Note / Memo

HaskoningDHV UK Ltd.
Water & Maritime

To:	Marine Management Organistation
From:	Royal HaskoningDHV
Date:	2 May 2023
Copy:	Graham Construction, Teesworks
Our reference:	PC1084-RHD-SB-EN-ME-EV-1145
Classification:	Project related
Checked by	JDE, CP, SG, JR

Subject: **MLA/2020/00506 Condition 5.2.11 - P03**

---

1 Introduction

Condition 5.2.11 of Teesworks Marine Licence Number L/2021/00333/3 requires that:

> *Material from the area bounded by the coordinates detailed in schedule 8 must be excluded from disposal at sea. An enclosed bucket removal must be used to remove this material for disposal to a recognised contaminated disposal site. The enclosed bucket must be used until glacial till is reached.*
>
> *Once the area bounded by Schedule 8 has been dredged, surface grabs for samples within the area adjacent to the dredged area must been taken to ensure there has been no movement of contaminated sediment outside of the area bounded by Schedule 8. Any movement of contaminated sediment must be removed using an enclosed bucket and material sent for disposal to a recognised contaminated disposal site.*
>
> ***A report detailing the results of surface grabs and any remedial action undertaken must be submitted to the MMO within one week of the completion of any remedial dredging.***
>
> *The exclusion zone may be reduced or removed if further evidence is presented to the MMO showing minimised areas of contamination. Written permission will be required to commence sea disposal operations.*
>
> *Reason:*
> *To prevent contaminated material being disposed of at sea or mobilised causing toxic or harmful effects to sensitive receptors.*

This note has been drafted to address the requirement to submit a report outlining the remedial dredge completed.

2 Harbour Authority Requirements

In addition to the requirements of the Marine Licence, PD Teesport as the Harbour Authority for the River Tees required a sediment sampling plan to be agreed as part of the River Works Licence for the dredging. This included taking pre and post dredge samples of the sediment adjacent to the exclusion zone dredging to demonstrate that no material not suitable for offshore disposal had spread during the

dredging works. The agreement also outlined the requirements for remedial dredging should there be evidence that the material not suitable for offshore disposal had spread.

Prior to the commencement of dredging baseline samples of the material were taken at six locations around the dredge area as identified in Figure 2-1.

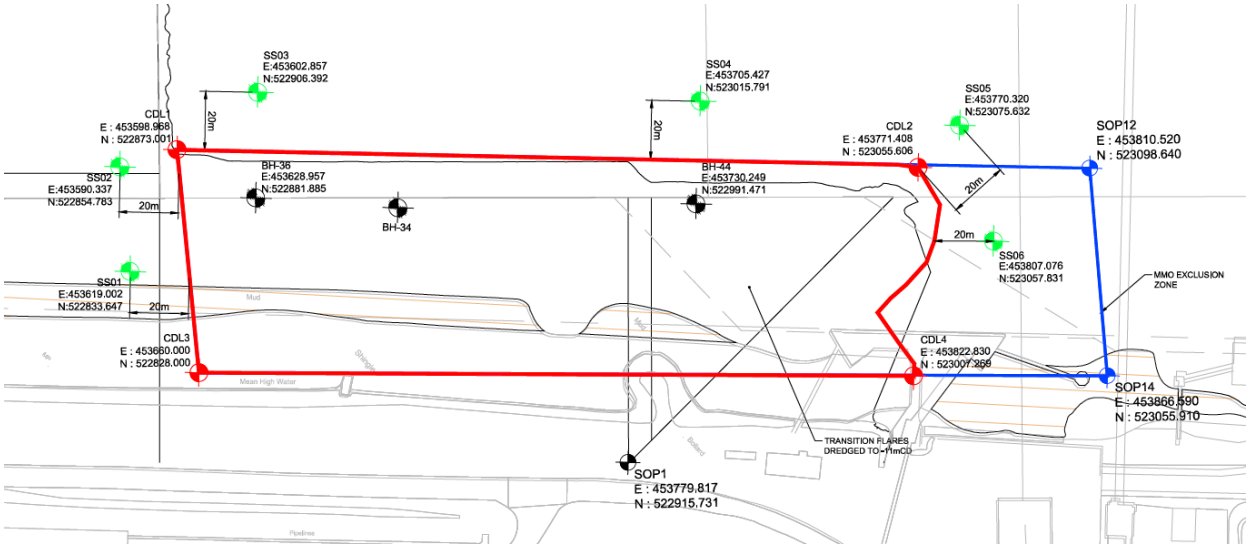


Figure 2-1 - Exclusion Zone (red boundary) and Sample Locations (SS01 - SS06)

The baseline samples were tested by Socotec and the results provided on 26th September 2022. Assessment of these results indicated that the material tested in the baseline sampling would be suitable for offshore disposal. The results from these samples can be found in Appendix A.

3 Exclusion Zone Dredging Works

The dredging works within the exclusion zone commenced on 1st September 2022.

The dredging works within the exclusion zone were completed on 8th November 2022.

4 Post Dredge Sampling

Following completion of the dredging works Graham Construction arranged for the sampling and testing of the areas outside the exclusion zone at sample locations. Samples were taken at the same six locations SS01 – SS06 (Ref. Figure 2-1) outside the perimeter of the dredge area on 22nd November 2022. The samples were sent to the Socotec laboratory and were tested in compliance with the MMO suite of testing requirements to identify potential contamination.

On 12th December 2022 the test results were received. The results from the post dredge sample testing can be found in Appendix B.

5 Bathymetric Comparison

In addition to the sampling, a comparison of the bathymetric surveys, before and after the dredging works, in the area adjacent to the exclusion zone was completed. The comparison of these two surveys, showed that there had potentially been a lateral spread of material to the areas outside the exclusion zone.

6 Remedial Dredging Proposal

After completing the review of the post dredging samples and bathymetric survey comparison it was agreed that localised remedial dredging works were required on accordance with the provisions of the condition wjich expressly provides for this eventuality.

6.1 Engagement with MMO & Harbour Authority

Although there was no requirement in the licence condition 5.2.1 to share any remedial dredging proposals with the MMO nor to seek MMO approval, this was duly done in a meeting on 4th January 2023 with both the MMO and the Harbour Authority. The MMO confirmed they were satisfied with the remedial works proposed.

The remedial dredging proposal was also agreed by the Harbour Authority.

6.2 Proposal

The remedial dredging proposal was split into two areas:

- Zone 1 – the area adjacent to the exclusion zone which lies within the capital dredge footprint
- Zone 2 – the area adjacent to the exclusion zone which lies within the PD Teesport maintenance dredge area

Figure 6-1 identifies the Zone 1 and Zone 2 remedial dredging extents.

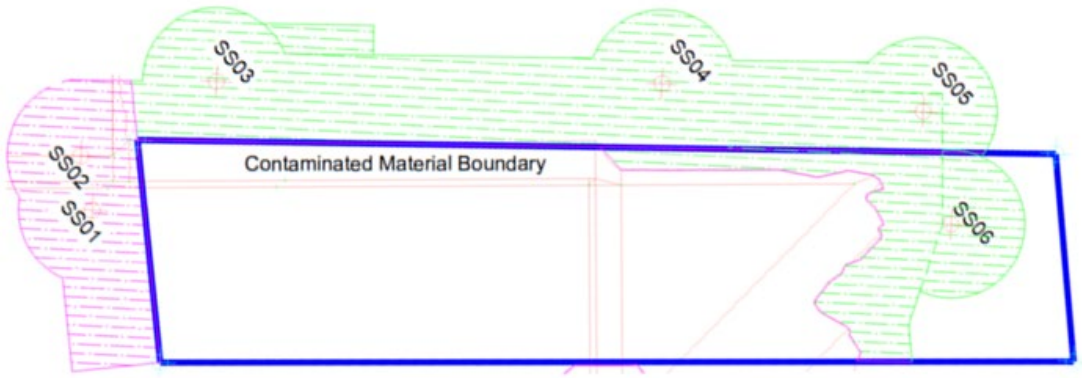


Figure 6-1 Extent of Remedial Dredging Works (Zone 1 – Magenta, Zone 2 – Green)

6.3 Zone 1 – Proposal

The remedial dredging proposal within Zone 1 was as follows:

- Remedial dredging to 1m below the 'IN' bathymetric survey riverbed levels over the extent of the change in bed levels.
- All material to be excavated with enclosed bucket and disposed onshore.
- Upon completion of the remedial dredging works, no follow up sampling was to be undertaken in this area due to remedial dredging being completed to depths significantly below the IN survey bed levels. This conservative approach was undertaken so that the capital dredging works in this area would now commence at a deeper depth in undisturbed material which had already been deemed suitable for offshore disposal under the Marine Licence
- Once the remedial dredging works had been completed in Zone 1, the main capital dredging works were permitted to commence.

6.4 Zone 2 – Proposal

- Remedial dredging to return the riverbed levels to a depth no higher than the 'IN' bathymetric survey levels over the extent of the change in bed levels.
- All material to be excavated with enclosed bucket and disposed onshore.
- Upon completion of the remedial dredging works, new samples were to be taken at the same locations as the previous samples (SS03 – SS06).
- The samples were to be tested and reviewed against the MMO suite of testing as per the pre and post exclusion zone dredging samples.

7 Remedial Dredging Works

Zone 1 and Zone 2 remedial dredging commenced on 23rd January 2023.

The remedial dredging works were paused on 29th January 2023, to enable the capital dredging works to commence in the Turning Circle on 30th January 2023, as marine plant had been mobilised for this activity.

Zone 1 remedial dredging recommenced on 13th February 2023 and was completed on 15th February 2023.

Zone 2 remedial dredging recommenced on 6th March 2023 and was completed on 28th March 2023.

7.1 Zone 1

As demonstrated by Figure 7-1, all material within Zone 1 was dredged to at least 1m below the 'IN' bathymetric survey levels.

