



**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 : 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 : LW012099(0)

Report Number : AW0029416(0)

Report Issued Date : 5 June 2018

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Lau Yan Kin
Senior Manager
Environmental Division

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CMA Industrial Development Foundation Limited

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CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AW0029416(0)

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

TABLE OF CONTENT

1. Introduction	2
2. Marine Water Quality Monitoring	3 – 5
3. Results and Observations	5
Appendix	
Appendix I – Location of Monitoring Stations	
Appendix II – Report for Laboratory Test(s)	



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Report No.: AW0029416(0)

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

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 Marine Water Quality Monitoring (MWQM) of Project in Apr 2018.
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
Marine Water Quality	23 Apr 2018	E.coli, Total Residual Chlorine (TRC), Chlorination by-products (CBPs) and Contaminants of Concern (COCs)



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the Drainage Services Department

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 Marine Water Quality Monitoring (MWQM) of Project on 23 Apr 2018.



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2. MARINE WATER QUALITY MONITORING

Monitoring Requirements

- 2.1. Monitoring was taken at three water depths, namely, 1m below water surface, mid-depth and 1m above sea bed, except where the water depth is less than 6m, in which case the mid-depth station may be omitted. If the water depth be less than 3m, only the mid-depth station will be monitored.
- 2.2. Six samples (replicates) at each monitoring stations were collected by collecting the same amount of water sample at each depth.
- 2.3. One grab sample was collected at each water depth for E.coli analysis.

Monitoring Locations

- 2.4. Six monitoring stations were designated for the marine water quality monitoring programme. The locations are summarized in Table 3.1 and shown on **Figure 2**.

Table 3.1 Proposed Marine Water Quality Monitoring Stations

Station	Description	Coordinates	
		Easting	Northing
1	Edge of Mixing Zone (northwest of effluent diffuser)	829762.00	819604.47
2	Edge of ZID (northwest of effluent diffuser)	830117.99	819251.93
3	Edge of ZID (southeast of effluent diffuser)	830186.21	819184.37
4	Edge of Mixing Zone (southeast of effluent diffuser)	830525.00	818848.87
SM6	Control Station	826179.81	805902.89
SM12	Control Station	819524.19	808420.40

Monitoring Schedule

- 2.5. The marine water quality monitoring was conducted coincide with effluent quality monitoring on 23 Apr 2018.

Monitoring Equipment

- 2.6. The equipment used in the marine water quality monitoring in the reporting month is summarized in Table 3.2. Copies of calibration certificates are shown in **Appendix II-Report no. AW0029415(0)**.

Table 3.2 Marine Water Quality Monitoring Equipment

Equipment	Model and Make	Qty
Water Sampler	Kahlsico Water Sampler	1
Water Depth Detector	Seafarer 700	1
Positioning System	Global Positioning System (GPS)	1
Multi-parameter Water Quality System	Model YSI 6920 V2	1



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廠商會檢定中心

Report No.: AW0029416(0)

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Monitoring Parameters and Frequency

- 2.7. Marine Water sampling on E.coli, Total Residual Chlorine (TRC), Chlorination By-Products (CBPs) shall and the Contaminants of Concern (COCs) shall be performed quarterly throughout the contract period.
- 2.8. The list of parameters to be analysed as well as the corresponding analytical methods and detection limit are listed in Table 3.3

Table 3.3 Analytical Methods for Laboratory Analysis for Marine Water Samples

Parameters		Analytical Method	Limit of Reporting (µg/L)
TRC and Potential CBPs			
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
Bromoacetic acid	Haloacetic Acids (HAAs)	TG-ENV-WW-79 (GC-ECD)	2
Chloroacetic acid			2
Dibromoacetic acid			2
Dichloroacetic acid			2
Trichloroacetic acid			2
Bacteria			
E.coli		Environmental Monitoring Laboratory Test Method Manual TM09/EC/10/097 Issue 3, Environmental Protection Department, HK.	1 cfu/100ml
Contaminants of Concern (COCs)			
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



CMA Testing and Certification Laboratories

廠商會檢定中心

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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

Weather and Sea Condition

- 3.1. The weather condition was Fine while the sea condition was moderate during the sampling period 23 Apr 2018 in the reporting month.

