

Validation Completion Report

For a site at

Pomona Hotel, Gorton

Undertaken for

John Southworth Builders Ltd

Report Title:	Pomona Hotel, Gorton Validation Completion Report
Report Reference:	9079G-WML-XX-ZZ-RP-G-0002
Client:	John Southworth Builders Ltd
Issue Date:	5th August 2021
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Revision Status / History

Rev	Date	Issue	Prepared	Checked	Authorised
-	05/08/2021	Final	TPB	SCS	SCS

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1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting (WML) has been commissioned by John Southworth Builders Ltd to prepare a Validation Report in relation to development of the former Pomona Hotel site in Gorton, Manchester.

Proposed Development

- 1.2 The development comprised the construction of 15no residential apartments within a three storey structure. External areas comprise associated hardstanding for access and parking and soft landscaped areas and raised planters for communal gardening.
- 1.3 A copy of the proposed layout is presented in Appendix 01.

Background

- 1.4 Sutcliffe Investigations were initially commissioned by One Manchester to undertake a Phase 1 Desk Study and Phase 2 Investigation and Assessment. These culminated in the following reports.
- Phase 1 Preliminary Risk Assessment, Reference 30063LG, date unknown.
 - Phase 2 Interpretative Ground Investigation, Reference 30063NG-R02, dated February 2019.
- 1.5 Subsequently WML produced the following report in consideration of the need for remedial measures to be outlined and agreed as a pre-development requirement.
- Remediation Strategy, 9079G-WML-00-XX-RP-G-0001-Rev A, dated January 2020.
- 1.6 The reports have been presented to Manchester City Council Planning Division in support of Planning Application No. 105483/FO/2014/N2.

Verification

- 1.7 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.

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 which are in turn underlain by the Chester Sandstone Formation.
- 2.3 Risks of subsidence from coal mining have been 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 sandstone is classified as a Principal Aquifer.
- 2.6 There site is not within an Environment Agency Source Protection Zone and there are no active groundwater or surface water abstraction licences within influencing distance. There are no surface water features within influencing distance of the site.
- 2.7 There are no active landfills recorded within 1km of the site. There are several infilled canals within 250m of the site which were considered to pose a potential source of ground gas.
- 2.8 Historically the site was developed prior to 1848 with several buildings thought to be a mixture of residential and a hotel public house. From 1892-1893 further buildings were identified on maps as glasshouses, these were present until circa 1920/1930s. The site remained developed with the public house/hotel until recent years when all buildings were demolished. Surrounding areas were in use primarily as residential and mixed commercial use.

Ground Conditions

- 2.9 Ground conditions encountered during the intrusive investigations comprised made ground to depths of between 0.50m and 2.60mbgl underlain by soft / firm becoming stiff clay and dense sand to depths in excess of 11.45mbgl. Groundwater was encountered between 1.04m and 3.80mbgl.
- 2.10 No significant visual and/or olfactory evidence of significant ground contamination was identified during the investigation.
- 2.11 Chemical analysis indicated several exceedances of CoC's within the made ground, when compared to the current LQM/CIEH reference values for residential without homegrown produce. These related to lead and the PAH compounds benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[ghi]perylene, chrysene and dibenzo[ah]anthracene most likely due to the presence of ash and clinker within the made ground matrix.
- 2.12 In addition a single localised exceedance of TPH, in the heavier aromatic C21-C35 hydrocarbon band, namely 2320mg/kg was recorded within WS101 between 0.20m to 0.60mbgl. However, no visual or olfactory evidence of contamination was noted within the exploratory holes during formation. Therefore it is possible that this single exceedance was related to fragments of asphalt within the made ground matrix from the overlying asphalt hardstanding.
- 2.13 No asbestos or ACMs were encountered in the samples tested.
- 2.14 Chemical analyses also included leachate testing of selected soils samples to determine the risks to controlled waters. The results indicated localised elevated concentrations of lead and benzo[a]pyrene when compared to current drinking water standards and copper, lead, zinc and

PAHs when compared to EQS screening levels. However, risks to controlled waters were assessed as being low due to the relatively small exceedences, distance to the nearest surface water features, depth to phreatic groundwater and the process of natural attenuation.

- 2.15 Further ground investigation work was undertaken by WML on 20th February 2020 in the vicinity of WS101 to examine the matrix of the made ground for visual / olfactory evidence of hydrocarbons and the presence of asphalt fragments.
- 2.16 No significant visual and/or olfactory evidence of significant ground contamination was identified during the additional investigation and chemical analysis of 4no soil samples for banded TPH's indicated no exceedences of CoC's within the made ground and underlying clay, when compared to the current LQM/CIEH reference values for residential without homegrown produce.

Ground Gas Monitoring

- 2.17 Gas monitoring was undertaken on 6no occasions between 26th November 2018 and 13th February 2019 by Sutcliffe Investigations. The results indicate concentrations of methane ranging from below detectable limits to 0.3% by volume in air (v/v) with a maximum carbon dioxide concentration of 3.2%. No detectable positive ground gas flows were recorded during any of the monitoring visits.
- 2.18 The results give a maximum Qhg value of <0.003l/hr and indicate the site to classify as Characteristic Situation (CS) 1 – Very Low Gas Risk' in accordance with BS8485:2015 with no specific ground gas protection measures required.

3.0 SUMMARY OF REMEDIATION OBJECTIVES

3.1 The following objectives were outlined in the Remediation Strategy.

Capping Requirements for Private Gardens

3.2 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.

3.3 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 sub-soil.

3.4 If where formation level comprises natural Glacial Till, capping thicknesses could be reduced to 300mm.

3.5 The following were to be provided.

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

General

3.6 The following additional information was also to be provided.

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

3.7 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

Unforeseen Ground Contamination

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

General Groundworks

- 4.3 Due to the low levels of contamination within the existing topsoil and made ground, together with the limited site area, all site-derived soils were removed from site to an appropriate landfill.

