Term Contract for Provision of Sampling and Analyzing of Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2023-2026)

Provision of Effluent Quality Monitoring (EQM) Services

Report for the Month of Apr 2024

Contract No.	:	DE/2022/15
Applicant	:	SEWAGE TREATMENT DIVISION 2 ELECTRICAL AND MECHANICAL BRANCH DRAINAGE SERVICES DEPARTMENT
Address	:	STONECUTTERS ISLAND SEWAGE TREATMENT WORKS, NGONG SHUNG ROAD, NGONG SHUEN CHAU, KOWLOON, HONG KONG
Application Number	:	L1005255(7)
Report Number	:	A10010054(0)
Report Issued Date	:	14 May 2024

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lee Hoi Yung, Benson
Deputy Manager
Environmental Division

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
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TABLE OF CONTENT

APPENDIX

EXECUTIVE SUMMARY

1. This is the water quality monitoring report prepared by CMA Testing and Certification Laboratory (CMA Testing) for Contract No. DE/2022/15 “Term Contract for Provision of Sampling and Analyzing of Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2023-2026)’’. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Effluent Quality Monitoring (EQM) of Project in Apr 2024.

2. In accordance with the Final EM&A Manual, environmental monitoring has been conducted in the reporting month with a Quarterly Basis for various parameters as summarized in **Table 1**.

Table 1. Summary Table for Environmental Monitoring Works Conducted in the Reporting Month

Monitoring Parameters	Monitoring Period	Laboratory Testing Parameters
Effluent Quality	19 Apr 2024 (10 a.m.) To 20 Apr 2024 (10 a.m.)	Chlorination by-products (CBPs) and Contaminants of Concern (COCs)

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1 INTRODUCTION

1.1 CMA Testing was commissioned by Drainage Services Department (DSD) to undertake the operation phase environmental monitoring for Advance Disinfection Facilities (ADF) at Stonecutters Island Sewage Treatment Works (SCISTW) (thereafter called the "the Services").

1.2 The operation phase monitoring, which include effluent quality monitoring, marine water quality monitoring and emergency discharge monitoring, is to monitor the effluent and marine water quality impact of ADF during its operation phase.

1.3 This is the water quality monitoring report prepared by CMA Testing that documented the results and findings of Operation Phase Water Quality Monitoring works conducted for Effluent Quality Monitoring (EQM) of Project on monitoring period.

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2 EFFLUENT QUALITY MONITORING

2.1 Monitoring Requirements

2.1.1 Effluent samples were collected at Disinfection Facilities in a full 24-hour period. 24-hour flow weighted composite effluent samples for subsequent chemical analysis and testing were prepared by CMA Testing according to the following procedures:

- Collect effluent sub-sample by direct grab sampling method at bi-hourly interval over a 24-hour sampling period;
- Obtain flow record of Stonecutters Island Sewage Treatment Works (SCISTW) for the 24-hour sampling period;
- Calculate the volume of each sub-sample for preparing the bi-hourly of 24-hour flow-weighted composite samples; and
- Transfer the appropriate volume of sub-samples to a clean container and mix thoroughly.

2.1.2 Bi-hourly of 24-hour composite sample for Chlorination By-Products (CBPs) and Contaminants of Concern (COCs) tests shall be performed quarterly throughout the contract period.

2.2 Monitoring Location

The sampling locations for effluent from SCISTW were collected at the Disinfection Facilities.

2.3 Monitoring Schedule

The effluent quality monitoring was conducted in the monitoring period shown in **Table 1**. Collection of marine water samples were within the time period of effluent quality monitoring was to be collected.

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2.4 Laboratory Measurement / Analysis

In the reporting month, the bi-hourly of 24-hour flow-weighted composite effluent sample was collected for subsequent laboratory analysis and testing on CBPs and COCs as shown in **Table 2.1.**

Table 2.1 Analytical Methods for Laboratory Analysis for Effluent Samples

Parameters		Analytical Method	Limit of Reporting (µg/L)
Potential CBPs			
Bromoform	Tri-halomethanes (THMs)	USEPA 8260D & In house method TG-ENV-WW-78 & 85 (by Headspace GC/MSD)	0.1
Bromodichloromethane			0.1
Chloroform			0.1
Dibromochloromethane			5
Bromoacetic acid	Haloacetic Acids (HAAs)	In house method TG-ENV-WW-79 (by GC-ECD)	2
Chloroacetic acid			2
Dibromoacetic acid			2
Dichloroacetic acid			2
Trichloroacetic acid			2
Contaminants of Concern (COCs)			
Methylene chloride	Halogenated Aliphatics	ISO 17943:2016 & In house method TG-ENV-WW-78 & 85 (by Headspace GC/MSD)	20
Carbon tetrachloride			0.5
1,1-dichloroethane			0.5
1,2-dichloroethane			0.5
1,1-dichloroethylene			0.5
1,2-dichloropropane			0.5
Tetrachloroethylene			0.5
1,1,1-trichloroethane			0.5
1,1,2-trichloroethane			0.5
Trichloroethylene			0.5

