

JOB NO.: TCS00874/16

CEDD CONTRACT NO. CV/2012/05
DEVELOPMENT OF A BATHING BEACH AT LUNG MEI,
TAI PO

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT (SEPTEMBER 2018)

PREPARED FOR

WELCOME CONSTRUCTION CO., LTD

Date Reference No. Prepared By Certified By

11 October 2018 TCS00874/16/600/R0308v2

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Version	Date	Remarks		
1	8 October 2018	First Submission		
2	11 October 2018	Amended according to the IEC's comment on 10 October 2018		





Environmental Permit No. EP-388/2010

Development of a Bathing Beach at Lung Mei, Tai Po

Independent Environmental Checker Verification

Reference Document/Plan

Document/Plan to be Certified/ Verified: Monthly Environmental Monitoring and Audit Report

(September 2018)

Date of Report: 11 October 2018

Date received by IEC: 11 October 2018

Reference EP Condition / Updated EM&A Manual Requirement

Environmental Permit Condition / Updated EM&A Manual Reference Condition 4.4

Three hard copies and one electronic copy of monthly EM&A Report shall be submitted to the Director within 2 weeks after the end of the reporting month. The EM&A Reports shall include a summary of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels). The submissions shall be certified by the ET Leader and verified by the IEC. Additional copies of the submission shall be provided to the Director upon request by the Director.

IEC Verification

I hereby verify that the above referenced document/plan complies with the above referenced condition of EP-388/2010.

Mr Terence Fong

Date: 12 October 2018

Independent Environmental Checker

Our ref: P:\Projects\0206709 IEC for Lung Mei EM&A\07_ET Submission\23_Monthly EM&A Report\10_September 2018\20181011 v2



EXECUTIVE SUMMARY

- ES.01 Civil Engineering and Development Department (hereafter referred as "CEDD") is the Project Proponent and the Permit Holder of *Agreement No. CE 59/2005 (EP) Development of a Bathing Beach at Lung Mei, Tai Po* (hereinafter referred as "the Project"), which is a Designated Project to be implemented under Environmental Permit number EP-388/2010 (hereinafter referred as "the EP-388/2010" or "the EP").
- ES.02 Action-United Environmental Services & Consulting (hereinafter referred as "AUES") has been commissioned as the Environmental Team for the Project (hereinafter referred as "the ET") to perform relevant Environmental Monitoring and Audit (EM&A) programme, including baseline and impact environmental monitoring in accordance with the EM&A Manual approved under the Environmental Impact Assessment Ordinance (EIAO).
- ES.03 According to the Approved Environmental Monitoring and Audit (EM&A) Manual [November 2007] (hereinafter referred as 'the EM&A Manual'), air quality, construction noise and water quality monitoring should be required to be monitored for baseline and during the construction phase of the Project. In January 2018, an updated EM&A Manual (AUES Ref.: TCS00874/16/300/L0085 dated 11 January 2018) was prepared to update of noise and air sensitive receivers and recent site condition for the EM&A Programme and it was submitted and approved by EPD in January 2018.
- ES.04 This is the 10th monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from 1 to 30 September 2018 (hereinafter 'the Reporting Period'). In the Reporting Period, the impact monitoring covered air quality, construction noise and water quality.

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.05 Environmental monitoring activities under the EM&A program in the Reporting Period are summarized in the following table.

Issues Environmental Monitoring Parameters / Inspection		Sessions Note 1
Air Onolity	1-hour TSP	5
Air Quality	24-hour TSP	5
Construction Noise	L _{Aeq(30min)} Daytime	4
Water Quality	Marine Water Sampling	12
	ET Regular Environmental Site Inspection	2
Inspection / Audit	Independent Environmental Checker (IEC) Monthly Environmental Site Audit	1

Note: 1.) *Total sessions are counted by monitoring days.*

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.06 No exceedance of air quality and construction noise monitoring were recorded in this Reporting Period. For water quality monitoring, a total of 99 Action/Limit Level exceedances were recorded for parameters of DO, Turbidity, Suspended Solids and Chlorophyll-a as shown in below table. NOEs were issued to relevant parties upon confirmation of the monitoring result and investigation for the causes of exceedances were carried out by ET subsequently. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Environmental	Monitoring	Exceedance		Event & Action	
Issues	Parameters	Action Level	Limit Level	Investigation	Corrective Actions
Ain Ovolity	1-hour TSP	0	0	-	-
Air Quality	24-hour TSP	0	0	-	-
Construction Noise	$L_{Aeq(30min)}$	0	0	-	-
	DO	6	4	-	-
Water Quality	Turbidity	2	48	Refer to ES.07	
vvacor Quarry	SS	9	29		
	Chlorophyll-a	1	0		



- ES.07 As advised by the Contractor and confirmed by Site Resident Engineers (SRE), construction activity carried out on 3 to 14 September 2018 included marine dredging at West Groyne enclosed by double silt curtain. As water quality mitigation measures, silt curtains were properly implemented and maintained at locations in accordance with EP's condition. Site inspection was carried out to assess the implementation of water quality mitigation measures and environmental performance of the construction site and there were no adverse water quality impact was observed. Having reviewed environmental performance of the project site and the monitoring results of the reference stations, impact stations as well as the sensitive receiver stations and the weather condition during the monitoring days, it is considered that all the exceedances were not caused by the works under the Project. The investigation for cause of exceedances recorded on 17 to 28 September 2018 is underway by ET.
- ES.08 Nevertheless, the Contractor was reminded to strictly implement the water quality mitigation measures as recommended implementation schedule for environmental mitigation measures in the EM&A Manual and EP's condition.

ENVIRONMENTAL COMPLAINT

ES.09 No environmental complaint was recorded or received in this Reporting Period. The statistics of environmental complaint are summarized in the following table.

Donauting David	Environmental Complaint Statistics			
Reporting Period	Frequency	Cumulative	Complaint Nature	
1 – 30 September 2018	0	0	N/A	

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.10 No environmental summons or successful prosecutions were recorded in this Reporting Period. The statistics of environmental complaint are summarized in the following tables.

Donauting Daviad	Environmental Summons Statistics			
Reporting Period	Frequency	Cumulative	Complaint Nature	
1 – 30 September 2018	0	0	N/A	

Depositing Devied	Environmental Prosecution Statistics			
Reporting Period	Frequency	Cumulative	Complaint Nature	
1 – 30 September 2018	0	0	N/A	

REPORTING CHANGE

ES.11 There was no reporting change in the EM&A programme in this Reporting Period.

SITE INSPECTION

ES.12 In the Reporting Period, joint site inspection by CEDD, ET and the Contractor was performed on 12 and 27 September 2018. During the two occasions of site inspection, no non-compliance was noted.

FUTURE KEY ISSUES

- ES.13 The construction activities in October 2018 include site formation, construction of retaining wall, dredging and construction of groynes, construction of eastern and western open channel / box culvert, construction of Eastern Box Culvert and construction of seawall. The potential environmental impacts arising from the forthcoming construction activities include construction waste, air quality, construction noise and water quality.
- ES.14 In regards to the marine works, special attention should be paid on the groynes construction (Eastern and Western) in which water quality mitigation measures such as erection of silt curtain should be properly implemented and maintained.

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- ES.15 During the wet and rainy season, the Contractor is reminded prevent surface runoff entering the sea or public area such as cover the exposed slope by impervious sheets and maintain the temporary drain and wastewater treatment system effectively.
- ES.16 Furthermore, mitigation measures should be fully implemented to minimize construction dust and noise impact to nearby sensitive receivers as appropriate. Moreover, all vehicles leaving the Site should be thoroughly washed by wheel washing facilities and dump/highway trucks should be covered with mechanical covers.



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1. INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 Civil Engineering and Development Department (hereafter referred as "CEDD") is the Project Proponent and the Permit Holder of *Agreement No. CE 59/2005 (EP) Development of a Bathing Beach at Lung Mei, Tai Po* (hereinafter referred as "the Project"), which is a Designated Project to be implemented under Environmental Permit number EP-388/2010 (hereinafter referred as "the EP-388/2010" or "the EP").
- 1.1.2 The major construction activities of the Project comprise construction of 200-metre long bathing beach with a groyne at each end, a shark prevention net; a public car park; retaining walls; and the associated roadworks, drainage and sewerage works. Layout plan of the Project is shown in *Appendix A*. Designated works of the Project under the EP shall include:
 - (i) Construction of a 200m long beach with a groyne at each end of the beach which includes dredging and sandfilling works;
 - (ii) Construction of one culvert at the eastern side of the beach and another small section of culvert and open drainage channel with gabion embankments at the western end, both to collect and divert surface runoff from upstream locations; and
 - (iii) Construction of a beach building with associated beach building facilities, kiosk and a carpark and associated road improvement works adjoining the facility.
- 1.1.3 CEDD is Site Resident Engineers (hereinafter referred as "SRE") responsible for the Project management; Welcome Construction CO., Ltd is a Main Contractor (hereinafter referred as "Contractor") responsible for construction of the Project; and Action-United Environmental Services & Consulting (hereinafter referred as "AUES") has been commissioned as an Independent Environmental Team (hereinafter referred as "the ET") to implement the relevant EM&A program in accordance with the approved EM&A Manual, as well as the associated duties. Moreover, Environmental Resources Management is Independent Environmental Checker (hereinafter referred as "IEC") of the Project.
- 1.1.4 As part of the EM&A program, baseline monitoring to determine the ambient environmental conditions including air quality, noise and water quality were undertaken between 7 June 2017 and 21 October 2017. After completed baseline monitoring, Baseline Monitoring Report for Air Quality and Noise (AUES Ref.: TCS00874/16/600/R0022v3) and Baseline Monitoring Report for Water Quality (AUES Ref.: TCS00874/16/600/R0036v2) were verified by IEC and submitted to EPD for endorsement. These Baseline Monitoring Reports have summarized the key findings of baseline condition and determined a set of Action and Limit Levels (A/L Levels) based on the baseline data. The A/L Levels will serve as the yardsticks for assessing the acceptability of the environmental impact during construction phase of the Project Works impact monitoring.
- 1.1.5 The construction phase of the Project commenced on 1st December 2017. Accordingly, the impact monitoring of the EM&A programme commenced on the same date
- 1.1.6 This is the 10th monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from 1 to 30 September 2018.

1.2 REPORT STRUCTURE

1.2.1 The Monthly Environmental Monitoring and Audit (EM&A) Report is structured into the following sections:-

Section 1	Introduction

Section 2 Project Organization and Construction progress

Section 3 Summary of Impact Monitoring Requirements

Section 4 Air Quality Monitoring

Section 5 Construction Noise Monitoring

Section 6 Water Quality Monitoring

Section 7 Waste Management

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Section 8	Ecology
Section 9	Site Inspection
Section 10	Environmental Complaint and non-compliance
Section 11	Implementation Status of Mitigation Measures
Section 12	Conclusion and Recommendation



2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS

2.1 PROJECT ORGANIZATION AND MANAGEMENT STRUCTURE

2.1.1 Organization structure and contact details of relevant parties with respect to on-site environmental management are shown in *Appendix B*. The responsibilities of respective parties are:

Engineer or Engineers Representative (ER)

- 2.1.2 The ER is responsible for overseeing the construction works and for ensuring that the works are undertaken by the Contractor in accordance with the specification and contract requirements. The duties and responsibilities of the ER with respect to EM&A are:
 - monitor the Contractor's compliance with contract specifications, including the effective implementation and operation of environmental mitigation measures and other aspects of the EM&A programme;
 - instruct the Contractor to follow the agreed protocols or those in the Contract Specifications in the event of exceedances or complaints;
 - comply with the agreed Event and Action Plans in the event of any exceedance;
 - liaise with the IEC and assist as necessary in the implementation of the EM&A program; and
 - participate in joint site inspection undertaken by the ET and IEC.

The Contractor

- 2.1.3 The duties and responsibilities of the Contractor are:
 - work within the scope of the construction contract and other tender conditions;
 - provide assistance to the ET in carrying out monitoring;
 - Submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event and Action Plans;
 - implement measures to reduce impact where Action and Limit levels are exceeded;
 - implement the corrective actions instructed by ER/ET/IEC;
 - participate in the site inspections undertaken by the ET and the IEC, as required, and undertake any corrective actions instructed by ER/ET/IEC; and
 - adhere to the procedures for carrying out complaint investigation.

Environmental Team (ET)

- 2.1.4 The ET will be led and managed by the ET Leader. The ET leader will have relevant education, training, knowledge, experience and professional qualifications and the appointment will be subject to the approval of the Director of Environmental Protection and ER. Suitably qualified staff will be included in the ET, and the ET should not be in any way an associated body of the Contractor or the Independent Environmental Checker (IEC) for the Project.
- 2.1.5 The duties and responsibilities of the ET are:
 - monitor various environmental parameters as required in this EM&A Manual;
 - assess the EM&A data and review the success of the EM&A programme determining the adequacy of the mitigation measures implemented and the validity of the EIA predictions as well as identify any adverse environmental impacts before they arise;
 - carry out regular site inspection to investigate and audit the Contractor's site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and effect proactive action to pre-empt issues;
 - review the Contractor's working programme and methodology, and comment as necessary;
 - review and prepare reports on the environmental monitoring data, site environmental conditions and audits;
 - report on the environmental monitoring and audit results and conditions to the IEC, Contractor, EPD and ER;
 - recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action Plans;



- adhere to the procedures for carrying out complaint investigation; and,
- the ET Leader will keep a contemporaneous log-book and record each and every instance or circumstance or change of circumstances which may affect the environmental impact assessment and every non-conformance with the recommendations of the EIA Reports or the EPs.

<u>Independent Environmental Checker (IEC)</u>

- 2.1.6 The duties and responsibilities of the IEC are:
 - review and monitor the implementation of the EM&A programme and the overall level of environmental performance being achieved;
 - arrange and conduct monthly independent site inspections/audits of the works;
 - validate and confirm the accuracy of monitoring results, monitoring equipment, monitoring stations, monitoring procedures and locations of sensitive receivers;
 - carry out random sample check and audit on monitoring data and sampling procedures, etc;
 - audit the EIA recommendations and requirements against the status of implementation of environmental protection measures on site;
 - on needed basis, audit the Contractor's construction methodology and agree the appropriate, reduced impact alternative in consultation with ER, the ET and the Contractor;
 - provide specialist advice to ER and the Contractor on environmental matters;
 - check complaint cases and the effectiveness of corrective measures;
 - check that the necessary mitigation measures recommended in the EIA, EP and Contract documents, or as subsequently required, are effectively implemented;
 - review EM&A report submitted by the ET leader and feedback audit results to ET by signing off relevant EM&A proformas;
 - report the findings of site inspections/ audits and other environmental performance reviews to ER, ET, EPD and the Contractor;

2.2 CONSTRUCTION PROGRESS

- 2.2.1 The 3-month rolling construction program is enclosed in *Appendix C* and the major construction activities undertaken in the Reporting Period are listed below:-
 - Site formation
 - Construction of Western Open Channel / Box Culvert
 - Dredging and Construction of Groynes (East and West)
 - Construction of Seawall

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

2.3.1 Summary of currently relevant permits, licenses, and/or notifications on environmental protection for this Project in this Reporting Period is presented in *Table 2-1*.

Table 2-1 Status of Environmental Licenses and Permits

	License/Permit Status			
Item	Description	Permit no./Account no./ Ref. no.	From	То
1	Air pollution Control (Construction Dust) Regulation	Ref. Number: 418137	N/A	N/A
2	Chemical Waste Producer Registration	Waste Producers Number (WPN): 5213-728-W3437-01	21 August 2017	End of Project
3	Water Pollution Control Ordinance	License No.: WT00028905-2017	24 October 2017	31 October 2022
4	Waste Disposal (Charges for Disposal of Construction Waste) Regulation	Billing Account for Disposal of Construction Waste: Account No. 7017686	3 July 2013	End of Project



		License/Per	License/Permit Status	
Item	Description	Permit no./Account no./ Ref. no.	From	То
5	Construction Noise	GW-RN0379-18	27 Jul 2018	26 Sep 2018
	Permit (Noise Control Ordinance)			
6	Construction Noise Permit (Noise Control Ordinance)	GW-RN0498-18	29 Sep 2018	28 Nov 2018
7	Permit issued under the dumping at sea ordinance	Permit no. EP/MD/18-093	13 Aug 2018	12 Sep 2018
8	Permit issued under the dumping at sea ordinance	Permit no. EP/MD/18-094	13 Aug 2018	12 Sep 2018
9	Permit issued under the dumping at sea ordinance	Permit no. EP/MD/18-027	13 Sep 2018	12 Oct 2018

2.3.2 The submission status as under the EP requirement is presented in *Table 2-2*.

 Table 2-2
 Submission Status as under the EP Stipulation

Item	EP condition	Description	Status	
1	2.3	Management Organization of the	The updated version was submitted	
		Main Construction Companies	in May 2018	
2	2.4	Report for Capture and Relocation of	Approved by EPD on 15 Sep 2017	
		Common Rat Snake	(EPD ref.: (15) in EP2/N5/C/46	
			Pt.6 dated 15 Sep 2017)	
3	2.5	Landscape Plan	Submitted to EPD on 28 June 2017	
4	3.12	Mangrove Seedling Planting Proposal	Not yet submitted	
5	3.13	Detailed Landscape As-built	Not yet submitted	
		Drawing(s)		
6	4.3	Baseline Monitoring Report for Air	Approved by EPD on 8 Jan 2018	
		Quality and Noise (AUES Ref.:	(EPD ref.: (36) in EP2/N5/C/46	
		TCS00874/16/600/R0022v3)	Pt.6 dated 8 Jan 2018)	
7		Baseline Monitoring Report for Water	Approved by EPD on 10 Jan 2018	
		Quality(AUES Ref.:	(EPD ref.: (37) in EP2/N5/C/46	
		TCS00874/16/600/R0036v2)	Pt.6 dated 10 Jan 2018)	



3. SUMMARY OF IMPACT MONITORING REQUIREMENTS

3.1 GENERAL

3.1.1 The Environmental Monitoring and Audit requirements are set out in the EM&A manual. Environmental issues such as air quality, construction noise and water quality were identified as the key issues during the construction phase of the Project. A summary of the EM&A requirements for air quality, noise monitoring and water quality are presented in the sub-sections below.

3.2 MONITORING PARAMETERS

- 3.2.1 According to the Project EM&A Manual, the Impact monitoring program covers the following environmental issues:
 - Air Quality;
 - Construction Noise; and
 - Water Quality
- 3.2.2 A summary of the monitoring parameters is presented in *Table 3-1* below.

Table 3-1 Summary of EM&A Impact Monitoring Requirements

Environmental Issue	Parameters
Air Quality	1-hour TSP24-hour TSP
Noise	• Leq (30min) in six consecutive Leq(5 min) between 07:00-19:00 on normal weekdays
Water Qaulity	In-situ Measurements • Dissolved Oxygen Concentration (mg/L); • Dissolved Oxygen Saturation (%); • Salinity (mg/L); • Temperature (°C); • Turbidity (NTU); • pH unit; • Current direction (degree); • Current speed (m/s); and • Water depth (m) Laboratory Analysis • Suspended Solids (mg/L); and • Chlorophyll-a (μg/L)

3.3 MONITORING LOCATIONS

Air Quality

3.3.1 There are air quality monitoring locations (A4 and A6) recommended in Section 3.1 of the EM&A Manual. During liaison with the landlord of A6, he refused to provide access and location for installation of High Volume Air Sampler (HVAS). Therefore, alternative location (A7) was proposed by ET in accordance with Section 3.4 of the EM&A Manual. The proposed alternative locations are considered capable of effectively representing the baseline conditions at the impact monitoring locations. The proposal (ref no.: TCS00874/16/300/L0016b) for alternative monitoring locations was verified by IEC and it has been submitted to EPD for approval on 8 May 2017. The air quality monitoring locations are in Table 3-2 and illustrated in Appendix D.

Table 3-2 Location of Air Quality Monitoring

Station ID	Location
A4	No. 101 Lung Mei Tsuen
A7	Hong Kong Eco-Farm



Construction Noise

3.3.2 According to Section 4.1 of the EM&A Manual, four designated noise sensitive receivers (N1, N2, N3 and N4) were recommended and they are listed in *Table 3-3* and illustrated in *Appendix D*.

Table 3-3 Designated Noise Monitoring Station according to the EM&A Manual

NSR	Location
N1	Village house - No. 165A Lung Mei
N2*	Village house - No. 103 Lung Mei
N3	Village house - No. 70 Lo Tsz Tin
N4	Village house - No. 79 Lo Tsz Tin

Remarks: (*)Noise monitoring should be conducted at N2a (i.e House No. 101 Lung Mei) if it is changed to residential use during construction phase.

- 3.3.3 As confirmed on the first day of baseline monitoring, N2a (House no. 101 Lung Mei) has been changed to residential use. Therefore, the noise monitoring is conducted at N2a and to replace N2. Moreover, due to the lack of accessibility of noise monitoring at N3 (Village house No. 70 Lo Tsz Tin), alternative location was proposed to replace N3 to carry out the noise monitoring. Having reviewed the surrounding condition, N3a (Village house No. 66C Lo Tsz Tin) was proposed with the rationales summarized in below.
 - 1) The distance between N3 and N3a is about 18 meter apart and N3a locates at close proximity of the project site and major site activities which are likely to have noise impacts;
 - 2) N3a is a village type residential house and it is a noise sensitive receiver (NSR);
 - 3) Accessibility for noise monitoring work at N3a is available; and
 - 4) Minimal disturbance would be only caused to the proposed monitoring location N3a.
- 3.3.4 The proposal (*ref no.: TCS00874/16/300/L0016b*) for alternative monitoring locations was verified by IEC and it has been submitted to EPD for approval on 8 May 2017. The noise monitoring stations under the EM&A programme are listed in *Table 3-4* and illustrated in *Appendix D*.

Table 3-4 Noise Monitoring Stations of the EM&A Programme

Station ID	Address
N1	Village house No. 165A of Lung Mei
N2a	Village house No. 101 of Lung Mei
N3a	Village house No. 66C of Lo Tsz Tin
N4	Village house No. 79 of Lo Tsz Tin

Water Quality

3.3.5 According to Section 5.1.2 of the Approved EM&A Manual, two Reference Stations (R1 and R2), three impact stations (I1, I2 and I3), three sensitive receivers (FCZ1, W1 and M1) and one Gradient station (G1), were identified to perform water quality monitoring. Detailed and coordinates of water quality monitoring stations is described in *Table 3-5* and the graphical is shown in *Appendix D*.

Table 3-5 Location of Marine Water Quality Monitoring Station

Station	Coord	linates	Description
Station	Easting	Northing	Description
G1	841483.9	835936.1	Gradient Station - to assist in the identification of the source of
U1	01 841483.9	033930.1	any impact.
			Reference Station - for the background water quality for Tolo
R1	842307.4	835718.4	Harbour as it is at the channel where the water excha
K1	042307.4	033/10.4	between the enclosed Plover Cove and Tolo Harbour take place.
			It is located at south of the Project dredging/sandfilling area.
			Reference Station - for the background water quality in the
R2	840739.4	836212.4	Plover Cove region. It is located at southwest of the Project
			dredging/sandfilling area.



Station Coordinates		linates	Description
Station	Easting	Northing	Description
I1	841338.5	836588.5	Impact Station - located outside the mixing zone of
11	041330.3	630366.3	dredging/sandfilling works of the Project.
12	841590.3	836601.2	Impact Station - located outside the mixing zone of
12	041390.3	830001.2	dredging/sandfilling works of the Project.
13	841807.0	836680.9	Impact Station - located outside the mixing zone of
15	641607.0	630060.9	dredging/sandfilling works of the Project.
			Sensitive Receiver - located at the Water Sport Centre, which is
W1	841858.9	836571.0	about 0.25 km distance to the southeast of the
			dredging/sandfilling area.
			Sensitive Receiver - located at the Ting Kok SSSI, which is
M1	840822.2	836416.4	about 0.8 km distance to the west of the dredging/sandfilling
			area.
			Sensitive Receiver - located at the Yim Tin Tsai East Fish
FCZ1	841180.6	835230.8	Culture Zone, which is about 1.5 km distance to the southwest
			of the dredging/sandfilling area.

3.4 MONITORING FREQUENCY AND PERIOD

3.4.1 The frequency and the duration for impact monitoring are summarized below.

Air Quality Monitoring

• Parameters: 1-hour TSP and 24-hour TSP

• Frequency: 3 times every six days for 1-hour TSP and once every 6 days for 24-hour

TSP

• Duration: Throughout the construction period

Noise Monitoring

• Parameters: $L_{Aeq(30min)}$ and statistical results L_{10} & L_{90}

• Frequency: Leq (30min) in 6 consecutive Leq(5min) for once a week during

07:00-19:00 on normal weekdays

• Duration: Throughout the construction period

Water Quality (Marine) Monitoring

• <u>Parameters:</u> In-situ measurements including water depth, Dissolved Oxygen (DO)

concentration (mg/L) & saturation (%), Salinity (mg/L), Temperature ($^{\circ}$ C) and Turbidity (NTU); and Suspended Solids (mg/L) and Chlorophyll-a

(μg/L) are analyzed by HOKLAS-accredited laboratory.

• Frequency: Three days a week, at mid ebb and mid flood tides. The interval between

2 sets of monitoring will be more than 36 hours.

Sampling 1) Three depths: 1m below water surface, 1m above sea bottom and at mid-depth when the water depth exceeds 6m;

2) If the water depth is between 3m and 6m, two depths: 1m below water surface and 1m above sea bottom; and

3) If the water depth is less than 3m, 1 sample at mid-depth is taken

• Duration: During marine works proceeding such as the dredging and sand filling

3.4.2 In addition to the water quality parameters, other relevant data will also be to measure and record, which are included the location of the sampling stations, water depth, time, weather conditions, sea conditions, tidal stage, current water flow direction and speed, special phenomena and work activities undertaken around the monitoring and works area that may influence the monitoring results. Observations on any special phenomena and work underway at the Project site during the time of sampling will also be to record.



3.5 MONITORING INSTRUMENT

Air Quality Monitoring

- 3.5.1 The 24-hour and 1-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the *Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B*. If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, it shall submit sufficient information to the IEC to prove that the instrument is capable of achieving a comparable results to the HVS. The instrument should be calibrated regularly, and the 1-hour sampling shall be determined on yearly basis by the HVS to check the validity and accuracy of the results measured by direct reading method. The filter paper of 24-hour TSP measurement shall be determined by HOKLAS accredited laboratory.
- 3.5.2 All equipment to be used for air quality monitoring is listed in *Table 3-6*.

Table 3-6 Air Quality Monitoring Equipment

Equipment	Model	
24-Hour TSP		
High Volume Air Sampler	TISCH High Volume Air Sampler, HVS Model TE-5170	
Calibration Kit	TISCH Calibration Kit Mode TE-5025A	
1-Hour TSP		
Portable Dust Meter	Sibata LD-3B Laser Dust Meter	

Noise Monitoring

- 3.5.3 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in ms⁻¹ for reference.
- 3.5.4 Monitoring equipment to be used for construction noise measurement is listed in *Table 3-7*.

Table 3-7 Construction Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	Rion NL-31 or Rion NL-52 or Brüel & Kjær 2238
Acoustic Calibrator	Rion NC-74 or Brüel & Kjær 4231
Portable Wind Speed Indicator (#)	Anemometer AZ Instrument 8908

^(#) Wind speed is reference data only and there is no calibration certificate for portable wind speed indicator.

Water Quality Monitoring

- 3.5.5 For water quality monitoring, the used equipment should be fulfill the requirements under *the Approved EM&A Manual Section 5.1.1*. Requirement of instruments is described in the following sections.
- 3.5.6 Instruments to be used for Water quality monitoring is listed in *Table 3-8*.

Table 3-8 Instrument of Water Quality Monitoring

Equipment	Model
A Digital Global Positioning System	Garmin eTrex
Water Depth Detector	Garmin ECHO 100
Water Sampler	Aquatic Research Transparent PC Vertical Water Sampler 2.2L / 3L / 5L
Thermometer & DO meter	YSI 6920V2-2-M Sonde
pH meter	
Turbidimeter	



Equipment	Model
Salinometer	
Current Meter	Acoustic Doppler Current Profiler - RiverSurveyor M9
Storage Container	'Willow' 33-litre plastic cool box with Ice pad

3.5.7 The following equipment and facilities shall be provided and used for the monitoring of water quality impacts:

Dissolved Oxygen and Temperature Measuring Equipment

- 3.5.8 DO and water temperature shall be measured in-situ by a DO/ temperature meter. The instrument shall be portable and weatherproof using a DC power source. It shall have a membrane electrode or an optical dissolved oxygen sensor with automatic temperature compensation complete with a cable. The equipment shall be capable of measuring:
 - DO level in the range of 0-20 mg/l and 0-200% saturation; and
 - Temperature of between 0 and 45 degree Celsius with a capability of measuring ± 0.1 degree Celsius.

Turbidity Measurement Instrument

3.5.9 The instrument shall be portable and weatherproof using a DC power source. It shall have a photoelectric sensor capable of measuring turbidity between 0-1000 NTU.

Salinity

3.5.10 A portable salinometer with measuring range of 0-40 mg/l shall be used to determine the salinity of the water.

Water Depth Detector

3.5.11 A portable, battery-operated echo sounder shall be used for the measurement of water depth at each designated monitoring station. The unit shall be either handheld or affixed to the bottom of the work boat, if the same vessel is to be used throughout the monitoring programme.

Positioning Device

3.5.12 A hand-held or boat-fixed type digital Global Positioning System (dGPS) with way point bearing indication or other equivalent instrument of similarly accuracy should be provided and used during monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

Water Sampling Equipment

- 3.5.13 A water sampler comprises a transparent PVC cylinder, with a capacity of not less than 2 litres, and could be effectively sealed with latex cups at both ends shall be used. The sampler has a positive latching system to keep it open and prevent premature closure until it is released by a messenger when the sampler is at the predetermined water depth (Kahlsico Water Sampler or other approved instrument).
- 3.5.14 Water samples 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 hours possible after collection. Each bottle will be labelled on the surface with date, location, tide, parameter and replicate information of the sample.



3.6 MONITORING PROCEDURES

Air Quality

1-hour TSP

- 3.6.1 Operation of the 1-hour TSP meter will follow manufacturer's Operation and Service Manual.
- 3.6.2 The 1-hour TSP monitor, brand named "Sibata LD-3B Laser Dust Meter" is a portable, battery-operated laser photometer. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90⁰ light scattering. The 1-hour TSP monitor consists of the following:
 - a. A pump to draw sample aerosol through the optic chamber where TSP is measured;
 - b. A sheath air system to isolate the aerosol in the chamber to keep the optics clean for maximum reliability; and
 - c. A built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.
- 3.6.3 The 1-hour TSP meter to be used will be within the valid period, calibrated by the manufacturer prior to purchasing. Zero response of the instrument will be checked before and after each monitoring event. Annually calibration with the High Volume Sampler (HVS) in same condition would be undertaken by the Laboratory.

24-hour TSP

- 3.6.4 The equipment used for 24-hour TSP measurement is the High Volume Sampler (hereinafter the "HVS") brand named TISCH, Model TE-5170 TSP High Volume Air Sampler, which complied with *EPA Code of Federal Regulation, Appendix B to Part 50*. The HVS consists of the following:
 - a. An anodized aluminum shelter;
 - b. A 8"x10" stainless steel filter holder;
 - c. A blower motor assembly;
 - d. A continuous flow/pressure recorder;
 - e. A motor speed-voltage control/elapsed time indicator;
 - f. A 7-day mechanical timer, and
 - g. A power supply of 220v/50 hz
- 3.6.5 For HVS for 24-hour TSP monitoring, the HVS is mounted in a metallic cage with a top for protection and also it is sat on the existing ground or the roof of building. The flow rate of the HVS between 0.6m³/min and 1.7m³/min will be properly set in accordance with the manufacturer's instruction to within the range recommended in *EPA Code of Federal Regulation*, *Appendix B to Part 50*. Glass Fiber Filter 8" x 10" of TE-653 will be used for 24-Hour TSP monitoring and would be supplied by laboratory. The general procedures of sampling are described as below:-
 - A horizontal platform with appropriate support to secure the samples against gusty wind should be provided;
 - No two samplers should be placed less than 2 meters apart;
 - The distance between the sampler and an obstacle, such as building, must be at least twice the height that the obstacle protrudes above the sample;
 - A minimum of 2 meters of separation from any supporting structure, measured horizontally is required;
 - Before placing any filter media at the HVS, the power supply will be checked to ensure the sampler work properly;
 - The filter paper will be set to align on the screen of HVS to ensure that the gasket formed an air tight seal on the outer edges of the filter. Then filter holder frame will be tightened to the filter hold with swing bolts. The holding pressure should be sufficient to avoid air leakage at the edge.
 - The mechanical timer will be set for a sampling period of 24 hours (00:00 mid-night to 00:00 mid-night next day). Information will be recorded on the field data sheet, which would be included the sampling data, starting time, the weather condition at current and the filter paper



ID with the initial weight;

- After sampling, the filter paper will be collected and transfer from the filter holder of the HVS to a sealed envelope and sent to a local HOKLAS accredited laboratory for quantifying.
- 3.6.6 All the sampled 24-hour TSP filters will be collected and put into the filter envelope provided by the laboratory. The sample will be kept in normal air conditioned room conditions, i.e. 70% HR (Relative Humidity) and 25°C and delivery to the office within 48 hours and sent to laboratory for analysis. The sampled filter will be kept in the laboratory for six months prior to disposal.
- 3.6.7 The HVS used for 24-hour TSP monitoring will be calibrated before the commencement for sampling, and after in two months interval for 1 point checking of maintenance and six months interval for five points calibrate in accordance with the manufacturer's instruction using the NIST-certified standard calibrator (TISCH Calibration Kit Model TE-5025A) to establish a relationship between the follow recorder meter reading in cfm (cubic feet per minute) and the standard flow rate, Qstd, in m³/min. Motor brushes of HVS will be regularly replaced of about five hundred hours per time.

Construction Noise

- 3.6.8 As referred to in the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804:1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.
- 3.6.9 All noise measurements will be performed with the meter set to FAST response and on the A-weighted equivalent continuous sound pressure level (Leq). Leq $_{(30 \text{ min})}$ in six consecutive Leq $_{(5 \text{ min})}$ measurements will be used as the monitoring parameter for the time period between 07:00-19:00 hours on weekdays.
- 3.6.10 The sound level meter will be mounted on a tripod at a height of 1.2 m and placed at the assessment point and oriented such that the microphone is pointed to the site with the microphone facing perpendicular to the line of sight. The windshield will be fitted for all measurements. Where a measurement is to be carried out at a building, the assessment point would normally be at a position 1 m from the exterior of the building façade. Where a measurement is to be made for noise being received at a place other than a building, the assessment point would be at a position 1.2 m above the ground in a free-field situation, i.e. at least 3.5 m away from reflective surfaces such as adjacent buildings or walls.
- 3.6.11 Immediately prior to and following each noise measurement the accuracy of the sound level meter will be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements will be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0 dB.
- 3.6.12 Noise measurements will not be made in fog, rain, wind with a steady speed exceeding 5m/s or wind with gusts exceeding 10m/s. The wind speed will be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

Water Quality (Marine) Monitoring

- 3.6.13 Marine water quality monitoring will be conducted at the designated locations in accordance with EM&A Manual. The operating and analytical of sampling procedures are described as below:
 - Water quality monitoring locations shall be located by GPS prior to in-situ monitoring and sampling. Water depth should be determined by using portable echo sounder for each monitoring location.
 - Measurements shall be taken at 3 water depths: 1m below water surface, mid-depth and 1m



above sea bed, except where the water depth less than 6m, the mid-depth station may be omitted. Should the water depth be less than 3 m, only the mid-depth station will be monitored.

- Water samples should be collected repeatedly using the water sampler as described in Section 3.5.13 to obtain adequate water samples for laboratory analysis.
- Sample container should be pre-labeled with date, location, tide, parameter and replicate information of the sample. The container should be rinsed using a portion of the marine water sample before the container is filled. Container is sealed with a screw cap after the filling is completed. The filled sample containers are then packed in ice (cooled to 4°C without being frozen), and delivered to the laboratory on the same day of collection for analysis.
- Two consecutive in-situ readings of water temperature, turbidity, dissolved oxygen, salinity, pH and water depth should taken at a predetermined depth. Where the difference in the value between the first and second readings of each set is more than 25% of the value of the first reading, the reading is discarded and further readings is taken.
- 3.6.14 All in-situ monitoring instruments shall be checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use, and subsequently re-calibrated at 3 months intervals throughout the water quality monitoring programme. Responses of sensors and electrodes shall be checked with certified standard solutions before each use. Certificate for calibration of in-situ instruments shall also be provided for auditing.
- 3.6.15 Wet bulb calibration for a DO probe shall be carried out at least once per monitoring day. A zero check in distilled water shall be performed with the turbidity probe at least once per monitoring day. The probe shall then be calibrated with a solution of known NTU. In addition, the turbidity probe shall be calibrated at least twice per month to establish the relationship between turbidity readings (in NTU) and levels of suspended solids (in mg/L).
- 3.6.16 For the on-site calibration of field equipment, the BS 1427: 1993, Guide to Field and On-Site Test Methods for the Analysis of Waters should be observed. Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment shall also be made available so that monitoring is uninterrupted even when some equipment is under maintenance or calibration etc.
- 3.6.17 Before each round of monitoring, the dissolved oxygen probe will be calibrated by wet bulb method; a zero check in distilled water will be performed with the turbidity and salinity probes; 4 and 10 values of the standard solution will be undertaken to check the accuracy of pH value.

LABORATORY ANALYSIS

3.6.18 Sufficient water samples shall be collected at the monitoring stations for carrying out laboratory determination. Analysis of suspended solids and Chlorophyll-a should be carried out in a HOKLAS or other international accredited laboratory. The chemicals analysis method and reporting limit is shown *Table 3-9*.

Table 3-9 Testing Method and Reporting Limit of the Chemical Analysis

Parameter ALS Method 0		In-house Method Reference ¹	Reporting Limit
Total Suspended Solids	EA025	APHA 2540D	2 mg/L
Chlorophyll-a	EP008F	APHA 10200H	1 μg/L

Note: The exact method shall depend on the laboratory accredited method. APHA = Standard Methods for the Examination of Water and Wastewater by the American Public Health Association.

3.6.19 Valid calibration certificates of monitoring equipment of air quality, construction noise and water quality are shown in Appendix E.



3.7 METEOROLOGICAL INFORMATION

3.7.1 The meteorological information including wind direction, wind speed, humidity, rainfall, air pressure and temperature etc. during impact monitoring is extracted from the closest Hong Kong Observatory Station. To obtain the most appropriate meteorological information where available, Air Temperature/Pressure and Relative Humidity will be extracted from Tai Po Station and wind speed and direction will be extracted from Tai Mei Tuk Station.

3.8 DETERMINATION OF ACTION/LIMIT (A/L) LEVELS

3.8.1 The baseline results form the basis for determining the environmental acceptance criteria for the impact monitoring. A summary of the Action/Limit (A/L) Levels for air quality, construction noise and water quality are shown in *Table 3-10*, *3-11* and *3-12* respectively.

Table 3-10 Action and Limit Levels for Air Quality

Monitoring	Action Lev	vel (μg/m³)	Limit Level (μg/m³)		
Station	1-hour TSP	24-hour TSP	1-hour TSP	24-hour TSP	
A4	275	142	500	260	
A7	274	141	500	260	

Table 3-11 Action and Limit Levels for Construction Noise, dB(A)

Time Period: 0700-1900 hours on normal weekdays						
Monitoring Location	Action Level	Limit Level Note 1 & Note 2				
N1, N2a, N3a, and N4	When one documented complaint is received	75				

Note 1: Acceptable Noise Levels for school should be reduced to 70 dB(A) and65 dB(A) during examination period

Note 2: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.

Table 3-12 Action and Limit Levels for Water Quality

Monitoring	Action	Level	Limit	it Level	
Location		Depth Average	e of SS (mg/L)		
I1	7.0	OR 120% of	7.5	OR 130% of	
I2	7.0		8.1		
I3	8.3	any reference stations at the	15.0	any reference stations at the	
W1	8.0	stations at the	8.6	same tide of the	
M1	10.0	same day	11.0	same day	
FCZ1	7.0	same day	8.0	same day	
		Dissolved Ox	ygen (mg/L)		
Monitoring	Depth Average		Depth Average		
Location	of Surface &	Bottom	of Surface &	Bottom	
	Mid-depth		Mid-depth		
I1	5.08	N/A	4.80	N/A	
I2	5.26	3.64	4.88	3.37	
I3	5.03	4.09	4.77	3.19	
W1	4.67	2.41	4.54	2.33	
M1	4.73	N/A	4.70	N/A	
FCZ1	5.00	3.43	5.00	3.18	
Monitoring Location		Depth Average of	Turbidity (NTU)		
I1	2.8		2.9		
I2	3.5	OR 120% of	7.7	OR 130% of	
I3	2.6	any reference	3.0	any reference	
W1	2.9	stations at the same tide of the	3.3	stations at the same tide of the	
M1	5.2	same day	6.6	same day	
FCZ1	3.2	Suille day	3.4	Saine day	



Monitoring Location	Surface, Middle & Botton	Surface, Middle & Bottom of Chlorophyll-a (μg/L)				
I1	11.1	12.1				
I2	11.0	13.1				
I3	11.3	14.5				
W1	11.3	16.1				
M1	16.9	42.4				
FCZ1	11.8	12.5				

Notes:

- (a) For DO, non-compliance of water quality limits occurs when monitoring result is lower than the limits
- (b) For SS, chlorophyll-a and turbidity, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- (c) Both Action and Limit Levels for DO (surface and middle) in the FCZ1 are less than 5 mg/L.

Event Action Plan

3.8.2 Should non-compliance of the environmental quality criteria occurs, remedial actions will be triggered according to the Event and Action Plan which presented in *Appendix F*.

3.9 DATA MANAGEMENT AND DATA QA/QC CONTROL

- 3.9.1 The impact monitoring data were handled by the ET's in-house data recording and management system.
- 3.9.2 The monitoring data recorded in the equipment were downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data were input into a computerized database properly maintained by the ET. The laboratory results were input directly into the computerized database and checked by personnel other than those who input the data.
- 3.9.3 For monitoring parameters that require laboratory analysis, the local laboratory shall follow the QA/QC requirements as set out under the HOKLAS scheme for the relevant laboratory tests.



4. AIR QUALITY MONITORING

4.1 GENERAL

4.1.1 In the Reporting Period, air quality monitoring were performed at the proposed monitoring locations A4 and A7. The air quality monitoring schedule is presented in *Appendix G* and the monitoring results are summarized in the following sub-sections.