Imported Topsoil / Subsoil

- 4.4 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 and subsoil required for use as capping soil was imported to site thorough Freeland Horticulture Limited from a manufactured source located in Astley, Greater Manchester.
- 4.5 Chemical analysis carried out at source indicated the soil was suitable for reuse and are presented in Appendix 04. Sample delivery tickets and invoices for the soils are presented in Appendix 03.
- 4.6 After import of the capping soils, WML attended site on 22nd July 2021 in order to obtain samples from the emplaced soil in order to submit them for chemical analyses and to check the thickness of the capping strata.
- 4.7 During the inspection three samples of the imported topsoil (VP01 – 0.05, VP02 – 0.10 and VP04 – 0.10) and four samples of the imported subsoil (VP01 – 0.40, VP02 – 0.50, VP03 – 0.30 and VP04 – 0.40) were obtained. The samples, were submitted for chemical analyses and the test results are presented in Appendix 05.
- 4.8 Comparison of these results with the Assessment Criteria for 'residential with home-grown produce' as provided within Appendix 06, indicates that the relevant criteria were not exceeded.
- 4.9 Therefore, the soil was considered suitable, in terms of contamination levels, for the intended use.

Capping Thickness

- 4.10 The capping thicknesses were also verified by WML with the formation of hand excavated validation pits on 22nd July 2021.
- 4.11 Selected photographs of the validation pits are provided in Appendix 02 and indicate generally 450mm of subsoil and 150mm of topsoil in garden areas.
- 4.12 A drawing showing the locations of the validation pits is presented in Appendix 01.
- 4.13 The imported topsoil generally comprised a brown organic sand. The imported subsoil generally comprised a grey, gravelly sand.

Testing Volumes

- 4.14 Delivery tickets for the imported capping soils from Freeland Horticulture via PP O'Conner, presented in Appendix 03, indicate that 38.3 tonnes / 24m³ of topsoil and 147.72 tonnes / 92m³ of subsoil were delivered to site. This indicates sampling of imported topsoil has been undertaken at a

ratio of 1 sample per 8m³ and sampling of imported subsoil has been undertaken at a ratio of 1 sample per 23m³.

Water Supply Pipes

- 4.15 United Utilities Water were consulted with regards the selection of suitable water supply pipe materials for the development. In light of the ground conditions encountered, the requirement for specific materials and measures to protect the water supply from ground contamination was not required. A copy of the United Utilities Risk Assessment is presented in Appendix 07.

5.0 CONCLUSIONS

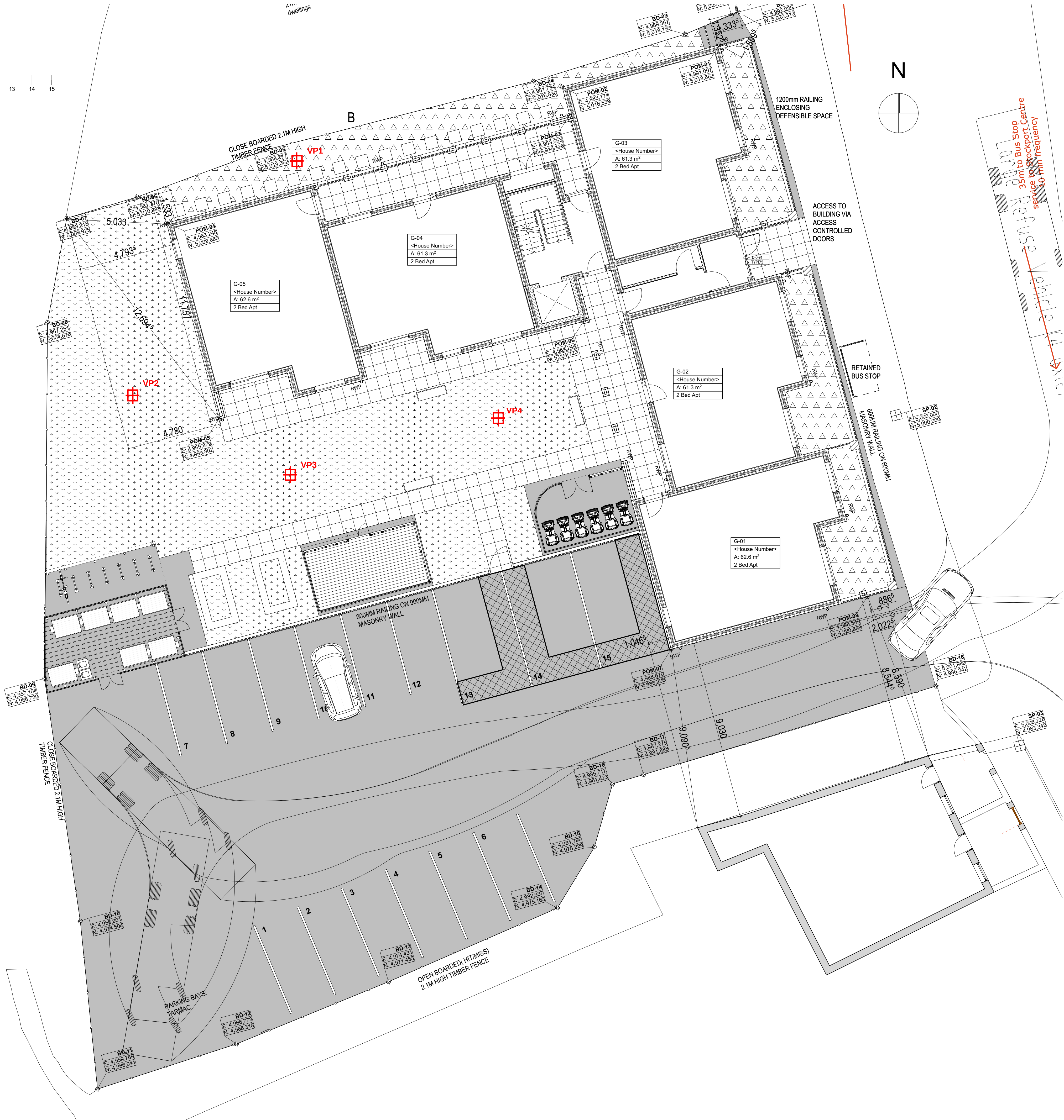
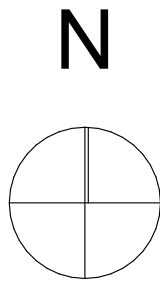
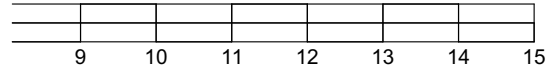
Capping Requirements for Garden / Landscaped Areas

- 5.1 Clean imported topsoil and subsoil were found to be generally emplaced to depths of at least 600mm. The Topsoil and sub-soil 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.

