CONTRACT NO: HY/2019/14

NEW WANG TONG RIVER BRIDGE

UNDER ENVIRONMENTAL PERMIT NO. EP-555/2018/A

MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT

MAY 2022

CLIENTS:

Highways Department

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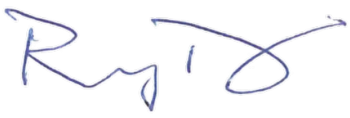

Raymond Dai
Environmental Team Leader

DATE:

14 June 2022

ANEWR

Highways Department
Works Division
7th Floor, Trade and Industry Tower
3 Concorde Road
Kowloon
Hong Kong

Your reference:

Our reference: HKHYD202/50/108064

Date: 15 June 2022

Attention: Mr Kennick Ho

BY EMAIL & POST
(email: ek3-1.wd@hyd.gov.hk)

Dear Sirs

Agreement No. WD 23/2020
Environmental Monitoring and Audit for New Wang Tong River Bridge
Monthly Environmental Monitoring & Audit Report (May 2022)

We refer to emails of 13 and 14 June 2022 attaching a Monthly Environmental Monitoring & Audit Report (May 2022) prepared by the Environmental Team (ET) of the captioned.

We have no further comment and hereby verified the Monthly Environmental Monitoring & Audit Report (May 2022) in accordance with Clause 3.4 of the Environmental Permit no. EP-555/2018/A.

Should you have any queries, please do not hesitate to contact the undersigned or our Mr Frankie Yuen on 2618 2831.

Yours faithfully
ANEWR CONSULTING LIMITED

James Choi
Independent Environmental Checker

CPSJ/LCCR/YCFF/lsmt

cc Lam Environmental Services Limited – Mr Raymond Dai (Fax no.: 2882 3331)

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EXECUTIVE SUMMARY

i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report – May 2022 of New Wang Tong River Bridge under Environmental Permit no. EP-555/2018/A (Hereafter as "the Project"). The construction works of the Project was commenced on 12 July 2021 and the tentative completion date is Q3 2024. This is the 11th EM&A report presenting the environmental monitoring findings and information recorded during the period of 01 May 2022 to 31 May 2022. The cut-off date of reporting is at the end of each reporting month.

ii. In the reporting month, the principal work activities conducted are as follow:

- Pilling construction

Noise Monitoring

iii. Noise monitoring was conducted at one noise monitoring station once per week in the reporting month.

iv. No action or limit level exceedance was recorded in this reporting period.

Air Quality Monitoring

v. 1-hour and 24-hour Total Suspended Particulates (TSP) monitoring was conducted at two monitoring station. 24-hour TSP shall be sampled at least once in every 6 days, while sampling for 1-hour TSP shall be at least 3 times in every 6 day in the reporting month.

vi. No action or limit level exceedance was recorded in this reporting period.

Water Quality Monitoring

vii. Water quality monitoring was conducted at seven monitoring stations three days per week according to the schedule in the reporting month.

viii. Owing to accessibility and safety issues, water quality monitoring at Station W3 was cancelled with verification from the IEC in November 2020 and approval from the EPD in December 2020.

ix. Water quality monitoring results before 27th May 2022 were taken as reference such that no action and limit level exceedance was concluded and recorded before the day. Review of action or limit level exceedance was conducted for water quality monitoring results after 27th May 2022 when marine-based construction work commenced.

x. Action level exceedances on DO were recorded at station W2 and W4 during mid-flood on 30 May 2022. Investigation revealed these exceedances could be due to fluctuation around background DO ranges and concluded not related to project.

xi. Limit level exceedance on turbidity and SS were recorded at station W1, W2 and W4 during mid flood on 27 May 2022. Investigation revealed these exceedances could be due high turbidity and SS levels recorded upstream at W5 and concluded not related to project.

Site Inspections and Audit

xii. The Environmental Team (ET) conducted weekly site inspections on 4, 11, 17 and 25 May 2022. IEC attended the joint site inspection on 25 May 2022. No non-compliance was found during the site inspection while reminders on environmental measures were recommended.

xiii. The Environmental Team (ET) conducted monthly landscape site inspections on 25 May 2022. No non-compliance was found during the site inspection.

