

Our Ref: 15568/VAL

Your Ref:

Contact: James Rhys-Williams

Terra Firma (Wales) Ltd.

Consulting Geotechnical & Geo-Environmental Engineers
Site Investigation Contractors

5 Deryn Court, Wharfedale Road,
Pentwyn, Cardiff CF23 7HA

Tel: 029 2073 5354 Fax: 029 2073 5433

Email: info@terrafirmawales.co.uk

www.terrafirmawales.co.uk

25th August 2020

Kingfisher Developments (Wales) Ltd

For the attn. of Niall Griffiths (by e-mail: niall@kingfisherwales.co.uk)

Dear Niall

IMPORTED TOPSOIL VALIDATION: PARK ROW, CWMAVON, PORT TALBOT

Terra Firma Wales Ltd were retained by Kingfisher Developments (Wales) Ltd to perform chemical analysis on soils currently located in the garden/landscape areas of recently developed residential flats at Park Row, Cwmavon, SA12 9PD.

It is understood that 40 tonnes of topsoil were imported onto the site in two loads between the 15th and 16th July 2020. Transfer notes and origin testing certificate are appended (**Annex A**).

Terra Firma Wales Ltd attended the site on 31st July 2020.

During the visit, Terra Firma Wales Ltd collected 4 No. soil samples from the areas surrounding the development. Approximate sample locations are presented in **Figure 1.1**.