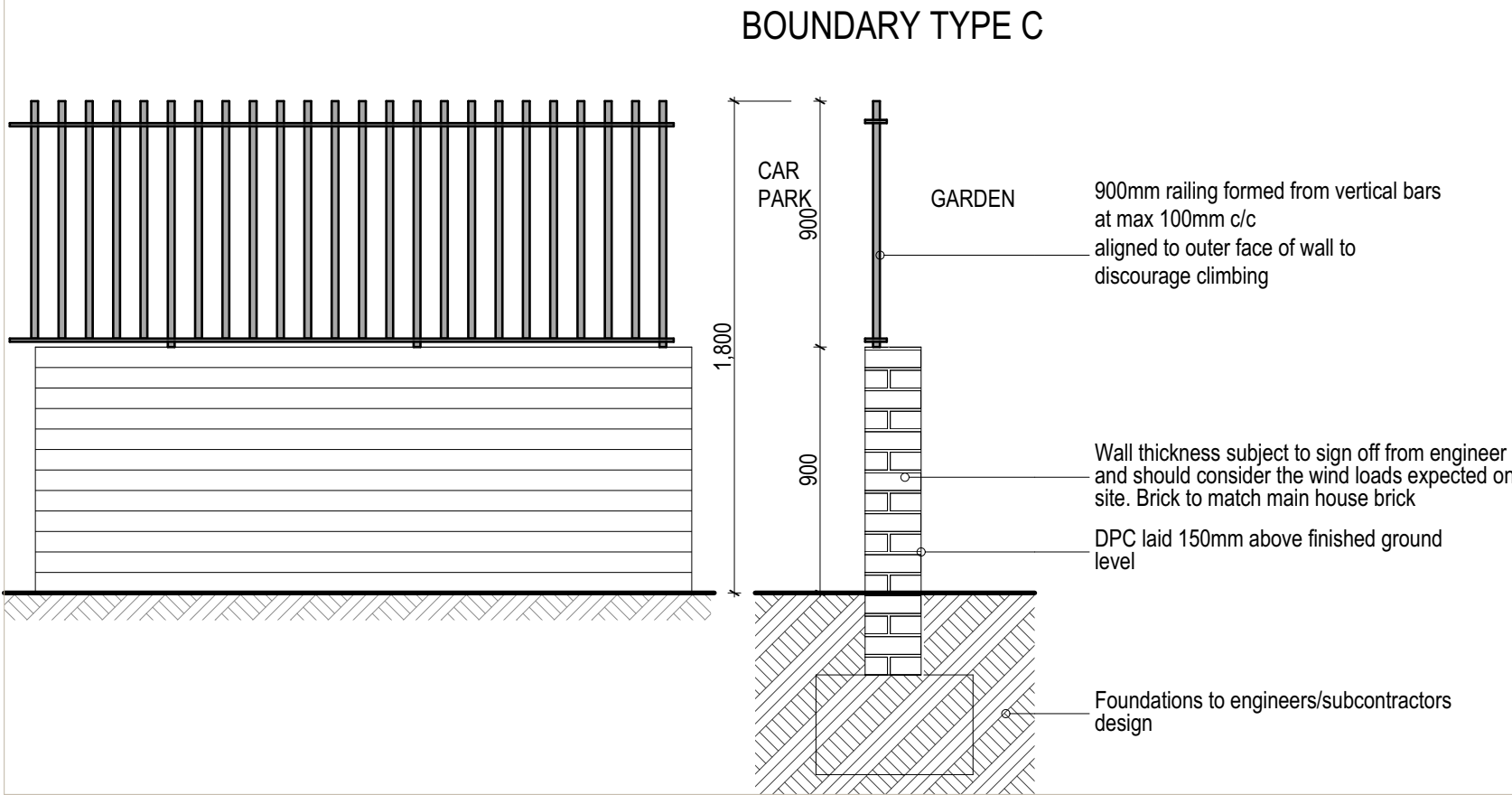
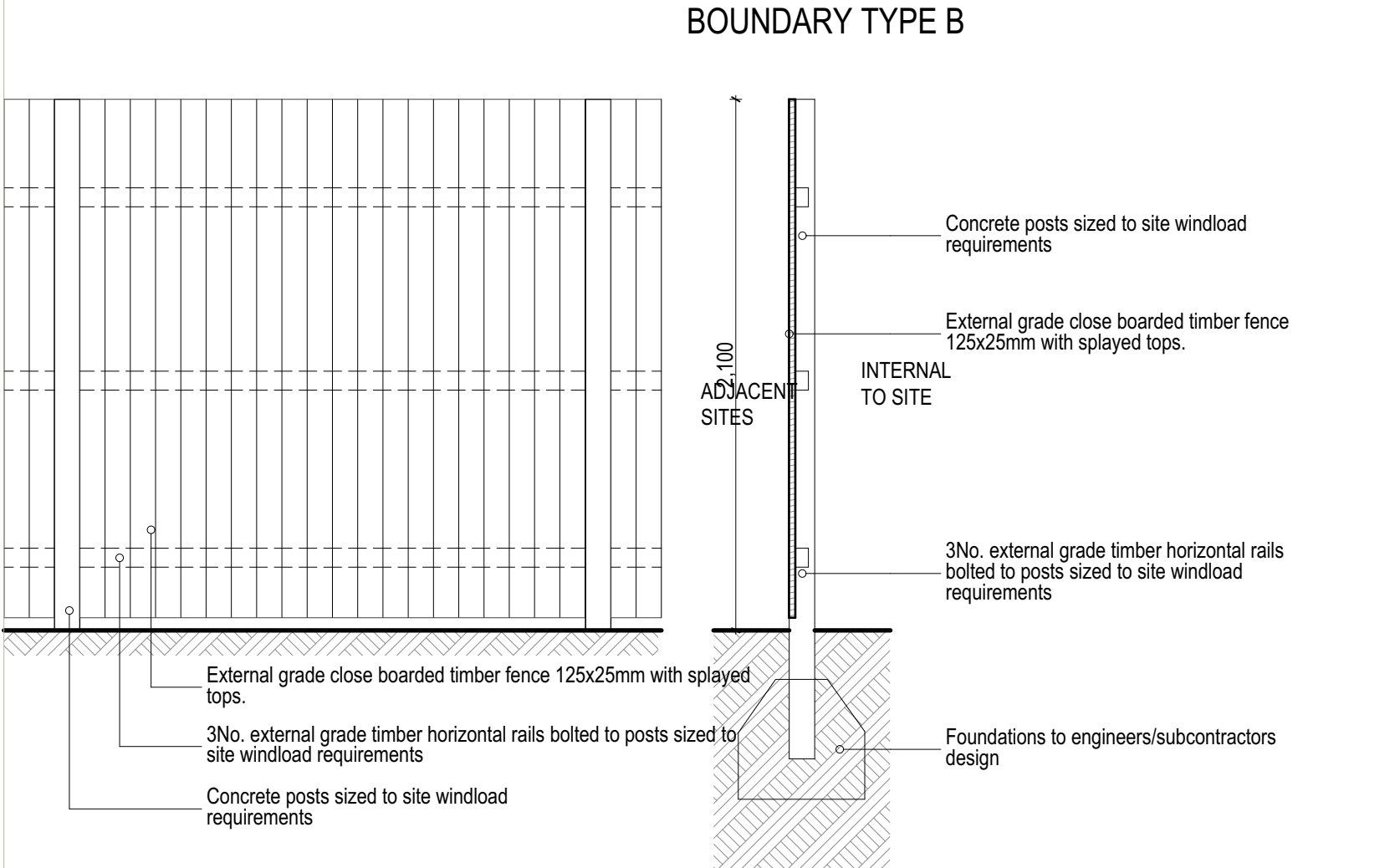
