

14th May 2021

Our ref: GE15735/GR04/210514

James Richards
Vistry Southern
Central 40
Lime Tree Way
Chineham Park
Basingstoke
RG24 8GU



Dear James,

RE: Linden Homes development, Bartons Road, Havant

Further to recent discussions, we write to provide commentary on third party test results on Topsoil imported on to the Bartons Road, Havant development.

Remediation Measures

The placement of Topsoil in gardens and soft landscaped areas form the last stage of the remediation measures as set out in the Remediation Method Statement, RMS, (GE15375-RMS-SEP16v1.1). Verification of the cover systems has been reported by Geo-Environmental in letter reports GE15735/GR01/170515 and GE15735/GR02/190221.

Information supplied

The information supplied recently to Geo-Environmental relates to third party testing undertaken on Topsoil imported on to the site. The information provided comprised:

- Raymond Brown (Topsoil importer) Topsoil Delivery Tracker
- Marchwood Scientific Services (MSS) Test Report 117/3301 dated 01/06/2017 (sample received at the lab 15/05/2017). Results issued in relation to Rookery Farm.
- ACS Testing Ltd Topsoil Analysis 17-86467 sampled 05/09/2017 from Rookery Farm
- Envirochem Soil Analysis Report 18-10746 sampled 08/05/2018 from Rookery Farm
- Tim O'Hare Associates letter report TOHA/17/7144/2/SS dated 18/05/2017 from Parley
- Tim O'Hare Associates letter report TOHA/17/7225/2/SS dated 13/07/2017 from Parley
- Tim O'Hare Associates letter report TOHA/18/7483/2/SS dated 20/02/2018 from Parley
- Tim O'Hare Associates letter report TOHA/18/7580/2/SS dated 11/05/2018 from Parley
- Tim O'Hare Associates letter report TOHA/18/7814/SS/Rev1 dated 31/10/2018 from Parley

Raymond Brown was understood to have been engaged by Vistry's Groundworks Contractor (P J Brown) to import topsoil on to the site. Raymond Brown's material tracker record indicates that Topsoil was imported onto the site during the period 21/06/2017 to 21/01/2019 from two sources, i.e. Rookery Farm and Eco Sustainable Solutions' Parley site.

Geo-Environmental assumes all such third-party information to be factually correct and accepts no liabilities for any inaccuracies within this third-party information.

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Environmental Consultants | Geotechnical Engineers | Site Investigations

Geo-Environmental Services Ltd incorporated in England number 3214980 VAT number 679544479



Commentary on third party information

The material tracker indicates that c. 624tonnes of Topsoil was imported and this is estimated to be approximately 330-350m³ of material. A total of 8No. sets of analysis have been provided.

The information provided has been reviewed against the criteria set out in the Imported Soil Specification which formed Appendix C of the Remediation Method Statement.

The testing reported by Tim O'Hare Associates for the soils imported from Eco Sustainable Solutions at Parley were compliant with the requirements of the Imported Soil Specification in terms of suitability in relation to BS3882:2015 for Topsoil. Whilst BS3882:2015 includes extractable phosphate in the nutrient suite, test results were reported as extractable phosphorus and assuming a conversion multiplier of 3.066 (based on USEPA guidance and Water Research Centre online chemistry conversion searches) on reported phosphorous concentrations, phosphate would be considered within BS3882:2015 range for multipurpose topsoil apart from the sample 18/7580 dated 11/05/2018 where the phosphate concentration would be higher than the BS3882 range. Nonetheless, this is considered a minor non-compliance in terms of nutrient balance and would not preclude the use of these soils in a residential soft landscaped/garden setting.

Testing undertaken by MSS, ACS and Envirochem indicated that samples from Rookery Farm were generally compliant with the requirements of BS3882:2015, albeit that the Envirochem analysis identified a minor non-compliance for phosphate (compared with multipurpose topsoil criteria) and the presence of 0.2g of glass, again considered to comprise a minor non-compliance.

