8	9.9	594	2	200	0.01	0.0008	< 0.01
AS001960	NSAP 27	9B	Adjacent to TP3		12:50	10.0	N/A	N/A	13:50	9.8	9.9	594	2.5	200	0.01	0.0010	< 0.01
Field Blank No:		AS001961		Cowl Ref:		9E	Field Blank Counted:			No	No. of Fibres			No. of fields			

The measured airborne respirable fibre concentrations are below the limit of detection stated above.

n/a

Assessed By:	Matthew Walker	Signature:		Date:	07 Jan 2019
Supervisor:	ian pyatt	Signature:		Date:	07 Jan 2019

This certificate is invalid unless signed by an authorised analyst of North Star Environmental Ltd. Any queries as to the authenticity of this certificate can be clarified by contacting North Star office at the above address. It should be noted that any opinions or interpretations detailed herein are outside the scope of UKAS testing accreditation held.

Photographs			
			
N/A	N/A	N/A	N/A
			
N/A	N/A	N/A	N/A

Diagram

Enclosure Length: N/Am

Enclosure Width: N/Am

Enclosure Height: N/Am



Certificate of Analysis (Personal)



Northstar Environmental Ltd
Suite A1 (First Floor)
Beech House
Oaklands Office Park
Hooton Road
Hooton
Cheshire
CH66 7NZ
0151 538 3141

Certificate No:

J027922/AS02



Tests carried out in accordance with North Star Environmental in-house Technical Procedures NSDOC 46, 47 & HSE Guidance HSG 248. All four stages of the clearance procedure, air sampling & fibre counting have been accredited by UKAS

Date:

07 Jan 2019

Email: info@northstarenvironmental.co.uk Website: www.northstarenvironmental.co.uk

Client	Removal Contractor	Site Address	Location of Work
John Southworth Builders Ltd 10 Charles St Dukinfield Cheshire SK16 4SD	John Southworth Builders Ltd 10 Charles St Dukinfield Cheshire SK16 4SD	St Thomas Nunthorpe Drive Crumpsall M8 5UU	Section TP1
Contact: Sam Wallwork	Contact:	Sam Wallwork	Site Supervisor: ian pyatt

Job Details			
Test Type:	Personal	Purpose of Test:	To assess effectiveness of control measures
RPE in use:	Half Face Mask with P3 Filter	Asbestos Type:	Chrysotile
Scope of works:	Carrying out excavation work on contaminated grounds	Condition of Asbestos:	Poor
Removal Method / Control Measures in use:	Carrying out excavation work on contaminated ground with 360 degree excavator, also using general hand tools. Operatives will use fibre suppressant on dry days to minimise dust release. Hard hat, Hi-viz, Safety boots, Glasses or goggles, Ear defenders, Gloves and Dust masks (FFP3 type)		
Tasks performed by operative during works		Duration of task in minutes	
Carrying out excavation works using 360 degree digger.		60 minutes	
N/A		0 minutes	
N/A		0 minutes	
N/A		0 minutes	
Total duration of works:		60 minutes	
4 Hr Time Weighted Average (TWA)		N/A	
		*4hr TWA calculated using the following formula: $\frac{(F1 \times T1) + (F2 \times T2) + \dots (Fn \times Tn)}{4}$ F = Fibre Concentration T = Time for Exposure (decimal)	

Air Sampling and Fibre Counting Details																		
Microscope No:			NSM9		Graticule Diameter (µm)		100		NPL Test Slide			NSTS10		BTT		NSBTT11		
Flow Meter			NSFM20		Pressure (Mb) (Cal/Samp)		1020	1020.3	Fifth Line Visible			Yes		Exposed Filter Diameter		22.0mm		
Flow Meter Calib Date			2019-02-19		Temp (C) (Cal/Samp)		23	9	Stage Micrometer			NSSM12		Filter Analysis Location		DG17 ABZ		
Sample No	Pump Ref	Cowl Ref	Location			Start Time Min	Start Flow L/Min	During Time Min	During Flow L/Min	End Time Min	End Flow L/Min	Ave Flow L/Min	Sample Vol Litres	No. of Fibres	No. of Fields	Limit of Quantification f/cm³	Fibre Conc f/cm³	Reported Fibre Conc f/cm³
AS001954	NSAP 64	9D	Peter cunningham (operative)			09:30	3.0	N/A	N/A	10:30	3.0	3.0	180	1.5	200	0.027	0.0020	< 0.027
Field Blank No:		AS001958				Cowl Ref:		9E	Field Blank Counted:			No	No. of Fibres			No. of fields		

Photographs



Peter Cunningham (operative)

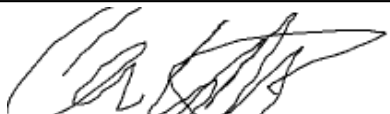
Carrying out excavation works

Carrying out excavation works

Carrying out excavation works

Comments:

The measured airborne respirable fibre concentrations prove the control measures in place are adequate.
No fibre suppressant used due to intermittent rain showers throughout the day.

Assessed By:	Matthew Walker	Signature:		Date:	07 Jan 2019
Supervisor:	ian pyatt	Signature:		Date:	07 Jan 2019

This certificate is invalid unless signed by an authorised analyst of North Star Environmental Ltd. Any queries as to the authenticity of this certificate can be clarified by contacting North Star office at the above address. It should be noted that any opinions or interpretations detailed herein are outside the scope of UKAS testing accreditation held.