Complaints, Notifications of Summons and Successful Prosecutions

xiv. No environmental complaint, notification of summons and successful prosecution regarding the construction works was recorded in the reporting period.

Reporting Changes

xv. There are no particular reporting changes.

Future Key Issues

xvi. In coming reporting 3 months, the scheduled construction activities and the recommended mitigation measures are listed as follows:

Key Construction Works	Recommended Mitigation Measures
• Piling construction	• Dust control during dust generating works; • Implementation of proper noise pollution control; • Covering noisy part of piling machine with proper sound insulation material; • Provision of surface runoff collection and perimeter protection to properly treat runoff without direct discharge into Wang Tong River; • Provision of water-tight cofferdam for piling construction in Wang Tong River; and • Proper waste handling and storage.

1 Introduction

1.1 Scope of the Report

1.1.1. Lam Environmental Services Limited (LES) has been appointed to work as the Environmental Team (ET) under Environmental Permit (EP) no. EP-555/2018/A to implement the Environmental Monitoring and Audit (EM&A) programme as stipulated in the EM&A Manual of the approved Environmental Impact Assessment (EIA) Report for New Wang Tong River Bridge (Register No.: AEIAR-199/2016).

1.1.2. In accordance with Clause 3.4 stated in EP-522/2018/A, 1 hard copy and 1 electronic copy of Monthly EM&A Report shall be submitted to the Director within 10 working days after the end of each reporting month.

1.1.3. According to Section 10.3.1 of the Project EM&A Manual, the Monthly EM&A Report should be submitted within 10 working days of the end of each reporting month, with the first report due in the month after construction commences.

1.2 Structure of the Report

Section 1 ***Introduction*** – details the scope and structure of the report.

Section 2 ***Project Background*** – summarizes background and scope of the project, site description, project organization and contact details of key personnel during the reporting period.

Section 3 ***Status of Regulatory Compliance*** – summarizes the status of valid Environmental Permits / Licenses during the reporting period.

Section 4 ***Monitoring Requirements*** – summarizes all monitoring parameters, monitoring methodology and equipment, monitoring locations, monitoring frequency, criteria and respective event and action plan and monitoring programmes.

Section 5 ***Monitoring Results*** – summarizes the monitoring results obtained in the reporting period.

Section 6 ***Compliance Audit*** – summarizes the auditing of monitoring results, all exceedances environmental parameters.

Section 7 **Environmental Site Audit** – summarizes the findings of weekly site inspections

undertaken within the reporting period, with a review of any relevant follow-up actions within the reporting period.

Section 8 ***Complaints, Notification of summons and Prosecution*** – summarizes the cumulative statistics on complaints, notification of summons and prosecution

Section 9 ***Conclusion***

2 Project Background

2.1 Background

2.1.1. Silver Mine Bay is a popular bathing beach in Mui Wo, Lantau that attracted 4,550 visitors on a peak day and over 69,000 visitors utilized the beach in 2012.

2.1.2. In order to relieve the overcrowding problem and the road safety concern of Wang Tong Bridge (hereafter called "Old Bridge"), two bridges (pedestrian bridge and cycle bridge) are proposed to replace the Old Bridge. The new pedestrian bridge and the new cycle bridge (hereafter called "New Bridge") are also designed to align with the future amenity development on the northern side of the Old Bridge. The location of the project site is shown in ***Figure 2.1***.

2.1.3. The Project consists of a designated project under Part I, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) which is Item C.12 – (a)…a dredging operation which is less than 500m from the nearest boundary of an existing…(iii) bathing beach…

2.1.4. The major components of the Project under Environmental Permit (EP) (EP No. EP-555/2018/A) comprises: (i) demolition of the existing Wang Tong River Bridge; and (ii) construction of a new twin bridge with segregation for pedestrians and cyclists.

