A VERIFICATION REPORT FOR THE DEVELOPMENT AT NATWEST BANK, WITHINGTONROPOSED COSTA COFFEE, NEWCASLTE-UNDER-LYME

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Issue No.	Description of Issue / Revision	Date of Issue	Reviewed By	Author
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1 INTRODUCTION

1.1 BACKGROUND

Terra97 was commissioned by Truman Design and Build Ltd to undertake a verification report for the residential development at the Site referred to as NatWest Bank, Withington.

A Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy report (Reference: CL-602-LKC 19 1129-01, Version: RO, Dated: 7th of June 2019) has previously been produced by LK Consult for the Site which identified potential risks to human health receptors and water pipes at the Site.

The pertinent aspects of this report are outlined below.

- A moderate risk was identified for elevated metals and PAHs within Made Ground soils posing a risk to human health receptors at the Site. It was therefore recommended that limited remediation in areas of soft landscaping was appropriate. Options of remediation included either removal of all reworked topsoil and Made Ground (within the relevant areas) or the implementation of a 300mm thick environmental cover system.
- A low risk was identified to the water pipes at the Site from elevated VOCs identified within Made Ground soils across the Site. It was recommended that a United Utilities Risk Assessment may be required for new connections and that barrier pipe may be required.

This verification report is concerned with the verification of an environmental cover system and provides justifications for the choice of water pipe at the Site. Each of these aspect from the remediation strategy are discussed in further detail in the sections below.

1.2 OBJECTIVES

All remediation works have now been undertaken at the site, as specified in the Remediation Strategy and, as such, the objectives of the verification report are as follows:

- To provide lines of evidence that the remediation at the site was undertaken in accordance with the Remediation Strategy;
- Identify any deviations from the remediation strategy and provide justification, where appropriate, to demonstrate that these deviations were effectively managed to ensure no residual risk remains;
- To provide documented assessment of data and permanent records of onsite verification works;
- To determine whether there is any residual risk to receptors, post remediation and whether contaminated land planning conditions should be discharged; and
- To discharge Condition 6 of the Planning Approval Conditions (Approval No.125929/JO/2020)

This report, which was designed to meet the requirements of all relevant current guidance, presents the records and data produced during the remediation of the site, an interpretation of the data obtained and recommendations relevant to the defined objectives.

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2 SUMMARY OF REMEDIATION STRATEGY

The salient points of the LK Consult Remediation Strategy report (Reference: CL-602-LKC 19 1129-01, Version: RO, Dated: 7th of June 2019) are outlined below.

2.1 REMEDIATION OF AREAS OF SOFT LANDSCAPING

In order to remove relevant pollutant linkages between metals and PAHs in Made Ground soils and human health receptors, it was considered that the soft landscaped areas will require remediation, undertaken by the provision of an environmental cover system.

Two options were proposed.

2.1.1 Removal of Made Ground

Option 1 suggested was the removal of all reworked topsoil / Made Ground from areas of soft landscaping followed by raising levels (as required) with suitably chemically validated subsoil and topsoil.

The validation requirements should include consignment notes confirming the removal of the Made Ground, photographic evidence of the natural strata, and chemical validation of imported soils.

This method was not chosen as part of the site remediation.

2.1.2 Environmental Cover System

Option 2 suggested was the implementation of an environmental cover system where Made Ground remains in place in soft landscaping areas.

The environmental cover system should be 300mm thick and comprise:

Either 100mm physical break layer (MOT type 1 material, 20-30mm, minimal fines) and at least 200mm comprising clean inert fill and sufficient topsoil for a growing medium.

Or a geotextile membrane and at least 300mm comprising clean inert fill and sufficient topsoil for a growing medium. The clean inert fill subsoil and be replaced by additional topsoil.

The validation requirements should include measurements of the depth of the environmental cover system and providing photographic evidence, photographic evidence of the granular physical break or geotextile layer, and chemical validation of imported soils.

2.1.3 Validation of Imported Soils

Chemical validation of all imported soils to be used in soft landscaping areas should be undertaken. Imported soils should be accompanied by a certificate of analysis and source details.

Ideally, the material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site.

The sampling requirements are shown in the table below.

<table>
<tr><th>Material Type</th><th>Source</th><th>Suite of Analysis</th><th>Sampling Rate*</th></tr>
<tr><td rowspan="2">Topsoil</td><td>Greenfield</td><td>Suite A</td><td rowspan="2">1 sample per 50m^3</td></tr>
<tr><td>Brownfield / Unknown</td><td>Suite B</td></tr>
<tr><td rowspan="3">Subsoil</td><td>Brownfield / Unknown</td><td>Suite B</td><td rowspan="2">1 sample per 150m^3</td></tr>
<tr><td>Site won natural material / greenfield</td><td>Suite A</td></tr>
<tr><td rowspan="2">Physical Stone Break Layer</td><td>First Generation i.e. quarried sand (subsoil) or stone (break layer)</td><td colspan="2">No testing is required.
Certification of material provenance is required.</td></tr>
<tr><td>Recycled Stone (6F2 / screened)</td><td>Suite B</td><td>1 sample per 500m^3</td></tr>
</table>

Suite A - Heavy metals, pH, water soluble sulphate, speciated PAH, soil organic matter and asbestos screen.
Suite B - Heavy metals, pH, water soluble sulphate, speciated PAH, phenol, total and free cyanide, soil organic matter, asbestos screen, banded petroleum hydrocarbons (TPH CWG), BTEX, MTBE.

