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

Provision of Routine Marine Water Quality Monitoring Services

Report for the Month of Jul 2022

Contract No.	:	DE/2020/02
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	:	LB021709(8)
Report Number	:	AB0042155(6)
Report Issued Date	:	19 Aug 2022

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lau Yan Kin
Senior Manager
Environmental Division

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

1. This is the water quality monitoring report prepared by CMA Testing for Contract No. DE/2020/02 "Term Contract for Provision of Sampling and Analysing of Samples for Various Sewage Treatment Facilities in Urban Area, Lantau and Outlying Islands to the Drainage Services Department''. This report documented the results and findings of Operation Phase Environmental Monitoring works conducted for Routine Marine Water Quality Monitoring (rMWQM) of Project.

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	29 Jul 2022	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 includes 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.

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2. MARINE WATER QUALTIY MONITORING

Monitoring Requirements

2.1. Monitoring was taken at three water depths, namely, 1m below water surface, mid-depth and 1m above sea bed, expect 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 **Appendix I.**

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 monitoring date.

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.**

Table 2.2 Marine Water Quality Monitoring Equipment

Equipment	Model and Make	Qty
Water Sampler	Kahlsico Water Sampler	1
Water Depth Detector	Garmin Striker 4 or equivalent	1
Positioning System	Global Positioning System (GPS)	1
Chlorine Meter	HACH Pocket Colorimeter II or equivalent	1
Turbidimeter	HACH 2100Q or equivalent	1
Multi-parameter Water Quality System	YSI Professional Plus (Pro Plus) or equivalent	1

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Monitoring Parameter s 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 lowest reportable value are listed in Table 2.3

Table 2.3 Analytical Methods for Laboratory Analysis for Marine Water Samples

Parameters		Analytical Method	Lowest Reportable Value (µg/L)
TRC and Potential CBPs			
Total Residual Chlorine		APHA 23ed 4500 Cl G	10
Bromoform	Tri-halomethanes (THMs)	USEPA 8260B	0.1
Bromodichloromethane			0.1
Chloroform			0.1
Dibromochloromethane			5
Bromoacetic acid	Haloacetic Acids (HAAs)	In house method TG-ENV-WW-79 (by GC-ECD)	2
Chloroacetic acid			2
Dibromoacetic acid			2
Dichloroacetic acid			2
Trichloroacetic acid			2
Bacteria			
E.coli		Environmental Monitoring Laboratory Test Method Manual TM09/EC/10/098 Issue 3, Environmental Protection Department, HK.	1 cfu/100ml
Contaminants of Concern (COCs)			
Methylene chloride	Halogenated Aliphatics	ISO 17943:2016 & USEPA 8206B	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

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

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 on the monitoring date

Marine Water Quality

3.2. The in-situ measurement results include dissolved oxygen, turbidity, salinity, pH and temperature of the marine water monitoring. Also, the results of marine water quality monitoring conducted on the monitoring date and QC report are shown in **Appendix II.**

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Appendix I - Location of Monitoring Stations