2.2 Project Organization and Contact Personnel

2.2.1 Highways Department is the overall project controllers for the Project. For the construction phase of the Project, Contractor(s), Environmental Team and Independent Environmental Checker are appointed to manage and control environmental issues.

2.2.2 The project organization and lines of communication with respect to environmental protection works are shown in ***Figure 2.2***. Key personnel and contact particulars are summarized in ***Table 2.2***:

Table 2.2 Contact Details of Key Personnel

Party	Role	Post	Name	Contact No.	Contact Fax
Highways Department (HyD)	The Engineer for the Contract	Senior Engineer	Mr. Terry Chung	3903 6799	3188 3418
	Engineer's Representative	Engineer	Mr. Yeung Sui Chung	3903 6813	3188 3418
Unison Construction Engineering Limited	Contractor	Site Agent	Mr. Peter Lui	2690 2232	2363 3199
		Environmental Officer	Ms. Suki Chan		
ANewR Consulting Limited	Independent Environmental Checker (IEC)	Independent Environmental Checker (IEC)	Mr. James Choi	2618 2831	3007 8648
Lam Environmental Services Limited	Environmental Team (ET)	Environmental Team Leader (ETL)	Mr. Raymond Dai	2882 3939	2882 3331

2.3 Construction Activities

2.3.1 In the reporting month, the principal work activities conducted are as follow.

- Pilling construction

2.3.2 In coming reporting 3 months, the scheduled construction activities are listed as follows:

- Piling construction
- Excavation works
- Pile cap construction

3 Status of Regulatory Compliance

3.1 Status of Environmental Licensing and Permitting under the Project

3.1.1. A summary of the current status on licences and/or permits on environmental protection pertinent to the Project is shown in ***Table 3.1***.

Table 3.1 Summary of the current status on licences and/or permits on environmental protection pertinent to the Project

Permits and/or Licences	Permit. No. / Account No.	Valid From	Expiry Date	Status
Environmental Permit	EP-555/2018/A	16 Dec 2020	N/A	Valid
Billing Account for Disposal of Construction Waste	7038550	29 Mar 2021	End of the Project	Valid
Registration as a Chemical Waste Producer	5213-962-U2333-01	28 Jun 2021	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation	Form NA submitted to EPD on 25 Jun 2021.			
Discharge Licence	WT00040069-2021	10/1/2022	31/1/2027	Valid
Construction Noise Permit	N/A			

3.2 Status of Submission under the EP-555/2018/A

3.2.1. A summary of the current status on submission under EP-555/2018/A is shown in ***Table 3.2***.

Table 3.2 Summary of submission status under EP-555/2018/A

EP Condition	Submission	Date of Latest Submission^ or Approval#
Condition 1.12	Notification of Commencement Date of Works	3 June 2021 ^
Condition 2.7	Submission of Management Organization of Main Construction Companies, the ET and the IEC	20 May 2021 ^
Condition 2.8	Submission of Construction Works Schedule and Location Plan	22 June 2021 #
Condition 2.9	Submission of Breeding Bird Survey Report	29 December 2020 #
Condition 3.3	Submission of Baseline Monitoring Report	24 June 2021 #
Condition 4.2	Setting up Dedicated Internet Website	28 April 2021 ^

4 Monitoring Requirements

4.1 Noise Monitoring

NOISE MONITORING STATIONS

4.1.1. The noise monitoring stations for the Project are listed and shown in ***Table 4.1*** and ***Figure 4.1.***

Table 4.1 Noise Monitoring Station

Monitoring Station ID	Monitoring Location	Measurement Type	Level (in terms of no. of floor)
NMS1 A	1 Tung Wan Tau Road	Free-field	G/F

Remarks A: As discussed with the lot owner, a fine adjustment of location at the boundary of 1 Tung Wan Tau Road was proposed and approved in the Baseline Monitoring Report, in order to prevent access obstruction.

