

Validation Completion Report

For a site at

Howgill Street, Openshaw

Undertaken for

John Southworth Builders Ltd

Report Title:	Howgill Street, Openshaw Validation Completion Report
Report Reference:	7539G-WML-XX-ZZ-RP-G-0005-B
Client:	John Southworth Builders Ltd
Issue Date:	25th January 2022
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Revision Status / History

Rev	Date	Issue	Prepared	Checked	Authorised
-	25/01/2022	First Issue	TPB	SCS	SCS
A	03/03/2022	Revised following comments	TPB	-	-
B	29/03/2022	Revised following further comments	TPB	-	-

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1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting (WML) has been commissioned by John Southworth Builders Ltd (JSB) to prepare a Validation Report in relation to development of Howgill Street, Openshaw.

Proposed Development

- 1.2 The redevelopment relates to the construction of twelve single storey residential structures with associated hardstanding for access and car-parking together with private gardens and landscaped areas.
- 1.3 For the purposes of planning the site is segregated by a council boundary with the relevant plots and planning information outlined in the following table.

Plots	Local Authority	Planning Reference	Condition
1 to 4	Manchester City Council	117160/FO/2017	5(ii) – Remediation Scheme
5 to 12	Tameside Metropolitan Borough Council	17/00666/FUL	4 (a) Part 3 – Remediation Scheme

- 1.4 A drawing indicating a preliminary layout by Pozzoni, is presented in Appendix 01.

Background

- 1.5 WML were initially commissioned by Mosscafe St Vincent's Housing Group (MSV) 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 7539/G/01, dated March 2017.
 - Phase 2 Geo-environmental Investigation and Assessment, Reference 7539/G/02, dated October 2017.
- 1.6 Subsequently a Remediation Strategy was undertaken for D. J. Hughes Construction which culminated in the following report.
- Supplementary Geo-Environmental Investigation and Remediation Strategy, Reference 7539G-WML-00-XX-RP-G-0003-Rev A, dated May 2019.
- 1.7 The Phase 1 and Phase 2 reports were presented to the relevant Local Authorities in support of the planning applications.

Verification

- 1.8 This report presents the compilation of the remediation / validation information obtained during the redevelopment programme associated with the capping of soft landscaping as identified within the Remediation Strategy for the following plots.

Plots	Local Authority	Planning Reference	Condition
1 to 4	Manchester City Council	117160/FO/2017	5(ii) – Remediation Scheme

- 1.9 At the start of construction, D.J. Hughes were the main contractor, however, due to unforeseen circumstances, JSB were appointed in November 2020 to complete the development. At this stage the site had been cleared, all waste soils removed and the structures had been completed to roof level and

were watertight. External areas mainly comprised compacted hardcore, installed as a construction and piling mat.

- 1.10 Subsequently, due to the nature of the change in contractor, information obtained by D. J. Hughes could not be obtained, and will be described in the relevant sections within this report.

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 BGS plans indicated that the site is underlain by Devensian Glacial Till. Across the majority of the site the drift deposits are underlain at greater depths by the Permian Collyhurst Sandstone Formation which generally comprises sandstone. In the extreme south-western section of the site, the drift deposits are inferred to be underlain by the Permian Manchester Marl Formation which generally comprises calcareous mudstone and siltstone.
- 2.3 In consideration of the underlying geology, risks of subsidence from coal mining can be discounted.
- 2.4 The property is not in a Radon Affected Area as defined by the Health Protection Agency as less than 1% of properties are above the Action Level of exposure. No radon protection measures are therefore necessary for new properties as described in publication BR211 by the Building Research Establishment.
- 2.5 The Glacial Till is classified by the Environment Agency as a Secondary (Undifferentiated) Aquifer. The underlying bedrock is classified as a Principal Aquifer.
- 2.6 There are no Environment Agency Source Protection Zones within 500m of the site. There are no active groundwater abstraction licences within 1km of the site. There is 1no recorded Detailed River Network feature within 250m of the site. This relates to the Ashton Canal, approximately 83m south.
- 2.7 There are no active landfills recorded within 1km of the site and no BGS/DOE recorded non-operational landfills within 500km of the site.
- 2.8 There is 1no Environment Agency recorded historic landfill within 250m of the site. This relates to inert and industrial waste at Crabtree Forge approximately 148m south-west. Historical records indicate that several infilled ponds and a lime pit are located within 250m of the site, the closest being immediately to the south at a lower elevation.
- 2.9 An electrical sub-station is located between the Howgill Street and Arbroath Street boundaries and lies outside of the development zone with an associated easement.
- 2.10 There are no active Petrol Fuel Sites recorded within 500m of the site boundary although there is one obsolete site recorded at Maynes Coaches, some 91m south-west. However, in consideration of the subject site being topographically at a higher elevation and the distance, this is not considered to pose a significant risk.
- 2.11 There are 7no sites that have been determined as Contaminated Land under Section 78R of the Environmental Protection Act 1990 within 500m of the study site. These relate to sites contaminated by arsenic, heavy metals and polyaromatic hydrocarbons (PAHs) located between 247m south and 403m south-west of the site and relating to domestic premises.
- 2.12 Historically, the site was developed with residential terraced structures between 1892 and 1906 in two phases. Phased demolition of these structures was undertaken in the 1980's, since then, the site has remained undeveloped.

Ground Conditions

- 2.13 Across the wider Howgill and Arbroath sites, ground investigation work was undertaken by LOT Geotechnics Ltd on 26th and 27th September 2017 and 1st and 7th May 2019. This comprised the formation of 2no cable percussive boreholes, 8no window sample probeholes to a maximum depth of 10.00 metres below ground level (mbgl).

- 2.14 Ground conditions comprised made ground to depths of between 1.25m and 3.20mbgl underlain by firm becoming stiff cohesive glacial till to a maximum proven depth of 10.00mbgl.
- 2.15 No significant visual and/or olfactory evidence of significant ground contamination was identified during the investigation. However, a sample of made ground obtained from WS1 at a depth of 0.90mbgl contained a fragment of floor tile with a fibrous matrix.
- 2.16 Groundwater was encountered during formation at depths of 2.30m and 3.80bgl within the made ground and glacial till. During the subsequent monitoring visit, groundwater levels were recorded at depths of between 1.08m and 2.46mbgl. However, WS5 was noted to be dry on all occasions.
- 2.17 Chemical analysis indicated several exceedances of CoC's within the Made Ground, when compared to the current LQM/CIEH reference values for residential with homegrown produce. These were considered to relate in the main to metals and PAH compounds, most likely due to the presence of ash and clinker within the made ground matrix.
- 2.18 In addition, 8no samples of made ground were found to contain asbestos, with subsequent quantification testing indicating the following with those in bold located within the Arbroath section of the site.