Marine Water Quality

- 3.2. The in-situ measurement results including dissolved oxygen, turbidity, salinity, pH and temperature of the marine water monitoring. Also, the results of marine water quality monitoring conducted on 23 Jan 2018 and QC report are shown in **Appendix II – Report no. AW0029415(0)**.



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Report No.: AW0029416(0)

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

Appendix I - Location of Monitoring Stations

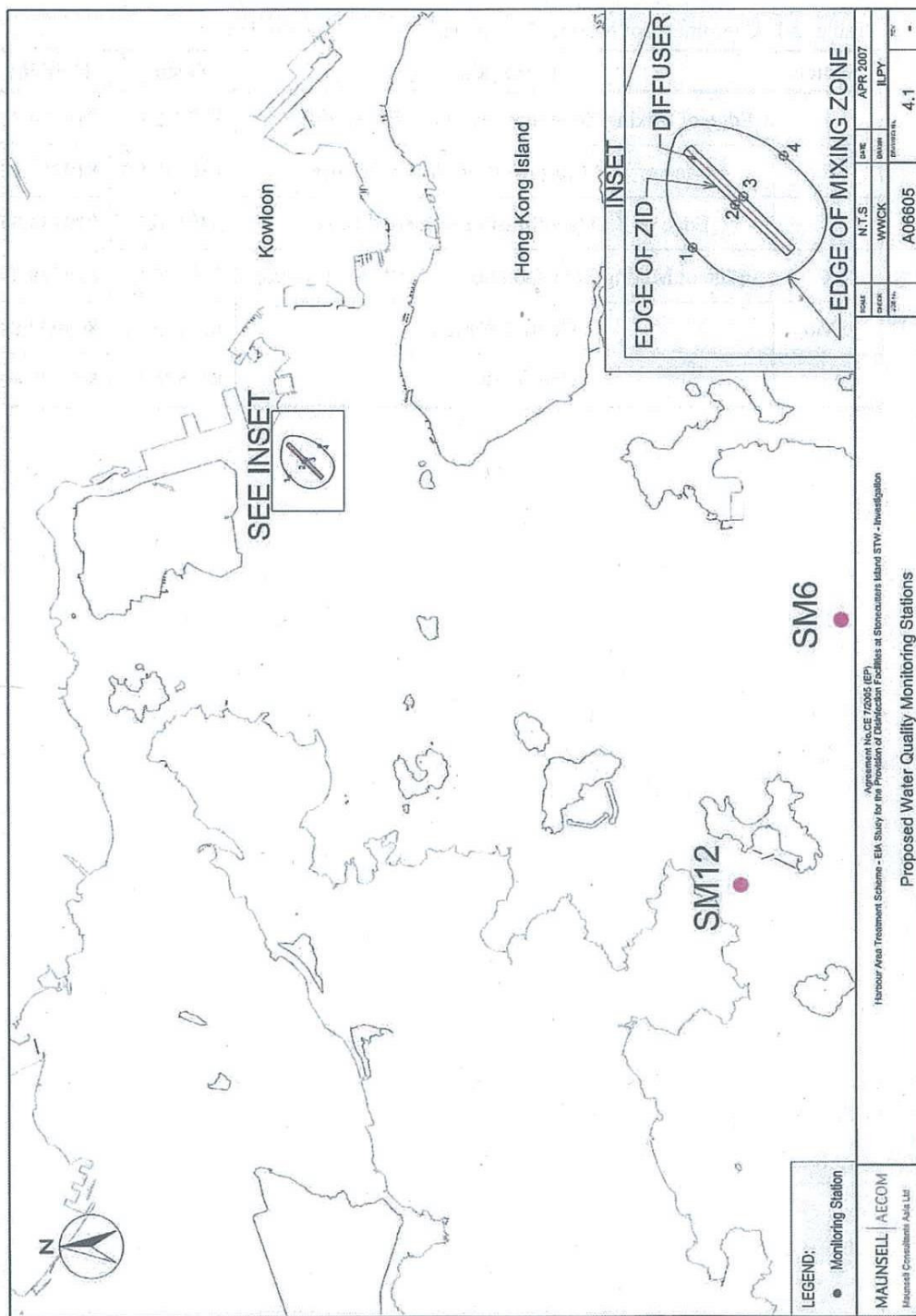


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the Drainage Services Department