NOISE MONITORING PARAMETERS, FREQUENCY AND DURATION

4.1.2. For daytime construction work on normal weekdays (0700-1900 Monday to Saturday), one set of 30-min measurement shall be carried out at each NMS every week. Measurement procedures shall be referred to the Noise Control Ordinance-TM. Construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). $L_{eq\ 30min}$ shall be used as the monitoring parameter. As supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

MONITORING EQUIPMENT

4.1.3. Noise monitoring was performed using sound level meter at the designated monitoring locations. The sound level meters shall comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator shall be deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in ***Table 4.2***.

Table 4.2 Noise Monitoring Equipment

Equipment	Brand and Model	Series Number
Integrated Sound Level Meter	Larson Davis LxT	6346
Acoustic Calibrator	HLES-02	2019612534

4.1.4. The calibration certificates of the noise monitoring equipment are attached in ***Appendix 4.2***.

SAMPLING PROCEDURE AND MONITORING EQUIPMENT

4.2.1. Monitoring Procedure

(a) The monitoring station shall normally be at a point 1m from the exterior of the sensitive receiver's building façade and be at a position 1.2m above the ground.

(b) Façade measurements were made at the monitoring locations. For free-field

measurement, a correction factor of +3 dB (A) would be applied.

(c) The battery condition was checked to ensure the correct functioning of the meter.

(d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

(e) Frequency weighting: A, Time weighting: Fast, Measurement time set: continuous 5 mins

(f) Prior and after to the noise measurement, the meter was checked using the acoustic calibrator for 94dB (A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than ±1 dB (A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

4.2.2. Maintenance and Calibration

(a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.

(b) The sound level meter and calibrator were calibrated at yearly intervals.

EVENT AND ACTION PLAN

4.1.5. Noise Standards for Daytime Construction Activities are specified under EIAO-TM. The Action and Limit levels for construction noise are defined in ***Table 4.3*** and ***Appendix 4.1***. Should non-compliance of the criteria occurs, action in accordance with the Event and Action Plan in ***Appendix 6.1*** shall be carried out.

Table 4.3 Action and Limit Level for Noise Monitoring

Monitoring Station	Action Level	Limit Level
NMS1	When one documented complaint is received	75 dB(A)

4.2 Air Monitoring

AIR QUALITY MONITORING STATIONS

4.2.3. The air monitoring stations for the Project are listed and shown in ***Table 4.4*** and ***Figure 4.3***.

Table 4.4 Air Monitoring Station

Monitoring Station	Location	Level (in terms of no. of floor)
AMS1 [A]	Silvermine Beach Resort	G/F
AMS2 [B, C]	1 Tung Wan Tau Road	G/F

Remarks A: AMS1 recommended under EM&A manual is at the north of boundary wall of Silvermine Beach Resort. Positioning of HVS on a narrow road at the northern boundary wall would obstruct access of passengers. After liaison with the resort owner, HVS is located near the eastern boundary wall, which is representative and suitable for air quality monitoring. Thus, fine adjustment of location at the boundary of Silvermine Beach Resort was therefore proposed and approved in the Baseline Monitoring Report.

Remarks B: As discussed with the lot owner, a fine adjustment of location at the boundary of 1 Tung Wan Tau Road was proposed and approved in the Baseline Monitoring Report, in order to prevent access obstruction and to minimize noise nuisance induced from HVS operation.

Remarks C: As the agreement of ER and IEC, a fine adjustment of location at the boundary of 1 Tung Wan Tau Road was proposed and approved in the impact monitoring since mid-September 2021, in order to prevent the interruption of GI working area conducted by contractor.

AIR MONITORING PARAMETERS, FREQUENCY AND DURATION

4.2.4. One-hour and 24-hour TSP levels should be measured to indicate the impacts of construction dust on air quality.

4.2.5. 24-hour TSP shall be sampled at least once in every 6 days, while sampling for 1-hour TSP shall be at least 3 times in every 6 days when the highest dust impact takes place.