4.2 RESULTS OF AIR QUALITY MONITORING

4.2.1 In the Reporting Period, 5 sessions of 1-hour TSP and 24-hour TSP were performed at Stations A4 and A7. The monitoring results for air quality monitoring are summarized in *Tables 4-1 to 4-2*. The detailed 24-hour TSP and 1-hour TSP monitoring data are presented in *Appendix H* and the relevant graphical plots are shown in *Appendix I*. The meteorological data during the impact monitoring period are summarized in *Appendix J*.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results (A4)

	24-hour	1-hour TSP (µg/m³)					
Date	TSP (μg/m³)	Date	Start Time	1 st reading	2 nd reading	3 rd reading	
6-Sep-18	90	3-Sep-18	9:51	35	38	42	
12-Sep-18	44	8-Sep-18	9:52	53	58	63	
18-Sep-18	54	14-Sep-18	9:23	28	23	27	
24-Sep-18	73	20-Sep-18	9:42	65	66	69	
29-Sep-18	86	26-Sep-18 9:43		72 83		86	
Average	69	Average		54			
(Range)	(44 - 90)	(Rang	ge)	(23 - 86)			

Table 4-2 Summary of 24-hour and 1-hour TSP Monitoring Results (A7)

	24-hour	1-hour TSP (μg/m³)					
Date	TSP (μg/m³)	Date	Start Time	1 st reading	2 nd reading	3 rd reading	
6-Sep-18	43	3-Sep-18	9:28	40	42	45	
12-Sep-18	47	8-Sep-18	9:41	52	62	65	
18-Sep-18	33	14-Sep-18	12:43	30	46	44	
24-Sep-18	31	20-Sep-18	10:59	106	104	104	
29-Sep-18	54	26-Sep-18 13:08		85 88 9		93	
Average	42	Average		67			
(Range)	(31 - 47)	(Rang	ge)	(30-106)			

4.2.2 As shown in *Tables 4-1 to 4-2*, all the 1-hour TSP and 24-hour TSP monitoring results were below the Action / Limit Level. No Notification of Exceedance (NOE) was issued in this Reporting Period.



5. CONSTRUCTION NOISE MONITORING

5.1 GENERAL

5.1.1 In the Reporting Period, construction noise quality monitoring were performed at the designated monitoring locations N1, N2a, N3a and N4. The noise quality monitoring schedule is presented in *Appendix G* and the monitoring results are summarized in the following sub-sections.

5.2 RESULTS OF NOISE MONITORING

5.2.1 In the Reporting Period, 4 sessions of noise monitoring were carried out at the designated locations. Free-field status were performed at N1 and N3a and façade correction (+3 dB(A)) has been added for the correction in according to the acoustical principles and EPD guidelines. The noise monitoring results at the designated locations are summarized in *Tables 5-1 to 5-4*. The detailed noise monitoring data are presented in *Appendix H* and the relevant graphical plots are shown in *Appendix I*.

Table 5-1 Construction Noise Monitoring Results of N1, dB(A)

Date	Start Time	$ m L_{eq30min}$	*Corrected L _{eq30min}
3-Sep-18	10:33	55	58
14-Sep-18	9:23	58	61
20-Sep-18	11:21	53	56
26-Sep-18	10:23	57	60

Remark: (*) A façade correction of +3dB(A) has been added according to acoustical principles and EPD guidelines.

Table 5-2 Construction Noise Monitoring Results of N2a, dB(A)

Date	Start Time	$ m L_{eq30min}$	Corrected L _{eq30min}
3-Sep-18	10:03	57	NA
14-Sep-18	9:53	59	NA
20-Sep-18	10:50	54	NA
26-Sep-18	9:53	56	NA

Table 5-3 Construction Noise Monitoring Results of N3a, dB(A)

Date	Start Time	$ m L_{eq30min}$	*Corrected L _{eq30min}
3-Sep-18	11:09	61	64
14-Sep-18	10:27	52	55
20-Sep-18	11:34	60	63
26-Sep-18	10:57	55	58

Remark: (*) A façade correction of +3dB(A) has been added according to acoustical principles and EPD guidelines.

Table 5-4 Construction Noise Monitoring Results of N4, dB(A)

Date	Start Time	${ m L_{eq30min}}$	Corrected L _{eq30min}
3-Sep-18	11:42	60	NA
14-Sep-18	10:59	62	NA
20-Sep-18	10:56	59	NA
26-Sep-18	11:28	61	NA

As shown in *Table 5-1 to Table 5-4*, all the designated locations measured results were below 75dB(A) of the acceptance criteria. Furthermore, no complaint on construction noise was registered, indicating no exceedance of Action Level. No non-compliance was therefore found during the Reporting Period.



6. WATER QUALITY MONITORING

6.1 GENERAL

6.1.1 The water quality monitoring schedule is presented in *Appendix G* and the monitoring results are summarized in the following sub-sections.

6.2 RESULTS OF WATER QUALITY MONITORING

6.2.1 In this Reporting Period, a total of **twelve** (*12*) sampling days were performed at the nine designated locations. Monitoring results of 4 key parameters: dissolved oxygen (DO), turbidity, suspended solids and Chlorophyll-*a* are summarized in *Tables 6-1* to *6-5*.

Table 6-1 Results Summary of Depth Average (Surface & Middle Layer) of DO (mg/L)

Tidal	Sampling Date	G1	R1	R2	I1	I2	13	W1	M1	FCZ1
	3-Sep-18	8.83	9.57	9.31	9.14	9.09	8.89	8.14	8.70	9.55
	5-Sep-18	10.19	6.99	9.12	6.59	7.16	6.53	7.94	8.48	9.29
	7-Sep-18	9.60	8.58	9.19	8.93	8.09	9.28	8.84	8.04	9.42
	10-Sep-18	7.90	7.68	8.13	8.36	8.32	8.86	7.72	7.97	7.76
	12-Sep-18		m	onitoring	was can	celled du	e to adve	rse weath	er	
Mid-Ebb	14-Sep-18	8.59	8.27	7.89	7.97	8.45	8.29	8.25	8.63	8.55
MIG-EUU	17-Sep-18	7.64	7.68	7.68	7.31	7.44	7.05	7.17	7.85	8.67
	19-Sep-18	7.62	7.27	6.66	8.02	7.21	6.13	7.17	6.72	6.66
	21-Sep-18	8.39	9.04	8.69	8.24	7.61	7.00	7.69	9.18	9.38
	24-Sep-18		monitoring was cancelled due to adverse weather							
	26-Sep-18	7.00	7.04	6.48	7.26	6.75	6.73	7.09	7.30	7.69
	28-Sep-18	7.02	7.07	7.13	7.14	6.97	6.98	7.03	7.27	7.42
	3-Sep-18	7.31	7.54	7.78	7.55	6.55	6.66	7.07	7.63	7.99
	5-Sep-18	10.72	8.19	9.07	11.00	7.95	7.59	7.72	9.91	10.11
	7-Sep-18	10.18	9.41	9.36	9.81	8.64	9.07	8.64	8.84	10.75
	10-Sep-18	8.27	8.66	8.61	8.33	8.65	8.79	8.41	7.92	8.89
	12-Sep-18	8.42	7.92	8.41	7.35	7.18	5.45	6.17	7.66	7.75
Mid-Flood	14-Sep-18	7.39	7.40	7.48	6.64	7.15	6.61	7.51	6.94	7.64
Mid-Fiood	17-Sep-18		m	onitoring	was can	celled du	e to adve	rse weath	er	
	19-Sep-18	7.03	6.76	6.94	9.84	7.69	7.52	10.36	8.49	7.96
	21-Sep-18	8.90	8.43	8.83	9.08	8.59	8.01	7.71	9.80	8.83
	24-Sep-18	7.47	7.13	8.20	7.53	7.46	7.61	7.09	7.31	7.34
	26-Sep-18	6.79	6.56	6.16	6.36	6.87	6.88	6.41	6.81	6.88
	28-Sep-18	6.77	6.77	6.72	6.52	6.74	6.60	6.43	6.84	7.09

Remark: Italic and bold value indicated Action Level exceedance
Underlined and bold value indicated Limit Level exceedance

Table 6-2 Results Summary of Bottom Depth of DO (mg/L)

Tidal	Sampling Date	G1	R1	R2	I1	I 2	I 3	W1	M1	FCZ1
	3-Sep-18	5.85	8.63	8.86	8.65	8.23	6.61	6.59	N/A	7.83
	5-Sep-18	4.30	2.64	4.96	1.48	4.32	1.38	3.14	N/A	3.27
	7-Sep-18	7.96	7.13	7.90	5.64	6.47	8.20	6.92	N/A	7.55
	10-Sep-18	7.53	7.02	7.83	8.02	7.93	8.02	6.81	N/A	7.32
	12-Sep-18		m	onitoring	was can	celled due	e to adve	rse weath	er	
Mid Ell	14-Sep-18	5.98	6.66	7.19	8.19	8.06	7.73	6.18	N/A	6.25
Mid-Ebb	17-Sep-18	6.93	7.12	6.85	6.53	6.29	6.32	6.89	N/A	7.33
	19-Sep-18	4.63	4.19	5.35	5.71	5.21	4.20	3.97	N/A	5.35
	21-Sep-18	5.01	5.95	5.26	5.00	4.98	3.92	5.17	N/A	5.88
	24-Sep-18		m	onitoring	was can	celled due	e to adve	rse weath	er	
	26-Sep-18	5.79	5.56	4.27	5.28	5.36	4.02	5.66	N/A	4.89
	28-Sep-18	6.07	6.13	5.47	5.93	5.63	5.72	6.14	N/A	5.46
Mid Flood	3-Sep-18	5.78	6.36	6.34	7.31	5.43	5.13	5.75	N/A	7.31
Mid-Flood	5-Sep-18	2.22	1.61	3.69	4.26	1.14	1.19	0.55	N/A	4.61



Tidal	Sampling Date	G1	R1	R2	I1	I 2	13	W1	M1	FCZ1
	7-Sep-18	9.13	6.61	5.69	5.62	6.49	6.82	6.65	N/A	6.37
	10-Sep-18	9.04	8.20	9.06	8.65	8.54	8.51	8.39	N/A	9.23
	12-Sep-18	7.11	5.85	4.84	6.14	6.54	3.42	3.93	N/A	5.39
	14-Sep-18	4.07	6.42	3.35	5.69	5.71	4.79	5.73	N/A	6.50
	17-Sep-18		monitoring was cancelled due to adverse weather							
	19-Sep-18	5.41	4.87	5.63	6.32	4.93	3.55	4.36	N/A	5.05
	21-Sep-18	7.21	4.87	6.87	6.90	3.88	4.05	4.16	N/A	7.16
	24-Sep-18	6.81	6.00	6.90	6.53	6.09	5.46	5.82	N/A	6.92
	26-Sep-18	5.18	4.87	4.30	5.39	6.67	5.22	4.26	N/A	5.96
	28-Sep-18	4.85	4.91	5.68	5.29	5.65	5.23	5.59	N/A	4.85

Remark: Italic and bold value indicated Action Level exceedance
Underlined and bold value indicated Limit Level exceedance

Table 6-3 Results Summary of Depth Average of Turbidity (NTU)

	G I									1
Tidal	Sampling Date	G1	R1	R2	I1	I2	I 3	W1	M1	FCZ1
	3-Sep-18	0.9	0.5	1.0	0.8	1.0	0.6	0.8	2.3	0.6
	5-Sep-18	2.1	1.0	2.4	2.8	1.2	1.7	1.8	0.5	2.0
	7-Sep-18	0.7	0.6	0.8	0.7	1.0	0.3	0.4	0.3	0.4
	10-Sep-18	1.1	1.4	0.7	0.2	0.5	0.2	0.2	2.7	0.3
	12-Sep-18		n	onitoring	was can	icelled due	e to adve	rse weath	er	
Mid-Ebb	14-Sep-18	0.7	1.2	1.8	0.7	0.8	0.6	0.6	1.4	0.5
WIIG-LOU	17-Sep-18	1.0	0.6	1.1	0.8	1.0	0.7	0.6	1.2	1.1
	19-Sep-18	1.4	1.4	2.2	0.4	0.3	0.9	1.2	1.9	2.2
	21-Sep-18	1.2	0.6	0.9	0.6	0.7	0.9	0.9	5.3	1.3
	24-Sep-18			onitoring	was car	celled due	e to adve	rse weath	er	
	26-Sep-18	1.6	1.7	2.6	1.8	1.5	1.0	1.0	0.4	1.7
	28-Sep-18	1.5	0.8	1.5	1.5	0.6	1.7	0.3	0.5	1.0
	3-Sep-18	0.4	0.7	0.8	0.7	0.8	0.6	0.7	0.3	0.6
	5-Sep-18	2.7	1.4	2.6	0.8	1.4	1.5	1.4	2.1	1.7
	7-Sep-18	0.9	0.6	1.0	1.1	0.6	0.8	0.8	1.8	0.7
	10-Sep-18	0.5	0.4	0.8	1.0	0.8	0.5	0.7	1.5	0.6
	12-Sep-18	0.3	0.4	1.3	0.1	0.5	1.3	0.9	0.9	0.9
Mid-Flood	14-Sep-18	1.9	0.3	1.5	2.0	<u>0.7</u>	0.7	0.5	2.7	0.6
Wiid-i 100d	17-Sep-18		n	onitoring	was car	icelled due	e to adve	rse weath	er	
	19-Sep-18	2.0	1.2	1.6	0.7	0.7	2.3	0.7	1.2	1.1
	21-Sep-18	1.0	1.1	1.0	0.6	1.1	1.4	1.2	3.5	0.9
	24-Sep-18	0.5	0.5	0.3	0.6	0.5	0.5	0.7	0.8	0.2
	26-Sep-18	1.7	1.3	1.8	1.0	1.2	1.3	1.6	0.9	0.7
	28-Sep-18	0.5	0.5	0.9	0.6	0.5	0.4	0.2	0.5	0.9

Remark: Italic and bold value indicated Action Level exceedance
Underlined and bold value indicated Limit Level exceedance

Table 6-4 Results Summary of Depth Average of Suspended Solids (mg/L)

Tidal	Sampling Date	G1	R1	R2	I1	I2	I3	W1	M1	FCZ1		
	3-Sep-18	2.3	3.3	3.0	2.3	2.0	3.3	3.7	2.5	2.5		
	5-Sep-18	9.0	4.0	2.0	5.0	3.7	2.3	3.2	2.0	2.3		
	7-Sep-18	3.5	7.0	4.0	4.8	5.7	5.8	4.5	2.5	6.5		
	10-Sep-18	3.5	5.7	11.2	3.0	4.2	6.0	5.3	3.5	2.0		
	12-Sep-18		monitoring was cancelled due to adverse weather									
Mid-Ebb	14-Sep-18	2.8	5.3	3.8	2.8	4.2	4.8	4.5	4.0	3.0		
	17-Sep-18	3.5	5.3	4.8	8.0	5.0	5.2	4.8	5.5	5.0		
	19-Sep-18	3.8	4.2	3.8	5.8	3.7	4.0	4.5	4.0	3.0		
	21-Sep-18	4.3	3.2	3.3	4.0	3.8	4.3	3.3	4.0	4.3		
	24-Sep-18		monitoring was cancelled due to adverse weather									
	26-Sep-18	2.5	2.0	2.5	2.3	2.0	2.7	3.0	2.0	2.5		



Tidal	Sampling Date	G1	R1	R2	I1	I 2	13	W1	M1	FCZ1	
	28-Sep-18	3.3	3.0	2.8	3.2	3.0	3.3	3.7	3.5	3.0	
	3-Sep-18	2.0	2.2	2.3	4.0	2.0	2.0	2.0	2.5	2.0	
	5-Sep-18	5.5	3.5	4.5	7.8	9.2	7.8	7.5	13.0	6.5	
	7-Sep-18	7.8	4.2	6.0	7.8	6.0	6.5	3.5	3.5	5.3	
	10-Sep-18	5.0	2.7	2.5	4.8	4.3	2.7	2.8	14.5	3.0	
	12-Sep-18	3.3	3.2	3.5	2.5	3.3	3.3	3.3	4.5	3.5	
Mid-Flood	14-Sep-18	2.8	2.8	2.8	2.3	2.5	2.8	2.5	3.0	2.5	
MIG-FIOOG	17-Sep-18		monitoring was cancelled due to adverse weather								
	19-Sep-18	4.3	4.5	3.5	3.3	5.0	4.3	3.8	4.0	3.5	
	21-Sep-18	5.3	3.3	3.2	3.5	3.0	3.2	3.7	4.5	3.3	
	24-Sep-18	3.2	3.2	4.5	3.0	3.2	3.2	3.7	4.0	3.5	
	26-Sep-18	2.0	2.3	2.8	2.0	2.2	2.0	2.0	2.0	2.0	
	28-Sep-18	3.2	3.3	3.3	3.0	3.0	3.7	3.2	3.5	3.5	

Remark: Italic and bold value indicated Action Level exceedance
Underlined and bold value indicated Limit Level exceedance

Table 6-5 Results Summary of Depth Average of Chlorophyll-a (µg/L)

	results summary of Departmenage of emotophyn a (4g 2)										
Tidal	Sampling Date	G1	R1	R2	I1	I 2	13	W1	M1	FCZ1	
	3-Sep-18	4.3	4.8	5.0	3.9	3.7	4.5	4.9	4.7	4.4	
	5-Sep-18	2.8	3.1	4.1	2.7	3.2	3.4	3.3	3.7	3.8	
	7-Sep-18	2.3	2.6	2.8	2.1	1.8	2.2	2.2	2.3	2.9	
	10-Sep-18	2.5	3.4	3.6	3.1	2.9	2.8	3.8	4.0	6.9	
	12-Sep-18		m	onitoring	was can	celled due	e to adve	rse weath	er		
Mid-Ebb	14-Sep-18	3.5	4.7	4.5	4.2	4.1	3.6	4.5	3.7	3.4	
MIG-EDD	17-Sep-18	9.1	11.3	11.3	9.5	9.2	9.7	9.7	12.0	12.5	
	19-Sep-18	1.8	4.3	2.7	4.1	4.1	5.6	3.9	3.6	1.9	
	21-Sep-18	5.9	4.2	7.8	5.4	5.3	5.2	4.7	5.6	5.7	
	24-Sep-18		monitoring was cancelled due to adverse weather								
	26-Sep-18	3.5	3.9	3.9	3.7	4.7	4.5	3.8	5.0	10.5	
	28-Sep-18	2.4	2.5	3.2	2.6	2.8	3.1	3.1	3.1	3.0	
	3-Sep-18	2.8	3.6	2.6	3.2	2.7	2.8	2.6	1.8	2.6	
	5-Sep-18	2.2	3.0	3.7	2.9	3.0	3.5	2.9	3.4	2.7	
	7-Sep-18	1.8	1.8	2.1	1.7	1.6	1.8	1.8	2.2	2.1	
	10-Sep-18	2.4	2.6	2.7	2.5	2.2	2.4	2.8	3.7	3.8	
	12-Sep-18	1.6	2.2	1.9	2.2	2.0	2.1	2.2	2.6	1.5	
Mid-Flood	14-Sep-18	2.8	2.2	2.8	2.3	1.9	2.3	2.8	3.7	2.3	
Mid-Flood	17-Sep-18		m	onitoring	was can	celled due	e to adve	rse weath	er		
	19-Sep-18	4.7	6.0	5.7	4.9	6.0	4.5	6.3	4.5	5.4	
	21-Sep-18	2.5	3.0	3.3	2.9	2.8	3.3	3.4	3.4	3.4	
	24-Sep-18	3.3	3.8	3.8	4.0	3.8	4.0	3.5	3.7	3.9	
	26-Sep-18	2.3	4.0	3.1	2.9	2.7	3.4	3.4	3.1	3.3	
	28-Sep-18	2.9	3.5	3.8	2.7	2.9	3.0	3.8	4.3	4.8	

Remark: Italic and bold value indicated Action Level exceedance
Underlined and bold value indicated Limit Level exceedance

- 6.2.2 During the Reporting Period, field measurements showed that temperatures of marine water were within 22.8°C to 32.1°C; the salinity concentrations within 19.61 to 30.69 ppt and pH values within 7.89 to 8.70.
- 6.2.3 The monitoring results including in-situ measurements and laboratory testing results are attached in *Appendix H*. The graphical plots are shown in *Appendix I*.
- 6.2.4 In this Reporting Period, there were total of 99 exceedances recorded, namely 18 Action Level (AL) and 81 Limit level (LL). A summary of water quality monitoring exceedance is shown in *Table 6-6.*



Table 6-6 Summary of Water Quality Exceedance

Station	To	Ave of p & lepth)	(Bo	O ttom pth)	,	idity pth ve)	(De	S epth ve)		phyll- <i>a</i> h Ave)	To Excee for Stat	dance the
	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL	AL	LL
I1	0	0	0	0	0	7	1	7	0	0	1	14
I2	0	0	0	1	0	6	0	6	0	0	0	13
I3	0	0	5	2	1	8	2	5	0	0	8	15
W1	0	0	0	1	1	7	1	4	0	0	2	12
M1	0	0	0	0	0	12	3	4	0	0	3	16
FCZ1	0	0	1	0	0	8	2	3	1	0	4	11
No of Exceedance	0	0	6	4	2	48	9	29	1	0	18	81

6.2.5 The total of 99 water quality monitoring exceedances included 10 AL/LL exceedances of DO, 50 AL/LL exceedances of Turbidity, 38 AL/LL exceedances of Suspended Solids and also 1 AL exceedances of Chlorophyll-a.

6.3 EXCEEDANCE INVESTIGATION

6.3.1 Upon confirmation of the monitoring result, Notification of Exceedances (NOEs) has had issued to relevant parties. Investigation for the cause of exceedance was carried out by ET subsequently.

Exceedances on 20, 22, 24, 27, 29 and 31 August 2018 (last Reporting Month)

There was no marine work carried out on 20 August 2018 while marine dredging at West Groyne was carried out on 24 to 31 August 2018. As water quality mitigation measures, silt curtains were properly implemented and maintained at locations in accordance with EP's condition. During the course of marine water quality monitoring, no abnormal and turbid discharge was observed made from the construction site. Having reviewed environmental performance of the project site and the monitoring results of the reference stations, impact stations as well as the sensitive receiver stations and the weather condition during the monitoring days, it is considered that all the exceedances were not caused by the works under the Project. Nevertheless, the Contractor was reminded to strictly implement the water quality mitigation measures as recommended implementation schedule for environmental mitigation measures in the EM&A Manual and EP's condition.

Exceedances on 3, 5, 7, 10, 12 and 14 September 2018

The construction activity carried out on 3 to 14 September 2018 included marine dredging at West Groyne enclosed by double silt curtain. As water quality mitigation measures, silt curtains were properly implemented and maintained at locations in accordance with EP's condition. During the course of marine water quality monitoring, no abnormal and turbid discharge was observed made from the construction site. Having reviewed environmental performance of the project site and the monitoring results of the reference stations, impact stations as well as the sensitive receiver stations and the weather condition during the monitoring days, it is considered that all the exceedances were not caused by the works under the Project. Nevertheless, the Contractor was reminded to strictly implement the water quality mitigation measures as recommended implementation schedule for environmental mitigation measures in the EM&A Manual and EP's condition.

Exceedances on 17, 19, 21, 24, 26 and 28 September 2018

6.3.2 Investigation for the cause of exceedance is underway by ET and the findings will be reported in next reporting period



7. WASTE MANAGEMENT

7.1 GENERAL

7.1.1 Waste management was carried out by an on-site Environmental Officer or an Environmental Supervisor from time to time.

7.2 RECORDS OF WASTE QUANTITIES

- 7.2.1 All types of waste arising from the construction work are classified into the following:
 - Construction & Demolition (C&D) Material;
 - Chemical Waste;
 - General Refuse; and
 - Excavated Soil.
- 7.2.2 The quantities of waste for disposal in this Reporting Period are summarized in *Tables 7-1* and 7-2 and the Monthly Summary Waste Flow Table is shown in *Appendix K*. Whenever possible, materials were reused on-site as far as practicable.

Table 7-1 Summary of Quantities of Inert C&D Materials

Types of Waste	Quantity	Disposal Location
Total C&D Materials (Inert) ('000m ³)	1.08	Tuen Mun Area 38
Reused in this Contract (Inert) ('000m ³)	0	NA
Reused in other Projects (Inert) ('000m ³)	0	NA
Disposal as Public Fill (Inert) ('000m ³)	1.08	Tuen Mun Area 38

Table 7-2 Summary of Quantities of C&D Wastes

Types of Waste	Quantity	Disposal Location
Recycled Metal ('000kg)	0	NA
Recycled Paper / Cardboard Packing ('000kg)	0	NA
Recycled Plastic ('000kg)	0	NA
Chemical Wastes ('000kg)	0	NA
General Refuse ('000m ³)	0	NA



8. ECOLOGY

8.1 ECOLOGY MONITORING (MARINE-BASED)

Seahorse Translocation Surveys

- 8.1.1 The seahorse captured and translocation was conducted in the period of 17 to 20 January 2018. Since the two tagged seahorses were not recorded at the Ting Kok East reception site during the first 7 days Post-translocation Seahorse Survey on 21 to 27 January 2018, Option 2 of monitoring programme was therefore adopted to perform the Post-translocation Seahorse Survey in accordance with the approved method statement (Seahorses Translocation Plan (Version 1, 11 January 2018) refers). The Post-translocation Seahorse Survey should be performed in the first year for a period of one year after the completion of seahorse translocation. The proposed survey time would be at least 28 man-hours (including 14 man-hours during daytime and 14 man-hours during nighttime for each survey). The survey frequency is listed below:
 - Daily for first week
 - three times per week for the second to fourth week
 - once a week for the second to fourth month
 - once a month for the fifth to twelve month
- 8.1.2 The eighth month post-translocation Seahorse Survey was carried out on 20 and 21 September 2018 at Ting Kok East reception site. According to the survey result, no tagged seahorses #051 and #052 were found during the survey. The corresponding post-translocation Seahorse Survey Report will be submitted in stand-alone copy.



9. SITE INSPECTION

9.1 REQUIREMENTS

9.1.1 According to the approved EM&A Manual, the environmental site inspection shall be formulation by ET Leader. The site inspection and audits should be conducted twice per month by ET.

9.2 FINDINGS / DEFICIENCIES DURING THE REPORTING MONTH

- 9.2.1 In the Reporting Period, joint site inspection and audit to evaluate site environmental performance was carried out by the RE, ET and the Contractor on 12 and 27 September 2018. No non-compliance was noted within this reporting period.
- 9.2.2 The findings / deficiencies that observed during the weekly site inspection are listed in *Table 9-1*.

Table 9-1 Site Observations

	The Constitutions	
Date	Findings / Deficiencies	Follow-Up Status
27 August 2018	 Muddy trails and muddy water were observed outside the site exit, the Contractor should clean the mud and muddy water properly and provide mitigation measure to ensure the cleanliness of site exit. 	Muddy trails outside the site exit was cleaned up and maintained.
	• Seepage of turbid water from the site into the river channel was observed, the Contractor should provide proper mitigation measure to avoid water quality impact.	No seepage of turbid water from the site into the river channel was observed.
12 September 2018	• Missing part of silt curtain at site boundary was observed at site boundary. The Contractor should maintain the silt curtain regularly.	Maintenance of silt curtain on on-going.
27 September 2018	• Turbid effluent from wastewater treatment facility was observed, the Contractor should ensure the capacity of wastewater treatment facility is sufficient and provide proper mitigation measure to avoid water quality impact.	To be followed.



10. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

10.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

- 10.1.1 In the Reporting Period, no environmental complaint, summons and prosecution was received.
- In the Reporting Period, no summons and prosecution under the EM&A Programme was lodged for the project. The statistical summary table of environmental complaint is presented in *Tables* 10-1, 10-2 and 10-3.

Table 10-1 Statistical Summary of Environmental Complaints

Depositing Devied	Enviro	Environmental Complaint Statistics					
Reporting Period	Frequency	Cumulative	Complaint Nature				
1 – 30 September 2018	0	0	NA				

Table 10-2 Statistical Summary of Environmental Summons

Donauting Davied	Enviro	Environmental Summons Statistics						
Reporting Period	Frequency	Cumulative	Summons Nature					
1 – 30 September 2018	0	0	NA					

Table 10-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Prosecution Nature
1 – 30 September 2018	0	0	NA



11. IMPLEMENTATION STATUS OF MITIGATION MEASURES

11.1 GENERAL

- 11.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the approved EM&A Manual covered the issues of dust, noise, water, ecology and waste etc. and they are summarized presented in *Appendix L*.
- 11.1.2 The Contractor had been implementing the required environmental mitigation measures according to the Environmental Monitoring and Audit Manual subject to the site condition. Environmental mitigation measures generally implemented by the Contractor in this Reporting Month are summarized in *Table 11-1*.

Table 11-1 Environmental Mitigation Measures in the Reporting Month

Issues	Environmental Mitigation Measures
Construction	• Regularly to maintain all plants, so only the good condition plants were used
Noise	on-site;
	• If possible, all mobile plants onsite operation has located far from NSRs;
	• When machines and plants (such as trucks) were not in using, it was switched
	off;
	• Wherever possible, plant was prevented oriented directly the nearby NSRs;
	Provided quiet powered mechanical equipment to use onsite;
	Moveable noise barriers were temporary used for construction work, where
	necessary; and
	Weekly noise monitoring was conducted to ensure construction noise meet the criteria.
Air Quality	
All Quality	Stockpile of dusty material was covered entirely with impervious sheeting or support dusty material was covered entirely with impervious sheeting or
	sprayed with water so as to maintain the entire surface wet;
	• The construction plants regularly maintained to avoid the emissions of black smoke;
	The construction plants switched off when it not in use;
	Water spraying on haul road and dry site area was provided regularly;
	• Where a vehicle leaving the works site is carrying a load of dusty materials,
	the load has covered entirely with clean impervious sheeting; and
	Before any vehicle leaving the works site, wheel watering has been
	performed.
Water Quality	Impervious sheeting was provided on exposed soil surfaces to reduce the
	potential of soil erosion;
	Debris and refuse generated on-site collected daily;
	• Stockpiles of the cement and other construction materials were covered when
	not being used;
	Oils and fuels were stored in designated areas with locks;
	The chemical waste storage as sealed area provided with locks;
	• Sedimentation facilities was provided to remove silt particles from
	groundwater;
	• Site hoarding with sealed foot were provided surrounding the boundary of
	working site to prevent wastewater or site surface water runoff get into public
	areas; and
	• Portable chemical toilets were provided on-site. A licensed contractor was
	regularly disposal and maintenance of these facilities.
	Silt curtain was installed and maintained in accordance with EP condition



Issues	Environmental Mitigation Measures
Waste and	• Excavated material reused on site as far as possible to minimize off-site
Chemical	disposal. Scrap metals or abandoned equipment should be recycled if
Management	possible;
	• Waste arising kept to a minimum and be handled, transported and disposed of in a suitable manner;
	• Disposal of C&D wastes to any designated public filling facility and/or landfill followed a trip ticket system; and
	• Chemical waste handled in accordance with the Code of Practice on the
	Packaging, Handling and Storage of Chemical Wastes.
General	• The site is generally kept tidy and clean.
	• Mosquito control is performed to prevent mosquito breeding on site.

11.2 IMPACT FORECAST

- 11.2.1 Construction activities to be undertaken in October 2018 should be included below:-
 - Site formation
 - Construction of and Eastern Box Culvert and Western Open Channel / Box Culvert
 - Dredging and Construction of Groynes (East and West)
 - Construction of retaining wall
 - Construction of seawall
- 11.2.2 Potential environmental impacts arising from the works include:
 - Construction waste
 - Air quality
 - Construction noise
 - Water quality (particularly site runoff during rainy seasons)
- 11.2.3 Environmental mitigation measures will be properly implemented and maintained as per the Mitigation Implementation Schedule in **Appendix L** to ensure site environmental performance is acceptable.



12. CONCLUSIONS AND RECOMMENTATIONS

12.1 CONCLUSIONS

- 12.1.1 This is the 10th monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from 1 to 30 September 2018.
- 12.1.2 In this Reporting Period, no construction noise monitoring results that triggered the Limit Level was recorded. No NOE or the associated corrective actions were therefore issued. Moreover, no noise complaint (which is an Action Level exceedance) was received for the Project.
- 12.1.3 In this Reporting Period, no air quality monitoring exceedance was recorded. No NOE or the associated corrective actions were therefore issued.
- 12.1.4 For water quality monitoring, there were total of 99 water quality monitoring exceedances included 10 AL/LL exceedances of DO, 50 AL/LL exceedances of Turbidity, 38 AL/LL exceedances of Suspended Solids and also 1 AL exceedances of Chlorophyll-a. As advised by the Contractor and confirmed by Site Resident Engineers (SRE), construction activity carried out on 3 to 14 September 2018 included marine dredging at West Groyne enclosed by double silt curtain. As water quality mitigation measures, silt curtains were properly implemented and maintained at locations in accordance with EP's condition. Having reviewed environmental performance of the project site and the monitoring results of the reference stations, impact stations as well as the sensitive receiver stations and the weather condition during the monitoring days, it is considered that all the exceedances were not caused by the works under the Project. The investigation for cause of exceedances recorded on 17 to 28 September 2018 is underway by ET.
- 12.1.5 In the Reporting Period, joint site inspection and audit to evaluate site environmental performance was carried out by the CEDD, ET and the Contractor on 12 and 27 September 2018. No non-compliance was noted within this reporting period.
- 12.1.6 No environmental complaints, notification of summons or successful prosecution were received in this Reporting Period.

12.2 RECOMMENDATIONS

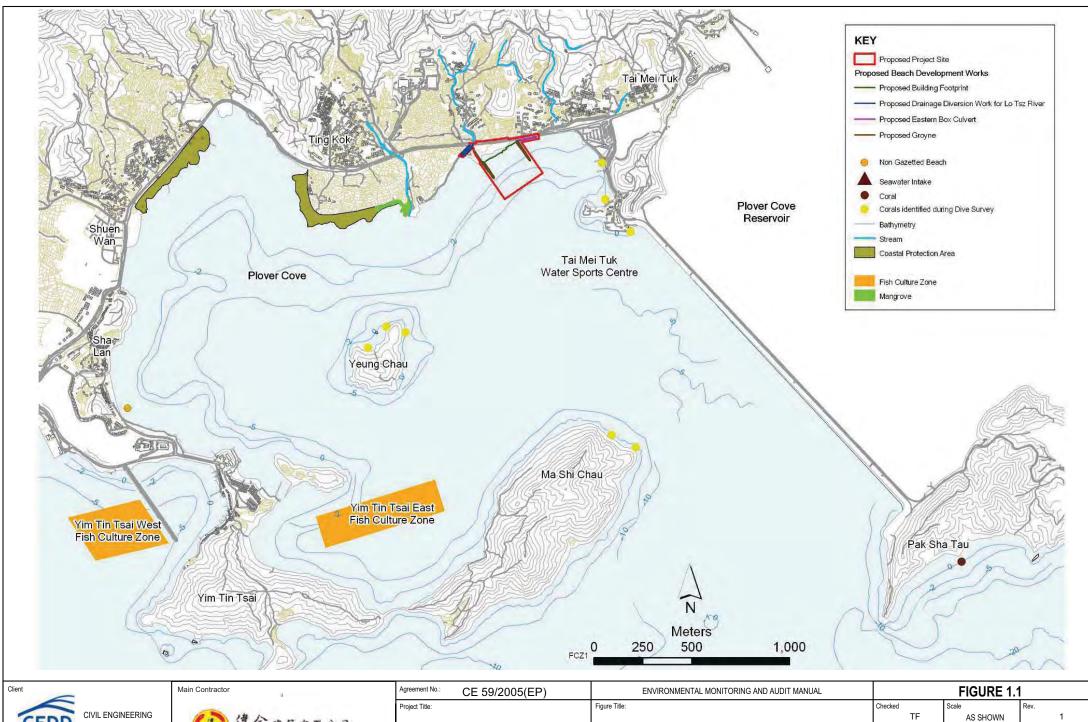
- 12.2.1 The construction activities in coming month October 2018 include site formation, dredging and construction of groynes, construction of eastern and western box culvert and open channel. Furthermore, retaining wall construction will be commenced in the coming month. The potential environmental impacts arising from the forthcoming construction activities include construction waste, air quality and construction noise and water quality.
- During wet and rainy season, the Contractor is reminded prevent surface runoff entering the sea or public area such as cover the exposed slope by impervious sheets and maintain the temporary drain and wastewater treatment system effectively.
- 12.2.3 Construction noise should be a key environmental impact during the works. The noise mitigation measures such as use of quiet plants and installation of temporary noise barrier at the construction noise predominate area should be fully implemented as accordance with the EM&A requirement.
- As a reminder, housekeeping of the site and site tidiness should be undertaken after every day work completion. Also, drip tray should be provided for chemical container to prevent land contamination. In addition, mosquito control should be kept to prevent mosquito breeding on site.