Appendix II - Report for Laboratory Test(s)



CMA Testing and Certification Laboratories

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TEST REPORT

Report No. : AW0029415(0) Date: 5 June 2018

Application No. : LW012099(0)

Applicant : SEWAGE TREATMENT DIVISION 2
ELECTRICAL AND MECHANICAL BRANCH
DRAINAGE SERVICES DEPARTMENT
STONECUTTERS ISLAND SEWAGE TREATMENT WORKS.,
NGONG SHUNG ROAD, NGONG SHUEN CHAU,
KOWLOON, 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 : Eighteen (18) marine water samples sampled by the staff of CMA
Industrial Development Foundation Limited.
Samples were refrigerated during delivery.

Sample ID : Refer to Sample ID on page 4 to 11.

Station	Description	Coordinates	
		Easting	Northing
1	Edge of Mixing Zone (northwest of effluent diffuser)	829762.00	819604.47
2	Edge of ZID (northwest of effluent diffuser)	830117.99	819251.93
3	Edge of ZID (southeast of effluent diffuser)	830186.21	819184.37
4	Edge of Mixing Zone (southeast of effluent diffuser)	830525.00	818848.87
SM6	Control Station	826179.81	805902.89
SM12	Control Station	819524.19	808420.40

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

Page 1 of 15



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0029415(0) Date: 5 June 2018

Application No. : LW012099(0)

Sampling Date : 23 Apr 2018.

Date Received : 23 Apr 2018.

Test Period : 23 Apr 2018 to 21 May 2018.

Test Requested :

1. Temperature (on-site measurement)
2. pH (on-site measurement)
3. Salinity (on-site measurement)
4. Dissolved Oxygen (DO) (mg/L) (on-site measurement)
5. Dissolved Oxygen (DOS) (% saturation) (on-site measurement)
6. Turbidity (on-site measurement)
7. Total Residual Chlorine (on-site measurement)
8. E. coli count
9. Bromoform
10. Bromodichloromethane
11. Chloroform
12. Dibromochloromethane
13. Bromoacetic acid
14. Chloroacetic acid
15. Dibromoacetic acid
16. Dichloroacetic acid
17. Trichloroacetic acid
18. Methylene chloride
19. Carbon tetrachloride
20. 1,1-dichloroethane
21. 1,2-dichloroethane
22. 1,1-dichloroethylene
23. 1,2-dichloropropane
24. Tetrachloroethylene
25. 1,1,1-trichloroethane
26. 1,1,2-trichloroethane
27. Trichloroethylene
28. 2-chlorophenol
29. 2,4-dichlorophenol
30. p-chloro-m-cresol
31. Pentachlorophenol
32. 2,4,6-trichlorophenol
33. Bis(2-chloroethoxy) methane
34. Chlorobenzene
35. 1,4-dichlorobenzene
36. Hexachlorobenzene
37. Hexachlorocyclopentadiene
38. Hexachloroethane
39. 1,2,4-trichlorobenzene
40. Alpha-BHC
41. Beta-BHC
42. Gamma-BHC

Page 2 of 15

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TEST REPORT

Report No. : AW0029415(0)

Date: 5 June 2018

Application No. : LW012099(0)

