



**CMA Testing  
and Certification  
Laboratories**

廠商會檢定中心

**Term Contract for Provision of Sampling and Analyzing of  
Wastewater and Sludge for Various Sewage Treatment Facilities in  
Urban Area, Lantau and Outlying Islands to the  
Drainage Services Department**

Contract No. : DE/2016/12

Applicant : DRAINAGE SERVICES DEPARTMENT  
SEWAGE SERVICES BRANCH  
HARBOUR AREA TREATMENT SCHEME DIVISION

Address : 5/F., WESTERN MAGISTRACY,  
2A, POK FU LAM ROAD, HONG KONG

Application Number : LV023396(1)

Report Number : AV0051579(5)

Report Issued Date : 05 Sep 2017

*For and on behalf of*

CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

Lau Yan Kin  
Senior Manager  
Environmental Division

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# CMA Testing and Certification Laboratories

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Report No.: AV0051579(5)

Term Contract for Provision of Sampling and Analyzing of Wastewater and Sludge Samples for Various and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department

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# CMA Testing and Certification Laboratories

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Term Contract for Provision of Sampling and Analyzing of Wastewater  
and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to  
the Drainage Services Department

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## EXECUTIVE SUMMARY

1. This is the water quality monitoring report prepared by CMA Testing and Certification Laboratory (CMA Testing) for Contract No. DE/2016/12 “Term Contract for Provision of Sampling and analysing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2017-2019)”. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Effluent Quality Monitoring (EQM) of Project in July 2017.
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 I**.

**Table I Summary Table for Environmental Monitoring Works Conducted in the Reporting Month**

Monitoring Parameters	Monitoring Date	Laboratory Testing Parameters
Effluent Quality	24 July 2017 to 25 July 2017	Total Residual Chlorine (TRC), Chlorination by-products (CBPs) and Contaminants of Concern (COCs)



# CMA Testing and Certification Laboratories

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Report No.: AV0051579(5)

Term Contract for Provision of Sampling and Analyzing of Wastewater  
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the Drainage Services Department

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## 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 24 Jul 2017.



# CMA Testing and Certification Laboratories

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## 2. EFFLUENT QUALITY MONITORING

### Monitoring Requirements

- 2.1. 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 according to the following procedures:
- Collect effluent sub-sample by direct grab sampling method at bi-hourly interval over a 24 hour 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 preparation the bi-hourly of 24 hour flow-weighted composite samples; and
  - Transfer the appropriate the volume of sub-samples to a clean container and mix thoroughly.
- 2.2. Total Residual Chlorine (TRC), Chlorination By-Products (CBPs) and Contaminants of Concern (COCs) shall be performed quarterly throughout the contract period.

### Monitoring Location

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

### Monitoring Schedule

- 2.4. The effluent quality monitoring was conducted between the time periods of 10:00 24 Jul 2017 to 10:00 of 25 Jul 2017 in the reporting month. Collection of marine water samples were within the time period of effluent quality monitoring was to be collected.

### Laboratory Measurement / Analysis

- 2.5. In the reporting month, the bi-hourly of 24-hour flow-weighted composite effluent sample was collected for subsequent laboratory analysis and testing on TRC, 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)
<b>TRC and Potential CBPs</b>			
Total residual Chlorine		APHA 21ed 4500 Cl G	10
Bromoform	Tri-halomethanes (THMs)	TG-ENV-WW-78 (Headspace GC-MS)	0.1
Bromodichloromethane			0.1
Chloroform			0.1
Dibromochloromethane			5



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Bromoacetic acid	Haloacetic Acids (HAAs)	TG-ENV-WW-79 (GC-ECD)	2
Chloroacetic acid			2
Dibromoacetic acid			2
Dichloroacetic acid			2
Trichloroacetic acid			2
<b>Contaminants of Concern (COCs)</b>			
Methylene chloride	Halogenated Aliphatics	TG-ENV-WW-78 (Headspace GC-MS)	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	Halogenated Aliphatics		0.5
1,1,2-trichloroethane			0.5
Trichloroethylene			0.5
2-chlorophenol	Phenols & Haloethers	TG-ENV-WW-80 (GC-MS)	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	TG-ENV-WW-78 (Headspace GC-MS)	0.5
1,4-dichlorobenzene			0.5
Hexachlorobenzene		USEPA 625	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

### 3. RESULTS AND OBSERVATIONS

#### Effluent Quality

- 3.1. The results of effluent quality monitoring conducted on the time period of 10:00 24 Jul 2017 to 10:00 of 25 Jul 2017, whereas the laboratory testing and QC report are shown in **Appendix I-Report no. AV0051580(8)**.