Appendix A

Layout plan of the Project

(The content of Appendix A is modified from the previous EM&A Manual - Development of a Bathing Beach at Lung Mei, Tai Po (Register No. AEIAR-123/2008): Environmental Monitoring and Audit (EM&A) Manual (November 2007))



AND DEVELOPMENT DEPARTMENT



DEVELOPMENT OF A BATHING

BEACH AT LUNG MEI, TAI PO

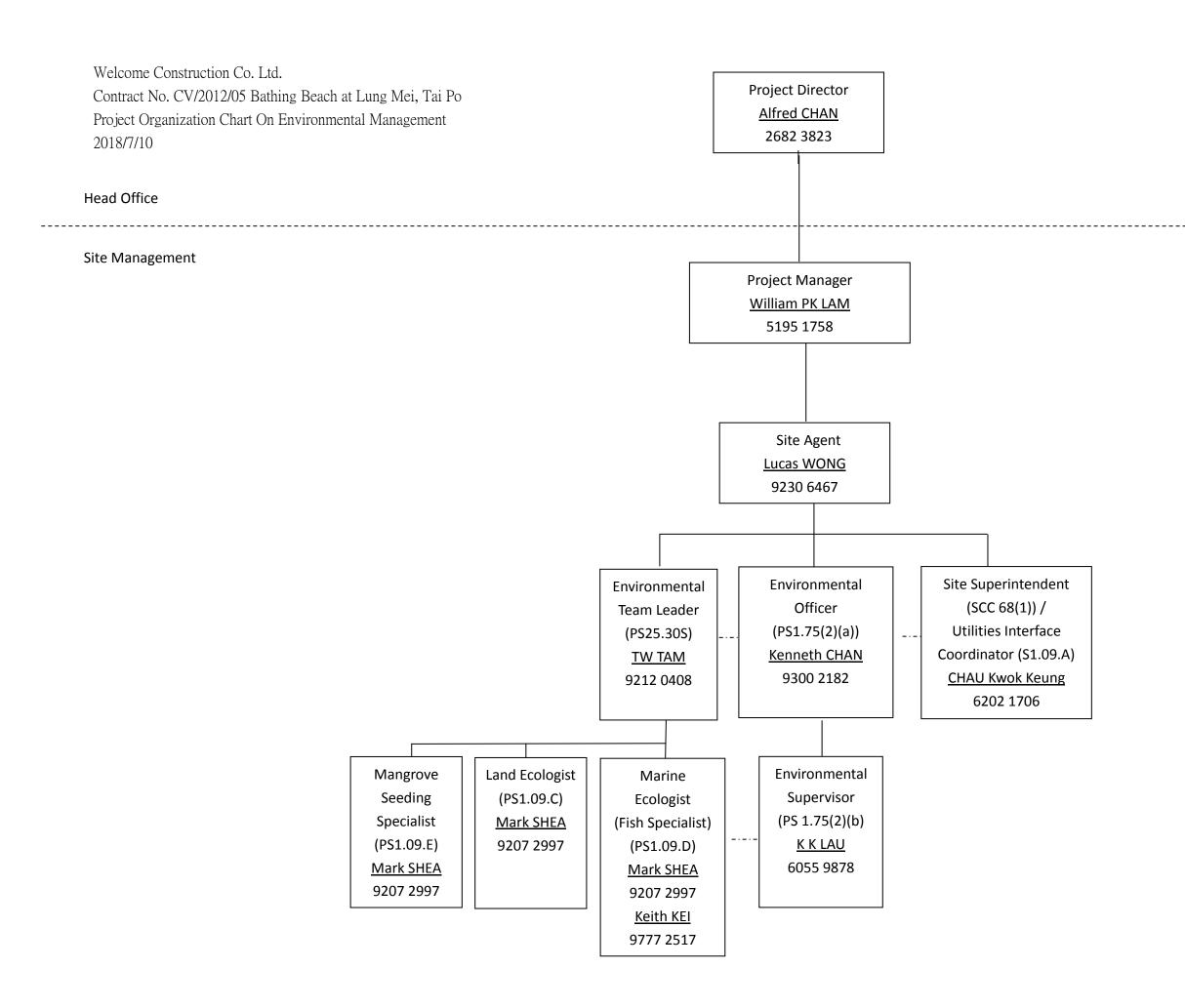
PROJECT LOCATION AND ENVIRONMENTAL SENSITIVE RECEIVERS

Designed Drawn AM 13/03/2007



Appendix B

Organization structure and contact details





Contact Details of Key Personnel - CV/2012/05

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
CEDD	Engineer's Representative	Mr. K F Chan	2762 5532	2714 2054
ERM	Independent Environmental Checker	Mr. Terence Fong	2271 3156	2723 5660
Welcome	Project Manager	Mr. William Lam	5195 1758	2682 3222
Welcome	Site Agent	Mr. Lucas Wong	9230 6467	2682 3222
Welcome	Environmental Officer	Mr. Kenneth Chan	9300 2182	2682 3222
Welcome	Environmental Supervisor	Mr. K K Lau	6055 9878	2682 3222
AUES	Environmental Team Leader	T. W. Tam	2959 6059	2959 6079
AUES	Environmental Consultant	Nicola Hon	2959 6059	2959 6079
AUES	Environmental Consultant	Ben Tam	2959 6059	2959 6079

Legend:

CEDD (Engineer) – Civil Engineering and Development Department Welcome (Contractor) – Welcome Construction Company Limited ERM (IEC) – Environmental Resources Management AUES (ET) – Action-United Environmental Services & Consulting



Appendix C

3-Month Rolling Construction Program

3-month Construction Program (September to November 2018)

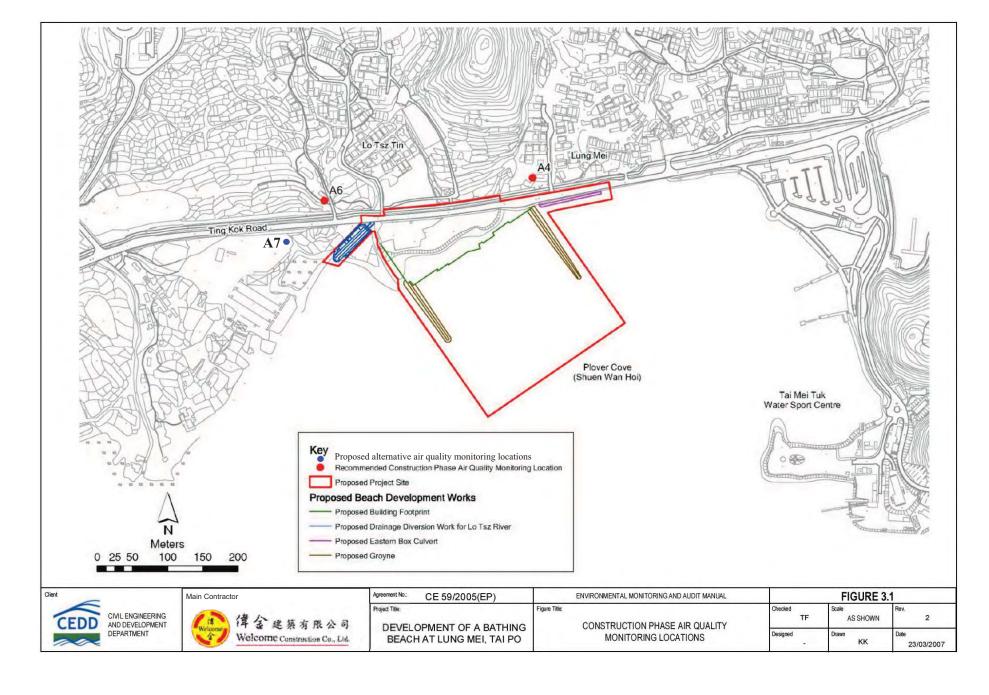
Construction Work	September	October	November
	2018	2018	2018
Site Formation	✓	✓	✓
Construction of Western Open Channel /	✓	✓	✓
Box Culvert			
Construction of Eastern Box Culvert		✓	✓
Dredging and Construction of Groynes	✓	✓	✓
(East and West)			
Construction of Retaining Wall		✓	✓
Construction of Seawall	✓	✓	✓



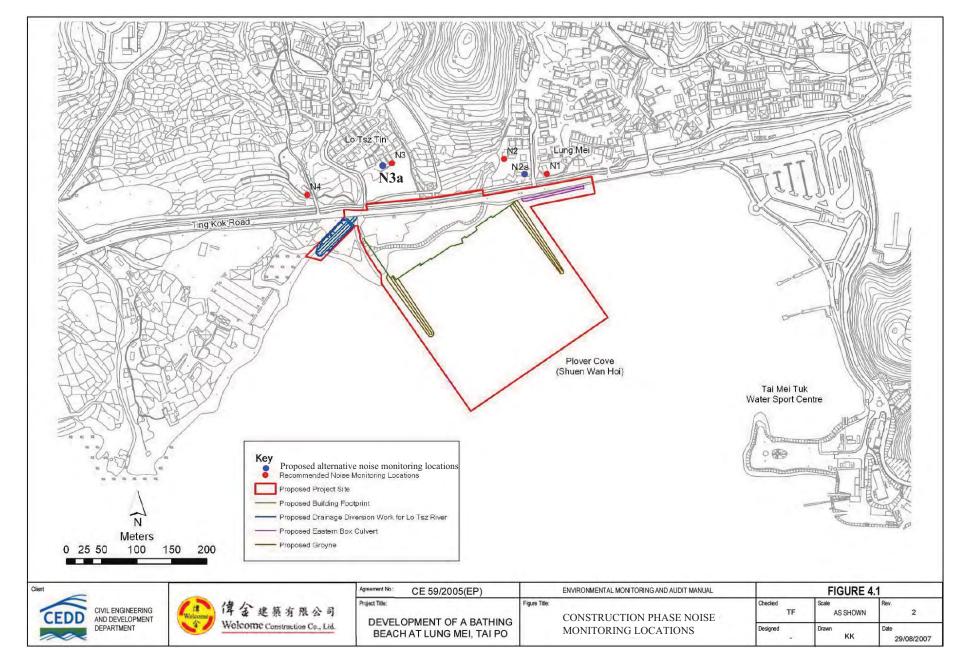
Appendix D

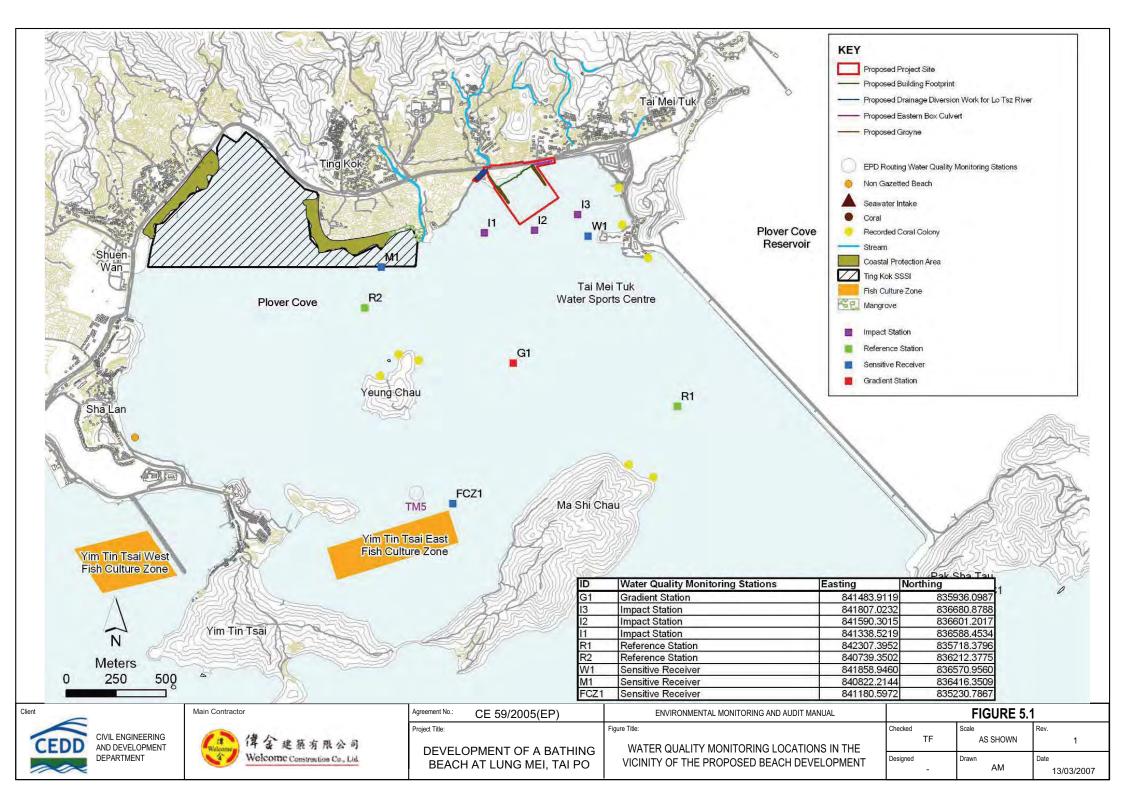
Monitoring Location

(The Figures of Appendix D are modified from the previous EM&A Manual - Development of a Bathing Beach at Lung Mei, Tai Po (Register No. AEIAR-123/2008): Environmental Monitoring and Audit (EM&A) Manual (November 2007))











Photograph Records for Air Quality Monitoring

Air Quality Monitoring (24-Hour TSP & 1-Hour TSP)









Photograph Records for Noise Monitoring

Noise Monitoring



N1





Noise Monitoring







N4



Appendix E

Calibration Certificate of Monitoring Equipment



MONITORING EQUIPMENT CALIBRATION CERTIFICATES

Items	Aspect	Description of Equipment	Date of Calibration	Date of Next Calibration
1		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for A4	6 Aug 18	6 Oct 18
1a		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for A4	28 Sep 18	28 Nov 18
2		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for A7	27 Jul 18	27 Sep 18
2a		TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for A7	28 Sep 18	28 Nov 18
3	Air	Calibration Kit TISCH Model TE-5025A Orifice ID 1612 and Rootsmeter S/N 438320	13 Feb 18	13 Feb 19
4		Laser Dust Monitor, Model LD-3B (Serial No. 456658) – EQ115	15 Mar 18	15 Mar 19
5		Laser Dust Monitor, Model LD-3B (Serial No. 456659) – EQ116	15 Mar 18	15 Mar 19
6		Laser Dust Monitor, Model LD-3B (Serial No. 456660) – EQ117	15 Mar 18	15 Mar 19
7		Laser Dust Monitor, Model LD-3B (Serial No. 456662) – EQ118	15 Mar 18	15 Mar 19
8		Brüel & Kjær 2238 Sound Level Meter (Serial No. 2285722) – EQ009	10 Jun 18	10 Jun 19
9		Rion NL-52 Sound Level Meter (Serial No. 00142581) – EQ015	12 May 18	12 May 19
10	Noise	Rion NL-31 Sound Level Meter (Serial No. 00410247) – EQ068	9 Jun 18	9 Jun 19
11		Brüel & Kjær 4231 Acoustical Calibrator (Serial No. 2713428) – EQ082	12 May 18	12 May 19
12		Rion Sound Level Calibrator NC-74 (Serial No.: 34657230) - EQ086	18 Jun 18	18 Jun 19
13	Water	Acoustic Doppler Current Profiler - RiverSurveyor M9 (Serial No. 5906)	24 May 17	
14	vvaler	Multifunctional Meter –6920V2-2-M Sonde (Serial No. 15A104748)	20 Jul 18	19 Oct 18

Location: No. 101 Lung Mei Tsuen Date of Calibration: 6-Aug-18 Location ID: A4 Next Calibration Date: 6-Oct-18

Name and Model: TISCH HVS Model TE-5170 Technician: Fai So

CONDITIONS

Sea Level Pressure (hPa) 1005.4

Temperature (°C) 30.2 Temperature (K)

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Serial # -> 1612

Qstd Slope -> Qstd Intercept ->

Corrected Pressure (mm Hg)

2.02017 -0.03691

754.05

303

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	5.10	5.10	10.2	1.579	42	41.12	Slope = 24.9853
13	4.00	4.00	8.0	1.401	36	35.24	Intercept = 0.8660
10	3.30	3.30	6.6	1.274	33	32.31	Corr. coeff. = 0.9968
7	2.00	2.00	4.0	0.996	26	25.45	
5	1.30	1.30	2.6	0.806	22	21.54	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

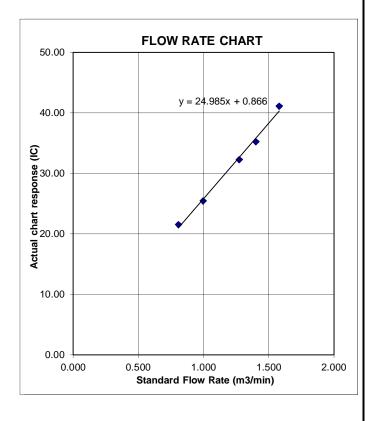
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



No. 101 Lung Mei Tsuen Location: Date of Calibration: 28-Sep-18 Location ID: A4 Next Calibration Date: 28-Nov-18

Technician: Fai So Name and Model: TISCH HVS Model TE-5170

CONDITIONS

Sea Level Pressure (hPa)

1009.9 Temperature (°C) 27.6 Corrected Pressure (mm Hg) 757.425 Temperature (K) 301

CALIBRATION ORIFICE

Make-> TISCH Model-> 5025A Serial # -> 1612

Qstd Slope -> Qstd Intercept -> 2.02017 -0.03691

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	5.10	5.10	10.2	1.590	41	40.58	Slope = 24.2135
13	4.10	4.10	8.2	1.427	36	35.63	Intercept = 1.5516
10	3.30	3.30	6.6	1.282	33	32.66	Corr. coeff. = 0.9971
7	2.10	2.10	4.2	1.027	26	25.73	
5	1.30	1.30	2.6	0.812	22	21.77	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

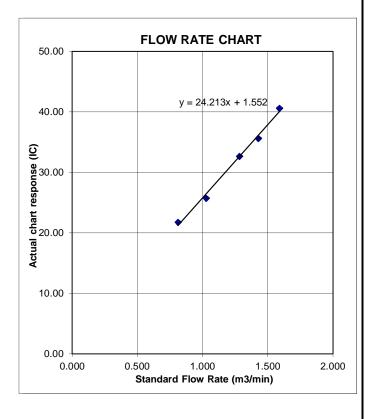
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



Location: Hong Kong Eco-Farm

Date of Calibration: 27-Jul-18

Location ID: A7

Next Calibration Date: 27-Sep-18

Name and Model: TISCH HVS Model TE-5170 Technician: Fai So

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C) 1006.7 29.8 Corrected Pressure (mm Hg)
Temperature (K)

755.025 303

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Serial # -> 1612

Qstd Slope -> Qstd Intercept ->

2.02017 -0.03691

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	Ι	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	5.40	5.40	10.8	1.627	48	47.08	Slope = 30.1493
13	4.20	4.20	8.4	1.437	44	43.16	Intercept = -1.1761
10	3.20	3.20	6.4	1.257	38	37.28	Corr. coeff. = 0.9955
7	2.10	2.10	4.2	1.021	29	28.45	
5	1.30	1.30	2.6	0.807	24	23.54	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

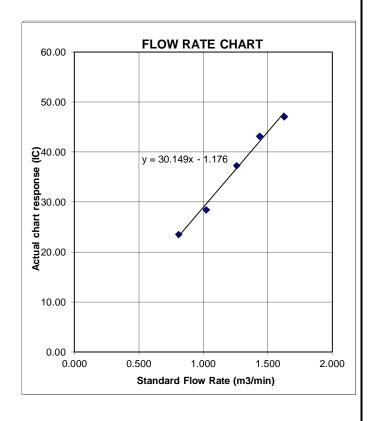
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



Location: Hong Kong Eco-Farm

Date of Calibration: 28-Sep-18

Location ID: A7

Next Calibration Date: 28-Nov-18

Name and Model: TISCH HVS Model TE-5170 Technician: Fai So

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C) 1009.9 27.6 Corrected Pressure (mm Hg) 7
Temperature (K)

757.425 301

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Serial # -> 1612

Qstd Slope -> Qstd Intercept ->

2.02017 -0.03691

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	5.50	5.50	11.0	1.650	50	49.48	Slope = 30.3185
13	4.20	4.20	8.4	1.444	44	43.55	Intercept = -0.8130
10	3.20	3.20	6.4	1.263	37	36.62	Corr. coeff. = 0.9969
7	2.00	2.00	4.0	1.002	29	28.70	
5	1.20	1.20	2.4	0.781	24	23.75	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

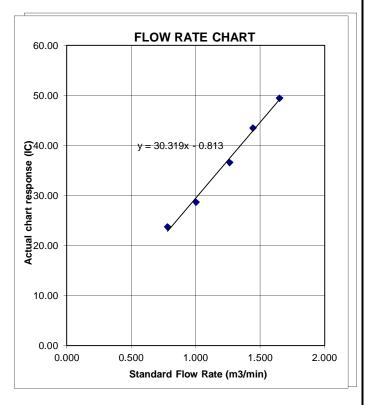
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tay = daily average temperature





RECALIBRATION DUE DATE:

February 13, 2019

Certificate of Calibration

Calibration Certification Information

Cal. Date: February 13, 2018

Rootsmeter S/N: 438320

Ta: 293

°K

Operator: Jim Tisch

Calibration Model #: TE-5025A

Calibrator S/N: 1612

Pa: 763.3 mm Hg

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3970	3.2	2.00
2	3	4	1	1.0000	6.3	4.00
3	5	6	1	0.8900	7.9	5.00
4	7	8	1	0.8440	8.7	5.50
5	9	10	1	0.7010	12.6	8.00

	Data Tabulation								
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H(\frac{Pa}{Pstd})(\frac{Tstd}{Ta})}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H \Big(Ta/Pa \Big)}$ (y-axis)				
1.0172	0.7281	1.4293	0.9958	0.7128	0.8762				
1.0130	1.0130	2.0213	0.9917	0.9917	1.2392				
1.0109	1.1358	2.2599	0.9896	1.1120	1.3854				
1.0098	1.1964	2.3702	0.9886	1.1713	1.4530				
1.0046	1.4331	2.8586	0.9835	1.4030	1.7524				
	m=	2.02017		m=	1.26500				
QSTD	b=	-0.03691	QA	b=	-0.02263				
70.0	r=	0.99988	~.	r=	0.99988				

Calculation	ons
Vstd= ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	Va= ΔVol((Pa-ΔP)/Pa)
Qstd= Vstd/ΔTime	Qa= Va/ΔTime
For subsequent flow ra	ate calculations:
Qstd= $1/m \left(\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)} - b \right)$	$Qa = 1/m \left(\left(\sqrt{\Delta H \left(Ta/Pa \right)} \right) - b \right)$

	Standard Conditions
Tstd:	298.15 °K
Pstd:	760 mm Hg
	Key
ΔH: calibrator	manometer reading (in H2O)
ΔP: rootsmete	er manometer reading (mm Hg)
Ta: actual abs	olute temperature (°K)
Pa: actual bar	ometric pressure (mm Hg)
b: intercept	
m: slope	

RECALIBRATION

US EPA recommends annual recalibration per 1998
40 Code of Federal Regulations Part 50 to 51,
Appendix B to Part 50, Reference Method for the
Determination of Suspended Particulate Matter in
the Atmosphere, 9.2.17, page 30

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

CONTACT : MR BEN TAM

WORK ORDER

HK1825892

CLIENT

: ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

KWAI CHUNG, N.T. HONG KONG

BATCH :

: 1

.....

: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, SUB-BATCH

DATE RECEIVED

: 12-APR-2018 : 19-APR-2018

PROJECT

ADDRESS

.

DATE OF ISSUE

NO. OF SAMPLES

: 1

CLIENT ORDER

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

General Manager



WORK ORDER

: HK1825892

SUB-BATCH

: 1

CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

PROJECT : ---



ALS Lab	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1825892-001	S/N: 456660	Equipments	12-Apr-2018	S/N: 456660	

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor

Manufacturer: Sibata LD-3B

Serial No. 456660

Equipment Ref: EQ117

Job Order HK1825892

Standard Equipment:

Standard Equipment: Higher Volume Sampler

Location & Location ID: AUES office (calibration room)

Equipment Ref: HVS 018

Last Calibration Date: 27 February 2018

Equipment Verification Results:

Calibration Date: 12 & 13 March 2018

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr07min	9:50 ~ 11:57	19.6	1019.0	0.073	4016	31.7
2hr14min	12:05 ~ 14:19	19.6	1019.0	0.075	4544	33.8
2hr17min	9:50 ~ 12:07	20.9	1016.7	0.075	4912	35.7

Sensitivity Adjustment Scale Setting (Before Calibration) 615 (CPM)

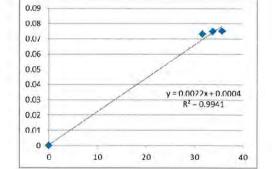
Sensitivity Adjustment Scale Setting (After Calibration) 615 (CPM)

Linear Regression of Y or X

 Slope (K-factor):
 0.0022

 Correlation Coefficient (R)
 0.9970

 Date of Issue
 15 March 2018



Remarks:

1. Strong Correlation (R>0.8)

2. Factor 0.0022 should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

Operator : Martin Li Signature : Date : 15 March 2018

QC Reviewer: _____Ben Tam ____ Signature: ______ Date: ____15 March 2018

Location: Gold King Industrial Building, Kwai Chung Date of Calibration: 27-Feb-18
Location ID: Calibration Room Next Calibration Date: 27-May-18

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C) 1017.3 19.1

Corrected Pressure (mm Hg) Temperature (K) 762.975 292

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Calibration Date-> 28-Feb-17

Qstd Slope -> Qstd Intercept -> Expiry Date-> 2.11965 -0.02696 28-Feb-18

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.2	6.2	12.4	1.694	52	52.63	Slope = 39.8525
13	5.1	5.1	10.2	1,538	46	46.55	Intercept = -14.3322
10	3.9	3.9	7.8	1.346	40	40.48	Corr. coeff. = 0.9974
8	2.6	2.6	5.2	1.101	30	30.36	
5	1.7	1.7	3.4	0.893	20	20.24	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Ostd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Ostd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

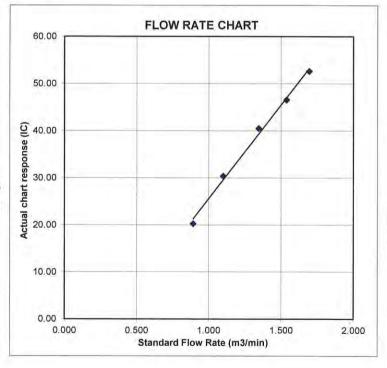
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

: MR BEN TAM CONTACT

WORK ORDER

HK1825891

CLIENT

ADDRESS

: ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, SUB-BATCH

: 1 DATE RECEIVED

: 12-APR-2018

KWAI CHUNG, N.T. HONG KONG

DATE OF ISSUE

: 19-APR-2018

PROJECT

NO. OF SAMPLES CLIENT ORDER

: 1 . ----

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

This document has been signed by those names that appear on this report and are the authorised signatories

Signatories

Position

Richard Fung

General Manager



This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

: HK1825891 WORK ORDER SUB-BATCH

: 1 : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING CLIENT

PROJECT



ALS Lab	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1825891-001	S/N: 456659	Equipments	12-Apr-2018	S/N: 456659	

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:

Laser Dust monitor

Manufacturer:

Sibata LD-3B

Serial No.

456659

Equipment Ref:

EQ116

Job Order

HK1825891

Standard Equipment:

Standard Equipment:

Higher Volume Sampler

Location & Location ID:

AUES office (calibration room)

Equipment Ref:

HVS 018

Last Calibration Date:

27 February 2018

Equipment Verification Results:

Calibration Date:

12 & 13 March 2018

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr07min	9:50 ~ 11:57	19.6	1019.0	0.073	4313	34.1
2hr14min	12:05 ~ 14:19	19.6	1019.0	0.075	4413	32.8
2hr17min	9:50 ~ 12:07	20.9	1016.7	0.075	4906	35.7

Sensitivity Adjustment Scale Setting (Before Calibration)

Sensitivity Adjustment Scale Setting (After Calibration)

(CPM) 726 724 (CPM)

Linear Regression of Y or X

Slope (K-factor):

0.0022

Correlation Coefficient (R)

0.9977

Date of Issue

15 March 2018

Remarks:

- 1. Strong Correlation (R>0.8)
- Factor 0.0022 should be apply for TSP monitoring

0.00 0.08 0.07 0.06 0.05 0.04 y = 0.0022x + 0.00020.03 0.02 0.01 10 40

Operator: Martin Li

Signature:

Date:

15 March 2018

QC Reviewer:

Ben Tam

Signature:

15 March 2018

^{*}If R<0.5, repair or re-verification is required for the equipment

Date of Calibration: 27-Feb-18 Location: Gold King Industrial Building, Kwai Chung Location ID: Calibration Room Next Calibration Date: 27-May-18

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C)

1017.3 19.1

Corrected Pressure (mm Hg) Temperature (K)

762.975

CALIBRATION ORIFICE

TISCH Make-> Model-> 5025A Calibration Date-> 28-Feb-17

Ostd Slope -> Ostd Intercept -> Expiry Date->

2.11965 -0.02696 28-Feb-18

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.2	6.2	12.4	1.694	52	52.63	Slope = 39.8525
13	5.1	5.1	10.2	1.538	46	46.55	Intercept = -14.3322
10	3.9	3.9	7.8	1.346	40	40.48	Corr. coeff. = 0.9974
8	2.6	2.6	5.2	1.101	30	30.36	
5	1.7	1.7	3.4	0.893	20	20.24	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Ostd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

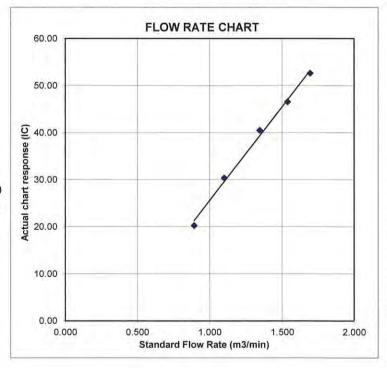
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

CONTACT : MR BEN TAM WORK ORDER : HK1825890

CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

ADDRESS : RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, SUB-BATCH :

KWAI CHUNG, N.T. HONG KONG DATE RECEIVED : 12-APR-2018

PROJECT : --- DATE OF ISSUE : 19-APR-2018

NO. OF SAMPLES : 1

CLIENT ORDER : ----

General Comments

Sample(s) were received in ambient condition.

Sample(s) analysed and reported on an as received basis.

Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

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Signatories

Position

Richard Fung

General Manager

7.17

WORK ORDER SUB-BATCH

: HK1825890

CLIENT PROJECT : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING



ALS Lab	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1825890-001	S/N: 456658	Equipments	12-Apr-2018	S/N: 456658	

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor

Manufacturer: Sibata LD-3B

Serial No. 456658

Equipment Ref: EQ115

Job Order HK1825890

Standard Equipment:

Standard Equipment: Higher Volume Sampler

Location & Location ID: AUES office (calibration room)

Equipment Ref: HVS 018

Last Calibration Date: 27 February 2018

Equipment Verification Results:

Calibration Date: 12 & 13 March 2018

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr07min	9:50 ~ 11:57	19.6	1019.0	0.073	4333	34.2
2hr14min	12:05 ~ 14:19	19.6	1019.0	0.075	4469	33.3
2hr17min	9:50 ~ 12:07	20.9	1016.7	0.075	4912	35.7

Sensitivity Adjustment Scale Setting (Before Calibration) 705 (CPM)

Sensitivity Adjustment Scale Setting (After Calibration) 705 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient (R) 0.9983

Date of Issue _____15 March 2018

Remarks:

- 1. Strong Correlation (R>0.8)
- 2. Factor 0.0022 should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

0.09 0.08 0.07 0.06 0.05 0.04 0.03 0.02 0.01 0 10 20 30 40

Operator : Martin Li Signature : _____ Date : ____ 15 March 2018

QC Reviewer: Ben Tam Signature: Date: 15 March 2018

Location: Gold King Industrial Building, Kwai Chung Date of Calibration: 27-Feb-18
Location ID: Calibration Room Next Calibration Date: 27-May-18

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C) 1017.3 19.1

Corrected Pressure (mm Hg)
Temperature (K)

762.975 292

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Calibration Date-> 28-Feb-17

Qstd Slope -> Qstd Intercept -> Expiry Date-> 2.11965 -0.02696 28-Feb-18

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINE	AR	
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRES	SSION	
18	6.2	6.2	12.4	1.694	52	52.63	Slope =	39.8525	
13	5.1	5.1	10.2	1.538	46	46.55	Intercept =	-14.3322	
10	3.9	3.9	7.8	1.346	40	40.48	Corr. coeff. =	0.9974	
8	2.6	2.6	5.2	1.101	30	30.36			
5	1.7	1.7	3.4	0.893	20	20.24			

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Ostd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

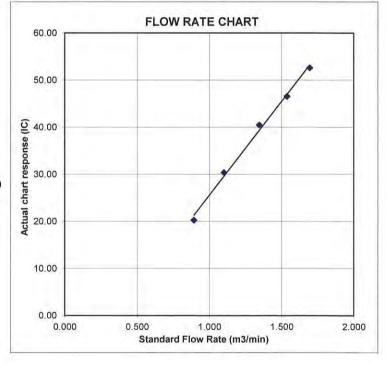
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature



ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



SUB-CONTRACTING REPORT

CONTACT : MR BEN TAM WORK ORDER : HK1825893

CLIENT : ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

ADDRESS : RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, SUB-BATCH : 1

KWAI CHUNG, N.T. HONG KONG

DATE RECEIVED : 12-APR-2018

DATE OF ISSUE : 19-APR-2018

PROJECT : ---- NO. OF SAMPLES : 1

CLIENT ORDER : ----

General Comments

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Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

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Signatories Position

Richard Fung General Manager

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Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

: HK1825893 WORK ORDER

SUB-BATCH

: 1 : ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING CLIENT

: PROJECT



ALS Lab	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.	
HK1825893-001	S/N: 456662	Equipments	17-Apr-2018	S/N: 456662	

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor

Manufacturer: Sibata LD-3B

Serial No. 456662

Equipment Ref: EQ118

Job Order HK1825893

Standard Equipment:

Standard Equipment: Higher Volume Sampler

Location & Location ID: AUES office (calibration room)

Equipment Ref: HVS 018

Last Calibration Date: 27 February 2018

Equipment Verification Results:

Calibration Date: 12 & 13 March 2018

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m ³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr07min	9:50 ~ 11:57	19.6	1019.0	0.073	4108	32.4
2hr14min	12:05 ~ 14:19	19.6	1019.0	0.075	4532	33.7
2hr17min	9:50 ~ 12:07	20.9	1016.7	0.075	5016	36.5

Sensitivity Adjustment Scale Setting (Before Calibration) 591 (CPM)
Sensitivity Adjustment Scale Setting (After Calibration) 591 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient (R) 0.9967

Date of Issue 15 March 2018

Remarks:

- 1. Strong Correlation (R>0.8)
- 2. Factor 0.0022 should be apply for TSP monitoring

*If R<0.5, repair or re-verification is required for the equipment

0.09 0.08 0.07 0.06 0.05 0.04 0.03 0.02 0.01 0 10 20 30 40

Operator: Martin Li Signature: Date: 15 March 2018

QC Reviewer : _____ Ben Tam ___ Signature : _____ Date : ____ 15 March 2018

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location: Gold King Industrial Building, Kwai Chung Date of Calibration: 27-Feb-18
Location ID: Calibration Room Next Calibration Date: 27-May-18

CONDITIONS

Sea Level Pressure (hPa) Temperature (°C) 1017.3 19.1

Corrected Pressure (mm Hg) Temperature (K) 762.975 292

CALIBRATION ORIFICE

Make-> TISCH
Model-> 5025A
Calibration Date-> 28-Feb-17

Qstd Slope -> Qstd Intercept -> Expiry Date-> 2.11965 -0.02696 28-Feb-18

CALIBRATION

Plate	H20 (L)	H2O (R)	H20	Qstd	I	IC	LINEAR
No.	(in)	(in)	(in)	(m3/min)	(chart)	corrected	REGRESSION
18	6.2	6.2	12.4	1.694	52	52.63	Slope = 39.8525
13	5.1	5.1	10.2	1.538	46	46.55	Intercept = -14.3322
10	3.9	3.9	7.8	1.346	40	40.48	Corr. coeff. = 0.9974
8	2.6	2.6	5.2	1.101	30	30.36	
5	1.7	1.7	3.4	0.893	20	20.24	

Calculations:

Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]

IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Ostd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pstd = actual pressure during calibration (mm Hg)

For subsequent calculation of sampler flow:

1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

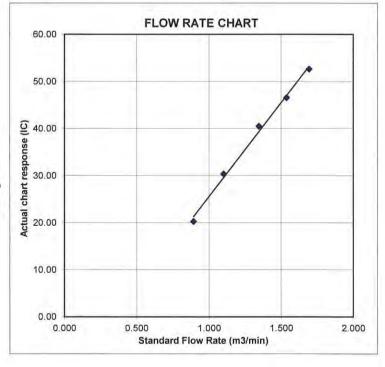
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

Date of Receipt / 收件日期: 29 May 2018

C183086

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC18-0867)

Description / 儀器名稱

Integrating Sound Level Meter (EQ009)

Manufacturer / 製造商

Brüel & Kjær

2285722

Model No. / 型號 Serial No. / 編號

2238

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 温度 :

Relative Humidity / 相對濕度 :

 $(50 \pm 25)\%$

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規節

Calibration check

DATE OF TEST / 測試日期

10 June 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試

K C Lee Engineer

Certified By 核證

H C Chan Engineer

Date of Issue 簽發日期

11 June 2018

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 一 校正及檢測實驗所

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Page 1 of 4



Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C183086

證書編號

- 1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- 2. Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment:

Equipment ID

Description

Certificate No.

CL280

40 MHz Arbitrary Waveform Generator

C180024

CL281

Multifunction Acoustic Calibrator

PA160023

- 5. Test procedure: MA101N.
- 6. Results:
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

	UUT S	Setting	Applied	Value	UUT	
Range	Parameter	Frequency	Level	Freq.	Reading	
(dB)	(dB) Weighting Weighting				(kHz)	(dB)
50 - 130	L_{AFP}	A	94.00	1	94.1	

6.1.1.2 After Self-calibration

	UUT	Setting		Applied	d Value	UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
50 - 130	L _{AFP}	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

	UU	Γ Setting	Applied	d Value	UUT	
Range	Parameter	Frequency	Time	Level	Freq.	Reading
(dB)	Weighting Weighting		Weighting	(dB)	(kHz)	(dB)
50 - 130	0 L _{AFP} A F		F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : \pm 0.4 dB per 10 dB step and \pm 0.7 dB for overall different.

Sun Creation Engineering Limited - Calibration & Testing Laboratory c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 — 校正及檢測實驗所

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C183086

證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

_											
		UUT	Setting		Applied Value		UUT	IEC 60651			
	Range Parameter Frequency Time					Freq.	Reading	Type 1 Spec.			
L	(dB) Weighting Weight				(dB)	(kHz)	(dB)	(dB)			
	50 - 130 L _{AFP} A		F	94.00	1	94.0	Ref.				
		L_{ASP}		S			94.1	± 0.1			
		L_{AIP}		I			94.1	± 0.1			

6.2.2 Tone Burst Signal (2 kHz)

	UUT	Setting		Applied Value		UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Burst	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	Duration	(dB)	(dB)
30 - 110	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	104.9	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L _{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

	UUT	Setting		Appli	ed Value	UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
50 - 130	L_{AFP}	A	F	94.00	31.5 Hz	54.5	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	$+1.2 \pm 1.0$
					4 kHz	95.0	$+1.0 \pm 1.0$
					8 kHz	92.8	-1.1 (+1.5; -3.0)
					12.5 kHz	89.7	-4.3 (+3.0; -6.0)

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C183086

證書編號

6.3.2 C-Weighting

		Setting		Applie	ed Value	UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
50 - 130	L_{CFP}	С	F	94.00	31.5 Hz	90.9	-3.0 ± 1.5
					63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.1	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5; -3.0)
					12.5 kHz	87.7	-6.2 (+3.0; -6.0)

6.4 Time Averaging

	UUT	Setting			Aj		UUT	IEC 60804		
Range	Parameter	Frequency	Integrating	Frequency	Burst	Burst	Burst	Equivalent	Reading	Type 1
(dB)		Weighting	Time	(kHz)	Duration	Duty	Level	Level	(dB)	Spec.
					(ms)	Factor	(dB)	(dB)		(dB)
30 - 110	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
						$1/10^{2}$		90	90.0	± 0.5
			60 sec.			$1/10^{3}$		80	79.0	± 1.0
			5 min.			1/104		70	69.1	± 1.0

Remarks: - UUT Microphone Model No.: 4188 & S/N: 2658547

- Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value : 94 dB : 31.5 Hz - 125 Hz : \pm 0.35 dB

250 Hz - 500 Hz : \pm 0.30 dB 1 kHz $: \pm 0.20 \text{ dB}$ 2 kHz - 4 kHz $: \pm 0.35 \text{ dB}$ 8 kHz $: \pm 0.45 \text{ dB}$ 12.5 kHz $: \pm 0.70 \text{ dB}$

104 dB: 1 kHz $: \pm 0.10 \text{ dB (Ref. 94 dB)}$ 114 dB: 1 kHz $: \pm 0.10 \text{ dB (Ref. 94 dB)}$

Burst equivalent level $: \pm 0.2 \text{ dB}$ (Ref. 110 dB) continuous sound level)

Website/網址: www.suncreation.com

- The uncertainties are for a confidence probability of not less than 95 %.

Note:

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.:

C182473

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC18-0867)

Date of Receipt / 4X1+1

Date of Receipt / 收件日期: 26 April 2018

Description / 儀器名稱

Sound Level Meter (EQ015)

Manufacturer / 製造商

Rion

Model No. / 型號 Serial No. / 編號 NL-52 00142581

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 温度 :

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :

 $(50 \pm 25)\%$

Line Voltage / 電壓 : -

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

12 May 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試

H T Wong Technical Officer

Certified By 核證

K C Lee Engineer Date of Issue

15 May 2018

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c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

Page 1 of 3



Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C182473

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

- 2. Self-calibration was performed before the test.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment:

Equipment ID

Description

Certificate No.

CL280

40 MHz Arbitrary Waveform Generator

C180024

CL281

Multifunction Acoustic Calibrator

PA160023

- 5. Test procedure: MA101N.
- 6. Results:
- 6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

	UUT	Setting		Applied	d Value	UUT	IEC 61672
Range	Function	Frequency	Time	Level	Freq.	Reading	Class 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
30 - 130	L_{A}	A	Fast	94.00	1	94.3	± 1.1

6.1.2 Linearity

	UU′	Γ Setting	Applied	d Value	UUT	
Range	Function	Frequency Time		Level	Freq.	Reading
(dB)		Weighting	Weighting Weighting		(kHz)	(dB)
30 - 130	L_{A}	A	Fast	94.00 1		94.3 (Ref.)
				104.00		104.3
				114.00		114.3

IEC 61672 Class 1 Spec. : \pm 0.6 dB per 10 dB step and \pm 1.1 dB for overall different.

6.2 Time Weighting

L		UUT	Setting		Applied Value		UUT	IEC 61672
	Range	Function	Frequency	Time	Level	Freq.	Reading	Class 1 Spec.
L	(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
	30 - 130	L_{A}	A	Fast	94.00	1	94.3	Ref.
				Slow			94.3	± 0.3

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No.: C182473

證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

11 Weighting							
	UUT	Setting		Appl	ied Value	UUT	IEC 61672
Range	Function	Frequency	Time	Level	Freq.	Reading	Class 1 Spec.
(dB)		Weighting	Weighting	(dB)	•	(dB)	(dB)
30 - 130	L_A	A	Fast	94.00	63 Hz	68.0	-26.2 ± 1.5
					125 Hz	78.1	-16.1 ± 1.5
					250 Hz	85.6	-8.6 ± 1.4
					500 Hz	91.0	-3.2 ± 1.4
					1 kHz	94.3	Ref.
					2 kHz	95.5	$+1.2 \pm 1.6$
					4 kHz	95.3	$+1.0 \pm 1.6$
					8 kHz	93.3	-1.1 (+2.1; -3.1)
					12.5 kHz	89.9	-4.3 (+3.0; -6.0)

6.3.2 C-Weighting

UUT Setting				Appli	ed Value	UUT	IEC 61672
Range	Function	Frequency	Time	Level	Freq.	Reading	Class 1 Spec.
(dB)		Weighting	Weighting	(dB)	_	(dB)	(dB)
30 - 130	L_{C}	C	Fast	94.00	63 Hz	93.5	-0.8 ± 1.5
					125 Hz	94.1	-0.2 ± 1.5
					250 Hz	94.3	0.0 ± 1.4
					500 Hz	94.3	0.0 ± 1.4
					1 kHz	94.3	Ref.
					2 kHz	94.1	-0.2 ± 1.6
					4 kHz	93.5	-0.8 ± 1.6
					8 kHz	91.4	-3.0 (+2.1; -3.1)
					12.5 kHz	87.9	-6.2 (+3.0; -6.0)

Remarks: - UUT Microphone Model No.: UC-59 & S/N: 06015

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value: 94 dB : 63 Hz - 125 Hz $: \pm 0.35 \text{ dB}$

250 Hz - 500 Hz $: \pm 0.30 \text{ dB}$ 1 kHz $:\pm 0.20~dB$ 2 kHz - 4 kHz $:\pm 0.35 dB$ 8 kHz $:\pm 0.45~dB$

12.5 kHz $:\pm 0.70~dB$

104 dB : 1 kHz 114 dB : 1 kHz : ± 0.10 dB (Ref. 94 dB) : ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Only the original copy or the laboratory's certified true copy is valid.

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Tel/電話: (852) 2927 2606



Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

Date of Receipt / 收件日期: 28 May 2018

C183083

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC18-0867)

Description / 儀器名稱

Sound Level Meter (EQ068)

Manufacturer / 製造商

Rion

Model No. / 型號

NL-31

Serial No. / 編號

00410247

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 温度 :

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

9 June 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試

K C Lee Engineer

Certified By 核證

H C Chan

Date of Issue 簽發日期

11 June 2018

Engineer

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

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Website/網址: www.suncreation.com

Page 1 of 4



Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C183083

證書編號

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.

2. Self-calibration was performed before the test.

3. The results presented are the mean of 3 measurements at each calibration point.

4. Test equipment:

CL281

Equipment ID CL280

Description

40 MHz Arbitrary Waveform Generator Multifunction Acoustic Calibrator

Certificate No.

C180024 PA160023

5. Test procedure: MA101N.

6. Results:

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

	UU	JT Setting		Applied Value		UUT	IEC 61672 Class 1
Range Mode Frequency Time		Time	Level	Freq.	Reading	Spec.	
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
30 - 120	L_A	A	Fast	94.00	1	93.7	± 1.1

6.1.2 Linearity

	UUT Setting				Value	UUT
Range	Mode	Frequency	Time	Level	Freq.	Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
30 - 120	L_A	A	Fast	94.00	1	93.7 (Ref.)
				104.00		103.7
				114.00		113.7

IEC 61672 Class 1 Spec. : \pm 0.6 dB per 10 dB step and \pm 1.1 dB for overall different.

Time Weighting 6.2

UUT Setting			Applied Value		UUT	IEC 61672 Class 1	
Range Mode Frequency Time		Level	Freq.	Reading	Spec.		
(dB) Weighting Weighting		(dB)	(kHz)	(dB)	(dB)		
30 - 120	L_{A}	A	Fast	94.00	1	93.7	Ref.
			Slow			93.7	± 0.3

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C183083

證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

11 11 11 11 11	2						
	UU	T Setting		Appl	ied Value	UUT	IEC 61672 Class 1
Range	Mode	Frequency	Time	Level	Freq.	Reading	Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
30 - 120	L_A	A	Fast	94.00	63 Hz	67.3	-26.2 ± 1.5
					125 Hz	77.4	-16.1 ± 1.5
					250 Hz	84.9	-8.6 ± 1.4
					500 Hz	90.4	-3.2 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	94.9	$+1.2 \pm 1.6$
					4 kHz	94.8	$+1.0 \pm 1.6$
					8 kHz	92.6	-1.1 (+2.1; -3.1)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Appl	ied Value	UUT	IEC 61672 Class 1
Range	Mode	Frequency	Time	Level	Freq.	Reading	Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
30 - 120	L_{C}	С	Fast	94.00	63 Hz	92.8	-0.8 ± 1.5
					125 Hz	93.5	-0.2 ± 1.5
					250 Hz	93.6	0.0 ± 1.4
					500 Hz	93.7	0.0 ± 1.4
					1 kHz	93.7	Ref.
					2 kHz	93.6	-0.2 ± 1.6
					4 kHz	93.0	-0.8 ± 1.6
					8 kHz	90.7	-3.0 (+2.1; -3.1)
					12.5 kHz	87.9	-6.2 (+3.0 ; -6.0)

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C183083

證書編號

Remarks: - UUT Microphone Model No.: UC-53A & S/N: 319841

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value : 94 dB : 63 Hz - 125 Hz : \pm 0.35 dB

 $250 \text{ Hz} - 500 \text{ Hz} : \pm 0.30 \text{ dB}$ $1 \text{ kHz} : \pm 0.20 \text{ dB}$ $2 \text{ kHz} - 4 \text{ kHz} : \pm 0.35 \text{ dB}$ $8 \text{ kHz} : \pm 0.45 \text{ dB}$ $12.5 \text{ kHz} : \pm 0.70 \text{ dB}$

104 dB : 1 kHz : $\pm 0.10 \text{ dB}$ (Ref. 94 dB) 114 dB : 1 kHz : $\pm 0.10 \text{ dB}$ (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

Note:

Only the original copy or the laboratory's certified true copy is valid.