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Parameters		Analytical Method	Limit of Reporting (µg/L)
2-chlorophenol	Phenols & Haloethers	In house method TG-ENV-WW-80, 84 & 86 (by GC-MSD)	0.5
2,4-dichlorophenol			0.5
p-chloro-m-cresol			0.5
Pentachlorophenol			0.5
2,4,6-trichlorophenol			0.5
Bis(2-chloroethoxy) methane			0.5
Chlorobenzene	Chlorinated Hydrocarbons & Organochlorine Pesticides	In house method TG-ENV-WW-78 (by Headspace GC-MSD) & In house method TG-ENV-WW-86 (by GC-MSD)	0.5
1,4-dichlorobenzene			0.5
Hexachlorobenzene			0.01
Hexachlorocyclopentadiene			2.5
Hexachloroethane			0.5
1,2,4-trichlorobenzene			0.5
Alpha-BHC			0.01
Beta-BHC			0.01
Gamma-BHC			0.01

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3 RESULTS AND OBSERVATIONS

3.1 Effluent Quality

The results of effluent quality monitoring conducted during the monitoring period shown in **Table 1.**, whereas the laboratory testing and QC report are shown in **Appendix I.**

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Appendix I

Report for Laboratory Test(s)

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TEST REPORT

Report No. : A10010055(1) Date: 13 May 2024

Application No. : L1005255(7)

Applicant : SEWAGE TREATMENT DIVISION 2
ELECTRICAL AND MECHANICAL BRANCH
DRAINAGE SERVICES DEPARTMENT

Address : STONECUTTERS ISLAND SEWAGE TREATMENT WORKS,
NGONG SHUNG ROAD, NGONG SHUEN CHAU,
KOWLOON, HONG KONG

Contract No.	:	DE/2022/15
Project Name	:	Term Contract for Provision of Sampling and Analyzing of Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department
Sample Description	:	Bi-hourly of 24-hour flow-weighted composite effluent sample was collected by the staff of CMA Industrial Development Foundation Limited. Sample was refrigerated during delivery.
Sample ID	:	Refer to Sample ID on page 3 - 4.
Sampling Location	:	SCISTW- Disinfection Facilities
Sampling Date	:	19 Apr 2024 to 20 Apr 2024.
Date Received	:	20 Apr 2024.
Test Period	:	22 Apr 2024 to 29 Apr 2024.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lee Hoi Yung, Benson
Deputy Manager
Environmental Division

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TEST REPORT

Report No. : A10010055(1) Date: 13 May 2024

Application No. : L1005255(7)

Test Requested :

1. Bromoform
2. Bromodichloromethane
3. Chloroform
4. Dibromochloromethane
5. Bromoacetic acid
6. Chloroacetic acid
7. Dibromoacetic acid
8. Dichloroacetic acid
9. Trichloroacetic acid
10. Methylene chloride
11. Carbon tetrachloride
12. 1,1-dichloroethane
13. 1,2-dichloroethane
14. 1,1-dichloroethylene
15. 1,2-dichloropropane
16. Tetrachloroethlyene
17. 1,1,1-trichloroethane
18. 1,1,2-trichloroethane
19. Trichloroethylene
20. 2-chlorophenol
21. 2,4-dichlorophenol
22. p-chloro-m-cresol
23. Pentachlorophenol
24. 2,4,6-trichlorophenol
25. Bis(2-chloroethoxy) methane
26. Chlorobenzene
27. 1,4-dichlorobenzene
28. Hexachlorobenzene
29. Hexachlorocyclopentadiene
30. Hexachloroethane
31. 1,2,4-trichlorobenzene
32. Alpha-BHC
33. Beta-BHC
34. Gamma-BHC

Test Method :

1-4.	USEPA 8260D & In house method TG-ENV-WW-78 & 85 (by Headspace GC/MSD)
5-9.	TG-ENV-WW-79 (by GC-ECD)
10-19.	ISO 17943:2016 & In house method TG-ENV-WW-78 & 85 (by Headspace GC/MSD)
20-25.	In house method TG-ENV-WW-80, 84 & 86 (by GC-MSD)
26-34.	In house method TG-ENV-WW-78 (by Headspace GC-MSD) & In house method TG-ENV-WW-86 (by GC-MSD)

Test Result : Refer to results on page 3 - 4.

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TEST REPORT

Report No. : A10010055(1) Date: 13 May 2024

Application No. : L1005255(7)

Effluent Water Quality

Application No:.	L1005255	
Sampling Date	19 Apr 2024 to 20 Apr 2024	
Monitoring Location	Chamber 15A	

Parameter	Results (µg/L)	Discharge limit (measured in HATs effluent) (µg/L)
Bromoform	0.2	16,000
Bromodichloromethane	<0.1	1,000
Chloroform	1.8	560
Dibromochloromethane	<5	1,500
Bromoacetic acid	<2	75,000
Chloroacetic acid	<2	1,500,000
Dibromoacetic acid	<2	32,000
Dichloroacetic acid	<2	10,000
Trichloroacetic acid	<2	4,300,000

*TRC is 0.1mg/L by reference to Chamber 15A Sampling Tanks Daily Monitoring result on 19 Apr 2024.