The results of soil contamination testing presented as part of these analytical reports did not identify any exceedances against the respective maximum concentrations for use in residential gardens with plant uptake as set out in the Imported Soils Specification.

The test results supplied spanned the period over which Topsoil was imported on to the site from the two sources, with testing generally coinciding with particular import phases.

Conclusions

No significant non-compliance issues have been identified in the above referenced third party information provided for Topsoil imported onto this development for placement in gardens and soft landscaping.

Closure

We trust we have interpreted your request correctly and provided sufficient information to satisfy the Local Authority. Should you have any queries please do not hesitate to contact us.

Yours sincerely

For and on Behalf of Geo-Environmental


GAVIN ROBERTS CGeol, BEng (Hons), MSc, FGS
Technical Director

Enc Raymond Brown Material Tracker Sheet with Geo-Environmental's comments
Third party test results (MSS 117/3301, ACS 17-86467, Envirochem 18-10746, TOHA/17/7144/2/SS, TOHA/17/7225/2/SS, TOHA/18/7483/2/SS, TOHA/18/7580/2/SS, TOHA/18/7814/SS/Rev1)



Raymond Brown Topsoil Material Delivery Tracking Record with GPS comments

Ticket	Ext ref	Quarry	Company	Customer	Customer order	Reg	Hauler	Material	Date and Time	Weight	Testing dates	Lab report	Stockpile Ref	Pass / Fail	Notes
Material: BS3882 25mm Screened Soil															
924458	250226	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G205/WR/0289	WR64VRW		BS3882 25mm Screened Soil	21/06/2017 07:28	18,890.00	18/05/2017	T0HA/17/7144/2/SS	Parley	Pass	
924459	250227	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203/WR/0289	WR64VRW		BS3882 25mm Screened Soil	21/06/2017 11:12	18,980.00					
924461	250228	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203/WR/0289	WR64VRW		BS3882 25mm Screened Soil	21/06/2017 15:40	18,800.00					
925247	250244	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203 / RN / 0281	WR64VRW		BS3882 25mm Screened Soil	26/06/2017 07:28	18,190.00					
925480	248208	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G205 / RN / 0293	WR64VRW		BS3882 25mm Screened Soil	07/07/2017 07:28	19,890.00	13/07/2017	T0HA/17/7225/2/SS	Parley	Pass	
962586	257156	Exc Haul	DIG	P. J. Brown (Construction) Ltd		WR64VRW		BS3882 25mm Screened Soil	07/02/2018 11:34	19,940.00	20/02/2018	T0HA/18/7483/2/SS	Parley	Pass	
979632	250532	Exc Haul	DIG	P. J. Brown (Construction) Ltd		WR64VRW		BS3882 25mm Screened Soil	05/05/2018 07:28	18,990.00	11/05/2018	T0HA/18/7580/2/SS	Parley	Pass	
001849	020904	Exc Haul	DIG	P. J. Brown (Construction) Ltd		WOODMACE 1	WOODMACE PLANT LIMITED	BS3882 25mm Screened Soil	15/05/2018 07:28	18,500.00					
1010872	205051	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G205/ER/1025	WU05NRK		BS3882 25mm Screened Soil	02/11/2018 08:44	18,700.00	31/10/2018	T0HA/18/7834/SS/Rev 1	Parley	Pass	Possible minor non-compliance for extractable phosphorus
1015285	205435	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203 / ER / 0140	WR64VRW		BS3882 25mm Screened Soil	23/11/2018 12:43	19,240.00					
1016867	201355	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G204 / ER / 0140	WR64VRW		BS3882 25mm Screened Soil	04/12/2018 15:36	19,120.00					