APPENDIX 04

Waste Transfer Dockets

DATE 10/1/19 MATERIAL TRANSFER NOTE

No. 399994

SECTION A - EWC and DESCRIPTION OF WASTE MATERIAL

TICK

17 05 04 soil and stones

✓

Mixtures of concrete, bricks, tiles and ceramics 17 01 07

Plastic 17 02 03

Mixed metals 17 04 07

Wood 17 02 01

Soil 19 13 02

Other:

Where waste material is discovered to be inconsistent with the description described by the customer or their agent/representative, RTK Grab Hire Limited reserve the right to recover the appropriate charges and associated tax together with all other costs incurred.

SECTION B - PRODUCER OF THE WASTE

PRODUCER OF THE MATERIAL

NAME

RTK GRAB HIRE LIMITED

ADDRESS

WELLINGTON STREET

BURY

BL8 2BD

POSTCODE

WML

EAWML 102477

SIGNED FOR PRODUCER

SIGNED FOR RTK GRAB HIRE LIMITED

PRINT NAME

PRINT NAME

It is essential that all written particulars entered above are carefully checked by the customer or their agent/representative, i.e. Site Foreman, Labourer, Machine Operator, Banksman etc., since this Note once signed represents total acceptance.

SIC CODE: 38110

SECTION C - PERSON COLLECTING THE WASTE

DRIVER: PRINT

SIGN

VEHICLE REGISTRATION NUMBER:

THE CARRIERS LICENCE NUMBER: CB/TN5610MQ

EIGHT
WHEEL

SIX WHEEL

SKIP SIZE

It is the responsibility of the Customer to supply a Banksman for off public highway deliveries/collections. The customer is also responsible for all damage caused to vehicles and property.

WASTE CAN BE REUSED

WASTE TO BE RECYCLED X

WASTE TO BE DISPOSED

SECTION D - RECEIPT OF MATERIAL

RECEIPT OF MATERIAL

RTK GRAB HIRE LIMITED

NAME

WELLINGTON STREET

ADDRESS

BURY

POSTCODE

BL8 2BD

WML

SIGNED FOR RTK GRAB HIRE LIMITED

SIGNED FOR PRODUCER

PRINT NAME

PRINT NAME

It is essential that all written particulars entered above are carefully checked by the customer or their agent/representative, i.e. Site Foreman, Labourer, Machine Operator, Banksman etc., since this Note once signed represents total acceptance.

White copy: RTK Grab Hire Limited/Carrier Yellow copy: Producer Pink copy: RTK (to Producer with invoice)