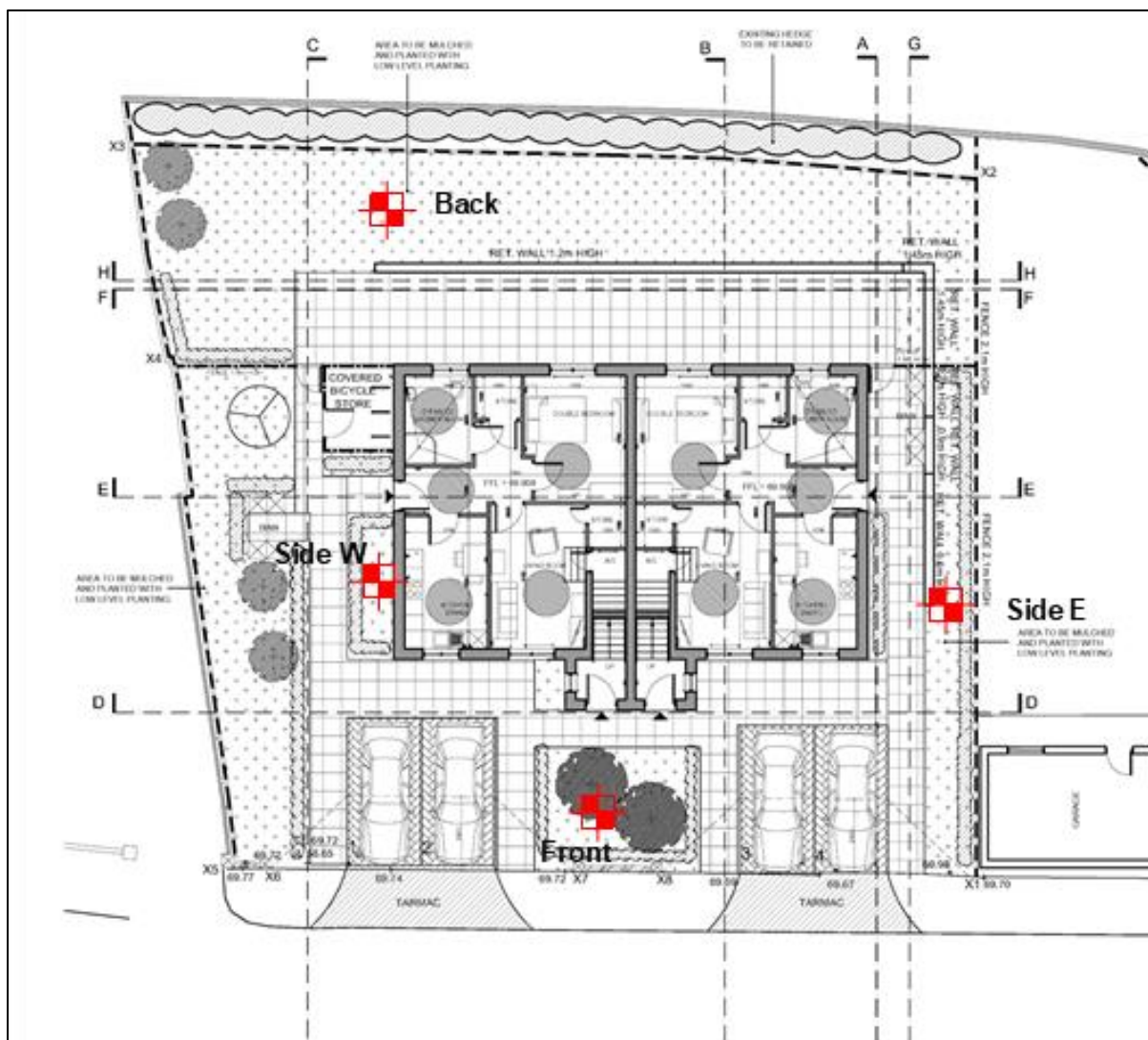


Figure 1.1. Approximate Sample Locations

The results of the analysis are presented in **Annex B** and summarised in **Table 1.1 to 1.3**, along with corresponding Generic Assessment Criteria for a residential setting with plant uptake. It should be noted that two of the four samples needed to be partly retested to due anomalous initial results.

Table 1.1 Summary of Soil Chemical Test Results – Inorganics & Miscellaneous

Substance	Threshold Value (mg/kg)	Source	Measured Concentrations of Tested Substances (mg/kg)		Number of Exceedances
			Minimum	Maximum	
Arsenic	37	LQM/CIEH	15	18	0
Cadmium	11	LQM/CIEH	0.34	0.38	0
Chromium III	910	LQM/CIEH	10	12	0
Chromium VI	6	LQM/CIEH	<0.5	<0.5	0
Copper	2400	LQM/CIEH	29	46	0
Lead	200	pC4SL	76	150	0
Mercury (inorganic)	40	LQM/CIEH	0.10	0.24	0

Nickel	180	LQM/CIEH	11	14	0
Selenium	250	LQM/CIEH	<0.2	0.31	0
Zinc	3700	LQM/CIEH	130	450	0
Cyanide	-	-	<0.5	<0.5	-
Boron	290	LQM/CIEH	1.7	2.5	0
Sulphate (%)	0.24	BRE	0.098	0.14	0
Organic Matter (%)	-	-	4.2	4.5	-
pH	-	-	8.3	9.1	-

Notes:

- No available guidelines

Table 1.2 Summary of Soil Chemical Test Results – Speciated Polycyclic Aromatic Hydrocarbons & Phenols

Substance	Threshold Value (mg/kg)	Source	Measured Concentrations of Tested Substances (mg/kg)		Number of Exceedances
			Minimum	Maximum	
Naphthalene	2.3	LQM/CIEH	<0.1	<0.1	0
Acenaphthylene	170	LQM/CIEH	<0.1	<0.1	0
Acenaphthene	210	LQM/CIEH	<0.1	<0.1	0
Fluorene	170	LQM/CIEH	<0.1	<0.1	0
Phenanthrene	95	LQM/CIEH	<0.1	2.6	0
Anthracene	2400	LQM/CIEH	<0.1	0.59	0
Fluoranthene	280	LQM/CIEH	0.89	2.5	0
Pyrene	620	LQM/CIEH	1.1	2.6	0
Benzo(a)anthracene	7.2	LQM/CIEH	<0.1	1.3	0
Chrysene	15	LQM/CIEH	<0.1	1.2	0
Benzo(b)fluoranthene	2.6	LQM/CIEH	<0.1	<0.1	0
Benzo(k)fluoranthene	77	LQM/CIEH	<0.1	<0.1	0
Benzo(a)pyrene	2.2	LQM/CIEH	<0.1	<0.1	0
Indeno(123cd)pyrene	27	LQM/CIEH	<0.1	<0.1	0
Dibenzo(ah)anthracene	0.24	LQM/CIEH	<0.1	<0.1	0
Benzo(ghi)perylene	320	LQM/CIEH	<0.1	<0.1	0
Total PAH	-	-	3.0	8.3	-
Total Phenols	120	LQM/CIEH	<0.3	<0.3	0

Table Notes:

- Thresholds based on 1.0% soil organic matter
- No available guidelines

Table 1.3 Summary of Soil Chemical Test Results – Petroleum Hydrocarbons

Substance	Threshold Value (mg/kg)	Source	Measured Concentrations of Tested Substances (mg/kg)		Number of Exceedances
			Minimum	Maximum	
Aliphatic					
PH C5 – C6 Ali	42	LQM/CIEH	<1.0	<1.0	0
PH C6 – C8 Ali	100	LQM/CIEH	<1.0	<1.0	0
PH C8 – C10 Ali	27	LQM/CIEH	<1.0	<1.0	0