1020888	201385	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203 / ER/0155	WR64VRW		BS3882 25mm Screened Soil	14/12/2018 07:28	18,740.00					
1024565	207646	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203 / ER/0160	WR64VRT		BS3882 25mm Screened Soil	10/01/2019 07:28	19,190.00					
1024588	207647	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203 / ER/0160	WR64VRT		BS3882 25mm Screened Soil	10/01/2019 11:12	18,900.00					
1026659	400797	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203 / ER/0167	WR64VRU		BS3882 25mm Screened Soil	21/01/2019 07:28	18,990.00					
1026660	400799	Exc Haul	DIG	P. J. Brown (Construction) Ltd	G203 / ER/0167	WR64VRU		BS3882 25mm Screened Soil	21/01/2019 12:58	18,820.00					
Total for BS3882 25mm Screened Soil										302,780.00					
Material: BS3882 Screened Soil															
925251	250247	Rockery	WS	P. J. Brown (Construction) Ltd	G203 / RN / 0281	WR64VRW		BS3882 Screened Soil	26/06/2017 14:48	18,180.00					
940917	252588	Rockery	WS	P. J. Brown (Construction) Ltd	G205 m0450	WX17 WXP		BS3882 Screened Soil	10/10/2017 07:44	18,200.00	05/09/2017	ACS 17-07419	R100-1143	Pass	
942811	236882	Rockery	WS	P. J. Brown (Construction) Ltd	G204 / ER / 8450	WX17 WXC		BS3882 Screened Soil	18/10/2017 07:19	18,540.00					
942854	236883	Rockery	WS	P. J. Brown (Construction) Ltd	G204 / ER / 8450	WX17 WXC		BS3882 Screened Soil	18/10/2017 08:15	18,520.00					
944582	248227	Rockery	WS	P. J. Brown (Construction) Ltd	G203 / ER / 8450	SBBLY	Sibley Material Movements Ltd	BS3882 Screened Soil	23/10/2017 07:28	19,840.00					
943983	251952	Rockery	WS	P. J. Brown (Construction) Ltd	G203 / ER / 8450	WX17 WXC		BS3882 Screened Soil	24/10/2017 07:40	18,700.00					
945200	251927	Rockery	WS	P. J. Brown (Construction) Ltd	BARTON ROAD	WX17 WXP		BS3882 Screened Soil	31/10/2017 08:58	18,790.00					
945417	251929	Rockery	WS	P. J. Brown (Construction) Ltd	BARTON ROAD	WX17 WXP		BS3882 Screened Soil	31/10/2017 11:32	18,700.00					
952579	248143	Rockery	WS	P. J. Brown (Construction) Ltd	G203	WU05NRK		BS3882 Screened Soil	01/12/2017 08:46	19,820.00					
952571	248144	Rockery	WS	P. J. Brown (Construction) Ltd	G203	WU05NRK		BS3882 Screened Soil	01/12/2017 11:28	19,820.00					
002587	250340	Rockery	WS	P. J. Brown (Construction) Ltd	Barton Road	WX17 WXC		BS3882 Screened Soil	06/06/2018 10:16	18,140.00	08/05/2018	EC 18-10746	R100	Pass	Minor non-compliance for phosphate & 0.2g glass
964795	252650	Rockery	WS	P. J. Brown (Construction) Ltd	Barton Road	WALFCT 2	Walton Materials Limited	BS3882 Screened Soil	07/06/2018 08:02	18,320.00					
965179	262588	Rockery	WS	P. J. Brown (Construction) Ltd		WU05NRK		BS3882 Screened Soil	15/06/2018 10:56	18,290.00					
965171	262589	Rockery	WS	P. J. Brown (Construction) Ltd		WU05NRK		BS3882 Screened Soil	15/06/2018 13:23	18,200.00					
965172	262590	Rockery	WS	P. J. Brown (Construction) Ltd		WU05NRK		BS3882 Screened Soil	15/06/2018 15:05	18,200.00					
1006188	2037	Rockery	WS	P. J. Brown (Construction) Ltd	G203/W/0110	MX100CF	Minerals & Materials (UK) Ltd	BS3882 Screened Soil	27/06/2018 09:18	17,680.00					
1006120	179708	Rockery	WS	P. J. Brown (Construction) Ltd	G203/ER/0118	WU05NRK		BS3882 Screened Soil	03/10/2018 08:42	17,890.00					
Total for BS3882 Screened Soil										321,580.00					