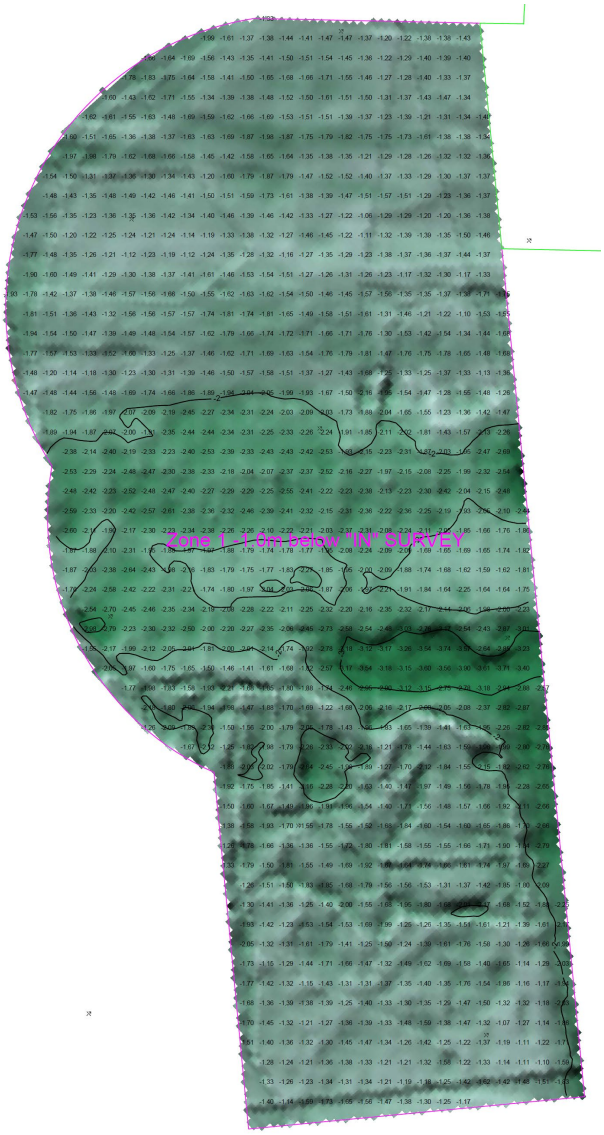


Figure 7-1: Zone 1 Post Remedial Dredge Survey Identifying the Difference in Levels between the IN and OUT Bathymetric Survey. NB: All points show figures of < -1.0m.

7.2 Zone 2

As demonstrated by Figure 7-2, all material within Zone 2 was dredged to a level no higher than the 'IN' bathymetric survey levels.

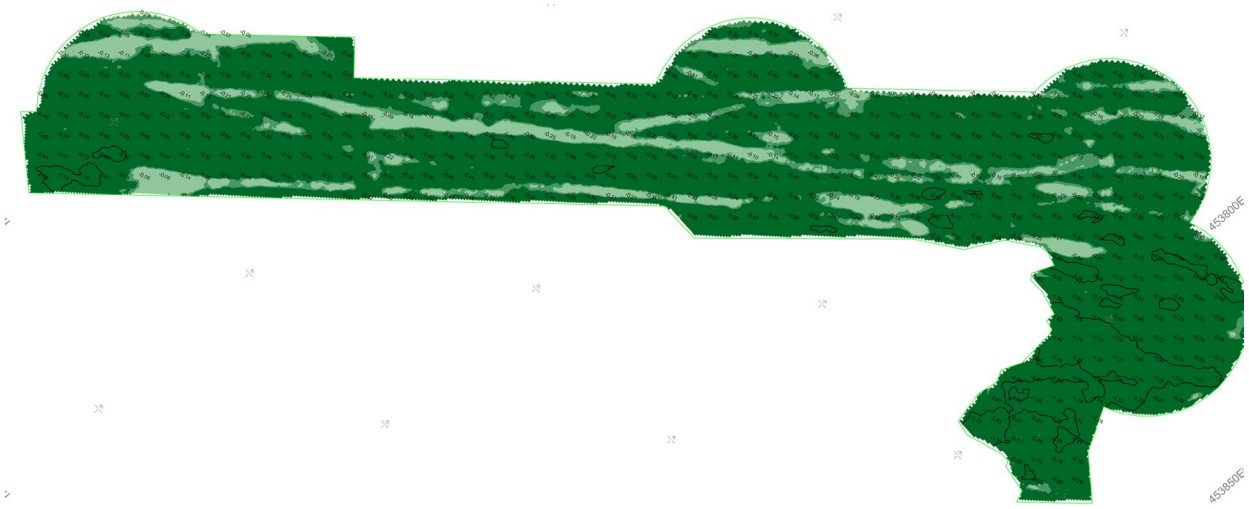


Figure 7-2: Zone 2 Post Remedial Dredge Survey Identifying the Difference in Levels between the IN and OUT Bathymetric Survey NB: All points show figures of < 0m.

The full survey drawings from which Figure 7-1 and Figure 7-2 have been extracted can be found in Appendix D.

7.3 Zone 2 – Post Remedial Dredge Sampling

Post remedial dredge samples were collected in the Zone 2 sample locations SS03 – SS06 and tested in the Socotec laboratory. The results were provided on 14th April 2023.

The results from the sampling were assessed and identified that:

- No Cefas Action Level 2 exceedances were recorded in the post dredge samples.
- Samples from the post remedial dredge also show similar concentrations to those recorded in the pre-dredge samples.

The results from the post remedial dredge sample testing can be found in Appendix C.

It is therefore concluded that the remediation dredging was complete and that the area around the exclusion zone has been returned to a condition similar to the pre-dredge state.

8 Summary

Pre-Works

- An 'IN' bathymetric survey was completed prior to the commencement of the dredging works within the exclusion zone.
- Grab samples were taken at 6 locations outside the exclusion zone and analysed prior to the commencement of the dredging works within the exclusion zone.

Exclusion Zone Dredging

- Dredging of the material in the exclusion zone commenced on 1st September and was completed on 14th November 2022.
- An 'OUT' bathymetric survey was undertaken and compared to the 'IN' bathymetric survey. This identified that there had been an accumulation of material on the riverbed in the areas adjacent to the exclusion zone.
- Grab samples were taken at the same 6 locations outside the exclusion zone and analysed.
- Upon review of the bathymetric survey and the sample results a remedial dredging proposal was developed.

Remedial Dredging

- A proposal for remedial dredging of the material outside the exclusion zone was agreed with the MMO and Harbour Authority at a meeting on 4th January 2023.
- Remedial dredging commenced on 23rd January 2023 and was completed on 28th March 2023
- Post remedial dredging bathymetric surveys were undertaken which demonstrated that the remedial dredging had been completed to the levels as per the agreed remedial dredge proposal.
- Post dredge grab samples were taken at the same locations outside the exclusion zone and analysed.
- The results of the soil sample analysis identified contaminant/compound concentrations similar to those recorded in the pre-dredge samples

It is therefore concluded that the remediation dredging was complete and that the area around the exclusion zone has been returned to a condition similar to the pre-dredge state. Therefore, no further dredging or sampling is required as part of the capital dredge operation and implementation of phase 1 of the new quay. Future dredging activity will take place under the MMO licenced maintenance dredging regime.

APPENDIX A – PRE-DREDGE SAMPLE RESULTS

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	**MAR01534**
Issue Version	1
Customer	Royal Haskoning DHV, Marlborough House, Marlborough Crescent, Newcastle Upon Tyne, NE1 4EE
Customer Reference	PC1084 Tees MMO Analysis
Date Sampled	22-Aug-22
Date Received	25-Aug-22
Date Reported	26-Sep-22
Condition of samples	Ambient Satisfactory

Authorised by: Marya Hubbard

Position: Laboratory Manager

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

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		Units	% M/M	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)	% (at 0.5phi intervals)
		Method No	WSLM59*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO
			Total Organic Carbon	45mm	31.5mm	22.4mm	16mm	11.2mm
Client Reference:	SOCOTEC Ref:	Matrix	–	-5.5	-5.0	-4.5	-4.0	-3.5
SS01	MAR01534.001	Sediment	2.77	0.00	9.32	0.00	0.00	0.90
SS02	MAR01534.002	Sediment	4.88	0.00	0.00	0.00	0.31	0.55
SS03	MAR01534.003	Sediment	4.72	0.00	0.00	0.00	0.00	0.00
SS04	MAR01534.004	Sediment	4.80	0.00	0.00	0.00	0.00	0.00
SS05	MAR01534.005	Sediment	4.74	0.00	0.00	0.00	0.00	0.00
SS06	MAR01534.006	Sediment	4.76	0.00	0.00	0.00	0.00	0.15

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			8mm	5.6mm	4mm	2.8mm	2mm	1.4mm
Client Reference:	SOCOTEC Ref:	Matrix	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5
SS01	MAR01534.001	Sediment	0.85	1.42	1.63	2.03	1.80	1.88
SS02	MAR01534.002	Sediment	0.10	0.28	0.40	0.08	0.06	0.06
SS03	MAR01534.003	Sediment	0.00	0.00	0.00	0.00	0.00	0.00
SS04	MAR01534.004	Sediment	0.00	0.00	0.00	0.00	0.00	0.00
SS05	MAR01534.005	Sediment	0.00	0.07	0.03	0.11	0.08	0.07
SS06	MAR01534.006	Sediment	0.00	0.13	0.07	0.03	0.00	0.01

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			1mm	707µm	500µm	353.6µm	250µm	176.8µm
Client Reference:	SOCOTEC Ref:	Matrix	0.0	0.5	1.0	1.5	2.0	2.5
SS01	MAR01534.001	Sediment	1.58	0.00	0.00	0.00	1.12	5.21
SS02	MAR01534.002	Sediment	0.08	0.00	0.00	0.00	0.09	1.28
SS03	MAR01534.003	Sediment	0.00	0.00	0.00	0.00	0.20	1.37
SS04	MAR01534.004	Sediment	0.00	0.00	0.00	0.00	0.00	0.31
SS05	MAR01534.005	Sediment	0.02	0.00	0.00	0.00	0.00	0.00
SS06	MAR01534.006	Sediment	0.03	0.00	0.00	0.00	0.00	0.00