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TEST REPORT

Report No. : A10010055(1) Date: 13 May 2024

Application No. : L1005255(7)

Application No:.	L1005255	
Sampling Date	19 Apr 2024 to 20 Apr 2024	
Monitoring Location	Chamber 15A	

Parameter	Results (µg/L)
Methylene chloride	<20
Carbon tetrachloride	<0.5
1,1-dichloroethane	<0.5
1,2-dichloroethane	<0.5
1,1- dichloroethylene	<0.5
1,2-dichloropropane	<0.5
Tetrachloroethylene	<0.5
1,1,1-trichloroethane	<0.5
1,1,2-trichloroethane	<0.5
Trichloroethylene	<0.5
2-chlorophenol	<0.5
2,4-dichlorophenol	<0.5
p-chloro-m-cresol	<0.5
Pentachlorophenol	<0.5
2,4,6-trichlorophenol	<0.5
Bis(2-chloroethoxy) methane	<0.5
Chlorobenzene	<0.5
1,4-dichlorobenzene	<0.5
Hexachlorobenzene	<0.01
Hexachlorocyclopentadiene	<2.5
Hexachloroethane	<0.5
1,2,4-trichlorobenzene	<0.5
Alpha-BHC	<0.01
Beta-BHC	<0.01
Gamma-BHC	<0.01

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TEST REPORT

Report No. : A10010055(1) Date: 13 May 2024

Application No. : L1005255(7)

QC Report

Parameter	Method Blank	Acceptance Criteria	QC Recovery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Bromoform	<0.02	<0.02	89	80-120	84	70-130	15	≤20
Bromodichloromethane	<0.02	<0.02	92	80-120	89	70-130	10	≤20
Chloroform	<0.02	<0.02	83	80-120	79	70-130	13	≤20
Dibromochloromethane	<1	<1	85	80-120	82	70-130	9	≤20
Bromoacetic acid	<0.4	<0.4	91	80-120	87	70-130	16	≤20
Chloroacetic acid	<0.4	<0.4	89	80-120	80	70-130	12	≤20
Dibromoacetic acid	<0.4	<0.4	96	80-120	92	70-130	10	≤20
Dichloroacetic acid	<0.4	<0.4	103	80-120	97	70-130	14	≤20
Trichloroacetic acid	<0.4	<0.4	105	80-120	99	70-130	11	≤20

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TEST REPORT

Report No. : A10010055(1) Date: 13 May 2024

Application No. : L1005255(7)

QC Report

Parameter	Method Blank	Acceptance Criteria	QC Recovery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	94	80-120	96	70-130	17	≤20
Carbon tetrachloride	<0.1	<0.1	87	80-120	80	70-130	16	≤20
1,1-dichloroethane	<0.1	<0.1	103	80-120	93	70-130	12	≤20
1,2-dichloroethane	<0.1	<0.1	92	80-120	85	70-130	14	≤20
1,1-dichloroethylene	<0.1	<0.1	90	80-120	83	70-130	14	≤20
1,2-dichloropropane	<0.1	<0.1	96	80-120	102	70-130	11	≤20
Tetrachloroethylene	<0.1	<0.1	84	80-120	90	70-130	15	≤20
1,1,1-trichloroethane	<0.1	<0.1	89	80-120	81	70-130	10	≤20
1,1,2-trichloroethane	<0.1	<0.1	95	80-120	85	70-130	17	≤20
Trichloroethylene	<0.1	<0.1	87	80-120	92	70-130	16	≤20
2-chlorophenol	<0.1	<0.1	106	80-120	111	70-130	10	≤20
2,4-dichlorophenol	<0.1	<0.1	101	80-120	108	70-130	8	≤20
p-chloro-m-cresol	<0.1	<0.1	110	80-120	116	70-130	12	≤20
Pentachlorophenol	<0.1	<0.1	113	80-120	120	70-130	15	≤20
2,4,6-trichlorophenol	<0.1	<0.1	102	80-120	105	70-130	14	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	107	80-120	100	70-130	13	≤20
Chlorobenzene	<0.1	<0.1	100	80-120	92	70-130	10	≤20
1,4-dichlorobenzene	<0.1	<0.1	99	80-120	90	70-130	11	≤20
Hexachlorobenzene	<0.005	<0.005	93	80-120	84	70-130	15	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	109	80-120	100	70-130	9	≤20
Hexachloroethane	<0.1	<0.1	112	80-120	105	70-130	11	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	103	80-120	95	70-130	8	≤20
Alpha-BHC	<0.005	<0.005	91	80-120	84	70-130	13	≤20
Beta-BHC	<0.005	<0.005	94	80-120	86	70-130	10	≤20
Gamma-BHC	<0.005	<0.005	99	80-120	90	70-130	15	≤20

***** End of Report *****

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