TEST REPORT

Raymond Brown Minerals & Recycling
Lee Lane
Nursling
SO16 0AD

Certificate No.	117/3301
Date received	15/05/17
Ref.	RB/117/3301

1st June 2017

Re. Analysis of a Soil Sample Ref. R100-1133

Customer Reference		R100-1133	Multipurpose Topsoil		Specific purpose/ Acidic		Specific purpose/ Low Fertility		Specific purpose/ Calcareous	
MSS Reference		117-3301	Limits	Complies	Limits	Complies	Limits	Complies	Limits	Complies
Moisture	%	15	-	-	-	-	-	-	-	-
CN Ratio	C/N	14.8/1	<20:1	Y	<20:1	Y	<20:1	Y	<20:1	Y
Clay Content	%	13	5-35	Y	5-35	Y	5-35	Y	5-35	Y
Visible Contaminants >2 mm	%	0	<0.5	Y	<0.5	Y	<0.5	Y	<0.5	Y
Electrical Conductivity (Topsoil)	µS/cm	2300	-	-	-	-	-	-	-	-
Silt Content	%	19	0-65	Y	0-65	Y	0-65	Y	0-65	Y
Visible Contaminants Plastics	%	0	<0.5	Y	<0.5	Y	<0.5	Y	<0.5	Y
Sand Content	%	68	30-85	Y	30-85	Y	30-85	Y	30-85	Y
Visible Contaminants Man-Made Sharps	%	0	0	Y	0	Y	0	Y	0	Y
Soil Texture Class		Sandy Loam								
pH		7.5	5.5-8.5	Y	3.5-5.5	N	3.5-9.0	Y	7.5-9	Y
Stones >2mm	%	30	0-30	Y	0-30	Y	0-30	Y	0-30	Y
Stones >20mm	%	< 0.020	0-10	Y	0-10	Y	0-10	Y	0-10	Y
Stones >50mm	%	< 0.020	0	Y	0	Y	0	Y	0	Y
Nitrogen (Total)	%	0.31	≥0.15	Y	≥0.15	Y	<0.1	N	≥0.15	Y
Carbonate	%	<0.10	-		-		-		<1	Y
Extractable Potassium	mg/l	320	121-900	Y	121-900	Y	<120	N	121-900	Y
Extractable Magnesium	mg/l	95	51-600	Y	51-600	Y	<600	Y	51-600	Y
Available Calcium	mg/l	3000								
Available Sodium	mg/l	65	<15%	Y	<15%	Y	<15%	Y	<15%	Y
Extractable Phosphorus	mg/l	72	16-100	Y	16-100	Y	<15	N	16-100	Y
Copper (Nitric Acid)	mg/kg	20	<200	Y	<200	Y	<200	Y	<200	Y
Nickel (Nitric Acid)	mg/kg	6.2	<110	Y	<110	Y	<110	Y	<110	Y
Zinc (Nitric Acid)	mg/kg	50	<300	Y	<300	Y	<300	Y	<300	Y
Loss on Ignition	%	7.8	3-20	Y	3-30	Y	1-10	Y	3-30	Y

Reported by: J Fursman
Position: Director
For/on behalf of Marchwood Scientific Services Ltd.

Marchwood Scientific Services

Registered in England No. 03604766
Registered Office: 371 Millbrook Road West, Southampton, Hampshire, SO15 0HW.