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			125µm	**88.39µm**	**63µm**	**44.2µm**	**31.3µm**	**22.1µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**3.0**	**3.5**	**4.0**	**4.5**	**5.0**	**5.5**
SS01	MAR01534.001	Sediment	2.71	4.61	5.00	4.70	4.86	5.66
SS02	MAR01534.002	Sediment	1.14	5.55	7.48	7.16	8.08	9.38
SS03	MAR01534.003	Sediment	0.56	4.83	6.88	7.19	7.84	8.69
SS04	MAR01534.004	Sediment	0.95	4.70	6.71	6.43	7.73	9.25
SS05	MAR01534.005	Sediment	0.12	2.56	6.32	6.28	7.26	8.45
SS06	MAR01534.006	Sediment	0.01	1.29	5.02	6.15	7.52	8.52

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			15.6µm	**11µm**	**7.8µm**	**5.5µm**	**3.9µm**	**2.75µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**6.0**	**6.5**	**7.0**	**7.5**	**8.0**	**8.5**
SS01	MAR01534.001	Sediment	6.65	6.09	6.21	6.73	5.94	4.07
SS02	MAR01534.002	Sediment	10.36	9.70	9.22	8.72	6.88	4.37
SS03	MAR01534.003	Sediment	9.95	9.23	9.18	9.53	8.08	5.30
SS04	MAR01534.004	Sediment	11.20	10.42	9.40	9.19	7.73	5.16
SS05	MAR01534.005	Sediment	11.05	10.83	9.85	9.99	8.66	5.82
SS06	MAR01534.006	Sediment	10.35	10.05	8.99	10.09	9.46	6.46

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			1.95µm	1.38µm	0.98µm	0.69µm	0.49µm	0.34µm
Client Reference:	SOCOTEC Ref:	Matrix	9.0	9.5	10.0	10.5	11.0	11.5
SS01	MAR01534.001	Sediment	2.20	1.22	0.94	0.93	0.92	0.85
SS02	MAR01534.002	Sediment	2.24	1.17	0.88	0.88	0.88	0.80
SS03	MAR01534.003	Sediment	2.72	1.44	1.14	1.18	1.19	1.09
SS04	MAR01534.004	Sediment	2.71	1.43	1.11	1.12	1.13	1.03
SS05	MAR01534.005	Sediment	3.05	1.67	1.33	1.35	1.33	1.19
SS06	MAR01534.006	Sediment	3.37	2.03	1.84	1.92	1.87	1.64

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		Method No	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	MMO	MMO	MMO	MMO	MMO	MMO
			0.24µm	**0.17µm**	**0.12µm**	**0.09µm**	**0.06µm**	**0.04µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**12.0**	**12.5**	**13.0**	**13.5**	**14.0**	**14.5**
SS01	MAR01534.001	Sediment	0.71	0.53	0.38	0.23	0.09	0.01
SS02	MAR01534.002	Sediment	0.67	0.50	0.36	0.22	0.09	0.01
SS03	MAR01534.003	Sediment	0.90	0.66	0.46	0.28	0.11	0.01
SS04	MAR01534.004	Sediment	0.85	0.62	0.44	0.26	0.10	0.01
SS05	MAR01534.005	Sediment	0.96	0.68	0.47	0.27	0.11	0.01
SS06	MAR01534.006	Sediment	1.27	0.83	0.52	0.28	0.10	0.01

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		Units	% (at 0.5phi intervals)
		Method No	*SUB_01
		Accreditation	MMO
			<0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	>14.5
SS01	MAR01534.001	Sediment	0.00
SS02	MAR01534.002	Sediment	0.00
SS03	MAR01534.003	Sediment	0.00
SS04	MAR01534.004	Sediment	0.00
SS05	MAR01534.005	Sediment	0.00
SS06	MAR01534.006	Sediment	0.00

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)**
SS01	MAR01534.001	Sediment	27.1	0.36	47.0	47.2	0.34	20.7	286	206
SS02	MAR01534.002	Sediment	32.9	0.39	49.3	52.7	0.46	29.7	151	248
SS03	MAR01534.003	Sediment	25.2	0.42	58.1	65.9	0.60	30.9	151	249
SS04	MAR01534.004	Sediment	31.0	0.46	51.9	57.4	0.52	29.3	139	235
SS05	MAR01534.005	Sediment	29.7	0.42	51.1	54.7	0.48	29.1	136	226
SS06	MAR01534.006	Sediment	25.4	0.24	51.2	53.6	0.45	30.7	130	212
Certified Reference Material SETOC 774 (% Recovery)			98	92	99	99	102	100	97	97
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.01	<0.5	<0.5	<2

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
SS01	MAR01534.001	Sediment	0.016	0.020
SS02	MAR01534.002	Sediment	0.015	0.033
SS03	MAR01534.003	Sediment	0.031	0.029
SS04	MAR01534.004	Sediment	0.026	0.031
SS05	MAR01534.005	Sediment	<0.005	0.030
SS06	MAR01534.006	Sediment	0.014	0.025
Certified Reference Material QSP078MS (% Recovery)			101	86
QC Blank			<0.001	<0.001

* See Report Notes

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		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
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**	**BBF**
SS01	MAR01534.001	Sediment	538	277	420	787	881	813
SS02	MAR01534.002	Sediment	654	307	464	1030	1160	1080
SS03	MAR01534.003	Sediment	577	359	569	922	1090	1020
SS04	MAR01534.004	Sediment	655	325	510	975	1110	1030
SS05	MAR01534.005	Sediment	432	184	302	703	773	742
SS06	MAR01534.006	Sediment	413	215	355	733	831	786
Certified Reference Material Quasimeme QPH107MS (% Recovery)			84	98	94	84	89	74
QC Blank			<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

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		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
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO	MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**BENZGHIP**	**BEP**	**BKF***	**C1N**	**C1PHEN**	**C2N**
SS01	MAR01534.001	Sediment	644	649	730	2730	1370	2270
SS02	MAR01534.002	Sediment	920	864	902	4590	2170	3640
SS03	MAR01534.003	Sediment	877	838	844	4950	2190	3770
SS04	MAR01534.004	Sediment	927	872	867	5460	2530	4290
SS05	MAR01534.005	Sediment	653	612	614	3680	1670	2940
SS06	MAR01534.006	Sediment	709	657	650	4090	1890	3270
Certified Reference Material Quasimeme QPH107MS (% Recovery)			88	79	78	100	61	95
QC Blank			<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

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		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)
		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
		Limit of Detection	1	1	1	1	1	1
		Accreditation	MMO	MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**C3N**	**CHRYSENE***	**DBENZAH**	**FLUORANT**	**FLUORENE**	**INDPYR**
SS01	MAR01534.001	Sediment	1760	883	148	1650	512	617
SS02	MAR01534.002	Sediment	3060	1130	202	1950	720	822
SS03	MAR01534.003	Sediment	3190	1020	195	1600	715	772
SS04	MAR01534.004	Sediment	3600	1090	204	1830	757	783
SS05	MAR01534.005	Sediment	2440	798	147	1320	499	559
SS06	MAR01534.006	Sediment	2850	827	153	1390	514	540
Certified Reference Material Quasimeme QPH107MS (% Recovery)			88	82	92	91	88	90
QC Blank			<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

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		Units	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/305
		Limit of Detection	1	1	1	1	1
		Accreditation	UKAS/MMO	MMO	UKAS/MMO	UKAS/MMO	MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**NAPTH**	**PERYLENE**	**PHENANT**	**PYRENE**	**THC**
SS01	MAR01534.001	Sediment	1120	212	1570	1490	118
SS02	MAR01534.002	Sediment	1750	274	2060	1830	126
SS03	MAR01534.003	Sediment	1880	274	1940	1730	120
SS04	MAR01534.004	Sediment	2060	257	2220	1820	100
SS05	MAR01534.005	Sediment	1380	187	1510	1270	84.5
SS06	MAR01534.006	Sediment	1460	199	1660	1350	123
Certified Reference Material Quasimeme QPH107MS (% Recovery)			95	94	87	92	110~
QC Blank			<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

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**
SS01	MAR01534.001	Sediment	0.00082	0.00028	0.00095	0.00093	0.00018	0.00079	0.00010
SS02	MAR01534.002	Sediment	0.00064	0.00021	0.00075	0.00074	0.00014	0.00076	0.00009
SS03	MAR01534.003	Sediment	0.00096	0.00028	0.00107	0.00109	0.00018	0.00080	0.00015
SS04	MAR01534.004	Sediment	0.00083	0.00027	0.00090	0.00097	0.00014	0.00112	0.00014
SS05	MAR01534.005	Sediment	0.00090	0.00024	0.00086	0.00088	0.00017	0.00096	0.00012
SS06	MAR01534.006	Sediment	0.00079	0.00031	0.00087	0.00094	0.00020	0.00107	0.00011
		Certified Reference Material Quasimeme QOR151MS (% Recovery)	101	85	105	101	89	95	88
		QC Blank	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 149**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**
SS01	MAR01534.001	Sediment	0.00082	0.00023	0.00120	0.00009	0.00012	0.00023	0.00023
SS02	MAR01534.002	Sediment	0.00075	0.00019	0.00079	<0.00008	0.00012	0.00020	0.00021
SS03	MAR01534.003	Sediment	0.00096	0.00025	0.00099	0.00010	0.00009	0.00025	0.00032
SS04	MAR01534.004	Sediment	0.00090	0.00029	0.00096	0.00011	0.00014	0.00022	0.00025
SS05	MAR01534.005	Sediment	0.00081	0.00017	0.00095	<0.00008	0.00012	0.00022	0.00025
SS06	MAR01534.006	Sediment	0.00078	0.00026	0.00104	0.00011	0.00011	0.00024	0.00025
Certified Reference Material Quasimeme QOR151MS (% Recovery)			95	111	98	85	80	94	89
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO*	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 180**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**
SS01	MAR01534.001	Sediment	0.00064	0.00013	0.00039	0.00016	0.00059	0.00054	0.00038
SS02	MAR01534.002	Sediment	0.00049	0.00012	0.00030	0.00013	0.00049	0.00044	0.00030
SS03	MAR01534.003	Sediment	0.00063	0.00020	0.00048	0.00020	0.00073	0.00067	0.00044
SS04	MAR01534.004	Sediment	0.00060	0.00015	0.00045	0.00017	0.00059	0.00057	0.00039
SS05	MAR01534.005	Sediment	0.00057	0.00013	0.00038	0.00017	0.00057	0.00053	0.00031
SS06	MAR01534.006	Sediment	0.00059	0.00015	0.00042	0.00019	0.00060	0.00057	0.00036
		Certified Reference Material Quasimeme QOR151MS (% Recovery)	97	90	102	87	78	95	105
		QC Blank	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