Test Method : 1-5. In house method (By multimeter)
6. APHA 2130B
7. APHA 21ed 4500 Cl G
8. Environmental Monitoring Laboratory Test Method Manual
TM09/EC/10/097 Issue 3, Environmental Protection Department,
HK.
9. TG-ENV-WW-78 (Headspace GC-MS)
10. TG-ENV-WW-78 (Headspace GC-MS)
11. TG-ENV-WW-78 (Headspace GC-MS)
12. TG-ENV-WW-78 (Headspace GC-MS)
13. TG-ENV-WW-79 (GC-ECD)
14. TG-ENV-WW-79 (GC-ECD)
15. TG-ENV-WW-79 (GC-ECD)
16. TG-ENV-WW-79 (GC-ECD)
17. TG-ENV-WW-79 (GC-ECD)
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-78 (Headspace GC-MS)
22. TG-ENV-WW-78 (Headspace GC-MS)
23. TG-ENV-WW-78 (Headspace GC-MS)
24. TG-ENV-WW-78 (Headspace GC-MS)
25. TG-ENV-WW-78 (Headspace GC-MS)
26. TG-ENV-WW-78 (Headspace GC-MS)
27. TG-ENV-WW-78 (Headspace GC-MS)
28. TG-ENV-WW-80 (GC-MS)
29. TG-ENV-WW-80 (GC-MS)
30. TG-ENV-WW-80 (GC-MS)
31. TG-ENV-WW-80 (GC-MS)
32. TG-ENV-WW-80 (GC-MS)
33. TG-ENV-WW-80 (GC-MS)
34. TG-ENV-WW-78 (Headspace GC-MS)
35. TG-ENV-WW-78 (Headspace GC-MS)
36. USEPA 625
37. USEPA 625
38. USEPA 625
39. USEPA 625
40. USEPA 625
41. USEPA 625
42. USEPA 625

Test Result : Refer to results on page 4 to 11.



CMA Testing and Certification Laboratories

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TEST REPORT

Date: 5 June 2018

Report No. : AW0029415(0)

Application No. : LW012099(0)

Marine Water Quality

Sampling Date : 23-Apr-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	E.coli (CFU/100mL)	Temperature (°C)		Salinity (ppt)		pH		DO (mg/L)		DOS (%)		Turbidity (NTU)		TRC (mg/L)	
					1	2	1	2	1	2	1	2	1	2	1	2	1	2
1	11:21	10.4	1.0	86	23.6	23.6	31.1	31.1	8.1	8.1	7.1	7.1	100.7	100.7	3.7	3.7	0.02	0.02
			5.2	58	23.4	23.4	31.8	31.8	8.1	8.1	5.8	5.8	81.4	81.4	3.8	3.8	0.02	0.02
			9.5	41	23.4	23.4	31.9	31.9	8.1	8.1	5.6	5.6	78.5	78.5	3.8	3.8	0.01	0.01
			1.0	190	23.5	23.5	31.6	31.6	8.1	8.1	5.3	5.3	74.5	74.5	3.9	3.9	0.01	0.01
			5.3	140	23.4	23.4	28.5	28.5	8.1	8.1	5.4	5.4	75.0	75.0	3.8	3.8	0.03	0.03
2	11:40	10.6	9.6	91	23.3	23.3	32.1	32.1	8.0	8.0	4.9	4.9	69.4	69.4	4.1	4.1	0.05	0.06
			1.0	340	23.9	23.9	31.6	31.6	8.0	8.0	5.4	5.4	77.3	77.3	4.2	4.2	0.04	0.04
			5.8	140	23.6	23.6	32.0	32.0	8.0	8.0	5.3	5.3	75.6	75.6	3.8	3.8	0.05	0.05
			9.7	310	23.4	23.4	32.3	32.3	8.0	8.0	5.1	5.1	72.5	72.5	3.8	3.8	0.04	0.04
			1.0	35	23.7	23.7	31.4	31.4	8.0	8.0	5.3	5.3	74.6	74.6	4.0	4.0	0.04	0.04
4	12:30	9.8	4.9	8	23.5	23.5	32.2	32.2	8.1	8.1	5.5	5.5	74.5	74.5	4.1	4.1	0.01	0.01
			8.8	4	23.4	23.4	32.1	32.1	8.0	8.0	5.2	5.2	73.4	73.4	3.9	3.9	0.04	0.04
			1.0	7	23.6	23.6	30.7	30.7	8.1	8.1	5.8	5.8	81.2	81.2	1.8	1.8	0.05	0.05
			7.3	8	23.6	23.6	30.8	30.8	8.1	8.1	5.6	5.6	78.7	78.7	0.9	0.9	0.02	0.02
			13.5	3	23.6	23.6	30.9	30.9	8.1	8.1	5.6	5.6	79.3	79.3	0.5	0.5	0.01	0.01
SM6	10:15	14.5	1.0	12	24.1	24.1	31.3	31.3	7.3	7.3	6.3	6.3	89.1	89.1	2.8	2.8	0.02	0.02
			4.4	4	23.7	23.7	31.5	31.5	7.6	7.6	6.5	6.5	92.5	92.5	2.7	2.7	0.04	0.04
			7.4	1	23.4	23.4	32.1	32.1	7.7	7.7	6.3	6.3	88.3	88.3	3.1	3.1	0.03	0.03