2.2 Potable Water Pipes

It was recommended that a Water Pipeline Assessment is undertaken once the location and depth of the potable water pipes are known for if a new connection is required.

The validation requirements should include delivery notes of the pipe material and photographs of the installed pipe.

2.3 Unexpected Contamination

During the development works, should any unusual ground conditions and / or visual or olfactory evidence of contamination (including asbestos containing material) be encountered at the site, LKC and the Local Authority should be informed, and further assessment of the material may be required.

Should asbestos be identified during groundworks, precautions should be taken to ensure the safety of the construction workers and nearby land users. It would be advisable to introduce an asbestos management strategy in line with CIRIA C73338.

Validation requirements include a log of works undertaken (including photographs) and details of any sampling and validation of remediation works.

2.4 Site Completion/ Verification Report

It was recommended that any remediation carried out on the Site is validated by a third party and suitable documentary evidence provided in a Site Completion Report, such as photographs, consignment documents and analytical results. This should include:

- Validation of the environmental cover system
- Verification testing of all imported soils for soft landscaping areas
- Information of the installation of protective pipes and/or sterile trenches.
- Details of any unexpected contamination identified onsite, suitably risk assessed and/or validated.

3 VERIFICATION OF THE REMEDIATION WORKS

3.1 UNEXPECTED CONTAMINATION

During the development works, no areas of unexpected/additional contamination was encountered.

3.2 REMEDIATION OF AREAS OF SOFT LANDSCAPING

A total of 2 No. areas of soft landscaping exists at the Site in the form of planters at the front of the development. These planter areas are shown on Drawing No. C21332VR1 within Appendix A. It was chosen that an Environmental Cover System (physical break layer below clean inert fill/topsoil) was implemented in order to break the pathway between potential contaminants within the Made Ground soils and the identified human health receptors.

3.2.1 Environmental Cover System Construction

It was outlined in the Remediation Strategy that the construction of the environmental cover system should comprise at least a 100mm physical break layer and at least 200mm comprising clean inert fill and sufficient topsoil for a growing medium.

The actual environmental cover system comprises a 150mm of compacted MOT material, originally emplaced as a working platform for a scissor lift, with 650mm clean imported topsoil. As such, the total environmental cover system comprises 750mm which is significantly thicken than the minimum 300mm cover system. This further reduces the identified exposure pathway compared to a standard thickness environmental cover system.

The two photographs below show the 150mm compacted MOT physical break layer (with a thin layer of drainage gravel on top) within each of the planters.





The two photographs below show the finished planters, which have been filled with 650mm of clean imported topsoil, placed directly on top of the physical break layer.





3.2.2 Imported Material Details

3.2.2.1 MOT Physical Break Layer

The MOT was imported by Breedon Group. The MOT material has been sourced from Dow Low Quarry and the material comprises first generation quarried limestone. The importation certificate is presented within Appendix B.

3.2.2.2 Topsoil

The topsoil was imported by Freeland Horticulture Ltd. The importation certificate, which includes the laboratory analysis provided by the supplier, is presented within Appendix C.

This documentation does not indicate the provenance of the topsoil. As such, Suite B (as per the table within Section 2.1.3 above) was selected for validation sampling).

3.2.3 Visual Screen of Topsoil

A visual inspection of the imported topsoil conducted by Terra97 confirmed that the imported soils were free from significant quantities of unsuitable/anthropogenic materials. Terra97 consider that the imported soils visually appeared suitable for their intended use as an environmental cover system and as a growing medium.

3.2.4 Test Results of Chemical Screening

3.2.4.1 MOT Physical Break Layer

Due to the imported MOT material being first generation quarried stone, no testing was required (in accordance with the sampling requirements table in Section 2.1.3).

3.2.4.2 Topsoil

The remediation strategy stated that ideally, the material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site.

The topsoil was initially sampled at the source by the supplier (Freeland Horticulture Ltd). The test results are presented on the importation documentation in Appendix B. These initial results, when compared with LQM/CIEH 2015 Generic Assessment Criteria (GAC) protective of a residential without home grown produce land use, show that no reported concentrations were above their relevant GACs and no asbestos was present in the sample. As such, the initial screen showed that the soils were suitable for use at the Site within the environmental cover system.

The sampling requirements table (Section 2.1.3) suggested that 1 confirmatory sample of topsoil was taken per $50m^3$. The total volume of imported topsoil imported was less than $50m^3$. A total of 2 No. confirmatory samples, one from each planter, was obtained by Terra97 Ltd and tested for Suite B, as the source of the topsoil is unknown. This suite includes testing for heavy metals, pH, water soluble sulphate, speciated PAH, phenol, total and free cyanide, soil organic matter, asbestos screen, banded petroleum hydrocarbons (TPH CWG), BTEX, and MTBE.