# CMA Testing and Certification Laboratories

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Report No.: AV0051579(5)

Term Contract for Provision of Sampling and Analyzing of Wastewater  
and Sludge Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to  
the Drainage Services Department

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## Appendix I - Report for Laboratory Test(s)



# CMA Testing and Certification Laboratories

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## TEST REPORT

Report No. : AV0051580(8) Date: 05 Sep 2017

Application No. : LV023396(1)

Applicant : DRAINAGE SERVICES DEPARTMENT  
SEWAGE SERVICES BRANCH  
HARBOUR AREA TREATMENT SCHEME DIVISION  
5/F., WESTERN MAGISTRACY,  
2A, POK FU LAM ROAD, HONG KONG

Contract No. : DE/2016/12

Project Name : Term Contract for Provision of Sampling and Analyzing of  
Wastewater and Sludge for Various Sewage Treatment Facilities in  
Urban Area, Lantau and Outlying Islands to the Drainage Services  
Department

Sample Description : One (1) wastewater sample sampled by the staff of CMA Industrial  
Development Foundation Limited.  
Samples were refrigerated during delivery.

Sample ID : Refer to Sample ID on page 4.

Sampling Location : SCISTW- Disinfection Facilities


Sampling Date : 24 Jul 2017 to 25 Jul 2017.

Date Received : 24 Jul 2017 to 25 Jul 2017.

Test Period : 24 Jul 2017 to 16 Aug 2017.

*For and on behalf of*  
CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

  
Lau Yan Kin  
Senior Manager  
Environmental Division

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# CMA Testing and Certification Laboratories

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## TEST REPORT

Report No. : AV0051580(8)

Date: 05 Sep 2017

Application No. : LV023396(1)

Test Requested :

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



# CMA Testing and Certification Laboratories

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## TEST REPORT

Report No. : AV0051580(8)

Date: 05 Sep 2017

Application No. : LV023396(1)

Test Method : 1. APHA 21ed 4500 Cl G  
2. TG-ENV-WW-78 (Headspace GC-MS)  
3. TG-ENV-WW-78 (Headspace GC-MS)  
4. TG-ENV-WW-78 (Headspace GC-MS)  
5. TG-ENV-WW-78 (Headspace GC-MS)  
6. TG-ENV-WW-79 (GC-ECD)  
7. TG-ENV-WW-79 (GC-ECD)  
8. TG-ENV-WW-79 (GC-ECD)  
9. TG-ENV-WW-79 (GC-ECD)  
10. TG-ENV-WW-79 (GC-ECD)  
11. TG-ENV-WW-78 (Headspace GC-MS)  
12. TG-ENV-WW-78 (Headspace GC-MS)  
13. TG-ENV-WW-78 (Headspace GC-MS)  
14. TG-ENV-WW-78 (Headspace GC-MS)  
15. TG-ENV-WW-78 (Headspace GC-MS)  
16. TG-ENV-WW-78 (Headspace GC-MS)  
17. TG-ENV-WW-78 (Headspace GC-MS)  
18. TG-ENV-WW-78 (Headspace GC-MS)  
19. TG-ENV-WW-78 (Headspace GC-MS)  
20. TG-ENV-WW-78 (Headspace GC-MS)  
21. TG-ENV-WW-80 (GC-MS)  
22. TG-ENV-WW-80 (GC-MS)  
23. TG-ENV-WW-80 (GC-MS)  
24. TG-ENV-WW-80 (GC-MS)  
25. TG-ENV-WW-80 (GC-MS)  
26. TG-ENV-WW-80 (GC-MS)  
27. TG-ENV-WW-78 (Headspace GC-MS)  
28. TG-ENV-WW-78 (Headspace GC-MS)  
29. USEPA 625  
30. USEPA 625  
31. USEPA 625  
32. USEPA 625  
33. USEPA 625  
34. USEPA 625  
35. USEPA 625

Test Result : Refer to results on page 4.

Remark : All data are copied from test report no. AV0050738(1) issued on 05 Sep 2017.