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TEST REPORT

Date: 5 June 2018

Report No. : AW0029415(0)

Application No. : LW012099(0)

Marine Water Quality

Sampling Date : 23-Apr-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Bromoform (µg/L)	Bromodichloromethane (µg/L)	Chloroform (µg/L)	Dibromochloromethane (µg/L)	Bromoacetic acid (µg/L)	Chloroacetic acid (µg/L)	Dibromoacetic acid (µg/L)
1	11:21	10.4	1.0	<0.1	<0.1	<0.1	<5	<2	<2	<2
			5.2	<0.1	<0.1	<0.1	<5	<2	<2	<2
			9.5	<0.1	<0.1	0.1	<5	<2	<2	<2
2	11:40	10.6	1.0	<0.1	<0.1	0.3	<5	<2	<2	<2
			5.3	<0.1	<0.1	0.3	<5	<2	<2	<2
			9.6	<0.1	<0.1	0.1	<5	<2	<2	<2
3	12:11	10.7	1.0	<0.1	<0.1	0.2	<5	<2	<2	<2
			5.8	<0.1	<0.1	0.1	<5	<2	<2	<2
			9.7	<0.1	<0.1	0.2	<5	<2	<2	<2
4	12:30	9.8	1.0	<0.1	<0.1	<0.1	<5	<2	<2	<2
			4.9	<0.1	<0.1	0.2	<5	<2	<2	<2
			8.8	<0.1	<0.1	<0.1	<5	<2	<2	<2
SM6	10:15	14.5	1.0	<0.1	<0.1	<0.1	<5	<2	<2	<2
			7.3	<0.1	<0.1	<0.1	<5	<2	<2	<2
			13.5	<0.1	<0.1	<0.1	<5	<2	<2	<2
SM12	09:34	8.4	<0.1	<0.1	<0.1	<5	<2	<2	<2	<2
			4.4	<0.1	<0.1	<0.1	<5	<2	<2	<2
			7.4	<0.1	<0.1	<0.1	<5	<2	<2	<2
			LRV	<0.1	<0.1	<0.1	<5	<2	<2	<2



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Marine Water Quality

Sampling Date 23-Apr-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Dichloroacetic acid (µg/L)	Trichloroacetic acid (µg/L)
1	11:21	10.4	1.0	<2	<2
			5.2	<2	<2
			9.5	<2	<2
2	11:40	10.6	1.0	<2	<2
			5.3	<2	<2
			9.6	<2	<2
3	12:11	10.7	1.0	<2	<2
			5.8	<2	<2
			9.7	<2	<2
4	12:30	9.8	1.0	<2	<2
			4.9	<2	<2
			8.8	<2	<2
SM6	10:15	14.5	1.0	<2	<2
			7.3	<2	<2
			13.5	<2	<2
SM12	09:34	8.4	1.0	<2	<2
			4.4	<2	<2
			7.4	<2	<2
			LRV	<2	<2



CMA Testing and Certification Laboratories

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TEST REPORT

Date: 5 June 2018

Report No. : AW0029415(0)

Application No. : LW012099(0)

Marine Water Quality

Sampling Date : 23-Apr-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Methylene chloride (µg/L)	Carbon tetrachloride (µg/L)	1,1-dichloroethane (µg/L)	1,2-dichloroethane (µg/L)	1,1-dichloroethylene (µg/L)	1,2-dichloropropane (µg/L)	Tetrachloroethylene (µg/L)
1	11:21	10.4	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.2	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.5	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	11:40	10.6	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.3	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.6	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3	12:11	10.7	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.8	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.7	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4	12:30	9.8	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.9	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.8	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM6	10:15	14.5	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			7.3	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			13.5	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM12	09:34	8.4	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.4	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			7.4	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			LRV	<20	<0.5	<0.5	<0.5	<0.5	<0.5	