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C182470

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC18-0867)

Date of Receipt / 收件日期: 26 April 2018

Description / 儀器名稱

Acoustical Calibrator (EQ082)

Manufacturer / 製造商

Brüel & Kjær

Model No. / 型號

4231

Serial No. / 編號

2713428

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 温度 :

Relative Humidity / 相對濕度 :

 $(50 \pm 25)\%$

Line Voltage / 電壓 :

TEST SPECIFICATIONS / 測試規節

Calibration check

DATE OF TEST / 測試日期

12 May 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By 測試

HT Wong

Technical Officer

Certified By 核證

K C Lee Engineer Date of Issue 簽發日期

15 May 2018

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c/o 香港新界屯門興安里一號四樓

Certificate of Calibration 校正證書

Certificate No.: C182470

證書編號

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment:

> Equipment ID CL130 CL281 TST150A

Description Universal Counter Multifunction Acoustic Calibrator

C173864 PA160023

Certificate No.

Measuring Amplifier

C181288

Test procedure: MA100N.

5. Results:

Sound Level Accuracy 5.1

Sound Boverricouracy			
UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
Nominal Value	(dB)	(dB)	(dB)
94 dB, 1 kHz	94.0	± 0.2	± 0.2
114 dB, 1 kHz	114.1		

Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value
(kHz)	(kHz)	Spec.	(Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

Remark: The uncertainties are for a confidence probability of not less than 95 %.

Note:

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.:

C183261

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC18-0867)

Date of Receipt / 收件日期: 12 June 2018

Description / 儀器名稱

Sound Calibrator (EQ086)

Manufacturer / 製造商

Rion NC-74

Model No. / 型號 Serial No. / 編號

34657230

Supplied By / 委託者

Action-United Environmental Services and Consulting

Unit A, 20/F., Gold King Industrial Building, 35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 温度 :

Line Voltage / 電壓

Relative Humidity / 相對濕度 : $(50 \pm 25)\%$

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期

18 June 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By

測試

HT Wong Technical Officer

Certified By

核證

C Lee Engineer Date of Issue

20 June 2018

簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory

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Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration 校正證書

Certificate No.: C183261

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment:

> Equipment ID CL130 CL281 TST150A

Description Universal Counter Multifunction Acoustic Calibrator Measuring Amplifier

Certificate No. C173864 PA160023 C181288

4. Test procedure: MA100N.

5. Results:

5.1 Sound Level Accuracy

UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
Nominal Value	(dB)	(dB)	(dB)
94 dB, 1 kHz	94.1	± 0.3	± 0.2

Frequency Accuracy

Troductio j Trocurac j			
UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value
(kHz)	(kHz)	Spec.	(Hz)
1	1.002	1 kHz ± 1 %	± 1

Remark: The uncertainties are for a confidence probability of not less than 95 %.

Only the original copy or the laboratory's certified true copy is valid.

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9940 Summers Ridge Road San Diego, CA 92121 Tel: (858) 546-8327 support@sontek.com

Certificate of Calibration

TEST REPORT

TEST REFORT		
Serial Number	5906	
System Type	M9	100
System Orientation	Down	
Compass Type	Sontek	
Compass Offset (degrees)	N/A	
Communications Output	RS232	
Recorder Size (GB)	14.9	
Firmware Version	4.02	
Date Tested	05/23/2017	

POWER TEST

Command Mode (W):	0.17	Range: 0.00 - 0.30	
Sleep Mode (W):	N/A	Range: N/A	
Ping Mode - 18V (W):	2.67	Range: 1.50 – 3.50	
Power Check		PASS	

NOISE TEST

Beam 1 – 3.0 MHz (counts)	95
Beam 2 – 1.0 MHz (counts)	96
Beam 3 – 3.0 MHz (counts)	95
Beam 4 – 1.0 MHz (counts)	101
Beam 5 – 3.0 MHz (counts)	93
Beam 6 – 1.0 MHz (counts)	95
Beam 7 – 3.0 MHz (counts)	91
Beam 8 – 1.0 MHz (counts)	100
Beam Vertical – 500KHz (counts)	88
Noise Test	PASS

VERIFICATION

Velocity Check	PASS
Transmit Output	PASS
Sensitivity	PASS
Temperature Sensor	PASS
Compass Heading Check	PASS
Compass Level Check	PASS
Burn-in (24 hrs)	PASS
Load Default Parameters	DONE

OPTIONS

Bottom Track	Installed	
SmartPulse HD TM	Enabled	
Stationary	Disabled	
GPS Compass Integration	Disabled	
RiverSurveyor	Enabled	27 10
HydroSurveyor	Disabled	

Verified by: ainthasane

This report was generated on 5/24/2017.

ATTENTION: New Warranty Terms as of March 4, 2013:

This system is covered under a two year limited warranty that extends to all parts and labor for any malfunction due to workmanship or errors in the manufacturing process. The warranty is valid only if you properly maintain and operate this system under normal use as outlined in the User's Manual. The warranty does not cover shortcomings that are due to the design, or any incidental damages as a result of errors in the measurements.

SonTek will repair and/or replace, at its sole option, any product established to be defective with a product of like type. CLAIMS FOR LABOR COSTS AND/OR OTHER CHARGES RESULTING FROM THE USE OF SonTek GOODS AND/OR PRODUCTS ARE NOT COVERED BY THIS LIMITED WARRANTY.

SonTek DISCLAIMS ALL EXPRESS WARRANTIES OTHER THAN THOSE CONTAINED ABOVE AND ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE. SonTek DISCLAIMS AND WILL NOT BE LIABLE, UNDER ANY CIRCUMSTANCE, IN CONTRACT, TORT OR WARRANTY, FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO LOST PROFITS, BUSINESS INTERRUPTION LOSSES, LOSS OF GOODWILL, OR LOSS OF BUSINESS OR CUSTOMER RELATIONSHIPS.

If your system is not functioning properly, first try to identify the source of the problem. If additional support is required, we encourage you to contact us immediately. We will work to resolve the problem as quickly as possible.

If the system needs to be returned to the factory, please contact SonTek to obtain a Service Request (SR) number. We reserve the right to refuse receipt of shipments without SRs. We require the system to be shipped back in the original shipping container using the original packing material with all delivery costs covered by the customer (including all taxes and duties). If the system is returned without appropriate packing, the customer will be required to cover the cost of a new packaging crate and material.

The warranty for repairs performed at an authorized SonTek Service Center is one year.

FUGRO TECHNICAL SERVICES LIMITED

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

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Report No.: 142626WA181288(1)



Page 1 of 3

Report on Calibration of YSI 69201V2-M 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.

Project

CV/2013/04 - Providing Sufficient Water Depth for

Kwai Tsing Container Basin and its Approach Channel

Sample description

One YSI 69201V2-M Multi-parameter Water Quality Meter

Client sample ID

Serial No. 15A104748

Test required

Meter

Calibration of the YSI 69201V2-M Multi-parameter Water Quality

Laboratory Information

Lab. sample ID

WA181288/2

Date sample received

03/07/2018

Date of calibration

20/07/2018

Next calibration date

19/10/2018

Test method used

In-house comparison method

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

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Report No.: 142626WA181288(1)

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Results:

A. pH calibration

pH reading at 23°C for	or Q.C. solution(6.86) and at 23	8°C for Q.C. solution(9.18)
Theoretical	Measured	Deviation
9.18	9.09	-0.09
6.86	6.76	-0.10

B. Salinity calibration

	Salinity, ppt						
Theoretical	Measured	Deviation	Maximum acceptable Deviation				
10	10.01	+0.01	± 0.5				
20	20.14	+0.14	± 1.0				
30	30.01	+0.01	± 1.5				
40	39.98	+0.02	± 2.0				

C. Dissolved Oxygen calibration

Trial No.	Dissolved oxygen content, mg/L			
Trial No.	By Titration	By D.O. meter		
1	8.35	8.51		
2	8.31	8.46		
3	8.02	8.04		
Average	8.23	8.34		

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

Certified by

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

Date

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

FUGRO TECHNICAL SERVICES LIMITED

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



Report No.: 142626WA181288(1)

Page 3 of 3

Results:

D. Temperature calibration

Thermometer reading, °C	Meter reading, °C
22.5	22.69

E. Turbidity calibration

	Turbidity, N.T.U.					
Theoretical	Measured	Deviation	Maximum acceptable Deviation			
0	0.1	+0.10	± 0.5			
4	4.3	+0.30	± 0.6			
8	8.6	+0.60	± 0.8			
40	40.1	+0.10	± 3.0			
80	80.1	+0.10	± 4.0			

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

Date

** End of Report **

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



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-way, 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



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



Appendix F

Event and Action Plan



Event and Action Plan for Air Quality

EN / EN / EN				ACTION				
EVENT		ET		IEC		ER		Contractor
Action Level Exceedance for One Sample	1. 2. 3. 4.	findings;	1. 2.	Check monitoring data submitted by ET; Check Contractor's working method	1.	Notify Contractor	1. 2.	practice;
Action Level Exceedance for Two or More Consecutive Samples	1. 2. 3. 4. 5. 6. 7.	Inform the IEC and ER; Repeat measurement to confirm findings; Carry out investigation for the cause of exceedance, if the exceedance is project-related, increase monitoring frequency to daily Discuss with IEC and Contractor on remedial action required; If exceedance continues, arrange meeting with IEC and ER;	1. 2. 3. 4.	submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ER on the effectiveness of the proposed remedial measures;	1. 2. 3.	Confirm receipt of notification of failure in writing; Notify Contractor; Ensure remedial measures properly implemented	2. 3.	Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Amend proposal if appropriate
Limit Level Exceedance for One Sample	1. 2. 3. 4.	findings;	1. 2. 3.	Check monitoring data submitted by ET; Check Contractor's working method; Discuss with ET and Contractor on possible remedial measures; Advise the ER on the effectiveness of the proposed	1. 2. 3.	Confirm receipt of notification of failure in writing; Notify Contractor; Ensure remedial measures properly implemented	1. 2. 3. 4.	Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; Amend proposal if



TOX/TONICE	ACTION				
EVENT	ET	IEC	ER	Contractor	
	5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of results	remedial measures; 5. Supervise implementation of remedial measures		appropriate	
Limit Level Exceedance for Two or More Consecutive Samples	 Notify IEC, ER, Contractor and EPD; Identify source(s) of impact; Repeat measurement to confirm findings; Carry out investigation for the cause of exceedance, if the exceedance is project-related, increase monitoring frequency to daily Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; Arrange meeting with IEC and ER to discuss the remedial actions to be taken; Assess effectiveness of Contractor's remedial action and keep IEC, EPD and ER informed of the result; If exceedance stop, cease additional monitoring 	 Discuss amongst ER, ET and Contractor on the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; Supervise the implementation of remedial measures 	 Confirm receipt of notification of failure in writing; Notify Contractor; In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; Ensure remedial measures properly implemented; If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals Resubmit proposals if problem still not under control; Stop the relevant portion of works as determined by the ER until the exceedance is abated 	



Event and Action Plan for Construction Noise

EXCEEDANCE	ACTION				
EXCEEDANCE	ET	IEC	ER Contractor		
Action Level	 Notify IEC and Contractor; Carry out investigation; 	1. Review the analysed results submitted by the ET; 1. Confirm notification	receipt of 1. Submit noise mitigation on of failure in proposals to IEC;		
		2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures 4. Ensure results of the problem;	2. Implement noise mitigation		
Limit Level	 Notify IEC, ER, EPD and Contractor; Identify source; Carry out investigation; Report the results of investigation to the IEC and Contractor; Discuss with the Contractor and formulate remedial measures; Increase monitoring frequency to check mitigation effectiveness 	3. Supervise the implementation of remedial measures the implementation of remedial measures 4. Ensure results for the problem;	2. Implement noise mitigation proposals Contractor to emedial measures		



Event and Action Plan for Water Quality

				ACT	ION	V		
EVENT		ET		IEC		ER		Contractor
Action Level being exceeded by one sampling day	 1. 2. 3. 4. 5. 	Contractor;	 2. 3. 	Discuss with the ET and the Contractor on the mitigation measures; Review proposals on mitigation measures submitted by the Contractor; Assess the effectiveness of the implemented mitigation measures.	1. 2.	Discuss with the IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented.	 2. 3. 4. 6. 	Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with the ET and the IEC and propose mitigation measures to the IEC and ER; Implement the agreed mitigation measures.
Action Level being exceeded by more than one consecutive sampling days	1. 2. 3. 4. 5.	Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with the IEC and the Contractor;	 2. 3. 	Discuss with the ET and the Contractor on the mitigation measures; Review proposals on mitigation measures submitted by the Contractor accordingly; Assess the effectiveness of the implemented mitigation measures.	1. 2. 3.	Discuss with the IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented; Assess effectiveness of the implemented mitigation measures.	1. 2. 3. 4. 5.	Inform the ER and confirm notification of the noncompliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with the ET and the IEC and propose mitigation measures to the IEC and ER within 3 working days; Implement the agreed mitigation measures.
Limit Level being exceeded by one consecutive sampling day	1. 2. 3. 4.	equipment and the Contractor's working methods;	 2. 3. 	Discuss with the ET / Contractor on the mitigation measures; Review proposals on mitigation measures submitted by the Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures.	 2. 3. 	Discuss with the IEC, the ET and the Contractor on the proposed mitigation measures; Request the Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented;	1. 2. 3. 4. 5.	Inform the ER and confirm notification of the noncompliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with the ET, the IEC and the ER and propose mitigation

CEDD Contract No. CV/2012/05 – Development of a Bathing Beach at Lung Mei, Tai Po Monthly Environmental Monitoring & Audit Report – September 2018



		ACT	TION	
EVENT	ET	IEC	ER	Contractor
	the IEC, the ER and the Contractor; 6. Ensure mitigation measures are implemented.		4. Assess the effectiveness of the implemented mitigation measures.	measures to the IEC and the ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by more than one consecutive sampling days	 Repeat <i>in-situ</i> measurement to confirm findings; Identify source(s) of impact; Inform the IEC, the Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with the IEC, the ER and the Contractor; Ensure mitigation measures are implemented; 	on the mitigation measures; 2. Review proposals on mitigation measures submitted by the Contractor and advise the ER accordingly;	 Discuss with the IEC, the ET and the Contractor on the proposed mitigation measures; Request Contractor to critically review working methods; Make agreement on the mitigation measures to be implemented; Assess effectiveness of the implemented mitigation measures; Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit Level. 	 Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with the ET, the IEC and the ER and propose mitigation measures to the IEC and the ER within 3 working days; Implement the agreed mitigation measures; As directed by the ER, slow down or stop all or part of the construction activities.



Appendix G

Impact Monitoring Schedule



Impact Monitoring Schedule for the Reporting Period

		Noise Monitoring	Air Quality	y Monitoring	W. (O 12 A		
	Date	(0700 – 1900)	1-hour TSP	24-hour TSP	Water Quality^		
Sat	1-Sep-18						
Sun	2-Sep-18						
Mon	3-Sep-18	✓	✓		✓		
Tue	4-Sep-18						
Wed	5-Sep-18				✓		
Thu	6-Sep-18			✓			
Fri	7-Sep-18				✓		
Sat	8-Sep-18		✓				
Sun	9-Sep-18						
Mon	10-Sep-18				✓		
Tue	11-Sep-18						
Wed	12-Sep-18			✓	√ *		
Thu	13-Sep-18						
Fri	14-Sep-18	✓	✓		✓		
Sat	15-Sep-18						
Sun	16-Sep-18						
Mon	17-Sep-18				√ #		
Tue	18-Sep-18			✓			
Wed	19-Sep-18				✓		
Thu	20-Sep-18	✓	✓				
Fri	21-Sep-18				✓		
Sat	22-Sep-18						
Sun	23-Sep-18						
Mon	24-Sep-18			✓	√ *		
Tue	25-Sep-18						
Wed	26-Sep-18	✓	✓		✓		
Thu	27-Sep-18						
Fri	28-Sep-18				✓		
Sat	29-Sep-18			✓			
Sun	30-Sep-18						

Remark: (*) Marine water quality monitoring during ebb tide was cancelled due to adverse weather (#) Marine water quality monitoring during flood tide was cancelled due to adverse weather

(^) Water Quality Monitoring Schedule was provided by Fugro Technical Services Limited

✓	Monitoring Day
	Sunday or Public Holiday



Marine Water Quality Monitoring Schedule

Impact Monitoring Schedule (September 2018)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1
2	3 WQM Mid-Ebb (16:52-19:52) Mid-Flood(11:14-14:14)	4	5 WQM Mid-Ebb (07:14-10:14) Mid-Flood(14:08-17:08)	6	7 WQM Mid-Ebb (09:10-12:10) Mid-Flood(16:05-19:05)	8
9	10 WQM Mid-Ebb (11:51-14:51) Mid-Flood(18:07-21:07)	11	12 WQM Mid-Ebb (13:13-16:13) Mid-Flood(06:56-09:56)	13	14 WQM Mid-Ebb (14:33-17:33) Mid-Flood(08:26-11:26)	15
16	17 WQM Mid-Ebb *(17:14-20:14) Mid-Flood* (12:00-15:00)	18	19 WQM Mid-Ebb (07:26-10:26) Mid-Flood(15:05-18:05)	20	21 WQM Mid-Ebb(08:20-11:20) Mid-Flood(16:15-19:15)	22
23	24 WQM Mid-Ebb (11:10-14:10) Mid-Flood(17:35-20:35)	25	26 WQM Mid-Ebb (12:19-15:19) Mid-Flood(08:04-09:04)	27	28 WQM Mid-Ebb (13:30-16:30) Mid-Flood(07:28-10:26)	29
30						

- Remarks

 1. Monitoring Locations G1, R1, R2, I1, I2, I3, W1, M1 and FCZ1

 2. Actual monitoring will be subjected to change due to any safety concern or adverse weather condition

 (*) The tidal range for the flood and ebb tide is less than 0.5m.

 (#) The water quality sampling will be undertaken within a 3-hour window of 1.5 hour before and 1.5 hour after mid flood and mid ebb.



Impact Monitoring Schedule for next Reporting Period

		Noise Monitoring	Air Qualit	ty Monitoring	
	Date	(0700 – 1900)	1-hour TSP	24-hour TSP	Water Quality*
Mon	1-Oct-18				
Tue	2-Oct-18	✓	✓		✓
Wed	3-Oct-18				
Thu	4-Oct-18				✓
Fri	5-Oct-18			✓	
Sat	6-Oct-18				✓
Sun	7-Oct-18				
Mon	8-Oct-18	✓	✓		✓
Tue	9-Oct-18				
Wed	10-Oct-18				✓
Thu	11-Oct-18			✓	
Fri	12-Oct-18				✓
Sat	13-Oct-18		✓		
Sun	14-Oct-18				
Mon	15-Oct-18				
Tue	16-Oct-18			✓	✓
Wed	17-Oct-18				
Thu	18-Oct-18				✓
Fri	19-Oct-18	✓	✓		
Sat	20-Oct-18				✓
Sun	21-Oct-18				
Mon	22-Oct-18			✓	✓
Tue	23-Oct-18				
Wed	24-Oct-18				✓
Thu	25-Oct-18	✓	✓		
Fri	26-Oct-18				✓
Sat	27-Oct-18			✓	
Sun	28-Oct-18				
Mon	29-Oct-18				✓
Tue	30-Oct-18	✓	✓		
Wed	31-Oct-18				✓

^{*} Water Quality Monitoring Schedule was provided by Fugro Technical Services Limited

✓	Monitoring Day
	Sunday or Public Holiday



Marine Water Quality Monitoring Schedule

Impact Monitoring Schedule (October 2018)

Sun	Mon	Tue	Wed	Thur	Fri	Sat
Sun	Mon	Tue	wed	Inur		
	1	2 WQM Mid-Flood(11:02-14:02) Mid-Ebb (16:10-18:35)	3	4 WQM Mid-Ebb (06:53-09:53) Mid-Flood(14:02-17:02)	5	6 WQM Mid-Ebb (09:01-12:01) Mid-Flood(15:39-18:39)
7	8 WQM Mid-Ebb (10:44-13:44) Mid-Flood(17:00-20:00)	9	10 WQM Mid-Flood(08:01-09:01) Mid-Ebb (12:09-15:09)	11	12 WQM Mid-Flood(07:24-10:24) Mid-Ebb (13:26-16:26)	13
14	15	16 WQM Mid-Ebb (5:24-08:39) Mid-Flood(10:09-13:09)	17	18 WQM Mid-Ebb (06:13-09:13) Mid-Flood(14:34-17:34)	19	20 WQM Mid-Ebb (07:54-10:54) Mid-Flood(15:39-18:39)
21	22 WQM Mid-Ebb (09:52-12:52) Mid-Flood(16:28-19:28)	23	24 WQM Mid-Flood(05:05-08:05) Mid-Ebb (11:13-13:23)	25	26 WQM Mid-Flood(06:29-09:29) Mid-Ebb (12:27-15:27)	27
28	29 WQM Mid-Flood(08:46-11:46) Mid-Ebb (13:53-16:53)	30	31 WQM Mid-Flood(10:53-13:53) Mid-Ebb (15:39-18:39)			

- Remarks

 1. Monitoring Locations G1, R1, R2, I1, I2, I3, W1, M1 and FCZ1

 2. Actual monitoring will be subjected to change due to any safety concern or adverse weather condition

 (†) The tidal range for the flood and ebb tide is less than 0.5m.

 (#) The water quality sampling will be undertaken within a 3-hour window of 1.5 hour before and 1.5 hour after mid flood and mid ebb.



Appendix H

Database of Monitoring Result



24-hour TSP Monitoring Data

DATE	SAMPLE NUMBER	EI	LAPSED TIM	CHART READING			AVG TEMP	AVG AIR PRESS	STANDA RD FLOW RATE	AIR VOLUM E	FILTER WEIGHT (g)		DUST WEIGHT COLLECTE D	24-Hr TSP (μg/m³)	ACTION LEVEL (μg/m³)	LIMIT LEVEL (µg/m³)	
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m ³ /min)	(std m ³)	INITIAL	FINAL	(g)	-		
A4 - No. 10	Lung Me	i Tsuen		_							_						
6-Sep-18	23057	13403.21	13427.00	1427.40	28	29	28.5	28.2	1007.2	1.10	1565	2.6643	2.8050	0.1407	90	142	260
12-Sep-18	23110	13427.00	13451.23	1453.80	28	28	28.0	27.9	1008.4	1.08	1567	2.6806	2.7494	0.0688	44	142	260
18-Sep-18	23121	13451.23	13475.25	1441.20	28	28	28.0	27.8	1009.2	1.08	1554	2.6753	2.7596	0.0843	54	142	260
24-Sep-18	23133	13475.25	13499.25	1440.00	30	30	30.0	27.1	1010.4	1.16	1671	2.6646	2.7872	0.1226	73	142	260
29-Sep-18	22834	13499.25	13523.26	1440.60	30	31	30.5	26.9	1011.5	1.19	1715	2.6697	2.8171	0.1474	86	142	260
A7 - Hong K	Kong Eco-F	arm															
6-Sep-18	23058	19891.98	19915.98	1440.00	30	32	31.0	28.2	1007.2	1.06	1524	2.6842	2.7494	0.0652	43	141	260
12-Sep-18	23059	19915.98	19939.68	1422.00	30	32	31.0	27.9	1008.4	1.06	1507	2.6803	2.7506	0.0703	47	141	260
18-Sep-18	23122	19939.68	19963.38	1422.00	28	30	29.0	27.8	1009.2	0.99	1414	2.6774	2.7240	0.0466	33	141	260
24-Sep-18	22833	19963.38	19987.00	1417.20	30	32	31.0	27.1	1010.4	1.06	1505	2.6834	2.7294	0.0460	31	141	260
29-Sep-18	23132	19987.00	20011.00	1440.00	30	32	31.0	26.9	1011.5	1.05	1505	2.6935	2.7745	0.0810	54	141	260

1-hour TSP Monitoring Data

I Hour Ibi IV			. 1		3	
Date	Start Time	1 st reading	2 nd reading	3 rd reading	Action Level (μg/m³)	Limit Level (µg/m³)
A4 - No. 101 I	Lung Mei Tsuen					
3-Sep-18	9:51	35	38	42	275	500
8-Sep-18	9:52	53	58	63	275	500
14-Sep-18	9:23	28	23	27	275	500
20-Sep-18	9:42	65	66	69	275	500
26-Sep-18	9:43	72	83	86	275	500
			A7 - Hong I	Kong Eco-Farm		
3-Sep-18	9:28	40	42	45	274	500
8-Sep-18	9:41	52	62	65	274	500
14-Sep-18	12:43	30	46	44	274	500
20-Sep-18	10:59	106	104	104	274	500
26-Sep-18	13:08	85	88	93	274	500



Construction Noise Monitoring Results, dB(A)

Date	Start Time	1 st Leq _{5min}	L10	L90	2 nd Leq _{5min}	L10	L90	3 nd Leq _{5min}	L10	L90	4 th Leq _{5min}	L10	L90	5 th Leq _{5min}	L10	L90	6 th Leq _{5min}	L10	L90	Leq30	façade correctio n	Limit Level (dB(A))
N1 - Village	N1 - Village house - No. 165A Lung Mei																					
3-Sep-18	10:33	55.2	58.9	47.5	56.7	59.9	48.3	56.4	59.3	50.4	55.4	58.7	48.4	56.4	59.1	49.2	55.8	58.8	48.7	55	58	75
14-Sep-18	9:23	60.1	61.8	50.8	55.1	57.8	49.8	57.0	60.2	49.0	58.0	59.8	50.3	57.6	59.5	49.4	56.1	59.2	49.1	58	61	75
20-Sep-18	11:21	51.0	53.5	44.5	52.7	55.8	44.6	54.2	56.7	44.6	51.3	54.8	43.9	53.2	56.1	47.5	54.6	57.4	46.3	53	56	75
26-Sep-18	10:23	57.1	59.6	50.1	58.3	60.9	50.5	57.5	60.8	49.6	56.1	59.2	48.9	57.5	60.2	49.8	57.0	60.4	49.8	57	60	75
								1	V2a - Vi	llage hou	use - No.	101 Lur	ng Mei									
3-Sep-18	10:03	58.2	62.0	49.7	57.5	61.1	49.6	56.2	60.2	48.0	56.5	60.0	49.5	57.2	61.9	49.6	56.4	60.4	48.6	57	N/A	75
14-Sep-18	9:53	58.2	61.4	50.0	57.6	58.1	48.9	57.1	59.3	49.1	60.2	63.4	50.4	57.8	61.1	49.5	62.0	65.2	51.7	59	N/A	75
20-Sep-18	10:50	55.2	57.6	46.9	54.7	57.1	44.6	53.8	56.4	44.5	52.7	55.6	45.2	54.7	56.1	45.0	52.6	55.6	45.0	54	N/A	75
26-Sep-18	9:53	57.8	61.4	50.4	55.3	60.7	49.1	54.2	60.8	49.8	56.5	61.9	49.6	55.7	60.5	48.6	53.3	59.2	49.8	56	N/A	75
								N			se - No. 6	56C Lo	Tsz Tin									
3-Sep-18	11:09	61.4	65.5	54.1	60.1	64.5	53.6	61.0	65.0	53.6	62.8	66.6	53.7	61.2	65.3	53.6	60.6	64.1	53.8		64	75
14-Sep-18	10:27	51.2	53.4	46.3	53.1	54.0	46.0	51.1	53.3	46.6	50.5	52.8	47.0	51.2	54.4	46.5	55.3	57.1	46.6	52	55	75
20-Sep-18		61.6	61.6	58.4	60.3	62.1	58.8	59.1	59.7	58.5	58.9	59.3	58.4	58.7	59.2	58.1	59.0	59.5	58.3	60	63	75
26-Sep-18	10:57	57.6	60.4	49.0	55.2	57.1	47.3	53.4	56.2	48.0	54.8	57.1	48.8	55.2	57.7	47.0	53.2	56.2	47.1	55	58	75
											ise - No.		1							1		
3-Sep-18	11:42	62.8	64.3	48.1	59.2	62.8	46.3	59.5	62.6	45.3	58.6	61.9	46.7	59.0	62.5	46.0	58.0	61.3	46.4	60	N/A	75
14-Sep-18		59.0	62.0	49.1	59.9	63.2	50.9	64.3	64.0	50.7	57.9	61.1	48.4	57.7	61.6	48.1	64.6	66.5	50.4	62	N/A	75
20-Sep-18	10:56	59.6	62.6	47.0	56.7	59.8	45.9	57.6	60.6	47.5	60.7	64.7	46.7	60.4	62.6	48.9	58.4	60.7	49.7	59	N/A	75
26-Sep-18	11:28	61.2	67.5	51.3	65.4	69.7	52.5	61.5	66.6	52.7	58.2	62.0	50.5	59.3	62.3	49.7	56.0	60.0	48.9	61	N/A	75

Remark:

Sound level meter set at N1 and N3a are made free-field measurement, façade correction (+3dB(A)) has added according to acoustical principles and EPD guidelines;

Weather:	Fine Moderate															
Condition:	Moderate Location	Tide*	Co-ord	dinates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	DO Saturatio	Turbidity	Salinity	pН	ss	Chlorophy
			East	North	m	m	degrees	m/s	ဗ	mg/L	%	NTU	ppt	unit	mg/L	μg/L
17:30	G1	ME	841483.9	835936.1	5.2	1.00	141	0.097	27.7	8.89 8.76	136.0 133.1	0.8	23.67	8.44 8.43	3 2	3.7
						4.20			26.9 26.8 27.8	5.80 5.90 9.61	87.0 88.6 146.0	1.0 1.0 0.6	30.30 30.23 19.71	8.17 8.12 8.44	2 2 5	5.3 4.1 4.7
17:42	R1	ME	842307.4	835718.4	5.9	1.00	159	0.357	27.6 27.5	9.63 9.57	146.3 143.6	0.6	19.65	8.43	3	4.9
17:42	KI	IVIE	042307.4	033710.4	5.9	4.90	159	0.357	27.5 27.0	9.46 8.74	141.2 131.1	0.3	23.96	8.33	3	4.8
						1.00			27.1 27.8 27.8	9.38 9.24	129.5 140.7 138.6	0.3 0.8 0.8	24.61 20.02 20.56	8.30 8.44 8.42	2 2 4	4.9 4.9 4.7
18:19	R2	ME	840739.4	836212.4	6.0		106	0.190								
						5.00			27.4 27.3 27.6	8.91 8.81 9.13	133.7 132.2 129.6	1.1 1.1 0.8	25.86 25.91 21.85	8.35 8.32 8.45	3 3 2	5.2 5.2 3.5
47.00	14	м	044000 5	000500.5	4.7	1.00	000	0.000	27.6	9.14	130.0	0.9	21.82	8.42	3	3.8
17:20	I1	ME	841338.5	836588.5	4.7	3.70	269	0.280	27.1	8.65	127.3	0.7	26.51	8.34	2	4.1
						1.00			27.1 27.6	8.64 9.07	127.2 136.1	0.7 1.5	26.52 20.30	8.31 8.47	2	4.0 3.6
17:13	12	ME	841590.3	836601.2	7.1	3.55	200	0.098	27.6 27.4 27.4	9.12 9.12 9.05	136.8 136.5 135.1	1.5 1.0 1.0	20.56 23.86 24.03	8.46 8.43 8.41	2 2 2	3.5 2.9 3.2
						6.10			27.2 27.3	8.25 8.20	122.4 122.6	0.6 0.6	28.11 28.21	8.32 8.31	2	4.5 4.3
						1.00			27.7	9.06 9.05	128.9 128.5	1.1	20.34	8.41 8.42	3	4.9 4.5
16:59	13	ME	841807.0	836680.9	7.5	3.75	195	0.168	27.6 27.9 28.6	8.73 8.72 6.62	118.9 118.8 99.4	0.6 0.6 0.2	20.56 20.57 20.59	8.45 8.44 8.44	3 4 4	4.4 4.2 4.6
						6.50 1.00			28.6 26.8	6.60 8.72	99.2 130.8	0.2	20.58 28.56	8.42 8.21	3	4.6 4.7
17:49	W1	ME	841858.9	836571.0	8.1	4.05	237	0.144	26.6 26.2	8.80 7.59	132.0 113.9	0.9	28.45 30.67	8.19 8.05	3 4	5.2 4.9
			011000.0	00007 110		7.10			26.2 26.6	7.46 6.63	111.9 99.5	0.7 0.8	30.54 29.13 29.26	8.08 8.20	5 3	4.9 4.7
									26.5	6.54	98.1	0.8		8.15	4	4.7
18:02	M1	ME	840822.2	836416.4	1.1	0.55	143	0.151	28.4 28.3	8.75 8.65	131.3 129.8	2.3	19.59 19.62	8.42 8.42	3	4.7
						1.00			27.8 27.7	9.55 9.54	143.3 143.1	0.5 0.5	22.27 22.34	8.42 8.41	3	4.1 4.3
18:32	FCZ1	ME	841180.6	835230.8	4.7	3.70	183	0.073	27.5 27.5	7.95 7.71	120.2 115.7	0.6 0.6	28.30 28.22	8.30 8.25	3 2	4.6 4.6
						1.00			27.6 27.6	7.30 7.31	106.6 107.8	0.3 0.2	25.23 25.25	8.26 8.27	2	3.0 2.7
12:13	G1	MF	841483.9	835936.1	5.4		191	0.157								
						4.40			26.8 26.8 26.9	5.77 5.78 7.87	87.2 87.3 112.9	0.6 0.6 0.8	30.25 30.21 24.27	8.16 8.15 8.32	2	2.7 2.6 3.1
12:26	R1	MF	842307.4	835718.4	6.9	1.00 3.45	201	0.316	26.9 26.7	7.88 7.21	113.0 107.0	0.8	24.28 27.82	8.33 8.27	2	3.3
12.20	KI	IVII	042307.4	6557 16.4	0.5	5.90	201	0.510	26.7 26.5 26.5	7.21 6.31	107.2 95.2 95.4	0.9	27.83 30.18	8.28 8.23	3	4.2 3.6
						1.00			26.5 27.2 27.2	6.40 7.78 7.78	95.4 110.2 110.3	0.4 0.4 0.5	30.20 21.78 21.76	8.24 8.14 8.15	3	3.7 2.5 2.4
13:06	R2	MF	840739.4	836212.4	5.0		231	0.434	£1.E	7.70	110.0	0.0	21.70	0.10		<u> </u>
						4.00			26.7 26.7	6.38	93.2 93.2	1.0	29.68	8.23 8.23	2	2.7
						1.00			26.9 27.0	7.51 7.58	108.5 108.3	0.5 0.5	27.67 27.68	8.22 8.20	3	2.7 3.2
11:59	I1	MF	841338.5	836588.5	7.1	6.09	255	0.098	26.3	7.32	107.3	0.8	29.75	8.02	2	3.5
						1.00			26.3 26.8	7.30 6.81	107.1 99.7	0.8	29.73	8.03 8.26	8	3.3 2.6
11:49	12	MF	841590.3	836601.2	7.1	3.55	201	0.073	26.8 26.7 26.7	6.82 6.28 6.29	99.8 91.5 91.6	0.5 1.0 1.1	23.70 27.34 27.33	8.25 8.18 8.20	2 2	2.7 2.7 2.8
						6.10			26.6 26.6	5.44 5.42	80.2 80.1	0.9 0.9	28.54 28.53	8.11 8.12	2	2.6 2.5
						1.00			27.0 27.0	7.27	104.7 104.6	0.5	25.69 25.70	8.29 8.28	2	2.7
11:37	13	MF	841807.0	836680.9	5.0	2.50	174	0.183	26.4 26.4 26.0	6.00 6.10 5.11	79.1 79.2 77.0	0.6 0.6 0.7	26.77 26.78 30.89	8.04 8.06 7.92	2 2	3.2 3.1 2.6
						4.00 1.00			26.0 27.1	5.14 7.69	77.2 109.2	0.7 0.4	30.87 22.38	7.93 8.28	2	2.5 2.5
12:39	W1	MF	841858.9	836571.0	8.1	4.05	179	0.037	27.1 26.6	7.71 6.43	109.4 100.5	0.4	22.40	8.30 8.23	2	2.4
	•					7.10			26.6 26.4 26.5	6.43 5.70 5.80	100.6 84.4 84.5	0.9 0.6 0.7	29.82 29.94 29.96	8.25 8.13 8.15	2 2 2	2.6 2.7 2.8
															_	
12:49	M1	MF	840822.2	836416.4	1.1	0.55	117	0.083	27.5 27.6	7.62 7.63	109.2 109.4	0.3	22.66 22.68	8.32 8.35	3 2	1.8 1.8
						1.00			27.3 27.3	7.99 7.98	123.2 122.3	0.3	26.71 26.73	8.27 8.30	2	2.5
13:17	FCZ1	MF	841180.6	835230.8	4.3		163	0.125								
						3.30			27.4 27.3	7.32 7.30	111.9 110.9	0.8	28.21 28.24	8.37 8.40	2	2.8 2.6
Remarks:	MF - Middl ME - Middl				_							· <u>-</u>			_	

ampling Date																
Weather: ea Condition:	Fine Moderate)														
Date / Time	Location	Tide*	Co-ord	dinates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	DO Saturatio n	Turbidity	Salinity	рН	SS	Chlorophyll-
			East	North	m	m	degrees	m/s	℃ 28.7	mg/L 10.20	% 152.4	NTU 0.4	ppt 24.45	unit 8.52	mg/L 10	μ g/L 2.9
						1.00			28.7	10.17	151.6	0.5	24.47	8.52	5	2.8
8:50	G1	ME	841483.9	835936.1	5.2		166	1.329								
						4.20			26.2 26.2	4.31 4.29	63.7 63.4	3.6 4.0	31.14 31.17	8.06 8.06	13	2.7 2.7
						1.00			28.0 28.0	8.74 8.75	130.4 131.1	0.6 0.5	28.03 28.04	8.36 8.37	5 4	2.8 2.9
8:59	R1	ME	842307.4	835718.4	7.2	3.60	159	0.441	31.4	5.24	80.1	0.7	31.44	8.05	4	3.2
						6.20			31.4 32.1	5.23 2.63	80.8 40.2	0.7 1.9	31.44 32.09	8.05 7.85	4 5	3.0 3.6
									32.1 28.3	2.64 9.12	41.2 130.2	1.8 0.4	32.10 20.93	7.85 8.52	2	3.3 4.5
						1.00			28.3	9.12	129.7	0.6	21.04	8.52	2	4.1
8:18	R2	ME	840739.4	836212.4	5.7		122	0.660								
						4.70			24.1 24.1	4.96 4.95	74.4 74.3	4.3 4.4	32.42 32.44	7.83 7.82	2	3.8 3.8
						1.00			28.1 28.1	9.11 9.08	131.7 130.6	1.8 1.9	24.34 24.35	8.48 8.48	8 7	2.7 2.6
7:45	l1	ME	841338.5	836588.5	6.9	3.45	102	1.127	26.2	4.07	62.3	2.6	30.77	8.80	3	2.7
						5.90			26.2 24.4	4.08 1.46	60.3 22.1	2.5 4.0	30.76 32.30	8.08 7.85	4	2.4 2.8
									24.4 28.6	1.49 9.45	22.8 140.1	4.2 0.8	32.33 22.97	7.85 8.49	3	3.0 4.7
						1.00			28.6 26.0	9.46 4.83	138.4 71.2	0.6	22.94 31.38	8.50 8.02	4	4.5 1.8
7:29	12	ME	841590.3	836601.2	6.7	3.35	131	0.631	26.1	4.89	70.8	1.4	31.40	8.01	5	1.8
						5.70			24.2 24.2	4.25 4.38	63.8 65.7	1.3 1.5	32.26 32.27	7.81 7.80	3	2.9 3.2
						1.00			28.3 28.3	8.71 8.70	128.4 128.5	0.9 1.0	24.57 24.56	8.38 8.38	2	2.9 2.9
7:15	13	ME	841807.0	836680.9	6.8	3.40	239	0.419	26.4	4.36	64.7	1.4	31.06	8.04	2	3.2
						5.80			26.4 23.7 23.7	4.35 1.37	64.6 20.3	1.4 2.7	31.07 32.60	8.04 7.79	2	3.0 4.0
									23.7 27.9	1.39 9.17	20.4 130.8	2.6 0.4	32.61 27.55	7.79 8.52	2	4.2 3.5
						1.00			27.9	9.15	129.4	0.5	27.56	8.52	2	3.2
9:13	W1	ME	841858.9	836571.0	7.8	3.90	203	0.136	26.8 26.8	6.73 6.72	105.4 104.7	1.6 1.5	30.41 30.41	8.20 8.20	6 4	3.5 3.4
						6.80			24.0 24.0	3.14 3.14	44.9 44.7	3.3	32.43 32.44	7.80 7.81	2	2.9 3.2
									24.0	3.14	77.7	5.5	32.44	7.01		5.2
8:01	M1	ME	840822.2	836416.4	1.2	0.60	177	1.785	28.7	8.48	119.4	0.5	21.16	8.48	2	3.5
0.01	I IVI I	IVIL	040022.2	030410.4		0.00	***	100	28.7	8.48	119.2	0.4	21.18	8.48	2	3.9
									28.6	9.30	136.8	0.5	24.91	8.47	3	4.4
						1.00			28.6	9.30	135.4	0.6	24.91	8.47	2	3.8
8:36	FCZ1	ME	841180.6	835230.8	4.9		177	0.419								
						3.90			25.4 25.4	3.25 3.28	54.3 54.6	3.3 3.7	31.88 31.87	7.82 7.81	2	3.6 3.5
						1.00			29.5 29.4	10.63 10.80	159.5 162.4	0.5 0.4	24.06 24.88	8.61 8.57	5 4	2.1 2.1
15:24	G1	MF	841483.9	835936.1	5.4		213	0.426								
						4.40			24.5 25.0	2.30 2.14	35.0 31.2	5.1 4.9	32.22 31.98	7.83 7.91	3 10	2.3 2.2
						1.00			27.7	9.68	141.8	0.6	28.51	8.48	4	3.0
15:35	R1	MF	842307.4	835718.4	7.4		211	0.882	27.3 26.4	9.41 7.12	141.0 105.2	0.5 0.6	28.78 30.95	8.43 8.22	3	3.0 3.1
15.55	K1	IVIF	842307.4	835/18.4	7.4	3.70	211	0.002	26.3 23.9	6.54 1.60	98.6 26.0	0.7 3.0	30.87 32.51	8.23 7.82	3	2.9 2.8
						6.40			23.9	1.62	24.5	3.1	32.50	7.80	5	2.9
						1.00			28.4 28.6	9.06 9.08	132.9 133.0	1.7 2.0	27.02 29.70	8.46 8.24	- 4 - 5	3.6 3.6
15:03	R2	MF	840739.4	836212.4	5.2		268	0.608								
						4.20			25.6	3.95	60.5	3.5	31.81	7.93	3	3.8
						1.00			25.5 29.7	3.43 11.02	55.4 164.8	3.3 0.5	31.86 23.48	7.89 8.61	6	3.7 3.0
44.40	14		044000 5	000500.5		1.00	261	0.400	29.8	10.98	164.3	0.6	22.96	8.61	9	3.1
14:46	I1	MF	841338.5	836588.5	4.1		261	0.199	25.9	4.31	67.8	1.0	31.44	8.06	6	2.8
						3.10			25.9	4.21	62.3	1.1	31.42	8.05	10	2.7
						1.00			29.8 29.3	10.11 10.41	150.7 152.3	0.4	22.78 22.66	8.59 8.56	6 5	3.1 3.0
14:36	12	MF	841590.3	836601.2	7.1	3.55	217	0.276	26.2 25.9	5.82 5.46	90.5 84.6	1.3 1.5	31.36 31.38	8.10 8.12	10 8	3.0 3.1
						6.10			23.5	1.31	19.9	2.5	32.60	7.81	15	2.7
						1.00			24.4 29.7	0.96 10.33	14.2 153.6	2.3 0.6	32.20 22.48	7.82 8.54	3	3.0 3.4
									29.0 25.8	10.50 5.26	153.9 82.4	0.7 1.5	24.06 31.65	8.50 8.02	8	3.1 3.4
14:23	13	MF	841807.0	836680.9	6.5	3.25	251	0.320	25.5	4.26	65.1	1.9	31.64	8.00	13	3.5
						5.50			23.5 23.5	1.48 0.89	23.4 14.7	2.1	32.66 32.64	7.79 7.79	11 10	3.8 3.6
_						1.00		1	29.2 29.4	10.11 10.77	147.8 159.6	0.5 0.6	25.63 24.69	8.54 8.57	4	2.7 2.6
15:46	W1	MF	841858.9	836571.0	8.5	4.25	177	0.613	26.4	5.00 5.01	75.3	1.4	31.23 31.18	8.07	6 10	3.0
						7.50			26.3 23.6	0.55	75.5 8.4	1.6 2.3 2.2	32.58	8.08 7.81	9	3.0 2.9
						50		 	23.6	0.54	8.0	2.2	32.57	7.80	12	3.1
									30.4	9.90	148.6	2.2	21.79	8.57	11	3.5
14:55	M1	MF	840822.2	836416.4	1.0	0.50	226	0.318	30.4	9.90	148.9	2.0	21.79	8.56	15	3.3
	1		 						28.2	10.11	152.3	0.9	25.76	8.48	7	2.5
						1.00			28.3	10.10	152.6	1.0	25.77	8.46	5	2.6
15:15	FCZ1	MF	841180.6	835230.8	4.4	1.00	138	0.175			152.6	1.0	25.77	8.46	5	2.6

Remarks: MF - Middle Flood tide

ME - Middle Ebb tide

For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.