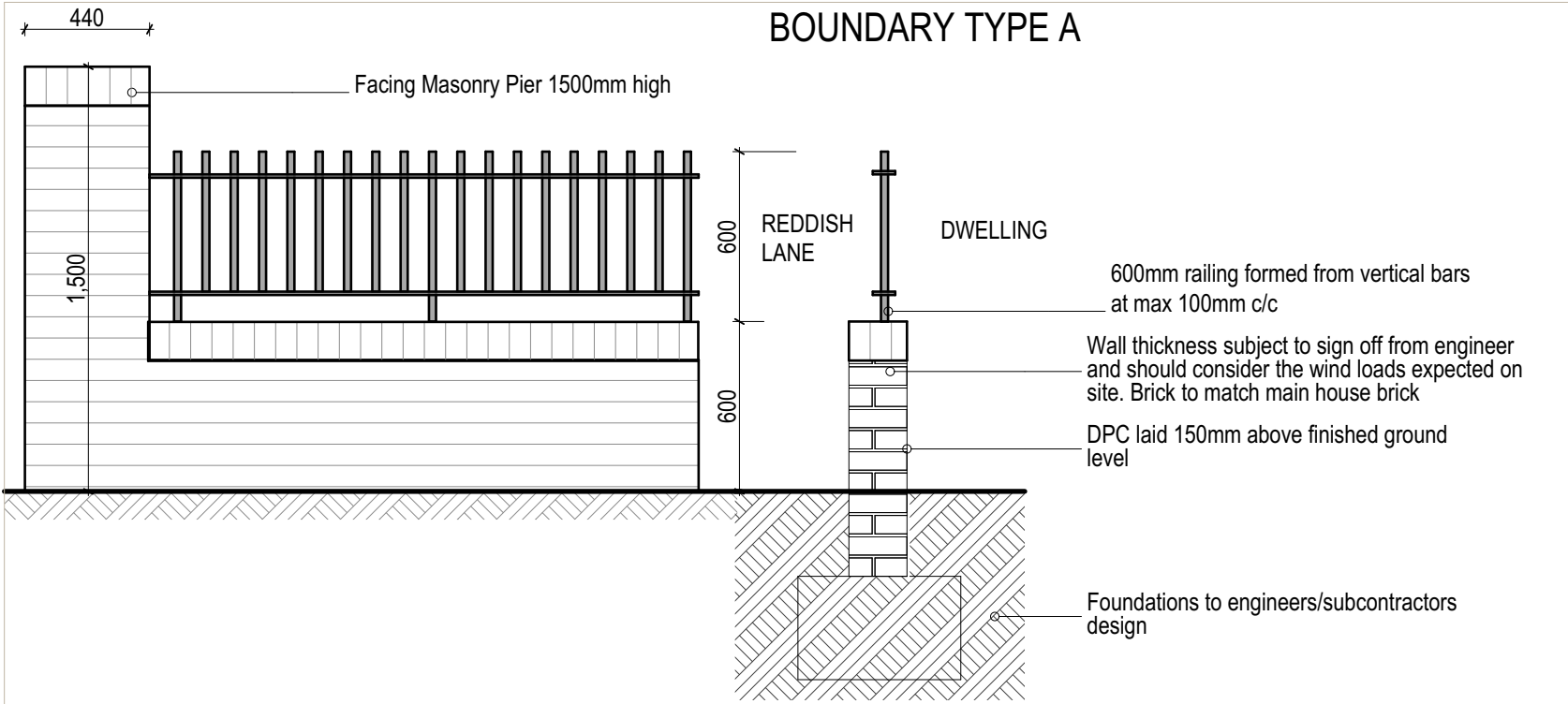
APPENDIX 01

