



**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 in Urban Area, Lantau and Outlying Islands to the
Drainage Services Department**

Provision of Marine Water Quality Monitoring Services

Report for the Month of Aug 2018

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 : LW026851(0)

Report Number : AW0056035(8)

Report Issued Date : 31 Jan 2019

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

CMA Industrial Development Foundation Limited

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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 Marine Water Quality Monitoring (MWQM) of Project in Aug 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	28 Aug 2018	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 Marine Water Quality Monitoring (MWQM) of Project on 28 Aug 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 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 28 Aug 2018.

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. AW0056034(7)**.

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
Pentachlorophenol			0.5



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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		0.01	
Hexachlorocyclopentadiene		2.5	
Hexachloroethane		0.5	
1,2,4-trichlorobenzene		USEPA 625	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 28 Aug 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 28 Aug 2018 and QC report are shown in **Appendix II – Report no. AW0056034(7)**.



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Appendix I - Location of Monitoring Stations

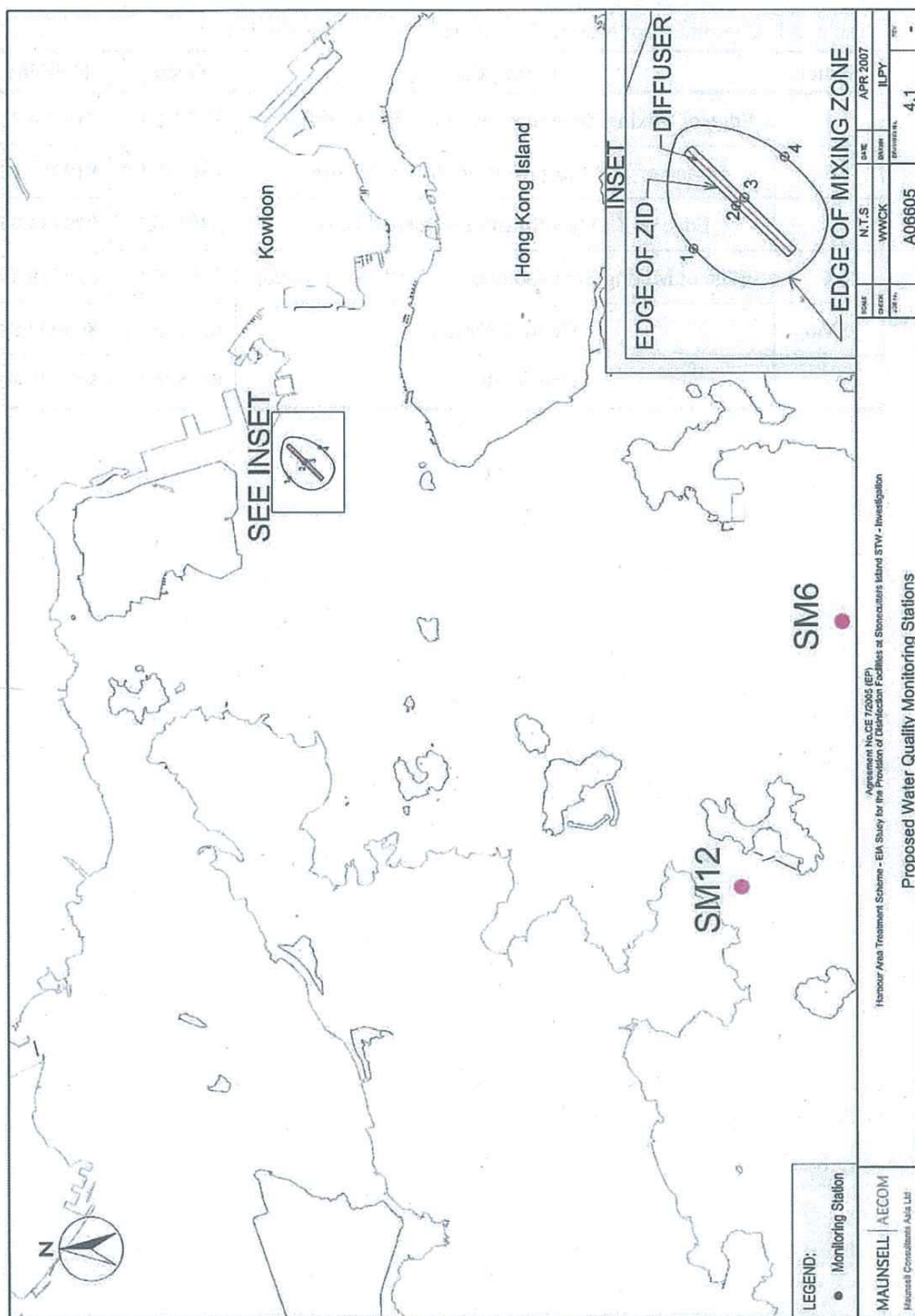


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Appendix II - Report for Laboratory Test(s)



CMA Testing and Certification Laboratories

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TEST REPORT

Report No. : AW0056034(7) Date: 31 Jan 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/2016/12

Project Name : 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

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.

Sampling Location :

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

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CMA Testing and Certification Laboratories

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TEST REPORT

Report No. : AW0056034(7) Date: 31 Jan 2019

Application No. : LW026851(0)

Sampling Date : 28 Aug 2018.

Date Received : 28 Aug 2018.

Test Period : 28 Aug 2018 to 29 Sep 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

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TEST REPORT

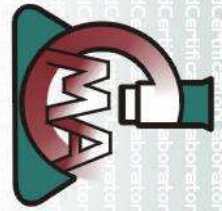
Report No. : AW0056034(7)

Date: 31 Jan 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

Report No. : AW0056034(7)

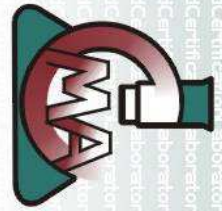
Date: 9 Oct 2018

Application No. : LW026851(0)

Marine Water Quality

Sampling Date 28-Aug-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	14:50	10.0	1.0	210	28.2	28.2	26.9	26.9	8.1	8.1	5.9	5.9	87.7	87.7	3.1	3.1	0.03	0.03
			5.0	480	28.1	28.1	27.2	27.2	8.1	8.1	5.6	5.6	83.2	83.2	4.2	4.2	0.04	0.04
			9.0	390	28.0	28.0	27.9	27.9	8.2	8.2	5.3	5.3	78.8	78.8	6.8	6.8	0.03	0.03
2	14:39	11.1	1.0	800	28.2	28.2	27.1	27.1	8.1	8.1	5.8	5.8	86.2	86.2	3.0	3.0	0.02	0.02
			5.6	290	27.9	27.9	27.4	27.4	8.2	8.2	5.7	5.7	84.7	84.7	3.5	3.5	0.04	0.04
			10.1	310	27.9	27.9	27.9	27.9	8.2	8.2	5.3	5.3	78.8	78.8	5.2	5.2	0.02	0.02
3	14:26	10.1	1.0	370	28.2	28.2	28.2	28.2	8.0	8.0	5.7	5.7	84.7	84.7	2.7	2.7	0.02	0.02
			5.0	220	28.0	28.0	28.5	28.5	8.2	8.2	5.5	5.5	81.7	81.7	3.2	3.2	0.03	0.03
			9.1	320	27.9	27.9	29.1	29.1	8.2	8.2	5.2	5.2	77.3	77.3	4.5	4.5	0.01	0.01
4	14:13	9.6	1.0	350	28.1	28.1	27.7	27.7	8.1	8.1	5.6	5.6	83.7	83.7	3.1	3.1	0.04	0.04
			4.8	210	28.1	28.1	28.1	28.1	8.1	8.1	5.3	5.3	78.8	78.8	4.6	4.6	0.02	0.02
			8.6	340	27.9	27.9	28.5	28.5	8.2	8.2	5.1	5.1	75.8	75.8	5.7	5.7	0.03	0.03
SM6	13:02	14.8	1.0	4	28.1	28.1	30.9	30.9	8.4	8.4	5.8	5.8	87.0	87.0	3.6	3.6	0.03	0.03
			7.4	12	27.8	27.8	32.3	32.3	8.4	8.4	5.6	5.6	86.2	86.2	3.8	3.8	0.02	0.02
			13.8	16	27.6	27.6	32.1	32.1	8.5	8.5	5.2	5.2	80.2	80.2	4.3	4.3	0.01	0.01
SM12	12:24	8.7	1.0	8	27.9	27.9	30.0	30.0	8.4	8.4	5.9	5.9	89.4	89.4	3.6	3.6	0.02	0.02
			4.4	9	27.7	27.7	30.9	30.9	8.4	8.4	5.7	5.7	85.5	85.5	3.4	3.4	0.03	0.03
			7.7	9	27.8	27.8	31.0	31.0	8.5	8.5	5.4	5.4	82.1	82.1	3.3	3.3	0.03	0.03



**CMA Testing
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TEST REPORT

Report No. : AW0056034(7)

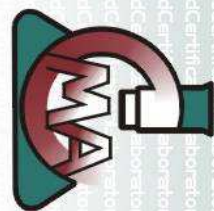
Date: 9 Oct 2018

Application No. : LW026851(0)

Marine Water Quality

Sampling Date 28-Aug-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Bromoform (µg/L)		Bromodichloromethane (µg/L)		Chloroform (µg/L)		Dibromochloromethane (µg/L)		Bromacetic acid (µg/L)		Chloroacetic acid (µg/L)		Dibromoacetic acid (µg/L)		
1	14:50	10.0	1.0	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			5.0	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	<2
			9.0	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	<2
2	14:39	11.1	1.0	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			5.6	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			10.1	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
3	14:26	10.1	1.0	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			5.0	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			9.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
4	14:13	9.6	1.0	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			4.8	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			8.6	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
SM6	13:02	14.8	1.0	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			7.4	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			13.8	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
SM12	12:24	8.7	1.0	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			4.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			7.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	
			LRV	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<5	<2	<2	<2	<2	<2	<2	



**CMA Testing
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TEST REPORT

Date: 9 Oct 2018

Report No. : AW0056034(7)

Application No. : LW026851(0)

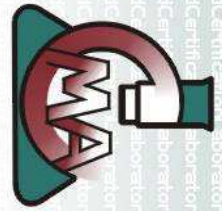
Marine Water Quality

Sampling Date 28-Aug-2018

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Dichloroacetic acid (µg/L)		Trichloroacetic acid (µg/L)	
				<2	<2	<2	<2
1	14:50	10.0	1.0	<2	<2	<2	<2
			5.0	<2	<2	<2	<2
			9.0	<2	<2	<2	<2
2	14:39	11.1	1.0	<2	<2	<2	<2
			5.6	<2	<2	<2	<2
			10.1	<2	<2	<2	<2
3	14:26	10.1	1.0	<2	<2	<2	<2
			5.0	<2	<2	<2	<2
			9.1	<2	<2	<2	<2
4	14:13	9.6	1.0	<2	<2	<2	<2
			4.8	<2	<2	<2	<2
			8.6	<2	<2	<2	<2
SM6	13:02	14.8	1.0	<2	<2	<2	<2
			7.4	<2	<2	<2	<2
			13.8	<2	<2	<2	<2
SM12	12:24	8.7	1.0	<2	<2	<2	<2
			4.4	<2	<2	<2	<2
			7.7	<2	<2	<2	<2
			LRV	<2	<2	<2	<2

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廠商會檢定中心

TEST REPORT

Report No. : AW0056034(7)

Date: 9 Oct 2018

Application No. : LW026851(0)

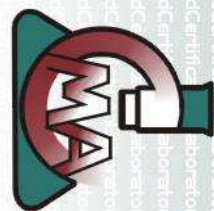
Marine Water Quality

Sampling Date 28-Aug-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	14:50	10.0	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			5.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	14:39	11.1	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			5.6	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			10.1	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3	14:26	10.1	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			5.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			9.1	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4	14:13	9.6	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			4.8	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			8.6	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
SM6	13:02	14.8	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			7.4	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			13.8	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
SM12	12:24	8.7	1.0	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			4.4	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			7.7	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			LRV	<20	<20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	

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TEST REPORT

Report No. : AW0056034(7)

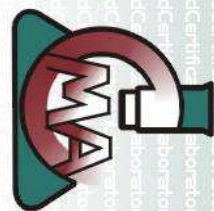
Date: 9 Oct 2018

Application No. : LW026851(0)

Marine Water Quality

Sampling Date 28-Aug-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	14:50	10.0	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			9.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2	14:39	11.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			5.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			10.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3	14:26	10.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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	<0.5	<0.5	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4	14:13	9.6	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			4.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			8.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM6	13:02	14.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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	<0.5	<0.5	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SM12	12:24	8.7	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			7.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	



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TEST REPORT

Report No. : AW0056034(7)

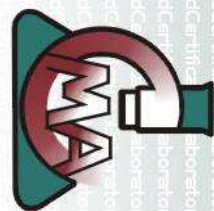
Date: 9 Oct 2018

Application No. : LW026851(0)

Marine Water Quality

Sampling Date 28-Aug-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	14:50	10.0	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			9.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
2	14:39	11.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			5.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			10.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
3	14:26	10.1	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			9.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
4	14:13	9.6	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			4.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			8.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
SM6	13:02	14.8	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			7.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			13.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
SM12	12:24	8.7	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			4.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			7.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5
			LRV	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	<0.01	<2.5	<2.5	<0.5	<0.5	



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TEST REPORT

Date: 9 Oct 2018

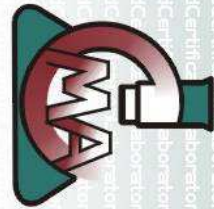
Report No. : AW0056034(7)

Application No. : LW026851(0)

Marine Water Quality

Sampling Date 28-Aug-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)	
1	14:50	10.0	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			5.0	<0.5	<0.5	>0.01	>0.01	<0.01	<0.01	<0.01	<0.01
			9.0	<0.5	<0.5	>0.01	>0.01	<0.01	<0.01	<0.01	<0.01
2	14:39	11.1	1.0	<0.5	<0.5	>0.01	>0.01	<0.01	<0.01	<0.01	<0.01
			5.6	<0.5	<0.5	>0.01	>0.01	<0.01	<0.01	<0.01	<0.01
			10.1	<0.5	<0.5	>0.01	>0.01	<0.01	<0.01	<0.01	<0.01
3	14:26	10.1	1.0	<0.5	<0.5	>0.01	>0.01	<0.01	<0.01	<0.01	<0.01
			5.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			9.1	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
4	14:13	9.6	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.8	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			8.6	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SM6	13:02	14.8	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			7.4	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			13.8	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SM12	12:24	8.7	1.0	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			4.4	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			7.7	<0.5	<0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
			LRV	<0.5		<0.01		<0.01		<0.01	



**CMA Testing
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TEST REPORT

Date: 9 Oct 2018

Report No. : AW0056034(7)

Application No. : LW026851(0)

QC Report

Sampling Date 28-Aug-2018

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	87	70-130	8	≤20
Bromodichloromethane	<0.02	<0.02	98	80-120	95	70-130	6	≤20
Chloroform	<0.02	<0.02	103	80-120	93	70-130	8	≤20
Dibromochloromethane	<1	>1	108	80-120	106	70-130	8	≤20
Bromoacetic acid	<0.4	>0.4	112	80-120	106	70-130	7	≤20
Chloroacetic acid	<0.4	>0.4	95	80-120	108	70-130	9	≤20
Dibromoacetic acid	<0.4	<0.4	91	80-120	116	70-130	4	≤20
Dichloroacetic acid	<0.4	<0.4	83	80-120	85	70-130	5	≤20
Trichloroacetic acid	<0.4	>0.4	98	80-120	94	70-130	2	≤20
Parameter	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	>4	>4	96	80-120	87	70-130	6	≤20
Carbon tetrachloride	<0.1	<0.1	103	80-120	91	70-130	8	≤20
1,1-dichloroethane	<0.1	>0.1	108	80-120	93	70-130	7	≤20
1,2-dichloroethane	<0.1	<0.1	97	80-120	104	70-130	7	≤20
1,1-dichloroethylene	<0.1	<0.1	93	80-120	108	70-130	7	≤20
1,2-dichloropropane	<0.1	>0.1	101	80-120	95	70-130	6	≤20
Tetrachloroethylene	<0.1	<0.1	106	80-120	92	70-130	9	≤20
1,1,1-trichloroethane	<0.1	>0.1	112	80-120	98	70-130	8	≤20
1,1,2-trichloroethane	<0.1	<0.1	94	80-120	94	70-130	4	≤20
Trichloroethylene	<0.1	<0.1	90	80-120	103	70-130	3	≤20
2-chlorophenol	<0.1	>0.1	90	80-120	106	70-130	6	≤20
2,4-dichlorophenol	<0.1	<0.1	93	80-120	107	70-130	7	≤20
p-chloro-m-cresol	<0.1	<0.1	104	80-120	107	70-130	5	≤20
Pentachlorophenol	<0.1	>0.1	97	80-120	98	70-130	4	≤20
2,4,6-trichlorophenol	<0.1	<0.1	102	80-120	94	70-130	4	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	102	80-120	96	70-130	9	≤20
Chlorobenzene	<0.1	<0.1	97	80-120	94	70-130	10	≤20
1,4-dichlorobenzene	<0.1	<0.1	91	80-120	97	70-130	6	≤20
Hexachlorobenzene	<0.005	<0.005	95	80-120	104	70-130	5	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	87	80-120	93	70-130	7	≤20
Hexachloroethane	<0.1	<0.1	103	80-120	92	70-130	4	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	84	80-120	113	70-130	2	≤20
Alpha-BHC	<0.005	<0.005	98	80-120	86	70-130	8	≤20
Beta-BHC	<0.005	<0.005	95	80-120	95	70-130	3	≤20
Gamma-BHC	<0.005	>0.005	104	80-120	92	70-130	3	≤20

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CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0056034(7)

Date: 9 Oct 2018

Application No. : LW026851(0)

Calibration Certificate



Calibration Certificate

Certificate No.: CC0061806

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 :	29 May 2018

3. Date of performance of the calibration

Date of calibration :	1 June 2018
Date of next calibration :	1 September 2018

Authorized Signatory

WM Ling 

Company Chop 

Certificate issue date: 2 June 2018

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cc0061806

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. : AW0056034(7)

Date: 9 Oct 2018

Application No. : LW026851(0)



CALIBRATION

4. Result of Calibration

a) Turbidity

Reference reading (NTU)	Display Reading (NTU)	Error of indication (%)
Blank	0.01	0.1
10	9.90	-0.1
20	20.10	0.1
100	99.5	-0.1
800	813	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

*** End of Certificate ***

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CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0056034(7)

Date: 9 Oct 2018

Application No. : LW026851(0)



Calibration Certificate

Certificate No.: CC0041807

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: 17H105750
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 :	13 July 2018

3. Date of performance of the calibration

Date of calibration :	16 July 2018
Next Calibration date :	15 October 2018

Authorized Signatory

WM Ling

Company Chop:



Certificate issue date: 17 July 2018

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CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0056034(7)

Date: 9 Oct 2018

Application No. : LW026851(0)



CALIBRATION

4. Result of Calibration

a) Temperature

Reference reading (°C)	Display Reading (°C)	Error of indication (°C)
15.02	15.1	0.1
25.11	25.2	0.1
35.13	35.0	-0.1

b) Dissolved Oxygen

Reference reading (mg/L)	Display Reading (mg/L)	Error of indication (mg/L)
0.00	0.00	0.00
2.36	2.40	0.04
6.18	6.11	-0.07

c) Conductivity at 25°C

Reference reading (uS/cm)	Display Reading (uS/cm)	Error of indication (%)
147.6	144.3	-2.2
1410	1402	-0.6
13047	12933	-0.9
59033	58261	-1.3
1113820	1095327	-1.7

d) Salinity

Reference reading (ppt)	Display Reading (ppt)	Error of indication (%)
10	9.98	-0.2
20	20.1	0.5
30	30.1	0.3

e) Oxidation-Reduction Potential (ORP)

Reference reading (mV)	Display Reading (mV)	Error of indication (mV)
+230	+227	3

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CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0056034(7)

Date: 9 Oct 2018

Application No. : LW026851(0)



CALIBRATION

f) pH at 25°C

Reference reading	Display Reading	Error of indication
4.00	4.05	0.05
6.86	6.85	-0.01
9.18	9.19	0.01
10.01	10.05	0.04

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

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