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	MAR01534
Issue Version	1
Customer Reference	PC1084 Tees MMO Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 47**	**PCB 49**	**PCB 52**	**PCB 66**
SS01	MAR01534.001	Sediment	0.00011	0.00036	0.00058	0.00056
SS02	MAR01534.002	Sediment	0.00013	0.00032	0.00046	0.00046
SS03	MAR01534.003	Sediment	0.00017	0.00046	0.00071	0.00065
SS04	MAR01534.004	Sediment	0.00015	0.00038	0.00058	0.00057
SS05	MAR01534.005	Sediment	0.00011	0.00036	0.00055	0.00054
SS06	MAR01534.006	Sediment	0.00016	0.00036	0.00053	0.00053
		Certified Reference Material Quasimeme QOR151MS (% Recovery)	101	104	99	109~
		QC Blank	<0.00008	<0.00008	<0.00008	<0.00008

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

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

		Units	mg/Kg (Dry Weight)							
		Method No	ASC/SOP/302							
		Limit of Detection	0.0001							
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
SS01	MAR01534.001	Sediment	<0.0001	<0.0001	0.0001	0.0006	0.0013	0.0014	0.0012	0.0005
SS02	MAR01534.002	Sediment	<0.0001	<0.0001	0.0001	0.0004	0.0010	0.0010	0.0008	0.0005
SS03	MAR01534.003	Sediment	<0.0001	<0.0001	0.0002	0.0006	0.0013	0.0016	0.0013	0.0016
SS04	MAR01534.004	Sediment	<0.0001	<0.0001	0.0002	0.0006	0.0012	0.0013	0.0012	0.0007
SS05	MAR01534.005	Sediment	<0.0001	<0.0001	0.0002	0.0002	0.0012	0.0014	0.0010	0.0002
SS06	MAR01534.006	Sediment	<0.0001	<0.0001	0.0002	0.0006	0.0011	0.0014	0.0013	0.0002
Certified Reference Material Quasimeme QOR151MS (% Recovery)			108~	115~	111	88	67	107	112	107
QC Blank			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

~ Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.
For full analyte name see method summaries.

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 MAR01534
Issue Version 1
Customer Reference PC1084 Tees MMO Analysis

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR01534.001-006	Analysis was conducted by an approved subcontracted laboratory.
WSLM59*	MAR01534.001-006	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ICPMSS*	MAR01534.001-006	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/301	MAR01534.001-006	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted, but in doing so, the detection limit for this test has been elevated.
ASC/SOP/303/304	MAR01534.001-006	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	MAR01534.001-006	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 acccreditation.

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

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	MAR01534
Issue Version	1
Customer Reference	PC1084 Tees MMO Analysis

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 1600°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS 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
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

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		

APPENDIX B – POST-DREDGE SAMPLE RESULTS

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	**MAR01640**	
Issue Version	2	
Customer	Graham Construction	
Customer Reference	South Bank Quay - MMO Analysis	
Date Sampled	22-Nov-22	
Date Received	24-Nov-22	
Date Reported	09-Dec-22	
Condition of samples	Cold	Satisfactory

Authorised by: Marya Hubbard

Position: Laboratory Manager

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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		Units	% M/M	% (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	WSLM59*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO	MMO
			Total Organic Carbon	45mm	31.5mm	22.4mm	16mm	11.2mm	8mm
Client Reference:	SOCOTEC Ref:	Matrix	-	-5.5	-5.0	-4.5	-4.0	-3.5	-3.0
SS01	MAR01640.001	Sediment	5.34	0.00	0.00	0.00	0.00	0.00	0.00
SS02	MAR01640.002	Sediment	5.56	0.00	0.00	0.00	0.00	0.00	0.00
SS03	MAR01640.003	Sediment	5.62	0.00	0.00	0.00	0.00	0.00	0.00
SS04	MAR01640.004	Sediment	5.52	0.00	0.00	0.00	0.00	0.00	0.00
SS05	MAR01640.005	Sediment	5.41	0.00	0.02	0.00	0.02	0.00	0.19
SS06	MAR01640.006	Sediment	4.03	0.00	0.00	0.00	0.00	0.00	0.02

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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
			5.6mm	4mm	2.8mm	2mm	1.4mm	1mm	707µm
Client Reference:	SOCOTEC Ref:	Matrix	-2.5	-2.0	-1.5	-1.0	-0.5	0.0	0.5
SS01	MAR01640.001	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS02	MAR01640.002	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.02
SS03	MAR01640.003	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS04	MAR01640.004	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS05	MAR01640.005	Sediment	0.16	0.00	0.00	0.00	0.00	0.00	0.00
SS06	MAR01640.006	Sediment	0.05	0.12	0.07	0.04	0.08	0.18	2.29

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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
			500µm	353.6µm	250µm	176.8µm	125µm	88.39µm	63µm
Client Reference:	SOCOTEC Ref:	Matrix	1.0	1.5	2.0	2.5	3.0	3.5	4.0
SS01	MAR01640.001	Sediment	0.50	1.72	0.49	2.38	7.95	2.76	6.12
SS02	MAR01640.002	Sediment	1.37	4.42	3.17	4.56	8.70	3.28	3.86
SS03	MAR01640.003	Sediment	0.00	0.00	0.00	2.02	7.26	2.49	6.84
SS04	MAR01640.004	Sediment	0.00	0.00	0.00	1.19	5.04	0.89	4.06
SS05	MAR01640.005	Sediment	0.00	0.00	0.00	0.45	4.10	1.29	2.09
SS06	MAR01640.006	Sediment	1.85	1.95	8.08	15.80	12.65	1.62	2.81

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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
			44.2µm	31.3µm	22.1µm	15.6µm	11µm	7.8µm	5.5µm
Client Reference:	SOCOTEC Ref:	Matrix	4.5	5.0	5.5	6.0	6.5	7.0	7.5
SS01	MAR01640.001	Sediment	8.60	7.61	8.70	8.13	7.49	7.81	7.70
SS02	MAR01640.002	Sediment	7.38	6.65	8.10	7.26	7.07	7.56	7.14
SS03	MAR01640.003	Sediment	9.57	8.24	9.22	8.35	7.71	8.17	7.96
SS04	MAR01640.004	Sediment	8.68	8.40	10.21	9.83	9.46	9.79	9.16
SS05	MAR01640.005	Sediment	7.70	7.97	10.08	9.97	9.71	10.46	10.09
SS06	MAR01640.006	Sediment	5.21	4.77	5.94	5.43	5.19	5.51	5.31

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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
			3.9µm	2.75µm	1.95µm	1.38µm	0.98µm	0.69µm	0.49µm
Client Reference:	SOCOTEC Ref:	Matrix	8.0	8.5	9.0	9.5	10.0	10.5	11.0
SS01	MAR01640.001	Sediment	6.35	4.33	2.58	1.72	1.42	1.29	1.18
SS02	MAR01640.002	Sediment	5.63	3.79	2.30	1.56	1.26	1.12	1.00
SS03	MAR01640.003	Sediment	6.39	4.30	2.61	1.78	1.46	1.30	1.16
SS04	MAR01640.004	Sediment	7.07	4.58	2.66	1.73	1.41	1.28	1.18
SS05	MAR01640.005	Sediment	7.93	5.14	2.94	1.89	1.53	1.39	1.28
SS06	MAR01640.006	Sediment	4.26	2.87	1.75	1.20	0.99	0.88	0.79

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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
			0.34µm	**0.24µm**	**0.17µm**	**0.12µm**	**0.09µm**	**0.06µm**	**0.04µm**
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**11.5**	**12.0**	**12.5**	**13.0**	**13.5**	**14.0**	**14.5**
SS01	MAR01640.001	Sediment	1.03	0.83	0.59	0.40	0.23	0.09	0.01
SS02	MAR01640.002	Sediment	0.87	0.71	0.52	0.37	0.22	0.09	0.01
SS03	MAR01640.003	Sediment	1.00	0.81	0.59	0.41	0.25	0.10	0.01
SS04	MAR01640.004	Sediment	1.04	0.86	0.64	0.46	0.28	0.11	0.01
SS05	MAR01640.005	Sediment	1.12	0.92	0.67	0.48	0.29	0.11	0.01
SS06	MAR01640.006	Sediment	0.69	0.57	0.42	0.31	0.19	0.08	0.01

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		Units	% (at 0.5phi intervals)
		Method No	*SUB_01
		Accreditation	MMO
			<0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	>14.5
SS01	MAR01640.001	Sediment	0.00
SS02	MAR01640.002	Sediment	0.00
SS03	MAR01640.003	Sediment	0.00
SS04	MAR01640.004	Sediment	0.00
SS05	MAR01640.005	Sediment	0.00
SS06	MAR01640.006	Sediment	0.00