Drawings

SITEPLAN



Plot no.	Type	Floor Area (SQM)
Ground Floor		
G-01	2 Bed Apt	62.64
G-02	2 Bed Apt	61.31
G-03	2 Bed Apt	61.31
G-04	2 Bed Apt	61.31
G-05	2 Bed Apt	62.64
First Floor		
1-01	2 Bed Apt	62.64
1-02	2 Bed Apt	61.31
1-03	2 Bed Apt	61.31
1-04	2 Bed Apt	61.31
1-05	2 Bed Apt	62.64
Second Floor		
2-01	1 Bed Apt	67.96
2-02	1 Bed Apt	50.18
2-03	1 Bed Apt	50.35
2-04	1 Bed Apt	50.35
2-05	1 Bed Apt	53.02



Details
1:25

PROJECT
POMONA HOTEL
REDDISH LANE GORTON

TITLE
SITEPLAN

SIZE
A1
STATUS
PRELIMINARY

JOHN McCALL ARCHITECTS LTD
No. 1 Arts Village, Henry Street, Liverpool L1 5BS Tel: 0151 707 1818 Fax: 707 1819
Old Coop Building, Church Street, Hayfield, SK22 2JE e-mail: admin@johnmccall.co.uk

DRAWN BY
BG
CHECKED
JUNE 19
SCALE (1:100)
1:100, 1:25

APPENDIX 02

Photographs



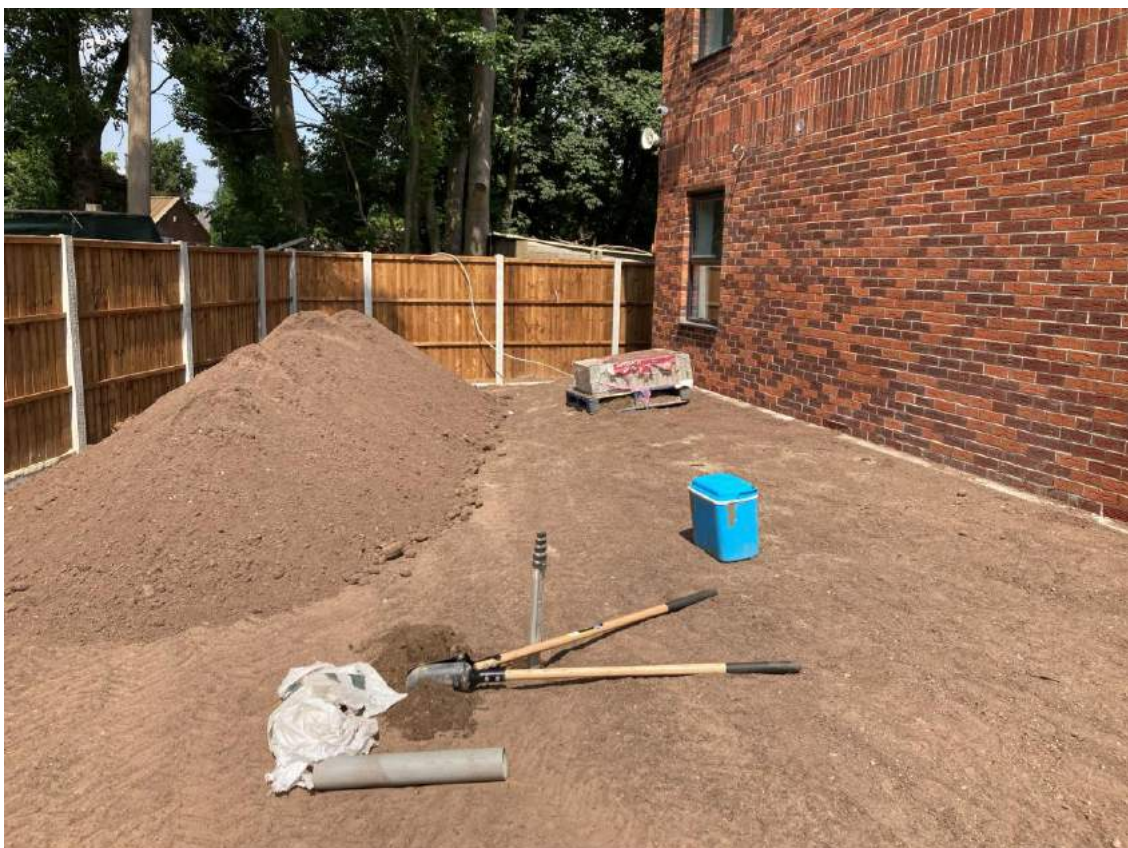
Photograph 1
150mm of topsoil and 450mm of subsoil emplaced in VP01.



Photograph 2
Garden area showing VP01 location.



Photograph 3
150mm of topsoil and 450mm of subsoil emplaced in VP02.



Photograph 4
Garden area showing VP02 location.



Photograph 5
150mm of topsoil and 450mm of subsoil emplaced in VP03.



Photograph 6
Garden area showing VP03 location.



Photograph 7
150mm of topsoil and 450mm of subsoil emplaced in VP04.



Photograph 8
Garden area showing VP04 location.