Sample	Asbestos Identification	ACM	Fibres	Quantification %
WS1 0.40	Chrysotile	-	Fibre Bundles	<0.001
WS1 0.90	Chrysotile	Cement Debris		29.07
WS2 0.30	Chrysotile	-		<0.001
WS4 0.50	Chrysotile	-		<0.001
WS5 0.50	Chrysotile	-		<0.001
WS6 0.50	Chrysotile	-		<0.001
WS7 0.40	Chrysotile	Cement Debris		0.007
WS8 0.30	Chrysotile	-		<0.001

Ground Gas Results

- 2.19 Ground gas monitoring, primarily for methane and carbon dioxide, with associated flow rates, was undertaken on 6no occasions between 10th October 2017 and 22nd November 2017.
- 2.20 The results to date indicate no detectable concentrations of methane with carbon dioxide concentrations generally ranging from 0.2 to 4.1% by volume in air (v/v). However, within WS8 the carbon dioxide concentrations were noted to be between 8.9 and 9.6% v/v.
- 2.21 No detectable ground gas flows have been recorded during any of the monitoring visits with the exception of a slight low flow of 0.7l/hr within WS3 on a single occasion, namely 22nd November 2017.
- 2.22 The results for each individual standpipe have been assessed with reference to guidance provided in BS8485:2015. Based on the measured flow rates and hazardous gas concentrations, individual "hazardous gas flow rates" (Q_{hg}) have been derived for each monitoring point, from which an individual "Characteristic Situation" (CS) has been determined, with reference to Table 2 of BS8485:2015. The determined CS for each standpipe for each visit is presented on the gas monitoring spreadsheet in Appendix 03 of the Remediation Strategy.

- 2.23 The results give a maximum Qhg value of <0.0096l/hr and indicate the site to classify as Characteristic Situation (CS) 1 – Very Low Gas Risk' in accordance with BS8485:2015.
- 2.24 Notwithstanding this , when compared to CIRIA C665:2007, the monitoring results give screening values (GSV's) of 'Green' in eighteen out of twenty-four gas monitoring situations with only six (all from WS8) being Amber 1.
- 2.25 As the carbon dioxide concentration exceeds 5% within a single hole the BS8485 guidance indicates that consideration should be given to upgrading the CS classification to CS2 – 'Low Gas Risk' could be considered.
- 2.26 However, in consideration of the conceptual model no credible significant source of ground gas exists beneath or in close proximity to the site, with no plausible migration pathway, leads to the conclusion that the site presents a negligible risk from ground gas and an upgrade to CS2 would not be required.
- 2.27 It can also be concluded that piled foundations, would not provide a preferential pathway for the migration of ground gas in consideration of the conceptual site model (Wilson & Mortimer (2017), Environmental Geotechnics).
- 2.28 Consequently, based on the BS:8485 / CIRIA guidance, and taking into consideration the installation of a ventilated sub slab void due to the thickness of made ground, it is considered that no specific ground gas protection measures would be require within new structures.

3.0 SUMMARY OF REMEDIATION OBJECTIVES

3.1 The following objectives were outlined in the Remediation Strategy.

Asbestos Control Measures

- 3.2 Site operations will be under the full-time control of Site Manager who will ensure that all asbestos management personnel hold necessary certificates relating to asbestos awareness.
- 3.3 Site induction for site operatives and visitors will include a specific tool box talk relating to asbestos. This will cover basic identification of possible Asbestos Containing Material (ACM) and the procedure to be adopted if any such material is suspected.
- 3.4 A specialist consultant in the identification of ACM should be present during any significant earth moving operations.
- 3.5 The asbestos specialist will be UKAS accredited and will set up perimeter background monitoring stations around the site boundary and at strategic locations within the site as considered necessary during the earthworks. In addition, personal monitoring equipment will be deployed around working areas for work location monitoring.
- 3.6 It is envisaged that, during earthworks within these areas, air tests will be undertaken with asbestos fibre counting being undertaken in consultation with the asbestos specialist.
- 3.7 Furthermore, during periods of dry weather, the site surface will be dampened down to minimise the potential for airborne dust. Water sprays may also be employed at excavation locations to minimise the production of airborne dust. A detailed Method Statement for the control and management of dust on site will be contained within the main contractor's Environmental Management Plan.
- 3.8 The asbestos consultant will initially undertake a detailed walk-over of the site with selected samples of any suspected fibrous material so identified on the surface being sent to the laboratory for asbestos identification.
- 3.9 Where such materials are identified as ACM, similar fragments identified by further inspection will be located on plan and marked on site for subsequent removal by a licensed asbestos contractor. Where considered appropriate, further samples of such materials will be taken for laboratory identification.
- 3.10 The consultant will similarly identify any suspected ACM during the subsequent earthworks/groundworks. Where obvious fragments of ACM are identified, they will be hand-picked where practical and removal from site by the licensed asbestos contractor as soon as reasonably practical. Where such materials cannot be removed immediately, the ACM will be covered by impermeable membrane and clearly marked on site for subsequent removal.
- 3.11 Following the surface hand-picking exercise, samples of soil will be taken from the surface over the site and subjected to asbestos quantification analysis in the laboratory. Where the percentage of asbestos fibres are identified to be in excess of 0.1% by volume of the sample, further inspection of the soil in that area will be undertaken with removal of identified ACM where appropriate.
- 3.12 At the discretion of the asbestos consultant further samples may also be taken for quantification analysis at the laboratory.
- 3.13 The licensed asbestos contractor will arrange for the necessary disposal of hand-picked ACM to an appropriately licensed landfill facility. Records in the form of Duty of Care documentation will be kept by the site manager for presentation where required.

Capping Requirements for Private Gardens

- 3.14 As the level of contamination in the made ground rendered it unsuitable for direct use beneath proposed landscaped areas, development were to include the provision of a clean cover over the made ground to break the direct contact pollution linkage.
- 3.15 Subsequently, all new landscaped areas were 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 comprise from the top down of:
- 150mm (minimum) of clean imported Topsoil;
 - 450mm of clean imported subsoil;
 - 100mm granular break or geotextile separator.
- 3.16 The following were also to be provided.
- Results of chemical analysis of imported Topsoil/subsoil to confirm compliance with the Site Specific Assessment Criteria.
 - Records of the volumes and suitability of all imported fill, Topsoil and subsoil delivered to site in the form of certificates.
 - Photographic evidence of suitable subsoil/Topsoil cover in gardens where underlain by Made Ground.