The results of this confirmatory testing have been compared with LQM/CIEH 2015 Generic Assessment Criteria (GAC) protective of a residential without home grown produce land use, which is considered appropriate for the development. No reported concentrations of the above determinands were above their relevant GACs for a residential without homegrown produce land use. No asbestos was encountered within either of the samples.

On this basis, Terra97 considers that the imported topsoil used within the environmental cover system has been suitably verified in accordance with the remediation strategy, and that the soils break the pollutant linkage between Made Ground soils and the identified human health receptors, as well as the soils themselves not posing any additional risk to the identified human health receptors at the site. The results of the confirmatory chemical testing are presented within Appendix D.

3.3 POTABLE WATER PIPES ASSESSMENT

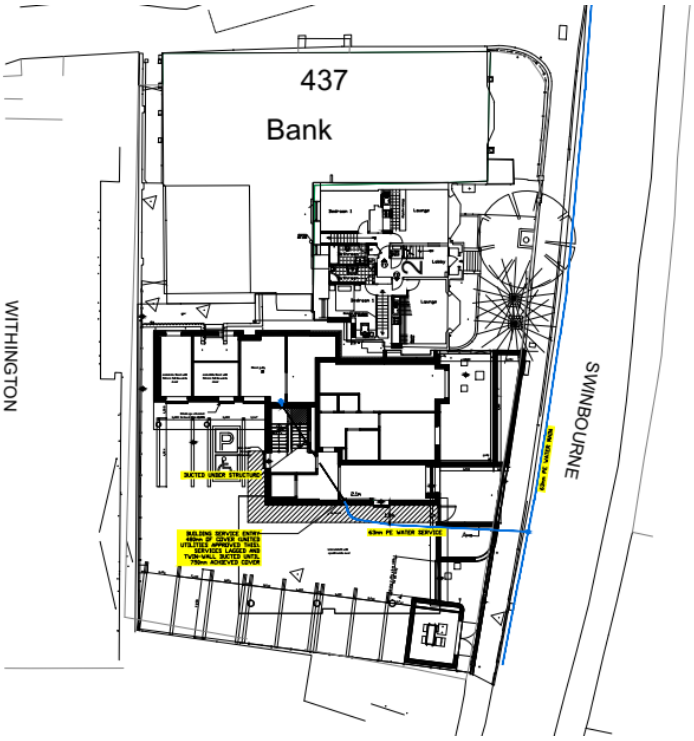
The Remediation Strategy recommended that a Water Pipeline Assessment was undertaken.

3.3.1 Assessment

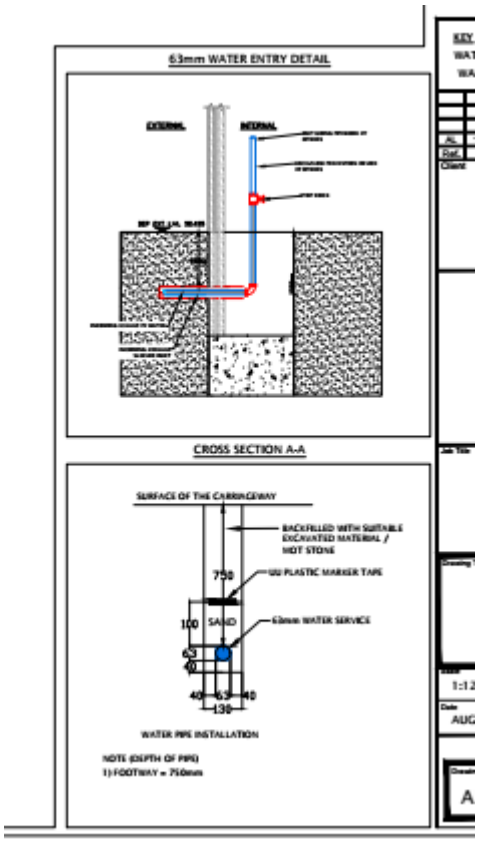
A United Utilities Risk Assessment for Water Pipes has been completed for the Site and has been submitted to United Utilities.

Standard Polyethylene (PE) pipes have been installed at the Site. This has been assessed as a suitable selection as the pipes have been installed completely within the natural strata. As such, no contaminants are present to warrant the use of barrier pipe.

The location of the installed PE waterpipe is shown in the diagram below (blue line entering the Site).



The construction of the PE pipe is shown in the diagram below. This shows the pipe as having been installed 750mm below finished ground level.



Made Ground at the site was observed to between 0.60m and 0.80m bgl. Due to a reduction in Site levels where some of this Made Ground was removed, and the water pipe being installed at 0.75m bgl, this resulted in the water pipe being completely installed within natural strata.

The photograph below show the PE pipe being installed within natural strata.



3.3.2 Water Pipe Delivery Notes

The delivery notes of the water pipes installed at the Site are presented in Appendix E.