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 5 June 2018

Report No. : AW0029415(0)

Application No. : LW012099(0)

Marine Water Quality

Sampling Date 23-Apr-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	1,1,1-trichloroethane (µg/L)	1,1,2-trichloroethane (µg/L)	Trichloroethylene (µg/L)	2-chlorophenol (µg/L)	2,4-dichlorophenol (µg/L)	p-chloro-m-cresol (µg/L)	Pentachlorophenol (µg/L)
1	11:21	10.4	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	11:40	10.6	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3	12:11	10.7	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4	12:30	9.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM6	10:15	14.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			7.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			13.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM12	09:34	8.4	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			7.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			LRV	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 5 June 2018

Report No. : AW0029415(0)

Application No. : LW012099(0)

Marine Water Quality

Sampling Date 23-Apr-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	2,4,6-trichlorophenol (µg/L)	Bis(2-chloroethoxy) methane (µg/L)	Chlorobenzene (µg/L)	1,4-dichlorobenzene (µg/L)	Hexachlorobenzene (µg/L)	Hexachlorocyclopentadiene (µg/L)	Hexachloroethane (µg/L)
1	11:21	10.4	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			5.2	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			9.5	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
2	11:40	10.6	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			5.3	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			9.6	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
3	12:11	10.7	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			5.8	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			9.7	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
4	12:30	9.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			4.9	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			8.8	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
SM6	10:15	14.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			7.3	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			13.5	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
SM12	09:34	8.4	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			4.4	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			7.4	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			LRV	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 5 June 2018

Report No. : AW0029415(0)

Application No. : LW012099(0)

Marine Water Quality

Sampling Date : 23-Apr-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	1,2,4-trichlorobenzene (µg/L)		Alpha-BHC (µg/L)		Beta-BHC (µg/L)		Gamma-BHC (µg/L)	
				<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1	11:21	10.4	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			5.2	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			9.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
2	11:40	10.6	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			5.3	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			9.6	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
3	12:11	10.7	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			5.8	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			9.7	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
4	12:30	9.8	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.9	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			8.8	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SM6	10:15	14.5	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			7.3	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			13.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SM12	09:34	8.4	1.0	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.4	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			7.4	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
			LRV	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 5 June 2018

Report No. : AW0029415(0)

Application No. : LW012099(0)