For Chorophyll-a, if the monitoring result is less than Limit of Report 0.µg/L, the result value will be assumed as 0.1 for the calculation.

March Marc							Imp	act Water	Quality Mo	nitoring Re	sult						
Part																	
The column The	ondition:					Water	Sampling	Current	Current	T _		DO					Chlorophy
11-20		Location	Tide*			Depth	Depth	Direction	Speed			Saturation	-	-			
1100 R1							1.00			29.3	9.60	145.5	0.4 0.4	26.61	8.51 8.52	3	2.5 2.3
130 R1	11:23	G1	ME	841483.9	835936.1	5.8		136	0.157	05.0	7.00	101.0		04.50	2.24		
1195 R1 ME 642074 83718.4 R8 3030 140 140 140 140 140 140 140 140 140 14							4.80			25.9 25.9	7.96	120.9	0.9	31.60	8.00	4	2.2
1924 P2 ME 847584 8362124 5.7 1927 11 ME 841593 836685 7.2 1928 13 MB 84167.0 836680 7.4 1929 13 MB 84167.0 836680 7.4 1930 13 MB 84167.0 836680 7.4 1931 14 ME 841858 83657.0 7.3 1932 15 MB 84165.0 83658.0 7.4 1934 15 MB 84165.0 83658.0 7.4 1935 15 MB 84165.0 83658.0 7.4 1946 15 MB 84165.0 83658.0 7.4 1957 15 MB 84165.0 83658.0 7.4 1958 15 MB 84165.0 83658.0 7.4 1959 15 MB 84165.0 83658.0 7.4 1950								-		29.2	9.48	143.0	0.2	26.09	8.51	7	2.5
1027 11	11:35	R1	ME	842307.4	835718.4	6.6		145	0.163	26.4	7.68	113.9	0.5	31.41 31.78	8.04	4	2.6
1027 11										25.7 29.9	7.13 9.18	107.3 139.8	1.2 0.5	31.79 26.54	7.92 8.46	6 5	2.6
1027 11 ME 641365, 836586, 5 2 1,00 250 277 565 645 11 30 12 278 3 2 2 2 2 2 2 2 2 2	10:58	R2	ME	840739 4	836212.4	5.7	1.00	122	0.153	29.9	9.19	140.0	0.6	26.53	8.46	5	2.8
1927 11 ME 84138.5 83888.5 5.2				0.0700.1	00021211		4.70							31.42	7.92		2.8
11 ME										28.8	8.92	134.1	0.4	27.08	8.45	3	2.0
100	10:27	11	ME	841338.5	836588.5	5.2		253	0.209	20.0	6.93	134.2	0.3	27.07	0.40	5	2.0
1014 12 ME							4.20			27.7 27.7	5.64 5.64	84.5 84.6		30.18 30.16	8.22 8.23		
1000 13 ME							1.00			29.0	8.73 8.73	131.4 131.5		26.78 26.80	8.44 8.45		1.9 1.8
1000 13 ME	10:14	12	ME	841590.3	836601.2	7.5	3.75	164	0.084	26.2 26.2	7.44	112.0 112.1	1.1 1.2	31.50 31.51	7.98 7.97	8	1.8 1.9
1000 13 ME 8418070 8368809 78 38690 9 78 380 200 0.147 23 3 3 5 3 5 3 5 3 5 0 2 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2							6.50			22.8 22.8	6.46 6.47	97.2 97.2	1.4	32.95 32.96	7.79 7.78	6	1.7
11-140 W1 ME 8418589 836571.0 7.2 3.60 251 0.160 266 8.69 1.160 1.										29.1	9.26	139.9	0.2	26.62	8.42	14	1.9
11-146 W1 ME 841868 9 836571.0 7.2 8.80 251 0.162 266 8.19 1225 0.3 31.25 8.09 2 2.22 10-14 M1 ME 840822 836416.4 0.9 0.45 122 0.120 30.6 8.03 1212 0.2 24.00 8.43 3 2.0 11-10 FC21 ME 84180.6 835230.8 8.0 10.0 288 0.119 11-10 FC21 ME 84180.6 835230.8 8.0 10.0 288 0.119 11-10 FC21 MF 841839 83698.1 4.7 10.0 288 0.119 11-10 RF2 MF 841839 83698.1 4.7 10.0 10.0 14.5 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	10:00	13	ME	841807.0	836680.9	7.6		200	0.147	29.2	9.28	140.3	0.2	26.56 32.77	8.46	2	2.5
11-146 W1 ME 841868 9 836571.0 7.2 8.80 251 0.162 266 8.19 1225 0.3 31.25 8.09 2 2.22 10-14 M1 ME 840822 836416.4 0.9 0.45 122 0.120 30.6 8.03 1212 0.2 24.00 8.43 3 2.0 11-10 FC21 ME 84180.6 835230.8 8.0 10.0 288 0.119 11-10 FC21 ME 84180.6 835230.8 8.0 10.0 288 0.119 11-10 FC21 MF 841839 83698.1 4.7 10.0 288 0.119 11-10 RF2 MF 841839 83698.1 4.7 10.0 10.0 14.5 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0							 			23.2 29.5	8.21	123.6	0.6	32.78 26.63	7.77	5	2.3
10.44 M1 ME	11.40	10/4	мп	0440500	020574.0	7.0		251	0.462	29.5 26.6				31.26			2.2
10.44 M1 ME 8408222 836416.4 0.9 0.45 122 0.120 30.6 8.03 121.2 0.2 240 8.43 3 2.0 120 30.6 8.04 1222 0.2 2.2 0.2 2400 8.43 3 2.0 120 30.6 8.04 122 0.2 0.2 2400 8.43 3 2.0 120 30.6 8.04 122 0.2 0.2 2400 8.43 3 2.0 120 30.6 8.04 122 0.2 0.2 2400 8.43 3 2.0 120 30.6 8.04 122 0.2 0.2 2400 8.43 3 2.0 120 30.6 8.04 122 0.2 0.2 120 30.6 8.04 122 0.2 122	11:48	VV1	IVIE	841858.9	836571.0	1.2		251	0.162	26.6 24.3	8.20 6.91	129.6 102.5	0.4 0.7	31.26 32.41	8.08 7.80	2 4	2.3 2.0
11:10 FCZ1 ME 84180.6 835230.8 5.0 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 ME 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 MF 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 MF 84180.6 835230.8 4.0 1.00 268 0.119 11:10 FCZ1 MF 84180.6 835230.8 4.0 1.00 268 0.119 11:10 MF 84180.7 836680.9 7.4 3.70 91 0.212 6.04 0.114 0.11 0.11 0.11 0.11 0.11 0.11							0.20			24.3	6.92	102.6	0.7	32.42	7.81	14	2.0
11:10 FCZ1 ME 84180.6 835230.8 5.0 11:10 FCZ1 ME 84180.6 835230.8 4.9 11:10 FCZ1 ME 84180.6 835230.8	10:44	M1	ME	840822.2	836416.4	0.9	0.45	122	0.120	30.6	8.03	121.2	0.2	24.00	8.43		2.0
11:10 FCZ1 ME 841180.6 835230.8 5.0										30.6	8.04	122.2	0.3	24.01	8.41		2.6
11:10 FCZ1 ME 841180.6 836230.8 5.0 4.00 288 0.119 2							1.00			29.2	9.41	142.4		26.93	8.50 8.51		3.2
17.46 G1 MF 841483,9 836936,1 4.7 176 0.145 18.02 R1 MF 842307.4 835718.4 7.9 3.95 186 0.255 10.3 133,3 16.6 3139 7.9 3.7 2.0 2.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	11:10	FCZ1	ME	841180.6	835230.8	5.0		268	0.119	20.2	J.72	142.0	0.2	20.04	0.01		2.0
17.46 G1 MF 841483,9 836936,1 4.7 176 0.145 18.02 R1 MF 842307.4 835718.4 7.9 3.95 186 0.255 10.3 133,3 16.6 3139 7.9 3.7 2.0 2.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1							4.00			23.9 23.9		113.8 113.9			8.24 8.23		2.8 2.8
17-46 G1 MF 841483.9 835936.1 4.7 3.70 3.70 1802 R1 MF 842307.4 835718.4 7.9 3.95 1802 R1 MF 842307.4 835718.4 7.9 3.95 1802 R1 MF 842307.4 836518.4 7.9 3.95 1803 R2 MF 842307.4 836518.4 7.9 3.95 1809 R2 R2 R2 R3 R4							1.00			29.8		155.2			8.53		
1802 R1	17:46	G1	MF	841483.9	835936.1	4.7	1100	176	0.145	29.8	10.17	155.0	0.3	26.76	8.53	14	1.6
18:02 R1 MF 842307.4 835718.4 7.9 3.95 165 0.255 26.0 8.33 124.1 0.5 31.59 8.07 2 1.4 18:02 R1 MF 842307.4 835718.4 7.9 3.95 165 0.255 26.0 8.33 124.2 0.5 31.59 8.07 2 1.4 10:00 0.25 26.0 0.25 26.0 8.35 12.2 0.25 3.0 0.25 26							3.70			25.6		133.9					2.0
R1 MF 842307.4 835718.4 7.9 3.95 165 0.255 26.0 8.39 124.1 0.5 31.59 8.07 2.2 1.4 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0							1.00			29.1 29.1	10.42	157.8	0.4	27.34	8.52	6	1.7
17:13 R2 MF 840739.4 836212.4 5.9 246 0.318 23.2 0.5 25.04 8.55 3.3 2.2 30.7 9.36 143.2 0.5 25.04 8.55 3.3 2.2 30.7 9.36 143.2 0.5 25.04 8.55 3.3 2.2 30.7 9.36 143.2 0.5 25.04 8.55 3.3 2.2 30.7 9.35 143.0 0.4 25.06 8.53 3.18 3.2 30.5 3.2 30.5 3.3 3.18 3.2 30.5 3.2 30.5 3.2 30.5 3.3 3.18 3.2 30.5 3.2 30.5 3.2 30.5 3.3 3.18 3.2 30.5 3.2 30.5 3.2 30.5 3.2 30.5 3.2 30.5 3.2 30.5 3.2 30.5 3.2 30.5 3.2 30.5 3.2 30.5 30.5 30.5 30.5 30.5 30.5 30.5 30.5	18:02	R1	MF	842307.4	835718.4	7.9	3.95	165	0.255	26.0 26.0	8.39 8.39	124.1 124.2	0.5	31.59 31.58	8.07	2	1.4
17:13 R2 MF							6.90			23.7	6.60	97.4	0.8 0.9	32.66	7.79	6	2.1
4.90 25.3 5.68 86.1 1.5 32.10 7.88 15 2.1							1.00							25.04 25.06			2.2 1.8
16.44 II MF 84138.5 83658.5 4.9 254 0.074 29.0 9.80 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 27.72 8.46 8 1.6 29.0 9.81 148.4 1.0 2.72 8.2 8.3 6 1.2 31.40 8.09 4 1.6 2.6 6 5.62 83.6 1.2 31.40 8.09 4 1.6 2.6 6 5.62 83.6 1.2 31.40 8.08 6 1.7 7 1.6 2.0 1.0 2.	17:13	R2	MF	840739.4	836212.4	5.9		246	0.318	25.2	5.00	00.4	4.5	20.40	7.00	45	24
16.44 11 MF 841338.5 836588.5 4.9 254 0.074 29.0 9.81 148.4 0.9 27.73 8.47 13 1.7										25.3 25.3	5.68	86.2	1.4	32.10	7.87	3	2.2
16.27 12 MF 841590.3 836601.2 7.3 3.65 1.74 0.158 26.6 5.62 83.5 1.3 31.40 8.09 4 1.6 16.27 12 MF 841590.3 836601.2 7.3 3.65 1.74 0.158 2.9.6 9.40 143.2 0.1 26.87 8.49 8 1.7 16.27 12 MF 841590.3 836601.2 7.3 3.65 174 0.158 2.60 7.88 116.2 0.5 31.81 7.98 9 1.7 16.28 1.00 2.37 6.49 95.6 1.2 32.72 7.78 3 1.5 16.29 1.00 2.95 9.98 151.8 0.2 26.83 8.54 5 2.0 16.21 13 MF 841807.0 836680.9 7.4 3.70 91 0.212 25.4 8.17 124.1 0.7 32.00 7.92 5 1.5 16.29 1.00 2.33 6.82 104.6 1.4 32.76 7.77 5 1.6 18.19 W1 MF 841858.9 836571.0 7.8 3.90 232 0.122 26.3 7.91 117.2 0.9 31.56 8.07 4 1.6 16.59 M1 MF 840822.2 836416.4 0.6 0.30 158 0.057 3.00 10.75 164.0 0.4 26.63 8.53 4 1.8 17.30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 13.9 0.3 26.62 8.54 6 1.8 17.30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 13.9 0.3 26.62 8.54 6 1.8 17.30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 13.9 0.3 26.62 8.54 6 1.8 17.30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4 17.30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4 17.30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4 17.30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 2.69 6.36 95.5 0.9 31.20 8.12 2 2.4 17.30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 2.4 2.6 3.6 2.6 2.5 3.6 2.0 2.5 3.6 3.5 3.6 2.0 2.5 3.5	10:11	.,		041000	000505	4.0	1.00	05.1	0.071	29.0				27.73			1.7
16:27 12 MF	10:44	17	MF	841338.5	838588.5	4.9	3 00	∠54	0.074	26.6	5.62	83.5	1.3	31.40	8.09	4	1.6
16.27 12 MF										26.6 29.6	5.62 9.40	83.6 143.2	1.2 0.1	31.40 26.88	8.08 8.48	7	1.7 1.6
16:11 13 MF 841807.0 836680.9 7.4 3.70 91 0.212 25.4 8.17 124.1 0.7 32.00 7.92 5 1.5 1	16:27	12	MF	841590.3	836601.2	7.3		174	0.158	29.6	7.88	143.1 116.2	0.5	26.87 31.81	7.98	9	1.7
16:11 13 MF 841807.0 836680.9 7.4 3.70 91 0.212 29.5 9.98 151.8 0.2 26.83 8.54 5 2.0 29.5 9.98 151.8 0.2 26.83 8.54 5 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.98 151.8 0.2 26.83 8.54 5 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.98 151.8 0.2 26.82 26.82 29.5 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.98 151.8 0.2 26.82 26.8 29.5 9.98 151.8 0.2 26.82 26.8 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 13 2.0 29.5 9.97 151.7 0.3 26.82 8.55 1.3 2.0 29.5 9.97 151.7 0.3 26.82 8.55 1.3 2.0 29.5 9.97 151.7 0.3 26.82 8.55 1.3 2.0 29.5 9.97 151.7 0.3 26.82 8.55 1.3 2.0 29.5 9.97 151.7 0.3 26.82 8.55 1.3 2.0 29.5 9.97 151.7 124.0 0.6 32.00 7.92 5 1.5 29.5 9.97 151.7 0.3 26.82 8.55 1.3 20 29.5 9.97 151.7 124.0 0.6 32.00 7.92 5 1.5 20.8 1.3 1.3 1.3 1.3 1.5 2.0 20.8 1.3 1.3 1.3 1.3 1.3 1.3 1.3 2.0 20.8 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 20.0 10.75 164.0 0.4 26.63 8.53 4 1.8 20.0 10.75 164.0 0.4 26.63 8.54 6 1.8 20.0 10.75 164.0 0.4 26.63 8.54 6 1.8 20.0 10.75 164.0 0.4 26.63 8.54 6 1.8 20.0 10.75 164.0 0.4 26.63 8.54 6 1.8 20.0 10.75 164.0 0.4 26.63 8.54 6 1.8		-				-		•		23.7	6.49	95.6	1.2	32.72	7.78	3	1.5
16:11 13 MF							1			29.5	9.98	151.8	0.2	26.83	8.54	5	2.0
18:19 W1 MF 841858.9 836571.0 7.8 3.90 232 0.122 833 8.53 4 1.6.0 2 25.38 8.54 4 1.6.6 8.0 2 2 1.00 2	16:11	13	MF	841807.0	836680.9	7.4	3.70	91	0.212	25.4	8.17	124.1	0.7	32.00	7.92	5	1.7
18:19 W1 MF 841858.9 836571.0 7.8 3.90 232 0.122 833 8.53 4 1.6.0 2 25.38 8.54 4 1.6.6 8.0 2 2 1.00 2				L			6.40			23.3	6.82 6.82	104.7 104.6	1.3 1.4	32.75 32.76	7.78 7.77	6 5	1.8 1.8
16.59 M1 MF 840822.2 836416.4 0.6 0.30 158 0.057 30.9 8.83 136.0 1.7 24.50 8.53 2 2.2 16.59 M5 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4							1.00			30.6 30.6	9.36 9.36	143.6 143.7	0.2 0.2	25.38 25.39	8.54 8.55	3	1.6 2.0
16.59 M1 MF 840822.2 836416.4 0.6 0.30 158 0.057 30.9 8.83 136.0 1.7 24.50 8.53 2 2.2 2.2 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 30.9 30.0 10.75 164.0 0.4 26.63 8.53 4 1.8 30.0 10.74 163.9 0.3 26.62 8.54 6 1.8 30.0 10.74 163.9 10.75 10.	18:19	W1	MF	841858.9	836571.0	7.8	3.90	232	0.122	26.3 26.3	7.92 7.91	117.3 117.2	0.9	31.55 31.56	8.06 8.07	4	1.2 1.6
16:59 M1 MF 840822.2 836416.4 0.6 0.30 158 0.057 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 17:30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 30.0 10.75 164.0 0.4 26.63 8.53 4 1.8 18:50 M1 MF 841180.6 835230.8 4.9 200 0.147 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4							6.80					94.6 94.5		32.78 32.79	7.79 7.79		2.0 2.1
16:59 M1 MF 840822.2 836416.4 0.6 0.30 158 0.057 30.9 8.84 136.1 1.8 24.49 8.52 5 2.2 17:30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 30.0 10.75 164.0 0.4 26.63 8.53 4 1.8 18:50 M1 MF 841180.6 835230.8 4.9 200 0.147 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4										20.0	0.00	126.0	17	24.50	0.50	2	2.2
17:30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 30.0 10.74 163.9 0.3 26.62 8.54 6 1.8 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4	16:59	M1	MF	840822.2	836416.4	0.6	0.30	158	0.057								2.2
17:30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 30.0 10.74 163.9 0.3 26.62 8.54 6 1.8 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4																	
17:30 FCZ1 MF 841180.6 835230.8 4.9 200 0.147 26.9 6.36 95.5 0.9 31.20 8.12 2 2.4							1.00										1.8 1.8
	17:30	FCZ1	MF	841180.6	835230.8	4.9		200	0.147								
							3.90			26.9 26.9	6.36 6.37	95.5 95.6	0.9 1.0	31.20 31.21	8.12 8.11	2 9	2.4 2.4

MF - Middle Flood tide
ME - Middle Ebb tide
For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.
For Chorophyll-a, if the monitoring result is less than Limit of Report 0.1g/L, the result value will be assumed as 0.1 for the calculation.

Weather: Condition:		е														
Date / Time	Location		Co-ore	dinates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	DO Saturatio n	Turbidity	Salinity	рН	SS	Chlorophy
	<u> </u>		East	North	m	m	degrees	m/s	ზ 26.4	mg/L 7.89	% 115.0	NTU 1.2	ppt 27.91	unit 8.53	mg/L 3	μg/L 2.2
13:15	G1	ME	841483.9	835936.1	5.7	1.00	357	0.084	26.4	7.90	115.2	1.2	27.92	8.54	3	2.5
						4.70			27.7	7.52 7.53	101.2 101.3	0.9	26.98 26.99	8.48 8.49	4	2.7 2.7
						1.00			27.7 27.7	7.84 7.83	113.4 113.5	2.7 2.4	26.73 26.74	8.52 8.53	7 6	3.6 3.3
13:25	R1	ME	842307.4	835718.4	9.3	4.65	100	0.129	27.7 27.7	7.52 7.51	107.4 107.3	1.0	27.06 27.07	8.48 8.49	4	3.2 3.4
						8.30			28.9	7.01	98.2	0.5	27.63 27.64	8.40	5	3.4
						1.00			28.9	7.02 8.22	98.3 120.2	0.5 1.0	26.92	8.41 8.52	8 4	3.5 4.0
14:45	R2	ME	840739.4	836212.4	8.3	4.15	337	0.174	27.8	8.23 8.02	120.3 115.2	1.0 0.9	26.93 27.01	8.53 8.48	5 24	3.7 3.5
						7.30			27.8 27.0	8.03 7.82	115.3 103.2	0.9 0.2	27.02 28.85	8.50 8.44	25 4	3.7 3.4
						1.00			27.0 28.2	7.83 8.35	103.1 123.9	0.2 0.1	28.86 26.12	8.44 8.45	5 3	3.4 2.7
12:20	11	ME	841338.5	836588.5	5.2	1.00	59	0.107	28.2	8.36	124.0	0.1	26.13	8.44	3	2.7
12.20		IVIL	041330.3	030300.3	3.2	4.20	33	0.107	27.6	8.01	119.2	0.3	27.39	8.43	4	3.5
									27.6 28.3	8.02 8.43	119.3 125.1	0.2	27.40 26.31	8.42 8.47	2	3.3 2.6
						1.00			28.3 28.0	8.44 8.20	125.2 118.4	0.6	26.31 26.80	8.48 8.46	2 7	2.4 2.8
12:09	12	ME	841590.3	836601.2	10.0	5.00	64	0.114	28.0	8.19 7.92	118.3 100.4	0.4	26.81 29.03	8.47 8.44	5	3.4
						9.00			27.7	7.93 8.98	100.4	0.4	29.04 26.72	8.45 8.48	4 3	3.0
						1.00			28.0	8.99	137.4	0.2	26.73	8.49	4	2.3
11:55	13	ME	841807.0	836680.9	9.2	4.60	51	0.055	28.0 28.0	8.74 8.73	129.9 130.0	0.3	27.34 27.35	8.43 8.42	9 7	2.7 2.9
						8.20			28.0 28.0	8.01 8.02	120.4 120.5	0.2	27.42 27.43	8.40 8.41	8 5	3.1 3.2
						1.00			27.9 27.9	7.91 7.92	116.8 116.9	0.4 0.4	26.78 26.79	8.48 8.49	15 2	3.8 3.7
13:40	W1	ME	841858.9	836571.0	11.0	5.50	83	0.053	27.9	7.52 7.54	101.4 101.4	0.1	28.41 28.42	8.45 8.46	3	3.5 3.4
						10.00			27.5 27.5	6.80	94.3	0.1	28.49	8.44	3	4.1
									27.5	6.82	94.3	0.1	28.50	8.43	6	4.0
12:39	M1	ME	840822.2	836416.4	1.0	0.51	15	0.097	28.4 28.4	7.97 7.96	118.9 119.0	2.7 2.7	26.94 26.93	8.21 8.22	4 3	3.8 4.2
						4.00			27.8	7.76	113.3	0.3	27.77	8.46	2	7.1
12:55	FCZ1	ME	841180.6	835230.8	5.4	1.00	315	0.140	27.8	7.75	113.4	0.3	27.78	8.47	2	7.2
12.00	1021	IVI.	041100.0	000200.0	0.1	4.40	0.0	0.110	28.0 28.0	7.32 7.31	103.4 103.4	0.2 0.2	27.98 27.99	8.44 8.43	2	6.9 6.5
						1.00			27.7	8.24	119.7	0.5	26.89	8.55	4	2.4
19:25	G1	MF	841483.9	835936.1	5.8		264	0.145	27.5	8.30	120.5	0.5	26.79	8.54	4	2.4
						4.80			27.7	9.05	133.5	0.5	27.21	8.51	6	2.3
						1.00			27.8	9.03 8.35	133.1 120.4	0.5 0.5	27.15 27.02	8.49 8.52	6 5	2.3
19:35	R1	MF	842307.4	835718.4	9.7	4.85	311	0.138	27.8 27.5	8.41 8.92	121.5 131.8	0.5 0.3	27.12 27.23	8.51 8.50	3	2.7
			0.2007	0007.10.1		8.70			27.7 27.3 27.4	8.94 8.19	130.5 122.8 123.8	0.3	27.43 28.54 28.56	8.50 8.43	2	2.4 2.8
						1.00			27.4 28.1	8.20 8.36	122.6	0.4	28.56 26.52	8.42 8.57	2	2.8 2.6
19:05	R2	MF	040720 4	836212.4	7.1	-	263	0.222	28.0 28.1	8.40 8.82	122.8 129.5	0.9	26.52 26.83	8.50 8.48	2	2.4 3.0
19.05	K2	IVIF	040739.4	030212.4	7.1	3.55	203	0.222	28.2 27.7	8.84 9.05	128.4 133.9	0.9 0.7	26.81 27.34	8.45 8.41	3	2.9 2.7
	<u> </u>					6.10			27.8	9.07	133.8 120.3	0.7 1.0	27.41	8.42	2 5	2.7
						1.00			28.1 28.0	8.30 8.35	121.5	1.0	26.81 26.79	8.57 8.52	7	2.3 2.1
18:40	I1	MF	841338.5	836588.5	4.6		53	0.111	27.7	8.67	129.5	0.9	27.72	8.46	3	2.6
						3.60			27.7	8.63 8.69	128.9 125.3	0.9 0.9	27.69	8.43 8.51	4	2.9
						1.00			28.0 28.0	8.70	124.6	0.9	26.86 26.84	8.50	7	2.2 2.3 2.2
18:25	12	MF	841590.3	836601.2	7.6	3.80	28	0.259	27.8 27.7	8.62 8.60	128.5 127.6	0.8	27.87 27.77	8.45 8.43	3	2.1
						6.60			27.6 27.5	8.55 8.52	127.4 126.5	0.8 0.8	28.01 28.11	8.43 8.42	4 6	2.0 2.1
						1.00			28.0 28.0	8.72 8.78	127.4 129.6	0.6 0.5	26.66 26.36	8.50 8.51	4	2.5 2.4
18:00	13	MF	841807.0	836680.9	7.2	3.60	297	0.052	28.0 28.1	8.83 8.84	131.4 130.7	0.5 0.5	27.30 27.17	8.42 8.48	2	2.1
						6.20			27.9 27.8	8.52 8.49	127.8 126.9	0.4	27.69 27.54	8.45 8.42	2	2.8
						1.00			27.9 27.8	8.16 8.18	119.5 119.6	0.7	26.63 26.54	8.52 8.49	4 5	2.6 2.4
19:50	W1	MF	841858.9	836571.0	8.8	4.40	214	0.188	27.9 27.8	8.67 8.64	128.0 127.8	0.7 0.7	26.66 26.62	8.49 8.48	2	2.7
						7.80			27.8 27.7	8.40 8.37	125.8 124.9	0.7 0.7	28.00 27.98	8.42 8.43	2	3.2 2.9
									21.1	0.31	124.9	0.7	21.30	0.40		2.9
	M1	MF	840822.2	836416.4	1.2	0.60	298	0.112	28.0 27.9	7.89 7.95	115.6 116.6	1.5 1.4	27.20 27.11	8.45 8.44	13 16	3.9 3.4
18:50									00.0	0.01	400 4	0.0	20.44	0.51		<u> </u>
18:50						1.00			28.0	8.91 8.86	130.4 129.8	0.6	26.41 26.43	8.51 8.51	2	3.9 4.3
18:50																
18:50 19:15	FCZ1	MF	841180.6	835230.8	5.4		242	0.118								
	FCZ1	MF	841180.6	835230.8	5.4	4.40	242	0.118	28.2 28.1	9.21 9.24	137.2 137.6	0.5 0.5	27.05 27.15	8.51 8.51	4 3	3.7