4 SITE CERTIFICATION

It has been demonstrated in this report that remediation works have been undertaken at the site in general accordance with the agreed Remediation Statement. Due to the implementation of a clean environmental cover system thicker than the minimum thickness required, it is now considered that the pathway between source (metals and PAHs within Made Ground soils) and receptors (humans such as the Site users) has been broken.

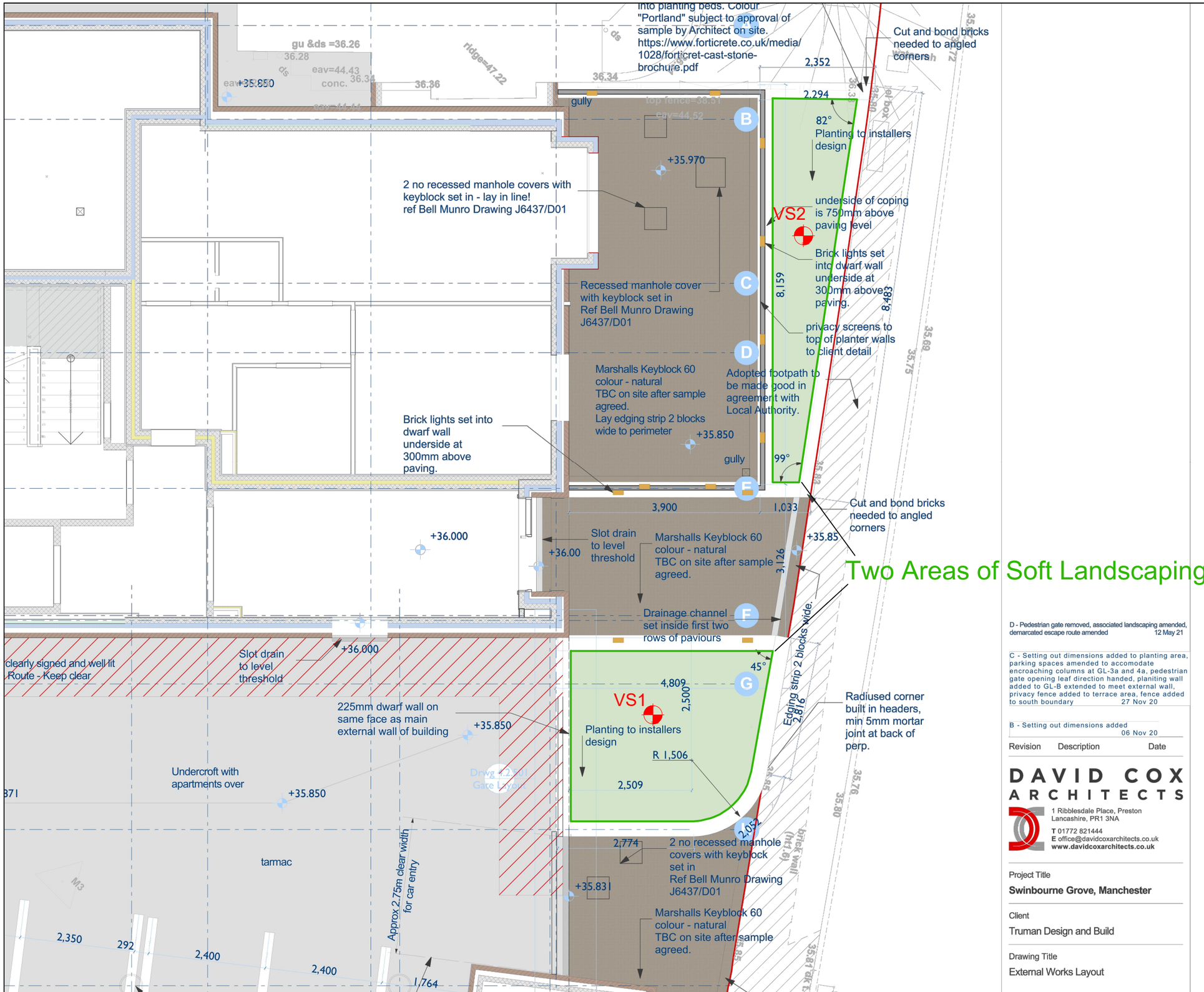
A potable water pipe assessment has demonstrated that the use of PE pipes is appropriate for the Site.

It is therefore recommended that Condition 6 of the Planning Approval Conditions (Approval No.125929/JO/2020) is discharged as the site is considered to be safe and suitable for the desired land use as no residual risk to human health or controlled waters receptors remain.

5 REGULATORY APPROVALS

The conclusions and recommendations presented above are considered reasonable based on the findings of the site investigation. However, these cannot be guaranteed to gain regulatory approval and, therefore, the report should be passed to the appropriate regulatory authorities and/or other organisations for their comment and approval prior to occupying the site.