QC Report

Sampling Date : 23-Apr-2018

Parameter	Method Blank (µg/L)	Acceptance Criteria (µg/L)	QC Recovery (%)	Acceptance Criteria (%)	Spike Recovery (%)	Acceptance Criteria (%)	Duplicate (RPD) (%)	Acceptance Criteria (%)
Bromoform	<0.02	<0.02	103	80-120	113	70-130	6	520
Bromodichloromethane	<0.02	<0.02	105	80-120	94	70-130	4	520
Chloroform	<0.02	<0.02	107	80-120	106	70-130	7	520
Dibromochloromethane	<1	<1	94	80-120	109	70-130	3	520
Bromoacetic acid	<0.4	<0.4	95	80-120	104	70-130	3	520
Chloroacetic acid	<0.4	<0.4	102	80-120	91	70-130	8	520
Dibromoacetic acid	<0.4	<0.4	93	80-120	98	70-130	7	520
Dichloroacetic acid	<0.4	<0.4	108	80-120	103	70-130	6	520
Trichloroacetic acid	<0.4	<0.4	97	80-120	108	70-130	1	520
Parameter	Method Blank (µg/L)	Acceptance Criteria (µg/L)	QC Recovery (%)	Acceptance Criteria (%)	Spike Recovery (%)	Acceptance Criteria (%)	Duplicate (RPD) (%)	Acceptance Criteria (%)
Methylene chloride	<4	<4	96	80-120	92	70-130	3	520
Carbon tetrachloride	<0.1	<0.1	92	80-120	95	70-130	9	520
1,1-dichloroethane	<0.1	<0.1	98	80-120	98	70-130	6	520
1,2-dichloroethane	<0.1	<0.1	96	80-120	93	70-130	4	520
1,1-dichloroethylene	<0.1	<0.1	95	80-120	106	70-130	3	520
1,2-dichloropropane	<0.1	<0.1	103	80-120	102	70-130	5	520
Tetrachloroethylene	<0.1	<0.1	107	80-120	96	70-130	5	520
1,1,1-trichloroethane	<0.1	<0.1	107	80-120	104	70-130	4	520
1,1,2-trichloroethane	<0.1	<0.1	92	80-120	109	70-130	6	520
Trichloroethylene	<0.1	<0.1	98	80-120	103	70-130	2	520
2-chlorophenol	<0.1	<0.1	95	80-120	93	70-130	8	520
2,4-dichlorophenol	<0.1	<0.1	104	80-120	98	70-130	6	520
p-chloro-m-cresol	<0.1	<0.1	105	80-120	104	70-130	1	520
Pentachlorophenol	<0.1	<0.1	93	80-120	103	70-130	9	520
2,4,6-trichlorophenol	<0.1	<0.1	106	80-120	107	70-130	6	520
Bis(2-chloroethoxy) methane	<0.1	<0.1	95	80-120	102	70-130	5	520
Chlorobenzene	<0.1	<0.1	101	80-120	109	70-130	3	520
1,4-difluorobenzene	<0.1	<0.1	106	80-120	106	70-130	6	520
Hexachlorobenzene	<0.005	<0.005	94	80-120	106	70-130	7	520
Hexachlorocyclopentadiene	<0.5	<0.5	92	80-120	92	70-130	4	520
Hexachloroethane	<0.1	<0.1	104	80-120	97	70-130	3	520
1,2,4-trichlorobenzene	<0.1	<0.1	96	80-120	103	70-130	3	520
Alpha-BHC	<0.005	<0.005	98	80-120	98	70-130	3	520
Beta-BHC	<0.005	<0.005	106	80-120	101	70-130	4	520
Gamma-BHC	<0.005	<0.005	105	80-120	94	70-130	7	520



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0029415(0)

Date: 05 June 2018

Application No. : LW012099(0)

Calibration Certificate



Calibration Certificate

Certificate No.: CC0081803

1. Description

Calibration item :	a) Turbidity
Equipment description :	Portable Turbidimeter
Manufacturer :	Hach
Type / Model No. :	2100Q
Serial No. :	16030C048375
Assigned equipment no. :	N/A
Adjustment :	N/A
Remark :	Received with good condition

2. Customer information

Customer :	CMA Testing and Certification Laboratories
Address :	Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung Street, Fotan, Shatin, NT, Hong Kong
Date of receipt :	5 March 2018

3. Date of performance of the calibration

Date of calibration :	5 March 2018
Date of next calibration :	5 June 2018

Authorized Signatory
WM Ling

Company Chop



Certificate issue date: 6 March 2018

- The certificate shall not reproduced except in full without the written approval of CAL LAB LTD
- The Certificate is issued subject to the latest Term and Condition, available assessable at our web site

Page 1 of 2
cc0081803

Cal Lab Limited
Address: Room 401A, Wah Wai Industrial Building, 53-61 Pak Tin Par Street, Tsuen Wan, NT, Hong Kong.
Tel: (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0029415(0)

Date: 05 June 2018

Application No. : LW012099(0)



4. Result of Calibration

a) Turbidity

Reference reading (NTU)	Display Reading (NTU)	Error of indication (%)
Blank	0.06	0.2
10	9.95	- 0.1
20	19.92	- 0.1
100	99.4	- 0.1
800	807	0.1

5. Reference method for calibration

Turbidity	APHA 21e 2130B
-----------	----------------

6. Environment condition of calibration

Temperature ; °C	18 – 25 °C
Relative humidity ; %RH	< 75 %RH

*** End of Certificate ***

1. The certificate shall not reproduced except in full without the written approval of CAL LAB LTD
2. The Certificate is issued subject to the latest Term and Condition, available assessable at our web site

Page 2 of 2
cc0081803

Cal Lab Limited

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CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0029415(0)