	12-Sep-1	8														
Weather: Condition:		•														
	Location		Co-ord	linates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	DO Saturatio	Turbidity	Salinity	рН	ss	Chlorophy
			East	North	m	m	degrees	m/s	r	mg/L	%	NTU	ppt	unit	mg/L	μg/L
	G1	ME	841483.9	835936.1												
	R1	ME	842307.4	835718.4												
	R2	ME	840739.4	836212.4												
	l1	ME	841338.5	836588 5												
	l ''	IVIL	041330.5	030300.3												
	10		044500.0	000004.0												
	12	ME	841590.3	836601.2												
	13	ME	841807.0	836680.9												
	W1	ME	841858.9	836571.0												
	M1	ME	840822.2	836416.4												
	FCZ1	ME	0/1100 6	835230.8												
	1021	IVIL	041100.0	033230.0												
						1.00			27.5 27.5	8.41 8.42	123.1 123.2	0.2	27.53 27.54	8.43 8.44	3 4	1.6 1.6
8:10	G1	MF	841483.9	835936.1	5.4		295	0.450								
						4.40			26.0 26.0	7.10 7.11	106.2 106.3	0.3	29.96 29.96	8.19 8.19	3	1.6 1.6
						1.00			27.3 27.3	8.27 8.28	122.6 122.7	0.4	28.22	8.40 8.40	2	1.9
8:24	R1	MF	842307.4	835718.4	7.1	3.55	265	0.175	25.8	7.55	112.1	0.3	30.29	8.12 8.12	3	2.3
									25.8	7.56	112.2	0.3	30.30	8.12		2.0
						6.10			25.8	5.84	86.5	0.4	30.30	8.10	3	2.4
						6.10			25.8 25.8 27.9	5.85 8.40	86.6 122.3	0.4 0.4	30.30 27.82	8.10 8.10 8.39	3 4 4	2.4 2.3 1.6
7.47	P2	ME	840730 4	836212 /	5.8	1.00	60	0.286		5.85	86.6	0.4	30.30	8.10 8.10 8.39	3 4	
7:47	R2	MF	840739.4	836212.4	5.8	1.00	60	0.286	27.9 27.9	5.85 8.40 8.41	86.6 122.3 122.4	0.4 0.4 0.4	30.30 27.82 27.83 29.84	8.10 8.10 8.39 8.38	3 4 4 3	1.6 1.9
7:47	R2	MF	840739.4	836212.4	5.8	1.00	60	0.286	27.9 27.9 26.6 26.6	5.85 8.40 8.41 4.86 4.81	86.6 122.3 122.4 69.8 69.8	0.4 0.4 0.4 2.1 2.1 0.1	30.30 27.82 27.83 29.84 29.84 28.93	8.10 8.39 8.38 8.17 8.17 8.24	3 4 4 3 5 2	1.6 1.9 2.0 2.2
						1.00			27.9 27.9 26.6	5.85 8.40 8.41 4.86	86.6 122.3 122.4 69.8	0.4 0.4 0.4	30.30 27.82 27.83 29.84	8.10 8.39 8.38 8.17	3 4 4 3	1.6 1.9
7:47	R2	MF		836212.4 836588.5	5.8	1.00 4.80 1.00	60	0.286	27.9 27.9 26.6 26.6 26.7 26.7	5.85 8.40 8.41 4.86 4.81 7.34 7.35	86.6 122.3 122.4 69.8 69.8 107.8 107.7	0.4 0.4 0.4 0.4 2.1 2.1 0.1 0.1	27.82 27.83 27.83 29.84 29.84 28.93 28.93	8.10 8.39 8.38 8.17 8.17 8.24 8.24	3 4 4 3 5 2 3 3	1.6 1.9 2.0 2.2 1.9 3.0
						1.00 4.80 1.00 4.70			27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.4	5.85 8.40 8.41 4.86 4.81 7.34 7.35	86.6 122.3 122.4 69.8 69.8 107.8 107.7	0.4 0.4 0.4 0.1 2.1 0.1 0.1 0.1	29.84 28.93 29.86 29.86	8.10 8.39 8.38 8.17 8.17 8.24 8.24 8.15	3 4 4 3 5 2 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.9
7:25	I1	MF	841338.5	836588.5	5.7	1.00 4.80 1.00 4.70 1.00	190	0.167	27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.4 26.9 26.9	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.35	86.6 122.3 122.4 69.8 69.8 107.8 107.7 90.7 90.8 108.0 108.1	0.4 0.4 0.4 2.1 2.1 0.1 0.1 0.1 0.1 0.1	29.84 29.84 29.84 28.93 28.93 29.86 29.86 29.86 28.60 28.61	8.10 8.39 8.38 8.17 8.17 8.24 8.24 8.24 8.25 8.27	3 4 4 3 5 2 3 3 3 2 2 2 3 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.9 1.8 2.0 1.9
			841338.5			1.00 4.80 1.00 4.70			27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.4 26.9 26.9 26.4 26.4	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.14 7.35 7.01 7.01	86.6 122.3 122.4 69.8 69.8 107.8 107.7 90.7 90.8 108.0 108.1 102.7 102.8	0.4 0.4 0.4 2.1 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	30.30 27.82 27.83 29.84 29.84 28.93 28.93 29.86 29.86 29.86 29.48	8.10 8.10 8.39 8.38 8.17 8.24 8.24 8.24 8.25 8.27 8.27 8.20 8.20	3 4 4 3 5 2 3 3 3 2 2 2 3 3 5 5 3	1.6 1.9 2.0 2.2 1.9 3.0 1.8 2.0 1.9 2.0 1.9
7:25	I1	MF	841338.5	836588.5	5.7	1.00 4.80 1.00 4.70 1.00	190	0.167	27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.9 26.9 26.4 26.4 29.8	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.01 7.01 6.54 6.54	86.6 122.3 122.4 69.8 69.8 107.7 90.7 90.8 108.0 108.0 102.7 102.8 95.4 95.5	0.4 0.4 0.4 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	30.30 27.82 27.83 29.84 29.84 28.93 28.93 29.86 29.86 29.86 29.48 29.48 29.48 29.48 29.48	8.10 8.13 8.39 8.38 8.17 8.17 8.24 8.24 8.24 8.25 8.27 8.27 8.20 8.20 8.18 8.18	3 4 4 3 5 2 2 3 3 3 5 3 3 4 4 2 2 3 3 3 5 4 4 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.8 2.0 1.9 2.0 1.9 2.0
7:25	I1	MF	841338.5	836588.5	5.7	1.00 4.80 1.00 4.70 1.00 3.50	190	0.167	27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.9 26.9 26.4 29.8 29.8 29.8 29.6 26.7	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.01 6.54 6.54 5.94 5.95	86.6 122.3 122.4 69.8 69.8 107.8 107.7 90.7 90.8 108.0 108.1 102.7 102.8 95.4 95.6 87.6	0.4 0.4 0.4 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	27.82 27.83 27.83 29.84 29.84 28.93 28.93 29.86 29.86 29.48 29.48 29.48 29.48 29.48 29.48 29.61 26.16 29.68	8.10 8.13 8.39 8.38 8.17 8.17 8.24 8.24 8.15 8.27 8.27 8.20 8.18 8.18 8.18 8.10 8.10	3 4 4 3 5 2 2 3 3 5 4 2 2 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.8 2.0 1.9 2.0 1.9 2.0 1.9 1.9 1.9 1.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9
7:25	I1	MF	841338.5 841590.3	836588.5	5.7	4.80 1.00 4.70 1.00 3.50 6.00	190	0.167	26.6 26.6 26.7 26.7 26.7 26.9 26.9 26.4 29.8 29.8 29.8 26.6 26.7 26.7 26.3	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.14 7.35 7.01 6.54 6.54 6.54 5.94 5.95 4.95	86.6 122.3 122.4 69.8 69.8 107.7 90.7 90.7 90.8 108.0 102.7 102.8 95.5 87.6 87.7 73.0	0.4 0.4 0.4 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	27.82 27.83 27.83 29.84 29.84 29.89 28.93 28.93 28.60 28.61 29.48 29.48 29.48 29.48 29.48 29.48 29.48 30.20	8.10 8.39 8.38 8.17 8.17 8.24 8.24 8.15 8.27 8.20 8.20 8.18 8.10 8.10 8.03	3 4 4 3 5 2 2 3 3 3 5 5 2 2 3 3 4 4 2 2 3 3 3 3 3 3 3 3 3 3 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.8 2.0 1.9 2.0 2.0 2.1 1.9 2.0 2.1 1.9 2.0 2.0 2.0 2.1 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
7:25 7:15	l1 l2	MF MF	841338.5 841590.3	836588.5 836601.2	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00	190	0.167	26.6 26.7 26.7 26.7 26.7 26.4 26.9 26.9 26.4 29.8 26.6 26.3 26.3 26.3 26.3	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.35 7.01 6.54 6.54 6.54 6.54 4.95 4.94 3.42	86.6 122.3 122.4 69.8 69.8 107.8 107.7 90.7 90.8 108.0 108.1 102.7 102.8 95.4 95.5 87.6 87.7 73.0 48.7	0.4 0.4 0.4 2.1 0.1 0.1 0.1 0.1 0.1 0.6 0.7 0.8 0.8 0.4 0.4 0.5 0.5 0.3 0.3 0.3 0.4	27.82 27.83 27.83 29.84 29.84 28.93 28.93 29.86 28.60 28.61 29.48 29.48 29.48 29.48 29.48 30.20 30.21 30.51	8.10 8.39 8.38 8.17 8.24 8.24 8.24 8.27 8.27 8.27 8.20 8.20 8.18 8.10 8.10 8.00 8.03 7.96	3 4 4 3 5 2 2 3 3 5 3 4 4 2 2 3 3 3 5 5 6 6 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8	1.6 1.9 2.0 2.2 1.9 3.0 1.8 2.0 1.9 2.0 2.1 1.9 2.1 1.8 2.2 2.3 2.3 2.5 1.9
7:25 7:15	l1 l2	MF MF	841338.5 841590.3	836588.5 836601.2	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65	190	0.167	26.6 26.7 26.7 26.7 26.4 26.9 26.9 26.4 29.8 26.4 29.8 26.6 26.7 26.3 26.3 26.3 26.3 26.3	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.35 7.01 6.54 5.94 5.95 4.95 4.95 4.94 3.42 6.57	86.6 122.3 122.4 69.8 69.8 107.8 107.7 90.7 90.8 108.1 102.8 95.4 95.5 87.6 87.7 73.0 72.9	0.4 0.4 0.4 2.1 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	30.30 27.82 27.83 29.84 29.84 28.93 28.93 28.93 29.86 29.86 29.61 29.48 26.16 29.68 29.68 30.20 30.21 30.51 29.50 29.50	8.10 8.39 8.38 8.17 8.17 8.24 8.24 8.24 8.15 8.27 8.20 8.20 8.18 8.10 8.03 7.96 7.97 8.23 8.23	3 4 3 5 5 2 3 3 3 3 3 4 2 2 3 3 3 3 3 3 3 3 3 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.9 1.9 2.0 2.0 1.9 2.0 2.1 1.8 1.9 2.0 2.1 2.0 2.1 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2
7:25 7:15	l1 l2	MF MF	841338.5 841590.3	836588.5 836601.2	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65 6.30	190	0.167	27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.9 26.9 26.4 29.8 29.8 29.8 29.6 26.7 26.3 26.3 26.3 26.3 26.7 26.7	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.01 7.01 7.01 6.54 5.95 4.95 4.94 3.42 3.42 3.42 3.42 5.75 5.75 6.57	86.6 122.3 122.4 69.8 69.8 107.7 90.7 90.7 90.8 108.0 108.0 102.7 102.8 95.4 95.5 87.6 87.7 30.7 72.9 48.7 48.7 48.7 48.7 48.7 48.7 48.7 48.7	0.4 0.4 0.4 2.1 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	30.30 27.82 27.83 29.84 29.84 28.93 28.93 28.93 29.86 29.86 29.48 29.48 29.48 29.48 29.48 30.20 30.21 30.51 30.51 30.51 30.51 30.51 30.51 30.51 30.51	8.10 8.39 8.38 8.17 8.17 8.24 8.24 8.15 8.15 8.27 8.20 8.20 8.18 8.10	3 4 4 3 5 2 2 3 3 5 5 3 4 2 2 3 3 3 3 5 5 3 3 3 3 3 3 3 3 3 3 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.9 2.0 1.9 2.0 1.9 2.0 2.1 1.8 1.9 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
7:25 7:15 7:00	l1 l2 l3	MF MF	841338.5 841590.3 841807.0	836588.5 836601.2 836680.9	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65 6.30	190 226 331	0.167	27.9 27.9 26.6 26.6 26.7 26.7 26.9 26.9 26.9 26.4 29.8 29.8 29.8 26.3 26.3 26.3 26.3 26.3 26.3 26.3 26.3	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.01 7.01 6.54 6.59 4.95 4.95 4.95 4.95 5.95 4.95 5.75 5.75 5.76	86.6 122.3 122.4 69.8 69.8 107.8 107.7 90.7 90.8 108.0 108.0 102.7 102.8 95.4 95.5 87.6 87.6 72.9 97.2 97.3 97.3 97.3 97.3 97.3 97.3 97.3 97.3	0.4 0.4 0.4 0.4 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	29.84 29.84 28.93 29.86 29.86 29.86 29.86 29.86 29.86 29.86 29.86 30.20 30.51 30.51 30.51 30.51 30.51 30.51 30.51 30.51	8.10 8.39 8.38 8.38 8.17 8.17 8.24 8.24 8.24 8.27 8.27 8.20 8.18 8.10 8.10 8.10 8.10 8.10 8.10 8.1	3 4 4 3 5 2 2 3 3 3 3 4 4 2 2 3 3 3 3 3 3 3 3 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.9 2.0 1.9 2.0 1.9 2.0 1.9 2.0 1.9 2.0 2.0 2.0 2.0 2.0 2.0 2.5 2.5 2.5 2.6 2.1 2.0 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1
7:25 7:15 7:00	l1 l2 l3	MF MF	841338.5 841590.3 841807.0	836588.5 836601.2 836680.9	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65 6.30 1.00 4.05	190 226 331	0.167	27.9 27.9 26.6 26.6 26.7 26.7 26.9 26.9 26.9 26.4 29.8 26.3 26.3 26.3 26.3 26.7 26.3 26.3 26.3 26.7 26.3	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.01 7.01 7.01 6.54 5.95 4.95 4.94 3.42 3.42 3.42 3.42 5.75 5.75 6.57	86.6 122.3 122.4 69.8 69.8 107.7 90.7 90.7 90.8 108.0 102.7 102.8 95.4 95.5 87.6 87.7 73.0 72.9 48.7 97.2 97.2 97.2	0.4 0.4 0.4 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.6 0.7 0.8 0.8 0.8 0.8 0.8 0.8	30,30 27,82 27,83 29,84 29,84 28,93 28,93 28,93 29,86 29,86 29,48 29,48 29,48 29,48 29,48 30,20 30,21 30,51 30,51 30,51 30,51 30,51 30,51 30,51 30,51	8.10 8.39 8.38 8.17 8.17 8.24 8.24 8.24 8.24 8.25 8.27 8.27 8.20 8.20 8.20 8.20 8.20 8.20 8.20 8.30	3 4 4 3 5 2 3 3 3 5 5 3 3 4 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	1.6 1.9 2.0 2.2 2.3 3.0 1.9 2.0 1.9 2.0 2.1 1.8 1.9 2.0 2.1 1.8 1.9 2.0 2.1 1.9 2.2 2.3 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5
7:25 7:15 7:00	I1 I2 I3 W1	MF MF	841338.5 841590.3 841807.0	836588.5 836601.2 836680.9 836571.0	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65 6.30 1.00 4.05 7.10	190 226 331	0.167 0.142 0.198	27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.9 26.4 26.9 26.4 29.8 29.8 26.3 26.3 26.3 26.3 26.3 26.3 26.3 26.3	5.85 8.40 8.41 7.34 4.86 4.81 7.35 7.35 7.35 7.35 7.35 7.35 6.54 4.94 4.94 3.42 6.59 4.94 6.57 5.76 6.57 6.57 6.57 6.57 6.57 6.57	86.6 122.3 122.4 69.8 69.8 107.7 90.7 90.7 90.8 108.0 108.1 102.7 102.8 95.4 95.5 87.6 87.7 73.0 72.9 48.7 48.6 97.1 86.3 86.3 86.3 86.3	0.4 0.4 0.4 0.4 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	30,30 27,82 27,83 29,84 28,93 28,93 29,86 28,60 28,61 29,48 29,48 29,48 29,48 29,48 29,48 29,61 26,16 26,16 26,16 29,50 30,20 30,21 30,51 30,51 30,51 30,51 30,51 30,51 30,51	8.10 8.39 8.38 8.38 8.17 8.17 8.17 8.24 8.24 8.25 8.27 8.20 8.20 8.20 8.20 8.30	3 4 4 4 3 3 5 2 2 2 2 3 3 3 3 4 4 2 2 3 3 3 3 2 2 4 4 3 3 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.9 1.8 2.0 2.0 2.0 1.9 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
7:25 7:15 7:00	l1 l2 l3	MF MF	841338.5 841590.3 841807.0	836588.5 836601.2 836680.9	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65 6.30 1.00 4.05	190 226 331	0.167	27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.9 26.9 26.9 26.9 26.9 26.9 26.8 26.8 26.8 26.8 26.8 26.8 26.8 26.8	5.85 8.40 8.41 4.86 4.81 7.34 4.81 7.35 6.13 6.14 7.35 7.35 7.35 7.35 7.35 7.35 7.35 7.35	86.6 122.3 122.4 69.8 69.8 107.7 90.7 90.7 90.8 108.0 108.1 102.7 102.8 87.6 87.7 773.0 97.2 97.1 48.6 97.2 97.1 86.3 86.4 58.0 58.1	0.4 0.4 0.4 0.4 2.1 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	30,30 27,82 27,83 29,84 29,84 28,93 28,93 29,86 28,60 28,60 28,60 28,61 29,48 29,48 29,48 29,48 29,48 30,20 30,21 30,51 30,51 30,51 30,51 30,51 30,51 30,51	8.10 8.39 8.38 8.17 8.17 8.24 8.24 8.25 8.27 8.20	3 4 4 4 3 3 5 2 2 3 3 5 5 2 2 3 3 5 5 3 4 4 2 2 3 3 5 3 6 6 6 7 8 7 8 7 8 7 8 8 7 8 7 8 8 7 8 7	1.6 1.9 2.0 2.2 1.9 3.0 1.8 2.0 1.9 2.0 2.0 1.9 2.0 2.1 1.8 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0
7:25 7:15 7:00	I1 I2 I3 W1	MF MF	841338.5 841590.3 841807.0	836588.5 836601.2 836680.9 836571.0	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65 6.30 1.00 4.05 7.10	190 226 331	0.167 0.142 0.198	27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.4 26.4 26.4 26.4 29.8 26.7 26.3 26.3 26.3 26.3 26.3 26.3 26.3 26.3	5.85 8.40 8.41 4.86 4.81 7.34 7.35 6.13 6.14 7.35 7.01 6.54 7.35 7.01 6.54 4.94 3.42 3.42 3.42 3.42 3.42 3.42 3.42 3.4	86.6 122.3 122.4 69.8 69.8 107.8 107.7 90.7 90.8 108.0 108.0 108.1 102.7 102.8 95.4 95.5 87.7 73.0 72.9 48.7 48.6 86.3 86.4 55.0 58.1	0.4 0.4 0.4 0.4 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	30,30 27,82 27,83 29,84 29,84 28,93 28,93 28,93 29,86 29,86 29,48 26,16 29,48 29,48 26,16 29,68 30,20 30,21 30,51 30,51 30,51 30,51 30,51 30,51 30,51 30,51	8.10 8.39 8.38 8.38 8.17 8.17 8.17 8.24 8.24 8.24 8.24 8.25 8.27 8.20 8.20 8.20 8.20 8.20 8.20 8.20 8.30 8.30 8.30 8.30 8.30 8.30 8.30 8.3	3 4 4 4 3 5 2 2 2 2 3 3 3 4 4 2 3 3 3 3 4 4 2 3 3 3 4 4 3 3 4 4 3 5 4 4 4 3 5 4 4 4 3 5 4 4 4 4	1.6 1.9 2.0 2.2 1.9 3.0 1.9 1.8 2.0 2.0 2.1 1.8 1.9 2.0 2.1 1.8 1.9 2.0 2.1 2.1 2.2 2.3 3.2 2.5 1.9 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5
7:25 7:15 7:00	I1 I2 I3 W1	MF MF	841338.5 841590.3 841807.0	836588.5 836601.2 836680.9 836571.0	7.0	4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65 6.30 1.00 4.05 7.10	190 226 331	0.167 0.142 0.198	27.9 27.9 26.6 26.6 26.7 26.7 26.4 26.9 26.4 26.9 26.4 29.8 29.8 26.3 26.3 26.3 26.3 26.3 26.3 26.3 26.3	5.85 8.40 8.41 7.34 4.86 4.81 7.35 7.35 7.35 7.35 7.35 7.35 6.54 4.94 4.94 3.42 6.59 4.94 6.57 5.76 6.57 6.57 6.57 6.57 6.57 6.57	86.6 122.3 122.4 69.8 69.8 107.7 90.7 90.7 90.8 108.0 108.1 102.7 102.8 95.4 95.5 87.6 87.7 73.0 72.9 48.7 48.6 97.1 86.3 86.3 86.3 86.3	0.4 0.4 0.4 0.4 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	30,30 27,82 27,83 29,84 28,93 28,93 29,86 28,60 28,61 29,48 29,48 29,48 29,48 29,48 29,48 29,61 26,16 26,16 26,16 29,50 30,20 30,21 30,51 30,51 30,51 30,51 30,51 30,51 30,51	8.10 8.39 8.38 8.38 8.17 8.17 8.17 8.24 8.24 8.25 8.27 8.20 8.20 8.20 8.20 8.30	3 4 4 4 3 3 5 2 2 2 2 3 3 3 3 4 4 2 2 3 3 3 3 2 2 4 4 3 3 3 3	1.6 1.9 2.0 2.2 1.9 3.0 1.9 1.8 2.0 2.0 2.1 1.9 2.1 1.8 2.0 2.0 2.1 2.1 2.2 2.3 3.2 2.5 1.9 2.2 2.3 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1
7:25 7:15 7:00	I1 I2 I3 W1	MF MF	841338.5 841590.3 841807.0 841858.9	836588.5 836601.2 836680.9 836571.0	7.0	1.00 4.80 1.00 4.70 1.00 3.50 6.00 1.00 3.65 6.30 1.00 4.05 7.10	190 226 331	0.167 0.142 0.198	27.9 27.9 26.6 26.6 26.7 26.7 26.7 26.4 26.9 26.4 26.9 26.4 29.8 26.6 26.3 26.3 26.3 26.3 26.3 26.3 26.3	5.85 8.40 8.41 4.86 4.81 7.34 6.13 7.35 7.01 6.54 7.01 6.54 5.95 4.94 4.95 4.95 4.95 4.95 4.95 4	86.6 122.3 122.4 69.8 69.8 107.7 90.7 90.8 108.0 108.0 108.1 102.7 102.8 95.4 95.4 95.5 87.6 87.7 73.0 97.2 97.1 86.3 86.4 58.0	0.4 0.4 0.4 0.4 2.1 2.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	29.84 29.84 28.93 29.86 29.86 28.60 28.60 29.86 29.86 29.86 29.61 29.48 29.48 29.48 29.48 29.48 29.48 29.48 29.48 29.50 30.21 30.51 30.51 30.51 30.51 30.51 30.51	8.10 8.39 8.38 8.38 8.38 8.17 8.17 8.24 8.24 8.25 8.27 8.20 8.27 8.20	3 4 4 4 3 5 2 2 3 3 5 5 2 2 3 3 5 3 5 3 5 6 6 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	1.6 1.9 2.0 2.2 1.9 3.0 1.9 2.0 1.9 2.0 1.9 2.0 2.1 1.8 1.9 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0

Remarks: MF - Middle Flood tide
ME - Middle Ebb tide
For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.
For Chorophyll-a, if the monitoring result is less than Limit of Report 0.1 µg/L, the result value will be assumed as 0.1 for the calculation.

Sampling Date:	14-Sep-1	8					ater Quality		J . 100ull							
Weather:	Fine															
Sea Condition:	Moderate	9			Water	Compling	Current	Current		DO	DO					1
Date / Time	Location	Tide*	Co-ord	dinates	Water Depth	Sampling Depth	Direction	Current Speed	Temp	Conc	Saturatio n	Turbidity	Salinity	pН	SS	Chlorophyll-
			East	North	m	m	degrees	m/s	°C	mg/L	%	NTU	ppt 29.05	unit	mg/L	µg/L
						1.00			27.4 27.4 27.1	8.41 8.43 8.76	124.3 124.6 128.6	0.3	28.05 28.04 28.43	8.48 8.48	3 3	3.6 3.8 3.3
15:53	G1	ME	841483.9	835936.1	8.6	4.30	306	0.034	27.1	8.77	128.8	0.4	28.44	8.42 8.42	5	3.3 3.3
						7.60			26.5 26.5	5.97 5.98	87.9 88.0	1.2 1.3	29.56 29.61	8.16 8.16	2	3.6 3.4
						1.00			28.6 28.6	8.30 8.31	125.0 125.1	0.2	27.81 27.82	8.50 8.48	5 4	4.7 5.0
16:07	R1	ME	842307.4	835718.4	7.4	3.70	313	0.167	26.8 26.8 26.4	8.24 8.24	120.8 120.9	0.8	28.69	8.43	4	5.1
						6.40			26.4	6.66	97.6	2.6	28.71 29.48	8.43 8.30	10	5.0 4.4
						1.00			26.4 27.9	6.66 7.69	97.7 113.4	2.4 1.2	29.49 27.73	8.29 8.38	5 4	4.1 4.0
15:23	R2	ME	840739.4	836212.4	7.8	3.90	311	0.132	27.9 27.2	7.70 8.08	113.5 119.3	1.3 0.9	27.74 28.42	8.37 8.44	3	4.1 4.1
13.23	NZ	IVIL	040739.4	030212.4	7.0		311	0.132	27.2 27.0	8.07 7.20	119.3 106.3	1.0 3.3	28.43	8.43 8.35	4	4.3 5.1
						6.80			27.0 27.0 27.2	7.18	106.1 117.5	3.3 3.2 0.5	28.82 27.96	8.34 8.46	4	5.1 4.1
						1.00			27.2	7.96	117.4	0.5	27.98	8.45	2	4.2
14:59	I1	ME	841338.5	836588.5	5.4		283	0.131								
						4.40			27.1 27.1	8.19 8.19	120.9 120.8	0.8	27.06 27.05	8.41 8.40	4	4.4 4.2
						1.00			27.6 27.6	8.47 8.48	121.6 121.7	0.5 0.4	27.63 27.64	8.47 8.48	7 5	4.4 4.5
14:48	12	ME	841590.3	836601.2	11.0	5.50	34	0.126	26.9	8.42	117.9	0.6	28.75	8.42	5	3.1
						10.00			26.9 26.1	8.42 8.06	117.7 76.3	0.7 1.2	28.76 30.04	8.42 8.06	3	3.3 4.5
									26.1 28.2	8.06 8.30	76.4 123.4	1.1 0.2	30.05 26.95	8.06 8.58	3	4.6 3.7
						1.00			28.2	8.29	123.2	0.3	26.96	8.56	4	3.8
14:38	13	ME	841807.0	836680.9	9.6	4.80	121	0.192	27.2	8.28 8.28	121.7 121.8	0.4	27.76	8.49 8.50	3	4.1
						8.60			26.8 26.8	7.73	113.6 113.4	1.0	28.62 28.62	8.43 8.42	7	2.9 3.1
						1.00			28.6 28.6	8.33 8.34	125.2 125.2	0.4	27.24 27.25	8.49 8.48	4 7	4.6 4.4
16:22	W1	ME	841858.9	836571.0	10.0	5.00	250	0.232	26.9	8.16	120.6	0.7	28.81	8.41	4	4.7
									26.9 26.3	8.17 6.17	120.7 90.4	0.6 0.7	28.82 29.63	8.40 8.22	5 3	4.5 4.5
						9.00			26.3	6.18	90.5	0.8	29.64	8.21	4	4.5
									00.4	0.00	100.7	4.4	00.54	0.40	_	0.7
15:15	M1	ME	840822.2	836416.4	0.9	0.45	310	0.019	29.1 29.1	8.62 8.63	129.7 129.8	1.4 1.3	26.54 26.55	8.46 8.47	3 5	3.7 3.7
						1.00			27.4 27.4	8.49 8.50	125.4	0.1 0.1	28.02 28.03	8.47 8.47	4	3.6 3.4
15:40	FCZ1	ME	841180.6	835230.8	6.9	3.45	282	0.109	26.9	8.59	125.6 126.5	0.3	28.65	8.44	2	3.9
10.10	1021	IVIL	041100.0	000200.0	0.0		202	0.100	26.9 26.7	8.60 6.25	126.5 91.5	0.3	28.66 29.58	8.43 8.15	3	3.9 2.1
						5.90			26.7 26.7	6.25 6.25	91.6	1.0	29.58 29.59	8.14	3	2.1 3.2
						1.00			26.9	7.88	115.1 115.2	0.4	27.76	8.42	3	2.3 2.2
10:44	G1	MF	841483.9	835936.1	7.0	3.50	200	0.052	26.9 26.7	7.89 6.88	102.3	0.4 1.0	27.76 28.87	8.42 8.35	2	2.2
10.11	01	IVII	041405.5	000000.1	7.0		200	0.002	26.7 26.4	6.89 4.10	102.4 62.0	1.1 4.1	28.89 29.70	8.32 8.12	2	3.3 2.9
						6.00			26.4	4.04 7.75	61.2	4.2 0.6	29.74	8.12	4 3	2.9
						1.00			26.8 26.8	7.77	113.2 113.5	0.5	27.94 27.94	8.42 8.42	2	1.9 2.0
11:01	R1	MF	842307.4	835718.4	9.0	4.50	119	0.160	26.5 26.5	7.05 7.04	103.6 103.5	0.2	29.03 29.04	8.32 8.31	2	1.9 1.7
						8.00			26.2 26.2	6.42	94.4 94.2	0.1 0.1	29.67 29.67	8.25 8.25	3 5	1.6 4.3
						1.00			27.0	7.59	111.7	0.5	27.80	8.41	4	2.7
10:11	R2	MF	840739.4	836212.4	7.4	3.70	165	0.101	27.0 26.8	7.61 7.36	111.8 108.6	0.4 0.7	27.79 28.60	8.41 8.38	3	2.6 3.0
10.11	1,72	1411	340,33.4	300212.4				5.101	26.8 26.4	7.34 3.34	108.7 52.1	0.8 3.2	28.60 29.89	8.38 8.21	3	3.2 2.5
						6.40			26.4 26.8	3.35 7.61	53.8 111.2	3.3 0.5	30.17	8.21 8.33	2	2.9 1.9
						1.00			26.8	7.63	111.6	0.5	28.10	8.33	2	1.8
9:47	l1	MF	841338.5	836588.5	7.0	3.50	138	0.149	26.7 26.7	5.62 5.68	83.4 83.7	2.5 2.4	29.11 29.13	8.25 8.26	3	3.9 1.9
						6.00			26.6 26.6	5.68 5.69	83.3 83.4	3.4 2.8	29.27 29.27	8.23 8.23	2	1.9 2.1
						1.00			26.9 26.9	7.58	110.9	0.5	28.05 28.07	8.39	2	1.6
9:32	12	MF	841590.3	836601.2	10.0	5.00	30	0.097	26.6	7.62 6.71	111.8 102.8	0.6 0.8	28.90	8.39 8.33	2	1.6 3.8
		1411	5-1000.5	300001.2	. 3.0		30		26.6 26.6	6.69 5.74	101.9 84.5	0.9	28.99 29.05	8.33 8.23	3	1.2 1.6
						9.00			26.6	5.68	83.9	0.7	29.05	8.23	3	1.5
						1.00			26.8 26.8	7.28	106.2 105.1	0.4	27.94 27.95	8.36 8.35	5 3	1.7 2.0
9:08	13	MF	841807.0	836680.9	9.0	4.50	310	0.026	26.6 26.5	5.87 6.01	86.0 87.6	0.8	29.20 29.18	8.21 8.22	2	2.6 2.6
	1					8.00			26.4 26.4	4.68 4.90	68.7 70.6	1.0	29.56 29.56	8.14 8.13	3	2.2
	İ					1.00			26.9	7.75	113.6	0.6	28.32	8.38	2	3.5
11:18	W1	MF	841858.9	836571.0	11.0	5.50	94	0.147	26.9 26.7	7.76 7.28	113.8 108.1	0.6 0.4	28.32 28.80	8.38 8.34	3	2.7 2.6
10		IVII-	5-1050.9	00007 1.0	. 1.0		J-7	5.147	26.7 26.4 26.4	7.25	107.8 86.0	0.4 0.6	28.80 29.45 29.45	8.34	3	2.6 2.7 2.4
						10.00			26.4	5.74 5.72	85.8	0.6	29.45	8.24 8.24	3	2.4
10:05	M1	MF	840822.2	836416.4	1.0	0.50	217	0.133	27.2 27.2	6.93 6.94	101.5 101.8	2.6 2.7	27.71 27.72	8.35 8.35	3	3.6 3.7
										5.54				2.00	Ů	Ü.,
									27.0	7.53	110.2	0.1	27.46	8.44	3	1.7
						1.00			27.0	7.52	110.1	0.1	27.46	8.44	2	1.7
10:26	FCZ1	MF	841180.6	835230.8	6.0	3.00	86	0.119	26.9	7.75	113.6	0.2	28.43	8.41	3	1.7
	1								26.9 26.6	7.76 6.51	113.4 96.9	0.2 1.4	28.43 29.02	8.41 8.31	3	1.7 3.4
	1		Ì		l	5.00		1	26.6	6.48	95.8	1.3	29.02	8.31	2	3.5

Remarks: MF - Middle Flood tide

ME - Middle Ebb tide

For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.

For Chorophyll-a, if the monitoring result is less than Limit of Report 0.1µg/L, the result value will be assumed as 0.1 for the calculation.

Sampling Date:	17-Sen-1	8				Impact \	Nater Quali	y Monitor	ing Res	ult						
Weather:	Fine															
Sea Condition:)	ı								DO					1
Date / Time	Location	Tide*	Co-ord	linates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	Saturatio	Turbidity	Salinity	pН	ss	Chlorophyll-a
			East	North	m	m	degrees	m/s	°C	mg/L	n %	NTU	ppt	unit	mg/L	μg/L
						1.00			29.1 29.1	7.95 7.96	119.42 119.43	0.8	26.42 26.43	8.43 8.42	3	8.8 8.9
18:59	G1	ME	841483.9	835936.1	7.0	3.50	76	0.142	28.0 28.0	7.31 7.32	106.89 106.88	0.9 1.0	28.41 28.42	8.39 8.38	3 4	9.3 9.6
						6.00			27.6 27.6	6.92 6.93	95.64 95.65	1.2 1.2	29.99 30.01	8.35 8.31	3	9.1 8.6
						1.00			29.1 29.2	7.67 7.68	115.84 115.83	0.9	27.84 27.85	8.40 8.39	5 6	11.0 11.0
19:10	R1	ME	842307.4	835718.4	5.9		77	0.172								
						4.90			28.0 28.1	7.11 7.12	100.71 100.73	0.3 0.3	29.42 29.43	8.29 8.25	5 5	12.0 11.0
						1.00			29.1 29.1	7.92 7.95	110.49	0.9	23.25	8.48 8.45	6 5	11.0 11.0
18:32	R2	ME	840739.4	836212.4	6.4	3.20	72	0.124	28.7	7.42 7.41	101.41	1.1	27.82 27.85	8.42 8.43	5 4	12.0 12.0
						5.40			28.6 28.7	6.85 6.84	96.72 96.74	1.4 1.4	29.92 29.91	8.40 8.39	4 5	11.0 11.0
						1.00			27.7 27.7	7.31 7.30	119.56 119.57	0.6	21.76	8.53 8.52	6	8.2 7.1
18:16	11	ME	841338.5	836588.5	5.6		126	0.176	21.1	7.30	119.57	0.7	21.77	0.52	4	7.1
						4.60			27.4	6.52	99.61	0.9	26.37	8.30	4	9.8
						1.00			27.4 28.7	6.53 8.39	99.62 128.20	1.0 0.5	26.36 22.49	8.29 8.50	18 4	13.0 8.3
18:00	12	ME	841590.3	836601.2	8.1	4.05	93	0.113	28.7 28.6	8.38 6.50	128.10 100.12	0.6 1.0	22.50 25.47	8.49 8.32	5 5	8.3 9.4
			011000.0	00000112		7.10			28.6 28.3	6.49 6.29	100.13 95.42	0.9 1.4	25.46 27.82	8.32 8.19	5 4	9.0 10.0
						1.00			28.3 28.5	6.28 7.40	95.43 113.40	1.3 0.3	27.81 23.45	8.18 8.48	7 5	10.0 7.9
17:49	10		044007.0	000000	0.6		100	0.037	28.4 28.4	7.41 6.68	113.50 101.40	0.4 0.7	23.46 25.78	8.47 8.27	4 6	7.9 9.6
17:49	13	ME	841807.0	836680.9	8.6	4.30	180	0.037	28.4 28.3	6.69 6.32	101.50 96.43	0.7	25.79 27.32	8.28 8.14	5	11.0 11.0
						7.60			28.3 29.0	6.31 7.24	96.44 109.12	1.2	27.32 27.83	8.13 8.41	6	11.0 9.0
						1.00			29.0	7.25	109.13	1.0	27.84 28.59	8.40	4	7.0 10.0
19:20	W1	ME	841858.9	836571.0	7.1	3.55	56	0.132	28.6	7.09	100.14	0.5	28.56	8.32 8.31	4	10.0
						6.10			27.6 27.7	6.89 6.88	94.32 94.33	0.3	29.92 29.91	8.21 8.20	6 4	11.0 11.0
18:26	M1	ME	840822.2	836416.4	1.2	0.60	126	0.094	29.1 29.1	7.84 7.85	110.90 110.80	1.2 1.2	25.67 25.68	8.69 8.70	5 6	12.0 12.0
						1.00			29.0 29.0	8.67 8.66	129.31 129.32	0.9	29.01 29.02	8.45 8.46	5 4	15.0 14.0
18:49	FCZ1	ME	841180.6	835230.8	5.6		163	0.121								
						4.60			28.6 28.6	7.32 7.33	106.64 106.65	1.3 1.4	28.61 28.64	8.40 8.38	5 6	8.8 12.0
	G1	MF	041402.0	835936.1												
	GI	IVIF	841483.9	035930.1												
	D.4		0.40007.4	005740.4												
	R1	MF	842307.4	835718.4												
	R2	MF	840739.4	836212.4												
	I1	MF	841338.5	836588.5												
	12	MF	841590.3	836601.2												
	13	MF	841807.0	836680.9												
			<u> </u>													
	W1	MF	841858.9	836571.0												
	M1	MF	840822.2	836416.4												
	FCZ1	MF	841180.6	835230.8												

Remarks: MF - Middle Flood tide

ME - Middle Ebb tide

For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.

For Chorophyll-a, if the monitoring result is less than Limit of Report 0.\(\text{lig/L}\), the result value will be assumed as 0.1 for the calculation.

ampling Date:	19-Sep-1	8				impact	Water Quali	rà MOUICO	g Kes	,uit						
Weather:																
ea Condition:	Moderate	,			_					-	DO					
Date / Time	Location	Tide*	Co-ord	dinates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	Saturatio	Turbidity	Salinity	рН	SS	Chlorophyll-
Dato, Timo	200411011		East	North	m	m	degrees	m/s	ొ	mg/L	n %	NTU	ppt	unit	mg/L	μg/L
						1.00			26.4 26.4	7.61 7.62	107.4 107.5	0.3 0.4	26.51 26.52	8.31 8.32	4 5	1.8 1.6
9:00	G1	ME	841483.9	835936.1	5.6		126	0.211	20.4	7.02	107.0	0.4	20.02	0.02	Ľ	1.0
						4.60			25.9	4.62	66.8	2.3	28.61	8.08	3	1.9
						1.00			25.9 26.6	4.63 8.32	66.9 119.5	2.4 0.1	28.62 25.90	8.07 8.30	<u>3</u> 5	1.9 4.0
									26.6 25.9	8.35 6.20	119.7 89.8	0.1 0.4	25.91 25.93	8.31 8.13	5 4	3.7 3.6
9:15	R1	ME	842307.4	835718.4	7.0	3.50	128	0.207	25.9 25.7	6.21 4.18	89.6 61.2	0.4 3.6	25.94 25.72	8.14 8.05	3	3.7 4.8
						6.00			25.7	4.19	61.3	3.6	25.73	8.07	4	6.0
						1.00			27.0 26.9	6.66 6.66	95.6 95.5	1.9 1.9	27.04 27.05	8.21 8.21	4 5	2.8 2.7
8:26	R2	ME	840739.4	836212.4	5.7		355	0.131								
						4.70			26.0 26.0	5.34 5.35	76.7 76.8	2.5 2.5	27.57 27.57	8.12 8.13	3	2.6 2.5
						1.00			26.6 26.6	8.01 8.03	115.0 115.2	0.2	26.24 26.25	8.34 8.35	5	3.9 4.0
8:00	11	ME	841338.5	836588.5	5.9		146	0.188	20.0	0.03	110.2	0.5	20.23	0.55	Ľ	4.0
						4.90			26.0	5.70	82.8	0.4	25.95	8.12	8	4.1
						1			26.0 26.6	5.71 8.39	82.7 120.50	0.5 0.1	25.96 26.31	8.13 8.34	3	4.3 4.4
7.50	10		044500 -	000001 -		1.00	40.	0.400	26.6 25.9	8.39 6.06	120.60 89.70	0.1	26.32 28.60	8.34 8.12	4	3.7 4.8
7:50	I2	ME	841590.3	836601.2	6.3	3.15	131	0.186	25.9 25.8	6.00 5.20	89.80 75.90	0.3	28.60 29.37	8.12 8.09	4 3	4.9
						5.30			25.8	5.21	75.80	0.5	29.37	8.09	4	3.6
						1.00			26.7 26.7	7.99 7.98	115.6 115.5	0.1	26.38 26.38	8.30 8.30	4	5.6 3.2
7:30	13	ME	841807.0	836680.9	6.2	3.10	180	0.195	25.8 25.8	4.28 4.28	62.1 62.0	1.4 1.4	29.18 29.19	8.06 8.07	4	7.0 6.5
						5.20			25.7 25.8	4.19 4.20	50.8 50.9	1.2	29.68 29.69	7.30 7.30	3	5.4 5.6
						1.00			26.6	8.43	120.8	0.1	25.98	8.31	4	3.2
9:30	W1	ME	841858.9	836571.0	7.8	3.90	130	0.204	26.6 25.9	8.43 5.91	120.9 85.3	0.1	25.98 27.56	8.31 8.13	5	3.5 4.6
3.30	***	IVIL	041030.9	030371.0	7.0		150	0.204	25.9 29.8	5.90 3.96	85.2 57.3	0.4 3.0	27.57 25.71	8.14 8.05	<u>4</u> 5	4.8 3.8
						6.80			29.8	3.97	57.4	3.1	25.72	8.06	5	3.7
									07.0	0.74	20.5	4.0	00.00	0.40		0.0
8:13	M1	ME	840822.2	836416.4	1.0	0.50	312	0.181	27.0 27.1	6.71 6.72	98.5 98.6	1.8 1.9	26.26 26.27	8.19 8.18	4	3.3 3.8
						1.00			26.0 26.0	6.66 6.66	95.6 95.5	1.9 1.9	27.04 27.05	8.21 8.21	3	1.9 2.0
8:45	FCZ1	ME	841180.6	835230.8	5.0		32	0.207	20.0	0.00	00.0		21.00	0.2.1	Ľ	2.0
						4.00			26.0	5.34	76.7	2.5 2.5	27.57 27.57	8.12	3	1.6 1.9
									26.0	5.35	76.8			8.13	3	
						1.00			26.7 26.6	7.03 7.02	101.8 101.7	1.6 1.6	27.74 27.75	8.37 8.36	5	3.8 4.6
16:35	G1	MF	841483.9	835936.1	5.3		110	0.086								
						4.30			26.0 26.0	5.40 5.41	78.6 78.7	2.4 2.5	28.96 28.97	8.29 8.28	4	5.3 5.0
						1.00			26.2 26.2	7.74 7.75	111.8 111.7	0.5 0.5	27.37 27.38	8.47 8.46	3 6	6.6 6.7
16:44	R1	MF	842307.4	835718.4	6.5	3.25	117	0.367	25.8 25.9	5.77 5.76	88.9 88.8	0.6	29.78 29.78	8.30 8.31	3 5	5.3 5.1
						5.50			25.9	4.86	72.1	2.5	29.50	8.29	5	5.9
						1.00			25.9 26.8	4.87 6.94	72.2 100.1	2.6 1.9	29.51 26.87	8.30 8.38	5 5	6.1 6.1
16:02	R2	MF	940720 4	836212.4	5.3	1.00	118	0.106	26.9	6.93	100.2	1.8	26.85	8.37	3	5.9
10.02	N2	IVII	040739.4	030212.4	5.5	4.00	110	0.100	26.0	5.62	83.0	1.3	28.70	8.27	3	5.9
						4.30			26.0 27.0	5.63 9.83	83.1 143.0	1.3	28.71	8.26 8.54	3	4.7 4.7
						1.00			27.1	9.84	143.1	0.3	26.54	8.54	2	4.6
15:40	I1	MF	841338.5	836588.5	5.5		150	0.289	20.0	0.04	22.2	4.0	00.40	0.40		5.0
						4.50			26.0 26.0	6.31	96.8 96.7	1.0 1.1	29.40 29.41	8.18 8.19	6	5.2 5.1
						1.00			26.2 26.2	7.68	110.7 110.8	0.6	27.23 27.23	8.37 8.36	5 4	5.3 5.5
15:28	12	MF	841590.3	836601.2	5.9		142	0.131								
						4.90			29.6 29.6	4.92 4.93	72.8 72.7	0.8	25.86	8.20	6	6.2
						1.00			27.4	7.69	119.4	1.9	25.87 25.59	8.20 8.50	5 4	6.9 3.8
15:16	13	MF	0/1007 0	836680.9	6.2	3.10	102	0.241	27.5 26.1	7.70 7.34 7.35	119.5 106.0	1.9 0.8	25.56 27.70	8.51 8.30	3	3.7 4.8
13.10	13	IVII	841807.0	030000.9	0.2		102	0.241	26.1 29.8	7.35 3.54	106.1 51.5	0.8 4.2	27.71 25.82	8.31 8.10	6 5	5.0 4.9
						5.20			29.8 28.7	3.56 9.99	51.6 145.6	4.3	25.83 21.77	8.11 8.52	4 2	4.8 5.4
						1.00			28.7	9.98	145.5	0.3	21.77	8.53	3	5.7
17:02	W1	MF	841858.9	836571.0	7.4	3.70	132	0.248	26.2 26.2	10.72	154.7 154.8	0.2	27.46 27.46	8.38 8.39	5 4	6.6 6.8
						6.40			25.8 25.9	4.36 4.35	64.0 63.8	1.5 1.5	29.69 29.68	8.21 8.21	3 6	7.2 6.1
15:51	M1	MF	840822.2	836416.4	0.8	0.40	125	0.129	29.8	8.49	126.7	1.2	21.94	8.52	3	4.3
									29.8	8.48	126.8	1.2	21.95	8.53	5	4.7
									26.1	7.05	114.2	0.0	27.25	8 46	4	4.9
						1.00			26.1 26.2	7.95 7.96	114.3 114.4	0.8	27.25 27.26	8.46 8.47	4	4.9
1			1		4.9		198	0.107								
16:23	FCZ1	MF	841180.6	835230.8	4.5											
16:23	FCZ1	MF	841180.6	835230.8	4.5	3.90			26.1	5.05	74.0	1.4	28.68	8.25	3	5.9

MF - Middle Flooa nae
ME - Middle Ebb tide
For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.
For Chorophyll-a, if the monitoring result is less than Limit of Report 0.1gg/L, the result value will be assumed as 0.1 for the calculation.

ampling Date		8				Impact V										
Weather: ea Condition:	Fine Moderate															
Date / Time	Location	Tide*	Co-ord		Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	n	Turbidity	Salinity	рН	ss	Chlorophyll-
			East	North	m	m	degrees	m/s	℃ 27.8	mg/L 9.48	% 139.4	NTU 0.3	ppt 26.19	8.39	mg/L 3	μ g/L 5.9
10:19	G1	ME	841483.9	835936.1	6.0	1.00 3.00 5.00	56	0.029	27.9 26.2 26.2 25.7	9.49 7.28 7.29 5.00	139.5 109.7 109.8 75.4	0.2 0.7 0.8 2.6	26.19 28.69 28.69 29.75	8.39 8.22 8.22 8.08	3 4 4 9	5.7 5.8 6.1 6.0
10:38	R1	ME	842307.4	835718.4	9.0	1.00	213	0.063	25.7 28.0 28.0 26.4	5.01 9.90 9.91 8.17	75.6 145.4 145.5 119.2	2.7 0.3 0.3 0.1	29.75 26.17 26.18 28.44	8.08 8.41 8.42 8.26	3 6 2 2	6.1 3.8 3.6 4.6
10.36	KI	IVIE	042307.4	033710.4	5.0	8.00 1.00	213	0.003	26.4 25.9 25.9 28.4	8.16 5.94 5.95 9.31	119.1 87.9 88.0 137.5	0.4 1.2 1.1 0.5	28.44 29.35 29.35 25.14	8.26 8.14 8.14 8.44	3 3 3	4.6 4.0 4.4 7.5
9:46	R2	ME	840739.4	836212.4	6.6	3.30 5.60	45	0.025	28.4 27.1 27.1 25.9 25.8	9.33 8.02 8.11 5.25 5.26	137.7 120.3 121.4 76.3 76.4	0.5 0.7 0.8 1.4 1.3	25.14 26.89 26.89 29.54 29.54	8.44 8.26 8.26 8.02 8.02	3 3 3 4	7.7 8.8 8.7 7.0 6.9
9:16	l1	ME	841338.5	836588.5	6.2	1.00 3.10 5.20	190	0.081	28.7 28.7 26.3 26.3 25.8 25.8	9.33 9.34 7.15 7.14 4.98 5.01	137.6 137.7 16.0 106.8 73.2 73.4	0.2 0.3 0.5 0.6 1.0	24.02 24.02 28.63 28.63 29.68 29.68	8.42 8.42 8.19 8.19 8.05 8.05	3 5 3 5 5	5.7 5.7 4.7 5.4 5.3
8:59	12	ME	841590.3	836601.2	9.0	1.00	233	0.113	27.9 27.9 26.1 26.1 25.7	8.60 8.61 6.64 6.60 4.98	126.30 126.50 99.20 98.90 74.30	0.5 0.4 0.3 0.4 1.3	25.63 25.63 28.84 28.84 29.79	8.35 8.35 8.16 8.16 8.04	5 3 3 4 4	5.5 5.4 5.6 4.4 4.9 6.0
8:45	13	ME	841807.0	836680.9	9.0	1.00 4.50	163	0.074	25.7 27.7 27.7 26.0 26.0	4.97 8.71 8.78 5.29 5.23	74.20 128.1 128.8 77.2 76.3	1.2 0.4 0.3 0.8 0.9	29.79 26.11 26.11 29.18 29.18	8.04 8.29 8.29 8.05 8.05	4 4 6 6 3	5.7 4.0 4.7 5.2 5.0
			044050.0	200574.0		8.00 1.00			25.6 25.6 28.4 28.4 26.3	3.92 3.91 8.60 8.61 6.77	58.0 57.3 126.8 126.9 102.6	1.6 1.5 0.7 0.6 0.7	29.98 29.88 25.53 25.53 28.78	7.97 7.97 8.37 8.37 8.21	3 4 3 3 3	6.2 6.0 5.1 4.8 4.9
10:54	W1	ME	841858.9	836571.0	9.2	4.60 8.20	86	0.083	26.3 25.7 25.7	6.78 5.12 5.21	102.9 75.4 76.0	0.8 1.2 1.3	28.78 29.80 29.80	8.21 8.09 8.09	4 4 3	5.0 4.1 4.1
9:32	M1	ME	840822.2	836416.4	1.3	0.65	265	0.061	28.9 28.9 28.6	9.17 9.18	137.7 137.8	5.2 5.4 0.1	24.67 24.67 23.60	8.42 8.42 8.44	3 5	5.6 5.6
10:02	FCZ1	ME	841180.6	835230.8	5.8	4.80	239	0.906	28.6	9.38 9.37 5.87	137.7 137.6 83.3 83.4	2.6	23.60	8.44	5	5.0
									26.1	5.88		2.5	29.06	8.10	3	6.9
18:05	G1	MF	841483.9	835936.1	6.2	3.10	145	0.199	29.4 29.4 26.3 26.3 26.1	10.16 10.17 7.65 7.63 7.21	152.5 152.8 111.6 111.4 105.0	0.8 0.6 0.6 0.7 1.5	24.98 25.02 29.05 29.05 29.44	8.59 8.58 8.34 8.33 8.30	4 9 5 6 5	2.2 2.5 2.6 2.5 2.6
18:21	R1	MF	842307.4	835718.4	9.1	5.20 1.00 4.55	176	0.217	26.1 28.1 28.1 26.5 26.5	7.21 8.85 8.87 8.01 8.00	105.1 131.4 131.6 117.3 117.0	1.6 0.4 0.5 1.1 1.0	29.44 26.82 26.81 28.77 28.76	8.29 8.45 8.45 8.38 8.36	3 3 4 3 4	2.6 2.5 2.7 3.1 3.0
	-					8.10 1.00			25.6 25.6 30.3 30.3 26.5	4.88 4.86 10.13	70.8 70.5 153.8 153.9 110.7	1.9 1.9 0.6 0.6 0.9	30.03 30.20 24.01 24.00 28.93	8.15 8.15 8.64 8.64 8.30	3 3 3 3	3.0 3.4 3.2 3.5 3.3
17:32	R2	MF	840739.4	836212.4	6.8	3.40 5.80 1.00	140	0.151	26.5 26.6 26.2 30.5 30.5	7.49 6.88 6.85 9.09 9.07	109.9 100.8 100.6 138.3 138.0	1.0 1.6 1.5 0.2 0.5	28.93 28.79 28.80 24.00 24.01	8.29 8.30 8.30 8.64 8.63	3 4 3 4 4	3.3 3.2 3.2 2.9 2.9
16:59	I1	MF	841338.5	836588.5	5.8	4.80	201	0.173	26.2 26.2 30.1	6.89 6.90 9.72	100.4 100.5 146.9	0.8 0.9 0.6	29.30 29.31 24.21	8.31 8.31 8.66	3 3 3	2.8 2.9 3.2
16:42	12	MF	841590.3	836601.2	9.7	1.00 4.85 8.70	118	0.228	30.1 26.0 26.0 25.6 25.6	9.74 7.46 7.43 3.89 3.87	147.1 108.7 108.5 57.1 57.0	0.4 1.1 1.9 1.3	24.21 29.45 29.49 30.07 30.06	8.65 8.40 8.38 8.13 8.13	3 3 3	3.1 2.2 2.6 2.8 2.9
16:30	13	MF	841807.0	836680.9	9.2	1.00 4.60 8.20	115	0.130	30.5 30.4 26.0 26.0 25.4 25.4	9.63 9.62 6.39 6.39 4.04 4.06	146.1 146.2 92.9 93.0 58.6 58.9	0.7 0.8 1.1 1.2 2.2 2.3	23.58 23.56 29.50 29.51 29.80 29.78	8.64 8.63 8.41 8.39 7.88 7.85	3 3 3 3 3	3.1 3.2 3.0 3.6 3.2 3.4
18:39	W1	MF	841858.9	836571.0	9.4	1.00 4.70 8.40	70	0.030	29.6 29.5 25.8 25.8 25.5	9.76 9.78 5.65 5.63 4.17	147.2 147.3 82.3 82.0 60.5	0.4 0.5 0.9 1.0 2.3	25.20 25.19 29.79 29.80 30.14	8.55 8.54 8.32 8.30 8.09	5 5 3 3	3.1 3.2 3.4 3.3 3.7
17:14	M1	MF	840822.2	836416.4	0.8	0.40	94	0.330	30.6 30.7	9.80 9.79	149.3 149.2	3.4 3.6	30.14 23.67 23.67	8.63 8.63	5 4	3.7 3.4 3.3
45						1.00			29.8 29.8 26.3	9.43 9.41 8.25	141.5 141.3 120.5	0.4 0.3 0.8	29.82 29.82 26.33	8.55 8.55 8.37	3 4 4	3.5 3.8 3.5
17:48	FCZ1	MF	841180.6	835230.8	6.2	3.10 5.20	176	0.240	26.3 26.3 26.3	8.23 7.15 7.16	120.3 120.3 104.4 104.4	0.8 1.6 1.4	26.33 26.26 26.25	8.36 8.29 8.29	3 3 3	3.4 3.2 3.2

Remarks: MF - Middle Flood tide

ME - Middle Ebb tide

For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.