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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)**
SS01	MAR01640.001	Sediment	37.0	3.32	139	132	2.44	33.4	514	967
SS02	MAR01640.002	Sediment	29.3	3.20	144	139	2.28	30.1	363	810
SS03	MAR01640.003	Sediment	34.6	3.32	143	130	2.33	33.0	454	883
SS04	MAR01640.004	Sediment	29.9	2.49	114	119	1.72	32.5	297	654
SS05	MAR01640.005	Sediment	30.4	1.96	100	104	1.36	35.6	250	519
SS06	MAR01640.006	Sediment	22.1	1.31	65.3	66.6	0.99	20.9	228	395
Certified Reference Material SETOC 774 (% Recovery)			100	100	101	98	101	102	99	96
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.01	<0.5	<0.5	<2

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
SS01	MAR01640.001	Sediment	0.030	0.029
SS02	MAR01640.002	Sediment	0.059	0.090
SS03	MAR01640.003	Sediment	0.040	0.054
SS04	MAR01640.004	Sediment	0.037	0.052
SS05	MAR01640.005	Sediment	0.020	0.027
SS06	MAR01640.006	Sediment	0.033	0.044
Certified Reference Material BCR-646 (% Recovery)			81	80
QC Blank			<0.001	<0.001

* See Report Notes

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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**
SS01	MAR01640.001	Sediment	3540	1190	2870	4260	4390	3970	2890	2980
SS02	MAR01640.002	Sediment	4970	1210	1890	2180	2350	2050	1550	1590
SS03	MAR01640.003	Sediment	4820	1210	2280	3100	3120	2890	2050	2140
SS04	MAR01640.004	Sediment	2280	723	1120	1840	2100	1850	1430	1490
SS05	MAR01640.005	Sediment	1120	373	646	980	1110	986	848	865
SS06	MAR01640.006	Sediment	2850	815	1460	1680	1690	1560	1160	1200
Certified Reference Material Quasimeme QPH107MS (% Recovery)			85	96	80	90	87	89	106	87
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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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**
SS01	MAR01640.001	Sediment	3720	5350	3840	4460	3550	4300	548	9880
SS02	MAR01640.002	Sediment	1900	6990	3430	5220	3980	2360	270	5160
SS03	MAR01640.003	Sediment	2460	7290	4220	5540	4490	3240	423	7250
SS04	MAR01640.004	Sediment	1710	5860	3060	4440	3820	2060	285	4200
SS05	MAR01640.005	Sediment	908	4590	2240	3540	2840	1110	145	2080
SS06	MAR01640.006	Sediment	1390	5100	2670	3760	3000	1860	222	4160
Certified Reference Material Quasimeme QPH107MS (% Recovery)			83	113	62	102	82	87	90	92
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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		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**
SS01	MAR01640.001	Sediment	2930	2800	4350	1070	6150	8920	1073
SS02	MAR01640.002	Sediment	3890	1410	4400	604	4980	4780	865
SS03	MAR01640.003	Sediment	3890	1890	4770	777	5930	6710	1111
SS04	MAR01640.004	Sediment	2170	1290	3080	535	3990	4050	688
SS05	MAR01640.005	Sediment	1020	669	1830	248	2250	2040	263
SS06	MAR01640.006	Sediment	2300	1030	3530	449	3820	3770	708
Certified Reference Material Quasimeme QPH107MS (% Recovery)			97	94	96	109	97	93	97
QC Blank			<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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**
SS01	MAR01640.001	Sediment	0.00390	0.00103	0.00367	0.00348	0.00059	0.00356	0.00055
SS02	MAR01640.002	Sediment	0.00384	0.00116	0.00348	0.00363	0.00077	0.00359	0.00063
SS03	MAR01640.003	Sediment	0.00310	0.00083	0.00285	0.00275	0.00070	0.00313	0.00038
SS04	MAR01640.004	Sediment	0.00276	0.00084	0.00245	0.00244	0.00047	0.00265	0.00035
SS05	MAR01640.005	Sediment	0.00170	0.00052	0.00161	0.00161	0.00028	0.00184	0.00029
SS06	MAR01640.006	Sediment	0.00161	0.00050	0.00137	0.00138	0.00023	0.00148	0.00026
Certified Reference Material Quasimeme QOR151MS (% Recovery)			94	91	93	98	95	89	103
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 149**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**
SS01	MAR01640.001	Sediment	0.00305	0.00076	0.00412	0.00028	0.00056	0.00067	0.00113
SS02	MAR01640.002	Sediment	0.00313	0.00079	0.00392	0.00035	0.00065	0.00073	0.00134
SS03	MAR01640.003	Sediment	0.00256	0.00064	0.00317	0.00029	0.00043	0.00054	0.00115
SS04	MAR01640.004	Sediment	0.00225	0.00056	0.00257	0.00021	0.00031	0.00053	0.00104
SS05	MAR01640.005	Sediment	0.00142	0.00038	0.00216	0.00013	0.00023	0.00041	0.00076
SS06	MAR01640.006	Sediment	0.00126	0.00032	0.00139	0.00013	0.00022	0.00029	0.00050
Certified Reference Material Quasimeme QOR151MS (% Recovery)			103	104	85	83	118	80	113
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 180**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**
SS01	MAR01640.001	Sediment	0.00172	0.00051	0.00123	0.00038	0.00218	0.00181	0.00133
SS02	MAR01640.002	Sediment	0.00185	0.00055	0.00136	0.00052	0.00268	0.00218	0.00156
SS03	MAR01640.003	Sediment	0.00166	0.00051	0.00107	0.00036	0.00234	0.00184	0.00118
SS04	MAR01640.004	Sediment	0.00144	0.00043	0.00094	0.00038	0.00209	0.00170	0.00107
SS05	MAR01640.005	Sediment	0.00118	0.00025	0.00083	0.00032	0.00157	0.00127	0.00069
SS06	MAR01640.006	Sediment	0.00082	0.00020	0.00056	0.00017	0.00101	0.00087	0.00056
Certified Reference Material Quasimeme QOR151MS (% Recovery)			99	110	97	91	87	96	101
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 47**	**PCB 49**	**PCB 52**	**PCB 66**
SS01	MAR01640.001	Sediment	0.00055	0.00171	0.00265	0.00150
SS02	MAR01640.002	Sediment	0.00056	0.00180	0.00271	0.00164
SS03	MAR01640.003	Sediment	0.00140	0.00148	0.00220	0.00197
SS04	MAR01640.004	Sediment	0.00042	0.00136	0.00204	0.00137
SS05	MAR01640.005	Sediment	0.00027	0.00088	0.00121	0.00099
SS06	MAR01640.006	Sediment	0.00023	0.00068	0.00107	0.00073
Certified Reference Material Quasimeme QOR151MS (% Recovery)			105	103	96	108~
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008

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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

		Units	mg/Kg (Dry Weight)							
		Method No	ASC/SOP/302							
		Limit of Detection	0.0001							
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO*
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
SS01	MAR01640.001	Sediment	<0.0001	<0.0001	0.0002	0.0010	0.0031	0.0015	0.0025	0.0004
SS02	MAR01640.002	Sediment	<0.0001	<0.0001	0.0002	0.0007	0.0033	0.0014	0.0027	0.0008
SS03	MAR01640.003	Sediment	<0.0001	<0.0001	0.0002	0.0011	0.0033	0.0014	0.0022	0.0007
SS04	MAR01640.004	Sediment	<0.0001	<0.0001	0.0002	0.0001	0.0028	0.0015	0.0021	0.0037
SS05	MAR01640.005	Sediment	<0.0001	<0.0001	0.0003	0.0005	0.0022	0.0014	0.0016	0.0003
SS06	MAR01640.006	Sediment	<0.0001	<0.0001	0.0001	0.0003	0.0015	0.0008	0.0010	0.0008
Certified Reference Material Quasimeme QOR151MS (% Recovery)			93~	69~	84	98	75	94	90	99
QC Blank			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

~ 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

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 MAR01640
Issue Version 2
Customer Reference South Bank Quay - MMO Analysis

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR01640.001-006	Analysis was conducted by an approved subcontracted laboratory.
WSLM59*	MAR01640.001-006	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ICPMSS*	MAR01640.001-006	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/303/304	MAR01640.001-006	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with PPDDT falling outside acceptable limits. DDT is a known problem compound that can breakdown into DDD and DDE .These circumstances should be taken into consideration when utilising the data and in line with our QMS policy we have removed accreditation, where applicable.
ASC/SOP/303/304	MAR01640.001-006	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	MAR01640.001-006	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 acccreditation.