APPENDIX 03

Delivery Tickets

Invoice No
049456



Invoice Date
19/07/2021

INVOICE

John Southworth Builders
Limited
10 Charles Street
Dukinfield
SK16 4SD

Rosedale Nursery
College Road
Hextable
Kent
BR8 7LT

Tel: 01322 619161
Fax: 01322 619135
Email: vicky@freelandhorticulture.co.uk

Site: John Southworth Builders Limited, Collection

Qty	Detail	Date	Ticket No	Order No	Unit Price	Line Total
19.14	Tn Topsoil - Astley	16/07/21	136562	739		
19.16	Tn Topsoil - Astley	16/07/21	136563	739		

All trading takes place on Freeland Horticulture Ltd Conditions of Sales; copies of which are available on request.
Registered in England: Roseland Nursery, College Road, Hextable, Kent BR8 7LT
VAT Registration No. 762 5393 14

Payment terms: Strictly 30 days net

NETT AMOUNT

VAT

TOTAL

£

Freeland

HORTICULTURE LIMITED

Rosedale Nursery, College Road,
Hextable, Kent, BR8 7LT

Tel: 01322 619161

Fax: 01322 619135

enquiries@freelandhorticulture.co.uk

DELIVERY AND ORDER NOTE

DATE 16 7 2021	CUSTOMER REF. 136563	HAULIER REG No. ML19 XEZ
DRIVER'S NAME PP O CONNOR		HAULIER
CUSTOMER JOHN SOUTHWORTH BUILDERS LTD		
ADDRESS COLLECTION		
CUSTOMER'S SIGNATURE	CUSTOMER'S NAME PRINT	
DESCRIPTION OF LOAD		
CONSIGNOR'S SIGNATURE	DRIVER'S SIGNATURE 	
PRINT	PRINT	

DISCREPANCIES/DAMAGE TO BE NOTIFIED WITHIN 7 DAYS OF DELIVERY.

ALL TRADING TAKES PLACE ON FREELAND HORTICULTURE LTD CONDITIONS OF SALE, COPIES OF WHICH ARE AVAILABLE ON REQUEST.
CUSTOMERS ORDERING VEHICLE OFF THE PUBLIC ROAD, DO SO ENTIRELY AT THEIR OWN RISK AND WILL BE LIABLE FOR ANY DAMAGE INCURRED.

TICKET No.

20579

TRANSFER WEIGHT

16/07/2021
Progressive
Product Code
14208
5779

Plate
RCD
7245

1. Weight
12180 kg

16/07/2021
Progressive
Product Code
14208
5779

Plate
RCD
7245

2. Weight
31340 kg
Weighing Net
19160 kg

**ANY VEHICLE GOING THROUGH
HIGHER GREEN OR ASTLEY GREEN
WILL BE BANNED FROM SITE.**



Rosedale Nursery, College Road,
Hextable, Kent, BR8 7LT
Tel: 01322 619161
Fax: 01322 619135
enquiries@freelandhorticulture.co.uk

DELIVERY AND ORDER NOTE

DATE	CUSTOMER REF.	HAULIER REG No.
16.7.2021	136562	ML19 XEZ
DRIVER'S NAME	HAULIER	
	PP O CONNER	
CUSTOMER		
JOHN SOUTHWORTH BUILDERS		
ADDRESS		
COLLECTION		
CUSTOMER'S SIGNATURE	CUSTOMER'S NAME PRINT	
DESCRIPTION OF LOAD		
CONSIGNOR'S SIGNATURE	DRIVER'S SIGNATURE	
PRINT	PRINT	

DISCREPANCIES/DAMAGE TO BE NOTIFIED WITHIN 7 DAYS OF DELIVERY.

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CUSTOMERS ORDERING VEHICLE OFF THE PUBLIC ROAD, DO SO ENTIRELY AT THEIR OWN RISK AND WILL BE LIABLE FOR ANY DAMAGE INCURRED.

TICKET No.

20576

TRANSFER WEIGHT

16/07/2021
Progressive
Product Code
Plate
Rcd
1. Weight

16/07/2021
Progressive
Product Code
Plate
Rcd
2. Weight
Weighing Net

ANY VEHICLE GOING THROUGH
HIGHER GREEN OR ASTLEY GREEN
WILL BE BANNED FROM SITE.

PP O'Connor Aggregates Limited

61 Mosley Road
Trafford Park
Manchester
M17 1GJ

P. P. O'CONNOR
Committed To Excellence

Telephone No. 0161 776 0333**VAT Reg No. GB 253 8639 76**

John Southworth Buildings Ltd
10 Charles Street
Dunkinfield
Cheshire
SK16 4SO

Invoice**Page 1**

Invoice No	0000005373
Invoice Date	30/06/2021
Your Order No	
Account Ref	JOHNSOUT

Quantity	Description	Del Date	Ticket No	Unit Price	Net Amount
10	Site at Reddish Lane, Gorton; Gritsand Delivered	21/06/21	274016		

Copy tickets attached**Bank Details:**

Total Net Amount	£	
Total VAT Amount	£	
Invoice Total	£	

Any queries regarding this Invoice should be made
in writing within 7 days

PAYMENT TERMS STRICTLY 30 days from document date**Co. Registration No. 1041 1361**

P.P. O'CONNOR

Committed To Excellence

A : 5373

Conveyance Note

№ 274016

61 Mosley Road, Trafford Park
Manchester M17 1GJ

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

Delivery Code

14 P33

Waste Carriers Licence Number CBDU101751

Contract No:

Customers Name: JOHN SOUTHWORTH BUILDERS

Drivers Name

Vehicle Registration

Signature

SIMON

MR 71CF

S. TOOD

Delivery/Collection Address

Date and Time

PARROT REDDISH LAMB
GORTON

21-6-21

Off Site Material Category

Weight

Tonne

Spoil - inert

Spoil - Non
Hazardous

Spoil -
Hazardous

Other - State

GROSS WEIGHT OF
VEHICLE

22500

TARE WEIGHT OF
VEHICLE

12500

NETT WEIGHT

10.000

Imported Materials

Material

Description

Recycled
Aggregate

Quarried
Aggregate

Other State

Gritsand

TIME ON SITE

TIME OFF SITE

WAITING TIME

DAYWORK

STATE REASON FOR WAITING TIME

CUSTOMERS SIGNATURE

PRINT NAME

Handwritten signature

P. CONNOR

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

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

£10.50

PP O'Connor Aggregates Limited

61 Mosley Road
Trafford Park
Manchester
M17 1GJ

P. P. O'CONNOR

Committed To Excellence

Telephone No. 0161 776 0333**VAT Reg No. GB 253 8639 76**

John Southworth Buildings Ltd
10 Charles Street
Dunkinfield
Cheshire
SK16 4SO

Invoice

Page 1

Invoice No	0000005581
Invoice Date	23/07/2021
Your Order No	
Account Ref	JOHNSOUT