ACS TESTING LIMITED SUMMARY OF ANALYSIS for Job No.17-86467**Client :** Raymond Brown Waste Solutions Ltd**Site :** Rookery Farm**Certificate Address** Raymond Brown Minerals & Recycling
Limited
The A303 Recycling Facility
Barton Stacey
Winchester**Contact**

Certificates - RBWS

Contact Telephone No. :**Contact e-mail**

certificates@raymondbrowngroup.co.uk

Sample No.	Material Source	Clients Reference	Sample Location	Date Sampled	Sampled By	Date Received	Material Description	Clients Specification	Test Ref	Test Name
359345	Stockpile	R100-1143	Stockpile	05/09/2017	AR	06/09/2017	Soil	BS 3882	S34_CHEM	Topsoil - Chemical
359345	Stockpile	R100-1143	Stockpile	05/09/2017	AR	06/09/2017	Soil	BS 3882	S34_PSD	Topsoil - PSD
359345	Stockpile	R100-1143	Stockpile	05/09/2017	AR	06/09/2017	Soil	BS 3882	S34_SED	Topsoil - Sedimentation

Certificate of Analysis
TOPSOIL ANALYSIS (BS 3882:2015)

Certificate Number : 17-07419-Issue 1-Page: 1

Report Fao: Martin Slater
Site Address: Rookery Farm
Customer Order No: 17-86467
Date of Sampling: 05/09/2017
Date Received: 06/09/2017
Report Date: 15/09/2017

Please find your certificates of test attached for your samples received in the laboratory on 06/09/2017 under our laboratory reference 17-07419.

Remarks:

Z - A minor deviation from the test method was necessary for Copper determination, but this is deemed to have no impact on the test results, the legitimacy of the method validation or the accreditation status of the test method.

Results reviewed by:



Lisa McWean Analyst

Results approved by:



David Redfern Technical Supervisor

*Any opinions or interpretations indicated are outside the scope of our UKAS accreditation.
This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.
Excel copies of reports are valid only when accompanied by this PDF certificate.
Client's Sample Description / ACS Material Description are noted for reference only.*

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Certificate No. 17-07419-Issue 1-Page: 2
Site Address Rookery Farm
ACSE Sample Number 30781
Sample ID 359345 - 17-86467
Clients Sample Ref. R100-1143
Location / Sample Depth (m)
Time Sampled
Date Sampled 05/09/2017
Sample Deviating Codes dg
Client's Sample Description Soil
ACS Testing Material Description Soil
Principal Matrix (as received) LOAM



TOPSOIL ANALYSIS (BS 3882:2015)

Analyte	Method	Units	AS	Result	Specification for BS 3882:2015					
					Multipurpose Topsoil	Specific Purpose				
						Acidic	Calcareous	Low Fertility	Low Fertility Acidic	Low Fertility Calcerous
Soil Texture	Sandy Loam									
Clay Content	SC	%		11	5-35	5-35	5-35	5-35	5-35	5-35
Silt Content	SC	%		29	0-65	0-65	0-65	0-65	0-65	0-65
Sand Content	SC	%		60	0-90	0-90	0-90	0-90	0-90	0-90
Maximum Coarse Fragment Content										
> 2 mm	SC	%		10.0	0-30	0-30	0-30	0-30	0-30	0-30
> 20 mm	SC	%		0.00	0-10	0-10	0-10	0-10	0-10	0-10
> 50 mm	SC	%		0.00	0	0	0	0	0	0
Mass Loss of Ignition										
Clay (5 - 20 %)	IHP	%	*	4.9	3-20	3-30	3-20	2-20	2-30	2-20
Soil pH	BS 1377:3	pH	*dg	7.1	5.5-8.5	3.5-5.5	7.5-9.0	3.5-9.0	3.5-5.5	7.5-9.0
Carbonate	IHP	%		2.15	-	-	>1	-	-	>1
Plant Nutrient Content										
Nitrogen (% m/m)	IHP	%		0.16	>0.15	>0.15	>0.15	-	-	-
Extractable Phosphate	IHP	mg/l		122	16-140	16-140	16-140	<=20	<=20	<=20
Extractable Potassium	IHP	mg/l		376	121-1500	121-1500	121-1500	-	-	-
Extractable Magnesium	IHP	mg/l		78.8	51-600	51-600	51-600	-	-	-
Carbon:Nitrogen Ratio	Calculation	N/A		18.4	<20:1	<20:1	<20:1	<35:1	<35:1	<20:1
Electrical Conductivity	MT/ACSE/303	us/cm		2540	3300					
Potentially Phytotoxic Elements (by soil pH)										
					Soil pH <6.0		Soil pH 6.0 to 7.0		Soil pH >7.0	
Zinc	AE16	mg/kg	*#d	76.6	<200		<200		<300	
Copper	AE16	mg/kg	*#d	25.4	<100		<135		<200	
Nickel	AE16	mg/kg	*#d	9.51	<60		<75		<110	
Visible Contaminants										
>2mm	SC	%		0.10	<0.5					
Plastics	SC	%		0.00	<0.25					
Sharps	SC	%		0.00	0					