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

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	MAR01640
Issue Version	2
Customer Reference	South Bank Quay - MMO Analysis

Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 1600°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS 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
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

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		

APPENDIX C – POST REMEDIAL DREDGE SAMPLE RESULTS

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 MAR01802

Issue Version: 1

Customer: John Graham Construction Ltd, South Bank Quay, Dockside Road, Middlesbrough, TS6 6US

Customer Reference: South Bank Quay - MMO Marine Sediment Analysis

Date Sampled: 28-Mar-23

Date Samples Received: 29-Mar-23

Test Report Date: 14-Apr-23

Condition of samples: Cold Satisfactory

Opinions and Interpretations expressed herein are outside the scope of our UKAS accreditaion
The results reported relate only to the sample tested
The results apply to the sample as received

JMColbourne

Authorised by: Jane Colbourne

Position: Customer Service Specialist

UKAS TESTING
1252

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment Analysis

		Units	% M/M	% (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	WSLM59*	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01	*SUB_01
		Accreditation	UKAS/MMO	MMO	MMO	MMO	MMO	MMO	MMO
			Total Organic Carbon	45mm	31.5mm	22.4mm	16mm	11.2mm	8mm
Client Reference:	SOCOTEC Ref:	Matrix	-	-5.5	-5.0	-4.5	-4.0	-3.5	-3.0
SS03	MAR01802.001	Sediment	5.12	0.00	0.00	0.00	0.00	0.00	0.00
SS04	MAR01802.002	Sediment	4.87	0.00	0.00	0.00	0.00	0.00	0.00
SS05	MAR01802.003	Sediment	5.49	0.00	0.00	0.00	0.00	0.00	0.00
SS06	MAR01802.004	Sediment	7.27	0.00	0.00	0.00	0.00	0.00	0.00

* See Report Notes

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment An

		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
			5.6mm	4mm	2.8mm	2mm	1.4mm	1mm	707µm
Client Reference:	SOCOTEC Ref:	Matrix	-2.5	-2.0	-1.5	-1.0	-0.5	0.0	0.5
SS03	MAR01802.001	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS04	MAR01802.002	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS05	MAR01802.003	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SS06	MAR01802.004	Sediment	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* See Report Notes

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment An

		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
			500µm	353.6µm	250µm	176.8µm	125µm	88.39µm	63µm
Client Reference:	SOCOTEC Ref:	Matrix	1.0	1.5	2.0	2.5	3.0	3.5	4.0
SS03	MAR01802.001	Sediment	0.00	0.00	0.61	5.07	4.07	0.26	1.49
SS04	MAR01802.002	Sediment	0.00	0.00	0.02	1.13	1.46	0.15	2.76
SS05	MAR01802.003	Sediment	0.00	0.00	0.00	0.32	2.99	0.61	1.66
SS06	MAR01802.004	Sediment	0.00	0.00	0.00	0.08	0.39	0.09	2.23

* See Report Notes

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment An

		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
			44.2µm	31.3µm	22.1µm	15.6µm	11µm	7.8µm	5.5µm
Client Reference:	SOCOTEC Ref:	Matrix	4.5	5.0	5.5	6.0	6.5	7.0	7.5
SS03	MAR01802.001	Sediment	5.41	8.06	8.97	9.17	10.48	11.30	10.55
SS04	MAR01802.002	Sediment	6.40	8.14	9.20	9.63	9.82	10.51	10.91
SS05	MAR01802.003	Sediment	6.16	9.17	9.57	9.25	9.51	10.58	10.60
SS06	MAR01802.004	Sediment	5.77	8.03	8.78	9.28	9.45	10.51	11.43

* See Report Notes

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment An

		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
			3.9µm	2.75µm	1.95µm	1.38µm	0.98µm	0.69µm	0.49µm
Client Reference:	SOCOTEC Ref:	Matrix	8.0	8.5	9.0	9.5	10.0	10.5	11.0
SS03	MAR01802.001	Sediment	8.00	5.02	2.73	1.67	1.36	1.28	1.20
SS04	MAR01802.002	Sediment	9.13	5.96	3.20	1.96	1.68	1.68	1.65
SS05	MAR01802.003	Sediment	8.66	5.78	3.39	2.24	1.85	1.70	1.59
SS06	MAR01802.004	Sediment	9.99	6.83	3.85	2.38	1.95	1.89	1.87

* See Report Notes

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment An

		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
			0.34µm	0.24µm	0.17µm	0.12µm	0.09µm	0.06µm	0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	11.5	12.0	12.5	13.0	13.5	14.0	14.5
SS03	MAR01802.001	Sediment	1.06	0.85	0.61	0.42	0.25	0.10	0.01
SS04	MAR01802.002	Sediment	1.49	1.22	0.86	0.58	0.33	0.12	0.01
SS05	MAR01802.003	Sediment	1.43	1.16	0.81	0.54	0.30	0.11	0.01
SS06	MAR01802.004	Sediment	1.72	1.41	0.97	0.63	0.35	0.12	0.01

* See Report Notes

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment An

		Units	% (at 0.5phi intervals)
		Method No	*SUB_01
		Accreditation	MMO
			<0.04µm
Client Reference:	SOCOTEC Ref:	Matrix	>14.5
SS03	MAR01802.001	Sediment	0.00
SS04	MAR01802.002	Sediment	0.00
SS05	MAR01802.003	Sediment	0.00
SS06	MAR01802.004	Sediment	0.00

* See Report Notes

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 MAR01802
Issue Version 1
Customer Reference South Bank Quay - MMO Marine Sediment Analysis

		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)**
SS03	MAR01802.001	Sediment	25.6	0.53	75.9	90.0	0.83	32.9	171	309
SS04	MAR01802.002	Sediment	30.8	0.73	71.5	73.7	0.68	38.0	195	335
SS05	MAR01802.003	Sediment	26.9	0.57	69.1	74.1	0.65	36.4	177	287
SS06	MAR01802.004	Sediment	26.5	0.38	64.9	67.3	0.59	36.3	152	237
Certified Reference Material SETOC 768 (% Recovery)			100	77	98	100	93	99	92	103
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.01	<0.5	<0.5	<2

* See Report Notes

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment Analysis

		Units	mg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	0.001	0.001
		Accreditation	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
SS03	MAR01802.001	Sediment	0.027	0.041
SS04	MAR01802.002	Sediment	<0.005	<0.005
SS05	MAR01802.003	Sediment	0.016	0.028
SS06	MAR01802.004	Sediment	<0.005	<0.005
Certified Reference Material BCR-646 (% Recovery)			81	88
QC Blank			<0.001	<0.001

* See Report Notes

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 MAR01802
Issue Version 1
Customer Reference South Bank Quay - MMO Marine Sediment Analysis

		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	MMO*
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ACENAPTH**	**ACENAPHY**	**ANTHRACN**	**BAA**	**BAP**	**BBF**	**BENZGHIP**	**BEP**
SS03	MAR01802.001	Sediment	1740	465	664	1100	1380	1340	1070	1000
SS04	MAR01802.002	Sediment	486	230	372	744	852	862	739	667
SS05	MAR01802.003	Sediment	765	254	355	760	875	847	701	651
SS06	MAR01802.004	Sediment	433	600	497	794	839	846	709	639
Certified Reference Material Nist 1941b (% Recovery)			85	93	66	68	63	86	81	83
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

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment An

		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**
SS03	MAR01802.001	Sediment	1080	4450	2190	3670	3300	1200	210	1830
SS04	MAR01802.002	Sediment	687	3320	1610	2730	2410	829	148	1370
SS05	MAR01802.003	Sediment	711	2910	1490	2440	2140	792	140	1410
SS06	MAR01802.004	Sediment	633	3340	1830	2610	2160	807	142	1340
Certified Reference Material Nist 1941b (% Recovery)			84	71	83	111	108	88	101	80
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

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 MAR01802
Issue Version 1
Customer Reference South Bank Quay - MMO Marine Sediment An

		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**
SS03	MAR01802.001	Sediment	1260	995	1980	341	2110	2340	43.5
SS04	MAR01802.002	Sediment	555	660	1360	263	1500	1400	26.5
SS05	MAR01802.003	Sediment	610	661	1150	211	1410	1550	40.2
SS06	MAR01802.004	Sediment	650	631	1090	198	1580	1450	39.9
Certified Reference Material Nist 1941b (% Recovery)			50	79	60	55	77	70	88~
QC Blank			<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

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 MAR01802
Issue Version 1
Customer Reference South Bank Quay - MMO Marine Sediment Analysis

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 101**	**PCB 105**	**PCB 110**	**PCB 118**	**PCB 128**	**PCB 138**	**PCB 141**
SS03	MAR01802.001	Sediment	0.00154	0.00057	0.00140	0.00175	0.00018	0.00147	0.00013
SS04	MAR01802.002	Sediment	0.00105	0.00036	0.00101	0.00122	0.00013	0.00081	0.00018
SS05	MAR01802.003	Sediment	0.00105	0.00030	0.00111	0.00118	0.00025	0.00111	0.00017
SS06	MAR01802.004	Sediment	0.00104	0.00047	0.00107	0.00134	0.00026	0.00105	0.00029
Certified Reference Material Nist 1941b (% Recovery)			96	83	101	95	89	90	104~
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

*See report notes

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 MAR01802
Issue Version 1
Customer Reference South Bank Quay - MMO Marine Sediment An

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	MMO*	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 149**	**PCB 151**	**PCB 153**	**PCB 156**	**PCB 158**	**PCB 170**	**PCB 18**
SS03	MAR01802.001	Sediment	0.00101	0.00047	0.00159	0.00010	0.00015	0.00030	0.00045
SS04	MAR01802.002	Sediment	0.00070	0.00032	0.00116	0.00010	0.00013	0.00023	0.00029
SS05	MAR01802.003	Sediment	0.00068	0.00027	0.00119	0.00011	0.00013	0.00024	0.00029
SS06	MAR01802.004	Sediment	0.00077	0.00043	0.00113	0.00027	0.00029	0.00041	0.00034
Certified Reference Material Nist 1941b (% Recovery)			75	100~	72	93	86	80	70
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

*See report notes

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 MAR01802
Issue Version 1
Customer Reference South Bank Quay - MMO Marine Sediment An

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	MMO*	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 180**	**PCB 183**	**PCB 187**	**PCB 194**	**PCB 28**	**PCB 31**	**PCB 44**
SS03	MAR01802.001	Sediment	0.00119	0.00019	0.00067	0.00027	0.00093	0.00103	0.00054
SS04	MAR01802.002	Sediment	0.00089	0.00016	0.00046	0.00026	0.00066	0.00080	0.00037
SS05	MAR01802.003	Sediment	0.00085	0.00014	0.00052	0.00025	0.00069	0.00082	0.00033
SS06	MAR01802.004	Sediment	0.00098	0.00023	0.00068	0.00036	0.00068	0.00088	0.00055
Certified Reference Material Nist 1941b (% Recovery)			107	63	83	96	71	106	77
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008