General

- 3.17 The following additional information was also to be provided.
- Details of any unexpected ground contamination (soils and 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.
- 3.18 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

- 4.1 Due to the presence of asbestos encountered within the Phase 2 investigations the groundworks were to be undertaken under consultation of an asbestos specialist.
- 4.2 However, this section of the works was undertaken by D.J. Hughes, and as such no documents are able to be obtained from the former contractor, whose records are all held by the administrators.
- 4.3 However, in consideration of the required finish levels, and the need to allow for a 600mm reduction in garden areas, together with the emplacement of a compacted granular 6F2 pile mat across the site area, it is considered that any made ground excavated from the site was removed to landfill. However, no records can be provided to this effect.

Unforeseen Ground Contamination

- 4.4 No evidence of contamination, unusual ground conditions, organic materials such as peat, and/or asbestos over and above those identified within the site investigations were reported to WML during the construction phase of the works by either D.J. Hughes (prior to November 2020) or subsequently by JSB.
- 4.5 However, it should be noted that with the exception of final service installation / connections all groundworks were carried out prior to the involvement of JSB.

General Groundworks

- 4.6 As previously outlined, all general groundworks were undertaken by D.J. Hughes in early 2020. This included the removal of site derived excavated soils including topsoil, made ground from the reduction of the mounds and spoil from foundation and service excavations.
- 4.7 Subsequently, this cannot be verified through provision of removal dockets or receiving landfill information due to the closure of the company.
- 4.8 However, due to the requirement to reduce site levels along the crest of the former mound, the contamination within the existing topsoil and made ground, together with the limited development area, it is considered that there would have been no provision to store or re-use any site derived soils in the development.

Imported Topsoil / Subsoil

- 4.9 No suitable site-won topsoil or subsoil was available for re-use at the site for the capping of proposed garden areas. Therefore, all topsoil required for use as capping soil was imported to site via Freeland Horticulture Limited from a source referred to as in Astley, Greater Manchester.
- 4.10 A clean granular material used as a subsoil was obtained via PP O'Connors direct from:
- Fletcher Bank Quarry
Manchester Road
Ramsbottom
Greater Manchester
BL0 0DH
- 4.11 Chemical analysis carried out at source indicated the soils were suitable for reuse and are presented in Appendix 03 and Appendix 04 respectively.

- 4.12 Three samples of the imported subsoil (VP02 – 0.30m, VP03 – 0.50m and VP04 – 0.30m) and three samples of the imported topsoil (VP01 – 0.10m, VP03 – 0.05m and VP04 – 0.10m) were obtained by WML on the 22nd October 2021 from the gardens of Plots 1 to 4.
- 4.13 The samples, were submitted for chemical analyses and the test results are presented on testing sheet 21/11661 in Appendix 05. The majority of the concentrations were measured below the relevant SL's for a "Residential with homegrown produce" end-use, as provided within Appendix 07, with the following exception.

Contaminant	Number of Exceedances	SL (mg/kg)	Recorded Concentrations (mg/kg)	Samples
Mercury	1	1.2	5.27	VP3 – 0.50m

- 4.14 Subsequently the subsoil within the rear garden of Plot 1, where VP3 was located, was removed from site and replaced with clean imported subsoil. An invoice from WDF Demolition & Excavation Ltd has been provided by JSB associated with the removal to the subsoil and is presented in Appendix 06.
- 4.15 Once the subsoil had been removed and replaced, WML attended site on 23rd December 2021 to obtain an additional sample of the clean imported material emplaced in the rear garden of Plot 1. This was submitted for chemical analyses and the test results are presented on testing sheet 21-44418-1 in Appendix 05.
- 4.16 All of the concentrations of the replaced granular subsoil measured below the relevant SL's for a "Residential with homegrown produce" end-use.

Capping Thickness

- 4.17 The capping thicknesses were also verified by WML with the formation of validation pits on 22nd October 2021 within Plots 1 to 4.
- 4.18 The imported topsoil generally comprised a dark brown, variably gravelly, organic sand with rootlets and small woody fragments. The imported subsoil generally comprised a greyish brown, gravelly sand/sandy gravel.
- 4.19 Photographs of the validation pits are provided in Appendix 02 and indicate generally 400mm to 500mm of subsoil and 150mm to 200mm of topsoil in all garden areas underlain by natural glacial till.
- 4.20 A drawing showing the locations of the validation pits, referenced 7539G – SK01A, is presented in Appendix 01.

Testing Volumes

- 4.21 Approximately 42m³ of capping soils were imported to site for use in the garden areas. This comprised approximately 12m³ of topsoil from Freeland Horticulture and 30m³ of subsoil from Fletcher Bank Quarry. This equates to a sampling regime of imported topsoil undertaken at a ratio of one sample per 4m³ and imported subsoil at a ratio of one sample per 10m³.

Water Supply Pipes

- 4.22 It is understood that standard PE water pipework was installed during the development. However, this section of the works was undertaken by D.J. Hughes, and as such no documents are able to be obtained from the former contractor, whose records are all held by the administrators.

- 4.23 However, in consideration of the lack of visual or olfactory evidence of significant ground contamination and the results of the chemical analysis undertaken during the intrusive investigations it is envisaged that standard PE pipework would be sufficiently protective for the development.
- 4.24 A copy of subsequent correspondence between JSB and United Utilities confirming the connection is included within Appendix 08.

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 500mm and to be underlain by natural cohesive glacial till. The Topsoil and subsoil have been confirmed by chemical analysis to generally conform to appropriate site specific assessment criteria.
- 5.2 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.
- 5.3 However, due to unforeseen issues documentation with regards to waste documentation and asbestos measures undertaken prior to November 2021, cannot be made available from the former main contractor.

