



**CMA Testing
and Certification
Laboratories**

廠商會檢定中心

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

Provision of Routine Marine Water Quality Monitoring Services

Report for the Month of Jan 2019

Contract No. : DE/2018/02

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 : LW026851(0)

Report Number : AY0012741(4)

Report Issued Date : 12 Mar 2019

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Lau Yan Kin
Senior Manager
Environmental Division



CMA Testing and Certification Laboratories

廠商會檢定中心

Report No.: AY0012741(4)

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

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Term Contract for Provision of Sampling and Analyzing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities and Marine Water Samples 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/2018/02 ‘Term Contract for Provision of Sampling and analysing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities and Marine Water Samples in Urban Area, Lantau and Outlying Islands to the Drainage Services Department (2018-2020)’. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Routine Marine Water Quality Monitoring (rMWQM) of Project in Jan 2019.
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	24 Jan 2019	E.coli, Total Residual Chlorine (TRC), 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 Routine Marine Water Quality Monitoring (rMWQM) of Project on 24 Jan 2019.



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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 2.1 and shown on **Figure 2**.

Table 2.1 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 24 Jan 2019.

Monitoring Equipment

- 2.6. The equipment used in the marine water quality monitoring in the reporting month is summarized in Table 2.2. Copies of calibration certificates are shown in **Appendix II-Report no. AY0012740(3)**.

Table 2.2 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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Monitoring Parameters and Frequency

- 2.7. Marine Water sampling on E.coli, Total Residual Chlorine (TRC), Chlorination By-Products (CBPs) 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 2.3

Table 2.3 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
p-chloro-m-cresol			0.5



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Pentachlorophenol			0.5
2,4,6-trichlorophenol			0.5
Bis(2-chloroethoxy) methane			0.5
Chlorobenzene		TG-ENV-WW-78	0.5
1,4-dichlorobenzene		(Headspace GC-MS)	0.5
Hexachlorobenzene	Chlorinated Hydrocarbons & Organochlorine Pesticides	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 24 Jan 2019 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 24 Jan 2019 and QC report are shown in **Appendix II – Report no. AY0012740(3)**.



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Appendix I - Location of Monitoring Stations

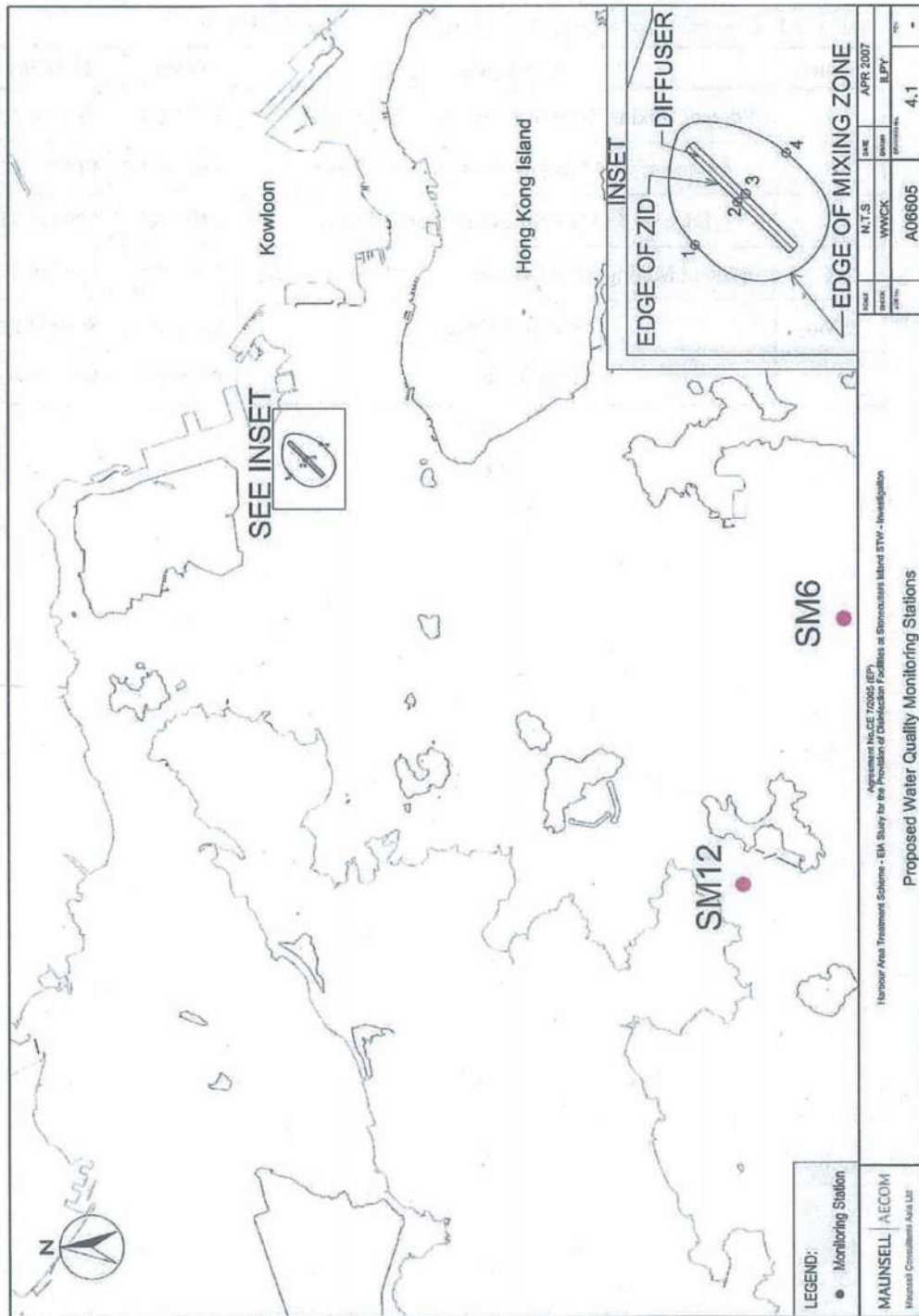


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Appendix II - Report for Laboratory Test(s)



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TEST REPORT

Report No. : AY0012740(3) Date: 12 Mar 2019

Application No. : LW026851(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/2018/02

Project Name : Term Contract for Provision of Sampling and Analyzing of Wastewater and Sludge Samples for Various Sewage Treatment Facilities and Marine Water Samples 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
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For and on behalf of
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Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

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TEST REPORT

Report No. : AY0012740(3) Date: 12 Mar 2019

Application No. : LW026851(0)

Sampling Date : 24 Jan 2019.

Date Received : 24 Jan 2019.

Test Period : 24 Jan 2019 to 1 Mar 2019.

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

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TEST REPORT

Report No. : AY0012740(3)

Date: 12 Mar 2019

Application No. : LW026851(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.



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TEST REPORT

Date: 12 Mar 2019

Report No. : AY0012740(3)

Application No. : LW026851(0)

Marine Water Quality

Sampling Date : 24-Jan-2019

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	16:10	10.1	1.0	210	18.7	30.5	8.0	6.9	88.4	5.5	0.02
			5.0	320	18.6	30.7	8.0	6.7	86.2	9.0	0.03
			9.1	240	18.5	30.8	8.0	6.4	82.1	12.6	0.01
2	16:03	10.6	1.0	160	18.7	30.2	7.9	6.8	87.6	6.2	0.01
			5.3	260	18.7	30.5	8.0	6.8	86.8	5.7	0.02
			9.6	170	18.6	30.8	8.0	6.7	85.9	6.8	0.02
3	15:53	10.5	1.0	22	18.6	30.8	8.0	7.1	91.1	3.1	0.02
			5.2	29	18.6	30.8	8.0	7.0	90.2	3.3	0.02
			9.5	62	18.5	31.0	8.0	7.0	89.3	5.2	0.03
4	15:44	10.1	1.0	14	18.6	30.8	8.0	7.1	91.2	2.9	0.02
			5.0	4	18.6	30.8	8.0	7.0	90.0	3.4	0.01
			9.1	6	18.5	31.0	8.0	7.0	89.6	3.3	0.03
SM6	14:47	14.8	1.0	6	19.0	31.2	7.8	8.7	112.3	2.6	0.03
			7.4	8	18.6	31.2	7.8	8.3	106.3	3.2	0.02
			13.8	54	18.5	31.4	7.8	7.8	100.1	3.4	0.01
SM12	14:01	9.1	1.0	8	18.8	31.9	7.8	9.0	114.6	2.8	0.03
			4.6	5	18.5	31.9	7.9	8.5	109.0	3.3	0.02
			8.1	140	18.5	29.8	7.8	8.1	103.9	3.7	0.01



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Date: 12 Mar 2019

Report No. : AY0012740(3)

Application No. : LW026851(0)

Marine Water Quality

Sampling Date : 24-Jan-2019

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	16:10	10.1	1.0	<0.1	<0.1	<0.1	<5	<2	<2	<2
			5.0	0.1	<0.1	<0.1	<5	<2	<2	<2
			9.1	<0.1	<0.1	<0.1	<5	<2	<2	<2
2	16:03	10.6	1.0	0.1	<0.1	<0.1	<5	<2	<2	<2
			5.3	<0.1	<0.1	<0.1	<5	<2	<2	<2
			9.6	0.1	<0.1	<0.1	<5	<2	<2	<2
3	15:53	10.5	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
4	15:44	10.1	1.0	<0.1	<0.1	<0.1	<5	<2	<2	<2
			5.0	0.1	<0.1	<0.1	<5	<2	<2	<2
			9.1	0.1	<0.1	<0.1	<5	<2	<2	<2
SM6	14:47	14.8	1.0	<0.1	<0.1	<0.1	<5	<2	<2	<2
			7.4	<0.1	<0.1	<0.1	<5	<2	<2	<2
			13.8	0.1	<0.1	<0.1	<5	<2	<2	<2
SM12	14:01	9.1	1.0	<0.1	<0.1	<0.1	<5	<2	<2	<2
			4.6	<0.1	<0.1	<0.1	<5	<2	<2	<2
			8.1	<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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TEST REPORT

Report No. : AY0012740(3)

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Marine Water Quality

Sampling Date : 24-Jan-2019

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Dichloroacetic acid (µg/L)	Trichloroacetic acid (µg/L)
1	16:10	10.1	1.0	<2	<2
			5.0	<2	<2
			9.1	<2	<2
2	16:03	10.6	1.0	<2	<2
			5.3	<2	<2
			9.6	<2	<2
3	15:53	10.5	1.0	<2	<2
			5.2	<2	<2
			9.5	<2	<2
4	15:44	10.1	1.0	<2	<2
			5.0	<2	<2
			9.1	<2	<2
SM6	14:47	14.8	1.0	<2	<2
			7.4	<2	<2
			13.8	<2	<2
SM12	14:01	9.1	1.0	<2	<2
			4.6	<2	<2
			8.1	<2	<2
			LRV	<2	<2

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CMA Industrial Development Foundation Limited

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Marine Water Quality

Sampling Date : 24-Jan-2019

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	16:10	10.1	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	16:03	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	15:53	10.5	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
4	15:44	10.1	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.1	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM6	14:47	14.8	1.0	<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
			13.8	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM12	14:01	9.1	1.0	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.6	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.1	<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	<0.5



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

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Marine Water Quality

Sampling Date 24-Jan-2019

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	16:10	10.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	16:03	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	15:53	10.5	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
4	15:44	10.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM6	14:47	14.8	1.0	<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
			13.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM12	14:01	9.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			4.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.1	<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: 12 Mar 2019

Report No. : AY0012740(3)

Application No. : LW026851(0)

Marine Water Quality

Sampling Date 24-Jan-2019

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)	Heuchloroethane (µg/L)
1	16:10	10.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			5.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			9.1	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
2	16:03	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	15:53	10.5	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
4	15:44	10.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			5.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			9.1	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
SM6	14:47	14.8	1.0	<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
			13.8	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
SM12	14:01	9.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			4.6	<0.5	<0.5	<0.5	<0.5	<0.01	<2.5	<0.5
			8.1	<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: 12 Mar 2019

Report No. : AY0012740(3)

Application No. : LW026851(0)

Marine Water Quality

Sampling Date 24-Jan-2019

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)
1	16:10	10.1	1.0	<0.5	<0.01	<0.01	<0.01
			5.0	<0.5	<0.01	<0.01	<0.01
			9.1	<0.5	<0.01	<0.01	<0.01
2	16:03	10.6	1.0	<0.5	<0.01	<0.01	<0.01
			5.3	<0.5	<0.01	<0.01	<0.01
			9.6	<0.5	<0.01	<0.01	<0.01
3	15:53	10.5	1.0	<0.5	<0.01	<0.01	<0.01
			5.2	<0.5	<0.01	<0.01	<0.01
			9.5	<0.5	<0.01	<0.01	<0.01
4	15:44	10.1	1.0	<0.5	<0.01	<0.01	<0.01
			5.0	<0.5	<0.01	<0.01	<0.01
			9.1	<0.5	<0.01	<0.01	<0.01
SM6	14:47	14.8	1.0	<0.5	<0.01	<0.01	<0.01
			7.4	<0.5	<0.01	<0.01	<0.01
			13.8	<0.5	<0.01	<0.01	<0.01
SM12	14:01	9.1	1.0	<0.5	<0.01	<0.01	<0.01
			4.6	<0.5	<0.01	<0.01	<0.01
			8.1	<0.5	<0.01	<0.01	<0.01
			LRV	<0.5	<0.01	<0.01	<0.01



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Date: 12 Mar 2019

Report No. : AY0012740(3)

Application No. : LW026851(0)

QC Report

Sampling Date 24-Jan-2019

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	92	80-120	84	70-130	7	520
Bromodichloromethane	<0.02	<0.02	85	80-120	87	70-130	6	520
Chloroform	<0.02	<0.02	83	80-120	105	70-130	6	520
Dibromochloromethane	<1	<1	88	80-120	89	70-130	8	520
Bromoacetic acid	<0.4	<0.4	96	80-120	96	70-130	5	520
Chloroacetic acid	<0.4	<0.4	104	80-120	107	70-130	4	520
Dibromoacetic acid	<0.4	<0.4	85	80-120	106	70-130	9	520
Dichloroacetic acid	<0.4	<0.4	92	80-120	93	70-130	6	520
Trichloroacetic acid	<0.4	<0.4	91	80-120	85	70-130	7	520
Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	103	80-120	82	70-130	3	520
Carbon tetrachloride	<0.1	<0.1	85	80-120	97	70-130	7	520
1,1-dichloroethane	<0.1	<0.1	106	80-120	85	70-130	9	520
1,2-dichloroethane	<0.1	<0.1	93	80-120	89	70-130	6	520
1,1-dichloroethylene	<0.1	<0.1	95	80-120	91	70-130	10	520
1,2-dichloropropane	<0.1	<0.1	87	80-120	104	70-130	7	520
Tetrachloroethylene	<0.1	<0.1	87	80-120	102	70-130	7	520
1,1,1-trichloroethane	<0.1	<0.1	83	80-120	98	70-130	4	520
1,1,2-trichloroethane	<0.1	<0.1	86	80-120	106	70-130	9	520
Trichloroethylene	<0.1	<0.1	103	80-120	87	70-130	6	520
2-chlorophenol	<0.1	<0.1	84	80-120	109	70-130	5	520
2,4-dichlorophenol	<0.1	<0.1	93	80-120	85	70-130	5	520
p-chloro-m-cresol	<0.1	<0.1	98	80-120	76	70-130	2	520
Pentachlorophenol	<0.1	<0.1	105	80-120	89	70-130	9	520
2,4,6-trichlorophenol	<0.1	<0.1	92	80-120	74	70-130	6	520
Bis(2-chloroethoxy) methane	<0.1	<0.1	95	80-120	95	70-130	8	520
Chlorobenzene	<0.1	<0.1	95	80-120	97	70-130	7	520
1,4-dichlorobenzene	<0.1	<0.1	86	80-120	83	70-130	11	520
Hexachlorocyclopentadiene	<0.005	<0.005	83	80-120	101	70-130	3	520
Hexachlorocyclopentadiene	<0.5	<0.5	84	80-120	94	70-130	6	520
Hexachloroethane	<0.1	<0.1	104	80-120	90	70-130	8	520
1,2,4-trichlorobenzene	<0.1	<0.1	102	80-120	109	70-130	7	520
Alpha-BHC	<0.005	<0.005	93	80-120	103	70-130	2	520
Beta-BHC	<0.005	<0.005	87	80-120	86	70-130	4	520
Gamma-BHC	<0.005	<0.005	89	80-120	92	70-130	9	520



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0012740(3)

Date: 12 Mar 2019

Application No. : LW026851(0)

Calibration Certificate



Calibration Certificate

Certificate No.: CC0141901

1. Description

Calibration item :	a) pH at 25°C b) Temperature c) Dissolve Oxygen d) Conductivity at 25°C e) Salinity f) Oxidation-Reduction Potential (ORP)
Equipment description :	Multiparaters Instrument
Manufacturer :	YSI
Type / Model No. :	Professional Plus
Serial No. :	Meter: 11J100821
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 :	11 January 2019

3. Date of performance of the calibration

Date of calibration :	14 January 2019
Next Calibration date :	14 April 2019

Authorized Signatory

Warren Yeung

Company Chop:



Certificate issue date: 16 January 2019

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Cal Lab Limited

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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. : AY0012740(3)

Date: 12 Mar 2019

Application No. : LW026851(0)



4. Result of Calibration

a) Temperature

Reference reading (°C)	Display Reading (°C)	Error of indication (°C)
14.97	15.1	0.1
25.12	25.1	0.0
35.08	34.8	-0.3

b) Dissolved Oxygen

Reference reading (mg/L)	Display Reading (mg/L)	Error of indication (mg/L)
0.00	0.00	0.00
2.32	2.38	0.06
6.24	6.14	-0.10

c) Conductivity at 25°C

Reference reading (uS/cm)	Display Reading (uS/cm)	Error of indication (%)
147.6	152.6	3.4
1410	1397	-0.9
13047	12885	-1.2
59033	58109	-1.6
1113820	1094622	-1.7

d) Salinity

Reference reading (ppt)	Display Reading (ppt)	Error of indication (%)
10	10.15	1.5
20	20.21	1.1
30	30.4	1.3

e) Oxidation-Reduction Potential (ORP)

Reference reading (mV)	Display Reading (mV)	Error of indication (mV)
+230	+236	6

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CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0012740(3)

Date: 12 Mar 2019

Application No. : LW026851(0)



f) pH at 25°C

Reference reading	Display Reading	Error of indication
4.00	4.09	0.09
6.86	6.86	0.00
9.18	9.23	0.05
10.01	10.13	0.13

5. Reference method for calibration

pH at 25°C	APHA 21e 4500-H B
Dissolved Oxygen	APHA 21e 4500-O G
Conductivity at 25°C	APHA 21e 2510 B
Temperature	JJG 130-2011
Salinity	APHA 21e 2520 B
Oxidation-Reduction Potential (ORP)	APHA 21e 2580 B

6. Environment condition of calibration

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

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CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0012740(3)

Date: 12 Mar 2019

Application No. : LW026851(0)



Calibration Certificate

Certificate No.: CC0201811

1. Description

Calibration item :	a) Turbidity
Equipment description :	Portable Turbidimeter
Manufacturer :	Hach
Type / Model No. :	2100Q
Serial No. :	17040C057757
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 :	21 November 2018

3. Date of performance of the calibration

Date of calibration :	22 November 2018
Date of next calibration :	22 February 2019

Authorized Signatory
WM Ling

Company Chop



Certificate issue date: 26 November 2018

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CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0012740(3)

Date: 12 Mar 2019

Application No. : LW026851(0)



CAL Lab
CALIBRATION Result of Calibration

a) Turbidity

Reference reading (NTU)	Display Reading (NTU)	Error of indication (%)
Blank	0.02	0.1
10	10.0	0.0
20	19.9	-0.1
100	99.8	-0.2
800	806	0.1

5. Reference method for calibration

Turbidity	APHA 21e 2130B
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6. Environment condition of calibration

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

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

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