PH C10 – C12 Ali	130	LQM/CIEH	<1.0	<1.0	0
PH C12 – C16 Ali	1100	LQM/CIEH	<1.0	<1.0	0
PH C16 – C21 Ali	65000*	LQM/CIEH	<1.0	<1.0	0
PH C21 – C35 Ali	65000*	LQM/CIEH	86	110	0
PH C35 – C44 Ali	65000	LQM/CIEH	<1.0	<1.0	0
Aromatic					
PH C5 – C7 Arom	70	LQM/CIEH	<1.0	<1.0	0
PH C7 – C8 Arom	130	LQM/CIEH	<1.0	<1.0	0
PH C8 – C10 Arom	34	LQM/CIEH	<1.0	<1.0	0
PH C10 – C12 Arom	74	LQM/CIEH	<1.0	<1.0	0
PH C12 – C16 Arom	140	LQM/CIEH	<1.0	<1.0	0
PH C16 – C21 Arom	260	LQM/CIEH	<0.1	14	0
PH C21 – C35 Arom	1100	LQM/CIEH	<0.1	280	0
PH C35 – C44 Arom	1100	LQM/CIEH	<1.0	19	0

Table Notes:

- PH – Petroleum Hydrocarbon
- Ali – Aliphatic
- Arom – Aromatic
- Thresholds based on 1.0% soil organic matter
- * – Ali C16-21 and C21-C35 based on criteria for Ali EC >16-35

All determinands assessed were at concentrations below the corresponding Generic Assessment Criteria for a Residential Setting with Plant Uptake.

We trust that the above is to your satisfaction, however, if you have any queries or require any further information please do not hesitate to contact us. In the meantime, we await your further instructions.

Yours sincerely

for: Terra Firma (Wales) Ltd



J. Rhys-Williams BSc (Hons) FGS

Enc

Annex A – Transfer Notes & Origin Test Certificate

Annex B – Laboratory Test Certificates

ANNEX A
Transfer Notes & Origin Test Certificate

07D 18113

DELIVERY NOTE

DUTY OF CARE

TRANSFER NOTE

Carrier No. CBDU12121

SIC Code - 38 • 11

212177



VILLAGE FARM INDUSTRIAL ESTATE • PYLE • BRIDGEND • CF33 6BN

Telephone: (01656) 743755 Email: admin@shillibiers.co.uk

Date

15/7/20

Customer

LBS

Loading Site

Ex Stock

Delivery Site

CWMAYON

Site Licence No.

Sign (Tip)

Description of Goods

TOP SOIL

By signing below, I confirm that I have fulfilled my duty to apply the waste hierarchy as required by regulation 12 of the Waste (England and Wales) Regulations 2011.

Artic



8 Wheel



Grab



4 Wheel



No of Loads

1 Load

Nett Weight

19.84

Vehicle Reg No.

CN15 PHV

Time Start

Driver

James

Break

Signed

Time Finish

Travel Time

Customer / Disposer

Total Time

E.W.C. CODES

170504



Soil & Stones

170107



Concrete & Bricks

170101



Clean Concrete

White Copy: Customer

Yellow: Office

Green: Tip or X Hire

Pink: Leave in Book

DELIVERY NOTE

DUTY OF CARE

TRANSFER NOTE

07D18055

1430

Carrier No. CBDU12121

SIC Code - 38 • 11

212174



VILLAGE FARM INDUSTRIAL ESTATE • PYLE • BRIDGEND • CF33 6BN
Telephone: (01656) 743755 Email: admin@shillibiers.co.uk

Date 15-7-20Customer LBSLoading Site STOCKDelivery Site 3 PARK ROW CWMAYON

Site Licence No. _____ Sign (Tip) _____

Description of Goods TOP-SOIL

By signing below, I confirm that I have fulfilled my duty to apply the waste hierarchy as required by regulation 12 of the Waste (England and Wales) Regulations 2011.