APPENDIX 01

Drawings



Existing Site Boundaries
1 : 200

Notes

The Contractor is to check all dimensions and conditions on site before commencing. Do not scale from this drawing.
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Scale Bars		TO BE USED ONLY AS GUIDANCE			
1:100	mm	0	1000	2000	3000
1:200	mm	0	1000	2000	3000
1:500	m	0	10	20	30
1:1250	m	0	10	20	30

Site Boundary (Tameside)

Site Boundary (Manchester)

A	Site Ownership Boundary adjusted on Arbroath Street	BAP	04/02/20
Rev	Description	By	Date
Client	St Vincent's Housing Association		
Job	Howgill Street & Arbroath Street		
Drawing	Site Location Plan		
Index Ref	P4674-02_1100	Rev	A
Date	17.06.19	As indicated	@ A1
2D Coord	BAP	3D Coord	AD
Planning	Tender	Construction	
Design	Contract	As Built	

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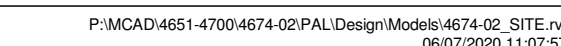
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Proj	Design	Contract	As Built
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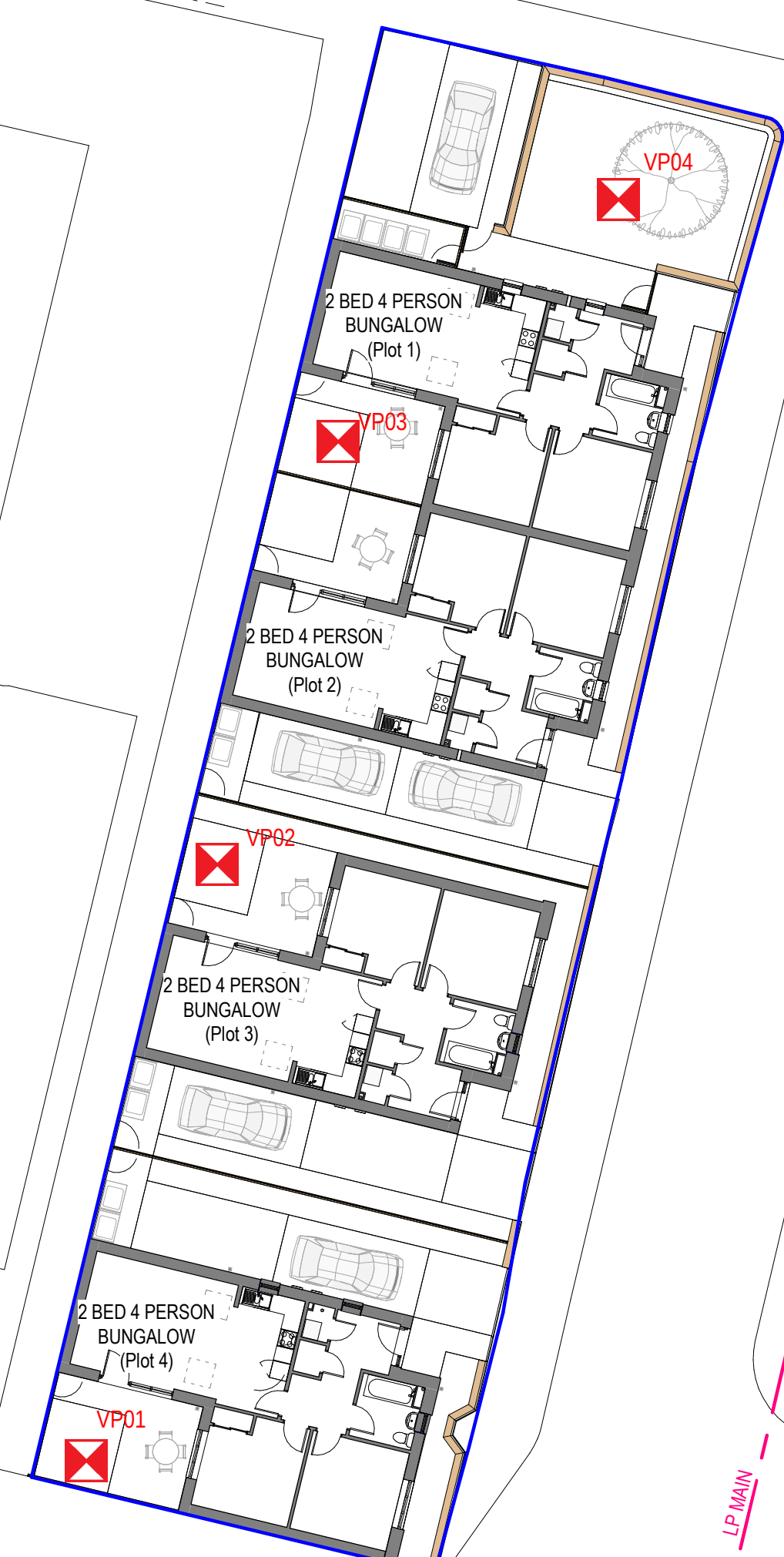
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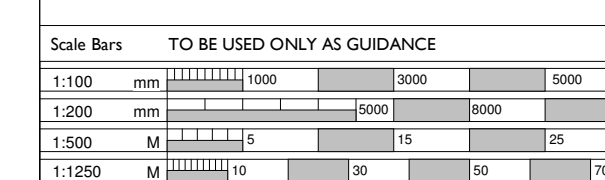




WMLCONSULTING
Project: Howgill St
Drg Title: Validation Pit Locations
Job No: 7539G By: TPB
Drg No: SK-01A Rev: -
Date: 25/01/22 Scale: N.T.S.

Proposed Site Plan - Arbroath Street
1 : 200

Notes
The Contractor is to check all dimensions and conditions on site before commencing. Do not scale from this drawing.
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Key

- Site Boundary
- Site within Manchester. Please refer to drawings P4674-02-1101M, P4674-02-1201M,
- Existing tree to be retained
- Existing tree to be removed
- Proposed tree (compensatory planting)
- Visibility Splay to driveways (NB the boundary to street can be seen through)

Boundary Types
1 : 50

Please refer to the tags on the plan for the location of each boundary type

A - Street boundary, wall with railings over and metal gates.

B - Division between dwellings, 1.8m timber fence

C - Rear boundary, 2.1m timber fence

D	Site Ownership Boundary adjusted on Arbroath Street	BAP	04/02/20
C	FFL levels	BAP	13/08/19
B	Layout adjusted to accommodate keeping some of the existing trees.	EMc	04/12/17
A	Visibility splays added and boundary types indicated	EMc	11/10/17

Rev	Description	By	Date
1	St Vincent's Housing Association		
2	Howgill Street & Arbroath Street		
3	Planning - Proposed GA Plans		
4	P4674-02_1201T	Rev	D
5	1201T	As indicated	@ A1
6	11/05/17	LB	JC
7	Planning	Tender	Construction
8	Design	Contract	As Built

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APPENDIX 02

Photographs



Photograph 1
VP01 showing 150mm of topsoil and 450mm of subsoil.



Photograph 2
View of Plot 4 rear garden showing location of VP01.



Photograph 3
VP02 showing 500mm of subsoil.