Date: 05 June 2018

Application No. : LW012099(0)



專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
Unit 10, 14/F, Wah Wai Centre, 38-40, Ai Pui Wan St., Fouan, Hong Kong
E-mail: info@qualityprotest.com, Website: www.qualityprotest.com
Tel: (852) 3956 8717, Fax: (852) 3956 3925

CALIBRATION CERTIFICATION

Report No. : AH020161
Date of Issue : 05 March 2018
Page No. : 1 of 2

PART A – CUSTOMER INFORMATION

CMA Testing and Certification Laboratories
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung Street,
Fouan, Shatin, N.T., Hong Kong
Attn: Mr. Jason Lau

PART B – DESCRIPTION

Name of Equipment : Professional Plus (Pro Plus) Multiparameters Instrument
Manufacturer : YSI (a xylem brand)
Serial Number : Meter: 17F104341
Date of Received : Feb 27, 2018
Date of Calibration : Mar 02, 2018
Date of Next Calibration^(a) : Jun 02, 2018

PART C – REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Parameter	Reference Method
pH at 25°C	APHA 21e 4500-H ⁺ B
Dissolved Oxygen	APHA 21e 4500-O G
Conductivity at 25°C	APHA 21e 2510 B
Oxidation-Reduction Potential (ORP)	APHA 21e 2580 B (Zobell's solution)
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

PART D – CALIBRATION RESULTS^(b,c)

(1) pH at 25°C

Target (pH unit)	Displayed Reading ^(d) (pH Unit)	Tolerance ^(e) (pH Unit)	Results
4.00	4.03	+0.03	Satisfactory
6.86	6.86	0.00	Satisfactory
7.42	7.39	-0.03	Satisfactory
10.01	10.04	+0.03	Satisfactory

Tolerance of pH should be less than ±0.10 (pH unit)

~ CONTINUED ON NEXT PAGE ~

Remarks:-

^(a) The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted from relevant international standards.

^(b) The results relate only to the calibrated equipment as received

^(c) The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

^(d) "Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.

^(e) The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by QPT or quoted from relevant international standards.

LAM Ho-ye, Emma
Assistant Laboratory Manager



CMA Testing and Certification Laboratories

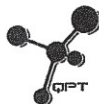
廠商會檢定中心

TEST REPORT

Report No. : AW0029415(0)

Date: 05 June 2018

Application No. : LW012099(0)



專業化驗有限公司
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CALIBRATION CERTIFICATION

Report No. : AH020161
Date of Issue : 05 March 2018
Page No. : 2 of 2

PART D – CALIBRATION RESULTS (Cont'd)

(2) Temperature

Reading of Ref. thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)	Results
13.3	13.3	0.0	Satisfactory
23.9	23.9	0.0	Satisfactory
34.8	34.8	0.0	Satisfactory

Tolerance limit of temperature should be less than ± 2.0 (°C)

(3) Dissolved Oxygen

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)	Results
3.37	3.41	+0.04	Satisfactory
5.12	5.10	-0.02	Satisfactory
7.44	7.49	+0.05	Satisfactory

Tolerance limit of dissolved oxygen should be less than ± 0.20 (mg/L)

(4) Conductivity at 25°C

Expected Reading (μ S/cm)	Displayed Reading (μ S/cm)	Tolerance (%)	Results
146.9	148.2	+0.9	Satisfactory
1412	1406	-0.4	Satisfactory
12890	12879	-0.1	Satisfactory
58670	58643	0.0	Satisfactory
111900	108956	-2.6	Satisfactory

Tolerance limit of conductivity should be less than ± 10.0 (%)

(5) Salinity

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)	Results
10	9.92	-0.8	Satisfactory
20	20.01	+0.1	Satisfactory
30	30.34	+1.1	Satisfactory

Tolerance limit of conductivity should be less than ± 10.0 (%)

(6) Oxidation-Reduction Potential (ORP)

Expected Reading (mV)	Displayed Reading (mV)	Tolerance (mV)	Results
228	233.9	5.9	Satisfactory

Tolerance limit of ORP should be less than ± 10 (mV)

- END OF REPORT -

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