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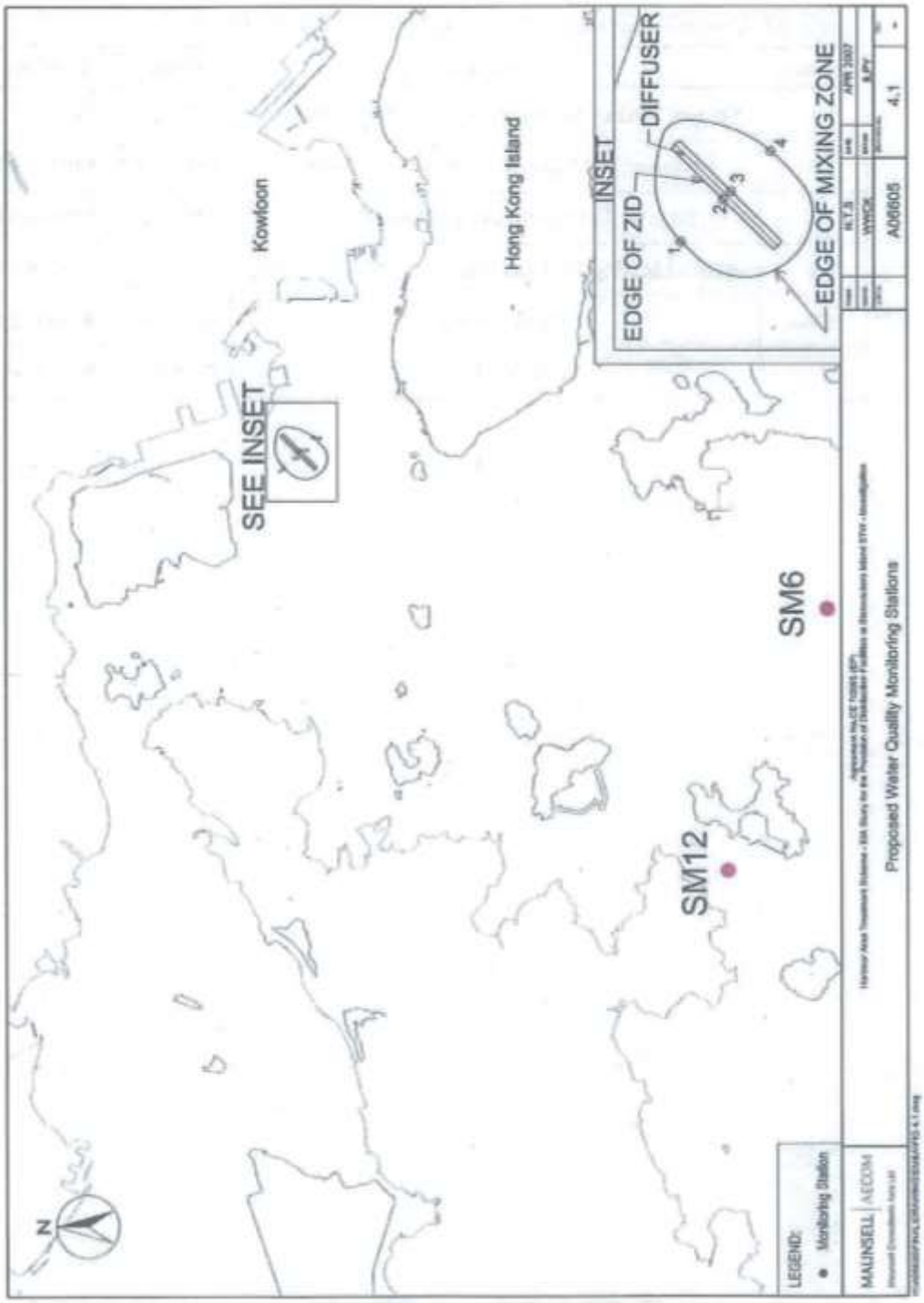

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Appendix II - Report for Laboratory Test(s)

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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

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/2020/02

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

Sample Description : Six (6) marine sampling point, 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 10.

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
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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Sampling Date : 29 Jul 2022

Date Received : 29 Jul 2022

Test Period : 29 Jul 2022 to 30 Jul 2022

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. Tetrachloroethlyene
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

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Test Method : 1-5. In house method (by multimeter)
6. APHA 23ed 2130 B
7. APHA 23ed 4500 Cl G
8. Environmental Monitoring Laboratory Test Method Manual TM09/EC/10/098 Issue 3, Environmental Protection Department, HK.
9-12. USEPA 8260B
13-17. In house method TG-ENV-WW-79 (by GC-MSD)
18-27. ISO 17943:2016 & USEPA 8260B
28-33. In house method TG-ENV-WW-80, 84 & 86 (by GC-MSD)
34-42. In house method TG-ENV-WW-78 (by Headspace GC-MSD) & In house method TG-ENV-WW-86 (by GC-MSD)

Test Result : Refer to results on page 4 to 10.

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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Marine Water Quality

Sampling Date 29-Jul-2022

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	14:00 -14:05	9.8	1.0	18	28.9	28.9	28.5	28.5	8.8	8.8	5.7	5.7	86.7	86.7	2.1	2.1	0.01	0.01
			4.9	160	28.1	28.1	29.5	29.5	8.8	8.8	5.8	5.8	86.4	86.4	2.2	2.2	0.01	0.01
			8.8	20	28.1	28.1	30.0	30.0	8.7	8.7	5.7	5.7	85.0	85.0	2.1	2.1	0.01	0.01
2	14:08 - 14:13	9.7	1.0	6	28.8	28.8	29.5	29.5	8.8	8.8	6.5	6.5	98.8	98.8	2.7	2.7	0.01	0.01
			4.9	52	28.8	28.8	29.7	29.7	8.8	8.8	5.7	5.7	87.2	87.2	2.2	2.2	0.01	0.01
			8.7	6	28.2	28.2	30.1	30.1	8.8	8.8	5.7	5.7	85.9	85.9	2.3	2.3	0.01	0.01
3	14:16-14:21	9.9	1.0	98	28.6	28.6	29.1	29.1	8.9	8.9	5.8	5.8	89.0	89.0	2.6	2.6	0.01	0.01
			5.0	8	28.6	28.6	29.6	29.6	8.9	8.9	5.7	5.7	88.0	88.0	2.3	2.3	0.01	0.01
			8.9	6	28.5	28.5	30.0	30.0	8.9	8.9	5.7	5.7	85.9	85.9	2.3	2.3	0.01	0.01
4	14:24 - 14:29	9.7	1.0	160	29.0	29.0	29.5	29.5	8.9	8.9	6.2	6.2	86.2	86.2	2.1	2.1	0.01	0.01
			4.9	64	28.3	28.3	29.5	29.5	8.9	8.9	5.7	5.7	86.2	86.2	2.2	2.2	0.02	0.02
			8.7	1000	28.1	28.1	30.3	30.3	8.9	8.9	5.6	5.6	84.2	84.2	2.3	2.3	0.01	0.01
SM6	12:38-12:41	14.5	1.0	10	28.5	28.5	29.0	29.0	8.8	8.8	5.6	5.6	84.1	84.1	2.7	2.7	0.01	0.01
			7.3	28	28.4	28.4	29.4	29.4	8.8	8.8	5.5	5.5	82.7	82.7	2.3	2.3	0.02	0.02
			13.5	6	28.3	28.3	29.9	29.9	8.8	8.8	5.4	5.4	82.1	82.1	2.3	2.3	0.01	0.01
SM12	12:00-12:04	8.8	1.0	950	28.6	28.6	28.9	28.9	8.9	8.9	5.5	5.5	85.0	85.0	2.6	2.6	0.02	0.02
			4.4	4	28.5	28.5	29.2	29.2	8.8	8.8	5.4	5.4	81.8	81.8	2.3	2.3	0.02	0.02
			7.8	2	28.3	28.3	29.6	29.6	8.8	8.8	5.3	5.3	80.5	80.5	2.2	2.2	0.02	0.02
			LRV	1	0.1		1		0.1		0.5 mg/L		-		1		0.01 mg/L	

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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Marine Water Quality

Sampling Date 29-Jul-2022

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)	
1	14:00 -14:05	9.8	1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			4.9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			8.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
2	14:08 - 14:13	9.7	1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			4.9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			8.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
3	14:16-14:21	9.9	1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			5.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			8.9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
4	14:24 - 14:29	9.7	1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			4.9	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			8.7	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
SM6	12:38-12:41	14.5	1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			7.3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			13.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
SM12	12:00-12:04	8.8	1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			4.4	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			7.8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 5	< 5	< 2	< 2
			LRV	0.1		0.1		0.1		5		2	

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TEST REPORT

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Marine Water Quality

Sampling Date 29-Jul-2022

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Chloroacetic acid (µg/L)		Dibromoacetic acid (µg/L)		Dichloroacetic acid (µg/L)		Trichloroacetic acid (µg/L)	
1	14:00 -14:05	9.8	1.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			4.9	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			8.8	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
2	14:08 - 14:13	9.7	1.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			4.9	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			8.7	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
3	14:16-14:21	9.9	1.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			5.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			8.9	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
4	14:24 - 14:29	9.7	1.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			4.9	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			8.7	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
SM6	12:38-12:41	14.5	1.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			7.3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			13.5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
SM12	12:00-12:04	8.8	1.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			4.4	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			7.8	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
			LRV	2		2		2		2	

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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Marine Water Quality

Sampling Date 29-Jul-2022

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)	
1	14:00 -14:05	9.8	1.0	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			4.9	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.8	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2	14:08 - 14:13	9.7	1.0	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			4.9	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.7	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
3	14:16-14:21	9.9	1.0	< 20	< 20	< 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
			8.9	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4	14:24 - 14:29	9.7	1.0	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			4.9	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.7	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
SM6	12:38-12:41	14.5	1.0	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			7.3	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			13.5	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
SM12	12:00-12:04	8.8	1.0	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			4.4	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			7.8	< 20	< 20	< 0.5	< 0.5	< 0.5	< 0.5	< 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 Industrial Development Foundation Limited
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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Marine Water Quality

Sampling Date 29-Jul-2022

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Tetrachloroethylene (µg/L)		1,1,1-trichloroethane (µg/L)		1,1,2-trichloroethane (µg/L)		Trichloroethylene (µg/L)		2-chlorophenol (µg/L)		2,4-dichlorophenol (µg/L)	
1	14:00 -14:05	9.8	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
			4.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2	14:08 - 14:13	9.7	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
			4.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
3	14:16-14:21	9.9	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
			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
			8.9	< 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	14:24 - 14:29	9.7	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
			4.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
SM6	12:38-12:41	14.5	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
			7.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			13.5	< 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	12:00-12:04	8.8	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
			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
			7.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			LRV	0.5		0.5		0.5		0.5		0.5		0.5	

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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Marine Water Quality

Sampling Date 29-Jul-2022

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	p-chloro-m-cresol (µg/L)		Pentachlorophenol (µg/L)		2,4,6-trichlorophenol (µg/L)		Bis(2-chloroethoxy) methane (µg/L)		Chlorobenzene (µg/L)		1,4-dichlorobenzene (µg/L)	
1	14:00 -14:05	9.8	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
			4.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2	14:08 - 14:13	9.7	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
			4.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
3	14:16-14:21	9.9	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
			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
			8.9	< 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	14:24 - 14:29	9.7	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
			4.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			8.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
SM6	12:38-12:41	14.5	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
			7.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			13.5	< 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	12:00-12:04	8.8	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
			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
			7.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
			LRV	0.5		0.5		0.5		0.5		0.5		0.5	

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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Marine Water Quality

Sampling Date 29-Jul-2022

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Hexachlorobenzene (µg/L)		Hexachlorocyclopentadiene (µg/L)		Hexachloroethane (µg/L)		1,2,4-trichlorobenzene (µg/L)		Alpha-BHC (µg/L)		Beta-BHC (µg/L)		Gamma-BHC (µg/L)	
1	14:00 -14:05	9.8	1.0	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			4.9	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			8.8	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2	14:08 - 14:13	9.7	1.0	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			4.9	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			8.7	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
3	14:16-14:21	9.9	1.0	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			5.0	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			8.9	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4	14:24 - 14:29	9.7	1.0	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			4.9	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			8.7	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SM6	12:38-12:41	14.5	1.0	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			7.3	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			13.5	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
SM12	12:00-12:04	8.8	1.0	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			4.4	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			7.8	< 0.01	< 0.01	< 2.5	< 2.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
			LRV	0.01		2.5		0.5		0.5		0.01		0.01		0.01	

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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

QC Report

Parameter	Method Blank	Acceptance Criteria	QC Recovery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Bromoform	<0.02	<0.02	89	80-120	110	70-130	15	≤20
Bromodichloromethane	<0.02	<0.02	103	80-120	107	70-130	10	≤20
Chloroform	<0.02	<0.02	91	80-120	86	70-130	7	≤20
Dibromochloromethane	<1	<1	94	80-120	92	70-130	13	≤20
Bromoacetic acid	<0.4	<0.4	90	80-120	94	70-130	11	≤20
Chloroacetic acid	<0.4	<0.4	84	80-120	99	70-130	9	≤20
Dibromoacetic acid	<0.4	<0.4	97	80-120	101	70-130	12	≤20
Dichloroacetic acid	<0.4	<0.4	102	80-120	113	70-130	10	≤20
Trichloroacetic acid	<0.4	<0.4	10	80-120	96	70-130	14	≤20

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QC Report

Parameter	Method Blank	Acceptance Criteria	QC Recovery	Acceptance Criteria	Spike Recovery	Acceptance Criteria	Duplicate (RPD)	Acceptance Criteria
	(µg/L)	(µg/L)	(%)	(%)	(%)	(%)	(%)	(%)
Methylene chloride	<4	<4	95	80-120	115	70-130	6	≤20
Carbon tetrachloride	<0.1	<0.1	91	80-120	110	70-130	9	≤20
1,1-dichloroethane	<0.1	<0.1	88	80-120	96	70-130	11	≤20
1,2-dichloroethane	<0.1	<0.1	90	80-120	97	70-130	8	≤20
1,1-dichloroethylene	<0.1	<0.1	93	80-120	104	70-130	4	≤20
1,2-dichloropropane	<0.1	<0.1	96	80-120	101	70-130	7	≤20
Tetrachloroethylene	<0.1	<0.1	101	80-120	106	70-130	10	≤20
1,1,1-trichloroethane	<0.1	<0.1	106	80-120	91	70-130	12	≤20
1,1,2-trichloroethane	<0.1	<0.1	93	80-120	95	70-130	11	≤20
Trichloroethylene	<0.1	<0.1	97	80-120	93	70-130	13	≤20
2-chlorophenol	<0.1	<0.1	89	80-120	102	70-130	15	≤20
2,4-dichlorophenol	<0.1	<0.1	94	80-120	106	70-130	9	≤20
p-chloro-m-cresol	<0.1	<0.1	90	80-120	85	70-130	9	≤20
Pentachlorophenol	<0.1	<0.1	107	80-120	100	70-130	4	≤20
2,4,6-trichlorophenol	<0.1	<0.1	110	80-120	103	70-130	5	≤20
Bis(2-chloroethoxy) methane	<0.1	<0.1	103	80-120	95	70-130	13	≤20
Chlorobenzene	<0.1	<0.1	92	80-120	99	70-130	11	≤20
1,4-dichlorobenzene	<0.1	<0.1	96	80-120	104	70-130	15	≤20
Hexachlorobenzene	<0.005	<0.005	95	80-120	87	70-130	8	≤20
Hexachlorocyclopentadiene	<0.5	<0.5	105	80-120	97	70-130	8	≤20
Hexachloroethane	<0.1	<0.1	110	80-120	103	70-130	10	≤20
1,2,4-trichlorobenzene	<0.1	<0.1	89	80-120	92	70-130	12	≤20
Alpha-BHC	<0.005	<0.005	107	80-120	100	70-130	16	≤20
Beta-BHC	<0.005	<0.005	101	80-120	107	70-130	7	≤20
Gamma-BHC	<0.005	<0.005	96	80-120	90	70-130	10	≤20

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TEST REPORT

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Calibration Certificate

Cal Lab Limited 校正實驗室有限公司
Room 2103, Technology Plaza, 29-35 Sha Tsui Road,
Tsuen Wan, NT, Hong Kong
Tel: +852 25680106 Email: info@callab.com.hk
Fax: +852 30116194 Website: www.callab.com.hk

Calibration Certificate No.: CC0402207

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

Equipment Identification

Equipment Description	Manufacturer	Model No.	Serial No.	Assigned equipment No.:
Multiparameter Instrument	YSI	Professional Plus	Meter: 17F104341	N/A

Certificate Information

Date of Receipt:	13 July 2022	Calibration Condition:	18-25°C, <75%RH
Date of Calibration:	15 July 2022	Adjustment:	N/A
Due Date of Calibration:	15 October 2022	Appearance:	Good
Calibration Procedure:	APHA 21e 4500-H B ,APHA 21e 4500-O G, APHA 21e 2510 B, JJG 130-2011, APHA 21e 2520 B, APHA 21e 2580 B	Remark:	N/A

Note1: The estimated expanded uncertainties have been calculated in "Evaluation and expression of uncertainty in measurement" and give an internal estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.
Note2: The standard (s) and instrument used in the calibration are traceable to national or international recognized standard and are calibrated on a schedule to maintain the accuracy and good condition.
Note3: The result reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument.
Note4: The result shows in this calibration certificate relate only to the item calibrated, and the result only applies to the calibration item as received.

Approved By:
Sherry Cheung

Company Chop:

Certificate Issue Date: 18 July 2022

CT-BEG-03

1. The certificate shall not be reproduced except in full, without written approval of Cal Lab Calibration CC0402207
2. The certificate is issued subject to the latest Terms and Conditions, available at our web site Page 1 of 2

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatesting.org Web Site: http://www.cmatesting.org

TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Cal Lab Limited 校正實驗室有限公司
Room 2103, Technology Plaza, 29-35 Sha Tsui Road,
Tsuen Wan, NT, Hong Kong
Tel: +852 25680106 Email: info@callab.com.hk
Fax: +852 30116194 Website: www.callab.com.hk

Result of Calibration

a) Temperature

Reference reading (°C)	Display Reading (°C)	Error of indication (°C)
14.95	14.8	-0.1
25.14	24.9	-0.2
34.87	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
4.02	3.98	-0.04
8.06	8.01	-0.05

c) Conductivity at 25°C

Reference reading (uS/cm)	Display Reading (uS/cm)	Error of indication (%)
147.4	150.6	2.2
1411	1509	6.9
12846	12065	-6.1
111310	111034	-0.2

d) Salinity

Reference reading (ppt)	Display Reading (ppt)	Error of indication (%)
10	9.97	-0.3
20	20.01	0.1
30	30.2	0.7

e) Oxidation-Reduction Potential (ORP)

Reference reading (mV)	Display Reading (mV)	Error of indication (mV)
+230	+228	-2

f) pH at 25°C

Reference reading	Display Reading	Error of indication
4.00	4.10	0.10
6.86	6.93	0.07
9.18	9.18	0.00
10.01	9.99	-0.03

*** End of Certificate ***

CC0402207
Page 2 of 2

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TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)

Cal Lab Limited 校正實驗室有限公司
Room 2103, Technology Plaza, 29-35 Sha Tsui Road,
Tsuen Wan, NT, Hong Kong
Tel: +852 25680106 Email: info@callab.com.hk
Fax: +852 30116194 Website: www.callab.com.hk

Calibration Certificate No.: CC0562206

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

Equipment Identification

Equipment Description	Manufacturer	Model No.	Serial No.	Assigned equipment No.:
Portable Turbidimeter	Hach	2100Q	17070C059801	N/A

Certificate Information

Date of Receipt:	27 June 2022	Calibration Condition:	18-25°C, <75%RH
Date of Calibration:	28 June 2022	Adjustment:	N/A
Due Date of Calibration:	28 September 2022	Appearance:	Good
Calibration Procedure:	APHA 21e 2130B	Remark:	N/A

Result of Calibration

Turbidity

Reference reading (NTU)	Display Reading (NTU)	Error of indication (%)
Blank	9.95	-0.5
10	20.1	0.5
20	102	2.0
100	806	0.8
800	9.95	-0.5

Note1: The estimated expanded uncertainties have been calculated in "Evaluation and expression of uncertainty in measurement" and give an internal estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.
Note2: The standard (s) and instrument used in the calibration are traceable to national or international recognized standard and are calibrated on a schedule to maintain the accuracy and good condition.
Note3: The result reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long term stability of the instrument.
Note4: The result shows in this calibration certificate relate only to the item calibrated, and the result only applies to the calibration item as received.

Approved By:

Sherry Cheung

Company Chop:

Certificate Issue Date: 30 June 2022

CT-BEG-03

*** End of Certificate ***

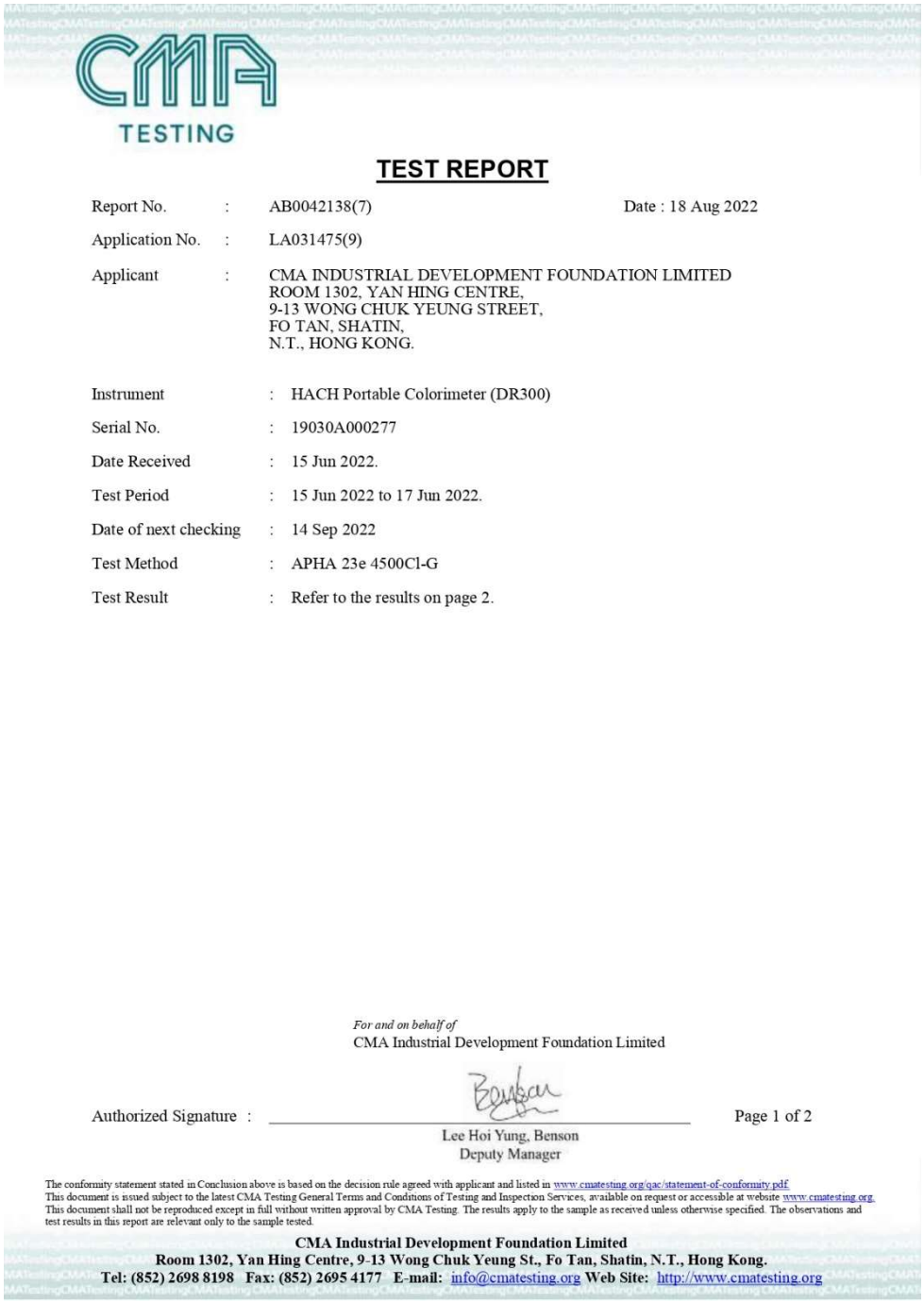
1. The certificate shall not be reproduced except in full, without written approval of Cal Lab Calibration
2. The certificate is issued subject to the latest Terms and Conditions, available at our web site

CC0562206
Page 1 of 1

TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)



TESTING

TEST REPORT

Report No. : AB0042138(7) Date : 18 Aug 2022

Application No. : LA031475(9)

Applicant : CMA INDUSTRIAL DEVELOPMENT FOUNDATION LIMITED
ROOM 1302, YAN HING CENTRE,
9-13 WONG CHUK YEUNG STREET,
FO TAN, SHATIN,
N.T., HONG KONG.

Instrument : HACH Portable Colorimeter (DR300)

Serial No. : 19030A000277

Date Received : 15 Jun 2022.

Test Period : 15 Jun 2022 to 17 Jun 2022.

Date of next checking : 14 Sep 2022

Test Method : APHA 23e 4500Cl-G

Test Result : Refer to the results on page 2.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Lee Hoi Yung, Benson
Deputy Manager

Page 1 of 2

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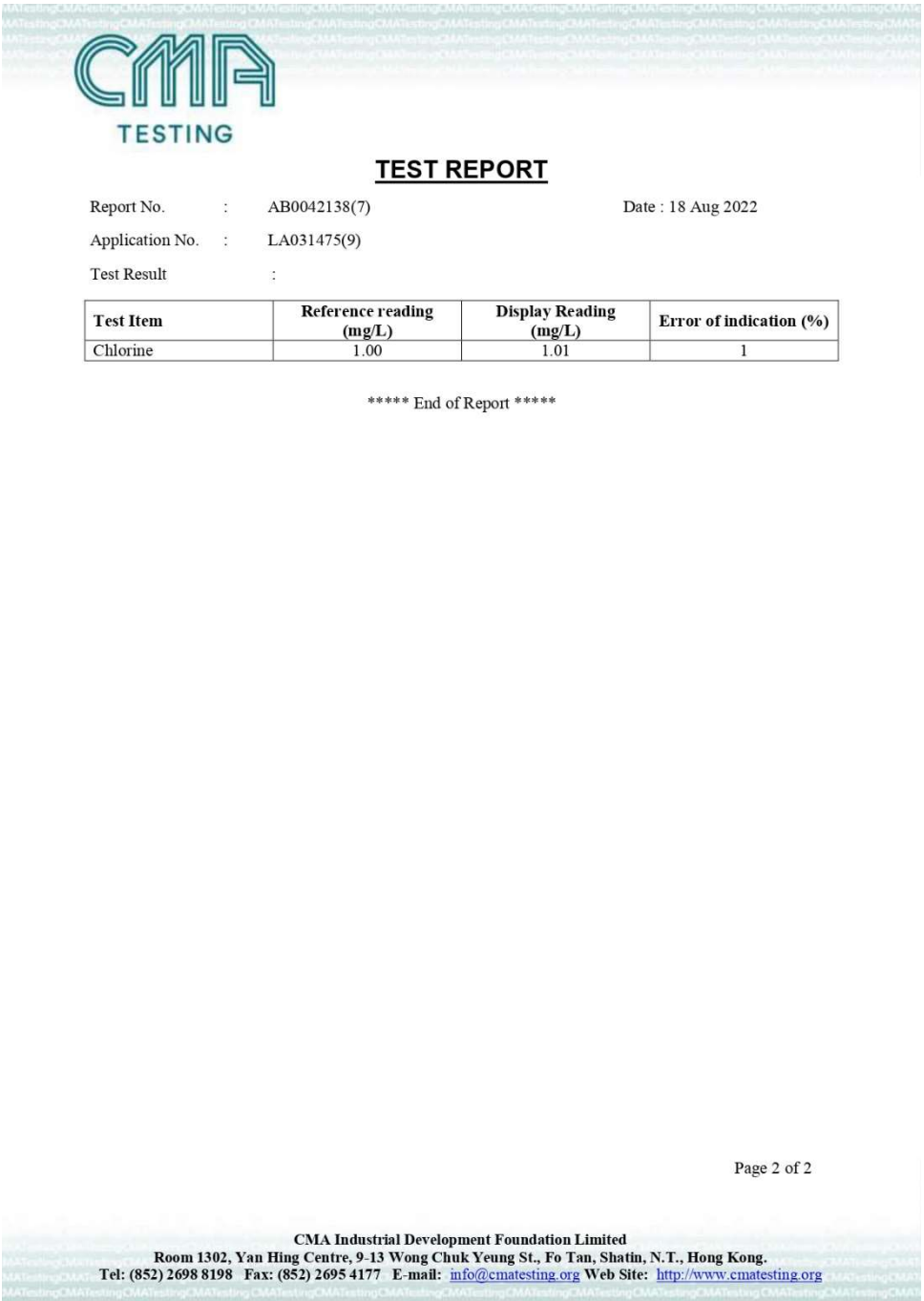
TEST REPORT

Report No. : AB0042156(7) Date: 19 Aug 2022

Application No. : LB021709(8)



TESTING

TEST REPORT

Report No. : AB0042138(7) Date : 18 Aug 2022

Application No. : LA031475(9)

Test Result :

Test Item	Reference reading (mg/L)	Display Reading (mg/L)	Error of indication (%)
Chlorine	1.00	1.01	1

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

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