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

*See report notes

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment An

		Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.00008	0.00008	0.00008	0.00008
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB 47**	**PCB 49**	**PCB 52**	**PCB 66**
SS03	MAR01802.001	Sediment	0.00028	0.00081	0.00103	0.00099
SS04	MAR01802.002	Sediment	0.00019	0.00053	0.00071	0.00070
SS05	MAR01802.003	Sediment	0.00021	0.00055	0.00071	0.00075
SS06	MAR01802.004	Sediment	0.00032	0.00061	0.00076	0.00084
Certified Reference Material Nist 1941b (% Recovery)			106~	103	94	95
QC Blank			<0.00008	<0.00008	<0.00008	<0.00008

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

*See report notes

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 MAR01802
Issue Version 1
Customer Reference South Bank Quay - MMO Marine Sediment Analysis

		Units	mg/Kg (Dry Weight)							
		Method No	ASC/SOP/302							
		Limit of Detection	0.0001							
		Accreditation	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	UKAS/MMO	MMO*
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**PPTDE**	**PPDDE**	**PPDDT**
SS03	MAR01802.001	Sediment	<0.0001	<0.0001	0.0002	0.0006	0.0016	0.0013	0.0014	0.0032
SS04	MAR01802.002	Sediment	<0.0001	<0.0001	0.0001	0.0003	0.0015	0.0010	0.0009	0.0004
SS05	MAR01802.003	Sediment	<0.0001	<0.0001	0.0001	0.0005	0.0015	0.0012	0.0010	0.0004
SS06	MAR01802.004	Sediment	<0.0001	0.0002	0.0001	0.0005	0.0021	0.0012	0.0011	0.0027
Certified Reference Material Nist 1941b (% Recovery)			95~	71~	72~	109~	114	71	96	66
QC Blank			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

~ 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

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 MAR01802
Issue Version 1
Customer Reference South Bank Quay - MMO Marine Sediment Analysis

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
*SUB_01	MAR01802.001-004	Analysis was conducted by an approved subcontracted laboratory.
WSLM59*	MAR01802.001-004	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ICPMSS*	MAR01802.001-004	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/301	MAR01802.002, .004	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted, but in doing so, the detection limit for this test has been elevated.
ASC/SOP/302	MAR01802.001-004	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. The remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected.However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (PCB153, PCB183, PPDDT) . These circumstances should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR01802.001-004	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. The remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected.However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (BEP) . These circumstances should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR01802.001-004	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	MAR01802.001-004	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 acccreditation.

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

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	MAR01802
Issue Version	1
Customer Reference	South Bank Quay - MMO Marine Sediment Analysis

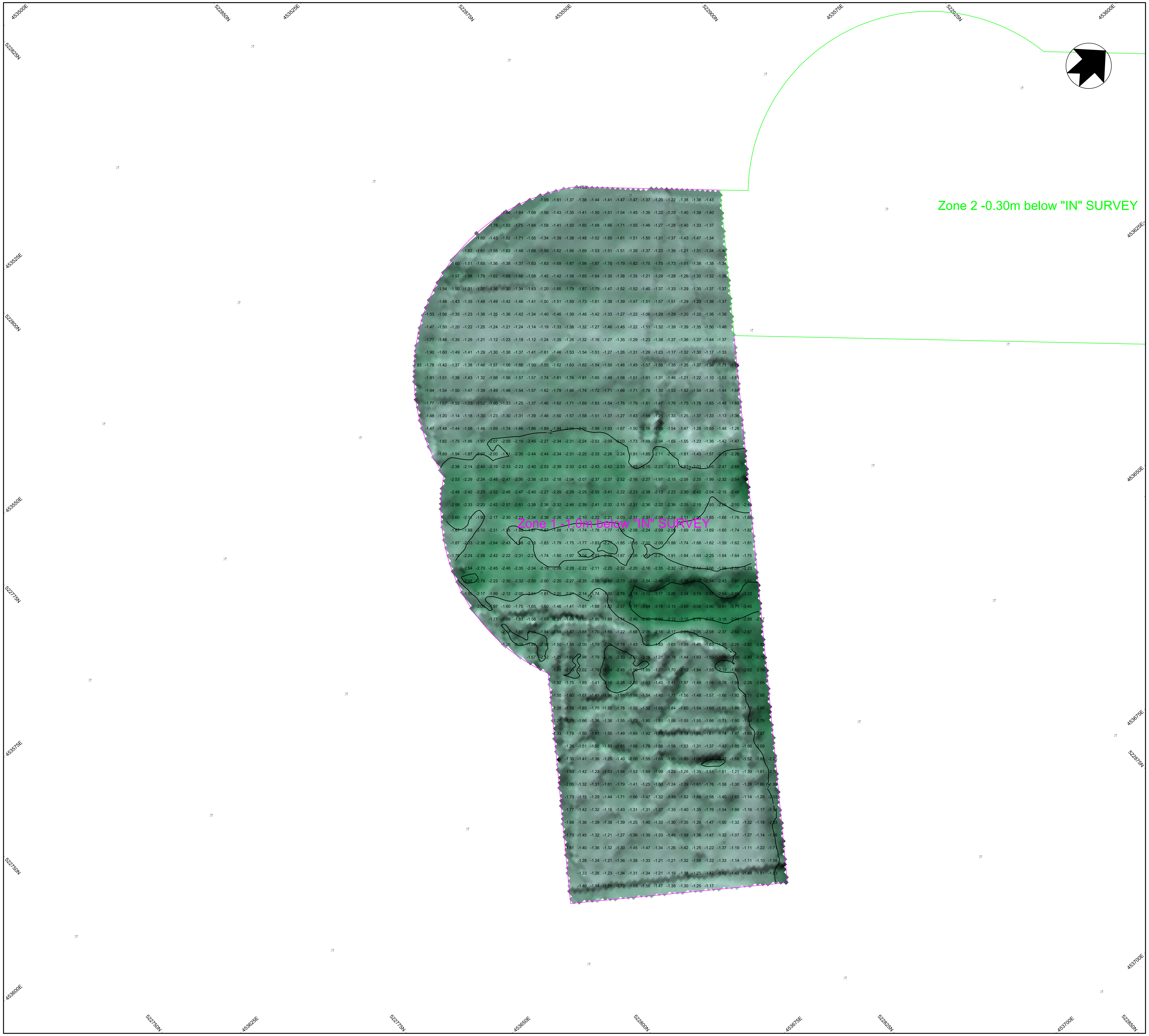
Method	Sample and Fraction Size	Method Summary
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried	Carbonate removal and sulphurous acid/combustion at 1600°C/NDIR.
Metals	Air dried	Aqua-regia extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS 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
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

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		

APPENDIX D – POST REMEDIAL DREDGE BATHYMETRIC SURVEY DRAWINGS

PLANVIEW: SCALE 1 : 250



NOTES

GEODETIC PARAMETERS:

Source Ellipsoid:	ETRS-89		
	Semi major axis (a): 6 378 137.000	Inverse Flattening (1/f) : 298.2572221000	
Target Ellipsoid:	ETRS-89		
	Semi major axis (a): 6 378 137.000	Inverse Flattening (1/f) : 298.2572221000	
Datum Shift:	name --> Default		
	Dx: 0m	Rx (seconds): 0	Sf(ppm): 0
	Dy: 0m	Ry (seconds): 0	
	Dz: 0m	Rz (seconds): 0	
Projection:	UK National Grid (OSTN15)		
	Latitude of Origin: 49°00'00.000"N	False Easting: 400000.000	
	Longitude of Origin: 002°00'00.000"W	False Northing: -100000.000	
	Scale factor: 0.9996012717		
Geoid Model:	OSGM15-GB		
Vertical datum :	All surveys are referenced to name LAT (2.85m below OD Newly)		

EQUIPMENT:

Survey Vessel: Gouwestroom

SOFTWARE:

Acquisition Software: Teledyne PDS
Processing Software: Teledyne PDS/VOSS.net

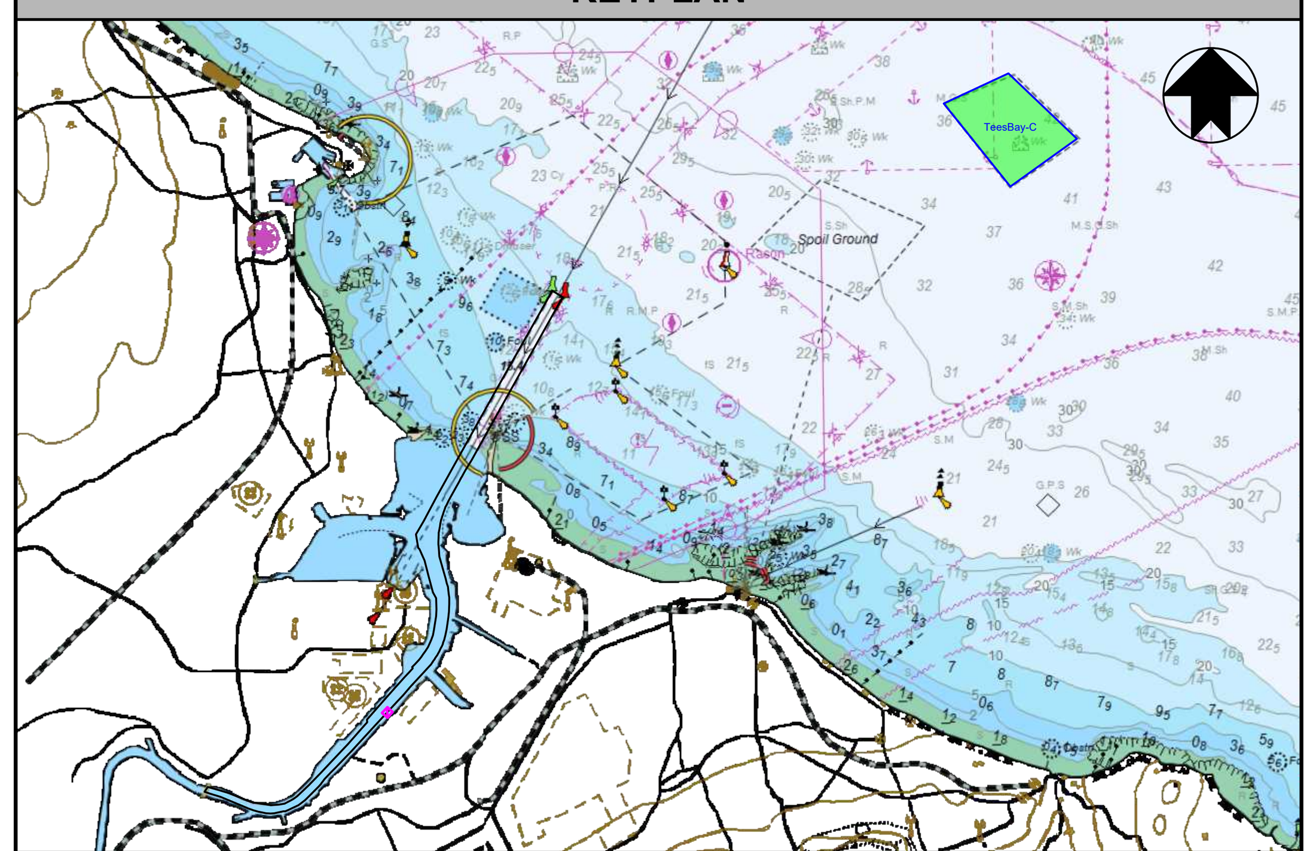
SURVEY PERIOD: **15.02.2023**

LEGEND

9.3	Centerline with KP annotation
———	Contours
99900 E, 497000 N	Coordinates in metres
-12.5	Depth in Metres Cell size: 1m Plotted depths: Average
(magenta box)	Zone 1
(green box)	Zone 2

3, 2, 1, 0, -1, -2, -3

KEYPLAN



SCALE BAR

SCALE 1:250

0.0 13.8 27.5

CLIENT

South Tees Development Corporation

CONTRACTOR

GRAHAM

PROJECT NAME

South Bank Quay - Phase 1

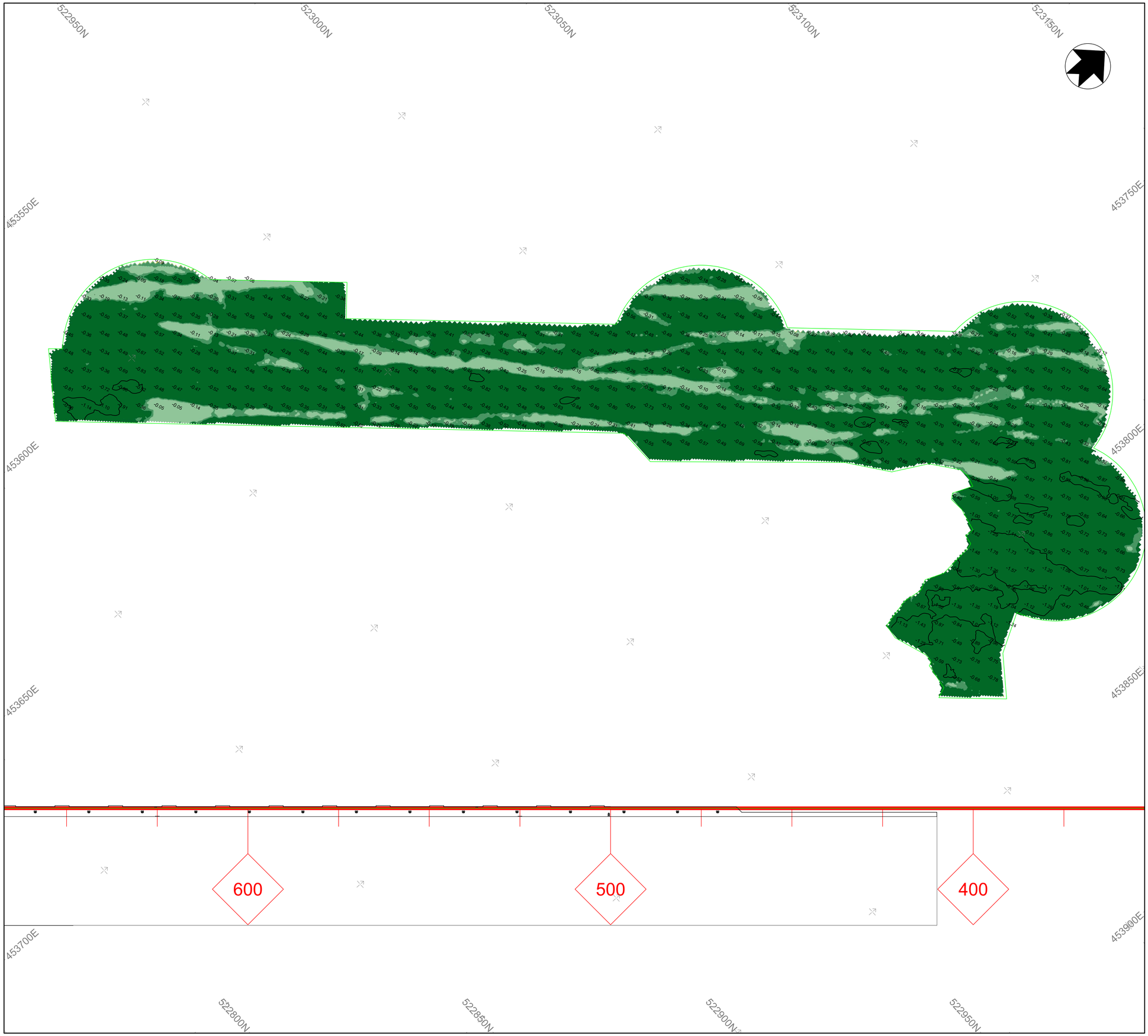
Rev.	Date	Description	Prepared	Checked	Approved	Client

DRAWING TITLE

Remedial Dredging Zone 1 - In Survey vs Out Survey Comparison

Van Oord Project/Dwg. No.	230215-POS-GRM-BAT-Z1Z2-056	1 : 250 Scale	A1 Size
Client Dwg. No.		Z1-DIF Sheet	0 Cur. Rev.

PLANVIEW: SCALE 1 : 500



NOTES

GEODETIC PARAMETERS:

Source Ellipsoid:	ETRS-89 Semi major axis (a): 6 378 137.000		Inverse Flattening (1/f) : 298.2572221000
Target Ellipsoid:	ETRS-89 Semi major axis (a): 6 378 137.000		Inverse Flattening (1/f) : 298.2572221000
Datum Shift:	name --> Default Dx: 0m Dy: 0m Dz: 0m	Rx (seconds): 0 Ry (seconds): 0 Rz (seconds): 0	Sf(ppm): 0
Projection:	UK National Grid (OSTN15) Latitude of Origin: 49°00'00.000"N Longitude of Origin: 002°00'00.000"W Scale factor: 0.9996012717	False Easting: 400000.000 False Northing: -100000.000	
Geoid Model:	OSGM15-GB		
Vertical datum :	All surveys are referenced to name LAT (2.85m below OD Newly)		

EQUIPMENT:

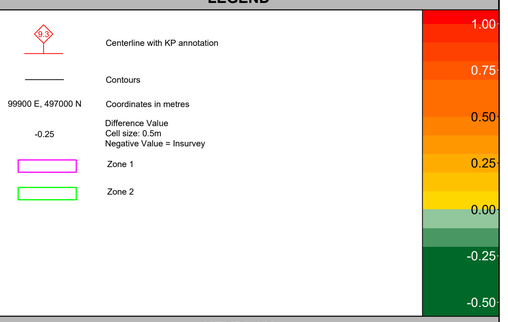
Survey Vessel:	Gouwestroom		
Positioning System 1:	Applanix PosMV : Graham	Tidegauge:	Seabed Orinoco Solo
Attitude Sensor:	Applanix PosMV	Sound Velocity Sensor:	ADL-Micro X
Heading Device:	Applanix PosMV	Sound Velocity Profiler:	Valeport Swift
Multibeam Echosounder:	Norbit iWMBS		
Survey Drone	-		

SOFTWARE:

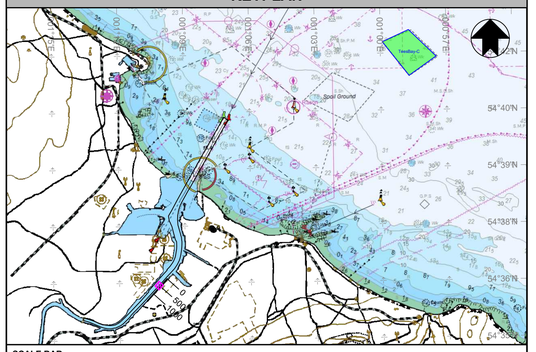
Acquisition Software:	Teledyne PDS
Processing Software:	Teledyne PDS/VOSS.net

SURVEY PERIOD: 28.03.2023 10:30

LEGEND



KEYPLAN



SCALE BAR

SCALE 1:500

0.0 27.5 55.0

CLIENT

South Tees Development Corporation

CONTRACTOR

GRAHAM

PROJECT NAME

South Bank Quay - Phase 1

Rev.	Date	Description	Prepared	Checked	Approved	Client

DRAWING TITLE

Zone 2 Remedial Dredge
Difference Chart - Insurvey vs Current

Van Oord Project/Dwg. No.	230327-PRO-GRM-BAT-Z2-092	1 : 500	A1
		Scale	Size
Client Dwg. No.		Zone2 Difference2 0	
		Sheet	Cur. Rev.