For Chorophyll-a, if the monitoring result is less than Limit of Report 0.lg/L, the result value will be assumed as 0.1 for the calculation.

ampling Date:	24-Sep-1	8				past 11	uto: Quanty	Monitori	ng Kesu	iit						
Weather:	Fine Moderate															
Date / Time	Location	Tide*	Co-ord	linates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	DO Saturatio n	Turbidity	Salinity	рН	ss	Chlorophyll
			East	North	m	m	degrees	m/s	ొ	mg/L	%	NTU	ppt	unit	mg/L	μg/L
	G1	ME	841483.9	835936.1												
	R1	ME	842307.4	835718.4												
	R2	ME	840739.4	836212.4												
	l1	ME	841338.5	836588.5												
	12	ME	841590.3	836601.2												
	13	ME	841807.0	836680.9												
	W1	ME	841858.9	836571.0												
	M1	ME	840822.2	836416.4												
	FCZ1	ME	841180.6	835230.8												
18:51	G1	MF	841483.9	835936.1	6.9	1.00 3.45 5.90	253	0.208	28.8 28.8 28.3 28.3 28.0 28.0	7.72 7.73 7.20 7.21 6.80 6.81	114.9 115.0 101.4 101.4 90.4 90.4	0.3 0.3 0.4 0.5 0.8	26.72 26.73 28.01 28.01 29.03 29.04	8.38 8.39 8.36 8.37 8.30 8.31	3 3 3 4 4	3.3 3.2 3.8 3.3 3.3 3.0
19:03	R1	MF	842307.4	835718.4	8.3	1.00 4.15 7.30	121	0.129	28.4 28.4 28.3 28.3 28.1 28.1	7.32 7.33 6.92 6.93 5.99 6.00	109.2 109.2 94.3 94.3 86.4 86.4	0.0 0.2 0.2 0.5 0.5 0.9	25.81 25.82 27.42 27.43 29.51 29.52	8.42 8.43 8.39 8.40 8.21 8.21	3 3 3 3 3 4	3.9 3.8 3.7 3.8 3.7 3.6
18:25	R2	MF	840739.4	836212.4	5.6	1.00	272	0.152	28.9	8.19 8.20 6.90 6.89	121.7	0.4 0.4 0.2 0.3	25.64 25.65 29.43 29.44	8.36 8.35 8.30 8.32	5 3 5 5	3.8 3.6 3.9 4.0
18:05	l1	MF	841338.5	836588.5	4.8	1.00	183	0.182	28.7 28.7 28.6 28.6	7.52 7.53 6.52	109.2 109.3 94.3 94.3	0.2 0.2 0.2 0.9	27.23 27.25 29.24 29.24	8.30 8.32 8.25 8.26	3 3 3	3.8 3.9 4.1 4.0
17:54	12	MF	841590.3	836601.2	6.8	1.00 3.40 5.80	96	0.184	28.7 28.7 28.4 28.4 29.5 29.4	6.53 7.63 7.64 7.28 7.27 6.09	112.3 112.4 103.6 103.5 90.3	0.2 0.2 0.4 0.4 0.9	25.43 25.44 26.39 26.40 29.23	8.34 8.33 8.30 8.31 8.27	3 3 3 4 3	3.9 3.8 3.5 3.6 4.0
17:40	13	MF	841807.0	836680.9	8.4	1.00 4.20 7.40	198	0.065	29.4 29.0 29.0 28.3 26.3 26.3	6.08 7.90 7.91 7.31 7.32 5.45 5.46	90.3 116.9 117.0 101.6 101.6 82.0 82.1	0.9 0.3 0.3 0.4 0.4 0.9	29.24 24.67 24.68 26.99 26.98 29.71 29.72	8.28 8.18 8.19 8.29 8.30 8.01 8.02	3 3 2 2 3 5	3.8 3.9 3.7 4.2 4.5 4.0 3.9
19:17	W1	MF	841858.9	836571.0	7.7	1.00 3.85 6.70	254	0.048	28.8 28.8 28.5 28.5 28.2 28.3	7.21 7.21 6.98 6.97 5.81 5.82	106.5 106.5 96.4 96.4 84.3 84.3	0.3 0.3 0.7 0.8 0.9	25.54 25.53 26.59 26.58 27.83 27.84	8.37 8.36 8.35 8.34 8.17 8.18	3 4 5 3 3 4	3.7 3.7 3.2 3.1 3.8 3.3
18:17	M1	MF	840822.2	836416.4	1.0	0.50	170	0.055	28.8		101.4 101.5	0.7	26.32 26.33	8.34 8.35	5 3	3.8
						1.00			28.9	7.34	109.9 109.8	0.2	25.94 25.95	8.36 8.37	2	3.6 3.8

MF - Middle Ebb tide

For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.

For Chorophyll-a, if the monitoring result is less than Limit of Report 0.1µg/L, the result value will be assumed as 0.1 for the calculation.

Sampling Date:		8					ater Quality									
Weather:	Fine Moderate						·	_			·					
Sea Condition: Date / Time	Location	Tide*	Co-ord	inates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	DO Saturatio n	Turbidity	Salinity	рН	ss	Chlorophyll-
			East	North	m	m	degrees	m/s	<u>ዮ</u>	mg/L 7.34	% 111.9	NTU 0.1	ppt	unit	mg/L	µg/L
						1.00			29.7 29.7	7.60	114.4	0.1	26.36 26.40	8.45 8.47	2	3.6 3.9
13:15	G1	ME	841483.9	835936.1	7.0	3.50	213	0.102	28.2 28.1	6.54	99.5 98.9	0.2	30.31 30.39	8.24 8.22	2	3.3 3.5
						6.00			27.4	5.84	89.1	4.3	30.89	8.14	3	3.5
									27.4 29.6	5.73 7.57	89.0 115.3	4.5 0.3	30.92 26.41	8.13 8.49	2	3.4 3.5
						1.00			29.6	7.56 6.50	114.8 98.1	0.2 0.5	26.41 29.97	8.49	2	3.3 3.8
13:26	R1	ME	842307.4	835718.4	8.0	4.00	313	0.247	28.3 28.3 27.4	6.54	98.5	0.4	30.29	8.33 8.30 8.13	2	3.9
						7.00			27.4 27.4	5.57 5.55	84.3 84.2	4.3 4.4	30.86 30.79	8.13 8.14	2	4.6 4.1
						1.00			29.7	7.04	107.5	0.6	26.23	8.41	2	4.0
10.57	DO.	NAT.	040720 4	026242.4	6.7		342	0.128	29.7 28.6	7.05 5.94	107.6 91.1	0.5 1.3	26.16 29.93	8.41 8.25	3 2	4.1 4.1
12:57	R2	ME	840739.4	836212.4	6.7	3.35	342	0.128	28.6	5.90 4.24	90.7	1.2	30.07	8.26 7.97	2	3.7
						5.70			27.4 27.5	4.29	64.1 64.3	5.8 6.1	30.83 30.78	7.97	2	3.6 3.6
						1.00			29.3 29.3	7.20 7.31	108.9 110.6	0.2	26.13 26.13	8.42 8.42	2	3.4 3.8
12:35	11	ME	841338.5	836588.5	5.5		338	0.313	20.0	7.01	110.0	0.1	20.10	0.12		0.0
						4.50			27.8	5.35	81.0	3.4	30.64	8.10	2	3.8
						4.50			27.7	5.20 7.27	78.4	3.3 0.4	30.66	8.09 8.44	3	3.7
						1.00			29.3 29.3 27.5	7.24	110.60 109.70	0.3	26.42 26.44	8.43	2	3.9 3.7
12:27	12	ME	841590.3	836601.2	9.2	4.60	235	0.153	27.5 27.5	6.27 6.21	94.40 93.90	0.8	30.80 30.82	8.21 8.23	2	5.2 6.2
						8.20			27.2	5.37	80.30	3.3	31.04	8.09	2	5.3
								<u> </u>	27.2 29.3	5.35 7.11	80.10 108.0	3.3 0.8	31.05 27.73	8.10 8.46	2	3.8
						1.00			29.3	7.12	108.2	0.7	27.63	8.41	2	3.5
12:15	13	ME	841807.0	836680.9	8.5	4.25	219	0.037	27.7 27.7 27.0	6.34 6.35	96.2 96.7	0.8	30.68 30.71	8.20 8.21 7.95	3 3	6.3 3.1
						7.50			27.0 27.0	4.03 4.01	60.3 60.1	1.3 1.4	31.25 31.25	7.95 7.94	3	5.3 5.2
						1.00			29.5	7.54	114.1	0.1	26.33	8.49	2	3.4
									29.5 27.6	7.51 6.69	113.9 100.7	0.1	26.40 30.73	8.49 8.26	4	3.2 3.6
13:38	W1	ME	841858.9	836571.0	9.3	4.65	219	0.197	27.6	6.61	99.2	0.4	30.74	8.24	3	3.7
						8.30			27.2 27.2	5.67 5.65	86.2 86.0	2.3	31.03 31.07	8.11 8.09	2	4.3 4.3
										0.00	00.0	2.0	01.07	0.00	Ĺ	7.0
12:46			0.400000.0	000440.4	1.1	0.55	118	0.192	29.6	7.29	110.0	0.4	26.02	8.42	2	5.0
12:46	M1	ME	840822.2	836416.4	1.1	0.55	110	0.192	29.6	7.31	110.3	0.4	26.01	8.41	2	5.0
						1.00			29.8 29.8	7.65 7.72	117.0 117.4	0.5	27.27 27.25	8.48 8.47	2	9.2 9.6
13:04	FCZ1	ME	841180.6	835230.8	5.8		135	0.303	20.0		11711	0.1	27.20	0. 17		0.0
						4.80			27.7	4.89 4.88	75.4	2.9	30.62	8.12	2	11.0
						4.00			27.7 27.7	4.88	75.4 75.3	2.9 3.0	30.65	8.12	4	12.0
						1.00			29.1	6.99	105.5	0.8	26.51	8.43	2	2.5
									29.1 28.1	7.05 6.56	106.0 99.4	0.7	26.54 30.27	8.44 8.31	2	2.4
8:19	G1	MF	841483.9	835936.1	7.5	3.75	67	0.790	28.1	6.57	99.5	0.2	30.28	8.28	2	2.3
						6.50			27.3 27.3	5.17 5.18	78.0 78.2	4.4	30.95 30.95	8.11 8.10	2	2.3 2.3
						1.00			28.8 28.8	7.03 7.11	105.5 106.0	0.7	28.82 28.83	8.48 8.44	2	4.3 4.2
8:31	R1	MF	842307.4	835718.4	8.3	4.15	263	0.179	27.9	6.04	91.3	0.9	27.89	8.24	3	3.9
0.01	IXI	IVII	042307.4	0337 10.4	0.0		200	0.170	27.9 26.9	6.06 4.88	91.2 73.4	0.8 2.4	27.89 26.93	8.26 8.14	3	3.9 3.7
						7.30			26.9	4.86	73.2	2.3	26.91	8.13	2	3.8
						1.00			29.1 29.1	6.84 6.95	104.1 104.7	0.6 0.5	26.40 26.46	8.44 8.45	<u>2</u> 5	3.4 3.4
7:49	R2	MF	840739.4	836212.4		0.00	328	0.135	28.0	5.42	82.1	0.7	30.46	8.19	2	3.1
						-1.00			28.0 27.4	5.44 4.33	82.6 65.0	0.8 4.0	30.48 30.85	8.20 8.04	3	2.9 2.7
									27.4 28.4	4.27 6.66	64.4 99.5	4.1 0.5	30.85 26.22	8.03 8.39	3	2.8 2.9
						1.00			28.4	6.71	100.0	0.4	26.23	8.40	2	2.7
7:20	I1	MF	841338.5	836588.5	8.8	4.40	275	0.068	27.9 27.7	6.23 5.82	94.8 88.9	0.5	30.47 30.66	8.33 8.34	2	2.6 2.4
						7.80			27.5	5.40	80.9	1.9	30.82	8.12	2	2.4
	 							1	27.5 29.3	5.38 7.20	81.2 108.8	2.0 0.8	30.82 26.93	8.14 8.47	2	4.2 1.9
						1.00			29.3	7.20 6.54	108.9	0.9	26.93 30.48	8.48 8.31	3	2.5 2.5
7:13	12	MF	841590.3	836601.2	9.2	4.60	343	0.033	27.9	6.55	98.8 99.0	0.7	30.47	8.31	2	2.8
						8.20			27.1 27.1	6.66 6.68	99.8 100.1	1.9 1.9	31.17 31.16	8.10 8.09	2	3.8 2.9
						1.00			27.6	7.80	144.5	0.8	25.90	8.43	2	3.5
7.00	l		044607.5	000000	6.0		20	0.400	27.6 28.1	7.82 6.02	144.6 91.9	1.0	25.90 30.35	8.43 8.29	2	3.0
7:02	13	MF	841807.0	836680.9	6.6	3.30	30	0.103	28.1	5.89	90.9	1.0	30.33	8.28	2	3.5
			<u> </u>		L	5.60	<u></u>		27.3 27.3	5.24 5.19	79.7 78.5	2.0	30.98 30.98	8.13 8.12	2	3.7 2.7
						1.00	-		29.2	7.22	108.9	0.6	26.56	8.48	2	3.0
	W1	MF	841858.9	836571.0	11.0	5.50	198	0.052	29.2 27.5	7.16 5.64	108.2 87.6	0.5 1.8	26.57 30.57	8.49 8.21	2	2.9 2.9
8:45	I ** '	IVII	5-1000.9	00007 1.0	11.0		130	5.002	27.5 26.9	5.62	87.5 64.1	1.9	30.60 31.40	8.20 8.04	2	3.5 4.0
8:45						10.00		ļ	26.9	4.26 4.25	63.9	2.3 2.4	31.43	8.05	2	3.9
8:45					1											
8:45									00.0		404.4					2.0
	NA1	ME	8408วว ว	836416 4	1 2	0.60	200	0.040	28.9	6.79	101.4	0.9	26.29	8.42	2	2.9
7:33	M1	MF	840822.2	836416.4	1.2	0.60	200	0.049	28.9	6.79	103.6	0.9	26.29 26.33	8.42 8.43	2	3.3
	M1	MF	840822.2	836416.4	1.2	0.60	200	0.049								
	M1	MF	840822.2	836416.4	1.2	1.00	200	0.049	28.9	6.83	103.6	0.8	26.33	8.43	2	3.3
7:33									28.9	6.83	103.6	0.8	26.33	8.43	2	3.3
	M1	MF MF	840822.2 841180.6	836416.4 835230.8	1.2 5.8		200	0.049	28.9	6.83	103.6	0.8	26.33	8.43	2	3.3

Remarks: MF - Middle Flood tide

ME - Middle Ebb tide

For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.

For Chorophyll-a, if the monitoring result is less than Limit of Report 0.lig/L, the result value will be assumed as 0.1 for the calculation.

Sampling Date:		8				Impact W	uumty		J							
Weather: Sea Condition:	Fine Moderate															
Date / Time	Location	Tide*	Co-ord	linates	Water Depth	Sampling Depth	Current Direction	Current Speed	Temp	DO Conc	DO Saturatio n		Salinity	pН	ss	Chlorophyll-
			East	North	m	m	degrees	m/s	℃	mg/L 7.26	% 111.2	NTU 0.1	ppt 27.74	unit 8.47	mg/L 4	μg/L 2.5 2.5 2.4
						1.00			29.3	7.26 7.27	111.2	0.2	27.74	8.47	3	2.5
15:19	G1	ME	841483.9	835936.1	7.2	3.60	349	0.252	28.3 28.3	6.76 6.77	102.3 102.4	0.2 0.1	30.41 30.41	8.31 8.31	3	2.4
						6.20			28.1 28.1	6.06	93.3 93.4	4.1 4.2	30.60 30.60	8.23 8.23	3	2.6 2.2
						1.00			29.4 29.4 28.8	7.29 7.30	110.9 111.0	0.1	27.27 27.27 28.02	8.51 8.51	4	2.6
15:42	R1	ME	842307.4	835718.4	8.4	4.20	102	0.500	28.8	7.01	107.3	0.3	28.02	8.47	3	2.6 2.5 2.7 2.4
						7.40			28.8 28.0	6.69 6.13	107.1 93.6	0.2 1.9	28.02 30.58	8.47 8.23	3	2.7
									28.0 30.0	6.12 7.44	93.5 114.3	2.0 0.4	30.58 26.32	8.23 8.49	3	2.4 3.0
						1.00			30.0	7.45	114.5	0.4	26.37	8.49	3	3.6
14:44	R2	ME	840739.4	836212.4	8.5	4.25	62	0.271	28.4 28.4	6.81	103.6 103.5	0.2	30.32 30.30	8.31 8.32	3	2.9 3.2
						7.50			30.8 30.8	5.50 5.44	84.6 84.6	3.9 4.0	30.76 30.76	8.15 8.15	3	3.3 3.3 2.4
						1.00			29.4 29.4	7.33 7.35	111.9 112.0	0.7	27.40 27.40	8.47 8.47	3	2.4 2.8
14:08	11	ME	841338.5	836588.5	10.0	5.00	230	0.082	28.6	6.94	106.6	0.4	30.04	8.33	4	2.5
						9.00			28.6 28.0	6.95 5.92	106.7 91.1	0.3 3.5	30.04 30.63	8.33 8.19	3	2.7 2.5
									28.0 29.1	5.93 7.13	91.2 109.40	3.4 0.1	30.63 28.38	8.19 8.43	2	2.6 2.6
						1.00			29.1 28.5	7.14 6.79	109.50 104.00	0.1 0.1	28.38 30.14	8.43 8.32	3	2.9 2.8
13:48	12	ME	841590.3	836601.2	9.0	4.50	164	0.152	28.5	6.80	104.10	0.2	30.14	8.32	3	2.6
						8.00			27.7 27.7	5.62 5.63	84.40 84.50	1.7 1.6	30.87 30.87	8.12 8.12	3	3.1 2.8
						1.00			29.7 29.7	7.10 7.11	108.1 108.2	0.5 0.6	27.35 27.35	8.45 8.45	3	3.1 3.1
13:35	13	ME	841807.0	836680.9	9.0	4.50	46	0.061	28.5	6.86	104.5	0.5	30.20	8.30	3 4	2.9
						8.00			28.5 27.9	6.86 5.71 5.72	104.5 86.2	0.4 4.0	30.20 30.75	8.30 8.16	3	3.1 3.1
									27.9 29.2	5.72 7.30	86.3 111.0	4.0 0.2	30.75 26.79	8.16 8.49	3	3.3 3.2
						1.00			29.2 28.5	7.32 6.74	111.3 102.3	0.1 0.1	26.79 29.97	8.49 8.33	4	3.1 3.1
15:59	W1	ME	841858.9	836571.0	9.0	4.50	359	0.044	28.5	6.75	102.4	0.2	29.97	8.33	3	3.0
						8.00			28.0 28.0	6.13	93.4 93.5	0.7	30.56 30.56	8.26 8.26	3	3.2 3.1
14:29	M1	ME	840822.2	836416.4	1.2	0.60	57	0.169	30.1	7.26	110.8	0.5	26.42	8.48	3	3.0
			0.10022.2	00011011		0.00			30.1	7.27	110.9	0.4	26.42	8.48	4	3.1
									29.7	7.42	111.9	0.2	26.78	8.50	3	3.0
						1.00			29.7	7.41	111.8	0.1	26.78	8.50	3	3.2
15:02	FCZ1	ME	841180.6	835230.8	5.9		234	0.297								
						4.90			27.9 27.9	5.46 5.46	83.3 83.3	1.8 1.7	30.81 30.81	8.12 8.12	3	3.1 2.5
									29.1	7.09	106.7	0.2	27.45	8.49	4	2.8
						1.00			29.1	7.10	106.8	0.2	27.46	8.50	3	3.0
9:00	G1	MF	841483.9	835936.1	8.5	4.25	322	0.010	28.3 28.3	6.44 6.43	97.6 97.5	0.3	30.28 30.29	8.34 8.35	3	2.8 2.8
						7.50			27.6	4.85 4.84	75.2 75.3	1.0	30.77 30.76	8.12 8.13	3	3.1 3.0
						1.00			28.6 28.6	7.01 7.02	104.5 104.4	0.2	27.05 27.06	8.51 8.52	3	3.3 3.6
9:15	R1	MF	842307.4	835718.4	8.1	4.05	270	0.064	28.6	6.52	98.7	0.5	28.99	8.40	4	3.7
						7.10			28.6 28.0	6.51 4.90	98.6 76.4	0.5 0.9	28.98 30.51	8.41 8.29	3 4	3.6 3.4
						7.10			28.0 29.1	4.91 6.92	76.3 103.6	0.9	30.52 26.13	8.30 8.45	3	3.3 3.5
						1.00			29.1	6.93	103.7	0.6	26.14	8.44	4	4.0
8:30	R2	MF	840739.4	836212.4	7.5	3.75	260	0.241	28.6 28.6	6.51 6.52	98.8 98.9	0.9	29.50 29.51	8.39 8.40	3	3.9 3.7
						6.50			28.1 28.1	5.68 5.67	87.2 87.3	1.1	30.42 30.43	8.22 8.23	3	3.6 4.0
						1.00			28.8	6.69 6.68	102.6 102.5	0.6 0.7	28.84 28.83	8.37 8.36	3	2.7 2.7
8:02	11	MF	841338.5	836588.5	7.4	3.70	62	0.271	28.4	6.35	97.0	0.1	30.09	8.30	3	2.6
						6.40			28.3 27.8 27.8	6.36 5.28	97.1 79.3	0.1	30.08 30.71	8.31 8.14	3	2.7 2.8
									27.8 28.8	5.29 7.11	79.4 108.7	0.9	30.72 27.27	8.15 8.45	3	2.6 2.6
						1.00			28.9	7.10	108.6	0.6	27.28 30.31	8.44	3	2.6 3.1
7:45	12	MF	841590.3	836601.2	11.0	5.50	26	0.002	28.2 28.2	6.37 6.38	98.2 98.3	0.1	30.32	8.33 8.34	3	3.1
			<u>L</u>	<u>L</u>		10.00		L	27.9 27.9	5.65 5.64	86.1 86.2	0.7 0.7	30.55 30.56	8.25 8.24	3	3.2 2.9
						1.00			29.1 29.1	7.05 7.06	106.9 107.0	0.1 0.1	27.32 27.31	8.42 8.41	3	3.0 3.7
7:30	13	MF	841807.0	836680.9	13.0	6.50	182	0.064	28.0	6.13	94.6	0.3	30.53	8.22	4	2.8 3.0
	.0		01100110	000000.0					28.0	6.14 5.22	94.7 78.6	0.3 0.7	30.54 30.75	8.23 8.14	3	3.0 2.5
						12.00			27.7 28.8	5.23 6.72	78.7 101.9	0.7 0.1	30.76 28.73	8.15 8.40	3	2.9 3.5
						1.00			28.8	6.73	102.0	0.1	28.74	8.41	3	3.5
9:30	W1	MF	841858.9	836571.0	11.0	5.50	248	0.056	28.7 28.7	6.12 6.13	94.4 94.5	0.2	29.17 29.18	8.38 8.39	3 4	3.8 4.4
						10.00			28.0 28.0	5.58 5.59	84.5 84.6	0.3	30.56 30.57	8.20 8.21	3	3.7 4.0
									_0.0	3.33	54.0	U. - †	55.51	V.E.1		7.0
0.45			0.400000.5	000440 :		0.85		0	29.0	6.83	102.6	0.5	26.35	8.43	3	4.3
8:15	M1	MF	840822.2	836416.4	1.7	0.00	57	0.169	29.0	6.84	102.7	0.5	26.36	8.44	4	4.2
						1.00			29.1	7.08	106.4	0.3	26.40	8.47	3	4.7
0.45	F074		044400.5	005000	<i>-</i> •		20.4	0.007	29.1	7.09	106.5	0.3	26.41	8.46	3	4.9
8:45	FCZ1	MF	841180.6	835230.8	5.9		234	0.297								
									27.8	4.84	73.2	1.4	30.66	8.13	4	4.6

Remarks: MF - Middle Flood tide

ME - Middle Ebb tide

For SS, if the monitoring result is less than Limit of Report 2mg/L, the result value will be assumed as 2 for the calculation.

For Chorophyll-a, if the monitoring result is less than Limit of Report 0.\(\text{lig/L}\), the result value will be assumed as 0.1 for the calculation.

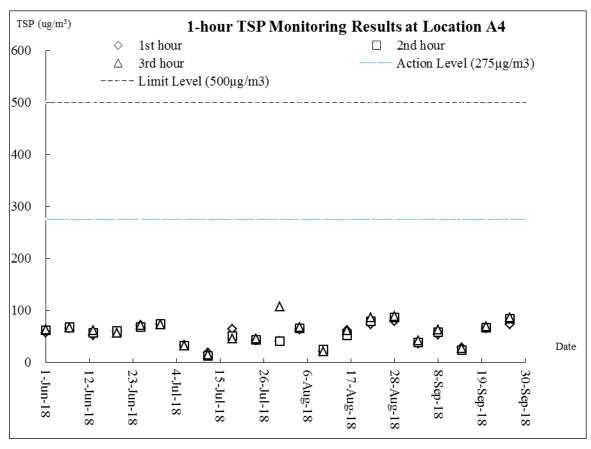


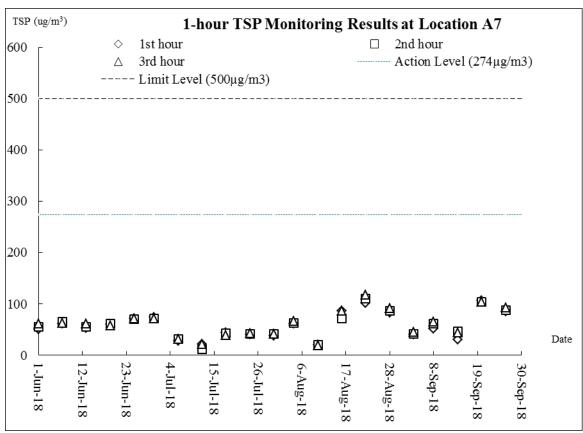
Appendix I

Graphical Plots for Monitoring Results



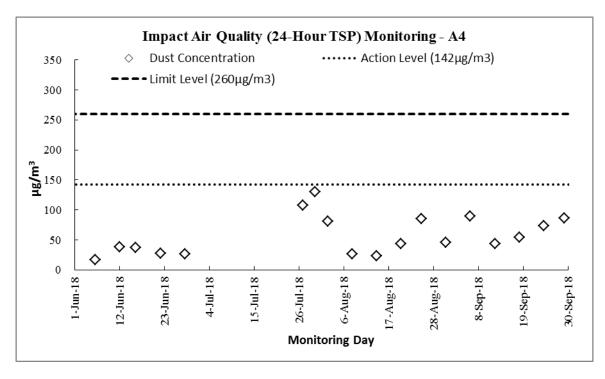
Air Quality - 1-hour TSP

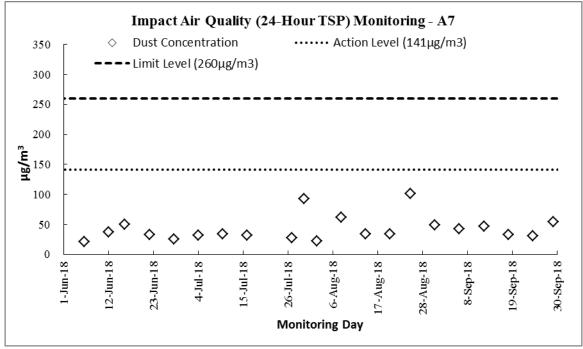






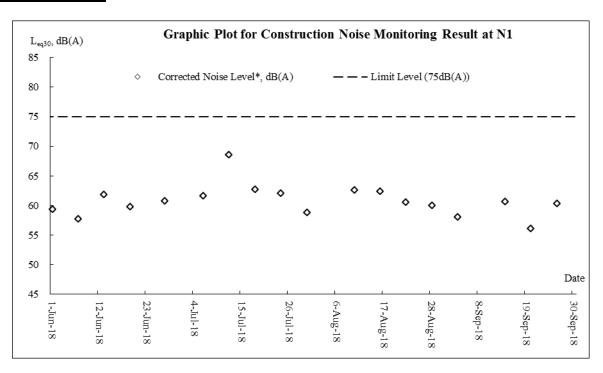
Air Quality - 24-hour TSP

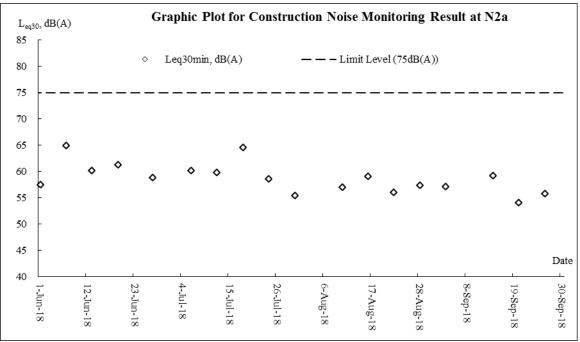




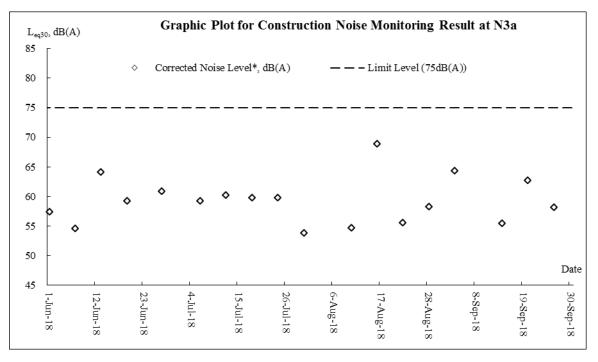


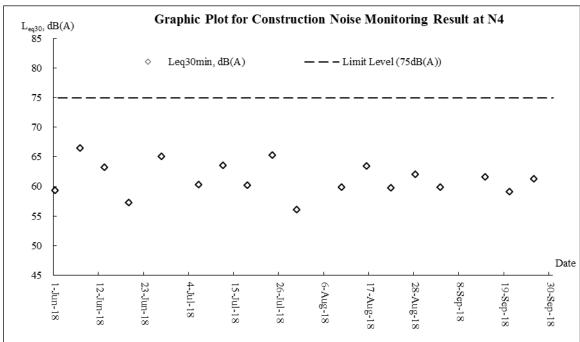
Construction Noise





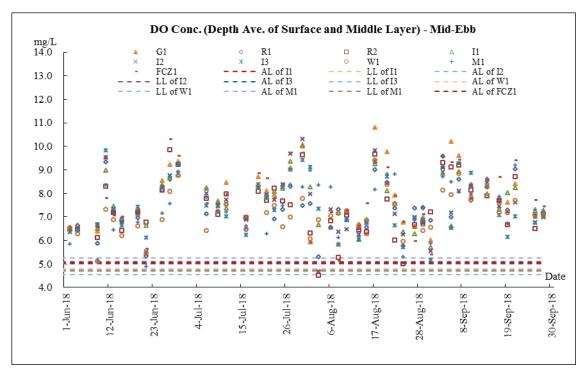


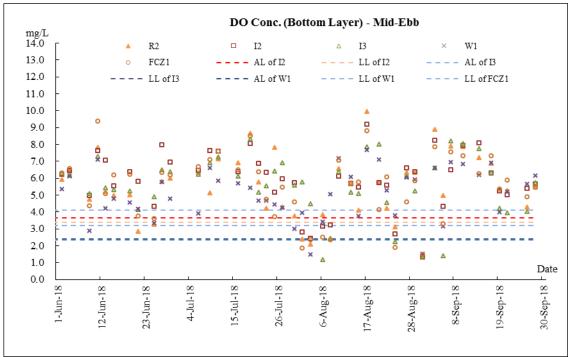




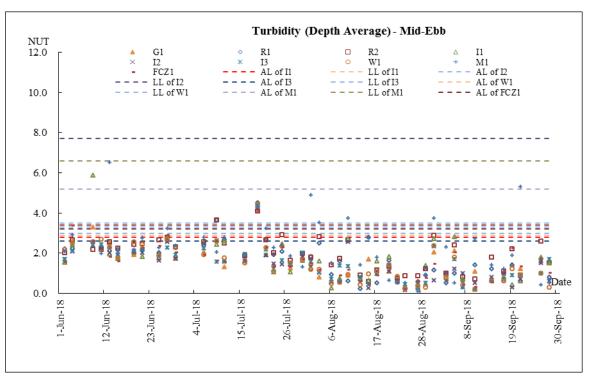


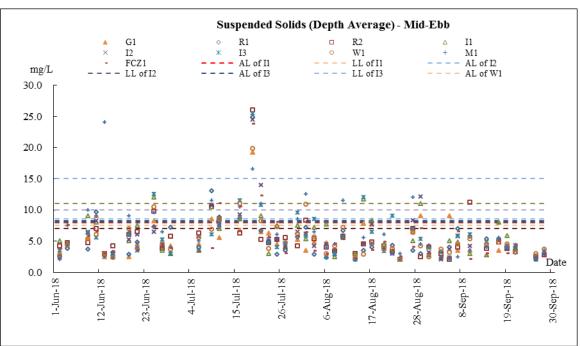
Water Quality



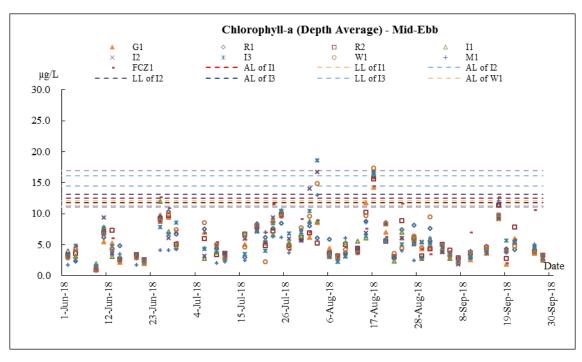


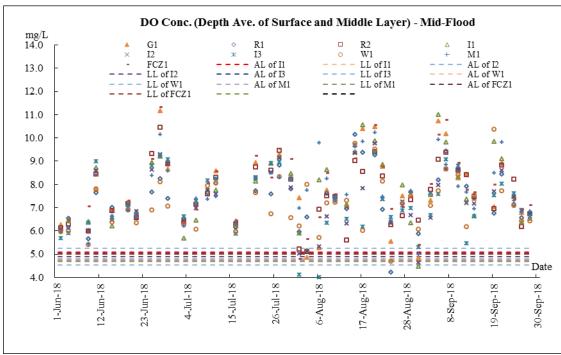




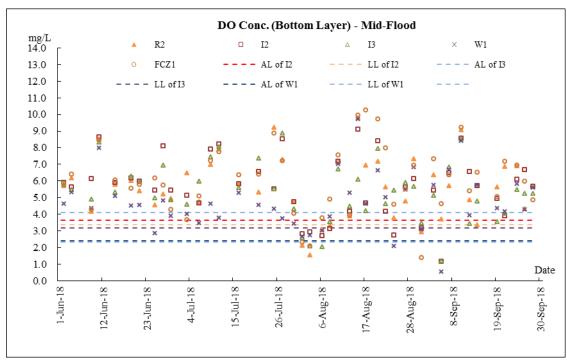


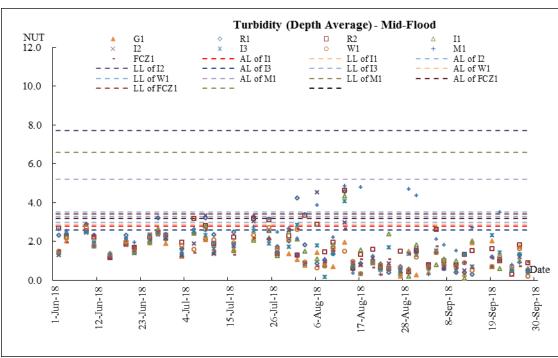




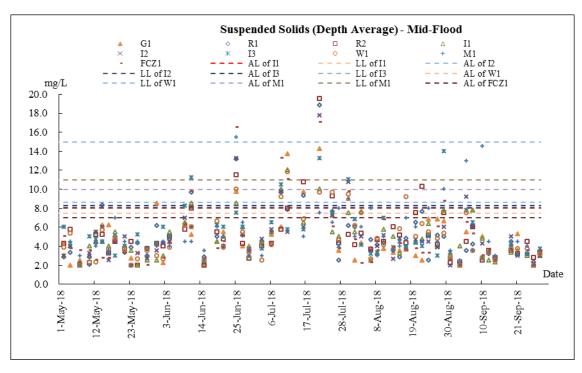


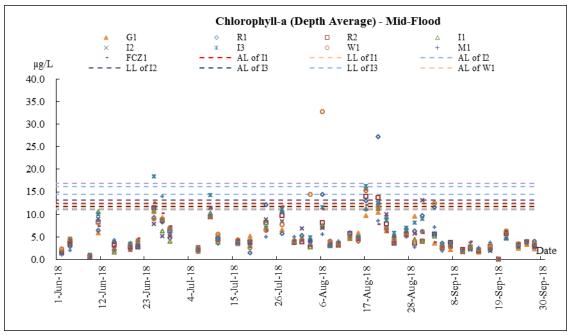














Appendix J

Meteorological Data



				Tai Po	Station	Tai Mei Tuk Station		
Date		Weather	Total Rainfall (mm)	Mean Air Temp. (°C)	Mean Relative Humidity (%)	Wind Speed (km/h)	Wind Direction	
1-Sep-18	Sat	Mainly cloudy with a few showers and isolated thunderstorms.	32	Maintenance	Maintenance	6.9	S/SW	
2-Sep-18	Sun	Mainly cloudy with isolated showers	9.8	Maintenance	Maintenance	7	W/SW	
3-Sep-18	Mon	Hot with sunny periods during the day tomorrow.	0.3	Maintenance	Maintenance	9	E/SE	
4-Sep-18	Tue	Mainly fine and hot,	0	Maintenance	Maintenance	12.3	W/SW	
5-Sep-18		Very hot. Sunny periods with isolated showers and thunderstorms.	0.1	30.4	82	12	W/SW	
6-Sep-18		Very hot with sunny periods and a few showers.	0	28.9	85.5	11.2	E/NE	
7-Sep-18		Hot with sunny periods.	Trace	29	82.5	7.5	S/SE	
8-Sep-18	Sat	Very hot with sunny periods and a few showers.	24.6	27.7	82.1	6.9	N/NE	
9-Sep-18		Mainly cloudy. Sunny intervals and isolated showers in the afternoon	16.7	26.8	81.2	16.5	Е	
10-Sep-18		Sunny periods. Isolated showers in the afternoon. Moderate easterly winds.	0.2	26.2	83.7	9.3	E/NE	
11-Sep-18		Mainly fine but hazy. Hot during the day. Moderate northerly winds.	0	27.7	69.7	8.2	N/NE	
12-Sep-18	Wed	Mainly cloudy with a few squally showers. Showers will be more frequent with thunderstorms at first.	Trace	27.6	86	26.5	E/NE	
13-Sep-18	Thu	Mainly cloudy with showers. Isolated squally thunderstorms at first.	167.5	274	88.7	26.1	E/NE	
14-Sep-18	Fri	Mainly cloudy with showers. Isolated squally thunderstorms at first.	0	28.6	87.5	18.3	NE	
15-Sep-18	Sat	Mainly fine but hazy. Hot during the day. Moderate northerly winds.	Trace	29.6	58.7	26	NE	
16-Sep-18	Sun	occasionally strong on high ground at first	167.5	28.3	93	80	SE	
17-Sep-18	Mon	Mainly fine. Moderate to fresh east to southeasterly winds	12		Maintenance		E/SE	
18-Sep-18	Tue	Mainly fine. Moderate to fresh east to southeasterly winds	1.2	Maintenance	Maintenance	16.2	Е	
19-Sep-18	Wed	Fine and hot. Light winds.	0	Maintenance	Maintenance	9.1	SE	
20-Sep-18	Thu	Sunny periods. Isolated showers later. Light winds.	0	Maintenance	Maintenance	6.5	E/SE	
21-Sep-18	Fri	Fine. Very hot in the afternoon. Light winds.	Trace	29.8	78.5	6.8	SE	
22-Sep-18	Sat	Fine and hot. Light winds.	0	28.8	84.2			
23-Sep-18		Sunny periods. Isolated showers later. Light winds.	Trace	28.9	86.2	8.3	NE	
24-Sep-18	Mon	Mainly cloudy with occasional showers and thunderstorms.	72.2	27.4	91.5	12.3	E/NE	
25-Sep-18	Tue	Mainly cloudy with one or two showers. Sunny periods tomorrow.	34.5	27.5	80	7.6	S/SE	
26-Sep-18	Wed	Mainly cloudy with one or two showers. Sunny periods tomorrow.	9.7	27.9	86	9.7	S/SW	
27-Sep-18	Thu	Fine and hot. Light winds.	Trace	27	87.5	9.7	E/SE	
28-Sep-18		Mainly fine. Dry in the afternoon. Moderate northerly winds.	0	27.6	78.7	12.7	NE	
29-Sep-18	Sat	Fine. Very hot in the afternoon. Light winds.	0	27	76.9	6.3	N/NE	
30-Sep-18	Sun	Mainly fine and dry. Moderate east to northeasterly winds.	0	26.6	77.6	5.9	N/NE	

