

Mark Morgan
Lakeland Leisure Estates Ltd
Lakeland Leisure Estates Ltd
The Studio
Station Road
Staveley
Cumbria
LA8 9NB

Dear Mark

Please find attached the results for the batch of 4 samples described below.

Samples Registered on:	01-May-2019
Analysis Started on:	01-May-2019
Analysis Completed on:	30-May-2019
Results for Batch Number	20130933
Your Purchase Order Number:	1246

You will be invoiced shortly by our accounts department.

If we can be of further assistance then please do not hesitate to contact us.

Yours sincerely



Lawrence Green
Customer Services Team Manager
Tel: 0800 092 0786
nls@environment-agency.gov.uk

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation. Details of analytical procedures and performance data are available on request. The date of sample analysis is available on request.

The Environment Agency carries out analytical work to high standards and within the scope of its UKAS accreditation, but has no knowledge of whether the circumstances or the validity of the procedures used to obtain the samples provided to the laboratory were representative of the need for which the information was required.

The Environment Agency and/or its staff does not therefore accept any liability for the consequences of any acts or omissions made on the basis of the analysis or advice or interpretation provided.

Client: Lakeland Leisure Estates Ltd Project: Sediment analysis
Quote Description: Deganwy Marina - Sediment analysis
Folder No: 004363742 Sampled on: 26-Apr-19 @ 11:53
Comments: Site A - 0m
Quote No: 15544 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Hydrocarbons : Total : Dry Wt as Ekofisk	322	mg/kg		0.9	None	LE	402
Mercury : Dry Wt	0.145	mg/kg	DC	0.01	UKAS	LE	1042
Arsenic : Dry Wt	16.3	mg/kg		1	UKAS	LE	1041
Cadmium : Dry Wt	0.563	mg/kg		0.04	UKAS	LE	1041
Chromium : Dry Wt	56.9	mg/kg		2	UKAS	LE	1041
Copper : Dry Wt	25.3	mg/kg		1	UKAS	LE	1041
Lead : Dry Wt	46.4	mg/kg		2	UKAS	LE	1041
Nickel : Dry Wt	30.6	mg/kg		1	UKAS	LE	1041
Zinc : Dry Wt	228	mg/kg		2.5	UKAS	LE	1041
Dibutyl Tin : Dry Wt as Cation	<9	ug/kg		3	UKAS	LE	897
ELEVATED_MRV : Dry weight calculation							
Tributyl Tin : Dry Wt as Cation	3.13	ug/kg		1	UKAS	LE	897
Dry Solids @ 30°C	30.2	%		0.5	None	LE	1130
Accreditation Assessment	2	No.			None	LE	924
Additional Material Present	Report	Text			None	LE	924
No additional material							
Drying Method	Report	Text			None	LE	924
Air dried at 30°C							
Rejected Matter Description	Report	Text			None	LE	924
No material removed							
Sample Colour	Report	Text			None	LE	924
Brown							
Sample Matrix	Report	Text			None	LE	924
Clay Sediment							
Sample Preparation	Report	Text			None	LE	924
Homogenised, Ball Milled & Sieved to <2mm							