Photograph 4
View of Plot 3 rear garden showing location of VP02 with topsoil stockpiled prior to emplacement.



Photograph 5
VP03 showing 200mm of topsoil 400mm of subsoil.



Photograph 6
View of Plot 1 rear garden showing location of VP03.



Photograph 7
VP04 showing 150mm of topsoil 400mm of subsoil.



Photograph 8
View of Plot 1 front garden showing location of VP04.

APPENDIX 03

Chemical Analyses from Source - Topsoil



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

Attention: Philippa Lambourne

Our Ref: SLC-924-SA

6 May 2021

Dear Philippa

Topsoil Analysis Report: Astley, Greater Manchester Topsoil – May 2021

We have completed the analysis of the topsoil sample recently taken from the above site and it has been forwarded to an approved laboratory for analysis 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 and its compliance with the current British Standard for topsoil (BS3882).

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 dark brown, slightly moist and friable 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 and MCERTS 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:

Freeland horticulture Ltd, Registered in England: Rosedale Nursery, College Road, Hextable, Kent BR8 7LT
Company Registration No: 04015968

COMMENTS**pH & Electrical Conductivity (salinity) Values**

The sample was alkaline in nature (pH 8.3) with a pH value that would be considered suitable for general landscaping purposes.

The electrical conductivity (salinity) value using the soil:water extract was (654 μ S/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by CaSO₄ extract (BS3882 requirement) fell below the maximum specified value (3300 μ S/cm) given in BS3882:2015.

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.

The C:N ratio of the sample was acceptable for general landscape purposes

Particle Size Distribution & Stone Content

The sample contained 71% 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 Virtually free from stones of 50 mm and upwards in diameter and only contained a slight fraction of smaller stones (3.4%). 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. This includes human health, environmental protection and metals considered toxic to plants. In the absence of any site-specific assessment criteria, the concentrations that affect human health have been compared with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in 'The LQM/CIEH S4UIs' for Human Health Risk Assessment (2015) and DEFRA SP1010: 'Development of Category 4 Screening Levels' for Assessment of Land Affected by Contamination – Policy Companion Document (2014).

Of the potential contaminants determined, none was found at levels that would exceed their respective guideline values.

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 sandy. 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	May 21
Our Ref	0924-SA
Date	06 May 2021

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	654
Electrical Conductivity (1:2.5 soil/CaSO ₄ ext)	µS/cm	2525
Neutralising Value (CaCO ₃ equivalent)	%	4.3

Organic Matter & Nutrient Status

Organic Matter (LOI)	%	3.4
Organic Carbon (Derived)	%	2.0
Total Nitrogen	%	0.107
Carbon:Nitrogen Ratio	:1	18.5
Available Phosphorus	mg/l	25.2
Available Potassium	mg/l	542
Available Magnesium	mg/l	161

Particle Size Analysis & Stones

Clay (<0.002mm)	%	10
Silt (0.063-0.002mm)	%	19
Sand (2.0-0.063mm)	%	71
Texture Class	UK Class	Sandy Loam

Stones 2-20mm	% by DW	3.4
Stones 20-50mm	% by DW	0.0
Stones >50mm	% by DW	0.0

Potential Contaminants

Total Arsenic (As)	mg/kg	3.1
Total Cadmium (Cd)	mg/kg	0.14
Total Chromium (Cr)	mg/kg	16.8
Hexavalent Chromium (Cr ^{VI})	mg/kg	<0.2
Total Copper (Cu)	mg/kg	9.1
Total Lead (Pb)	mg/kg	16.6
Total Mercury (Hg)	mg/kg	<0.2
Total Nickel (Ni)	mg/kg	<10
Total Selenium (Se)	mg/kg	0.13
Total Zinc (Zn)	mg/kg	33.5
Total Beryllium (Be)	mg/kg	<1
Total Barium (Ba)	mg/kg	33.4
Total Vanadium (V)	mg/kg	10.2
Hot Water Soluble Boron (B)	mg/kg	0.8
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	144
Total Phenols Index	mg/kg	<1
Asbestos Screen	-	N.D.

Client	Freeland Horticulture Ltd
Job Name	Topsoil Analysis
Site	Astley, Greater Manchester
Month/Year	May 21
Our Ref	0924-SA
Date	06 May 2021

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	0.2
Anthracene	mg/kg	<0.05
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo[a]anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo[b]fluoranthene	mg/kg	<0.1
Benzo[k]fluoranthene	mg/kg	<0.1
Benzo[a]pyrene	mg/kg	<0.1
Indeno[1,2,3-cd]pyrene	mg/kg	<0.1
Dibenzo[a,h]anthracene	mg/kg	<0.1
Benzo[g,h,i]perylene	mg/kg	<0.1
Total PAHs sum US EPA 16	mg/kg	<1

Banded Petroleum Hydrocarbons

Aliphatic TPH >C ₅ -C ₆	mg/kg	1.60
Aliphatic TPH >C ₆ -C ₈	mg/kg	0.25
Aliphatic TPH >C ₈ -C ₁₀	mg/kg	0.05
Aliphatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aliphatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aliphatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aliphatic TPH >C ₂₁ -C ₃₅	mg/kg	14.0
Aliphatic TPH >C ₃₅ -C ₄₄	mg/kg	20.0

Aromatic TPH >C ₅ -C ₇	mg/kg	<0.05
Aromatic TPH >C ₇ -C ₈	mg/kg	<0.05
Aromatic TPH >C ₈ -C ₁₀	mg/kg	<0.05
Aromatic TPH >C ₁₀ -C ₁₂	mg/kg	<10
Aromatic TPH >C ₁₂ -C ₁₆	mg/kg	<10
Aromatic TPH >C ₁₆ -C ₂₁	mg/kg	<10
Aromatic TPH >C ₂₁ -C ₃₅	mg/kg	15.0
Aromatic TPH >C ₃₅ -C ₄₄	mg/kg	22.0

Total Petroleum Hydrocarbons (C ₅ -C ₄₄)	mg/kg	72.8
---	-------	------

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 04

Chemical Analyses from Source - Subsoil

Concept Life Sciences

Certificate of Analysis

Hadfield House
Hadfield Street
Cornbrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 712587-1

Date of Report: 07-Feb-2018

Customer: PP O'Connor
Woodrow Way
Thames Trading Estate
Irlam
Manchester
M44 6NN

Customer Contact: Mr Nigel Hambleton

Customer Job Reference:

Customer Site Reference: Fletcher Bank Quarry, Ramsbottom

Date Job Received at Concept: 31-Jan-2018

Date Analysis Started: 01-Feb-2018

Date Analysis Completed: 07-Feb-2018

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

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

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with Concept Life Sciences SOPs

All results have been reviewed in accordance with Section 25 of the Concept Life Sciences, Analytical Services Quality Manual



1549

Report checked
and authorised by :
Aleksandra Pacula
Customer Service Advisor

Issued by :
Aleksandra Pacula
Customer Service Advisor



Concept Reference: 712587 Project Site: Fletcher Bank Quarry, Ramsbottom Customer Reference: Soil Analysed as Soil Heavy Metals(9)					
Concept Reference					712587 001
Customer Sample Reference					Jar of Sand
Date Sampled					31-JAN-2018
Determinand	Method	Test Sample	LOD	Units	
Arsenic	T6	A40	1	mg/kg	6
Cadmium	T6	A40	1	mg/kg	<1
Chromium	T6	A40	1	mg/kg	14
Copper	T6	A40	1	mg/kg	110
Lead	T6	A40	1	mg/kg	34
Mercury	T6	A40	1	mg/kg	<1
Nickel	T6	A40	1	mg/kg	12
Selenium	T6	A40	3	mg/kg	<3
Zinc	T6	A40	1	mg/kg	180

Concept Reference: 712587 Project Site: Fletcher Bank Quarry, Ramsbottom Customer Reference: Soil Analysed as Soil Total and Speciated USEPA16 PAH					
Concept Reference					712587 001
Customer Sample Reference					Jar of Sand
Date Sampled					31-JAN-2018
Determinand	Method	Test Sample	LOD	Units	
Naphthalene	T16	AR	0.1	mg/kg	<0.1
Acenaphthylene	T16	AR	0.1	mg/kg	<0.1
Acenaphthene	T16	AR	0.1	mg/kg	<0.1
Fluorene	T16	AR	0.1	mg/kg	<0.1
Phenanthrene	T16	AR	0.1	mg/kg	<0.1
Anthracene	T16	AR	0.1	mg/kg	<0.1
Fluoranthene	T16	AR	0.1	mg/kg	<0.1
Pyrene	T16	AR	0.1	mg/kg	<0.1
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	<0.1
Chrysene	T16	AR	0.1	mg/kg	<0.1
Benzo(b/k)Fluoranthene	T16	AR	0.1	mg/kg	<0.1
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	<0.1
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	<0.1
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	<0.1
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	<0.1
PAH(total)	T16	AR	0.1	mg/kg	<0.1

Concept Reference: 712587 Project Site: Fletcher Bank Quarry, Ramsbottom Customer Reference: Soil Analysed as Soil Miscellaneous					
Concept Reference					712587 001
Customer Sample Reference					Jar of Sand
Date Sampled					31-JAN-2018
Determinand	Method	Test Sample	LOD	Units	
Total Petroleum Hydrocarbons	T8	AR	1	mg/kg	(13) g
Asbestos ID	T27	AR			N.D.

Index to symbols used in 712587-1

Value	Description
A40	Assisted dried < 40C
AR	As Received
N.D.	Not Detected
13	Results have been blank corrected.
S	Analysis was subcontracted
U	Analysis is UKAS accredited

Notes

Asbestos was subcontracted to REC Asbestos.

Method Index

Value	Description
T6	ICP/OES
T16	GC/MS
T8	GC/FID
T27	PLM

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	Concept References
Total Petroleum Hydrocarbons	T8	AR	1	mg/kg	U	001
Asbestos ID	T27	AR			SU	001
Naphthalene	T16	AR	0.1	mg/kg	U	001
Acenaphthylene	T16	AR	0.1	mg/kg	U	001
Acenaphthene	T16	AR	0.1	mg/kg	U	001
Fluorene	T16	AR	0.1	mg/kg	U	001
Phenanthrene	T16	AR	0.1	mg/kg	U	001
Anthracene	T16	AR	0.1	mg/kg	U	001
Fluoranthene	T16	AR	0.1	mg/kg	U	001
Pyrene	T16	AR	0.1	mg/kg	U	001
Benzo(a)Anthracene	T16	AR	0.1	mg/kg	U	001
Chrysene	T16	AR	0.1	mg/kg	U	001
Benzo(b/k)Fluoranthene	T16	AR	0.1	mg/kg	U	001
Benzo(a)Pyrene	T16	AR	0.1	mg/kg	U	001
Indeno(123-cd)Pyrene	T16	AR	0.1	mg/kg	U	001
Dibenzo(ah)Anthracene	T16	AR	0.1	mg/kg	U	001
Benzo(ghi)Perylene	T16	AR	0.1	mg/kg	U	001
PAH(total)	T16	AR	0.1	mg/kg	U	001
Arsenic	T6	A40	1	mg/kg	U	001
Cadmium	T6	A40	1	mg/kg	U	001
Chromium	T6	A40	1	mg/kg	U	001
Copper	T6	A40	1	mg/kg	U	001
Lead	T6	A40	1	mg/kg	U	001
Mercury	T6	A40	1	mg/kg	U	001
Nickel	T6	A40	1	mg/kg	U	001
Selenium	T6	A40	3	mg/kg	U	001
Zinc	T6	A40	1	mg/kg	U	001

APPENDIX 05

Chemical Analyses from Imported Soils

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 21/11661
Issue Number: 1

Date: 03 November, 2021

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

Project Manager: Sam Seddon
Project Name: Howgill Street
Project Ref: Not specified
Order No: 7539G
Date Samples Received: 27/10/21
Date Instructions Received: 27/10/21
Date Analysis Completed: 03/11/21