SAMPLING PROCEDURE AND MONITORING EQUIPMENT

4.2.6. 24-hour TSP Measuring Installation (HVS)

(a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS.
(b) No furnace or incinerator flues were nearby.
(c) Airflow around the sampler was unrestricted
(d) 0.6 - 1.7 m^3 per minute adjustable flow range
(e) Equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation;
(f) Installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
(g) Equipped with a shelter to protect the filter and sampler;
(h) Capable of operating continuously for a 24-hour period.

4.2.7. 24-hour Measuring Procedures

(a) The power supply was checked to ensure the HVS works properly.
(b) The filter holder and the area surrounding the filter were cleaned.
(c) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.

(d) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.

(e) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges.

(f) Then the shelter lid was closed and was secured with the aluminum strip.

(g) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.

(h) A new flowrate record sheet was set into the flow recorder.

(i) The flow rate of the HVS was checked and adjusted at around 1.2 m^3 /min. The range specified in the EM&A Manual was between 0.6-1.7 m^3 /min.

(j) The programmable timer was set for a sampling period of 24 hrs + 1 hr, and the starting time, weather condition and the filter number were recorded.

(k) The initial elapsed time was recorded.

(l) At the end of sampling, the sampled filter was removed carefully and folded in half-length so that only surfaces with collected particulate matter were in contact.

(m) It was then placed in a clean plastic envelope and sealed.

(n) All monitoring information was recorded on a standard data sheet.

(o) Filters were sent to laboratory for further testing.

4.2.8. 1-hour Measuring Procedures

(a) Check the calibration period of portable direct reading dust meter prior to monitoring (The direct reading dust meter was calibrated at 2-years interval and checked with High Volume Sampler (HVS) yearly, details refer to Section 2.5.4)

(b) Record the site condition near / around the monitoring stations.

(c) Install the portable direct reading dust meter to the monitoring location.

(d) Slide the power switch to turn the power on.

(e) Check of portable direct reading dust meter to ensure the equipment operation in normal condition.

(f) Select the period of measurement to 60mins.

(g) Check and set the correct time.

(h) Select the appropriate unit display for the equipment.

(i) Slide the power switch to turn the power off when the monitoring period ended (3 times 1 hour TSP monitoring per day).

(j) Uninstall the portable direct reading dust meter

(k) Collected the sampled data for analysis.

Remark: Procedures (c) to (h) may be different subject to the brands and models of portable direct reading dust.

4.2.9. Maintenance and Calibration

(a) The direct reading dust meter was calibrated at 2-years interval and checked with High Volume Sampler (HVS) yearly to determine the accuracy and validity of the results measured.

(b) Checking of direct reading dust meter will be carried out in order to determine the conversion factor between the direct reading dust meter and the standard equipment, HVS. The comparison check is to be considered valid based on correlation coefficient checked by HOKLAS laboratory

4.2.10. High Volume Sampler (HVS – Model TE-5170) completed with the appropriate sampling inlets were installed for the 24-hour TSP sampling. 1-hour TSP air quality monitoring was performed by using portable direct reading dust meters at each designated monitoring station, which was verified by IEC and approved by the Engineer's Representative (ER) on 4 December 2020 according to Section 3.4.5 and 3.3.2 of the Project EM&A Manual. The brand and model of the equipment are given in ***Table 4.5***.

Table 4.5 Air Quality Monitoring Equipment

Equipment	Brand and model	Series Number
Portable direct reading dust meter	Met One Aerocet 831	Y23153, W16848
High Volume Sampler	TE-5170	HVS019 HVS020

4.2.11. The calibration certificates of the air quality monitoring equipment are attached in ***Appendix 4.2***.

WIND DATA

4.2.12. Hong Kong Observatory (HKO) meteorological information is widely accepted to be used in various environmental monitoring practices within HKSAR due to its professional quality and precision. Therefore, the daily wind data including Prevailing Wind Direction (degrees) and Mean Wind Speed (km/h) were obtained from Peng Chau Automatic Weather Station to serve as the representative data for meteorological condition during monitoring. The method was agreed by the IEC and approved by the ER on 4 December 2020. The representative wind data from Peng Chau Station were obtained covering the 1-hour and 24-hour TSP monitoring periods. The wind data were extracted and shown in ***Appendix 4.3***.