APPENDIX A – DRAWINGS



D - Pedestrian gate removed, associated landscaping amended, demarcated escape route amended 12 May 21

C - Setting out dimensions added to planting area, parking spaces amended to accomodate encroaching columns at GL-3a and 4a, pedestrian gate opening leaf direction handed, planiting wall added to GL-B extended to meet external wall, privacy fence added to terrace area, fence added to south boundary 27 Nov 20

B - Setting out dimensions added 06 Nov 20

Revision	Description	Date

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Project Title
Swinbourne Grove, Manchester

Client
Truman Design and Build

Drawing Title
External Works Layout

DO NOT SCALE

Location of Topsoil Verification Sample

REV	DATE	BY	DESCRIPTION	CHK	APD
A	12/10/21	JS	Verification Plan	JB	JB

DRAWING STATUS: First Issue

TERRA97
Terra 97 Ltd
27A Longwood Road
Trafford Park
Manchester
M17 1PZ

CLIENT: Truman Design and Build

ARCHITECT:

PROJECT: Natwest Bank Withington

TITLE: Verification Plan

SCALE @ SIZE:	CHECKED: JB	APPROVED: JB
CAD FILE:	DESIGN/DRAWN: JS	DATE: 12/10/21
PROJECT No: C21322	DRAWING No: C21332VR1	REV: A

APPENDIX B – IMPORTED MOT CERTIFICATE

GRADATION ANALYSIS TEST REPORT

Product: **Type 1 GSB**

Material Code: **803**

Supplied by: Dow low Quarry

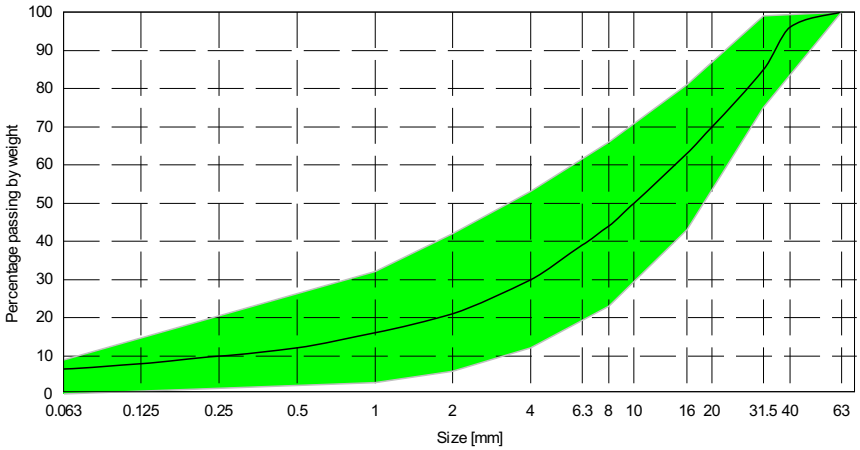
Customer:

Site Address:

Material type: SHW Series 800 / Limestone

Test method: BS EN 933-1:2012

Sample number	16013
Ticket No	
Sampled by	Allsop
Date Sampled	02/08/2021
Sample location	Stockpile
Weather Conditions	Overcast



Sieve Size (mm)	Percent passing	Specification	Complies (Spec)
125		-	-
80		-	-
63	100	100 - 100	Yes
40	96	-	-
31.5	85	75 - 99	Yes
20	70	-	-
16	63	43 - 81	Yes
10	50	-	-
8	44	23 - 66	Yes
6.3	39	-	-
4	30	12 - 53	Yes
2	21	6 - 42	Yes
1	16	3 - 32	Yes
0.5	12	-	-
0.25	10	-	-
0.125	8	-	-
0.063	6.5	0 - 9.0	Yes
Moisture content (%)	1.5		
Uniformity Coefficient	60		

Sampled By: Allsop Tested By: Kean Date Tested: 04/08/2021

APPENDIX C – IMPORTED TOPSOIL CERTIFICATE

Freeland
HORTICULTURE LIMITED

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 (C_5-C_{35}).
- Asbestos

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

Freeland Horticulture - 01322 619161

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 (654µS/cm) indicating that soluble salts are not present at levels that would be harmful to plants.

The electrical conductivity values by $CaSO_4$ extract (BS3882 requirement) fell below the maximum specified value (3300µS/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 compare with the 'residential with homegrown produce' land use in the Suitable For Use Levels presented in. 'The LQM/CIEH S4Uls' for Human Health Risk Assessmet (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.

Freeland Horticulture - 01322 619161

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/CaSO4 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	SandyLoam
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.

Chain of Custody requires a Freeland Horticulture Delivery Ticket-01322 619161

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

Chain of Custody requires a Freeland Horticulture Delivery Ticket-01322 619161

APPENDIX D – CONFIRMATORY CHEMICAL TESTING RESULTS FOR IMPORTED TOPSOIL

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

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Terra97 Limited
27A Longwood Road
Trafford Park
Manchester
M17 1PZ

Attention :	Jonny Swindells
Date :	6th October, 2021
Your reference :	C20332
Our reference :	Test Report 21/15236 Batch 1
Location :	Withington
Date samples received :	29th September, 2021
Status :	Final Report
Issue :	1

Two samples were received for analysis on 29th September, 2021 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 10 Lower Grosvenor Place, London, SW1W 0EN
Company Registration No: 11371415