Client: Lakeland Leisure Estates Ltd Project: Sediment analysis
Quote Description: Deganwy Marina - Sediment analysis
Folder No: 004363743 Sampled on: 26-Apr-19 @ 11:55
Comments: Site A- 1.5m
Quote No: 15544 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Hydrocarbons : Total : Dry Wt as Ekofisk	254	mg/kg		0.9	None	LE	402
Mercury : Dry Wt	0.159	mg/kg	DC	0.01	UKAS	LE	1042
Arsenic : Dry Wt	18.4	mg/kg		1	UKAS	LE	1041
Cadmium : Dry Wt	0.642	mg/kg		0.04	UKAS	LE	1041
Chromium : Dry Wt	66.1	mg/kg		2	UKAS	LE	1041
Copper : Dry Wt	29.0	mg/kg		1	UKAS	LE	1041
Lead : Dry Wt	49.7	mg/kg		2	UKAS	LE	1041
Nickel : Dry Wt	35.0	mg/kg		1	UKAS	LE	1041
Zinc : Dry Wt	246	mg/kg		2.5	UKAS	LE	1041
Dibutyl Tin : Dry Wt as Cation	<8	ug/kg		3	UKAS	LE	897
		ELEVATED_MRV : Dry weight calculation					
Tributyl Tin : Dry Wt as Cation	<3	ug/kg		1	UKAS	LE	897
		ELEVATED_MRV : Dry weight calculation					
Dry Solids @ 30°C	33.1	%		0.5	None	LE	1130
Accreditation Assessment	2	No.			None	LE	924
Additional Material Present	Report	Text			None	LE	924
	No additional material						
Drying Method	Report	Text			None	LE	924
	Air dried at 30°C						
Rejected Matter Description	Report	Text			None	LE	924
	No material removed						
Sample Colour	Report	Text			None	LE	924
	Brown						
Sample Matrix	Report	Text			None	LE	924
	Clay Sediment						
Sample Preparation	Report	Text			None	LE	924
	Homogenised, Ball Milled & Sieved to <2mm						

Client: Lakeland Leisure Estates Ltd Project: Sediment analysis
Quote Description: Deganwy Marina - Sediment analysis
Folder No: 004363744 Sampled on: 26-Apr-19 @ 11:46
Comments: Site B - 0m
Quote No: 15544 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Hydrocarbons : Total : Dry Wt as Ekofisk	234	mg/kg		0.9	None	LE	402
Mercury : Dry Wt	0.0763	mg/kg	DC	0.01	UKAS	LE	1042
Arsenic : Dry Wt	12.0	mg/kg		1	UKAS	LE	1041
Cadmium : Dry Wt	0.603	mg/kg		0.04	UKAS	LE	1041
Chromium : Dry Wt	36.5	mg/kg		2	UKAS	LE	1041
Copper : Dry Wt	15.7	mg/kg		1	UKAS	LE	1041
Lead : Dry Wt	32.8	mg/kg		2	UKAS	LE	1041
Nickel : Dry Wt	20.3	mg/kg		1	UKAS	LE	1041
Zinc : Dry Wt	185	mg/kg		2.5	UKAS	LE	1041
Dibutyl Tin : Dry Wt as Cation	<6	ug/kg		3	UKAS	LE	897
ELEVATED_MRV : Dry weight calculation							
Tributyl Tin : Dry Wt as Cation	4.33	ug/kg		1	UKAS	LE	897
Dry Solids @ 30°C	45.7	%		0.5	None	LE	1130
Accreditation Assessment	2	No.			None	LE	924
Additional Material Present	Report	Text			None	LE	924
No additional material							
Drying Method	Report	Text			None	LE	924
Air dried at 30°C							
Rejected Matter Description	Report	Text			None	LE	924
No material removed							
Sample Colour	Report	Text			None	LE	924
Brown							
Sample Matrix	Report	Text			None	LE	924
Clay Sediment							
Sample Preparation	Report	Text			None	LE	924
Homogenised, Ball Milled & Sieved to <2mm							

Client: Lakeland Leisure Estates Ltd Project: Sediment analysis
Quote Description: Deganwy Marina - Sediment analysis
Folder No: 004363745 Sampled on: 26-Apr-19 @ 11:48
Comments: Site B -1.5m
Quote No: 15544 Matrix: Sediment