EVENT AND ACTION PLAN

4.2.13. The Action and Limit levels for construction air quality are defined in ***Table 4.6*** and ***Appendix 4.1***. Should non-compliance of the air quality criteria occur, action in accordance with the Event and Action Plan in ***Appendix 6.1*** shall be carried out.

Table 4.6 Action and Limit Level for Air Quality Monitoring

Parameter	Monitoring Station	Action Level (μg/m^3)	Limit Level (μg/m^3)
24-hour TSP Level	AMS1	176.0	260.0
	AMS2	176.0	260.0
1-hour TSP Level	AMS1	276.5	500.0
	AMS2	283.7	500.0

4.3 Water Quality Monitoring

WATER QUALITY MONITORING STATIONS

4.3.1. Water quality monitoring was undertaken at 7 monitoring stations in the reporting month. The proposed water quality monitoring stations of the Project are shown in ***Table 4.7*** and ***Figure 4.3***.

Table 4.7 Marine Water Quality Stations for Water Quality Monitoring

Station	Description	Monitoring Period	Monitoring Station	Easting	Northing
W1	Wang Tong River (Major tributary)	Mid-Flood	Impact	817747	814519
		Mid-Ebb	Control		
W2	Wang Tong River (Major tributary)	Mid-Flood	Impact	817775	814471
		Mid-Ebb	Control		
W3 *	Wang Tong River (Minor tributary to Tai Wai Yuen)	Mid-Flood	Impact	817803	814537
		Mid-Ebb	Control		
W4	Wang Tong River (Minor tributary to Tai Wai Yuen)	Mid-Flood	Impact	817825	814481
		Mid-Ebb	Control		
W5	Silvermine Bay (Near Silvermine Bay Beach)	Mid-Flood	Control	817909	814452
		Mid-Ebb	Impact		
W6	Silvermine Bay (Near Silvermine Bay Beach)	Mid-Flood	Control	818024	814447
		Mid-Ebb	Impact		
W7	Silvermine Bay (Open Water)	Mid-Flood	Control	818061	814277
		Mid-Ebb	Impact		
W8	Silvermine Bay (Open Water)	Mid-Flood	Control	818224	814444
		Mid-Ebb	Impact		

Remark *: Water quality monitoring at Station W3 was cancelled with verification from the IEC and approval from the EPD.

WATER QUALITY PARAMETERS, FREQUENCY AND DURATION

4.3.2. The levels of dissolved oxygen (DO), turbidity, salinity and pH shall be measured in situ while suspended solids (SS) is determined by laboratory analysis at all the designated monitoring stations.

4.3.3. In association with the water quality parameters, other relevant data shall also be recorded, such as monitoring location / position, time, water temperature, DO saturation, weather conditions, and any special phenomena underway near the monitoring station.

4.3.4. Impact Monitoring shall be carried out 3 days per week, at mid-flood and mid-ebb tides (within ± 1.75 hour of the predicted time). The interval between two sets of monitoring shall not be less than 36 hours. The monitoring period should avoid concurrent marine project in the vicinity.

4.3.5. The sampling frequency of at least three days per week should be undertaken when the highest dust impact occurs. Upon completion of the construction works, the monitoring exercise at the designated monitoring locations should be continued for four weeks in the same manner as the impact monitoring. In case exceedance of Action/Limit Level is recorded, the frequency shall be increased as per the Event and Action Plan.

4.3.6. To ensure the robustness of in-situ measurement, parameters shall be measured in duplicate. In case the difference between duplicates is larger than 25%, a third set of measurement shall be carried out.