APPENDIX 05

Gas Membrane Specifications & Validation Record

St Thomas, Crumpsall

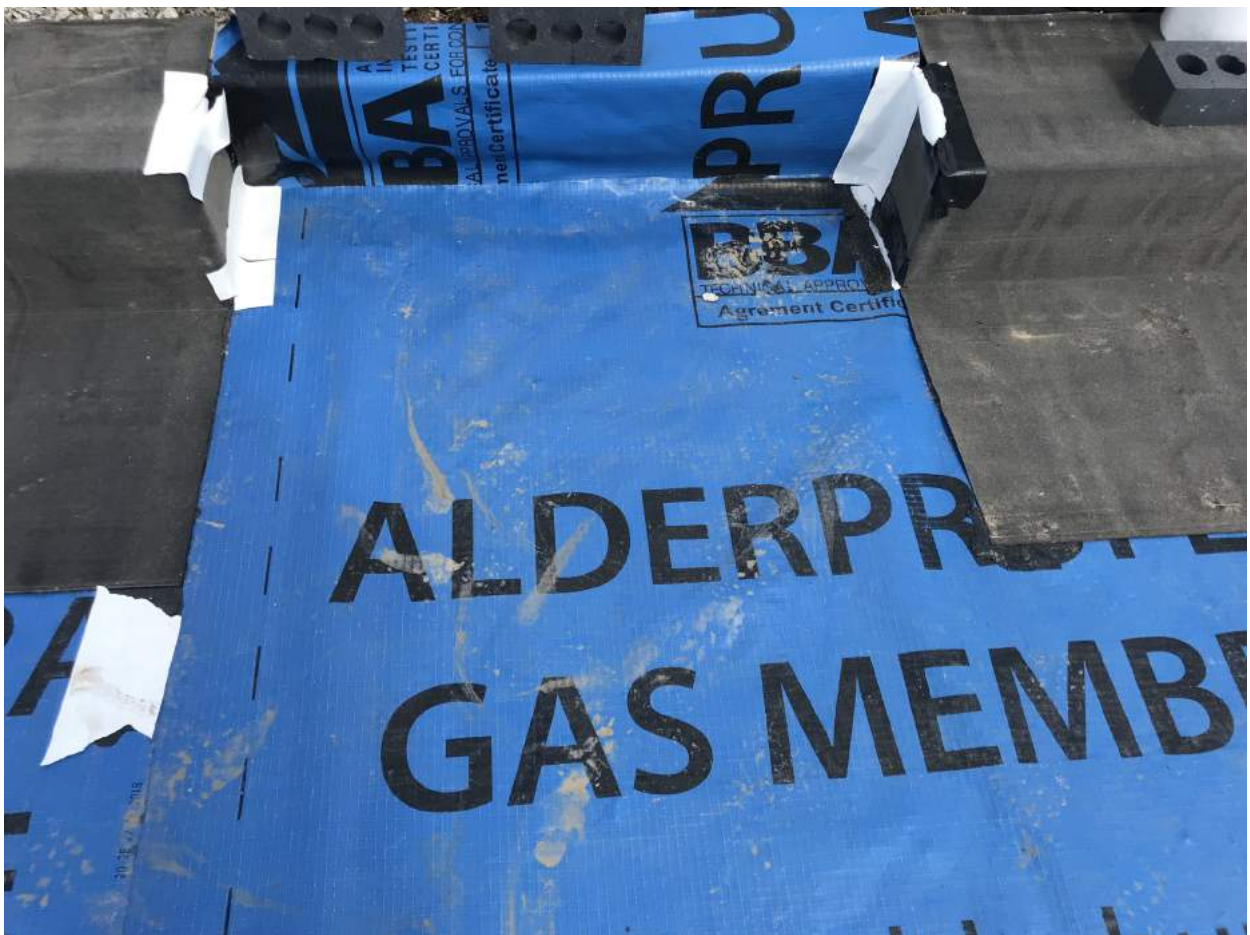
Gas Barrier

Record of Installation



John Southworth Builders Ltd







ALDERCOURSE GRA

Aldercourse GRA is an aluminium cored high performance damp-proof course, to maintain the integrity of the gas barrier system in load-bearing locations. Used combination with all Alderprufe gas barriers it provides a continuous "through the wall to floor" junction.

Aldercourse GRA is a laminate of aluminium, high quality oxidised bitumen and hessian, surfaced with a light sand finish, and is compliant with **BS8485:2015** and **BS6398**. The aluminium layer provides an effective barrier to VOC as noted in **Ciria C748**. **Aldercourse GRA** can be heat-bonded to masonry, and in addition to gas barrier applications, it can also be used in cavity tray applications including parapet walls and beneath copings and cappings.



Priming

Any surface to which **Aldercourse GRA** will be heat bonded must be primed with one coat of **Tac Primer** at a rate of 0.1 to 0.3 litres per m² dependent on the porosity of the surface. The primer must be allowed to dry thoroughly before applying **Aldercourse GRA**.

Application

Aldercourse GRA Damp-proof course should be laid on a wet mortar bed in accordance with British Standards Codes of Practice. All laps of Aldercourse to Aldercourse must be secured by heat bonding, and should be a minimum of 150mm. Laps between Alderprufe gas barriers and **Aldercourse GRA** should be secured as follows:

- A 'tail' of **Aldercourse GRA** dpc should extend onto the slab by a minimum of 150mm; the top surface of the **Aldercourse GRA** should be softened by use of a gas torch to allow the bitumen to become viscous; Gastite Tape should be applied to the exposed surface. **Alderprufe gas barrier** should then be applied Gastite Tape, and the joint rolled well for good adhesion.

ALDERCOURSE GRA GAS DPC

Characteristic	Test Method	Unit	Aldercourse GRA
Physical Properties			
Thickness	EN 1849-2	mm	3.2
Width (400mm, 500mm, 600mm, 1000mm are standard widths)	EN 1849-2	m	various
Length	EN 1849-2	m	8
Weight	EN 1849-2	g/m ²	4000
Gas Permeability			
Methane	EN ISO 15105 - 1	ml/m ² /day/atm	0.98
Carbon Dioxide	EN ISO 15105 - 1	ml/m ² /day/atm	0.28
Radon	K12/05/95	m ² /s	1.5 x 10 ⁻¹⁴
Complies with:- BS8485:2015, CIRIA 665, NHBC (Green Amber 1, Amber 2, Red), CIRIA C748 (*vapours - impermeable aluminium core)			

Use with: Alderprufe GRA* Alderprufe MR50 * Alderprufe Ultra VOCM * Alderprufe HC * Alderprufe GRM * Super Yellow Gas Barrier * Alderprufe Tuflex * Alderprufe LGM Liquid Gas Membrane

Alderprufe GRA

A loose laid 20 micron pure aluminium foil substrate with a multi-filament polyester 20mm scrim grid, sandwiched between two layers of polyethylene. For use in solid concrete ground floors that are not subject to hydrostatic pressure, to protect buildings against gas penetration from the ground.

General Description

Alderprufe GRA is available for use, in accordance with the relevant clauses of CP102: 1973 Code of Practice for protection of buildings against water from the ground (as amended), in concrete floors not subject to a hydrostatic pressure.

It can be installed as an oversite membrane, situated between a blinded hardcore bed and the base concrete, or as a sandwich membrane in base concrete or between the base concrete and the screed and suspended floor construction including block and beam.

The methods of jointing provide an effective barrier to the passage of gases, liquid water and water vapour from the ground.

Alderprufe GRA will meet Requirement C4 of the Building Regulations 1985 (England and Wales), in that sheet thickness is at least 1000 gauge.

Alderprufe GRA has a high resistance to puncture. On smooth or blinded surfaces it will not be damaged by normal foot or site traffic (eg wheelbarrows) but care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screed since it can be punctured by sharp objects.

Alderprufe GRA may be installed under all conditions normal to the construction of ground floor slabs. However, it should be noted that in accordance with CP102: 1973 (as amended) subsoil drainage should be provided wherever there is a risk of ground becoming waterlogged. The membranes remain flexible and do not soften

practice. When used in accordance with the manufacturer's instructions there will be no adverse effect on the membranes from underfloor heating under normal conditions of use. Alderprufe GRA will provide an effective barrier to the transmission of gases, liquid water and water vapour for the life of the concrete slab in which it is installed.