Analyte	Result	Units	Flag	MRV	Accred	Lab ID	Testcode
Hydrocarbons : Total : Dry Wt as Ekofisk	169	mg/kg		0.9	None	LE	402
Mercury : Dry Wt	0.114	mg/kg	DC	0.01	UKAS	LE	1042
Arsenic : Dry Wt	11.9	mg/kg		1	UKAS	LE	1041
Cadmium : Dry Wt	0.493	mg/kg		0.04	UKAS	LE	1041
Chromium : Dry Wt	42.1	mg/kg		2	UKAS	LE	1041
Copper : Dry Wt	17.5	mg/kg		1	UKAS	LE	1041
Lead : Dry Wt	30.7	mg/kg		2	UKAS	LE	1041
Nickel : Dry Wt	21.5	mg/kg		1	UKAS	LE	1041
Zinc : Dry Wt	169	mg/kg		2.5	UKAS	LE	1041
Dibutyl Tin : Dry Wt as Cation	<7	ug/kg		3	UKAS	LE	897
ELEVATED_MRV : Dry weight calculation							
Tributyl Tin : Dry Wt as Cation	2.98	ug/kg		1	UKAS	LE	897
Dry Solids @ 30°C	45.2	%		0.5	None	LE	1130
Accreditation Assessment	2	No.			None	LE	924
Additional Material Present	Report	Text			None	LE	924
No additional material							
Drying Method	Report	Text			None	LE	924
Air dried at 30°C							
Rejected Matter Description	Report	Text			None	LE	924
No material removed							
Sample Colour	Report	Text			None	LE	924
Brown							
Sample Matrix	Report	Text			None	LE	924
Clay Sediment							
Sample Preparation	Report	Text			None	LE	924
Homogenised, Ball Milled & Sieved to <2mm							

Method Description Summary for all samples in batch Number 20130933

- 402 LE I Hydrocarbons by fluorescence
- 897 LE O Organotins (GCMS) 01 - acetic acid/methanol extracted; derivatised; determined GCMS (SIM); from "as received" sample
- 924 Sample Preparation; Dry Solids (30°C); from "as received" sample
- 1041 LE M Metals ICP-MS Sediment - microwave aqua regia digested, determined by ICPMS, samples are sieved to <2000µm.
- 1042 LE M Mercury CSEMP - microwave aqua regia digested, acidic SnCl₂ reduced, determined by CV-AFS. Samples are sieved to <2000µm.
- 1130 LE P Soil Preparation 01: The sample is air-dried at <30°C in a controlled environment until a constant weight is achieved.



Steve Moss
Laboratory Site Manager

The results in this Certificate of Analysis are the definitive test results. Any accompanying results are provided for ease of use by the customer and should be used with caution.

All reporting limits quoted are those achievable for clean samples of the relevant matrix. No allowance is made for instances when dilutions are necessary owing to the nature of the sample or insufficient volume of the sample being available. In these cases higher reporting limits may be quoted and will be above the MRV.

Minimum Reporting Value (MRV). A minimum concentration selected for reporting purposes (i.e. the less than value), which is higher than the statistically derived method limit of detection.

Solid sample results are determined on a "dried" sample fraction except for parameters where the method description identifies that "as received" sample was used.

Uncertainty of Measurement information relating to sample results is supplied upon request. Uncertainty is estimated from the performance of routine quality control standards, using the calculation $2 \times \text{Relative Standard Deviation} + \text{Bias}$. This is based on the guidance issued by the UKTAG Chemistry task team - Guidance on the implementation of the Quality Assurance/Quality Control requirements' associated with Commission Directive 2009/90/EC, Article 4 (UoM = $2 \times \%RSD$), with a contribution added for the bias.

Key to Results Flags:

DC Analysis started outside of specified stability time. It is possible that the results may be compromised.

The analysis start date specified is the date of the first test, dates for other analysis are available on request.

Please note all samples will be retained for 10 working days for aqueous samples and 30 working days for solid samples after reporting unless otherwise agreed with Customer Services

Key to Accreditation: UKAS = Methodology accredited to ISO/IEC 17025:2005, MCertS = Methodology accredited to MCertS Performance Standard for testing of soils, none = Methodology not accredited

Key to Lab ID: LE = Leeds, NM = Nottingham, SX = Starcross, SC = Sub-Contracted outside NLS, FI = Field Data - outside NLS, NLS = Calculated

Any subsequent version of this report denoted with a higher version number will supersede this and any previous versions

END OF TEST REPORT