Denotes individual sample results which are outside the specification limits. Topsoil criteria limits are provided for guidance only.

Comments: (comments are beyond the scope of our accreditation)
Where results are less than the limit of detection, the limit of detection is used in calculations

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**Quality Testing & Materials Consultancy
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Construction Industry**

Technical Information for Analytical Results

Analysis

* - denotes analysis covered by our UKAS accreditation
- denotes analysis covered by our MCERTS certification
AD = Sample tested in air dried condition.
AR = Sample tested in as-received condition.
D = Sample tested in dry condition.
L = Laboratory prepared leachate
SC = sub contracted
All MCERTS certified test values reported on a dry weight basis.

Where results are less than the limit of detection, the value of 0 is used in calculations.

Deviating Codes

Deviating Samples

The use of any of the following symbols indicates that the sample was deviating and it is possible therefore that the results provided may not be representative of the sample taken.

- a – The date and/or time of sampling has not been provided, therefore it is not known if the time lapse between sampling and analysis has exceeded the acceptable holding time(s). It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.
- b – No sampling time given (waters only) unable to confirm if samples are within acceptable holding times.
- c – This test item was received in a container which has not been recommended; it is possible that the sample and/or analyte integrity has not been maintained and that results may be non-representative of the sample when taken.
- d – On receipt, the temperature of the sample received was found to fall outside the recommendations of BS ISO 18512:2007. Soil Quality. Guidance on long and short term storage of soil samples.
- e – The sample was received in a container that had been filled incorrectly which may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.
- f – The delay between Sampling and Sample Receipt is greater than the recommended holding time for the analyte of interest in this matrix. It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.
- g – The delay between Sampling and Analysis is greater than the recommended holding time for the analyte of interest in this matrix. It is possible that some deterioration may have compromised sample and/or analyte integrity, rendering the results non-representative of the original sample taken.

The following Additional Deviating Sample Codes may also be used.

- I/S – Insufficient sample mass/volume received for accurate quantification of this analyte.
- U/S – The sample received was deemed unsuitable for accurate determination of this analyte using the Test Methods available.

Deviating Methods

- Z – A minor deviation from the Test Method was necessary but this is deemed to have had no impact on the Test Result, the legitimacy of the method validation or the Accreditation Status of the Test Method.
- Y – A significant deviation from the Test Method was necessary which is deemed to have had no impact on the Test Result, however, due to a lack of sufficient supporting validation, the Accreditation Status of the Method has been removed.
- W – The normal LOD of the instrument/method could not be attained, thus an elevated LOD or LOQ has been applied to the Test Data, however, the data reported meets the requirements of the Client and does not affect compliance with the specification limit (where applicable).
- V – One of the QA/QC parameters failed, however, the increased implied Uncertainty associated with the Test Result meets the requirements of the Client and does not affect compliance with the specification limit (where applicable) (Quality Manual, Section 18.2.9).
- U – The precision acceptance criteria associated with the Test Method could not be met but the Test Result fulfils the Client's objectives and the elevated Uncertainty does not affect compliance with the specification limit (where applicable) (Quality Manual, Section 18.8.10).
- T – The Test Method used was supplied by the Client and involved a simple modification of a Test Method for which ACSE holds accreditation (Quality Manual, Section 18.3.8).