Artic ☐8 Wheel ☒Grab ☐4 Wheel ☐No of Loads 1 Nett Weight 20 TONVehicle Reg No. CN17 PHV Time Start _____Driver JOHN Break _____Signed [Signature] Time Finish _____

Customer / Disposer

Travel Time _____

Total Time _____

E.W.C. CODES

170504 ☐ Soil & Stones170107 ☐ Concrete & Bricks170101 ☐ Clean Concrete

White Copy: Customer

Yellow: Office

Green: Tip or X Hire

Pink: Leave in Book

FINAL ANALYTICAL TEST REPORT SUPPLEMENT TO TEST REPORT 18/03778/1

Envirolab Job Number: 18/03778
Issue Number: 2 S1
Date: 12 June, 2018

Client: CJ Associates
King Road
Bristol
BS11 9HF

Project Manager: Admin/Lorna Logan
Project Name: Stormy
Project Ref: AG0544-L12944-S6843
Order No: AG0544-L12944-S6843
Date Samples Received: 16/05/18
Date Instructions Received: 16/05/18
Date Analysis Completed: 12/06/18

Prepared by:



Richard Wong
Client Manager

Approved by:



Georgia King
Admin & Client Services Supervisor

Envirolab Job Number: 18/03778

Client Project Name: Stormy

Client Project Ref: AG0544-L12944-S6843

Lab Sample ID	18/03778/1	18/03778/2							Units	Method ref
Client Sample No										
Client Sample ID	Subsoil Stock	Topsoil								
Depth to Top										
Depth To Bottom										
Date Sampled	11-May-18	11-May-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6AE	4AE								
% Stones >10mm _A	26.2	6.7							% w/w	A-T-044
pH _D ^{M#}	9.86	8.20							pH	A-T-031s
Electrical conductivity @ 20degC _D	-	285							µs/cm	A-T-037s
Nitrogen, Total % _A	-	0.130							%	Subcon Yara
Cyanide (total) _A ^{M#}	-	<1							mg/kg	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2							mg/kg	A-T-050s
Loss on ignition (440 °C) _D	-	4.5							% w/w	A-T-030s
Organic matter _D ^{M#}	-	4.9							% w/w	A-T-032 OM
Extractable phosphorus _D	-	35							mg/l	A-T-EXTMETS
Extractable potassium _D	-	215							mg/l	A-T-EXTMETS
Extractable magnesium _D	-	164							mg/l	A-T-EXTMETS
Carbon:Nitrogen Ratio	-	21.7							:1	Calc-no stones
ESP (Exchangable Sodium Percentage)	-	1.1							%	Calc
Extractable Sodium _D	-	35							mg/l	A-T-EXTMETS
Calcium (available) _D	-	2450							mg/l	A-T-EXTMETS
Arsenic _D ^{M#}	7	13							mg/kg	A-T-024s
Boron (water soluble) _D ^{M#}	-	1.8							mg/kg	A-T-027s
Cadmium _D ^{M#}	0.7	1.0							mg/kg	A-T-024s
Copper _D ^{M#}	10	23							mg/kg	A-T-024s
Chromium _D ^{M#}	30	18							mg/kg	A-T-024s
Lead _D ^{M#}	106	130							mg/kg	A-T-024s
Mercury _D	0.35	<0.17							mg/kg	A-T-024s
Nickel _D ^{M#}	13	18							mg/kg	A-T-024s
Selenium _D ^{M#}	1	<1							mg/kg	A-T-024s
Zinc _D ^{M#}	79	164							mg/kg	A-T-024s
TPH total (>C6-C40) _A ^{M#}	80	-							mg/kg	A-T-007s

Envirolab Job Number: 18/03778

Client Project Name: Stormy

Client Project Ref: AG0544-L12944-S6843

Lab Sample ID	18/03778/1	18/03778/2							Units	Method ref
Client Sample No										
Client Sample ID	Subsoil Stock	Topsoil								
Depth to Top										
Depth To Bottom										
Date Sampled	11-May-18	11-May-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6AE	4AE								
PAH-16MS										
Acenaphthene _A ^{M#}	0.04	0.02							mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	0.02	0.02							mg/kg	A-T-019s
Anthracene _A ^{M#}	0.08	0.07							mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.31	0.44							mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.28	0.40							mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.45	0.63							mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.15	0.25							mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.15	0.19							mg/kg	A-T-019s
Chrysene _A ^{M#}	0.36	0.52							mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	0.05	0.08							mg/kg	A-T-019s
Fluoranthene _A ^{M#}	0.53	0.71							mg/kg	A-T-019s
Fluorene _A ^{M#}	0.04	0.02							mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.17	0.28							mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03							mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.23	0.26							mg/kg	A-T-019s
Pyrene _A ^{M#}	0.42	0.57							mg/kg	A-T-019s
PAH (total 16) _A ^{M#}	3.27	4.48							mg/kg	A-T-019s
Total PAH-16MS _A ^{M#}	6.55	8.94							mg/kg	A-T-019s

