

Certificate of Analysis

Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ



Test Report ID	MAR01712
Issue Version	1
Customer	Lymington Technical Services Ltd, 18 Ardnave Crescent, Bassett, Southampton, Hampshire, SO16 7FJ
Customer Reference	Lakeland Leisure Estates - Deganwy Marina
Date Sampled	25-Jan-23
Date Received	07-Feb-23
Date Reported	07-Mar-23
Condition of samples	Frozen Satisfactory

A handwritten signature in grey ink, appearing to read 'M. Hubbard'.

Authorised by: Marya Hubbard
Position: Laboratory Manager

Any additional opinions or interpretations found in this report, are outside the scope of UKAS accreditation.

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		Units	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
			45mm	31.5mm	22.4mm	16mm	11.2mm	8mm	5.6mm
Client Reference:	SOCOTEC Ref:	Matrix	-5.5	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5
Location A1	MAR01712.001	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Location A2	MAR01712.002	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* See Report Notes

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		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
			4mm	2.8mm	2mm	1.4mm	1mm	707µm	500µm
Client Reference:	SOCOTEC Ref:	Matrix	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0
Location A1	MAR01712.001	Sediment	0.00	0.00	0.00	0.00	0.00	0.02	1.55
Location A2	MAR01712.002	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.18

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		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
			353.6µm	250µm	176.8µm	125µm	88.39µm	63µm	44.2µm
Client Reference:	SOCOTEC Ref:	Matrix	1.5	2.0	2.5	3.0	3.5	4.0	4.5
Location A1	MAR01712.001	Sediment	3.20	2.05	4.44	8.04	1.94	6.17	7.97
Location A2	MAR01712.002	Sediment	0.62	1.00	3.45	6.88	2.19	6.44	8.08

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		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
			31.3µm	22.1µm	15.6µm	11µm	7.8µm	5.5µm	3.9µm
Client Reference:	SOCOTEC Ref:	Matrix	5.0	5.5	6.0	6.5	7.0	7.5	8.0
Location A1	MAR01712.001	Sediment	7.25	8.18	7.30	7.68	8.34	7.78	5.94
Location A2	MAR01712.002	Sediment	7.78	8.71	8.02	8.52	9.20	8.66	6.63

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		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
			2.75µm	1.95µm	1.38µm	0.98µm	0.69µm	0.49µm	0.34µm
Client Reference:	SOCOTEC Ref:	Matrix	8.5	9.0	9.5	10.0	10.5	11.0	11.5
Location A1	MAR01712.001	Sediment	3.79	2.09	1.24	0.94	0.86	0.80	0.73
Location A2	MAR01712.002	Sediment	4.21	2.32	1.39	1.06	0.96	0.90	0.82

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		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO	MMO
			0.24µm	0.17µm	0.12µm	0.09µm	0.06µm	0.04µm	<0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	12.0	12.5	13.0	13.5	14.0	14.5	>14.5
Location A1	MAR01712.001	Sediment	0.61	0.47	0.34	0.21	0.09	0.01	0.00
Location A2	MAR01712.002	Sediment	0.69	0.54	0.40	0.25	0.10	0.01	0.00

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		Units	mg/Kg (Dry Weight)							
		Method No	ICPMSS*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.01	0.5	0.5	2
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	SOCOTEC Ref:	Matrix	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)	Zinc (Zn)
Location A1	MAR01712.001	Sediment	14.0	0.60	29.2	24.2	0.14	23.9	36.8	197
Location A2	MAR01712.002	Sediment	13.0	0.53	30.6	23.3	0.14	24.6	35.9	180
Certified Reference Material SETOC 768 (% Recovery)			111	94	110	105	107	108	110	106
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.01	<0.5	<0.5	<2

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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	SOCOTEC Ref:	Matrix	ACENAPTH	ACENAPHY	ANTHRACN	BAA	BAP	BBF	BENZGHIP	BEP
Location A1	MAR01712.001	Sediment	<5	<5	<5	42.7	60.2	86.5	72.7	62.5
Location A2	MAR01712.002	Sediment	<5	<5	15.5	56.4	71.5	92.9	79.9	66.9
Certified Reference Material Nist 1941b (% Recovery)			94	108	68	64	60	83	76	75
QC Blank			<1	<1	<1	<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.

For full analyte name see method summaries.

*See report notes

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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1	1	1
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO	UKAS/MMO	UKAS/MMO
Client Reference:	SOCOTEC Ref:	Matrix	BKF*	C1N	C1PHEN	C2N	C3N	CHRYSENE*	DBENZAH	FLUORANT
Location A1	MAR01712.001	Sediment	65.0	88.1	94.6	119	86.6	63.7	14.7	80.2
Location A2	MAR01712.002	Sediment	72.5	100	108	105	80.8	76.1	16.8	117
Certified Reference Material Nist 1941b (% Recovery)			82	78	101	109	126	86	100	84
QC Blank			<1	<1	<1	<1	<1	<1	<1	<1

~ Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.

For full analyte name see method summaries.

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		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	mg/Kg
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/305
		Limit of Detection	1	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	SOCOTEC Ref:	Matrix	FLUORENE	INDPYR	NAPTH	PERYLENE	PHENANT	PYRENE	THC
Location A1	MAR01712.001	Sediment	17.0	78.5	34.3	30.3	76.5	73.3	26.6
Location A2	MAR01712.002	Sediment	16.3	88.5	35.1	31.1	88.9	101	19.9
Certified Reference Material Nist 1941b (% Recovery)			66	66	61	50	79	71	91~
QC Blank			<1	<1	<1	<1	<1	<1	<1

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REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR01712.001-002	Analysis was conducted by an approved subcontracted laboratory.
ICPMSS*	MAR01712.001-002	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/303/304	MAR01712.001-002	Benzo[k]fluoranthene is known to coelute with Benzo[j]fluoranthene and these peaks can not be resolved. It is believed Benzo[j]fluoranthene is present in these samples therefore it is suggested that the Benzo[k]fluoranthene results should be taken as a Benzo[k]fluoranthene (inc. Benzo[j]fluoranthene). Benzo[j]fluoranthene is not UKAS accredited. This should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR01712.001-002	Chrysene is known to coelute with Triphenylene and these peaks can not be resolved in the PAHSED UKAS accredited method. Chrysene and Triphenylene are resolved for MMO but this is currently not UKAS accredited therefore Chrysene is reported without this accreditation.

DEVIATING SAMPLE STATEMENT

Deviation Code	Deviation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Sample Contaminated through Damaged Packaging	N/A	N/A
D3	Sample Contaminated through Sampling	N/A	N/A
D4	Inappropriate Container/Packaging	N/A	N/A
D5	Damaged in Transit	N/A	N/A
D6	Insufficient Quantity of Sample	N/A	N/A
D7	Inappropriate Headspace	N/A	N/A
D8	Retained at Incorrect Temperature	N/A	N/A
D9	Lack of Date & Time of Sampling	N/A	N/A
D10	Insufficient Sample Details	N/A	N/A
D11	Sample integrity compromised or not suitable for analysis	N/A	N/A

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Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Ultra-violet fluorescence spectroscopy

Analyte Definitions					
Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorocyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorocyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Dibenzo[ah]anthracene	GHCH	gamma-Hexachlorocyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	PPDDE	p,p'-Dichlorodiphenyldichloroethylene
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	PPDDT	p,p'-Dichlorodiphenyltrichloroethane
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	PPTDE	p,p'-Dichlorodiphenyldichloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		