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



Sophie France
Client Service Manager

Envirolab Job Number: 21/11661

Client Project Name: Howgill Street

Client Project Ref: Not specified

Lab Sample ID	21/11661/1	21/11661/4	21/11661/5	21/11661/6	21/11661/7	21/11661/8		Units	Limit of Detection	Method ref
Client Sample No	TS	SS	TS	SS	TS	SS				
Client Sample ID	VP01	VP02	VP03	VP03	VP04	VP04				
Depth to Top	0.10	0.30	0.05	0.50	0.10	0.30				
Depth To Bottom										
Date Sampled	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	4AE	4A	5AE	4A	5AE	4A				
% Stones >10mm _A	0.8	20.1	<0.1	<0.1	<0.1	1.2		% w/w	0.1	A-T-044
pH _D ^{M#}	8.47	8.41	10.27	9.14	8.44	8.76		pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01	<0.01	0.07	<0.01	<0.01	0.02		g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	260	<200	630	<200	300	<200		mg/kg	200	A-T-028s
Sulphur (total) _D	582	51	792	165	529	62		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#}	8.4	0.3	8.2	0.4	6.7	0.4		% w/w	0.1	A-T-032 OM
Arsenic _D ^{M#}	2	<1	2	1	2	<1		mg/kg	1	A-T-024s
Boron (water soluble) _D	1.4	<1.0	1.1	<1.0	1.4	<1.0		mg/kg	1	A-T-027s
Cadmium _D ^{M#}	<0.5	<0.5	<0.5	2.4	<0.5	<0.5		mg/kg	0.5	A-T-024s
Copper _D ^{M#}	20	6	18	7	18	5		mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-040s
Lead _D ^{M#}	46	11	26	86	54	10		mg/kg	1	A-T-024s
Mercury _D	0.38	<0.17	0.67	5.27	0.54	<0.17		mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	12	11	12	5	12	12		mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	<1	<1	<1	<1		mg/kg	1	A-T-024s
Vanadium _D ^{M#}	16	11	22	6	16	11		mg/kg	1	A-T-024s
Zinc _D ^{M#}	59	29	56	33	53	29		mg/kg	5	A-T-024s

Envirolab Job Number: 21/11661

Client Project Name: Howgill Street

Client Project Ref: Not specified

Lab Sample ID	21/11661/1	21/11661/4	21/11661/5	21/11661/6	21/11661/7	21/11661/8		Units	Limit of Detection	Method ref
Client Sample No	TS	SS	TS	SS	TS	SS				
Client Sample ID	VP01	VP02	VP03	VP03	VP04	VP04				
Depth to Top	0.10	0.30	0.05	0.50	0.10	0.30				
Depth To Bottom										
Date Sampled	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	4AE	4A	5AE	4A	5AE	4A				
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	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: 21/11661

Client Project Name: Howgill Street

Client Project Ref: Not specified

Lab Sample ID	21/11661/1	21/11661/4	21/11661/5	21/11661/6	21/11661/7	21/11661/8		Units	Limit of Detection	Method ref
Client Sample No	TS	SS	TS	SS	TS	SS				
Client Sample ID	VP01	VP02	VP03	VP03	VP04	VP04				
Depth to Top	0.10	0.30	0.05	0.50	0.10	0.30				
Depth To Bottom										
Date Sampled	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21	22-Oct-21				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil				
Sample Matrix Code	4AE	4A	5AE	4A	5AE	4A				
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	0.02	<0.01	<0.01	<0.01	<0.01		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#}	0.04	0.04	<0.02	<0.02	<0.02	<0.02		mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.13	0.06	0.08	<0.04	0.09	<0.04		mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.17	0.07	0.11	<0.04	0.12	<0.04		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.16	0.05	0.11	<0.05	0.13	<0.05		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.09	<0.05	0.07	<0.05	0.08	<0.05		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.13	<0.07	0.11	<0.07	0.09	<0.07		mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	0.21	0.09	0.16	<0.06	0.17	<0.06		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#}	0.22	0.15	0.11	<0.08	0.15	<0.08		mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.09	0.04	0.05	<0.03	0.07	<0.03		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#}	0.12	0.11	<0.03	<0.03	0.05	<0.03		mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	0.20	0.14	0.11	<0.07	0.12	<0.07		mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	1.56	0.77	0.91	<0.08	1.07	<0.08		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

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:	21/11661
Project:	Howgill Street	Date Received:	27/10/2021 (am)
Clients Project No:		Cool Box Temperatures (°C):	15.4

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: 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 (for water samples $5 \pm 3^{\circ}\text{C}$), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	21/11661/1	21/11661/4	21/11661/5	21/11661/6	21/11661/7	21/11661/8
Client Sample No	TS	SS	TS	SS	TS	SS
Client Sample ID/Depth	VP01 0.10m	VP02 0.30m	VP03 0.05m	VP03 0.50m	VP04 0.10m	VP04 0.30m
Date Sampled	22/10/21	22/10/21	22/10/21	22/10/21	22/10/21	22/10/21
A-T-019s	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021
A-T-024s	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021
A-T-026s	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021
A-T-027s	03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021
A-T-028s	03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021	03/11/2021
A-T-031s	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021	01/11/2021
A-T-032 OM	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021
A-T-040s	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021
A-T-042sTCN	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021
A-T-044	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021
A-T-045	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021
A-T-050s	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021	29/10/2021

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



2183

Final Report

Report No.:	21-44418-1		
Initial Date of Issue:	23-Dec-2021		
Client	WML Consulting Ltd		
Client Address:	No. 8 Oak Green Stanley Green Business Park Earl Rd Cheadle SK8 6QL		
Contact(s):	Sam Seddon Tom Booth		
Project	7539G Howgill St		
Quotation No.:		Date Received:	16-Dec-2021
Order No.:	7539G	Date Instructed:	16-Dec-2021
No. of Samples:	1		
Turnaround (Wkdays):	5	Results Due:	22-Dec-2021
Date Approved:	23-Dec-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: 7539G Howgill St

Client: WML Consulting Ltd	Chemtest Job No.:		21-44418		
Quotation No.:	Chemtest Sample ID.:		1341230		
	Sample Location:		Plot 1		
	Sample Type:		SOIL		
	Top Depth (m):		0.6		
	Date Sampled:		30-Nov-2021		
	Asbestos Lab:		DURHAM		
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	13
pH	U	2010		4.0	8.8
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.064
Total Sulphur	U	2175	%	0.010	< 0.010
Cyanide (Total)	U	2300	mg/kg	0.50	[B] < 0.50
Sulphate (Total)	U	2430	mg/kg	100	330
Arsenic	U	2450	mg/kg	1.0	1.8
Cadmium	U	2450	mg/kg	0.10	0.12
Copper	U	2450	mg/kg	0.50	8.4
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	13
Lead	U	2450	mg/kg	0.50	9.7
Selenium	U	2450	mg/kg	0.20	< 0.20
Vanadium	U	2450	mg/kg	5.0	10
Zinc	U	2450	mg/kg	0.50	43
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Organic Matter	U	2625	%	0.40	0.79
Naphthalene	U	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.39
Pyrene	U	2800	mg/kg	0.10	0.27
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1341230			Plot 1	30-Nov-2021	B	Amber Glass 250ml

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
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.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
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"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

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

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

APPENDIX 06

Soil Removal Invoice

**W.D.F. Demolition & Excavation Limited**

Whitfield Dairy Farm, Shaw, Oldham, OL2 7UJ

Office: 01706 843659 • Mobile: 07958 119466

Email: info@wdf-ltd.co.uk • www.wdf-ltd.co.uk

N^o 92968

Date 10th

Job No

Licence No. CB/DU54473

Customer Name John Southworth

Site Address

Delivery Address

Driver Name Tyler

Wagon No UDV

Material	1 x 8 Wheeler Load	Skip / Size	Paid / Not Paid
Description			
MUCK away			

Day Work

Hours Worked

Travel Time

Total Hours

Print Name

Signature

Job Title

CONDITIONS OF SALE - It is essential that all written particulars entered above should be checked by the Consignee, since the 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 circumstances must be made to the driver of the vehicle and be confirmed in writing direct to the company immediately. Any skips hired by the customer are the customer's responsibility if stolen or damaged. Skips may only be hired for a maximum of two weeks without incurring additional costs.