Envirolab Job Number: 18/03778

Client Project Name: Stormy

Client Project Ref: AG0544-L12944-S6843

Lab Sample ID	18/03778/1	18/03778/2							Units	Method ref
Client Sample No										
Client Sample ID	Subsoil Stock	Topsoil								
Depth to Top										
Depth To Bottom										
Date Sampled	11-May-18	11-May-18								
Sample Type	Soil - ES	Soil - ES								
Sample Matrix Code	6AE	4AE								
TPH CWG										
Ali >C5-C6 _A [#]	-	<0.01							mg/kg	A-T-022s
Ali >C6-C8 _A [#]	-	<0.01							mg/kg	A-T-022s
Ali >C8-C10 _A [#]	-	<0.01							mg/kg	A-T-022s
Ali >C10-C12 _A [#]	-	<0.1							mg/kg	A-T-023s
Ali >C12-C16 _A [#]	-	<0.1							mg/kg	A-T-023s
Ali >C16-C21 _A [#]	-	<0.1							mg/kg	A-T-023s
Ali >C21-C35 _A [#]	-	<0.1							mg/kg	A-T-023s
Total Aliphatics _A	-	<0.1							mg/kg	A-T-023s
Aro >C5-C7 _A [#]	-	<0.01							mg/kg	A-T-022s
Aro >C7-C8 _A [#]	-	<0.01							mg/kg	A-T-022s
Aro >C8-C9 _A [#]	-	<0.01							mg/kg	A-T-022s
Aro >C9-C10 _A [#]	-	<0.01							mg/kg	A-T-022s
Aro >C10-C12 _A [#]	-	<0.1							mg/kg	A-T-023s
Aro >C12-C16 _A [#]	-	<0.1							mg/kg	A-T-023s
Aro >C16-C21 _A [#]	-	1.1							mg/kg	A-T-023s
Aro >C21-C35 _A [#]	-	3.3							mg/kg	A-T-023s
Total Aromatics _A	-	4.4							mg/kg	A-T-023s
TPH (Ali & Aro) _A	-	4.4							mg/kg	A-T-023s
BTEX - Benzene _A [#]	-	<0.01							mg/kg	A-T-022s
BTEX - Toluene _A [#]	-	<0.01							mg/kg	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	<0.01							mg/kg	A-T-022s
BTEX - m & p Xylene _A [#]	-	<0.01							mg/kg	A-T-022s
BTEX - o Xylene _A [#]	-	<0.01							mg/kg	A-T-022s
MTBE _A [#]	-	<0.01							mg/kg	A-T-022s

REPORT NOTES

General:

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

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

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

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

If results are in italic font they are associated with an AQC failure and there is insufficient sample to repeat the analysis. These are not accredited and are unreliable.

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

Soil chemical analysis:

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

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

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

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

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

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

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

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

Asbestos:

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

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

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

Predominant Matrix Codes:

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

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

Secondary Matrix Codes:

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

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

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

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

Please contact us if you need any further information.

ANNEX B
Laboratory Test Certificates



Final Report

Report No.:	20-20573-1		
Initial Date of Issue:	15-Aug-2020		
Client	Terra Firma (Wales) Ltd		
Client Address:	5 Deryn Court Wharfedale Road Pentwyn Cardiff CF23 7HA		
Contact(s):	james@terrafirmawales.co.uk		
Project	Park Row, Cwmavon		
Quotation No.:		Date Received:	06-Aug-2020
Order No.:	15568/JRW	Date Instructed:	06-Aug-2020
No. of Samples:	4		
Turnaround (Wkdays):	5	Results Due:	12-Aug-2020
Date Approved:	15-Aug-2020		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: Park Row, Cwmavon