Quantity	Description	Del Date	Ticket No	Unit Price	Net Amount
	Site at Reddish Lane, Gorton;				
19.62	Gritsand Delivered	08/07/21	274659		
19.78	Gritsand Delivered	08/07/21	279865		
19.62	Gritsand Delivered	08/07/21	266448		
19.68	Gritsand Delivered	09/07/21	275390		
19.66	Gritsand Delivered	09/07/21	275392		
19.66	Gritsand Delivered	09/07/21	275394		
19.7	Gritsand Delivered	08/07/21	216810		

Copy tickets attached**Bank Details:**

Any queries regarding this Invoice should be made
in writing within 7 days

PAYMENT TERMS STRICTLY 30 days from document date
Co. Registration No. 1041 1361

Total Net Amount

£

Total VAT Amount

£

Invoice Total

£

APPENDIX 04

Chemical Analyses from Source



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
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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 05

Chemical Analyses from Site



Final Report

Report No.: 21-25595-1
Initial Date of Issue: 30-Jul-2021
Client WML Consulting Ltd
Client Address: No. 8 Oak Green
Stanley Green Business Park
Earl Rd
Cheadle
SK8 6QL

Contact(s): Tom Booth

Project 9079G Pomona Hotel

Quotation No.: **Date Received:** 26-Jul-2021

Order No.: 9079G **Date Instructed:** 26-Jul-2021

No. of Samples: 8

Turnaround (Wkdays): 5 **Results Due:** 30-Jul-2021

Date Approved: 30-Jul-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: 9079G Pomona Hotel

Client: WML Consulting Ltd	Chemtest Job No.:				21-25595	21-25595	21-25595	21-25595	21-25595	21-25595	21-25595	21-25595
Quotation No.:	Chemtest Sample ID.:				1247587	1247588	1247589	1247590	1247591	1247592	1247593	1247594
Order No.: 9079G	Client Sample Ref.:				TS	SS	TS	SS	TS	SS	TS	SS
	Sample Location:				VP01	VP01	VP02	VP02	VP03	VP03	VP04	VP04
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.05	0.4	0.1	0.5	0.05	0.3	0.1	0.4
	Date Sampled:				22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD								
ACM Type	U	2192		N/A	-	-	-	-		-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	10	6.6	6.3	8.4	6.1	7.4	8.0	8.1
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones and Roots	Stones	Stones and Roots	Stones	Roots and Stones	Stones	Stones and Roots	Stones and Roots
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH	M	2010		4.0	8.3	8.5	8.1	8.5	8.1	8.7	8.2	8.6
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	0.98	< 0.40	0.94	< 0.40		< 0.40	0.79	< 0.40
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.056	< 0.010	0.045	0.011		< 0.010	0.061	0.021
Total Sulphur	M	2175	%	0.010	0.085	0.026	0.056	0.039		< 0.010	0.052	0.024
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50
Sulphate (Total)	M	2430	mg/kg	100	8200	1200	280	780		970	170	820
Arsenic	M	2450	mg/kg	1.0	12	1.5	< 1.0	1.6		2.0	< 1.0	1.4
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		0.11	< 0.10	0.10
Copper	M	2450	mg/kg	0.50	18	9.9	6.6	8.2		13	2.8	10
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	16	3.9	6.6	2.8		6.9	5.1	6.2
Lead	M	2450	mg/kg	0.50	9.1	11	8.9	12		22	6.8	13
Selenium	M	2450	mg/kg	0.20	1.5	< 0.20	< 0.20	< 0.20		< 0.20	< 0.20	< 0.20
Vanadium	U	2450	mg/kg	5.0	68	10	13	12		15	11	14
Zinc	M	2450	mg/kg	0.50	50	28	28	25		39	18	32
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	4.4	1.5	4.6	1.6		0.69	3.8	1.4
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.62		< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.18		< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	0.49	< 0.10	0.35	0.76		< 0.10	0.26	0.31
Pyrene	M	2700	mg/kg	0.10	0.50	< 0.10	0.43	0.88		< 0.10	0.39	0.44
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.32	0.45		< 0.10	< 0.10	0.13
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.66	0.67		< 0.10	< 0.10	0.25
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.61		< 0.10	< 0.10	0.32
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.97		< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.45		< 0.10	< 0.10	0.22

Results - Soil

Project: 9079G Pomona Hotel

Client: WML Consulting Ltd	Chemtest Job No.:				21-25595	21-25595	21-25595	21-25595	21-25595	21-25595	21-25595	21-25595
Quotation No.:	Chemtest Sample ID.:				1247587	1247588	1247589	1247590	1247591	1247592	1247593	1247594
Order No.: 9079G	Client Sample Ref.:				TS	SS	TS	SS	TS	SS	TS	SS
	Sample Location:				VP01	VP01	VP02	VP02	VP03	VP03	VP04	VP04
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.05	0.4	0.1	0.5	0.05	0.3	0.1	0.4
	Date Sampled:				22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021	22-Jul-2021
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD								
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	0.11
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	0.30
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	5.6		< 2.0	< 2.0	2.1
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10

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.
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
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 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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* 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.