;



Appendix K

Waste Flow Table

		Actual	Quantities of In	ert C&D Materi	ials Generated M	Ionthly	Actual	Actual (Quantities of No	on-inert C&D W	aste Generated	Monthly
Year	Mth	Total Quantities Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in Other Projects Disposed in Other Projects Chemical (see Note 2) Chemical (see Note 2	Others: tree branches, root and leaves						
		(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m ³)
	Jun	0	0	0	0	0	0	0	0	0	0	0
	Jul	0	0	0	0	0	0	0	0	0	0	0
3	Aug	0	0	0	0	0	0	0	0	0	0	0
2013	Sep	0	0	0	0	0	0	0	0	0	0	0
6	Oct	0	0	0			0	0			0	0
	Nov	0	0	0								0
	Dec	0	0	0								0
	Jan	0	0	0		-	-					0
116	:	0	0	0								0
2014-2016	Jun	0	0	0								0
)14	Sub-total:	0	0	0								0
7	:	0	0	0								0
	Oct	0	0	0								0
2016	Nov	0	0	0				_				0
7	Dec	0	0	0					_			0
	Total:	0	0	0					_			0
	Jan	0	0	0								0
	Feb	0	0	0								0.0024
	Mar	0	0	0								0
	Apr	0	0	0								0
	May	0	0	0								0.103644 0.0064
17	Jun Sub-total:	0	0	0				_				0.0064
2017	Jul	0	0	0		-						0.112444
	Aug	0	0	0								0.01104
	Sep	0	0	0								0.02883
	Oct	0	0	0								0.02883
	Nov	0.04875	0	0								0.26
	Dec	0.04873	0	0								0.0325
	Total:	0.04875	0	0								0.444814
	Jan	0	0	0								0.078
	Feb	0	0	0								0
	Mar	1.633125	0	0								0.0065
	Apr	1.31625	0	0								0
	May	0	0	0								0.0065
~	Jun	0	0	0								0
2018	Sub-total:	2.998125	0	0	0	2.998125	5.30196	4.97	0	0	0	0.535814
2	Jul	0	0	0								0
	Aug	1.14	0	0		1.14		0	0	0		0
	Sep	1.08	0	0								0
	Oct											
	Nov											
	Dec											
	Total:	5.218125	0	0	0	5.218125	17.48596	4.97	0	0	0	0.535814



Appendix L

Implementation Schedule for Environmental Mitigation Measures



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to		Implementation Agent	Implementation Stage	Relevant Legislation Guidelines
			address	Measures		Des C O Dec	Guidelines
Air Qu	ality – Con	nstruction Phase					
4.5.1	-	<u>Dust Control</u>					
		 a Vehicle washing facilities should be provided at the designated vehicle exit point; b Every vehicle should be washed to remove any dusty materials from its body and wheels immediately before 	To ensure dust emission is controlled and compliance with relevant statutory requirements	Project Site / During construction	Contractor	✓	Air Pollution Control (Construction Dust) Regulations
		leaving the worksite;					
		c The load carried by the trucks should be covered entirely to ensure no leakage from the vehicles;					
		d Hoarding of not less than 2.4 m high from ground level should be provided along the entire length of that portion of the site boundary adjoining a road or other area accessible to the public except for a site entrance or exit;					
		e The main haul road should be kept clear of dusty materials and should be sprayed with water so as to maintain the entire road surface wet at all the time;					
		f The stockpile of dusty materials should be either covered entirely by					



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	_	Stag	Legislation
		impervious sheets; place in an area sheltered on the top and three sides; or sprayed with water to maintain the entire surface wet at all the time;						
		g Belt conveyor system should be enclosed on the top and two sides;						
		h The height of the belt conveyor should be kept as low as possible to avoid delivery at height; and						
		i All the exposed area should be kept wet always to minimise dust emission.						
4.5.1	-	Air Quality Control						
		a All dump trucks entering or leaving the Project Site should be provided with mechanical covers in good service condition; and	To ensure air quality standards compliance with relevant statutory requirements	Project Site / During construction	Contractor		✓	ETWB TCW No 19/2005
		b Ultra-low-sulphur diesel (ULSD) should be used for all construction plant on site.						
4.7.1	-	EM&A Requirements						
		Regular site audits (at a frequency of not						



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Imp	lemei Stag		Legislation
			& Main Concerns to address	Completion of Measures		Des	C	O Dec	Guidelines
		less than once every two weeks) are recommended.	To ensure that appropriate dust control measures are implemented and good site practices are adopted	Project Site / During construction	ET and Contractor		✓		Air Pollution Control (Construction Dust) Regulations
4.7.1	3.0-3.7	Implementation of a construction dust monitoring in every six days	To ensure compliance with the relevant criterion during the construction works.	ASRs A4 (No. 101 Lung Mei Tsuen) and A6 (No. 79 Lo Tsz Tin tsuen) / during construction	ET and Contractor		✓		Air Pollution Control (Construction Dust) Regulations
Noise -	– Construc	tion Phase							
5.6.1		Site hoardings at the particular work site boundary may be provided for achieving screening effect, provided that the hoardings have no openings or gaps and meet the same specifications for movable noise barriers. The proposed movable noise barriers should be at least 3m high with a surface density of not less than 7 kg m ⁻² , which could provide a minimum of 5 dB(A) attenuation. Skid footing of movable noise barriers should be located at a distance not more than a few metres of stationary plant and mobile plant such that the NSRs would not have direct line of sight to the plant. The length of the barriers should also be at least five times greater than its height.	To reduce the construction noise impact.	Project Site / During construction	ET and Contractor		✓		Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1	-	The following Quiet Powered Mechanical	To reduce the construction	Project Site / During	Contractor		✓		Noise Control



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	_	Stag	Legislation
(Table 5.12)		Equipment (PME) should be used during the construction Phase.		construction phase				Ordinance (NCO) and
		 Mobile Crane, SWL listed in the data base of quality powered mechanical equipment prepared by the Noise Control Authority, 107 dB(A); 						Annex 5 of the EIAO-TM
		 Tracked Loader, British Standard 5228 – Table C3, Reference No. 16, 104 dB(A); 						
		 Pneumatic breaker, British Standard 5228 – Table C2, Reference No. 10, 110 dB(A); 						
		 Concrete Lorry Mixer British Standard 5228 – Table C6, Reference No. 23, 100 dB(A); and 						
		• Excavator British Standard 5228 - Table C3, Reference No. 97, 105 dB(A).						
5.7.1	-	Construction Works on Land						
(Table 5.13)		Movable noise barrier should be provided for excavator and mobile crane;	To reduce the construction noise impact.	Project Site / During the Site Formation,	Contractor		✓	Noise Control Ordinance
		Timber sawing machine should be operated behind site hoarding/ movable noise barrier; and	ed c er; s	construction of seawall, ramp, staircase, retaining walls, sump tanks for				(NCO) and Annex 5 of the EIAO-TM
		Concrete lorry mixer should be operated behind site hoarding/movable noise barrier.		grey water system and superstructure				



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	•	Sta	Legislation
5.7.1 (Table 5.13)	-	Timber sawing machine should be operated behind movable noise barrier; and Movable noise barrier should be provided for excavator and mobile crane.	To reduce the construction noise impact.	foundation Project Site / During the localised road widening works along Ting Kok Road	Contractor		✓	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1 (Table 5.13)	-	Car Park Paving Movable noise barrier should be provided for excavator.	To reduce the construction noise impact.	Project Site / During the car park paving	Contractor		√	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1 (Table 5.13)	-	Building Works Movable noise barrier should be provided for excavator, mobile crane and earth auger; and Timber sawing machine should be operated behind site hoarding/ movable noise barrier.	To reduce the construction noise impact.	Project Site / During foundation and tanking works	Contractor		✓	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1 (Table 5.13)	-	Movable noise barrier should be provided for mobile crane; and Timber sawing machine should be operated behind site hoarding/ movable noise barrier.	To reduce the construction noise impact.	Project Site / During superstructure works	Contractor		✓	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Implementation Stage	Legislation
			& Main Concerns to address	Completion of Measures		Des C O Dec	Guidelines
5.7.1 (Table 5.13)	-	Movable noise barrier should be provided for mobile crane.	To reduce the construction noise impact.	Project Site / During building finishes & internal fitting-out	Contractor	√	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1	-	Rock filling for the Groynes					
(Table 5.13)		Movable noise barrier should be provided for excavator and derrick lighter.	To reduce the construction noise impact.	Project Site / During the construction of gabion channel	Contractor	✓	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1	-	Box Culvert Construction					
(Table 5.13)		Movable noise barrier should be provided for excavator.	To reduce the construction noise impact.	Project Site / During the construction of gabion channel	Contractor	✓	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1 (Table	-	Movable noise barrier should be provided	To reduce the construction	Project Site / During the construction of	Contractor	✓	Noise Control Ordinance
5.13)		for excavator, mobile crane; and Concrete lorry mixer should be operated behind site hoarding/movable noise barrier.	noise impact.	western culvert			(NCO) and Annex 5 of the EIAO-TM
5.7.1 (Table 5.13)	-	Concrete lorry mixer should be operated behind site hoarding/movable noise barrier.	To reduce the construction noise impact.	Project Site / During the construction of eastern culvert	Contractor	✓	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1	-	Site hoarding should be provided for work	To reduce the construction	Project Site / During	Contractor	✓	Noise Control



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Implementation Stage	Legislation
			& Main Concerns to address	Completion of Measures		Des C O Dec	Guidelines
(Table 5.13)		site.	noise impact.	the construction of 90m box culvert			Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1	_	Sand Filling					
(Table 5.13)		Movable noise barrier should be provided for excavator.	To reduce the construction noise impact.	Project Site / During the construction of gabion channel	Contractor	✓	Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
5.7.1	-	Good Site Practice					
		Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;	To reduce the construction noise impact.	Project Site / Throughout the construction period	Contractor	✓	Noise Control Ordinance (NCO) and Annex 5 of the
		Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction programme;					EIAO-TM
		Mobile plant, if any, should be sited as far from NSRs as possible;					
		Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;					
		Plant known to emit noise strongly in one direction should, wherever possible, be					



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Impl Des	Sta	ge	Relevant Legislation Guidelines
		orientated so that the noise is directed away from the nearby NSRs; and							
		Material stockpiles and other structures should be effectively utilised, wherever practicable, in screening noise from on-site construction activities.							
5.9.1	4.1	EM&A Requirements							
		Implementation of weekly construction noise monitoring at the representative NSRs.	To ensure compliance with the relevant criterion during the construction works.	N1, N2/N2a, N3 & N4/ Throughout the construction period	ET and Contractor		✓		Noise Control Ordinance (NCO) and Annex 5 of the EIAO-TM
Water 9	Quality — C	Construction Phase							
6.6.1	-	Dredging and Sandfilling Operations	To further minimise the SS	Project Site / During	Contractor		✓		-
		Sandfilling works should be carried out after the completion of groyne construction.	level during sandfilling works	sandfilling					
6.6.1 and Figure 6.20	-	A movable cage type / metal frame type silt curtain will be deployed around the dredging area next to the grab dredger prior to commencement of dredging works.	To further minimise the SS level during the dredging and sandfilling works	Project Site / During dredging and sandfilling	Contractor		✓		Annex 6 of the EIAO-TM
6.6.1 and Figure 6.21	-	Standing type silt curtains will be deployed around the proposed sandfilling extent prior to commencement of sandfilling works.	To further minimise the SS level during the dredging and sandfilling works	Project Site / During dredging and sandfilling	Contractor		✓		Annex 6 of the EIAO-TM
6.6.1	-	A hourly dredging rate of a closed grab dredger (with a minimum grab size of 3 m ³) should be less than 31 m ³ hr ⁻¹ , with	To further minimise the SS level during the dredging works	Project Site / During dredging	Contractor		✓		-



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Implemen Stag		Legislation
			& Main Concerns to address	Completion of Measures		Des C C	O Dec	Guidelines
		reference to the maximum rate for dredging, which was derived in the EIA.						
5.6.1	-	A daily filling rate should be less than 1,000 m ³ day ⁻¹ , which was defined in the EIA.	To further minimise the SS level during the sandfilling works	Project Site / During sandfilling	Contractor	✓		-
5.6.1	-	Mechanical grabs should be designed and maintained to avoid spillage and should seal tightly while being lifted.	To further minimise the SS level during the dredging works	Project Site / During dredging	Contractor	✓		-
5.6.1	-	Barges or hoppers should have tight fitting seals to their bottom openings to prevent leakage of material.	To further minimise the SS level during the dredging and sandfilling works	Project Site / During dredging and sandfilling	Contractor	✓		-
5.6.1	-	Loading of barges or hoppers shall be controlled to prevent splashing of dredged material to the surrounding water.	To further minimise the SS level during the dredging works	Project Site / During dredging	Contractor	✓		-
5.6.1	-	Barges or hoppers should not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation.	To further minimise the SS level during the dredging and sandfilling works	Project Site / During dredging and sandfilling	Contractor	✓		-
5.6.1	-	Excess material should be cleaned from the decks and exposed fittings of barges or hoppers before the vessel is moved.	To further minimise the SS level during the dredging and sandfilling works	Project Site / During dredging and sandfilling	Contractor	✓		-
5.6.1	-	Adequate freeboard should be maintained on barges to reduce the likelihood of decks being washed by wave action.	To further minimise the SS level during the dredging and sandfilling works	Project Site / During dredging and sandfilling	Contractor	✓		-
5.6.1	-	All vessels should be sized such that adequate clearance is maintained between vessels and the seabed at all states of the	To further minimise the SS level during the dredging and sandfilling works	Project Site / During dredging and sandfilling	Contractor	✓		-



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Agent	Implementation Stage			Legislation	
			& Main Concerns to address	Completion of Measures		Des	C	O	Dec	Guidelines
		tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.								
6.6.1	-	The works should not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the Project Site.	To further minimise the SS level during the dredging and sandfilling works	Project Site / During dredging and sandfilling	Contractor		✓			ProPECC PN 1/94
6.6.1	-	Construction Site Runoff The excavation works for the drainage diversions should be carried out to minimise any seawater influx entering the works area and hence to keep the works area dry as much as possible.	To ensure the works area will be kept dry as much as possible and hence avoid construction site runoff	Project Site / During excavation for the drainage diversions	Contractor		✓			-
6.6.1 and Figure 6.21	-	Silt curtains at the inshore waters should be deployed to enclose the works area before the commencement of the excavation works for two drainage diversions until the completion of the diversions.	To avoid any adverse water quality impacts resulting from the site runoff due to heavy rainfall	Project Site / During excavation for the drainage diversions	Contractor		✓			-
6.6.1	-	At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed and internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of efficient silt removal facilities should be based on the guidelines in <i>Appendix A1</i> of <i>ProPECC PN 1/94</i> .	To minimise the construction site runoff	Project Site / During land based construction works	Contractor		✓			ProPECC PN 1/94
6.6.1	-	All the surface runoff should be collected by	To minimise the	Project Site / During	Contractor		✓			ProPECC PN



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Implementation Stage			Legislation
			& Main Concerns to address	Completion of Measures		Des	C) Dec	Guidelines
		the on-site drainage system and diverted through the silt traps prior to discharge into storm drain.	construction site runoff	land based construction works					1/94
6.6.1	-	All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks, where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or by other means.	To minimise the construction site runoff	Project Site / During land based construction works	Contractor		√		ProPECC PN 1/94
6.6.1	-	All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.	To minimise the construction site runoff	Project Site / During land based construction works	Contractor		✓		ProPECC PN 1/94
6.6.1	-	Measures should be taken to reduce the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal	To minimise the construction site runoff	Project Site / During land based construction works	Contractor		✓		ProPECC PN 1/94



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Imp	lemo Sta		tion	Legislation
			& Main Concerns to address	Completion of Measures		Des	C	О	Dec	Guidelines
		facilities.								
6.6.1	-	Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50 m ³ should be	To minimise the construction site runoff	Project Site / During land based construction works	Contractor		✓			ProPECC PN 1/94
		covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.		WOIKS						
6.6.1	-	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system.	To minimise the construction site runoff	Project Site / During land based construction works	Contractor		✓			ProPECC PN 1/94
6.6.1	-	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in <i>Appendix A2</i> of <i>ProPECC PN 1/94</i> . Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	To minimise the construction site runoff	Project Site / During land based construction works	Contractor		✓			ProPECC PN 1/94
6.6.1	-	Oil interceptors should be provided in the	To minimise the	Project Site / During	Contractor		✓			ProPECC PN



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage Des C O Dec	Relevant Legislation Guidelines
		drainage system and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	construction site runoff	land based construction works			1/94
6.6.1	-	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment traps should be regularly cleaned and maintained. The temporary diverted drainage should be reinstated to the original condition when the construction work has finished or the temporary diversion is no longer required.	To minimise the construction site runoff	Project Site / During land based construction works	Contractor	√	ProPECC PN 1/94
6.6.1	-	Sewage Generated by Workforce					
		Sewage from toilets should be collected by a licensed waste collector.	To prevent contamination to nearby environment	Project Site / During land based construction works	Contractor	✓	Water Pollution Control Ordinance
6.6.1	-	Storage and Handling of Oil, Other Petroleum Products and Chemicals	To prevent contamination to	Project Site / During	Contractor	√	Waste Disposal
		Waste streams classifiable as chemical wastes should be properly stored, collected and treated for compliance with Waste Disposal Ordinance or Disposal (Chemical Waste) (General) Regulation requirements.	nearby environment	land based construction works	Contractor	·	ordinance
6.6.1	-	All fuel tanks and chemical storage areas should be provided with locks and be sited	To prevent contamination to	Project Site / During land based construction	Contractor	✓	Waste Disposal



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	St	entation age O Dec	Legislation
		on paved areas.	nearby environment	works				Ordinance
6.6.1	-	The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters.	To prevent contamination to nearby environment	Project Site / During land based construction works	Contractor	✓		Waste Disposal Ordinance
6.6.1	-	Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal, in accordance with the <i>Waste Disposal Ordinance</i> . The Contractors should prepare guidelines and procedures for immediate clean-up actions following any spillages of oil, fuel or chemicals.	To prevent contamination to nearby environment	Project Site / During land based construction works	Contractor	√		Waste Disposal Ordinance
6.6.1	-	Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should, as far as possible, be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor.	To prevent contamination to nearby environment	Project Site / During land based construction works	Contractor	✓		Waste Disposal Ordinance
6.9.1 and 11.6.1	5.1	EM&A Requirements Monitoring of marine water quality during the construction phase is considered necessary to evaluate whether any impacts would be posed by these marine works on the surrounding waters during the operation of dredging and filling works.	To ensure the construction works would not arise any impacts to the surrounding waters	Marine water outside the Project Site / During dredging and filling works	ET and Contractor	√		-



EIA	EM&A	Environmental Protection Measures	Objectives of the	Location/Duration of	Implementation	Implementation	Relevant
Ref.	Ref		Recommended Measure	Measures/Timing of	Agent	Stage	Legislation
			& Main Concerns to	Completion of		Des C O Dec	Guidelines
			address	Measures		Des C O Dec	

.9.2	5.2	EM&A Requirements						
and 1.6.2		E. coli monitoring should be conducted at the outlet of two diverted drains and at EPD's beach water monitoring stations for the identification of pollution loading and to establish relationship between the loading and EPD's beach monitoring programme.	To investigate the pollution loading of <i>E. coli</i> and to establish relationship with EPD's beach monitoring data	Two diverted drains and the Bathing Beach/ Within six weeks after the completion of the construction works	ET	Post-Co n Phase the comp of the construct before the operation beach)	pletion etion and ne	-
Water	Quality –	Operational Phase						
5.6.2	-	Surface Runoff from Project Site						
		A petrol interceptor should be provided in the drainage system and regularly emptied to prevent the release of oil and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Where appropriate,	To prevent contamination to nearby environment	Beach Park area / During operation	Operator	✓	✓	Water Pollutio Control Ordinance and ProPECC PN 1/94



EIA Ref.	EM&A Ref		Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	_	Sta	entation age O Dec	Relevant Legislation Guidelines
		1/94.							
6.6.2	-	Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the <i>Waste Disposal Ordinance</i> .	To prevent contamination to nearby environment	Beach Building Facility / During operation	Operator	✓		✓	Waste Disposal Ordinance
Waste	Manageme	ent – Construction Phase							
7.6	-	The Contractor should submit the plan to Project Proponent's Engineer Representative for endorsement prior to the commencement of the construction works. The plan should incorporate site-specific factors, such as the designation of areas for the segregation and temporary storage of reusable and recyclable materials.	To ensure that adverse environmental impacts are prevented	Project Site / Contract mobilisation and during construction	Contractor	✓	✓		-
7.6	-	It will be the Contractor's responsibility to ensure that only reputable licensed waste collectors are used and that appropriate measures to reduce adverse impacts, including windblown litter and dust from the transportation of these wastes, are employed.	To ensure that adverse environmental impacts are prevented	Project Site / Contract mobilisation and during construction	Contractor	✓	✓		-
7.6	-	The Contractor must ensure that all the necessary permits or licences required under the Waste Disposal Ordinance are obtained for the construction phase.	To ensure compliance with relevant statutory requirements	Project Site / Contract mobilisation and during construction	Contractor	✓	✓		-
7.6	-	 Waste Management Hierarchy Nomination of approved personnel to be responsible for good site practices, 	To ensure that adverse environmental impacts are prevented	Project Site / Contract mobilisation and during construction	Contractor	✓	✓		Waste Disposal (Charges for Disposal of



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage Des C O Dec	Relevant Legislation Guidelines
		arrangements for collection and effective disposal to an appropriate facility of all wastes generated at the site:					Construction Waste) Regulation;
		 Training of site personnel in proper waste management and chemical handling procedures; 					ETWB TCW No.31/2004; and Appendix C of
		 Provision of sufficient waste disposal points and regular collection for disposal; 					ETWB TCW No. 19/2005
		 Appropriate measures to reduce windblown litter and dust transportation of waste by either covering trucks or by transporting wastes in enclosed containers; 					
		 Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre; 					
		 Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and 					
		 A recording system for the amount of wastes generated/recycled and disposal sites. 					
	-	Waste Reduction Measures	To reduce construction	Project Site / During	Contractor	✓	-
		• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse	waste generation	construction			



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Measures/Timing of	Implementation Agent	Implementation Stage			Legislation
			& Main Concerns to address	Completion of Measures		Des	C) Dec	Guidelines
		or recycling of material and their proper disposal;							
		 Encourage collection of aluminium cans and waste paper by individual collectors during construction with separate labelled bins being provided to allow the segregation of these wastes from other general refuse generated by the workforce; 							
		 Any unused chemicals and those with remaining functional capacity be recycled as far as possible; 							
		 Use of reusable non-timber formwork to reduce the amount of C&D materials; 							
		 Prior to disposal of construction waste, wood, steel and other metals should be separated, to the extent practical for re-use and/or recycling to reduce the quantity of waste to be disposed at landfills; 							
		 Proper storage and site practices to reduce the potential for damage or contamination of construction materials; and 							
		 Plan and stock construction materials carefully to reduce amount of waste generated and avoid unnecessary generation of waste. 							



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to	Location/Duration of Measures/Timing of Completion of	Implementation Agent	Stage	Legislation
			address	Measures		Des C O Dec	
7.6.1	-	Dredging Materials The final disposal site for the dredged sediments should be determined by the MFC	To ensure adverse environmental impacts are	Dredging area / During construction	Contractor	√	Dumping at Sea Ordinance
		and a dumping licence should be obtained from EPD prior to the commencement of the dredging works. Uncontaminated sediments should be disposed of at open sea disposal sites designated by the MFC. For contaminated sediments requiring Type 2 confined marine disposal, relevant contract documents should specify the allocation conditions of the MFC and EPD.	prevented	Construction			Oramance
7.6.2	-	Excavated Materials and C&D Waste					
		Management of Waste Disposal	To properly handle the	Project Site / During	Contractor	✓	Waste Disposal
		The contractor should open a billing account with EPD in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation for the payment of disposal charges. Every waste load transferred to Government waste disposal facilities such as public fill, sorting facilities, or landfills should require a valid "chit" which contains the information of the account holder to facilitate waste transaction recording and billing to the waste producer. A trip-ticket system should be established in accordance with TCW No. 6/2010 to monitor the reuse of surplus excavated materials off-site and disposal of construction waste and general refuse at	excavated materials and C&D waste and thus avoid any adverse impacts	construction			(Charges for Disposal of Construction Waste) Regulation



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to	Location/Duration of Measures/Timing of Completion of	Implementation Agent	Implementation Stage Des C O Dec	Relevant Legislation Guidelines
		transfer stations/landfills, and to control fly-tipping. The billing "chit" and trip-ticket system should be included as one of the contractual requirements and implemented by the contractor. Regular audits of the waste management measures implemented on-site as described in the Waste Management Plan should be conducted.	address	Measures		Des C O Dec	
		A recording system (similar to summary table as shown in Annex 4 and Annex 5 of <i>Appendix C</i> of ETWB TWC No. 19/2005) for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established during the construction phase.					
7.6.2	-	Reduction of C&D Materials Generation Public fill and construction waste should be segregated and stored in different containers or skips to facilitate reuse or recycling of the public fill and proper disposal of the construction waste. Specific areas of the work site should be designated for such segregation and storage if immediate use is not practicable.	To reduce the generation of C&D waste	Project Site / During construction	Contractor	•	
		To reduce the potential dust and water quality impacts of site formation works, C&D materials should be wetted as quickly as possible to the extent practicable after excavation/filling.					



EIA Ref.	EM&A Ref	f F	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Implementation Stage	Legislation
			& Main Concerns to address	Completion of Measures		Des C O Dec	Guidelines
7.6.3		Chemical Waste The Contractor should register as a chemical waste producer with the EPD. Chemical waste, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes. Containers used for the storage of chemical wastes should: • Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; • Have a capacity of less than 450 L unless the specifications have been approved by the EPD; and • Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the Regulations. The storage area for chemical wastes will: • Be clearly labelled and used solely for the storage of chemical waste; • Be enclosed on at least 3 sides;	To ensure proper handling of chemical waste	Project Site / During construction	Contractor		Code of Practice on the Packaging, Handling and Storage of Chemical Wastes



EIA	EM&A	Environmental Protection Measures	Objectives of the	Location/Duration of	Implementation	Implementation	Relevant
Ref.	Ref		Recommended Measure	Measures/Timing of	Agent	Stage	Legislation
			& Main Concerns to	Completion of		Des C O Dec	Guidelines
			address	Measures		Des C O Dec	

- Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest;
- Have adequate ventilation;
- Be covered to prevent rainfall entering (water collected within the bund must be tested and disposed of as chemical waste, if necessary); and
- Be arranged so that incompatible materials are appropriately separated.

Chemical waste should be collected by a licensed chemical waste collector to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility.



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	n Implementation Stage			Legislation
			& Main Concerns to address	Completion of Measures		Des	C () Dec	Guidelines
7.6.4	-	Sewage An adequate number of portable toilets should be provided for the on-site construction workforce during construction phase. All portable toilets should be maintained in a state that will not deter the users from using them. Night soil should be regularly collected by a licensed collector for disposal. The sewage generated from the visitors during operation of the Proposed Beach Development should be discharged to the adjacent foul sewer conveying to Tai Po Sewage Treatment Works for treatment.	To ensure proper handling of sewage	Project Site / During construction	Contractor		√		
7.6.5		General Refuse General refuse should be stored in enclosed bins or compaction units separately from construction and chemical wastes. A reputable waste collector should be employed to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to reduce odour, pest and litter impacts. The burning of refuse on construction sites is prohibited by law. Recycling bins should be provided at strategic locations to facilitate recovery of aluminium cans and waste paper from the Project Site. Materials recovered should be sold for recycling.	To ensure proper handling of general refuse	Project Site / During construction	Contractor		✓		



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	n Implementation Stage			Legislation	
			& Main Concerns to address	Completion of Measures		Des	С	O	Dec	Guidelines
7.6.6	-	Staff Training Training should be provided to workers on the concept of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling at the beginning of the construction works.	To ensure that adverse environmental impacts are prevented	Project Site / Contract mobilisation and during construction	Contractor	✓	✓			-
7.7	6.1	EM&A Requirements	To ensure that adverse environmental impacts are	Project Site / During construction	ET and Contractor		✓			-
		Joint site audits by the Environmental Team and the Contractor should be undertaken on a weekly basis. Particular attention should be given to the Contractor's provision of sufficient spaces, adequacy of resources and facilities for on-site sorting and temporary storage of C&D materials. The C&D materials to be disposed of from the Project Site should be visually inspected. The public fill for delivery to the off-site stockpiling area should contain no observable non-inert materials (e.g., general refuse, timber, etc).	prevented	Construction	Contractor					
		The waste to be disposed of at refuse transfer stations or landfills should as far as possible contains no observable inert or reusable/recyclable C&D materials (e.g., soil, broken rock, metal, and paper/cardboard packaging, etc). Any irregularities observed during the weekly site audits should be raised promptly to the Contractor for rectification.								



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage Des C O Dec	Relevant Legislation Guidelines
Ecolog	y – Cons	truction Phase					
3.10.2	7.1	Measures for Common Rat Snake To undertake a search of the Common Rat Snake within the land based Project Site just before the commencement of the construction works. Due to the small size of the Project Site and given that there are no optimal habitats for Common Rat Snake, one day-time search is considered sufficient. The surveyor(s) should actively search the areas within the Project Site and pay special attention to the leaf litters and rocks. All recorded Common Rat Snake should be caught by hand and translocated to the shrubland at the north of the Study Area, immediately after the search. The Common Rat Snake search and translocation works should be undertaken by a qualified ecologist with relevant experience in faunal translocation works.	To ensure that adverse impacts arising from the Project to Common Rat Snake are prevented	Project Site (land based) / prior to commencement of construction works	ET / Qualified Ecologist		
	7.2	Measures for marine ecology (1) To translocate target marine fauna, including fishes, starfish, sea urchins and sea cucumbers, from the intertidal area of the Site at Lung Mei to the intertidal area at the reception site of Ting Kok East before commencement of sand filling works or any other works that may cause disturbances to the	To ensure that adverse impacts arising from the Project to marine ecology	Project Site (marine based) / prior to commencement of marine works	ET / Qualified Ecologist	✓	



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage Des C O Dec	Relevant Legislation Guidelines
		existing marine ecology. The translocation works shall cover capturing, handling, holding transporting and releasing of the captured target marine fauna.					
		(2) Translocation of seahorses, including identifying, capturing, handling, protecting, transporting and placing the target seahorse species from Site at Lung Mei to the reception site of Ting Kok East, as well as pre- and post-translocation monitoring and post-construction monitoring shall be conducted. Seahorse translocation shall be undertaken before the commencement of marine construction works. The identifying, capturing, handling, protecting, transporting and placing of seahorses shall be led and supervised by the Fish Specialist.					
8.10.2	-	Dredging and Sand Filling Operations It is predicted that the sediment plume and the sediment deposition will not be large in extent and no unacceptable water impacts including DO depletion, release of contaminants and nutrients are expected. Although no unacceptable water quality impacts would result, the following good construction site practice and proactive precautionary measures are recommended to	To minimise ecological impacts arising from dredging and sand filling works	Project Site / During dredging and sand filling works	Contractor	✓	-



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent		Relevant Legislation Guidelines
		ensure dredging and sandfilling operations would be undertaken in such a manner as to avoid any uncontrolled or unexpected incidents during the marine works:					
		 A movable cage type / metal frame type silt curtain should be deployed around the dredging area next to the grab dredger prior to commencement of dredging works; 					
		 Standing type silt curtains should be deployed around the proposed sandfilling extent prior to commencement of sandfilling works; and 					
		Proper equipment, dredging rate, filling rate and good construction practices should be implemented, details refer to <i>Section 6.6.1</i> .					
3.10.2	-	Measures for Controlling Construction Runoff • Storm water run-off from the construction site should be directed into existing drainage channel via adequately designed sand/silt removal facilities such as sand/silt traps and oil interceptors. Channels, earth bunds or sand bag	To minimise ecological impacts of construction runoff	Project Site / During dredging and filling works	Contractor	√	-



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Imp	leme Sta		tion	Legislation
			& Main Concerns to address	Completion of Measures		Des	C	О	Dec	Guidelines
		barriers should be provided on site to properly direct storm water to such silt removal facilities.								
8.10.2	-	Planting along the Western Drainage Diversion • Provide tree/ shrub/ climber planting along the gabion wall of the new drainage channel. Regular monitoring and removal of the weed plant <i>Mikania micrantha</i> during the establishment and maintenance period.	To provide an ecological habitat	Along gabion wall of the new western drainage channel/ After completion of the gabion	Contractor		✓	✓		-
8.10.2		 Good Construction Practices Erect fences along the boundary of the Extension Site before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas; and Regularly check the work site boundaries to ensure that they are not breached and that damage does not occur to surrounding areas. 	To avoid any adverse ecological impacts	Project Site / During construction works	Contractor		✓			
Fisheri	es – Const	ruction Phase								
9.10.1	-	EM&A Requirements EM&A is not required during the	To ensure that no water quality deterioration in the	Details refer to Section 12.6 of the EM&A	ET and Contractor		✓			Environmental Impact



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure	Location/Duration of Measures/Timing of	Implementation Agent	Imp	lem Sta			Legislation
			& Main Concerns to address	Completion of Measures		Des	C	О	Dec	Guidelines
		construction phase of the Project. However, water quality monitoring will be conducted at the Yim Tin Tsai Fish Culture Zone. Details should be referred to the Water Quality Section.	Fish Culture Zone as a result of the dredging and sandfilling works	Manual.						Assessment Ordinance, Annex 21 of the EIAO-TM
Landsc	cape and V	isual Impact – Construction Phase								
10.5.1	-	Landscape Mitigation								
		A Landscape Plan will be submitted before the commencement of Works.	To provide landscaping work.	Before commencement of construction phase	ET and Contractor	✓				-
10.6.10) -	Cultivation of areas impacted during construction. Areas impacted during the construction phase that are not required during the operation phase, are to be cultivated to a depth of 300mm in accordance with accepted Hong Kong practice and guidelines. The cultivation shall involve ripping of compacted soil by mechanical means and the addition gypsum and/or organic fertiliser if required.	To improve the soil allowing plants to thrive	Project Site / During construction	Contractor		•			
10.6.10) -	Car Park Tree Planting. Advanced trees are to be planted in the car park.	To provide shade to the carpark areas and to reduce the mass of the paved areas	Project Site / During construction	Contractor		✓			-
10.6.10) -	Tree and shrub planting. All planting of trees and shrubs is to be carried out in accordance with the relevant best practice guidelines. Plant densities are to be provided in future detailed design documents and are to be selected so as to achieve a finished landscape that matches	To improve the appearance of the development	Project Site / During construction	Contractor			✓		-



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage Des C O Dec	Relevant Legislation Guidelines
		the surrounding, undisturbed, equivalent landscape types. Regular monitoring and removal of the weed plant <i>Mikania micrantha</i> during the establishment and maintenance period.					
10.6.10	-	Roof Terrace Planting. Trees, shrubs and climbers shall be established in planters on the roof terraces of the new structures where possible.	To improve the appearance of the development by softening the building element	Project Site / During construction	Contractor	✓	-
10.6.10	-	Natural Rock Groynes New rock groynes are needed to contain the sand of the new beach. Natural stones will be used for construction of the Groynes.	To improve the appearance of the development to make the man-made feature be more compatible with the surroundings	Project Site / During construction	Contractor	✓	-
10.6.10	-	Inter-Tidal Re-generation. It is likely that a build up of sediment and sand will occur at the outer edges of the rock groyne. This is a natural process and the development proponent has no control over the implementation of this mitigation measure.	To improve the appearance of the development	Adjacent areas	Nil	✓	-
10.6.10	-	Mangrove Re-generation. Mangroves of similar species to existing to be manually established by planting of droppings.	To improve the ecological value of the project	Project Site / During post-construction	Contractor	√	-
10.6.10	-	Buffer Planting. Trees and shrubs are to be planted along Ting Kok road to screen the development from the nearby Village/Developed Areas.	To improve the appearance of the development	Project Site / During post-construction	Contractor	✓	-



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10.6.10	-	Early Planting Works Where technically feasible, new plantings are to be installed during the construction works to reduce landscape impacts.	To improve the appearance of the development	Project Site / During construction	Contractor	✓	-
10.6.10	-	Tree Protection/Transplantation. Where technically feasible, existing trees in the Trees/Backshore Vegetation LR are to be retained. Those trees that cannot be retained that are of value are to be transplanted.	To improve the appearance of the development	Project Site / Before commencement of construction	Contractor	✓	-
0.7.9	-	Visual Mitigation					-
		Design of Structures. The structure shown in the photomontages are to illustrate the mass of the structures only. During the design phase of the development, features such as the location of doors, windows, eaves etc. will be detailed. All of these elements will greatly improve the appearance of the structures. Where possible, built structures will utilise appropriate designs to complement the surrounding landscape. Materials and finishes will also be considered during detailed design.	To reduce visual impacts and improve the appearance of the development	Project Site / During construction	Architect	√	
10.7.9	-	Colour Scheme. Colours for the structures can be used to complement the surrounding area. Lighter colours such as shades of light grey, off-white and light brown may be utilised where technically feasible to reduce the visibility of the structures.	To reduce visual impacts and improve the appearance of the development	Project Site / During construction	Architect	✓	-
10.7.9	-	Plantings. In addition to the landscape	To help integrate the new	Project Site / During	Contractor	✓	-



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			& Main Concerns to address	Completion of Measures		Des	C) Dec	Guidelines
		mitigation plantings proposed in Section 10.5.9 of the EIA report, appropriate new plantings will be installed as appropriate to help integrate the new structures into the surrounding landscape.	structures into the surrounding landscape	post-construction					
10.7.9	-	Colour of Site Hoardings. In order to mitigate the visual impact of these temporary hoardings, it is recommended that the hoardings be erected at a uniform height, with a uniform colour that complements the existing surrounding landscape.	To mitigate the visual impact of temporary hoardings	Project Site / During construction	Contractor		✓		-
-	9.2	EM&A Requirements							
		A specialist Landscape Sub-Contractor should be employed for the implementation of landscape construction works and subsequent maintenance operations during a 12-month establishment period.	To check the implementation and maintenance of landscape mitigation measures and ensure that they are fully	construction and post-construction phase	Specialist Landscape Sub-contractor,R egistered Landscape		✓		-
		A Registered Landscape Architect should be employed to supervise the specialist Landscape Sub-contractor for the implementation of landscape works, both hard and soft, involved.	hould be realised and that potential conflicts between the proposed landscape measures and any other project works and operational requirements are resolved at the earliest practical date and without compromise to the intention of the mitigation measures		Architect and ET				
		Measures undertaken by both the Contractor(s) and the specialist Landscape Sub-Contractor during the construction phase and first year post-construction will be audited by the Registered Landscape Architect of the ET.							
		Site inspections should be undertaken at							



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						Des	C	О	Dec	Guidelines
		least once every two weeks throughout the landscaping plants establishment period when planting works are being undertaken.								
		A tree survey should be prepared, for DLO submission, and for the purpose of existing trees protection. Removal of existing trees to be minimized. The Contractor should consider to employ a certified arborist when sizable and valuable existing tree(s) protection of transplant is required.								
		Post-construction phase auditing will be restricted to the 12-month establishment works of the landscaping proposals.								
		Advance planting- monitoring of implementation and maintenance of planting, and against potential incursion, physical damage, fire, pollution, surface erosion, etc.								
		Protection of trees to be retained-identification and demarcation of trees / vegetation to be retained, erection of physical protection (e.g. fencing), monitoring against potential incursion, physical damage, fire, pollution, surface erosion, etc.								
		Clearance of existing vegetation-identification and demarcation of trees / vegetation to be cleared, checking of								



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		extent of works to reduce damage, monitoring of adjacent areas against potential incursion, physical damage, fire, pollution, surface erosion, etc.	auuress	Measures			
		Transplanting of trees-identification and demarcation of trees / vegetation to be transplanted, monitoring of extent of pruning / lifting works to reduce damage, timing of operations, implementation of the stages of preparatory and translocation works, and maintenance of transplanted vegetation, etc.					
		Plant supply-monitoring of operations relating to the supply of specialist plant material (including the collecting, germination and growth of plants from seed) to ensure that plants will be available in time to be used within the construction works.					
		Soiling, planting, etc-monitoring of implementation and maintenance of soiling and planting works and against potential incursion, physical damage, fire, pollution, surface erosion, etc.					
		Architectural design and treatment of all structures (where practicable), retaining walls, elevated road structures and other engineering works-implementation and maintenance of mitigation measures, to ensure conformity with agreed designs.					
		Erection of Site Hoardings/Fences-					



EIA Ref.	EM&A Ref	Environmental Protection Measures	Objectives of the Recommended Measure & Main Concerns to address	Location/Duration of Measures/Timing of Completion of Measures	Implementation Agent	Implementation Stage Des C O Dec	Legislation
		Erection of site hoardings/fences during the construction phase to reduce visual impacts.					
		Establishment Works- monitoring of implementation of maintenance operations during Establishment Period.					

Remark: Des – Design; C – Construction; O – Operation; Dec – Decommissioning