Client Name: Terra97 Limited
Reference: C20332
Location: Withington
Contact: Jonny Swindells
EMT Job No: 21/15236

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-2	3-4									LOD/LOR	Units	Method No.
Sample ID	VS1	VS2											
Depth	0.30	0.30											
COC No / misc													
Containers	V J	V J											
Sample Date	22/09/2021	22/09/2021											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	29/09/2021	29/09/2021											
Arsenic #	5.0	5.3									<0.5	mg/kg	TM30/PM15
Barium #	67	68									<1	mg/kg	TM30/PM15
Beryllium	<0.5	<0.5									<0.5	mg/kg	TM30/PM15
Cadmium #	0.1	0.1									<0.1	mg/kg	TM30/PM15
Chromium #	35.2	33.1									<0.5	mg/kg	TM30/PM15
Copper #	14	13									<1	mg/kg	TM30/PM15
Lead #	26	27									<5	mg/kg	TM30/PM15
Mercury #	0.1	0.1									<0.1	mg/kg	TM30/PM15
Nickel #	9.6	10.8									<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1									<1	mg/kg	TM30/PM15
Vanadium	16	15									<1	mg/kg	TM30/PM15
Water Soluble Boron #	0.7	0.6									<0.1	mg/kg	TM74/PM32
Zinc #	42	44									<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.18	0.05									<0.03	mg/kg	TM4/PM8
Anthracene #	0.06	<0.04									<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.42	0.16									<0.03	mg/kg	TM4/PM8
Pyrene #	0.41	0.14									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.25	0.12									<0.06	mg/kg	TM4/PM8
Chrysene #	0.29	0.12									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.35	0.23									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.18	0.13									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.10	0.09									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.10	0.08									<0.04	mg/kg	TM4/PM8
PAH 16 Total	2.3	1.1									<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.25	0.17									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.10	0.06									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	98									<0	%	TM4/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Terra97 Limited
Reference: C20332
Location: Withington
Contact: Jonny Swindells
EMT Job No: 21/15236

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-2	3-4											
Sample ID	VS1	VS2											
Depth	0.30	0.30									Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J											
Sample Date	22/09/2021	22/09/2021											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	29/09/2021	29/09/2021									LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	<0.2	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	<4	<4									<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	<7	<7									<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	<7	<7									<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	<19	<19									<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	<0.2	<0.2									<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	<4	<4									<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	<7	<7									<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	<7	<7									<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)*	<19	<19									<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	<38	<38									<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE#	<5	<5									<5	ug/kg	TM36/PM12
Benzene#	<5	<5									<5	ug/kg	TM36/PM12
Toluene#	6	8									<5	ug/kg	TM36/PM12
Ethylbenzene#	<5	<5									<5	ug/kg	TM36/PM12
m/p-Xylene#	<5	<5									<5	ug/kg	TM36/PM12
o-Xylene#	<5	<5									<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15									<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	20.3	15.4									<0.1	%	PM4/PM0
Hexavalent Chromium#	<0.3	<0.3									<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext)#	0.0342	0.0336									<0.0015	g/l	TM38/PM20
Chromium III	35.2	33.1									<0.5	mg/kg	NONE/NONE
Free Cyanide	<0.5	<0.5									<0.5	mg/kg	TM89/PM45
Total Cyanide#	<0.5	<0.5									<0.5	mg/kg	TM89/PM45
Organic Matter	5.2	3.2									<0.2	%	TM21/PM24
pH#	7.86	7.42									<0.01	pH units	TM73/PM11

Client Name: Terra97 Limited
Reference: C20332
Location: Withington
Contact: Jonny Swindells

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
21/15236	1	VS1	0.30	2	30/09/2021	**General Description (Bulk Analysis)**	Soil/Stones
					30/09/2021	**Asbestos Fibres**	NAD
					30/09/2021	**Asbestos ACM**	NAD
					30/09/2021	**Asbestos Type**	NAD
					30/09/2021	**Asbestos Level Screen**	NAD
21/15236	1	VS2	0.30	4	30/09/2021	**General Description (Bulk Analysis)**	Soil/Stones
					30/09/2021	**Asbestos Fibres**	NAD
					30/09/2021	**Asbestos ACM**	NAD
					30/09/2021	**Asbestos Type**	NAD
					30/09/2021	**Asbestos Level Screen**	NAD

Client Name: Terra97 Limited
Reference: C20332
Location: Withington
Contact: Jonny Swindells

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 21/15236						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 21/15236

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 21/15236

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes

EMT Job No: 21/15236

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 First edition (2006)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

APPENDIX E – PE WATER PIPE DELIVERY NOTE

PE Pipeline Specialists Ltd

complete pipeline supplies

Unit 3, Link 25 Business Park
Wigan Road
Ashton-in-Makerfield
WN4 0DA
Tel: 01942 727788
Email: enquiries@pepipelinespecialists.co.uk
Web: www.pepipelinespecialists.co.uk
VAT Reg No 197413482