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**Quality Testing & Materials Consultancy
to the
Construction Industry**



Our Ref: 18-10746
Your Ref: 77167/RBWS

ENVIROCHEM

Analytical Laboratories Ltd.

12 The Gardens
Broadcut, Fareham
Hampshire
PO16 8SS



Tel: (01329) 287777
Fax: (01329) 287755
www.envirochem.co.uk
lab@envirochem.co.uk

Analysis Report

Client: Raymond Brown Aggregates Ltd
A1 Omega Park
Electron Way
Chandlers Ford
Hampshire
SO53 4SE

Sample Details: 1 soil sample for Top Soil Analysis

Date report issued: 23 May 2018

Number of pages (including this one): 4

Accreditation

All analytes marked **M** have been analysed under the scope of our MCERTS accreditation

All analytes marked **U** have been analysed under the scope of our UKAS accreditation

All analytes marked **m** have been subcontracted and analysed under the scope of their MCERTS accreditation

All analytes marked **u** have been subcontracted and analysed under the scope of their UKAS accreditation

All results labelled with an asterisk (*) are non-conforming due to incorrect sample storage or handling. The result may be invalid.

All comments are beyond the scope of our accreditation.

Signed on behalf of Envirochem by an authorised signatory



Christopher Mirzaians

Authorised Signaturee



ENVIROCHEM

Analytical Laboratories Ltd.

www.envirochem.co.uk

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Soil Analysis Report

(Analysed in accordance with BS 3882:2015)

Client: Raymond Brown Aggregates
Sample Lab Reference: Job: 18-10746-Samp. 28780-1
Site Details: R100 Rookery Farm
Sample Point: Stockpile
Date Sampled: 8 May 2018
Date Analysis Started: 14 May 2018
Sample Description: Soil - Silt loam

Sampled By: Client
Date Received: 14 May 2018
Date Completed: 23 May 2018

Table 1 : Soil Texture (% m/m)

Texture	Method	Sample Result	Multipurpose Topsoil Range	Specific Purpose Range				
				Acidic	Calcareous	Low Fertility	Low Fert. Acidic	Low Fert. Calc.
Clay Content (%)	5.05	10						
Silt Content (%)	5.05	60						
Sand Content (%)	5.05	30						
Soil Texture Class	5.05	Silt loam						

Note: see soil texture triangle in BS3882:2015 for allowed soils

Table 2 : Mass Loss on Ignition (%)

Clay percentage	Method	Sample Result	Multipurpose Topsoil Range	Specific Purpose Range				
				Acidic	Calcareous	Low Fertility	Low Fert. Acidic	Low Fert. Calc.
Clay (5 - 20 %)	6.07	4.1	3 - 20	3 - 30	3 - 30	2 - 20	2 - 20	2 - 20
Clay (20 - 35 %)	6.07		5 - 20	5 - 30	5 - 30	2 - 20	2 - 20	2 - 20

Table 3 : Maximum Coarse Fragment Content (% (m/m))

Particle size	Sample Result	Multipurpose Topsoil Range	Specific Purpose Range				
			Acidic	Calcareous	Low Fertility	Low Fert. Acidic	Low Fert. Calc.
> 2 mm	20						
> 20 mm	0						
> 50 mm	0						

Table 4 : Chemical Analysis (air-dried, sieved (<2 mm) soil)

Analyte	Method	Sample Result	Multipurpose Topsoil Range	Specific Purpose Range				
				Acidic	Calcareous	Low Fertility	Low Fert. Acidic	Low Fert. Calc.
soil pH Value ^M	5.03	7.49 *	5.5 - 8.5	3.5 - 5.5	7.5 - 9.0	3.5 - 9.0	3.5 - 5.5	7.5 - 9.0
Calcium Carbonate (%)	6.07	23.2	-	-	> 1	-	-	> 1



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Table 5 : Available Plant Nutrient Content