Technical Data

Thickness (mm)	0.5 mm
Minimum thickness (mm)	0.45 mm
Roll length (M)	50 mts
Roll width (M)	2.0 mts
Roll weight (kg)	38 kgs
Tensile strength	15 KN/M
Vapour transmission	0.01 g/m ² /day
Methane Gas Permeability	0.001 L/m ² /day

Application

Unless the base is smooth, a surface blinding of soft sand (Alderway or Geotex Mat) should be used to avoid puncture of the membrane during installation or when the concrete or screed is being placed.

Jointing: Before joining, sheets must be clean and free from dirt and grease. Adjacent sheets should be overlapped by at least 100mm wide and bonded with 100mm wide Alderseal double sided gas-tite compound.

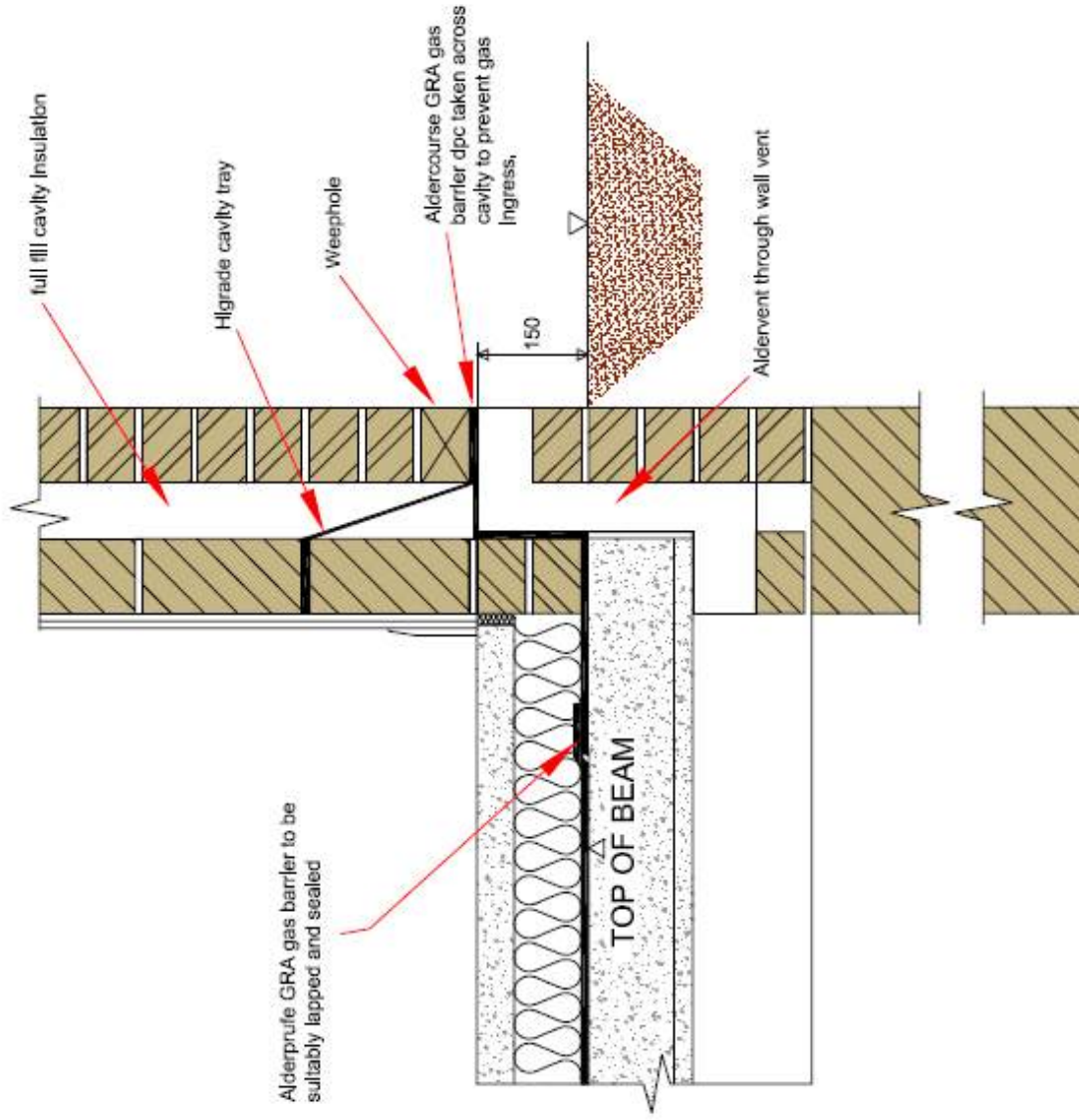
Perforation: Perforation or puncture of the sheets should be patched with sheets of identical thickness lapped at least 150mm beyond the limit of the puncture and sealed with 100mm wide Alderseal gas-tite compound.

Continuity with DPC: Alderprufe GRA membrane must be continuous with damp-proof course in the surrounding walls. Where necessary Alderprufe MR50 should be used as a vertical course to link the two. Lapped and bonded to Aldercourse GRA for continuation through load bearing structural walls (See details drawings and separate data sheets.)