# CMA Testing and Certification Laboratories

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## TEST REPORT

Report No. : AV0051580(8)

Date: 05 Sep 2017

Application No. : LV023396(1)

### Effluent Water Quality

Sampling Date 24-Jul-17  
Monitoring Location Chamber 15A

Parameter	Results (mg/L)
Total Residual Chlorine	<0.01
Parameter	Results (µg/L)
Bromoform	5.0
Bromodichloromethane	2.6
Chloroform	9.1
Dibromochloromethane	<5
Bromoacetic acid	<2
Chloroacetic acid	<2
Dibromoacetic acid	3.2
Dichloroacetic acid	28
Trichloroacetic acid	14

Parameter	Results (µg/L)
Contaminants of Concerns (COCs)	
Methylene chloride	<20
Carbon tetrachloride	<0.5
1,1-dichloroethane	<0.5
1,2-dichloroethane	<0.5
1,1-dichloroethylene	1.3
1,2-dichloropropane	<0.5
Tetrachloroethylene	3.5
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

# TEST REPORT

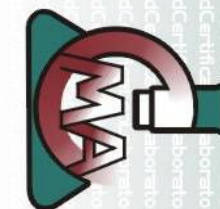
Report No. : AV0051580(8)

Application No. : LV023396(1)

## QC Report

Sampling Date 24-Jul-17

Date: 05 Sep 2017



**CMA Testing and Certification Laboratories**  
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Parameter	Method Blank (µg/L)	Acceptance Criteria (µg/L)	QC Recoery (%)	Acceptance Criteria (%)	Spike Recovery (%)	Acceptance Criteria (%)	Duplicate (RPD) (%)	Acceptance Criteria (%)
Bromoform	<0.02	<0.02	96	80-120	89	70-130	2	≤20
Bromodichloromethane	<0.02	>0.02	103	80-120	94	70-130	8	≤20
Chloroform	<0.02	<0.02	108	80-120	92	70-130	6	≤20
Dibromochloromethane	<1	<1	102	80-120	87	70-130	3	≤20
Bromoacetic acid	<0.4	>0.4	94	80-120	106	70-130	4	≤20
Chloroacetic acid	<0.4	>0.4	95	80-120	94	70-130	3	≤20
Dibromoacetic acid	>0.4	>0.4	94	80-120	92	70-130	5	≤20
Dichloroacetic acid	<0.4	>0.4	106	80-120	108	70-130	3	≤20
Trichloroacetic acid	<0.4	>0.4	96	80-120	104	70-130	4	≤20

Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	105	80-120	105	70-130	7	≤20
Carbon tetrachloride	<0.1	<0.1	107	80-120	108	70-130	2	≤20
1,1-dichloroethane	<0.1	<0.1	102	80-120	103	70-130	6	≤20
1,2-dichloroethane	<0.1	<0.1	97	80-120	107	70-130	7	≤20
1,1-dichloroethylene	<0.1	<0.1	93	80-120	106	70-130	4	≤20
1,2-dichloropropane	<0.1	<0.1	104	80-120	95	70-130	5	≤20
Tetrachloroethylene	<0.1	<0.1	98	80-120	87	70-130	3	≤20
1,1,1-trichloroethane	<0.1	<0.1	106	80-120	89	70-130	5	≤20
1,1,2-trichloroethane	<0.1	<0.1	108	80-120	103	70-130	6	≤20
Trichloroethylene	<0.1	<0.1	105	80-120	89	70-130	7	≤20
2-chlorophenol	<0.1	<0.1	109	80-120	92	70-130	7	≤20
2,4-dichlorophenol	<0.1	<0.1	92	80-120	98	70-130	4	≤20
p-chloro-m-cresol	<0.1	<0.1	95	80-120	103	70-130	2	≤20
Pentachlorophenol	<0.1	<0.1	97	80-120	97	70-130	8	≤20
2,4,6-trichlorophenol	<0.1	<0.1	104	80-120	97	70-130	3	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	92	80-120	106	70-130	6	≤20
Chlorobenzene	<0.1	<0.1	101	80-120	102	70-130	4	≤20
1,4-dichlorobenzene	<0.1	<0.1	106	80-120	89	70-130	7	≤20
Hexachlorobenzene	<0.005	<0.005	91	80-120	103	70-130	5	≤20
Hexachlorocyclopentadiene	<0.5	>0.5	98	80-120	86	70-130	5	≤20
Hexachloroethane	<0.1	<0.1	97	80-120	87	70-130	3	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	103	80-120	93	70-130	4	≤20
Alpha-BHC	<0.005	<0.005	92	80-120	104	70-130	2	≤20
Beta-BHC	<0.005	<0.005	96	80-120	92	70-130	6	≤20
Gamma-BHC	<0.005	<0.005	109	80-120	106	70-130	4	≤20

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