Analyte	Method	Sample Result	Multipurpose Topsoil Range	Specific Purpose Range				
				Acidic	Calcareous	Low Fertility	Low Fert. Acidic	Low Fert. Calc.
Nitrogen (% m/m)		0.29	> 0.15	> 0.15	> 0.15	-	-	-
Extractable Phosphate (mg/l)	6.08	< 3.0	16 - 140	16 - 140	16 - 140	< 20	< 20	< 20
Extractable Potassium (mg/l)	6.08	572	121 - 1500	121-1500	121-1500	-	-	-
Extractable Magnesium (mg/l)	6.08	83.7	51 - 600	51 - 600	51 - 600	-	-	-
Carbon:Nitrogen Ratio		19.8	< 20:1	< 20:1	< 20:1	< 35:1	< 35:1	< 35:1
Soil Electrical Conductivity		800.0	< 3300	-				
Exchangeable Sodium (%) 1)	6.08	3.27	< 15					

1) Need be measured only if the electrical conductivity is greater than 2800 us/cm

Table 6 : Phytotoxic Contaminants (by soil pH) (mg/kg) analyses carried out on air dried samples

	Method	Sample	Multipurpose and Specific purpose Topsoils		
Soil pH Range			< 6.0	6.0 - 7.0	> 7.0
Zinc M	6.08	84.5 *	< 200	< 200	< 300
Copper M	6.08	25.6 *	< 100	< 135	< 200
Nickel M	6.08	12.4 *	< 60	< 75	< 110

Table 7 : Additional Physical characteristics

	Method	Sample
Water Content	6.01	13.4
Total Organic Carbon	6.07	3.0
Soil Organic Matter	6.09	5.1
Visible Contaminants		Glass 0.2g

Comments: (including details of weeds and other visible contaminants - all comments are beyond the scope of our accreditation)

Results marked with an asterisk (*) are non conforming due to sampling handling time or conditions. Therefore the result may be invalid.



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Table 8 : Additional metals (all results in mg/kg dry weight)

Analyte	Method	Sample	Soil Guideline Values		
			Residential	Allotment	Commercial
Arsenic M	5.03, 6.08	5.7 *	32 †	43 †	640 †
Antimony	5.03, 6.08	< 5.0	-	-	-
WS Boron	5.03, 6.08	---	-	3	-
Cadmium M	5.03, 6.08	1.1 *	10 †	1.8 †	230†
Chromium (total) M	5.03, 6.08	53.7 *	600 †††	600 †††	1000 †††
Cobalt	5.03, 6.08	---	-	-	-
Copper M	5.03, 6.08	25.6 *	2330 ††	524 ††	71700 ††
Mercury	5.03, 6.08	< 1.00	1.0 †	26 †	26 †
Molybdenum	5.03, 6.08	---	-	-	-
Nickel M	5.03, 6.08	12.4 *	130 †	230 †	1800 †
Lead M	5.03, 6.08	60.1 *	500 †††	500 †††	2000 †††
Selenium	5.03, 6.08	< 2.0	350 †	120 †	13000 †
Thallium	5.03, 6.08	---	-	-	-
Vanadium	5.03, 6.08	---	75 ††	18 ††	3160 ††
Zinc M	5.03, 6.08	84.5 *	3750 ††	618 ††	66500 ††

All analytes marked **M** have been analysed under the scope of our MCERTS accreditation

Comments: (comments are beyond the scope of our accreditation)

Limits Notes:

†" are soil guideline values from Defra 2002 (information taken from: Using Soil Guideline Values: Science Report: SC050021/SGC introduction & www.environment-agency.gov.uk/clea

††" are LQM Soil Guideline Values

†††" are ICRL 59/83 trigger concentrations. These do not differentiate between domestic and allotments

For antimony values of less than 30mg/kg are typical of uncontaminated soil - as taken from 'Site investigation and materials problems', proc Conference on Reclamation of Contaminated Land, Eastbourne, Oct 79.