AME01,0000003770

Deliver to:
AMEON UTILITIES
COLLECTION
REF. AU1455
WILMSLOW RD

Invoice to:
AMEON UTILITIES
UNIT 9-10 OLYMPIC COURT
BOARDMANS WAY
WHITEHILLS BUSINESS PARK
BLACKPOOL
FY4 5GU

DEL ACC	DATE	ORDER NO.
AME01	21/09/21	S044187
INV ACC		**PAGE**
AME01		1
RAISED BY	**DELIVERY VIA**	
Warren Dootson	Customer Collection	
PAYMENT TERMS		
30 Days Net EOM		
YOUR REFERENCE		
Awaiting Order No		

DOCUMENT TYPE
DELIVERY NOTE

CODE	QTY	DESCRIPTION	QTY TO FOLLOW
TAPENONWAT	1	NON-DETECTABLE TAPE MARKED WATER X 365 MTRS	0
ARMOUR25	1	25/32MM ARMOURFLEX 32MM THICK X 2 MTR LENGTH	0
32ECBLKT	1	32MM BLACK END CAP E/F 16BAR	0
PL705032	2	32MM X 90 DEG MECHANICAL ELBOW	0
PL712032	1	32MM MECHANICAL END PLUG - PLASSON	0
PL3517022	1	INTERNAL METER MOUNT KIT 25MM X 22MM NO CHECK VALVE	0
PL702032.75	1	32MM X 3/4" MECHANICAL MALE ADAPTOR	0
PL795032	6	32MM PIPE INSERT	0
PIPEBLU321125	1	32MM BLUE PE80 SDR11 PIPE X 25 MTR COIL	0

Special Instructions

Signature _____

Print Name
_____

PE Pipeline Specialists Ltd
Unit 3 Link 25 Business Park
Wigan Road
Ashton in Makerfield
Lancashire
WN4 0DA
Tel : 01942 727788
Email : accounts@pepipelinespecialists.co.uk

PE Pipeline Specialists Ltd
complete pipeline supplies

DELIVERY NOTE **Page** 1 **warren**

AMEON UTILITIES
UNIT 9-10 OLYMPIC COURT
BOARDMANS WAY
WHITEHILLS BUSINESS PARK
BLACKPOOL
FY4 5GU

Order No	39353
Order Date	13/05/2021
Your Order No	AU1455
Delivery Date	

This is not a V.A.T Invoice

Qty	Location	Description	Weight	Qty O/S
1.00	G5B	2" GUNMETAL STOPCOCK FEM X FEM	0.00	0.00
2.00	PLASS	63MM X 2" MALE BSP MECHANICAL ADAPTOR	0.00	0.00
4.00	PLASS	63MM PIPE INSERTS	0.00	0.00

Total Weight 0.00

COLLECTION
REF. AU1455

SIGN:

PRINT:

DATE:

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Ashton in Makerfield
Lancashire
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DELIVERY NOTE **Page** 1 **warren**

AMEON UTILITIES
UNIT 9-10 OLYMPIC COURT
BOARDMANS WAY
WHITEHILLS BUSINESS PARK
BLACKPOOL
FY4 5GU

Order No	39298
Order Date	12/05/2021
Your Order No	UC571/10470
Delivery Date	

This is not a V.A.T Invoice

Qty	Location	Description	Weight	Qty O/S
15.00	D7C	63MM X 19MM THICKNESS ARMOURFLEX X 2MTR	0.00	0.00
1.00	F3A	63MM X 80MM PE DUCK FOOT BEND KIT E/F	7.00	0.00
1.00	A5A	HYDRANT 80MM TYPE 2 AVK - SERIES 29/388	13.00	0.00
5.00	1WAL	430X280MM X 100MM PLASTIC CHAMBER SECTION EC10	52.50	0.00
1.00	1WAL	PLASTIC HYDRANT CHAMBER BASE OFF SET HOLE	9.50	0.00
1.00	C5A	SURFACE BOX 380MMX230MMX125MM MARKED WO - WARRIOR	24.00	0.00
2.00	PLASS	63MM MECHANICAL END CAP	0.00	0.00

Total Weight 106.00

COLLECTION
REF. AU1455

SIGN:

PRINT:

DATE:

PE Pipeline Specialists Ltd
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Wigan Road
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Lancashire
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DELIVERY NOTE **Page** 1 **pauld**

AMEON UTILITIES
UNIT 9-10 OLYMPIC COURT
BOARDMANS WAY
WHITEHILLS BUSINESS PARK
BLACKPOOL
FY4 5GU

Order No	38470
Order Date	13/04/2021
Your Order No	UC571/10335
Delivery Date	**13/04/2021**

This is not a V.A.T Invoice

Qty	Location	Description	Weight	Qty O/S
30.00	WALL	150MM I/D RED ENW C1 DUCT X 3 MTRS EMTELLE	342.90	0.00
LENGTH				

Total Weight 342.90

Deliver To :
COLLECT

13/04/2021

SIGN:

PRINT:

DATE:

PE Pipeline Specialists Ltd
Unit 3 Link 25 Business Park
Wigan Road
Ashton in Makerfield
Lancashire
WN4 0DA
Tel : 01942 727788
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DELIVERY NOTE **Page** 1 **andyr**