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.

Contaminant	Criteria for Residential End Use (mg/kg)
Volatile Organic Compounds (VOCs)	
Benzene	0.087
Ethylbenzene	47
Toluene	130
Xylene	56
1,2-Dichloroethane	0.0071
1,1,1-Trichloroethane	8.8
Tetrachloroethane	1.6
Tetrachloroethene (PCE)	0.18
Tetrachloromethane	0.026
Trichloroethene (TCE)	0.016
Trichloromethane	0.91
Vinyl Chloride	0.00064
Semi-Volatile Organic Compounds (SVOCs)	
1,2-Dichlorobenzene	23
1,4-Dichlorobenzene	61 ^f
1,2,4-Trichlorobenzene	2.6
Hexachlorobenzene	1.8 (0.2) ^{vap}
Total Petroleum Hydrocarbons (TPH)	
Aliphatic C5-6	42
Aliphatic C6-8	100
Aliphatic C8-10	27
Aliphatic C10-12	130(48) ^{vap}
Aliphatic C12-16	1,100(24) ^{sol}
Aliphatic C16-35	65,000(8.48) ^{f, sol}
Aliphatic C35 - 44	65,000(8.84) ^{f, sol}
Aromatic C5 – 7 (benzene)	70
Aromatic C7 – 8 (toluene)	130
Aromatic C8-10	34
Aromatic C10-12	74
Aromatic C12-16	140
Aromatic C16-21	260 ^f
Aromatic C21-35	1,100 ^f
Aromatic C35 - 44	1,100 ^f

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APPENDIX 08

United Utilities Correspondence

* 12 no water connection.

Acceptance note

Please complete, sign and return to us



Quote for water connection at Howgill & Arbroath Street, Manchester, M11 4RS

Name	John Southworth Builders	Estimate ref	7500003291
Address	Unit 10 Charles Street, Dukinfield	Service order no	540000420981
		Date issued	01.12.2020
Postcode	SK16 4SD	Expiry date	31.03.2020

Below is a full breakdown of the costs for us to undertake the water connection at your site. Please note the work under contestable charges can be carried out by other accredited connections companies also known as self-lay providers (SLPs). You can find a list of these companies on the Lloyds Register website www.lr.org

Contestable charges

This is work that can be carried out by other self-lay providers.

Quantity	Charges Scheme ref	Description	VAT rate	Unit Price	Total	VAT
12	4.6.3	25mm connection surfaced	0%	£637.00	£7,644.00	£0.00
4	4.6.3/4.6.11	Additional m PE 25-32mm surfaced	0%	£97.00	£388.00	£0.00

Non-contestable charges

This is work that can only be carried out by United Utilities as it is on our water network.

Quantity	Charges Scheme ref	Description	VAT rate	Unit Price	Total	VAT
1	4.6.2	Admin fee Co laid conn - 1st connection	0%	£37.00	£37.00	£0.00
11	4.6.2	Admin fee Co laid conn - add connection	0%	£12.00	£132.00	£0.00
12	8.2	Building water connection <63mm	20%	£27.50	£330.00	£66.00
12	6.1	Water infrastructure charge	0%	£302.00	£3,624.00	£0.00
12	6.1	Sewerage infrastructure charge	0%	£279.00	£3,348.00	£0.00

Net Total	£15,503.00
VAT	£66.00
Income Offset	-£9,012.00
Total cost Including VAT	£6,557.00

Notes:

If it's found, when the work is carried out, that some of the items included in the quote are not required, you will not be invoiced for those items. The income offset allowance is applied against the water infrastructure charge for quotes to provide water to a property for domestic purposes, this is to recognise future income that new properties will generate for us.

Acceptance note

Quote for water connection at Howgill & Arbroath Street, Manchester, M11 4RS

Name	John Southworth Builders	Estimate ref	7500003291
Address	Unit 10 Charles Street, Dukinfield	Service order no	540000420981
		Date issued	01.12.2020
Postcode	SK16 4SD	Expiry date	31.03.2020
Total cost for your water connection		£6,557.00	

Acceptance of water service connection/s charges

In signing this form I confirm that I am authorised to complete and submit it (if working on behalf of a limited company) and I understand:

- That confirmation of the postal address from the local authority is required before the connection can be made.
- Work will not be carried out until I have supplied a WIAPS certificate for the pipework or it has passed a United Utilities inspection.
- If my connection is a temporary supply, it will be disconnected after 12 months or a permanent connection will be made which will be subject to infrastructure charges.
- Any water efficiency discounts are subject to audit and, if upon audit, it's found to be non-compliant, I/we will be liable for full infrastructure charges.
- For the connection to be made, the site, plot and service pipe must be accessible, with no scaffolding in the vicinity. If for any reason the connection cannot go ahead it may result in additional charges.
- If the connection is completed after the 31 March 2021, I/we will be charged at the new financial rates in your 2021/22 charges scheme.
- What information I need to send to United Utilities in order for the work to go ahead (this is contained in the 'What you need to do next' section of the letter).
- All work will need to be carried out at the same time, as multiple visits may result in additional charges.
- Payment is required upfront.

Name	Sam Adamson	Company	John Southworth Builders Ltd.
Position	Project manager	Date	14/12/2020
Telephone number	0161 339 3240	Signature	

Payment details

Please let us know how you like to pay – BACS, card or cheque:		BACS.	
Full name and postal address of payer (for invoicing purposes): Sam Adamson, 10 Charles Street, Dukinfield, SK16 4SD.			
Contact name of payer	Angela Cottrell	Daytime telephone number for payer	0161 339 3840.

Please return completed form to: United Utilities, Developer Services and Metering, 2nd Floor, Grasmere House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.