APPENDIX 07

United Utilities Risk Assessment

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

Introduction

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

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

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

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

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

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

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

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

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

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

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

How to contact us about the information in this leaflet



DeveloperServicesWater@uuplc.co.uk



0345 072 6067

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

Testing Requirements

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

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

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

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

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

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

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

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

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

- pH, Conductivity and redox potential

Sufficiency of Testing

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

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

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

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

Detection Limits

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

Protective Measures

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

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

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

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

References

BS10175: 2011

"Investigation of Potentially Contaminated Sites Code of Practice"

CLAIRE/CIEH

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

Department of the Environment Contaminated Land Research Report

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

Environment Agency

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

Environment Agency

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

Environment Agency P5-080/TR3

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

UK Water Industry Research (UKWIR)

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

Water Regulations Advisory Scheme (WRAS)

Information and Guidance Note 9-04-03

"Laying Pipes in Contaminated Land" 2002

Frequently asked questions

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

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

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

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

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

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

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

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

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

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

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

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

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

Examples where defaulting to barrier pipe would not be acceptable:

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

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

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

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

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

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

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

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

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

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

Have any other Water Companies adopted the UKWIR Guidance yet?

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

About us

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

Risk assessment for water pipes (RA)

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

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

Section 1: Development details

Development name <i>(if it has one)</i>	
Development address	The former Pomona Hotel, Reddish Lane, Gorton, M18 7JN
OS Grid reference <i>(mid point)</i>	389440E, 395560N
Developer's name	John Southworth Builders
UUW reference number <i>(for UU use only)</i>	

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

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

Sutcliffe Phase 2 Report Reference: 30063LG – R02 Issue: A Date: February 2019

The earliest available historical map (1848) indicated that several buildings were noted on site and thought to be a mixture of residential and a hotel/P.H; the remainder of the site was undeveloped. From 1892-1893 further buildings were identified on maps as glasshouses, these were present until circa 1920/1930s. The site remained developed with the public house/hotel until recent years when all buildings were demolished.

Surrounding areas were in use primarily as residential and mixed commercial use.

The Preliminary Risk Assessment concluded that under the proposed development scenario, pollution linkages have been considered unlikely with the overall preliminary risk assessed as very low to low.

Section 2: Preliminary risk assessment

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

NA
Site Investigation by Sutcliffes - Report Reference: 30063LG – R02 Issue: A Date: February 2019

Section 3: Intrusive site investigation																									
Have you completed any intrusive site investigation?	☒ Yes ☐ No																								
Have you completed any none intrusive site investigation?	☐ Yes ☒ No																								
Date(s) when the site investigation(s) undertaken	<table border="1"> <tr> <td>D</td><td>D</td><td>1</td><td>1</td><td>2</td><td>0</td><td>1</td><td>8</td> </tr> <tr> <td>D</td><td>D</td><td>0</td><td>2</td><td>2</td><td>0</td><td>1</td><td>9</td> </tr> <tr> <td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td> </tr> </table>	D	D	1	1	2	0	1	8	D	D	0	2	2	0	1	9	D	D	M	M	Y	Y	Y	Y
D	D	1	1	2	0	1	8																		
D	D	0	2	2	0	1	9																		
D	D	M	M	Y	Y	Y	Y																		
At what level has groundwater been encountered?	9.00 metres below ground level or ☐ Not encountered																								
Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing. <i>If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.</i>																									
Historical information does not identify any past industrial land use with the site only being developed for use as a hotel / public house. Therefore, chemical analysis was limited to metls, organics, speciated hydrocarbons, TPH and BTEX.																									
If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE. Please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i>																									
NA																									
Section 4: Site remediation																									
Please provide details below of any site remediation (which may include a change in site levels) already completed. <i>If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.</i>																									
No significant changes in elevation are anticipated. During the Phase 2 investigations very localised and shallow (0.20m to 0.60mbgl) TPH concentrations were recorded within the made ground. As no visual / olfactory evidence of hydrocarbon contamination were noted on the logs or by the site engineers, it is anticipaed that theseare likely due to fragments of asphalt mixed into the samples. Therefore, additonal localised investigations are to be undertaken in order to undertake additional TPH tetsing and determined the source of the elevated concentrations.																									
Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☐ Yes ☒ No ☐ N/A																								
Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection. <i>If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.</i>																									
Based on the previously outlined additional investigations, if/where the TPH is determined to be due to fragments of asphalt within the infilled basement, it would not be viable to remove all of the made ground as as such would remain insitu. However, if the additional investiations determine that the TPH is very localised andsignificantly exceeds the current reference value such as would pose a risk to human health and / or controlled waters ,such would be delineate and removed to a suitbale repository.																									

Section 5: Final use of site

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

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

The site is to be in residential use with no storage of chemicals / hydrocarbons anticipated.

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

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

Section 6: Additional information

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

NA

Section 7: Risk assessor

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

Samantha Seddon, Associate, BSc, MSc, EurGeol, CGeol, FGS

Name and address of risk assessor's company

WML Consulting, No. 8 Oak Green | Earl Road | Stanley Green Business Park | Cheadle Hulme | Cheshire | SK8 6QL

Date risk assessment performed

1 7 0 1 2 0 2 0

Section 8: Declaration

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

Name

Samantha Seddon

Company

WML Consulting

Telephone

01614820600

Date

1 7 M M Y Y Y Y

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



About us

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

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
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Table 1 - Pipe selection risk assessment summary (PSRAS)

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

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

What materials have been tested to populate Table 1 below?

☒ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

All concentrations in mg/kg								
Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth See Note [2]	Maximum site concentration See Note [3]	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	NA	NA	NA	NA	NA
Total BTEX & MTBE		0.1	Pass	NA	NA	NA	NA	NA
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	NA	NA	NA	NA	NA
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	0.01	Y	NA	NA	NA
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	1	Y	145	145	WS101 0.20MBGL
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	1	Y	3350	3350	WS101 0.20MBGL
Phenols* (from SVOC analysis)		2	Pass	NA	NA	NA	NA	NA
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	NA	NA	NA	NA	NA
Ethers*	Only where identified	0.5	Pass	NA	NA	NA	NA	NA
Nitrobenzene*		0.5	Pass	NA	NA	NA	NA	NA
Ketones*		0.5	Pass	NA	NA	NA	NA	NA
Aldehydes*		0.5	Pass	NA	NA	NA	NA	NA
Amines		Fail	Pass	NA	NA	NA	NA	NA
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]	NA	NA	NA	NA	NA

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

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

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