Placing Concrete Or Screed: Alderprufe GRA must be covered by a screed or other protective layer as soon as possible after installation. Care should be taken to ensure that the membrane is not stretched or displaced when placing the concrete or screed. Consideration should be given to use of ventilation systems and pre-formed details where appropriate see separate Data sheet. For all service entries the use of a 'Tophat' factory formed units made from the same material should be considered.



1. Do not stole from this drawing



PERISCOPE SLEEVE AND AIRBRICK VENT TYPICAL EDGE DETAIL FOR BLOCK AND BEAM CONSTRUCTION

LDERBURGH
Lider Road, Litheridge, QLD 4815
Tel: 07 555 2344 Fax: 07 555 3100
www.liderburgh.com.au

TYPICAL DETAILS

BS NO

PERISCOPE SLEEVE AND AIRBRICK VENT TYPICAL EDGE
DETAIL FOR BLOCK AND BEAM CONSTRUCTION

NTS TO-G-02

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APPENDIX 06

Chemical Analyses – Capping Soils at Source



Freeland Horticulture Ltd
Rosedale Nursery
College Road
Hextable
Kent
BR8 7LT

Attention: Philippa Lambourne

Our Ref: SLC-12-AN-0753-SA

7 June 2019

Dear Philippa

Topsoil Analysis Report : Astley, Greater Manchester Topsoil – June 2019

We have completed the analysis of the topsoil sample recently taken from the above site and have the pleasure of reporting our findings. The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes.

SOIL SAMPLING & EXAMINATION

At the time of our sampling visit the topsoil was stored in a stockpile. A series of 10 hand augered trial holes were constructed across the stockpile for the purpose of soil examination and sample collection. As the soil examination confirmed a consistent topsoil composition, the ten samples were combined together to form one composite sample for analysis purposes. The soil was described as a dark brown, slightly moist, friable *loamy sand* with a well developed, fine to medium granular structure. The soil contained a low fraction of small stones and no deleterious materials (eg. building waste materials, glass, roots or rhizomes of pernicious weeds) or unusual odours (eg. hydrocarbons) were recorded.

LABORATORY ANALYSIS

The topsoil sample was submitted to a UKAS accredited laboratory for routine physical and chemical parameters to confirm the composition and fertility of the soil. The following parameters were determined:

- ⊕ pH & electrical conductivity values;
- ⊕ major plant nutrients (N, P, K, Mg) & organic matter content;
- ⊕ particle size distribution and stone content;
- ⊕ heavy metals & potentially toxic elements (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, B);
- ⊕ sulphate, sulphur, sulphide;
- ⊕ total cyanide and total (mono) phenols;
- ⊕ speciated PAHs (US EPA16)
- ⊕ banded aromatic and aliphatic petroleum hydrocarbons (C₅-C₃₅).
- ⊕ Asbestos

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

Phone: 01322 619161;

COMMENTS

pH & Electrical Conductivity (salinity) Values

The sample was alkaline in nature (pH 8.3) with a pH value that would be suitable for general landscaping purposes, and in particular for species classified as either *wide pH tolerant* or *lime tolerant*.

The electrical conductivity value using the soil:water extract was moderate (1025µS/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

Organic Matter & Nutrient Status

The sample was rich in organic matter and all major plant nutrients. No further additions of compost or fertiliser are required, or indeed recommended, for at least the first growing season.

Particle Size Distribution & Stone Content

The sample contained 77% sand and fell into the *sandy loam* texture class. This particle size distribution is considered suitable for a broad range of landscape applications, including tree and shrub planting, turfing and seeding.

The sample was free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (9.1%). As such, stones will not restrict the use of the soil for landscaping purposes.

Potential Contaminants

We are not aware of any specified contaminant levels set for the proposed end-use of this topsoil so the following comments are based on the Soil Guideline Values (SGVs) for residential end-use presented in the Contaminated Land Exposure Assessment (CLEA) Model (EA/DEFRA:2002). The SGVs currently only consider a limited range of parameters so where a potential contaminant is not covered by the CLEA Model other relevant schedules for contamination assessment, such as the Dutch Guidelines, and professional judgement have been used.

Of the potential contaminants determined, none was found at levels that would indicate significant contamination.

CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil for general landscaping purposes. From the soil examination and laboratory analysis, the soil is described as an alkaline, non-saline, loamy sand. The organic matter and nutrient levels are acceptable and no significant contamination was found with respect to the parameters determined. This soil would adhere to the current BS3882 specification for 'multipurpose grade'.

To conclude, based on our findings, the topsoil would be considered well-suited to general landscaping purposes provided the physical condition of the soil is maintained.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if you have any queries or comments.