AMEON UTILITIES
UNIT 9-10 OLYMPIC COURT
BOARDMANS WAY
WHITEHILLS BUSINESS PARK
BLACKPOOL
FY4 5GU

Order No	38086
Order Date	30/03/2021
Your Order No	UC571/10275
Delivery Date	**09/04/2021**

This is not a V.A.T Invoice

Qty	Location	Description	Weight	Qty O/S
39.00 LENGTH	WALL	150MM I/D RED ENW C1 DUCT X 3 MTRS EMTELLE	445.77	0.00

Total Weight 445.77

Deliver To :
AMEON UTILITIES
437 WILMSLOW RD
WITHINGTON
MANCHESTER
SEAN - 07715 217853
M20 3BW
COLLECTION
09/04/2021

SIGN:

PRINT:

DATE:

37491

PE Pipeline Specialists Ltd
Unit 3 Link 25 Business Park
Wigan Road
Ashton in Makerfield
Lancashire
WN4 0DA
Tel : 01942 727788
Email : accounts@pepipelinespecialists.co.uk

PE Pipeline Specialists Ltd
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DELIVERY NOTE **Page** 1 **andyr**

AMEON UTILITIES
UNIT 9-10 OLYMPIC COURT
BOARDMANS WAY
WHITEHILLS BUSINESS PARK
BLACKPOOL
FY4 5GU

Order No	38086
Order Date	30/03/2021
Your Order No	UC571/10275
Delivery Date	**09/04/2021**

This is not a V.A.T Invoice

Qty	Location	Description	Weight	Qty O/S
6.00	WALL	150MM X 90 DEG RED ELECTRIC DUCT BEND - 1200MM RADIUS	0.00	0.00
1.00 COIL	YARD	63MM BLUE PE80 SDR11 PIPE X 25 MTR COIL	26.00	0.00
2.00 LENGTH	RACK	63MM BLUE PE80 SDR11 PIPE X 6MTR LENGTH	8.60	0.00
1.00	B7B	DETECTABLE MESH MARKED WATER X 100 MTRS ********** DETECTABLE MESH **********	1.00	0.00
2.00	B6B	NON DETECTABLE MARKER TAPE ENW X 350 MTRS	0.00	0.00
1.00 COIL	YARD	32MM BLUE PE80 SDR11 PIPE X 25 MTR COIL	7.25	0.00
1.00	B6B	NON-DETECTABLE ELECTRIC TAPE MARKED ESP	5.00	0.00
4.00	PLASS	63MM MECHANICAL END CAP	0.00	0.00
2.00	PLASS	32MM MECHANICAL END PLUG - PLASSON	0.30	0.00

PE Pipeline Specialists Ltd
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PE Pipeline Specialists Ltd
complete pipeline supplies

DELIVERY NOTE **Page** 2 **andyr**

AMEON UTILITIES
UNIT 9-10 OLYMPIC COURT
BOARDMANS WAY
WHITEHILLS BUSINESS PARK
BLACKPOOL
FY4 5GU

Order No	38086
Order Date	30/03/2021
Your Order No	UC571/10275
Delivery Date	**09/04/2021**

This is not a V.A.T Invoice

Qty	Location	Description	Weight	Qty O/S
2.00	B1A	63MM BLACK COUPLER E/F	0.34	0.00

Total Weight 48.49

Deliver To :
AMEON UTILITIES
437 WILMSLOW RD
WITHINGTON
MANCHESTER
SEAN - 07715 217853
M20 3BW

09/04/2021

SIGN:
PRINT: GARY (SITE MGR)
DATE: 9/4/21

PE Pipeline Specialists Ltd
Unit 3 Link 25 Business Park
Wigan Road
Ashton in Makerfield
Lancashire
WN4 0DA
Tel : 01942 727788
Email : accounts@pepipelinespecialists.co.uk

PE Pipeline Specialists Ltd
complete pipeline supplies

DELIVERY NOTE **Page** 1 **warren**

AMEON UTILITIES
UNIT 9-10 OLYMPIC COURT
BOARDMANS WAY
WHITEHILLS BUSINESS PARK
BLACKPOOL
FY4 5GU

Order No	35158
Order Date	01/12/2020
Your Order No	AU1455
Delivery Date	

This is not a V.A.T Invoice

Qty	Location	Description	Weight	Qty O/S
1.00 LENGTH	YARD	150MM I/D RED ENW C1 DUCT X 3 MTRS EMTELLE	11.43	0.00
1.00	WALL	150MM X 90 DEG RED ELECTRIC DUCT BEND - 1200MM RADIUS	0.00	0.00
1.00	WALL	150/178MM BLACK TWINWALL DUCT BEND X 90 DEG	0.00	0.00
1.00	YARD	150/178MM DUCT COUPLER	0.00	0.00
1.00	YARD	150/178MM BLUE TWIN WALL DUCT X 6M C/W COUPLER	0.00	0.00

Total Weight 11.43

COLLECTION
REF. AU1455

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DATE: