Baseline Water Quality Monitoring Report (Rev D)

Contract No.	**:**	DPW 01/2020
Contract Name	**:**	Environmental Team for Drainage Improvement Works at Ngong Ping (Contract No. DC/2019/06)
Report No.	**:**	0118/20/ED/0185D
EP No.	**:**	EP-456/2013/A

Prepared by : Wingo H.W. So

Reviewed by : Cyrus C.Y. Lai

Certified by : Calvin M.P. Leung
Environmental Team Leader

Document Control

Document Information

Project Title	Drainage Improvement Works at Ngong Ping
Document Title	Baseline Water Quality Monitoring Report (Rev 0)
Fugro Project No.	0118/20
Fugro Document No.	0118/20/ED/0185D
Issue Number	04

Client Information

Client	Drainage Services Department
Client Address	45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Client Contact	Mr. Sunny Wong

Document Status

Issue	Document Status	Prepared by	Reviewed by	Certified by	Date
04	Rev D	Wingo H.W. So	Cyrus C.Y. Lai	Calvin M.P. Leung	11 January 2021
03	Rev C	Wingo H.W. So	Cyrus C.Y. Lai	Calvin M.P. Leung	01 December 2020
02	Rev B	Wingo H.W. So	Cyrus C.Y. Lai	Calvin M.P. Leung	17 November 2020
01	Rev A	Wingo H.W. So	Cyrus C.Y. Lai	Calvin M.P. Leung	20 October 2020
00	Rev 0	Wingo H.W. So	Cyrus C.Y. Lai	Calvin M.P. Leung	16 October 2020

Contents

Appendices

Figures

EXECUTIVE SUMMARY

i. This document presents the baseline monitoring requirements, methodologies and results of baseline measurements in accordance with the requirements, where applicable, in the approved EM&A Manual.

ii. The baseline monitoring work was conducted between 8 September and 3 October 2020.

iii. The Action and Limit Levels for impact monitoring are summarized in Table I. The Action and Limit Levels for impact monitoring were derived based on the criteria adopted from the updated EM&A Manual.

Table I Action and Limit Levels for Impact Monitoring

Parameter(s) / Station(s)	DO in mg/L		Turbidity in NTU		pH		Suspended Solids in mg/L	
	AL	LL	AL	LL	AL	LL	AL	LL
WS1-R1(1)								
WS1-I1	7.36	7.32	15.8	17.3	< 6.5(3) or > 6.9(3)	<6.5 or >8.5	14(5)	14(6)
WS1-R2(1)								
WS1-I2	7.19	7.11	16.4	18.4	< 6.5(3) or > 6.9(3)	<6.5 or >8.5	10(5)	14(6)
WS4-R3(1)								
WS4-I3	7.29	7.28	22.9	31.2	< 6.9(3) or > 7.2(4)	<6.5 or >8.5	13(5)	13(6)
WS5-R4(1)								
WS5-I4	6.75	6.64	24.7	28.2	< 6.6(3) or > 7.1(4)	<6.5 or >8.5	9(5)	9(6)
WS6-R5(1)								
WS6-I5	6.31	6.23	12.6	13.2	< 6.6(3) or > 7.0(4)	<6.5 or >8.5	10(5)	10(6)
WS6-C1(2)								
WS6-R6(1)								
WS6-I6	6.57	6.38	21.7	23.7	< 6.9(3) or > 7.1(4)	<6.5 or >8.5	12(5)	13(6)

Note:
AL: Action Level, LL: Limit Level
(1) Upstream reference station, detailed refer to Table 2.2.
(2) Intermediate Control station, detailed refer to Table 2.2.
(3) Or 80% of upstream control station.
(4) Or 110% of upstream control station.
(5) Or 120% of upstream control station of the same day.
(6) Or 130% of upstream control station of the same day.

1. INTRODUCTION

1.1 Background

1.1.1 To enhance the capacity of the trunk drainage system and reduce the flood risk in Ngong Ping, long term drainage improvement works are proposed to be implemented under "PWP Item No. 4163CD – Drainage Improvement Works at Ngong Ping" (hereafter referred to as "the Project").

1.1.2 The Project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap.499). An Environmental Impact Assessment (EIA) Report together with an Environmental Monitoring and Audit (EM&A) Manual (hereafter referred to as the "approved EM&A Manual") (Register No. AEIAR-169/2013 was prepared for the Project and approved by Environmental Protection Department (EPD) on 21 April 2013. An Environmental Permit (EP) was first issued on 7 August 2013. The current version (EP No. EP-456/2013/A) was issued on 29 March 2019. These documents are available through the EIAO Register.

1.1.3 Fugro Technical Services Limited (FTS) has been appointed as the Environmental Team (ET) by Drainage Services Department (DSD) to implement the EM&A programme in accordance with the EP No. EP-456/2013/A and the approved EM&A Manual.

1.2 Purposes of the Report

1.2.1 This document presents the baseline monitoring requirements, methodologies and results of baseline measurements in accordance with the requirements, where applicable, in the approved EM&A Manual.

1.2.2 The baseline monitoring work was conducted between 8 September and 3 October 2020.

2. WATER QUALITY MONITORING RESULTS

2.1 Monitoring Methodology

2.1.1 In accordance with the recommendations of the EIA, construction phase water quality EM&A is required. Water quality parameters comprising: (i) suspended solids (SS); (ii) turbidity in Nephelometric Turbidity Units (NTU); (iii) dissolved oxygen (DO) in mg/L; and (iv) pH, shall be measured by the Environmental Team (ET) at locations which are within the potential influence of construction works at least three times per week to ensure that any deteriorating water quality could be readily detected and timely action be taken to rectify the situation. The first parameter, SS, shall be determined in the laboratory, with the other parameters measured in-situ using direct reading instrumentation.

2.1.2 In association with the water quality parameter measurements, relevant data shall also be measured, including the monitoring location/position, time, water depth, water temperature, salinity, DO saturation, weather conditions if appropriate, and any special phenomena and work underway at the construction site.

2.1.3 The measurements shall be taken at all designated monitoring stations including control stations, once per day for a minimum of 3 days per week for 4 weeks prior to the commencement of the construction works. Measurements shall be taken at each station at any time. The interval between two sets of monitoring shall not be less than 36 hours.

2.1.4 Only one sampling depth will be required for the stream monitoring, which shall be taken at mid depth. However, in all cases duplicate water samples shall be collected. Water samples for suspended solid analysis shall be collected at all the designated monitoring stations.

2.1.5 No construction activities shall be on-going in the vicinity of the stations during the baseline monitoring. The ET shall be responsible for undertaking the baseline monitoring and submitting the results within 10 working days from the completion of the baseline monitoring work.

2.2 Laboratory and Monitoring Equipment Used

Laboratory Test

2.2.1 Analysis of suspended solids shall be carried out in an environmental testing laboratory HOKLAS to this parameter.

2.2.2 The approved method statement for laboratory test by EPD are shown in **Appendix E**.

Monitoring Equipment

2.2.3 The limits of detection for the in-situ and laboratory measurements are shown in Table 2.1.

Table 2.1 Detection Limits and Precision for Water Quality Determinants

Parameters	Unit	Measuring Equipment/Method	Detection Range	Accuracy	Precision(1)
In-situ Measurements					
Dissolved oxygen (DO)	mg/L	In-situ Aqua TROLL 600	0-50 mg/L	±0.1mg/L	25%
Salinity	ppt	In-situ Aqua TROLL 600	0 to 350 psu (ppt)	Derived from conductivity and temperature: ±0.5% (0 to 100,000 µS/ cm); ±1.0% (100,000 to 200,000 µS/ cm); ±2.0% (200,000 to 350,000 µS/cm)	25%
Water temperature	°C	In-situ Aqua TROLL 600	-5 to 50°C	±0.1°C	25%
pH	unit	In-situ Aqua TROLL 600	0 to 14 pH units	±0.1 units	25%
Turbidity	NTU	In-situ Aqua TROLL 600	0-4000 NTU(FNU)	±2%	25%
Laboratory Measurement					
Suspended Solids (SS)	mg/L	Test Method: APHA 17th edition 2540 D	1 mg/L (Detection Limit)	±4mg/L	Follow Laboratory Test QA/QC.

Noted
(1) In-situ duplicate reading with ≤25% difference would be recalibrated.

2.3 Water Quality Monitoring Parameters

2.3.1 In accordance with the recommendations of the EIA, water quality parameters comprising: (i) suspended solids (SS); (ii) turbidity in Nephelometric Turbidity Units (NTU); (iii) dissolved oxygen (DO) in mg/L; and (iv) pH, shall be measured by the Environmental Team (ET).

2.3.2 In association with the water quality parameter measurements, relevant data shall also be measured, including the monitoring location/position, time, water depth, water temperature, salinity, DO saturation, weather conditions if appropriate, and any special phenomena and work underway at the construction site.

2.4 Water Quality Monitoring Locations

2.4.1 The water quality monitoring locations are shown in **Figure 1** and detailed in Table 2.2 below.

Table 2.2 Proposed water quality monitoring locations

Station	Type	Easting	Northing	Relevant Works Section*	Remark
WS1-R1	Upstream reference	808664	813130	WS1/SA1	R2 in EIA
WS1-I1	Downstream impact	808535	813094	WS1/SA1	
WS1-R2	Upstream reference	808524	813134	WS1	W2 in EIA
WS1-I2	Downstream impact	808528	813101	WS1	
WS4-R3	Upstream reference	808214	813003	WS4/SA2	
WS4-I3	Downstream impact	808196	813042	WS4/SA2	
WS5-R4	Upstream reference	808096	813076	WS5/SA3	
WS5-I4	Downstream impact	808055	813115	WS5/SA3	
WS6-R5	Upstream reference	807983	813158	WS6/WA3	

Station	Type	Easting	Northing	Relevant Works Section*	Remark
WS6-I5	Downstream impact	807919	813155	WS6/WA3	
WS6-C1	Intermediate Control	807813	813214	WS6/SA4	W8 in EIA
WS6-R6	Upstream reference	807727	813249	WS6/WA4	
WS6-I6	Downstream impact	807762	813285	WS6/WA4	W9 in EIA

** Please refer to Figures 2.9a-2.9g of the EIA Report for the relevant Works Section (WS), and/or designated works area (WA) and stockpiling area (SA).*

2.5 Monitoring Date, Time, Frequency and Duration

2.5.1 The monitoring date, time, frequency and duration of the monitoring locations are shown in **Appendix B**.

2.6 QA/QC results and detection limits

2.6.1 All in-situ monitoring instrument shall be checked, calibrated and certified by an environmental laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes shall be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be carried out before measurement at each monitoring location.

2.6.2 The QA/QC results of laboratory test and the parameters detection limits were shown in **Appendix C2**.

2.7 Results and Observations

2.7.1 The monitoring data are summarized in Table 2.3. Detailed monitoring data are presented in **Appendix C1**.

Table 2.3 Summary of Baseline Monitoring Results

Parameter(s) / Station(s)	DO in mg/L Min - Max (Mean)	Turbidity in NTU Min - Max (Mean)	pH Min - Max (Mean)	Suspended Solids in mg/L Min - Max (Mean)
WS1-R1	7.10 - 8.03 (7.68)	3.8 - 17.4 (8.5)	6.37 - 7.19 (6.79)	1 - 8.5 (4)
WS1-I1	7.31 - 8.10 (7.70)	3.1 - 17.7 (9.1)	6.34 - 6.99 (6.71)	2 - 14 (7)
WS1-R2	6.88 - 8.14 (7.67)	4.2 - 17.8 (9.3)	6.65 - 7.20 (6.90)	3 - 16 (7)
WS1-I2	7.08 - 7.92 (7.57)	3.2 - 19.0 (9.4)	6.41 - 7.00 (6.70)	1 - 15 (5)
WS4-R3	7.09 - 7.87 (7.59)	3.8 - 14.9 (9.4)	6.78 - 7.11 (6.97)	2 - 9 (5)
WS4-I3	7.27 - 7.91 (7.57)	3.8 - 33.9 (10.4)	6.85 - 7.19 (7.01)	2 - 13 (5)
WS5-R4	7.10 - 7.93 (7.43)	3.7 - 27.1 (10.8)	6.58 - 7.33 (6.97)	3 - 9 (6)
WS5-I4	6.61 - 7.72 (7.22)	3.7 - 29.1 (10.9)	6.52 - 7.16 (6.77)	2 - 9 (5)
WS6-R5	5.46 - 7.58 (6.85)	4.0 - 23.0 (9.9)	6.38 - 7.02 (6.70)	2 - 9 (4)
WS6-I5	6.17 - 7.55 (6.85)	3.6 - 13.3 (8.2)	6.54 - 7.04 (6.78)	2 - 10 (5)
WS6-C1	6.01 - 7.68 (6.72)	4.7 - 23.1 (9.6)	6.60 - 6.96 (6.81)	3 - 9 (5)
WS6-R6	6.40 - 7.72 (7.12)	4.5 - 24.3 (10.0)	6.58 - 7.21 (7.00)	3 - 13 (6)
WS6-I6	6.32 - 7.65 (7.14)	4.8 - 24.3 (11.7)	6.90 - 7.15 (7.02)	2 - 14 (5)

Statistical Analysis

2.7.2 As small samples size of each monitoring station which causes a low statistical power of data analysis. Moreover, refer to Table 2.3, the comparison between impact and reference station shown a slight variation mean of monitoring data. Therefore, statistical analysis is not conducted for the baseline monitoring.

3. INFLUENCING FACTORS

3.1 Major Activities during Monitoring

3.1.1 No construction activity during the monitoring.

3.2 Weather Conditions

3.2.1 The prevailing weather conditions are provided in **Appendix D**.

3.3 Other Factors Affect the Results

3.3.1 As no project-related activities have commenced yet when the baseline monitoring were carried out, the baseline monitoring results obtained are considered representative of the baseline condition prior to the commencement of construction works for the project.

4. DETERMINATION OF ACTION AND LIMIT LEVELS FOR WATER QUALITY MONITORING

4.1.1 The determination of Action and Limit Levels for impact monitoring was set out in the updated EM&A Manual and shown in Table 4.1.

Table 4.1 Determination of Action and Limit Levels for Impact Monitoring

Parameters	Action (mg/L)	Limit (mg/L)
DO in mg/L	5%-ile of baseline data	4mg/L or 1%-ile of baseline
Suspended Solids	95%-ile of baseline data or 120% of upstream control station of the same day	99%-ile of baseline or 130% of upstream control station of the same day
Turbidity (Tur) in NTU (depth-averaged)	95%-ile of baseline data or 120% of upstream control station of the same day	99%-ile of baseline or 130% of upstream control station of the same day
pH	For value >7, 95%-ile of baseline data or 110% of upstream control station; For value <=7, 5%-ile of baseline data or 80% of upstream control station;	<6.5 or >8.5

4.1.2 Table 4.2 presents the Action and Limit Levels for impact monitoring.

Table 4.2 Action and Limit Levels for Impact Monitoring

Parameter(s) / Station(s)	DO in mg/L		Turbidity in NTU		pH		Suspended Solids in mg/L	
	AL	LL	AL	LL	AL	LL	AL	LL
WS1-R1(1)								
WS1-I1	7.36	7.32	15.8	17.3	< 6.5(3) or > 6.9(3)	<6.5 or >8.5	14(5)	14(6)
WS1-R2(1)								
WS1-I2	7.19	7.11	16.4	18.4	< 6.5(3) or > 6.9(3)	<6.5 or >8.5	10(5)	14(6)
WS4-R3(1)								
WS4-I3	7.29	7.28	22.9	31.2	< 6.9(3) or > 7.2(4)	<6.5 or >8.5	13(5)	13(6)
WS5-R4(1)								
WS5-I4	6.75	6.64	24.7	28.2	< 6.6(3) or > 7.1(4)	<6.5 or >8.5	9(5)	9(6)
WS6-R5(1)								
WS6-I5	6.31	6.23	12.6	13.2	< 6.6(3) or > 7.0(4)	<6.5 or >8.5	10(5)	10(6)
WS6-C1(2)								
WS6-R6(1)								
WS6-I6	6.57	6.38	21.7	23.7	< 6.9(3) or > 7.1(4)	<6.5 or >8.5	12(5)	13(6)

Note:
AL: Action Level, LL: Limit Level
(1) Upstream reference station, detailed refer to Table 2.2.
(2) Intermediate Control station, detailed refer to Table 2.2.
(3) Or 80% of upstream control station.
(4) Or 110% of upstream control station.
(5) Or 120% of upstream control station of the same day.
(6) Or 130% of upstream control station of the same day.

5. REVISIONS FOR INCLUSION IN THE EM&A MANUAL

5.1.1 The baseline environmental monitoring was conducted according to the EM&A Manual (Register No.: AEIAR-169/2013) requirement and the monitoring methodology and parameters monitored are all in line with the EM&A Manual.

5.1.2 No revision was proposed to the EM&A Manual.

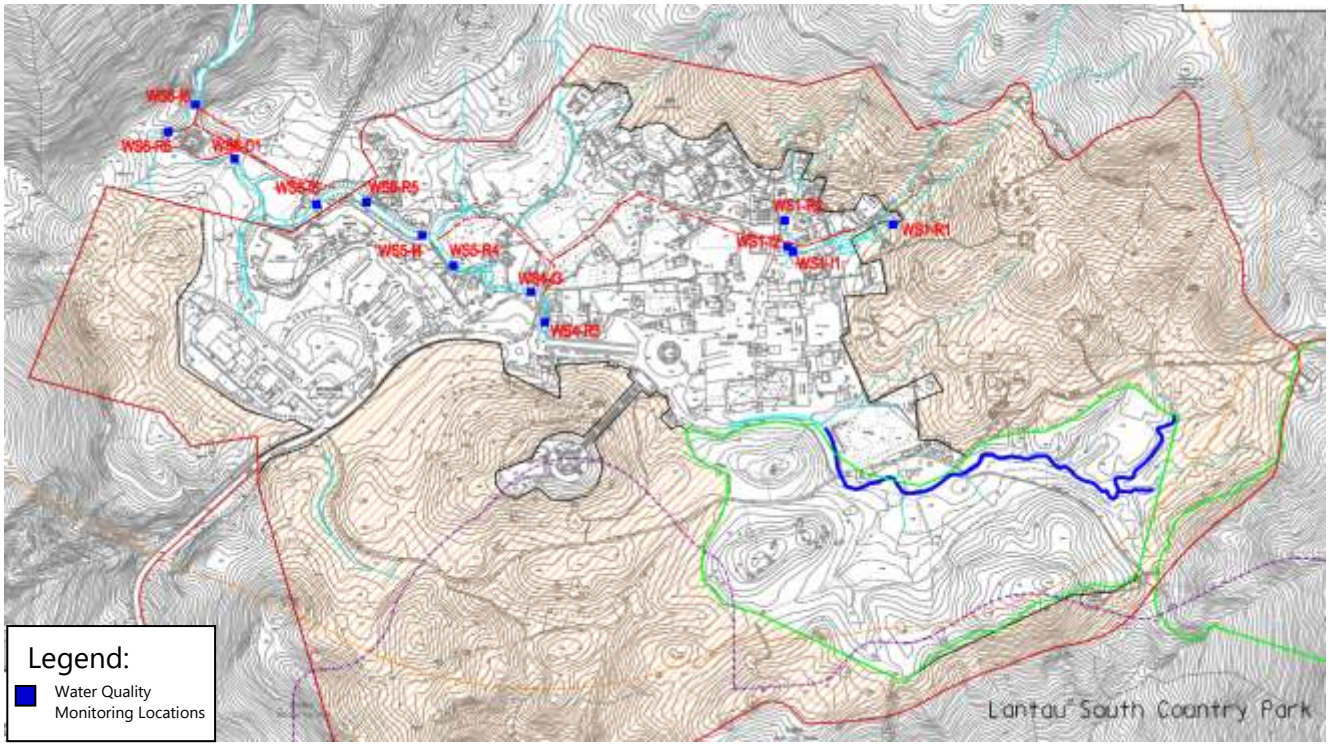
6. COMMENTS AND CONCLUSIONS

6.1.1 The baseline monitoring work was conducted between 8 September and 3 October 2020.

6.1.2 The baseline results are considered representative to the ambient conditions of the respective sensitive receivers.

6.1.3 The Action and Limit Levels were derived based on the baseline monitoring results, impact monitoring will be conducted in the construction phase based on the established Action and Limit Levels.

Figure 1 Water Quality Monitoring Locations



Station	Type
WS1-R1	Upstream reference
WS1-I1	Downstream impact
WS1-R2	Upstream reference
WS1-I2	Downstream impact
WS4-R3	Upstream reference
WS4-I3	Downstream impact
WS5-R4	Upstream reference
WS5-I4	Downstream impact
WS6-R5	Upstream reference
WS6-I5	Downstream impact
WS6-C1	Intermediate Control
WS6-R6	Upstream reference
WS6-I6	Downstream impact

WS1-R1 - Upstream reference

WS1-I1 - Downstream impact

WS1-R2 - Upstream reference

WS1-I2 - Downstream impact

WS4-R3 - Upstream reference

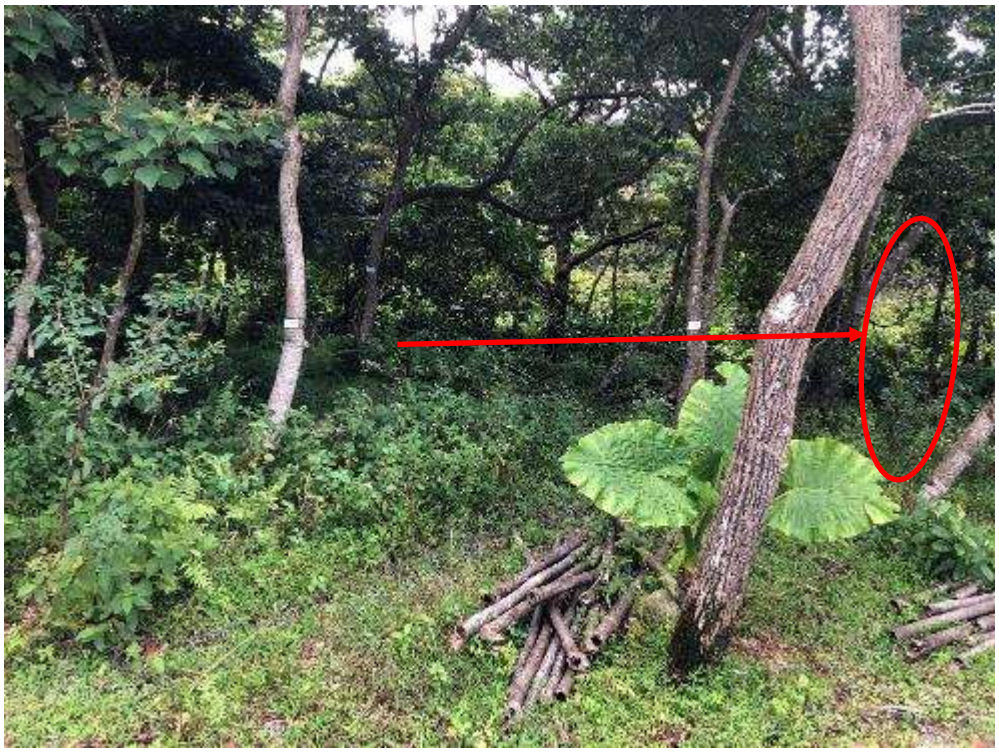
WS4-I3 - Downstream impact

WS5-R4 - Upstream reference

WS5-I4 - Downstream impact

WS6-R5 - Upstream reference

WS6-I5 - Downstream impact



WS6-C1 – Intermediate Control

WS6-R6 - Upstream reference

WS6-I6 – Downstream impact

Appendix A Equipment Calibration Certificates

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204

Report on Calibration of Aqua Troll 600 Multi-parameter Water Quality Meter

Information Supplied by Client

Client	:	MateriaLab Consultants Limited
Client's address	:	Rm. 723-726, 7/F, Profit Industrial Building, No. 1-15, Kwai Fung Crescent, Kwai Chung, N.T.
Sample description	:	One Aqua Troll 600 Multi-parameter Water Quality Meter
Client sample ID	:	Serial No. 484413
Test required	:	Calibration of the Aqua Troll 600 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID	:	WA201204/1
Date sample received	:	06/07/2020
Date of calibration	:	16/07/2020
Next calibration date	:	15/10/2020
Test method used	:	In-house comparison method

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204

Results :

A. pH calibration

pH reading at 24°C for Q.C. solution(6.86) and at 24°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.11	-0.07
6.86	6.78	-0.08

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
10	10.43	+0.43	± 0.5
20	20.90	+0.90	± 1.0
30	30.52	+0.52	± 1.5
40	39.37	-0.63	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.00	8.03
2	7.85	8.02
3	8.05	8.01
Average	7.97	8.02

Differences of D.O. Content between Wrinkler Titration and D.O. meter should be less than 0.4mg/L

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 24/7/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
25.7	25.14

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-	-	± 0.5
4	4.41	+0.41	± 0.6
8	7.42	-0.58	± 0.8
40	38.56	-1.44	± 3.0
80	82.00	+2.00	± 4.0

F. Conductivity calibration

Conductivity, umhos/cm			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1408	1469	+61	± 70
6668	6792	+124	± 400
12860	12860	0	± 700
24820	24625	-195	± 1200

Certified by :
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 24/7/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(2)

Report on Calibration of Aqua Troll 600 Multi-parameter Water Quality Meter

Information Supplied by Client

Client	:	MateriaLab Consultants Limited
Client's address	:	Rm. 723-726, 7/F, Profit Industrial Building, No. 1-15, Kwai Fung Crescent, Kwai Chung, N.T.
Sample description	:	One Aqua Troll 600 Multi-parameter Water Quality Meter
Client sample ID	:	Serial No. 490003
Test required	:	Calibration of the Aqua Troll 600 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID	:	WA201204/3
Date sample received	:	06/07/2020
Date of calibration	:	16/07/2020
Next calibration date	:	15/10/2020
Test method used	:	In-house comparison method

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(2)

Results :

A. pH calibration

pH reading at 25°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.27	+0.09
6.86	6.77	-0.09

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
10	10.45	+0.45	± 0.5
20	20.74	+0.74	± 1.0
30	31.04	+1.04	± 1.5
40	41.27	+1.27	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	8.00	8.12
2	8.15	8.10
3	8.00	8.14
Average	8.05	8.12

Differences of D.O. Content between Wrinkler Titration and D.O. meter should be less than 0.4mg/L

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 24/7/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(2)

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
24.4	24.69

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-	-	± 0.5
4	3.72	-0.28	± 0.6
8	8.08	+0.08	± 0.8
40	37.22	-2.78	± 3.0
80	78.11	-1.89	± 4.0

F. Conductivity calibration

Conductivity, umhos/cm			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1408	1464	+56	± 70
6668	6597	-71	± 400
12860	12842	-18	± 700
24820	24562	-258	± 1200

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 24/7/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(1)

Report on Calibration of Aqua Troll 600 Multi-parameter Water Quality Meter

Information Supplied by Client

Client	:	MateriaLab Consultants Limited
Client's address	:	Rm. 723-726, 7/F, Profit Industrial Building, No. 1-15, Kwai Fung Crescent, Kwai Chung, N.T.
Sample description	:	One Aqua Troll 600 Multi-parameter Water Quality Meter
Client sample ID	:	Serial No. 512112
Test required	:	Calibration of the Aqua Troll 600 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID	:	WA201204/2
Date sample received	:	06/07/2020
Date of calibration	:	16/07/2020
Next calibration date	:	15/10/2020
Test method used	:	In-house comparison method

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(1)

Results :

A. pH calibration

pH reading at 24°C for Q.C. solution(6.86) and at 25°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.20	+0.02
6.86	6.76	-0.10

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
10	10.11	+0.11	± 0.5
20	20.87	+0.87	± 1.0
30	30.43	+0.43	± 1.5
40	40.66	+0.66	± 2.0

C. Temperature calibration

Thermometer reading, °C	Meter reading, °C
24.4	24.57

Certified by :
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 24/7/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(1)

Results :

D. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-	-	± 0.5
4	3.65	-0.35	± 0.6
8	7.97	-0.03	± 0.8
40	40.82	+0.82	± 3.0
80	79.77	-0.23	± 4.0

E. Conductivity calibration

Conductivity, umhos/cm			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1408	1402	-6	± 70
6668	6670	+2	± 400
12860	12852	-8	± 700
24820	24589	-231	± 1200

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 24/2/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(3)

Report on Calibration of Aqua Troll 600 Multi-parameter Water Quality Meter

Information Supplied by Client

Client	:	MateriaLab Consultants Limited
Client's address	:	Rm. 723-726, 7/F, Profit Industrial Building, No. 1-15, Kwai Fung Crescent, Kwai Chung, N.T.
Sample description	:	One Aqua Troll 600 Multi-parameter Water Quality Meter
Client sample ID	:	Serial No. 525147
Test required	:	Calibration of the Aqua Troll 600 Multi-parameter Water Quality Meter

Laboratory Information

Lab. sample ID	:	WA201204/4
Date sample received	:	16/07/2020
Date of calibration	:	16/07/2020
Next calibration date	:	15/10/2020
Test method used	:	In-house comparison method

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(3)

Results :

A. pH calibration

pH reading at 24°C for Q.C. solution(6.86) and at 24°C for Q.C. solution(9.18)		
Theoretical	Measured	Deviation
9.18	9.25	+0.07
6.86	6.80	-0.06

B. Salinity calibration

Salinity, ppt			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
10	10.40	+0.40	± 0.5
20	20.81	+0.81	± 1.0
30	30.92	+0.92	± 1.5
40	41.50	+1.50	± 2.0

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L	
	By Titration	By D.O. meter
1	7.95	8.11
2	8.00	8.07
3	8.10	8.05
Average	8.02	8.07

Differences of D.O. Content between Wrinkler Titration and D.O. meter should be less than 0.4mg/L

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 24/7/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 142626WA201204(3)

Results :

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
23.8	24.02

E. Turbidity calibration

Turbidity, N.T.U.			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
0	-	-	± 0.5
4	3.97	-0.28	± 0.6
8	8.05	+0.08	± 0.8
40	41.60	-2.78	± 3.0
80	78.94	-1.89	± 4.0

F. Conductivity calibration

Conductivity, umhos/cm			
Theoretical	Measured	Deviation	Maximum acceptable Deviation
1408	1467	+59	± 70
6668	6811	+143	± 400
12860	12847	-13	± 700
24820	24255	-565	± 1200

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 24/7/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

Appendix B Monitoring Date, Time, Frequency and Duration

Sun	Mon	Tue	Wed	Thu	Fri	Sat
6	7	8 (September 2020) W	9	10 W	11	12 W
13	14	15 W	16	17 W	18	19 W
20	21	22 W	23	24 W	25	26 W
27	28	29 W	30	1 (October 2020) W	2	3 W

Remarks

1. W: Baseline Water Quality Monitoring, detailed station refer to Table 2.2.
2. Baseline Water Quality Monitoring: Once per day for a minimum of 3 days per week for 4 weeks prior to the commencement of the construction works. The interval between two sets of monitoring shall not be less than 36 hours.

Appendix C1 Monitoring Data

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement										Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	8-Sep-20	Rainy	10:45	54	1	7.23	7.15	0.01	0.02	25.1	25.1	99.6	99.7	7.8	7.8	8.0	8.0	4	4.0	NA
					2	7.07		0.02		25.1		99.7		7.8		8.1		4		
WS1-I1			11:17	13	1	6.94	6.97	0.03	0.03	24.9	24.9	100.2	100.1	7.8	7.8	3.2	3.1	6	6.0	NA
					2	6.99		0.02		24.9		99.9		7.8		3.1		6		
WS1-R2			11:39	15	1	6.98	6.99	0.02	0.03	24.7	24.7	98.2	98.2	7.7	7.7	8.8	8.8	9	9.0	NA
					2	6.99		0.03		24.7		98.2		7.7		8.7		9		
WS1-I2			11:58	10	1	6.77	6.77	0.03	0.04	24.8	24.8	100.2	100.2	7.9	7.9	3.2	3.2	3	3.0	NA
					2	6.76		0.04		24.8		100.2		7.9		3.2		3		
WS4-R3			12:17	7	1	6.79	6.79	0.03	0.04	24.8	24.8	100.2	100.2	7.9	7.9	14.8	14.8	5	5.0	NA
					2	6.78		0.04		24.8		100.1		7.8		14.9		5		
WS4-I3			12:36	7	1	7.04	7.05	0.03	0.04	24.9	24.9	98.0	97.7	7.6	7.5	3.8	3.8	5	5.5	NA
					2	7.05		0.04		24.9		97.3		7.4		3.8		6		
WS5-R4			12:59	20	1	7.11	7.12	0.01	0.02	24.9	24.9	95.5	95.5	7.5	7.5	3.7	3.7	4	4.0	NA
					2	7.12		0.03		24.9		95.5		7.5		3.7		4		
WS5-I4			13:28	23	1	7.07	7.07	0.04	0.05	25.1	25.1	97.5	97.5	7.6	7.6	3.7	3.7	4	4.0	NA
					2	7.06		0.05		25.1		97.5		7.6		3.7		4		
WS6-R5			13:50	24	1	7.02	7.02	0.04	0.04	25.1	25.1	95.2	95.3	7.5	7.6	4.3	4.2	4	4.0	NA
					2	7.02		0.04		25.1		95.3		7.6		4.0		4		
WS6-I5			14:10	24	1	6.96	6.97	0.04	0.05	25.2	25.2	96.4	96.4	7.6	7.6	5.7	5.6	4	3.5	NA
					2	6.97		0.05		25.2		96.4		7.6		5.4		3		
WS6-C1			14:31	20	1	6.94	6.93	0.03	0.03	25.0	25.0	96.1	96.1	7.5	7.5	4.7	4.8	4	4.0	NA
					2	6.92		0.02		25.0		96.1		7.5		4.8		4		
WS6-R6			14:49	60	1	6.94	6.95	0.04	0.04	25.0	25.0	95.4	95.6	7.5	7.5	5.7	5.8	4	4.0	NA
					2	6.95		0.03		25.0		95.8		7.6		5.8		4		
WS6-I6			15:08	60	1	7.01	7.02	0.03	0.03	25.1	25.1	97.8	97.8	7.7	7.6	7.4	7.5	14	13.5	NA
					2	7.02		0.03		25.1		97.8		7.6		7.5		13		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement										Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	10-Sep-20	Rainy	13:52	28	1	6.35	6.37	0.01	0.01	24.0	24.0	91.3	91.4	7.3	7.3	3.8	3.8	4	4.0	NA
					2	6.39		0.01		23.9		91.4		7.3		3.8		4		
WS1-I1			14:17	14	1	6.52	6.53	0.01	0.02	24.8	24.8	94.3	94.4	7.4	7.4	7.7	7.7	14	13.5	NA
					2	6.53		0.02		24.8		94.4		7.4		7.7		13		
WS1-R2			14:41	20	1	6.78	6.76	0.02	0.02	24.2	24.3	95.0	94.7	7.5	7.5	4.2	4.2	10	10.5	NA
					2	6.74		0.01		24.4		94.4		7.5		4.2		11		
WS1-I2			15:08	13	1	6.55	6.57	0.02	0.02	24.8	24.8	93.4	93.5	7.3	7.3	5.4	5.4	6	6.0	NA
					2	6.58		0.02		24.8		93.5		7.4		5.4		6		
WS4-R3			13:10	3	1	6.93	6.95	0.03	0.04	25.3	25.3	93.2	93.1	7.3	7.3	3.8	3.8	5	5.5	NA
					2	6.96		0.04		25.3		92.9		7.3		3.8		6		
WS4-I3			13:28	5	1	7.07	7.09	0.03	0.04	25.1	25.1	93.4	93.4	7.3	7.3	4.0	4.1	4	4.0	NA
					2	7.10		0.04		25.1		93.3		7.3		4.1		4		
WS5-R4			11:21	18	1	7.07	7.06	0.03	0.04	25.4	26.1	92.4	91.8	7.2	7.1	5.8	5.9	6	6.0	NA
					2	7.04		0.04		26.8		91.2		7.1		6.0		6		
WS5-I4			11:50	13	1	6.68	6.69	0.03	0.03	25.1	25.1	84.5	84.4	6.6	6.6	4.0	4.0	3	3.5	NA
					2	6.69		0.03		25.2		84.2		6.6		3.9		4		
WS6-R5			12:20	25	1	6.79	6.79	0.03	0.03	25.9	25.9	85.7	85.7	6.6	6.6	4.6	4.6	4	4.0	NA
					2	6.78		0.03		25.9		85.6		6.6		4.5		4		
WS6-I5			12:47	9	1	6.83	6.84	0.03	0.03	25.9	26.5	85.0	85.1	6.6	6.6	4.1	4.0	4	4.0	NA
					2	6.84		0.03		27.1		85.2		6.6		3.8		4		
WS6-C1			09:48	12	1	6.79	6.80	0.05	0.05	25.0	25.0	78.7	78.7	6.2	6.2	4.7	4.7	4	4.0	NA
					2	6.80		0.05		25.1		78.6		6.2		4.7		4		
WS6-R6			10:15	22	1	7.01	7.01	0.04	0.04	24.9	24.9	89.4	89.5	7.0	7.0	4.8	4.9	13	12.5	NA
					2	7.01		0.04		24.9		89.5		7.0		4.9		12		
WS6-I6			10:41	50	1	7.08	7.05	0.04	0.05	24.9	25.0	89.5	89.9	7.0	7.1	4.8	4.8	11	11.0	NA
					2	7.01		0.05		25.0		90.3		7.1		4.8		11		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	12-Sep-20	Fine	14:21	31	1	6.35	6.41	0.01	0.01	24.8	24.8	86.2	86.3	7.1	7.1	4.0	4.1	7	7.0	NA
					2	6.46		0.01		24.8		86.3		7.1		4.1		7		
WS1-I1			14:39	18	1	6.51	6.52	0.01	0.02	25.8	25.8	90.6	90.6	7.3	7.3	6.0	5.8	11	11.0	NA
					2	6.53		0.02		25.7		90.6		7.3		5.6		11		
WS1-R2			14:57	20	1	6.65	6.66	0.02	0.02	24.2	24.3	92.0	92.0	7.7	7.6	6.2	6.0	8	7.5	NA
					2	6.67		0.02		24.3		92.0		7.6		5.7		7		
WS1-I2			15:22	20	1	6.41	6.46	0.02	0.02	25.4	25.5	87.2	87.3	7.1	7.1	5.0	5.0	4	3.5	NA
					2	6.51		0.02		25.5		87.4		7.1		5.0		3		
WS4-R3			13:27	4	1	7.04	7.06	0.04	0.04	25.9	26.0	87.8	87.9	7.1	7.1	5.1	5.1	3	3.0	NA
					2	7.08		0.04		26.1		88.0		7.1		5.0		3		
WS4-I3			13:48	4	1	6.98	6.95	0.04	0.04	25.8	25.8	90.2	90.2	7.3	7.3	4.6	4.8	3	3.0	NA
					2	6.91		0.04		25.8		90.2		7.3		4.9		3		
WS5-R4			10:27	12	1	7.11	7.11	0.04	0.04	26.4	26.4	90.1	90.2	7.2	7.2	4.9	4.9	5	5.0	NA
					2	7.11		0.04		26.4		90.2		7.2		4.9		5		
WS5-I4			10:56	22	1	6.89	6.91	0.04	0.04	25.9	25.9	85.1	85.1	6.9	6.9	5.7	5.8	3	3.0	NA
					2	6.93		0.04		25.9		85.1		6.9		5.8		3		
WS6-R5			11:21	20	1	6.60	6.61	0.04	0.04	25.6	25.6	67.4	67.7	5.5	5.5	4.6	4.6	9	9.0	NA
					2	6.62		0.04		25.7		68.0		5.5		4.6		9		
WS6-I5			11:40	54	1	6.83	6.84	0.04	0.04	26.6	26.6	80.1	80.2	6.4	6.4	3.7	3.7	9	9.0	NA
					2	6.85		0.04		26.7		80.2		6.4		3.6		9		
WS6-C1			11:58	19	1	6.75	6.74	0.04	0.04	26.4	26.3	76.4	76.6	6.1	6.1	6.4	6.4	3	3.0	NA
					2	6.73		0.04		26.3		76.8		6.2		6.3		3		
WS6-R6			12:28	51	1	7.14	7.17	0.04	0.04	26.3	26.3	85.8	86.6	6.9	6.9	4.6	4.6	5	5.5	NA
					2	7.20		0.04		26.4		87.3		7.0		4.5		6		
WS6-I6			12:53	29	1	6.99	6.99	0.04	0.04	25.9	25.9	83.8	84.1	6.8	6.8	4.8	4.8	4	4.0	NA
					2	6.98		0.04		25.9		84.3		6.8		4.8		4		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	15-Sep-20	Rainy	11:55	33	1	6.58	6.48	0.01	0.01	23.6	23.6	91.6	91.7	7.7	7.7	18.5	17.4	9	8.5	NA
					2	6.38		0.01		23.6		91.7		7.7		16.2		8		
WS1-I1			12:05	21	1	6.34	6.54	0.01	0.02	24.3	24.3	92.6	91.8	7.7	7.6	17.7	17.7	9	8.5	NA
					2	6.73		0.02		24.2		90.9		7.6		17.7		8		
WS1-R2			12:19	22	1	6.99	7.01	0.03	0.04	23.7	23.6	90.8	90.6	7.6	7.6	7.2	7.1	4	4.0	NA
					2	7.02		0.04		23.6		90.4		7.6		7.0		4		
WS1-I2			12:26	23	1	6.90	6.87	0.05	0.05	23.9	23.9	89.1	88.7	7.5	7.5	12.6	13.9	5	5.5	NA
					2	6.84		0.05		23.8		88.2		7.4		15.1		6		
WS4-R3			11:33	6	1	7.04	6.97	0.04	0.04	24.6	24.5	90.2	89.7	7.5	7.4	10.5	11.0	8	8.5	NA
					2	6.90		0.04		24.5		89.1		7.4		11.5		9		
WS4-I3			11:43	7	1	7.17	7.14	0.07	0.07	24.6	24.6	89.7	89.4	7.4	7.4	33.9	33.3	13	12.5	NA
					2	7.10		0.06		24.5		89.1		7.4		32.7		12		
WS5-R4			10:23	15	1	6.67	6.63	0.04	0.04	24.8	24.7	97.4	93.8	7.9	7.6	17.7	18.1	9	9.0	NA
					2	6.58		0.04		24.7		90.1		7.4		18.4		9		
WS5-I4			10:40	24	1	6.56	6.59	0.04	0.05	24.7	24.7	90.1	91.0	7.4	7.4	29.0	29.1	8	8.5	NA
					2	6.61		0.05		24.8		91.9		7.5		29.1		9		
WS6-R5			10:49	23	1	6.69	6.80	0.04	0.04	24.8	24.9	92.3	90.0	7.5	7.3	23.0	22.3	6	6.0	NA
					2	6.91		0.04		25.1		87.7		7.2		21.6		6		
WS6-I5			11:02	55	1	7.04	7.04	0.03	0.03	24.8	24.8	87.1	87.7	7.2	7.2	11.7	11.9	10	10.0	NA
					2	7.03		0.03		24.8		88.3		7.3		12.0		10		
WS6-C1			11:14	21	1	6.96	6.96	0.04	0.04	25.2	25.1	82.2	82.3	6.7	6.7	18.8	18.1	9	8.5	NA
					2	6.95		0.04		25.1		82.3		6.7		17.4		8		
WS6-R6			13:18	55	1	6.93	6.94	0.04	0.05	25.0	25.0	82.1	82.0	6.5	6.4	16.1	15.4	7	7.0	NA
					2	6.94		0.05		25.0		81.8		6.4		14.6		7		
WS6-I6			13:27	31	1	6.91	6.92	0.05	0.05	24.9	24.9	80.8	80.8	6.3	6.3	17.3	16.7	7	7.5	NA
					2	6.92		0.05		24.9		80.7		6.3		16.0		8		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	17-Sep-20	Cloudy	13:59	28	1	6.73	6.76	0.01	0.01	24.4	24.4	94.9	95.0	7.5	7.5	6.3	6.5	9	8.5	NA
					2	6.79		0.01		24.4		95.0		7.5		6.7		8		
WS1-I1			14:20	17	1	6.77	6.77	0.02	0.02	24.9	24.9	95.3	95.3	7.5	7.5	6.9	6.9	9	8.5	NA
					2	6.76		0.01		25.0		95.3		7.5		6.9		8		
WS1-R2			14:38	10	1	6.89	6.89	0.01	0.01	26.1	26.1	101.7	101.8	6.9	6.9	5.4	5.5	4	4.0	NA
					2	6.88		0.01		26.1		101.8		6.9		5.5		4		
WS1-I2			14:52	12	1	6.76	6.78	0.02	0.02	25.0	25.0	92.8	93.0	7.3	7.3	6.3	6.4	5	5.5	NA
					2	6.79		0.02		25.0		93.1		7.3		6.4		6		
WS4-R3			13:19	7	1	7.10	7.11	0.04	0.04	25.3	25.3	95.0	95.0	7.4	7.4	10.1	10.0	8	8.5	NA
					2	7.11		0.04		25.3		95.0		7.4		9.9		9		
WS4-I3			13:40	10	1	7.08	7.08	0.04	0.04	25.4	25.3	95.2	95.2	7.4	7.4	7.4	7.4	13	12.5	NA
					2	7.07		0.04		25.3		95.2		7.4		7.4		12		
WS5-R4		Rainy	10:28	28	1	7.33	7.32	0.02	0.02	25.6	25.6	92.0	92.3	7.1	7.2	27.1	27.1	9	9.0	NA
					2	7.31		0.02		25.6		92.5		7.2		27.1		9		
WS5-I4			10:51	22	1	7.11	7.14	0.03	0.03	25.1	25.1	89.3	89.3	7.0	7.0	21.0	21.1	8	8.5	NA
					2	7.16		0.03		25.1		89.3		7.0		21.1		9		
WS6-R5			11:10	25	1	7.00	7.01	0.03	0.03	25.1	25.1	87.5	87.6	6.8	6.8	17.3	17.4	6	6.0	NA
					2	7.01		0.03		25.1		87.6		6.8		17.5		6		
WS6-I5			11:34	20	1	6.95	7.00	0.04	0.04	24.8	24.8	90.6	90.2	7.1	7.1	11.3	11.2	10	10.0	NA
					2	7.04		0.04		24.8		89.8		7.0		11.1		10		
WS6-C1			11:54	28	1	6.60	6.61	0.01	0.01	24.8	24.7	97.9	97.9	7.7	7.7	23.0	23.1	9	8.5	NA
					2	6.61		0.01		24.7		97.9		7.7		23.1		8		
WS6-R6			12:28	91	1	7.02	7.03	0.03	0.04	25.3	25.3	88.2	88.0	6.9	6.8	24.3	24.2	7	7.0	NA
					2	7.03		0.04		25.3		87.7		6.8		24.1		7		
WS6-I6			12:54	30	1	6.97	6.97	0.04	0.04	25.3	25.3	88.2	88.3	6.9	6.9	19.6	19.6	7	6.0	NA
					2	6.97		0.04		25.3		88.3		6.9		19.6		5		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	19-Sep-20	Rainy	13:34	39	1	6.73	6.76	0.01	0.01	23.8	23.8	97.1	97.2	7.8	7.8	6.7	6.9	3	3.0	NA
					2	6.78		0.01		23.8		97.2		7.8		7.1		3		
WS1-I1			13:57	13	1	6.73	6.76	0.01	0.01	24.1	24.1	96.9	96.9	7.6	7.6	6.7	6.7	13	13.5	NA
					2	6.78		0.01		24.1		96.8		7.6		6.7		14		
WS1-R2			14:18	19	1	6.76	6.75	0.02	0.02	23.8	23.8	96.7	96.8	7.8	7.8	17.8	17.6	16	16.0	NA
					2	6.74		0.02		23.8		96.9		7.8		17.4		16		
WS1-I2			14:43	21	1	6.97	6.99	0.02	0.02	23.7	23.7	98.3	98.3	7.9	7.9	18.9	19.0	15	15.0	NA
					2	7.00		0.02		23.7		98.3		7.9		19.0		15		
WS4-R3			12:51	4	1	6.94	6.93	0.04	0.04	24.9	24.9	98.0	98.4	7.7	7.8	7.4	7.6	4	4.0	NA
					2	6.92		0.04		24.8		98.8		7.8		7.7		4		
WS4-I3			13:14	6	1	7.04	7.05	0.04	0.04	24.6	24.6	97.8	98.0	7.7	7.8	9.3	9.3	4	4.0	NA
					2	7.05		0.04		24.6		98.2		7.8		9.3		4		
WS5-R4			11:17	40	1	6.80	6.81	0.05	0.05	25.0	25.0	91.3	91.9	7.2	7.2	9.6	9.7	7	7.0	NA
					2	6.81		0.05		25.0		92.4		7.3		9.8		7		
WS5-I4			11:40	66	1	6.52	6.53	0.05	0.05	25.2	25.2	87.7	87.5	6.9	6.9	7.1	7.1	3	3.0	NA
					2	6.53		0.04		25.2		87.2		6.9		7.1		3		
WS6-R5			12:10	41	1	6.57	6.62	0.04	0.04	25.3	25.4	88.7	89.6	6.9	7.0	6.7	7.0	4	3.5	NA
					2	6.66		0.04		25.5		90.4		7.0		7.3		3		
WS6-I5			12:32	36	1	6.65	6.69	0.04	0.04	25.8	25.8	91.2	90.0	6.2	6.2	6.2	6.3	3	3.0	NA
					2	6.73		0.04		25.9		88.7		6.3		6.3		3		
WS6-C1			10:17	51	1	6.77	6.77	0.05	0.05	25.5	25.6	86.0	86.9	6.2	6.1	6.2	6.1	4	4.0	NA
					2	6.76		0.05		25.6		87.8		6.0		6.0		4		
WS6-R6			10:40	54	1	6.97	6.96	0.05	0.05	25.0	25.0	91.5	91.4	6.8	6.9	6.8	6.9	4	4.0	NA
					2	6.94		0.05		25.0		91.2		7.0		7.0		4		
WS6-I6		Cloudy	10:55	34	1	6.97	6.96	0.05	0.05	25.0	25.1	91.2	91.3	7.2	7.2	7.2	7.3	3	3.0	NA
					2	6.95		0.05		25.1		91.3		7.2		7.3		3		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement										Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	22-Sep-20	Fine	12:56	51	1	6.80	6.77	0.01	0.01	24.6	24.4	95.3	95.4	7.6	7.6	6.9	7.0	1	1.0	NA
					2	6.74		0.01		24.3		95.4		7.6		7.0		1		
WS1-I1			13:03	20	1	6.69	6.70	0.01	0.01	24.3	24.3	96.4	96.4	7.7	7.7	7.8	7.9	5	5.0	NA
					2	6.71		0.01		24.3		96.4		7.7		7.9		5		
WS1-R2			13:14	15	1	7.17	7.19	0.02	0.02	24.0	24.0	97.6	97.6	7.8	7.8	7.2	7.1	4	4.0	NA
					2	7.20		0.02		24.0		97.5		7.8		6.9		4		
WS1-I2			13:21	3	1	6.64	6.65	0.02	0.02	24.6	24.6	93.5	93.5	7.4	7.4	7.0	7.1	3	3.5	NA
					2	6.66		0.02		24.6		93.4		7.4		7.1		4		
WS4-R3			12:06	7	1	6.86	6.87	0.04	0.04	24.4	24.4	93.7	93.7	7.4	7.4	9.2	9.2	5	5.0	NA
					2	6.87		0.04		24.4		93.7		7.4		9.2		5		
WS4-I3			12:14	5	1	6.85	6.85	0.04	0.04	25.0	25.0	94.9	94.9	7.4	7.5	8.3	8.5	4	4.0	NA
					2	6.85		0.04		24.9		94.9		7.5		8.7		4		
WS5-R4			10:27	28	1	7.05	7.05	0.06	0.06	24.7	24.6	92.9	92.9	7.3	7.3	9.6	9.6	5	5.0	NA
					2	7.04		0.06		24.6		92.9		7.3		9.5		5		
WS5-I4			10:37	20	1	6.77	6.78	0.04	0.04	24.5	24.5	90.4	90.4	7.2	7.2	10.0	10.2	5	5.0	NA
					2	6.78		0.04		24.5		90.3		7.2		10.4		5		
WS6-R5			10:45	18	1	6.66	6.67	0.04	0.04	24.6	24.5	86.2	86.1	6.8	6.8	7.3	7.5	3	3.0	NA
					2	6.67		0.04		24.5		86.0		6.8		7.6		3		
WS6-I5			10:53	20	1	6.82	6.81	0.04	0.04	24.5	24.5	87.2	87.2	6.9	6.9	7.1	7.1	2	2.0	NA
					2	6.80		0.04		24.5		87.2		6.9		7.1		2		
WS6-C1			11:02	41	1	6.78	6.78	0.05	0.05	24.7	24.7	83.2	83.2	6.6	6.6	7.3	7.5	4	4.0	NA
					2	6.78		0.05		24.7		83.2		6.6		7.6		4		
WS6-R6			11:28	52	1	7.05	7.05	0.05	0.05	25.0	25.0	92.8	92.7	7.3	7.3	9.0	9.3	4	4.0	NA
					2	7.04		0.05		24.9		92.6		7.3		9.6		4		
WS6-I6			11:35	43	1	7.05	7.05	0.05	0.05	24.7	24.7	92.0	92.0	7.3	7.2	8.4	8.2	3	3.0	NA
					2	7.05		0.05		24.7		91.9		7.2		8.0		3		

Water Quality Monitoring Results

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	24-Sep-20	Fine	14:02	38	1	6.93	6.99	0.01	0.01	24.3	24.5	96.8	96.7	7.7	7.7	7.5	7.6	3	3.0	NA
					2	7.04		0.01		24.7		96.5		7.7		7.6		3		
WS1-I1			14:19	19	1	6.70	6.71	0.01	0.01	24.4	24.4	98.0	98.0	7.8	7.8	7.6	7.7	5	5.0	NA
					2	6.71		0.01		24.4		98.0		7.8		7.7		5		
WS1-R2			14:43	13	1	6.96	6.97	0.02	0.02	23.8	23.8	99.6	99.5	8.0	8.0	8.9	9.0	3	3.0	NA
					2	6.97		0.02		23.8		99.4		8.0		9.0		3		
WS1-I2			15:10	14	1	6.58	6.58	0.02	0.02	24.1	24.1	94.3	94.6	7.5	7.6	46.6	46.85 (Discard)	4	4.0	NA
					2	6.58		0.02		24.1		94.8		7.6		47.1		4		
WS4-R3			13:28	10	1	7.02	7.04	0.04	0.04	24.5	24.5	96.2	96.4	7.6	7.6	81.6	81.65 (Discard)	3	3.5	NA
					2	7.05		0.04		24.5		96.6		7.6		81.7		4		
WS4-I3			13:41	8	1	7.00	7.00	0.04	0.04	24.8	24.8	96.6	96.7	7.6	7.6	86.1	86.1 (Discard)	3	2.5	NA
					2	7.00		0.04		24.8		96.8		7.6		86.1		2		
WS5-R4			11:44	38	1	6.87	6.87	0.05	0.05	24.8	24.8	94.7	94.8	7.5	7.5	10.2	10.3	7	7.0	NA
					2	6.87		0.05		24.8		94.8		7.5		10.3		7		
WS5-I4			12:05	44	1	6.61	6.62	0.05	0.05	24.7	24.8	90.7	90.9	7.2	7.2	7.8	7.8	2	2.0	NA
					2	6.62		0.05		24.8		91.1		7.2		7.7		2		
WS6-R5			12:26	33	1	6.58	6.59	0.05	0.05	24.8	24.8	85.4	85.4	6.7	6.7	9.5	9.5	4	4.0	NA
					2	6.59		0.05		24.8		85.3		6.7		9.4		4		
WS6-I5			12:51	29	1	6.59	6.59	0.05	0.05	24.8	24.8	86.1	86.0	6.8	6.8	8.3	8.3	3	3.0	NA
					2	6.59		0.05		24.8		85.9		6.8		8.3		3		
WS6-C1			10:43	31	1	6.79	6.77	0.05	0.05	25.0	25.0	86.3	87.0	6.8	6.8	9.8	9.9	4	4.0	NA
					2	6.75		0.05		25.0		87.6		6.9		10.0		4		
WS6-R6			11:01	77	1	6.58	6.59	0.05	0.05	24.8	24.8	85.2	85.8	6.7	6.8	9.4	9.5	6	6.0	NA
					2	6.59		0.05		24.8		86.4		6.8		9.6		6		
WS6-I6			11:19	49	1	6.90	6.92	0.05	0.05	25.0	25.0	91.0	91.1	7.1	7.1	12.3	12.4	4	4.0	NA
					2	6.93		0.05		25.0		91.1		7.2		12.4		4		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	26-Sep-20	Fine	13:30	38	1	6.92	6.87	0.01	0.01	23.6	23.6	97.3	97.3	7.9	7.9	8.1	8.1	2	2.5	NA
					2	6.81		0.01		23.5		97.2		7.9		8.0		3		
WS1-I1			13:47	19	1	6.88	6.84	0.01	0.01	23.9	23.9	99.4	99.3	8.0	7.9	9.1	9.1	3	3.0	NA
					2	6.79		0.01		23.9		99.1		7.9		9.1		3		
WS1-R2			14:06	19	1	6.88	6.89	0.01	0.01	23.5	23.5	98.0	98.6	6.9	6.9	11.6	11.6	11	10.5	NA
					2	6.89		0.01		23.5		99.1		6.9		11.5		10		
WS1-I2			14:23	20	1	6.51	6.50	0.02	0.02	23.8	23.8	96.2	96.3	7.8	7.7	8.6	8.7	2	2.0	NA
					2	6.49		0.02		23.8		96.3		7.7		8.8		2		
WS4-R3			12:49	6	1	6.92	6.90	0.03	0.03	23.6	23.5	97.3	97.2	7.9	7.9	8.1	8.1	4	4.0	NA
					2	6.88		0.03		23.4		97.1		7.9		8.0		4		
WS4-I3			13:11	10	1	6.90	6.89	0.03	0.03	24.4	24.4	95.9	96.0	7.6	7.6	8.3	8.5	3	3.0	NA
					2	6.88		0.03		24.4		96.1		7.6		8.7		3		
WS5-R4			11:29	39	1	6.97	6.98	0.05	0.05	24.4	24.4	94.4	94.5	7.5	7.5	7.0	7.1	6	6.0	NA
					2	6.99		0.05		24.4		94.6		7.5		7.2		6		
WS5-I4			11:50	26	1	6.60	6.60	0.04	0.04	24.4	24.4	90.9	90.6	7.2	7.2	7.6	7.6	4	4.0	NA
					2	6.60		0.04		24.4		90.3		7.2		7.6		4		
WS6-R5			12:09	19	1	6.56	6.55	0.04	0.04	24.3	24.3	87.1	76.2	6.9	6.9	7.4	7.5	2	2.0	NA
					2	6.54		0.04		24.2		65.3		6.8		7.5		2		
WS6-I5			12:30	23	1	6.59	6.57	0.04	0.04	24.2	24.2	87.3	87.3	6.9	6.9	7.5	7.4	5	5.0	NA
					2	6.54		0.04		24.2		87.2		6.9		7.3		5		
WS6-C1			10:25	45	1	6.86	6.87	0.05	0.05	24.9	24.9	85.5	85.2	6.7	6.7	5.7	5.8	3	3.0	NA
					2	6.88		0.05		24.8		84.9		6.7		5.8		3		
WS6-R6			10:48	58	1	7.20	7.21	0.05	0.05	24.4	24.4	94.2	93.8	7.4	7.4	8.5	8.6	9	9.0	NA
					2	7.21		0.05		24.4		93.3		7.4		8.7		9		
WS6-I6			11:09	39	1	7.14	7.15	0.05	0.05	24.2	24.2	93.9	93.7	7.5	7.5	10.7	10.5	3	3.0	NA
					2	7.15		0.05		24.2		93.4		7.4		10.3		3		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	29-Sep-20	Cloudy	13:19	38	1	7.20	7.19	0.01	0.01	24.6	24.6	97.1	97.2	7.8	7.8	10.6	10.7	1	1.0	NA
					2	7.18		0.01		24.6		97.2		7.8		10.7		1		
WS1-I1			13:37	18	1	6.76	6.79	0.01	0.01	23.8	23.8	98.1	98.2	7.9	7.9	10.8	10.9	4	4.5	NA
					2	6.81		0.01		23.8		98.2		7.9		10.9		5		
WS1-R2			13:58	19	1	6.87	6.88	0.01	0.01	23.5	23.5	98.5	98.6	8.0	8.0	10.8	10.9	4	3.5	NA
					2	6.89		0.01		23.5		98.6		8.0		10.9		3		
WS1-I2			14:19	9	1	6.64	6.76	0.01	0.01	23.6	23.7	95.3	95.4	7.7	7.7	10.5	10.6	3	3.0	NA
					2	6.88		0.01		23.8		95.4		7.7		10.7		3		
WS4-R3			12:43	8	1	6.95	6.97	0.03	0.03	24.0	24.0	97.6	97.2	7.8	7.8	9.9	9.9	4	3.5	NA
					2	6.99		0.03		24.0		96.7		7.7		9.9		3		
WS4-I3			12:59	10	1	6.92	6.92	0.02	0.02	24.2	24.3	98.1	98.1	7.9	7.8	10.7	10.6	6	5.5	NA
					2	6.92		0.02		24.3		98.0		7.8		10.5		5		
WS5-R4			11:19	31	1	6.81	6.82	0.04	0.04	24.2	24.2	91.5	91.5	7.3	7.3	9.7	9.7	3	3.0	NA
					2	6.82		0.04		24.2		91.5		7.3		9.7		3		
WS5-I4			11:41	19	1	6.74	6.71	0.04	0.04	24.2	24.2	95.0	94.1	7.6	7.5	9.7	9.8	6	6.0	NA
					2	6.67		0.04		24.2		93.2		7.4		9.8		6		
WS6-R5			12:03	15	1	6.39	6.39	0.04	0.04	24.1	24.1	80.0	80.0	6.4	6.4	10.1	10.1	6	6.0	NA
					2	6.38		0.04		24.1		79.9		6.4		10.1		6		
WS6-I5			12:22	10	1	6.64	6.63	0.04	0.04	24.2	24.2	84.4	84.4	6.7	6.7	20.7	20.8	13	13.5	NA
					2	6.61		0.04		24.2		84.3		6.7		20.8		14		
WS6-C1			10:23	40	1	6.71	6.72	0.05	0.05	24.8	24.8	82.7	82.3	6.5	6.5	8.2	8.2	3	3.0	NA
					2	6.72		0.05		24.7		81.9		6.5		8.2		3		
WS6-R6			10:40	68	1	7.04	7.04	0.05	0.05	24.4	24.4	92.2	91.9	7.3	7.3	8.8	8.9	7	6.5	NA
					2	7.03		0.05		24.4		91.5		7.3		8.9		6		
WS6-I6			10:59	53	1	7.06	7.06	0.05	0.05	24.4	24.4	92.9	92.4	7.4	7.3	9.9	9.8	2	2.0	NA
					2	7.05		0.05		24.4		91.9		7.3		9.6		2		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	1-Oct-20	Fine	12:58	62	1	6.86	6.88	0.01	0.02	23.2	23.2	98.2	98.2	8.0	8.0	10.8	10.8	2	2.0	NA
					2	6.90		0.02		23.2		98.2		8.1		10.8		2		
WS1-I1			13:17	51	1	6.59	6.60	0.01	0.01	23.3	23.3	98.6	98.6	8.0	8.1	11.4	11.5	2	2.0	NA
					2	6.61		0.01		23.3		98.6		8.1		11.5		2		
WS1-R2			13:32	41	1	6.82	6.84	0.02	0.03	23.1	23.1	99.1	99.2	8.1	8.1	11.7	11.8	8	8.0	NA
					2	6.86		0.03		23.1		99.2		8.1		11.8		8		
WS1-I2			13:46	89	1	6.67	6.69	0.02	0.02	23.6	23.7	96.5	96.7	7.8	7.8	11.5	11.6	4	4.0	NA
					2	6.71		0.02		23.7		96.8		7.8		11.6		4		
WS4-R3			12:15	27	1	6.94	6.95	0.04	0.05	24.0	24.0	97.4	97.4	7.8	7.8	12.8	12.8	4	4.0	NA
					2	6.95		0.05		24.0		97.4		7.8		12.8		4		
WS4-I3			12:35	28	1	6.91	6.92	0.04	0.04	24.3	24.3	97.5	97.5	7.8	7.8	12.4	12.4	4	4.5	NA
					2	6.93		0.04		24.3		97.4		7.7		12.4		5		
WS5-R4			11:04	63	1	7.00	7.00	0.04	0.05	24.2	24.3	98.5	98.5	7.8	7.8	11.9	11.9	3	3.0	NA
					2	6.99		0.05		24.4		98.5		7.9		11.9		3		
WS5-I4			11:26	17	1	6.77	6.73	0.04	0.04	24.3	24.3	95.7	95.7	7.6	7.6	12.5	12.5	4	4.0	NA
					2	6.69		0.04		24.3		95.7		7.7		12.5		4		
WS6-R5			11:39	15	1	6.78	6.79	0.04	0.04	24.3	24.3	94.1	94.1	7.5	7.5	12.8	12.8	3	2.5	NA
					2	6.80		0.04		24.3		94.1		7.5		12.8		2		
WS6-I5			11:55	46	1	6.69	6.69	0.04	0.04	24.3	24.3	89.2	89.1	7.1	7.1	11.8	12.0	2	2.0	NA
					2	6.68		0.04		24.3		89.0		7.1		12.1		2		
WS6-C1			10:00	42	1	6.90	6.88	0.04	0.05	25.4	25.4	90.1	89.9	7.0	7.0	10.8	11.0	4	4.0	NA
					2	6.86		0.05		25.4		89.6		7.0		11.2		4		
WS6-R6			10:21	54	1	7.02	7.03	0.05	0.05	24.3	24.3	94.5	94.6	7.5	7.6	12.0	12.0	3	3.0	NA
					2	7.04		0.05		24.3		94.6		7.7		12.0		3		
WS6-I6			10:45	58	1	7.06	7.03	0.05	0.06	24.4	24.5	94.7	94.7	7.5	7.5	11.0	11.1	2	2.0	NA
					2	7.00		0.06		24.6		94.7		7.5		11.1		2		

Monitoring Location	Date	Weather	Time	Water Depth (cm)	Replicate	In-situ Measurement												Laboratory Analysis		Remarks
						pH		Salinity (ppt)		Temperature (ºC)		DO Saturation (%)		DO (mg/L)		Turbidity (NTU)		Total suspended solids dried at 103 - 105 (ºC), mg/L		
						Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	Value	Ave.	
WS1-R1	3-Oct-20	Fine	13:15	38	1	6.86	6.88	0.01	0.01	23.0	23.1	97.3	97.3	7.9	7.9	11.5	11.6	1	1.0	NA
					2	6.90		0.01		23.1		97.3		7.9		11.6		1		
WS1-I1			13:38	19	1	6.87	6.86	0.01	0.01	23.5	23.5	98.2	98.1	7.9	7.9	14.5	14.3	9	9.0	NA
					2	6.85		0.01		23.5		97.9		7.9		14.1		9		
WS1-R2			13:53	20	1	6.98	6.97	0.01	0.02	23.1	23.1	98.1	98.1	8.1	8.1	12.6	12.6	3	3.0	NA
					2	6.96		0.02		23.1		98.1		8.1		12.5		3		
WS1-I2			14:18	18	1	6.73	6.75	0.02	0.02	23.5	23.5	95.5	95.5	7.7	7.7	12.7	12.8	1	1.0	NA
					2	6.76		0.02		23.5		95.5		7.7		12.8		1		
WS4-R3			12:40	10	1	7.07	7.08	0.04	0.04	24.0	24.0	98.0	98.1	7.8	7.8	11.1	11.3	2	2.0	NA
					2	7.09		0.04		24.0		98.1		7.8		11.4		2		
WS4-I3			12:58	8	1	7.18	7.19	0.04	0.04	24.0	24.0	98.9	98.9	7.9	7.9	11.6	11.4	4	4.0	NA
					2	7.19		0.04		23.9		98.8		7.9		11.2		4		
WS5-R4			11:24	26	1	6.95	6.96	0.04	0.04	24.0	24.0	99.1	99.2	7.9	7.9	11.5	11.7	3	3.5	NA
					2	6.96		0.04		24.0		99.2		7.9		11.8		4		
WS5-I4			11:43	18	1	6.89	6.85	0.04	0.04	24.6	24.6	97.6	97.2	7.7	7.7	11.9	11.9	3	3.0	NA
					2	6.81		0.04		24.6		96.7		7.7		11.9		3		
WS6-R5			12:01	14	1	6.55	6.57	0.04	0.04	24.0	24.1	89.1	89.2	7.1	7.1	11.9	12.0	2	2.0	NA
					2	6.59		0.04		24.1		89.3		7.1		12.0		2		
WS6-I5			12:19	11	1	6.61	6.60	0.04	0.04	24.4	24.4	88.9	88.8	7.1	7.1	13.3	13.3	6	5.5	NA
					2	6.59		0.04		24.4		88.7		7.0		13.3		5		
WS6-C1			10:25	35	1	6.88	6.89	0.05	0.05	24.3	24.3	84.6	84.6	6.7	6.7	9.3	9.4	4	4.0	NA
					2	6.90		0.05		24.3		84.5		6.7		9.4		4		
WS6-R6			10:44	43	1	7.03	7.03	0.05	0.05	24.3	24.3	93.7	93.6	7.5	7.4	10.1	10.2	3	3.0	NA
					2	7.03		0.05		24.3		93.4		7.4		10.3		3		
WS6-I6			11:06	31	1	7.05	7.06	0.05	0.05	24.0	24.0	93.1	93.2	7.4	7.5	11.2	11.3	2	2.0	NA
					2	7.07		0.05		24.0		93.3		7.5		11.3		2		

Parameter(s) / Station(s)	DO in mg/L Min - Max (Mean)	Turbidity in NTU Min - Max (Mean)	pH Min - Max (Mean)	Suspended Solids in mg/L Min - Max (Mean)
WS1-R1	7.09 - 8.07 (7.68)	3.8 - 18.5 (8.5)	6.35 - 7.23 (6.79)	1 - 9 (4)
WS1-I1	7.31 - 8.10 (7.70)	3.1 - 17.7 (9.1)	6.34 - 6.99 (6.71)	2 - 14 (7)
WS1-R2	6.88 - 8.14 (7.67)	4.2 - 17.8 (9.3)	6.65 - 7.20 (6.90)	3 - 16 (7)
WS1-I2	7.08 - 7.92 (7.57)	3.2 - 19.0 (9.4)	6.41 - 7.00 (6.70)	1 - 15 (5)
WS4-R3	7.09 - 7.87 (7.59)	3.8 - 14.9 (9.4)	6.78 - 7.11 (6.97)	2 - 9 (5)
WS4-I3	7.27 - 7.91 (7.57)	3.8 - 33.9 (10.4)	6.85 - 7.19 (7.01)	2 - 13 (5)
WS5-R4	7.10 - 7.93 (7.43)	3.7 - 27.1 (10.8)	6.58 - 7.33 (6.97)	3 - 9 (6)
WS5-I4	6.61 - 7.72 (7.22)	3.7 - 29.1 (10.9)	6.52 - 7.16 (6.77)	2 - 9 (5)
WS6-R5	5.46 - 7.58 (6.85)	4.0 - 23.0 (9.9)	6.38 - 7.02 (6.70)	2 - 9 (4)
WS6-I5	6.17 - 7.55 (6.85)	3.6 - 13.3 (8.2)	6.54 - 7.04 (6.78)	2 - 10 (5)
WS6-C1	6.01 - 7.68 (6.72)	4.7 - 23.1 (9.6)	6.60 - 6.96 (6.81)	3 - 9 (5)
WS6-R6	6.40 - 7.72 (7.12)	4.5 - 24.3 (10.0)	6.58 - 7.21 (7.00)	3 - 13 (6)
WS6-I6	6.32 - 7.65 (7.14)	4.8 - 24.3 (11.7)	6.90 - 7.15 (7.02)	2 - 14 (5)

Appendix C2 Laboratory Test Results

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201680

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	08/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 08/09/2020

Client sample ID :

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required : Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201680/1 - 26
Sample temperature being received	:	3.5°C
Date of receipt of sample	:	08/09/2020
Date test commenced	:	08/09/2020
Date test completed	:	09/09/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201680

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	4	1
2	WS1-R1 Dup	4	
3	WS1-I1	6	
4	WS1-I1 Dup	6	
5	WS1-R2	9	
6	WS1-R2 Dup	9	
7	WS1-I2	3	
8	WS1-I2 Dup	3	
9	WS4-R3	5	
10	WS4-R3 Dup	5	
11	WS4-I3	5	
12	WS4-I3 Dup	6	
13	WS5-R4	4	
14	WS5-R4 Dup	4	
15	WS5-I4	4	
16	WS5-I4 Dup	4	
17	WS6-R5	4	
18	WS6-R5 Dup	4	
19	WS6-I5	4	
20	WS6-I5 Dup	3	
21	WS6-C1	4	
22	WS6-C1 Dup	4	
23	WS6-R6	4	
24	WS6-R6 Dup	4	
25	WS6-I6	14	
26	WS6-I6 Dup	13	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 25/9/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	101	5	5	6.5
	<1	100	4	4	1.9

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 25/9/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201660

HOKLAS 015 TEST

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	10/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 10/09/2020
Client sample ID	:	

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required	:	Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201660/1 - 26
Sample temperature being received	:	3.5°C
Date of receipt of sample	:	10/09/2020
Date test commenced	:	10/09/2020
Date test completed	:	11/09/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201660

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	4	1
2	WS1-R1 Dup	4	
3	WS1-I1	14	
4	WS1-I1 Dup	13	
5	WS1-R2	10	
6	WS1-R2 Dup	11	
7	WS1-I2	6	
8	WS1-I2 Dup	6	
9	WS4-R3	5	
10	WS4-R3 Dup	6	
11	WS4-I3	4	
12	WS4-I3 Dup	4	
13	WS5-R4	6	
14	WS5-R4 Dup	6	
15	WS5-I4	3	
16	WS5-I4 Dup	4	
17	WS6-R5	4	
18	WS6-R5 Dup	4	
19	WS6-I5	4	
20	WS6-I5 Dup	4	
21	WS6-C1	4	
22	WS6-C1 Dup	4	
23	WS6-R6	13	
24	WS6-R6 Dup	12	
25	WS6-I6	11	
26	WS6-I6 Dup	11	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 25/9/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	11	11	2.8
	<1	100	3	3	6.5

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 25/9/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201699

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	12/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 12/09/2020
Client sample ID	:	

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required : Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201699/1 - 26
Sample temperature being received	:	3.5°C
Date of receipt of sample	:	12/09/2020
Date test commenced	:	12/09/2020
Date test completed	:	14/09/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201699

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	7	1
2	WS1-R1 Dup	7	
3	WS1-I1	11	
4	WS1-I1 Dup	11	
5	WS1-R2	8	
6	WS1-R2 Dup	7	
7	WS1-I2	4	
8	WS1-I2 Dup	3	
9	WS4-R3	3	
10	WS4-R3 Dup	3	
11	WS4-I3	3	
12	WS4-I3 Dup	3	
13	WS5-R4	5	
14	WS5-R4 Dup	5	
15	WS5-I4	3	
16	WS5-I4 Dup	3	
17	WS6-R5	9	
18	WS6-R5 Dup	9	
19	WS6-I5	9	
20	WS6-I5 Dup	9	
21	WS6-C1	3	
22	WS6-C1 Dup	3	
23	WS6-R6	5	
24	WS6-R6 Dup	6	
25	WS6-I6	4	
26	WS6-I6 Dup	4	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 25/9/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	7	8	4.7
	<1	101	6	6	3.3

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 25/9/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201760

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	15/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 15/09/2020

Client sample ID :

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required : Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201760/1 - 26
Sample temperature being received	:	3.5°C
Date of receipt of sample	:	15/09/2020
Date test commenced	:	15/09/2020
Date test completed	:	16/09/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201760

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	9	1
2	WS1-R1 Dup	8	
3	WS1-I1	9	
4	WS1-I1 Dup	8	
5	WS1-R2	4	
6	WS1-R2 Dup	4	
7	WS1-I2	5	
8	WS1-I2 Dup	6	
9	WS4-R3	8	
10	WS4-R3 Dup	9	
11	WS4-I3	13	
12	WS4-I3 Dup	12	
13	WS5-R4	9	
14	WS5-R4 Dup	9	
15	WS5-I4	8	
16	WS5-I4 Dup	9	
17	WS6-R5	6	
18	WS6-R5 Dup	6	
19	WS6-I5	10	
20	WS6-I5 Dup	10	
21	WS6-C1	9	
22	WS6-C1 Dup	8	
23	WS6-R6	7	
24	WS6-R6 Dup	7	
25	WS6-I6	7	
26	WS6-I6 Dup	8	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by :

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 25/9/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	101	4	5	6.7
	<1	98	8	8	0.6

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 25/9/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201748

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	17/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 17/09/2020
Client sample ID	:	

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required : Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID : WA201748/1 - 26

Sample temperature being received : 3.5°C

Date of receipt of sample : 17/09/2020

Date test commenced : 17/09/2020

Date test completed : 18/09/2020

Test methods used : APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201748

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	3	1
2	WS1-R1 Dup	3	
3	WS1-I1	4	
4	WS1-I1 Dup	3	
5	WS1-R2	4	
6	WS1-R2 Dup	4	
7	WS1-I2	4	
8	WS1-I2 Dup	4	
9	WS4-R3	6	
10	WS4-R3 Dup	7	
11	WS4-I3	6	
12	WS4-I3 Dup	6	
13	WS5-R4	43	
14	WS5-R4 Dup	42	
15	WS5-I4	29	
16	WS5-I4 Dup	29	
17	WS6-R5	20	
18	WS6-R5 Dup	18	
19	WS6-I5	9	
20	WS6-I5 Dup	9	
21	WS6-C1	10	
22	WS6-C1 Dup	10	
23	WS6-R6	21	
24	WS6-R6 Dup	20	
25	WS6-I6	15	
26	WS6-I6 Dup	14	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 5/10/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	4	3	11.1
	<1	101	10	10	1.5

Certified by :
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 5/10/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201770

HOKLAS 015 TEST

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	19/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 19/09/2020
Client sample ID	:	

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required	:	Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201770/1 - 26
Sample temperature being received	:	3.5°C
Date of receipt of sample	:	19/09/2020
Date test commenced	:	19/09/2020
Date test completed	:	21/09/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201770

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	3	1
2	WS1-R1 Dup	3	
3	WS1-I1	13	
4	WS1-I1 Dup	14	
5	WS1-R2	16	
6	WS1-R2 Dup	16	
7	WS1-I2	15	
8	WS1-I2 Dup	15	
9	WS4-R3	4	
10	WS4-R3 Dup	4	
11	WS4-I3	4	
12	WS4-I3 Dup	4	
13	WS5-R4	7	
14	WS5-R4 Dup	7	
15	WS5-I4	3	
16	WS5-I4 Dup	3	
17	WS6-R5	4	
18	WS6-R5 Dup	3	
19	WS6-I5	3	
20	WS6-I5 Dup	3	
21	WS6-C1	4	
22	WS6-C1 Dup	4	
23	WS6-R6	4	
24	WS6-R6 Dup	4	
25	WS6-I6	3	
26	WS6-I6 Dup	3	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 5/10/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	98	16	16	1.9
	<1	100	4	3	8.7

Certified by :
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 5/10/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201791

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	22/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 22/09/2020
Client sample ID	:	

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required	:	Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201791/1 - 26
Sample temperature being received	:	3.5°C
Date of receipt of sample	:	22/09/2020
Date test commenced	:	22/09/2020
Date test completed	:	23/09/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201791

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	1	1
2	WS1-R1 Dup	1	
3	WS1-I1	5	
4	WS1-I1 Dup	5	
5	WS1-R2	4	
6	WS1-R2 Dup	4	
7	WS1-I2	3	
8	WS1-I2 Dup	4	
9	WS4-R3	5	
10	WS4-R3 Dup	5	
11	WS4-I3	4	
12	WS4-I3 Dup	4	
13	WS5-R4	5	
14	WS5-R4 Dup	5	
15	WS5-I4	5	
16	WS5-I4 Dup	5	
17	WS6-R5	3	
18	WS6-R5 Dup	3	
19	WS6-I5	2	
20	WS6-I5 Dup	2	
21	WS6-C1	4	
22	WS6-C1 Dup	4	
23	WS6-R6	4	
24	WS6-R6 Dup	4	
25	WS6-I6	3	
26	WS6-I6 Dup	3	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 5/10/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	4	4	0.0
	<1	101	4	4	0.1

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 5/10/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201804

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	24/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 24/09/2020

Client sample ID :

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required : Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID : WA201804/1 - 26

Sample temperature being received : 3.3°C

Date of receipt of sample : 24/09/2020

Date test commenced : 24/09/2020

Date test completed : 25/09/2020

Test methods used : APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201804

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	3	1
2	WS1-R1 Dup	3	
3	WS1-I1	5	
4	WS1-I1 Dup	5	
5	WS1-R2	3	
6	WS1-R2 Dup	3	
7	WS1-I2	4	
8	WS1-I2 Dup	4	
9	WS4-R3	3	
10	WS4-R3 Dup	4	
11	WS4-I3	3	
12	WS4-I3 Dup	2	
13	WS5-R4	7	
14	WS5-R4 Dup	7	
15	WS5-I4	2	
16	WS5-I4 Dup	2	
17	WS6-R5	4	
18	WS6-R5 Dup	4	
19	WS6-I5	3	
20	WS6-I5 Dup	3	
21	WS6-C1	4	
22	WS6-C1 Dup	4	
23	WS6-R6	6	
24	WS6-R6 Dup	6	
25	WS6-I6	4	
26	WS6-I6 Dup	4	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by :
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 12/10/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	3	3	0.0
	<1	103	4	4	0.1

Certified by : _____
Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 12/10/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201817

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	26/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 26/09/2020

Client sample ID :

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required : Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201817/1 - 26
Sample temperature being received	:	3.4°C
Date of receipt of sample	:	26/09/2020
Date test commenced	:	26/09/2020
Date test completed	:	28/09/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201817

HOKLAS 015 TEST

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	2	1
2	WS1-R1 Dup	3	
3	WS1-I1	3	
4	WS1-I1 Dup	3	
5	WS1-R2	11	
6	WS1-R2 Dup	10	
7	WS1-I2	2	
8	WS1-I2 Dup	2	
9	WS4-R3	4	
10	WS4-R3 Dup	4	
11	WS4-I3	3	
12	WS4-I3 Dup	3	
13	WS5-R4	6	
14	WS5-R4 Dup	6	
15	WS5-I4	4	
16	WS5-I4 Dup	4	
17	WS6-R5	2	
18	WS6-R5 Dup	2	
19	WS6-I5	5	
20	WS6-I5 Dup	5	
21	WS6-C1	3	
22	WS6-C1 Dup	3	
23	WS6-R6	9	
24	WS6-R6 Dup	9	
25	WS6-I6	3	
26	WS6-I6 Dup	3	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by :

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 15/10/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	10	10	2.5
	<1	100	4	4	2.6

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 15/10/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201824

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	29/09/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 29/09/2020

Client sample ID :

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required	:	Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201824/1 - 26
Sample temperature being received	:	3.4°C
Date of receipt of sample	:	29/09/2020
Date test commenced	:	29/09/2020
Date test completed	:	30/09/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201824

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	1	1
2	WS1-R1 Dup	1	
3	WS1-I1	4	
4	WS1-I1 Dup	5	
5	WS1-R2	4	
6	WS1-R2 Dup	3	
7	WS1-I2	3	
8	WS1-I2 Dup	3	
9	WS4-R3	4	
10	WS4-R3 Dup	3	
11	WS4-I3	6	
12	WS4-I3 Dup	5	
13	WS5-R4	3	
14	WS5-R4 Dup	3	
15	WS5-I4	6	
16	WS5-I4 Dup	6	
17	WS6-R5	6	
18	WS6-R5 Dup	6	
19	WS6-I5	13	
20	WS6-I5 Dup	14	
21	WS6-C1	3	
22	WS6-C1 Dup	3	
23	WS6-R6	7	
24	WS6-R6 Dup	6	
25	WS6-I6	2	
26	WS6-I6 Dup	2	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 15/10/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	3	3	3.0%
	<1	102	5	6	3.6%

Certified by :

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 15/10/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201858

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	01/10/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 01/10/2020
Client sample ID	:	

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required : Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201858/1 - 26
Sample temperature being received	:	3.4°C
Date of receipt of sample	:	01/10/2020
Date test commenced	:	01/10/2020
Date test completed	:	03/10/2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201858

HOKLAS 015 TEST

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	2	1
2	WS1-R1 Dup	2	
3	WS1-I1	2	
4	WS1-I1 Dup	2	
5	WS1-R2	8	
6	WS1-R2 Dup	8	
7	WS1-I2	4	
8	WS1-I2 Dup	4	
9	WS4-R3	4	
10	WS4-R3 Dup	4	
11	WS4-I3	4	
12	WS4-I3 Dup	5	
13	WS5-R4	3	
14	WS5-R4 Dup	3	
15	WS5-I4	4	
16	WS5-I4 Dup	4	
17	WS6-R5	3	
18	WS6-R5 Dup	2	
19	WS6-I5	2	
20	WS6-I5 Dup	2	
21	WS6-C1	4	
22	WS6-C1 Dup	4	
23	WS6-R6	3	
24	WS6-R6 Dup	3	
25	WS6-I6	2	
26	WS6-I6 Dup	2	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 15/10/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	8	8	3.6
	<1	100	4	4	5.1

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 15/10/2020

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201859

Test Report on Analysis of Water

Information Supplied by Client

Client	:	Drainage Services Department
Client's address	:	Drainage Projects Division, Drainage Services Department, 45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
Project	:	Contract No. DPW 01/2020 – Environmental Team for Drainage Improvement works at Ngong Ping
Sampling date	:	03/10/2020
Sample description	:	Twenty six samples of water taken by the FTS staff on 03/10/2020
Client sample ID	:	

1	WS1-R1	14	WS5-R4 Dup
2	WS1-R1 Dup	15	WS5-I4
3	WS1-I1	16	WS5-I4 Dup
4	WS1-I1 Dup	17	WS6-R5
5	WS1-R2	18	WS6-R5 Dup
6	WS1-R2 Dup	19	WS6-I5
7	WS1-I2	20	WS6-I5 Dup
8	WS1-I2 Dup	21	WS6-C1
9	WS4-R3	22	WS6-C1 Dup
10	WS4-R3 Dup	23	WS6-R6
11	WS4-I3	24	WS6-R6 Dup
12	WS4-I3 Dup	25	WS6-I6
13	WS5-R4	26	WS6-I6 Dup

Tests required : Total suspended solids dried at 103°C – 105°C

Laboratory Information

Lab. sample ID	:	WA201859/1 - 26
Sample temperature being received	:	3.4°C
Date of receipt of sample	:	03/10/2020
Date test commenced	:	03/10/2020
Date test completed	:	05/10 /2020
Test methods used	:	APHA 17th ed, 2540D

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Report No. : 181172WA201859

Results :

Sample identification		Test result Total suspended solids dried at 103°C – 105°C, mg/L	Reporting limit, mg/L
1	WS1-R1	1	1
2	WS1-R1 Dup	1	
3	WS1-I1	9	
4	WS1-I1 Dup	9	
5	WS1-R2	3	
6	WS1-R2 Dup	3	
7	WS1-I2	1	
8	WS1-I2 Dup	1	
9	WS4-R3	2	
10	WS4-R3 Dup	2	
11	WS4-I3	4	
12	WS4-I3 Dup	4	
13	WS5-R4	3	
14	WS5-R4 Dup	4	
15	WS5-I4	3	
16	WS5-I4 Dup	3	
17	WS6-R5	2	
18	WS6-R5 Dup	2	
19	WS6-I5	6	
20	WS6-I5 Dup	5	
21	WS6-C1	4	
22	WS6-C1 Dup	4	
23	WS6-R6	3	
24	WS6-R6 Dup	3	
25	WS6-I6	2	
26	WS6-I6 Dup	2	

Remark: Disclaimer: Sampling is out of scope of accreditation.

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 15/10/2020

** End of Report **

Note : This report refers only to the sample(s) tested.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Note

Laboratory Duplicate, Quality Assurance/Quality Control Report

Total suspended solids dried at 103°C – 105°C					
Detection Limit	Blank	Spike recovery (%)	Original result	Duplicate result	RPD%
1 mg/L	<1	100	3	3	6.1
	<1	100	3	3	3.2

Certified by : _____

Approved Signatory : HO Kin Man, John
Assistant General Manager – Laboratories

Date : 15/10/2020

Note : This report refers only to the sample(s) tested.

Appendix D Weather Condition

Day	Hong Kong Observatory							
	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)				
September 2020								
8	1010.8	29.0	27.1	25.3	25.6	91	89	68.9
10	1007.1	32.1	28.5	26.0	25.3	83	86	8.2
12	1011.0	32.4	28.2	26.2	25.5	85	82	27.9
15	1008.8	28.8	27.3	26.4	26.0	92	88	62.6
17	1006.8	31.4	28.7	26.8	26.2	87	88	40.6
19	1011.9	30.3	27.2	25.9	25.7	92	88	50.8
22	1010.4	31.4	28.6	26.6	25.1	82	75	0.5
24	1010.6	31.3	28.5	27.1	24.6	80	87	0.6
26	1009.5	29.7	28.0	27.1	23.3	76	84	Trace
29	1008.5	28.9	26.9	26.0	25.0	89	76	21.9
October 2020								
1	1009.5	28.8	26.7	25.3	22.2	77	80	0.1
3	1011.3	31.9	28.3	26.7	23.4	75	33	0.0
Trace means rainfall less than 0.05 mm								

Source: Hong Kong Observatory

Appendix E: Method Statement for Laboratory Test

本署檔號
OUR REF: ( ) in EP 2/N9/I/140 Pt. 2
來函檔號
YOUR REF: MCL/ED/0466/2020/C
電　　話
TEL. NO.: 2835 1153
圖文傳真
FAX NO : 2591 0558
電子郵件
E-MAIL: simonho@epd.gov.hk
網　　址
HOMEPAGE: http://www.epd.gov.hk

Environmental Protection Department
Branch Office
28th Floor, Southorn Centre,
130 Hennessy Road,
Wan Chai, Hong Kong.

環境保護署分處
香港灣仔
軒尼詩道
一百三十號
修頓中心廿八樓

7 September 2020

By Fax: 2450 6138

Fugro Technical Services Limited
Fugro Development Centre
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.
(Attn.: Mr. Calvin LEUNG)

Dear Mr. LEUNG,

Project Title: Drainage Improvement Works at Ngong Ping
(Environmental Permit No. EP-456/2013/A)

Submission of Method Statement for Laboratory Test

I refer to your above referenced letter dated 3 September 2020 submitting the revised Method Statement for Laboratory Test (Rev. A) to seek our approval on the proposed test method of APHA 17th Ed 2540D for SS determination in pursuant to S.4.4.1.1 of the Environmental Monitoring and Audit (EM&A) Manual of the captioned Project.

2. Please be advised that the proposed test method for SS determination is approved.

Yours Sincerely,

(Simon M.K. ~~HO~~)
Senior Environmental Protection Officer
for Director of Environmental Protection

c.c.
DSD (Attn.: Mr. Sunny WONG) Fax: 3104 6420

Contract No. DPW 01/2020

Environmental Team for Drainage Improvement Works at Ngong Ping

Method Statement for Laboratory Test (Rev. A)

0118/20/ED/0139A
September 2020

ACUITY
SUSTAINABILITY
CONSULTING LIMITED

Website: www.acuityhk.com

Unit C, 11/F., Ford Glory Plaza,
Nos. 37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon, HK

Tel. : (852) 2698 6833
Fax.: (852) 2698 9383

FURGO TECHNICAL SERVICES LTD.
FURGO DEVELOPMENT CENTRE,
5 LOK YI STREET, TAI LAM,
TUEN MUN, N.T., HONG KONG.

Attention: Mr. Calvin LEUNG

3 September 2020

Dear Calvin,

Drainage Improvement Works at Ngong Ping
Method Statement for Laboratory Test

I refer to the email concerning the captioned. We have no further comment on the Method Statement for Laboratory Test (Rev.A) with report no. 0118/20/ED/0139A and verify this document according to condition 4.4.1.1 of the Approved EM&A Manual.

Yours faithfully,

F.C. Tsang
Independent Environmental Checker

cc. DSD – Sunny WONG

Document Control

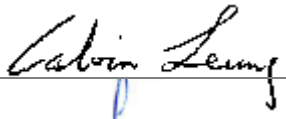
Document Information

Project Title	PWP Item No. 4163CD – Drainage Improvement Works at Ngong Ping
Document Title	Method Statement for Laboratory Test (Rev. A)
Fugro Project No.	0118/20
Fugro Document No.	0118/20/ED/0139A
Issue Number	03

Client Information

Client	Drainage Services Department
Client Address	45/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong
Client Contact	Mr. Sunny Wong

Project Team

Initials	Name	Role	Signature
MP	Calvin M.P. Leung	Environmental Team Leader	
CY	Cyrus C.Y. Lai	Senior Environmental Consultant	
HW	Wingo H.W. So	Environmental Consultant	

Contents

Appendices

Appendix A: HOKLAS Certificate of Accreditation

Appendix B: Suspended Solids Methods Statement

Appendix C: Calibration Certificate of Instrument

1. Introduction

1.1 Background

1.1.1 To enhance the capacity of the trunk drainage system and reduce the flood risk in Ngong Ping, long term drainage improvement works are proposed to be implemented under "PWP Item No. 4163CD – Drainage Improvement Works at Ngong Ping" (hereafter referred to as "the Project").

1.1.2 The Project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap.499). An Environmental Impact Assessment (EIA) Report together with an Environmental Monitoring and Audit (EM&A) Manual (hereafter referred to as the "approved EM&A Manual") (Register No. AEIAR-169/2013 was prepared for the Project and approved by Environmental Protection Department (EPD) on 21 April 2013. An Environmental Permit (EP) was first issued on 7 August 2013. The current version (EP No. EP-456/2013/A) was issued on 29 March 2019. These documents are available through the EIAO Register.

1.1.3 Fugro Technical Services Limited (FTS) has been appointed as the Environmental Team (ET) by Drainage Services Department (DSD) to implement the EM&A programme in accordance with the EP No. EP-456/2013/A and the approved EM&A Manual.

1.2 Purposes of the Method Statement

1.2.1 This document specifies the test methodology for analysis of suspended solids carried out in an environmental testing laboratory in accordance with the Section 4 of the Approved EM&A Manual.

2. WATER QUALITY

2.1 Water Quality Parameters

2.1.1 In accordance with the recommendations of the EIA, the Suspended Solids (SS), shall be determined in the laboratory, with the other parameters measured in-situ using direct reading instrumentation.

2.2 Monitoring Equipment

2.2.1 The equipment for measuring suspended solids shall be as follows:

- For fresh water sampling within the water courses, a 500ml clean plastic beaker shall be used.
- Water samples for suspended solids measurement shall be collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory within 24 hour of collection.

2.3 Measurement and Analysis

2.3.1 Analysis of suspended solids shall be carried out in an environmental testing laboratory HOKLAS (Registration No.: HOKLAS 015) to this parameter and the certificate of accreditation are shown in **Appendix A**. Water samples of about 500ml shall be collected at the monitoring stations for carrying out the laboratory SS determination. The SS determination work shall start within 24 hours after collection of the water samples. The SS determination follow the test method: APHA 17th Ed 2540D.

2.3.2 Well mixed samples are filtered through pre-weighted standard glass-fibre filters. Non-filterable residues retained on the filters are dried at 103 to 105 **°C** > 1 hour. Total suspended solids content are represented by weight difference of the filter papers. Detailed test method, pre-treatment procedures, instrument use, Quality Assurance/ Quality Control details (such as blank, spile recovery, no. of duplicate samples per batch, etc.), detection limits and accuracy are shown in **Appendix B**.

2.3.3 All Q.C. samples results should also be reported for quality checking.

Appendix A HOKLAS Certificate of Accreditation

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

FUGRO TECHNICAL SERVICES LIMITED
輝固技術服務有限公司

Fugro Development Centre, 5 Lok Yi Street, Tai Lam, Tuen Mun, New Territories, Hong Kong
香港新界屯門大欖樂怡街五號輝固發展中心

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
在認可諮詢委員會的建議下獲香港認可處執行機關接受為

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO/IEC 17025:2005 and it has been accredited for performing specific tests or calibrations as listed in the scope of accreditation within the test category of

Environmental Testing

此實驗所符合ISO/IEC 17025:2005所訂的要求
並獲認可進行載於認可範圍內下述測試類別中的指定測試或校正工作

環境測試

This accreditation to ISO/IEC 17025:2005 demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
此項 ISO/IEC 17025:2005 的認可資格證明此實驗所具備指定範疇內所須的技術能力並實施一套實驗所質量管理體系(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
現經香港認可處執行機關授權在此蓋上香港認可處的印章

WONG Wang-wah, Executive Administrator
執行幹事 黃宏華
Issue Date : 20 December 2016
簽發日期：二零一六年十二月二十日

Registration Number : HOKLAS 015
註冊號碼：

Date of First Registration : 23 March 1989
首次註冊日期：一九八九年三月二十三日

This certificate is issued subject to the terms and conditions laid down by HKAS
本證書按照香港認可處訂立的條款及條件發出

L001526

Appendix B Suspended Solids Methods Statement

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

Methods Statement

1. Total Suspended Solids dried at 103°C – 105°C

Test Method: APHA 17th Ed 2540D

Matrix: Water and Waste water

Detection Limit: 1 mg/L

Reporting Limit: 1 mg/L

Samples should be started within 24hours after collection and stored at 4 ± 2°C. Well mixed samples are filtered through pre-weighted standard glass-fibre filters. Non-filterable residues retained on the filters are dried at 103 to 105 °C > 1 hour. Total suspended solids content are represented by weight difference of the filter papers.

QA/QC:

Every batch or 20 samples analyzed should accompany with a Q.C. sample.

At SS Content, mg/L	Standard Deviation	Control Limit, mg/L
50	1.3	±4

The value of Q.C sample should be within the QC control limit.

For every 20 samples, or each batch of samples, whichever is less, analyze one of the samples in duplicate and calculated the normalized range as following:

$$\text{Normalize range} = \left[\frac{(X_1 - X_2)}{\text{mean}}\right]$$

$$\text{where mean} = \frac{(X_1 + X_2)}{2}, \text{ mg/L}$$

X1 = S.S. content in sample, mg/L

X2 = S.S. content in duplicate sample, mg/L

As according to APHA, normalize the range by dividing by the average. Determine the mean range for the pairs analyzed by:

$$\bar{R} = \frac{\sum \text{of Ri}}{n}$$

where $\bar{R}$ is the mean range

Ri is the individual duplicate analyzed,

and n is the number of duplicate,

Draw lines on the chart at $\bar{R}$ + 2SD (warning limit) and $\bar{R}$ + 3SD (control limit) and construct the range chart where SD is the relative standard deviation.

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre
5 Lok Yi Street, Tai Lam
Tuen Mun, NT
Hong Kong

For each duplicate analysis, calculate normalize range and enter result on the chart (should be within control limit)

For the spike sample, make a known addition to the same sample used in duplicate analysis to find out the recovery of the test. Take the same volume of sample as that in duplicate determination and add the same weight amount of the solid standard as that of Q.C. (nucleosil 100-7) into the sample. Follow exact procedures as for the sample. According to APHA 1020B, (table 1020:1; other inorganics) acceptable limit for recovery is 80 to 120%.

$$\text{Note : Recovery} = \left[\frac{(A - \text{mean})}{\text{Q.C.}}\right] \times 100\%$$

where mean = average suspended solids content of sample and duplicate, mg/L
A = Result of standard addition, mg/L
Q.C. = Theoretical suspended solids content of Q.C., mg/L

Appendix C Calibration Certificate of Instrument

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MateriaLab

Report no. : 921437CA190276 Page 1 of 2

CALIBRATION CERTIFICATE OF SINGLE-PAN BALANCE

Client Supplied Information

Client : Fugro Technical Services Ltd.

Address : 5 Lok Yi Street, 17 M.S. Castle Peak Road, Tai Lam, Tuen Mun, N.T.

Manufacturer	: Mettler Toledo	Capacity	: 120 (g)
Model no.	: XS104	Discrimination	: 0.0001 (g)
Serial no.	: 1127063977	Operating range	: 100.0003 (g)
Equipment ID.	: E-008-6	Type	: Without Built-in Mass

Location : Environmental Laboratory of FTS

Next calibration due date : Full Check : 25-Feb-2021 Repeatability Check : 25-Aug-2019

Laboratory Information

Equipment ID. of weight set : R-030-31
Class of weight set : F1
Equipment ID. of psychrometer : R-067-64
Date of calibration : 26-Feb-2019

Verification of Calibration Report
Verified by: Date: 6/3/19
Inputted by: Date: 6/3/19

Temperature during test : 20.5 - 20.5 °C Relative humidity during test : 67 - 67 %

Method used : **In house method R-C-082**

Calibration results:

Departure from nominal value

Reading (g)	Correction (g)
5.0001	-0.0001
10.0001	-0.0001
20.0001	-0.0001
30.0002	-0.0002
40.0002	-0.0002
50.0002	-0.0002
60.0001	-0.0001
70.0002	-0.0002
80.0003	-0.0003
90.0003	-0.0003
100.0003	-0.0003
--	--
--	--

Note:
When the sign of the correction is positive (+) the amount should be added to the balance reading to give the correct value and when negative (-) subtracted from it.

Repeatability of reading

Reading (g)	Standard deviation of reading (g)	Max. difference between successive reading (g)
5.0001	0.00003	0.0000
50.0002	0.00005	0.0001
100.0005	0.00006	0.0002

CA-R-124 (12/12/2008)

CAL29/0717

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.
Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MateriaLab

Report no. : 921437CA190276

Effect of off-centre loading

A mass of approximately 50 (g) was placed at various positions of the weighing pan.
The differences in balance readings are given in the table.

Centre	Front	Rear	Left	Right	Maximum difference (g)
0.0002	0.0003	0.0000	0.0002	0.0003	0.0003

Hysteresis

Load (g)	Hysteresis (g)
50.0	0.0000

Tare check

Tare load (g)	Balance reading with 50.0000 (g)	Error (g)
50	50.0002	0.0002

Uncertainty of weighing (correction is applied) = ± 0.0003 g at 95% confidence level, with a coverage factor of **2.01**

The uncertainty of weighing is the tolerance band within which 95% balance readings will fall after appropriate correction is applied

Limit of performance for the balance (no correction is applied) = ± 0.0007 g

The limit of performance is the tolerance band within which 95% balance readings will fall.

Remarks :

1. The equipment used in this calibration is traceable to recognized National Standards.
2. The reported hysteresis value is an average from three trials. In each trial, an extra mass was added to bring the balance reading close to full capacity after the specified load was placed on the pan. Hysteresis value is the difference of the readings of the specified load, before the extra mass was added and after it has been removed.
3. The uncertainty for departure from nominal value is ± **0.0003** g

Checked by : Hung Date : 04-3-2019 Approved Signatory: K.T. Leung Date : 4-3-2019

CA-R-124 (12/12/2008)

Leung Kwok Tai(Assistant Manager)

** End of Report **

FUGRO

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.
Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MateriaLab

Report No. : 921437CA180245

CALIBRATION CERTIFICATE OF ~~CHAMBER / INCUBATOR /~~ OVEN / ~~REFRIGERATOR (Chemical Lab.)~~

Client Supplied Information

Client : Fugro Technical Services Limited
Project : **Calibration Services**
Calibration Item -- Description : Drying Oven
Manufacturer : Binder
Equipment ID. : E-006-7
Next Calibration Date : 14-Feb-2021
Specification Limit : 104 ± 1°C

Laboratory Information

Calibrating Equipment -- Description : Temperature datalogger
Equipment ID. : R-097-13, R-097-14 (Channel no.:13-1 to 13-5, 14-1 to 14-5)
Date of Calibration : 15-Feb-2018 Ambient Temperature : 23 °C
Calibration location : Environmental Laboratory of FTS
Method used : **In-house method R-C-159**

Calibration Results :

Settings of equipment under test:
1. Temperature setting : 102 °C 3. Vent setting : Inlet vent : 5 division, ~~Outlet vent :~~ ~~division~~
2. Fan setting : On division 4. Volume of oven (V) : 0.153 m^3

Temperature Variation Test :

Test point, #	Indicated temperature of equipment under test	Measured temperature, °C		Specification limit
		Maximum	Minimum	
1	102 °C	104.1	103.4	104 ± 1°C
2		103.1	103.0	
3		103.7	103.3	
4		105.0	104.1	
5		103.4	103.2	
6		104.0	103.8	
7		103.9	103.6	
8		103.8	103.5	
9		104.4	103.6	
10		103.5	103.2	
11		--	--	
12		--	--	
13		--	--	
14		--	--	
15		--	--	

The maximum and minimum temperature were recorded within 2 hours.
Refer to diagram 1 for test point location.

Remarks :

1. The equipment used in this calibration has traceable accuracy to National Primary Standards.
2. The equipment being calibrated does comply with 104 ± 1°C
3. Recommended next calibration date of evaporation test : 14-Feb-2021
4. Recommended next calibration date of performance check: 14-Aug-2018

Checked by : _____ Date : 20-2-2018 Certified by : _____ Date : 26.2.2018
CA-R-62 (24/03/2011) Chan Chun Wai (Manager)

FUGRO

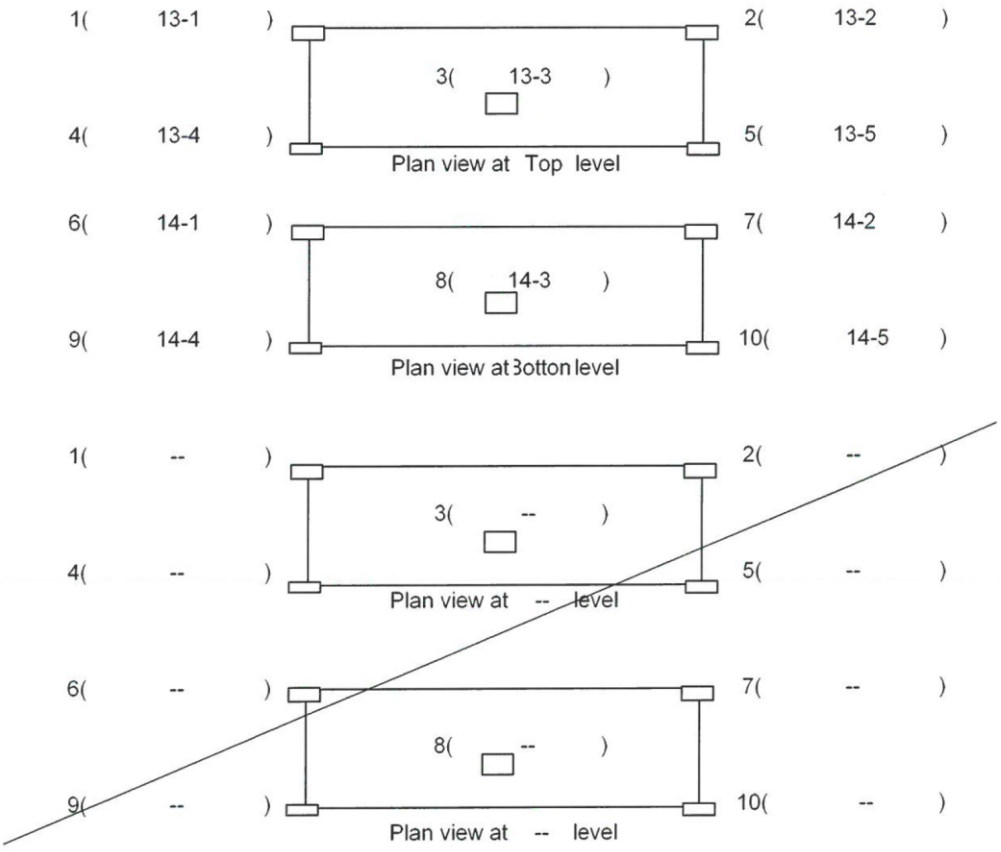
FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MateriaLab

Report No. : 921437CA180245

Diagram 1: The location of temperature variation test points



(The shaded area should not be used for test sample)

CA-R-62 (24/03/2011)

FUGRO

FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.
Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

MateriaLab

Report No. : 921437CA180245

Evaporation Test : (for specified temperature at or above 100°C only)

Interval (hr)	Reading of indicator (°C)
1 st	102
2 nd	102
3 rd	102
4 th	102

Number of dish = 8 - Integer of { (0.15 - V) / 0.03 }
= 8 - Integer of { (0.15 - 0.153)/0.03}= 8

Dish Location #	Weight of dish + 200g water : B(g)	Weight of foil : F(g)	Weight of water after the evaporation test + foil: A(g)	Weight of water evaporated:W(g)	Evaporation rate W/4 (g/hr)
1	291.62	--	182.06	109.56	27.39
2	291.57	--	196.02	95.55	23.89
3	294.49	--	182.35	112.14	28.04
4	296.79	--	196.45	100.34	25.09
5	295.22	--	189.27	105.95	26.49
6	295.18	--	214.46	80.72	20.18
7	291.15	--	197.35	93.80	23.45
8	291.97	--	193.77	98.20	24.55
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	--

Average evaporation rate : 24.58 g/hr

(average evaporation rate should be >15g/hr)
(evaporation rate on each dish should be >10 g/hr & not more than 2.2 times that of any other)

Refer to diagram 2 for detail dish location.

FUGRO

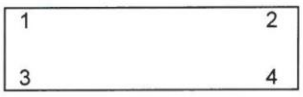
FUGRO TECHNICAL SERVICES LIMITED
Fugro Development Centre,
5 Lok Yi Street, Tai Lam,
Tuen Mun, N.T.,
Hong Kong.

Tel : +852 2450 8233
Fax : +852 2450 6138
E-mail : matlab@fugro.com
Website : www.fugro.com

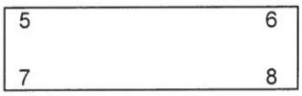
MateriaLab

Report No. : 921437CA180245

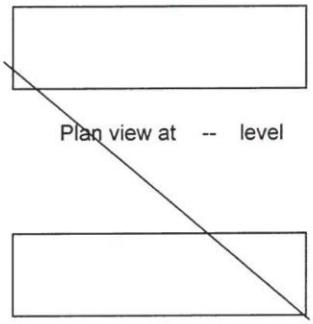
Diagram 2: The location of evaporation test points.



Plan view at Top level



Plan view at Bottom level



Plan view at -- level

Plan view at -- level

(The shaded area should not be used for test sample)

CA-R-62 (24/03/2011)

** End of Report **

FUGRO