George Longmuir MSc Soil Sci. M.I Soil Sci.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Astley, Greater Manchester
Month/Year	June 19
Our Ref	SLC-19-AN-0753-SA
Date	07 June 2019

Composite sample

pH Value & Salinity

pH value (1:2.5 soil/water ext)	units	8.3
Electrical Conductivity (1:2.5 soil/water ext)	µS/cm	1025
Neutralising Value (CaCO ₃ equivalent)	%	1.8
Neutralising Value (CaO equivalent)	%	1.0

Organic Matter & Nutrient Status

Organic Matter (LOI)	%	5.7
Organic Carbon (Derived)	%	3.3
Total Nitrogen	%	0.360
Carbon:Nitrogen Ratio	:1	9
Available Phosphorus	mg/l	77.6
Available Potassium	mg/l	952
Available Magnesium	mg/l	196

Particle Size Analysis & Stones

Clay (<0.002mm)	%	1
Silt (0.063-0.002mm)	%	16
Sand (2.0-0.063mm)	%	77
Texture Class	UK Class	Loamy Sand

Stones 2-20mm	% by DW	8.3
Stones 20-50mm	% by DW	0.8
Stones >50mm	% by DW	0.0

Potential Contaminants

Total Arsenic (As)	mg/kg	5.6
Total Cadmium (Cd)	mg/kg	0.15
Total Chromium (Cr)	mg/kg	16.1
Hexavalent Chromium (Cr ^{VI})	mg/kg	<0.1
Total Copper (Cu)	mg/kg	26.0
Total Lead (Pb)	mg/kg	34.9
Total Mercury (Hg)	mg/kg	<0.2
Total Nickel (Ni)	mg/kg	12.7
Total Selenium (Se)	mg/kg	0.17
Total Zinc (Zn)	mg/kg	76.3
Total Beryllium (Be)	mg/kg	<1
Total Barium (Ba)	mg/kg	80.1
Total Vanadium (V)	mg/kg	24.5
Hot Water Soluble Boron (B)	mg/kg	1.7
Total Cyanide (CN)	mg/kg	<1
Elemental Sulphur (S)	mg/kg	<5
Easily Liberated Sulphide (S ²⁻)	mg/kg	<1
Water Soluble Sulphate (SO ₄ ²⁻)	mg/l	159
Total Phenols Index	mg/kg	
Asbestos Screen	-	N.D.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Astley, Greater Manchester
Month/Year	June 19
Our Ref	SLC-19-AN-0753-SA
Date	07 June 2019

Polyaromatic Hydrocarbons

Naphthalene	mg/kg	<0.05
Acenaphthylene	mg/kg	<0.05
Acenaphthene	mg/kg	<0.05
Fluorene	mg/kg	<0.05
Phenanthrene	mg/kg	0.7
Anthracene	mg/kg	0.2
Fluoranthene	mg/kg	0.9
Pyrene	mg/kg	0.8
Benzo[a]anthracene	mg/kg	0.4
Chrysene	mg/kg	0.4
Benzo[b]fluoranthene	mg/kg	0.4
Benzo[k]fluoranthene	mg/kg	0.1
Benzo[a]pyrene	mg/kg	0.3
Indeno[1,2,3-cd]pyrene	mg/kg	0.2
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	0.2
Total PAHs sum US EPA 16	mg/kg	4.7

Banded Petroleum Hydrocarbons

Aliphatic TPH >C ₅ -C ₆	mg/kg	0.2
Aliphatic TPH >C ₆ -C ₈	mg/kg	<0.4
Aliphatic TPH >C ₈ -C ₁₀	mg/kg	<4
Aliphatic TPH >C ₁₀ -C ₁₂	mg/kg	<4
Aliphatic TPH >C ₁₂ -C ₁₆	mg/kg	<4
Aliphatic TPH >C ₁₆ -C ₂₁	mg/kg	4.4
Aliphatic TPH >C ₂₁ -C ₃₅	mg/kg	41.4
Aliphatic TPH >C ₃₅ -C ₄₄	mg/kg	20.9

Aromatic TPH >C ₅ -C ₇	mg/kg	<0.02
Aromatic TPH >C ₇ -C ₈	mg/kg	<0.02
Aromatic TPH >C ₈ -C ₁₀	mg/kg	<0.02
Aromatic TPH >C ₁₀ -C ₁₂	mg/kg	<4
Aromatic TPH >C ₁₂ -C ₁₆	mg/kg	<4
Aromatic TPH >C ₁₆ -C ₂₁	mg/kg	6.4
Aromatic TPH >C ₂₁ -C ₃₅	mg/kg	36.0
Aromatic TPH >C ₃₅ -C ₄₄	mg/kg	17.4

Total Petroleum Hydrocarbons (C ₅ -C ₄₄)	mg/kg	127
---	-------	-----

BTEX

Benzene	mg/kg	<0.02
Toluene	mg/kg	<0.2
Ethyl Benzene	mg/kg	<0.04
m- & p-Xylene	mg/kg	<0.2
o-Xylene	mg/kg	<0.1

APPENDIX 07

Chemical Analyses – Capping Soils on Site



2183

Final Report

Report No.:	19-40580-1		
Initial Date of Issue:	11-Dec-2019		
Client	WML Consulting Ltd		
Client Address:	No. 8 Oak Green Stanley Green Business Park Earl Rd Cheadle SK8 6QL		
Contact(s):	Sam Seddon		
Project	8110G St Thomas' School		
Quotation No.:		Date Received:	04-Dec-2019
Order No.:	8110G	Date Instructed:	04-Dec-2019
No. of Samples:	10		
Turnaround (Wkdays):	5	Results Due:	10-Dec-2019
Date Approved:	11-Dec-2019		
Approved By:			
Details:	Amy Parekh-Pross, Technical Projects Manager		

Results - Soil

Project: 8110G St Thomas' School

Client: WML Consulting Ltd	Chemtest Job No.:				19-40580	19-40580	19-40580	19-40580	19-40580	19-40580	19-40580	19-40580	19-40580
Quotation No.:	Chemtest Sample ID.:				937183	937184	937185	937186	937187	937188	937189	937190	937191
Order No.: 8110G	Client Sample Ref.:				SS	TS	SS	TS	GSS	TS	SS	GSS	TS
	Client Sample ID.:				1	2	3	4	5	6	7	8	9
	Sample Location:				Plot 1	Plot 12	Plot 12	Plot 5	Plot 5	Plot 7	Plot 7	Plot 7	Plot 10
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m) (\$):				0.2	0.1	0.3	0.1	0.5	0.1	0.3	0.5	0.1
	Date Sampled (\$):				29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	9.2	22	3.4	22	15	9.8	24	3.4	25
pH	U	2010		4.0	7.7	8.5	9.2	8.6	8.4	8.9	8.5	9.4	8.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.50
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.38	0.26	0.20	0.12	0.013	0.42	0.33	0.34	0.14
Total Sulphur	U	2175	%	0.010	< 0.010	0.060	0.011	0.041	< 0.010	0.017	0.043	0.014	0.019
Cyanide (Total)	U	2300	mg/kg	0.50	220	0.90	0.70	0.80	< 0.50	< 0.50	0.60	< 0.50	< 0.50
Sulphate (Total)	U	2430	mg/kg	100	120	1200	100	1100	< 100	130	1100	< 100	590
Arsenic	U	2450	mg/kg	1.0	2.5	3.5	33	6.0	1.9	21	4.7	25	3.6
Cadmium	U	2450	mg/kg	0.10	< 0.10	0.12	0.31	0.14	< 0.10	0.38	0.15	0.45	0.11
Copper	U	2450	mg/kg	0.50	4.1	14	1.4	13	3.0	4.9	12	2.2	7.3
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	8.2	9.1	3.0	8.2	5.7	7.5	13	2.8	6.7
Lead	U	2450	mg/kg	0.50	5.5	10	3.3	11	2.3	8.5	12	11	7.1
Selenium	U	2450	mg/kg	0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Vanadium	U	2450	mg/kg	5.0	12	12	< 5.0	12	12	7.7	12	< 5.0	12
Zinc	U	2450	mg/kg	0.50	54	44	9.9	35	12	17	36	110	29
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	U	2625	%	0.40	< 0.40	4.7	0.41	4.8	< 0.40	0.66	3.3	0.52	2.6
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	7.0	< 0.10	8.2	< 0.10	2.4	3.9	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	1.2	< 0.10	0.49	< 0.10	2.0	1.0	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	1.2	< 0.10	2.3	< 0.10	14	4.1	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	0.83	< 0.10	1.9	< 0.10	13	4.1	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.63	< 0.10	4.8	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.82	< 0.10	3.8	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.77	< 0.10	4.0	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.42	< 0.10	1.7	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	1.0	< 0.10	4.2	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.19	< 0.10	2.2	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.52	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 8110G St Thomas' School

Client: WML Consulting Ltd	Chemtest Job No.:				19-40580	19-40580	19-40580	19-40580	19-40580	19-40580	19-40580	19-40580	19-40580
Quotation No.:	Chemtest Sample ID.:				937183	937184	937185	937186	937187	937188	937189	937190	937191
Order No.: 8110G	Client Sample Ref.:				SS	TS	SS	TS	GSS	TS	SS	GSS	TS
	Client Sample ID.:				1	2	3	4	5	6	7	8	9
	Sample Location:				Plot 1	Plot 12	Plot 12	Plot 5	Plot 5	Plot 7	Plot 7	Plot 7	Plot 10
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m) (\$):				0.2	0.1	0.3	0.1	0.5	0.1	0.3	0.5	0.1
	Date Sampled (\$):				29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019	29-Nov-2019
	Asbestos Lab:				LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL	LIVERPOOL
Determinand	Accred.	SOP	Units	LOD									
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.40	< 0.10	2.3	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	10	< 2.0	17	< 2.0	55	13	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	0.44

Results - Soil

Client: WML Consulting Ltd	Chemtest Job No.:				19-40580
Quotation No.:	Chemtest Sample ID.:				937192
Order No.: 8110G	Client Sample Ref.:				GSS
	Client Sample ID.:				10
	Sample Location:				Plot 10
	Sample Type:				SOIL
	Top Depth (m) (\$):				0.5
	Date Sampled (\$):				29-Nov-2019
	Asbestos Lab:				LIVERPOOL
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-
Moisture	N	2030	%	0.020	24
pH	U	2010		4.0	8.2
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO ₄	U	2120	g/l	0.010	0.064
Total Sulphur	U	2175	%	0.010	0.018
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50
Sulphate (Total)	U	2430	mg/kg	100	640
Arsenic	U	2450	mg/kg	1.0	2.9
Cadmium	U	2450	mg/kg	0.10	0.12
Copper	U	2450	mg/kg	0.50	8.1
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	6.5
Lead	U	2450	mg/kg	0.50	7.5
Selenium	U	2450	mg/kg	0.20	< 0.20
Vanadium	U	2450	mg/kg	5.0	11
Zinc	U	2450	mg/kg	0.50	29
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	2.9
Naphthalene	U	2700	mg/kg	0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10

Project: 8110G St Thomas' School

Client: WML Consulting Ltd	Chemtest Job No.:				19-40580
Quotation No.:	Chemtest Sample ID.:				937192
Order No.: 8110G	Client Sample Ref.:				GSS
	Client Sample ID.:				10
	Sample Location:				Plot 10
	Sample Type:				SOIL
	Top Depth (m) (\$):				0.5
	Date Sampled (\$):				29-Nov-2019
	Asbestos Lab:				LIVERPOOL
Determinand	Accred.	SOP	Units	LOD	
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.30	0.45

Results - Soil

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"
- \$ This information has been supplied by the client and can affect the integrity of test data.

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

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

APPENDIX 08

Soil Assessment Criteria

**Screening Levels
for
Residential (with homegrown produce)**

Contaminant		Screening Levels for Residential 6% SOM (mg/kg)	
Metals			
Arsenic		37	
Boron		290	
Cadmium		26	
Chromium III		910	
Chromium VI		21	
Copper		2400	
Lead		200	
Mercury		1.2	
Nickel		130	
Selenium		250	
Vanadium		410	
Zinc		3700	
Non – Metals			
Inorganic Cyanide*		780	
Phenol		120	
Polyaromatic Hydrocarbons (PAH)			
	1% SOM	6% SOM	
Benz[a]anthracene	7.2	13	
Benzo[a]pyrene	2.2	3.0	
Benzo[b]fluoranthene	2.6	3.7	
Benzo[ghi]perylene	320	350	
Benzo[k]fluoranthene	77	100	
Chrysene	15	27	
Dibenz[ah]anthracene	0.24	0.30	
Fluoranthene	280	890	
Indeno[123-cd]pyrene	27	41	
Naphthalene	2.3	13	
Pyrene	620	2000	

APPENDIX 09

UU Risk Assessment

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 (if it has one)	ST THOMAS
Development Address	FORMER ST THOMAS SCHOOL CHATAWAY ROAD MANCHESTER, M8 5UU
OS Grid Reference (mid point)	385192 E, 401653 N
Developers Name	JOHN SOUTHWORTH BUILDERS
UUW reference number (for UU use only)	

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.

THE SITE COMPRISED GREENFIELD LAND AND LATER A SCHOOL AND TERRACED HOUSES. THE SCHOOL WAS DEMOLISHED BY 2014.

THE SURROUNDING AREA COMPRISED MAINLY RESIDENTIAL HOUSING, A CHURCH, BISCUIT FACTORY, ENGRAVING WORKS AND BRICK WORKS. THE WORKS WERE ALL GENERALLY REDEVELOPED AS RESIDENTIAL HOUSING BY THE 1970'S.

AN INFILLED CULVERT EXTENDS EAST TO WEST ACROSS THE CENTRAL SECTION.

SEE 7540/6/01 → SECTION 4.0

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.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

NA SEE 7540/6/02, MARCH 2017.

Section 3: Intrusive site investigation

Have you completed any intrusive site investigation?

☒ Yes ☐ No

Have you completed any non-intrusive site investigation?

☐ Yes ☒ No

Date(s) when the site investigation(s) undertaken

0	5	1	0	2	0	1	7

At what level has groundwater been encountered?

2.10 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.

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.

Due to historical use of the site no significant sources of hydrocarbons were anticipated with no visual / olfactory evidence encountered during the site investigations.

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.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

NOT APPLICABLE

Section 4: Site remediation

Please provide details below of any site remediation (which may include a change in site levels) already completed.

If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.

NONE Required other than Topsoil strip, Asphalt strip and removal of excavated arisings where not required for re-use.

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.

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.

NOT APPLICABLE - SEE ABOVE.

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.

NONE - Residential use only.

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 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 additional information to support your intended pipe selection, please reference below the relevant sections of your report.

None - Residential end use only.

Section 7: Risk assessor

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

SAMANTHA SEDDON
BSc (Hons) MSc, EVRGEO, CGEO, FGS

Name and address of risk assessor's company

WML CONSULTING
UNIT 8 OAKGREEN
EARL ROAD
CHADDIE HILL, SK8 6QL

Date risk assessment performed

21 12 2018

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

SAMANTHA SEDDON

Company

WML CONSULTING

Telephone

01161 482 0600

Date

21 12 2018

Please email the completed form and supporting information to DeveloperServicesWater@uuplc.co.uk. Alternatively you can fax a paper version to 01925 677973 or post to us at United Utilities Water, Developer Services, Windermere 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	N/A	N/A	N/A	N/A	N/A	
Total BTEX & MTBE		0.1	Pass	N/A	N/A	N/A	N/A	N/A	
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	N/A	N/A	N/A	N/A	N/A	
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	N/A	N/A	N/A	N/A	N/A	
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	N/A	N/A	N/A	N/A	N/A	
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	N/A	N/A	N/A	N/A	N/A	
Phenols* (from SVOC analysis)		2	Pass	N/A	N/A	N/A	N/A	N/A	
Cresols and chlorinated phenols* (from SVOC analysis)	Only where identified	2	Pass	N/A	N/A	N/A	N/A	N/A	
Ethers*		0.5	Pass	N/A	N/A	N/A	N/A	N/A	
Nitrobenzene*		0.5	Pass	N/A	N/A	N/A	N/A	N/A	
Ketones*		0.5	Pass	N/A	N/A	N/A	N/A	N/A	
Aldehydes*		0.5	Pass	N/A	N/A	N/A	N/A	N/A	
Amines	Conductivity, Redox and pH	Fail	Pass	N/A	N/A	N/A	N/A	N/A	
Corrosive		Pass	See Note [1]	N/A	N/A	N/A	N/A	N/A	

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.