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:				20-20573	20-20573	20-20573	20-20573
Quotation No.:	Chemtest Sample ID.:				1044085	1044086	1044087	1044088
	Client Sample ID.:				1	2	3	4
	Sample Location:				Back	Side W	Front	Side E
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Date Sampled:				31-Jul-2020	31-Jul-2020	31-Jul-2020	31-Jul-2020
	Time Sampled:				12:00	12:00	12:00	12:00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-
Moisture	N	2030	%	0.020	17	17	17	21
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand
pH	M	2010		4.0	8.3	8.5	9.1	8.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.7	1.9	2.1	2.5
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphate (Acid Soluble)	M	2430	%	0.010	0.14	0.099	0.13	0.098
Arsenic	M	2450	mg/kg	1.0	18	15	16	16
Cadmium	M	2450	mg/kg	0.10	0.34	0.36	0.38	0.34
Chromium	M	2450	mg/kg	1.0	12	12	11	10
Mercury Low Level	M	2450	mg/kg	0.05	0.11	0.13	0.24	0.10
Copper	M	2450	mg/kg	0.50	46	34	31	29
Nickel	M	2450	mg/kg	0.50	14	12	11	11
Lead	M	2450	mg/kg	0.50	76	86	150	96
Selenium	M	2450	mg/kg	0.20	0.31	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	130	150	450	140
Chromium (Trivalent)	N	2490	mg/kg	1.0	12	12	11	10
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	110	100	86	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	110	100	86	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	14	9.9	12	< 1.0

Results - Soil

Project: Park Row, Cwmavon

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:				20-20573	20-20573	20-20573	20-20573
Quotation No.:	Chemtest Sample ID.:				1044085	1044086	1044087	1044088
	Client Sample ID.:				1	2	3	4
	Sample Location:				Back	Side W	Front	Side E
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Date Sampled:				31-Jul-2020	31-Jul-2020	31-Jul-2020	31-Jul-2020
	Time Sampled:				12:00	12:00	12:00	12:00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY	COVENTRY
Determinand	Accred.	SOP	Units	LOD				
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	280	100	240	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	11	19	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	300	130	250	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	420	230	340	< 10
Naphthalene	M	2700	mg/kg	0.10	0.53	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.17	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	0.18	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	0.39	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	3.2	1.3	1.0	1.6
Anthracene	M	2700	mg/kg	0.10	0.82	0.35	0.15	0.36
Fluoranthene	M	2700	mg/kg	0.10	4.6	1.8	0.89	1.8
Pyrene	M	2700	mg/kg	0.10	4.5	1.8	1.2	1.9
Benzo[a]anthracene	M	2700	mg/kg	0.10	3.2	1.3	< 0.10	1.4
Chrysene	M	2700	mg/kg	0.10	3.0	1.2	< 0.10	1.4
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	3.5	< 0.10	< 0.10	1.6
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	1.5	< 0.10	< 0.10	0.77
Benzo[a]pyrene	M	2700	mg/kg	0.10	3.0	< 0.10	< 0.10	1.4
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	1.6	< 0.10	< 0.10	0.95
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.89	< 0.10	< 0.10	0.52
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	1.8	< 0.10	< 0.10	1.5
Total Of 16 PAH's	M	2700	mg/kg	2.0	33	7.8	3.2	15
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30
Organic Matter BS1377	N	2930	%	0.10	4.2	4.5	4.4	4.3

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
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-diphenylcarbazine.
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
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; Dibenz[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.
2930	Organic Matter	Organic Matter	Acid Dichromate digestion/Titration

Report Information

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N	Unaccredited
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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"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

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



2183

Final Report

Report No.: 20-21814-1
Initial Date of Issue: 24-Aug-2020
Client Terra Firma (Wales) Ltd
Client Address: 5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HA

Contact(s): James Rhys-Williams

Project Park Row, Cwmavon

Quotation No.: **Date Received:** 18-Aug-2020

Order No.: **Date Instructed:** 18-Aug-2020

No. of Samples: 2

Turnaround (Wkdays): 5 **Results Due:** 24-Aug-2020

Date Approved: 24-Aug-2020

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Soil

Project: Park Row, Cwmavon

Client: Terra Firma (Wales) Ltd	Chemtest Job No.:				20-21814	20-21814
Quotation No.:	Chemtest Sample ID.:				1050259	1050260
	Client Sample ID.:				Retest 1044085	Retest 1044088
	Sample Location:				Back	Side E
	Sample Type:				SOIL	SOIL
	Date Sampled:				31-Jul-2020	31-Jul-2020
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	15	18
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	2.6
Anthracene	U	2700	mg/kg	0.10	< 0.10	0.59
Fluoranthene	U	2700	mg/kg	0.10	1.9	2.5
Pyrene	U	2700	mg/kg	0.10	1.1	2.6
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	3.0	8.3

Test Methods

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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; Dibenz[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)

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