SAMPLING PROCEDURES AND MONITORING EQUIPMENT

Dissolved Oxygen, pH And Temperature Measuring Equipment

4.3.7. The instrument should be a portable, weatherproof dissolved oxygen and pH measuring instrument complete with cable, sensor, comprehensive operation manuals, and use a DC power source. It should be capable of measuring:

- a dissolved oxygen level in the range of 0-20 mg/l and 0-200% saturation
- a pH level in the range of 0 to 14 units
- a temperature of 0-45 degree Celsius

4.3.8. It should have a membrane electrode with automatic temperature compensation complete with a cable. Sufficient stocks of spare electrodes and cables should be available for replacement where necessary. Salinity compensation shall be build-in in the DO equipment

Turbidity Measurement Instrument

4.3.9. Nephelometric method shall be used in measuring turbidity in-situ. The instrument shall be portable, weatherproof complete with a cable, sensor, comprehensive operation manuals and DC power source. It shall have a photoelectric sensor capable of measuring turbidity between 0-1000 NTU and complete with a cable with at least 25 m in length. The meter shall be calibrated in order to establish the relationship between NTU units and suspended solids level. Turbidity shall be measured on split water sample collected from the same depths of suspended solid samples.

Sampler

4.3.10. A water sampler, consisting of a transparent PVC or glass cylinder of a capacity of not less than two litres which can be effectively sealed with cups at both ends shall be used. The water sampler shall have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth.

Sampler Container and Storage

4.3.11. A water sampler, Water samples for suspended solids measurement should be collected in high-density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to ALS Technichem (HK) Pty Ltd. as soon as possible after collection for analysis.

Water Depth Detector

4.3.12. A portable, battery-operated echo sounder shall be used for the determination of water depth at each designated monitoring station. This unit can either be handheld or affixed to the bottom of the workboat, if the same vessel is to be used throughout the monitoring programme.

Salinity

4.3.13. A portable salinometer capable of measuring salinity in the range of 0-40% shall be provided for measuring salinity of the water at each of monitoring location.

Monitoring Position Equipment

4.3.14. A hand-held or boat-fixed type digital Global Positioning System (GPS) with waypoint bearing indication or other equivalent instrument of similar accuracy shall be provided and used during monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

MONITORING METHODOLOGY

4.2.14. Monitoring Procedure

(a) The condition near the monitoring stations shall be observed and recorded on the data log sheet.
(b) Check of sensors and electrodes with certified standard solutions before each use.
(c) Wet bulb calibration for a DO meter should be carried out before measurement.
(d) Water depth should be recorded by detector before sampling.
(e) Sample would be taken using bucket sampler at surface level.
(f) Transfer the sampled water carefully into cleaned water bottles (2x 1000ml) provided by the laboratory at the spot after the collection of the water sample for the subsequent laboratory Suspended Solid testing.
(g) Transfer the sampled water from the bucket sampler to the rinsed water container for in-situ measurement (In case of the in-situ measurement cannot be carried at spot due to safety and adverse weather condition, sampled water from the bucket sampler will be transfer to cleaned water bottles provided by laboratory. Then, In-situ measurement will be conducted at a safe location which sampled water inside cleaned water bottle will be transfer to the rinsed water container for in-situ measurement) In-situ measurement shall be measured in duplicate.
(h) Parameters including Water Temperature (°C), pH (units), Salinity (ppt), DO (mg/L), DO saturation (%) will be measured by the Multifunctional Meter and Turbidity (NTU) will be measured by turbid meter. (Water Temperature and Salinity will be measured as reference parameters)
(i) Record the result on the data log sheet and record any special finding during / after in-situ measurement.
(j) The water sample bottles will be stored in a cool box (at cooled to 4°C without being frozen), which shall be delivered to HOKLAS laboratory (ALS Technichem (HK) Pty Ltd) for further testing to determine the level of SS.

4.2.15. Maintenance and Calibration

(a) The responses of sensors and electrodes of the water quality monitoring equipment were cleaned and checked at regular intervals.

(b) DO meter (Multifunctional Meter) and turbid meter was certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at three monthly intervals.

4.3.15. Brand and model of the equipment are given in ***Table 4.8***.

Table 4.8 Water Quality Monitoring Equipment

Equipment	Brand and model	Series Number
Multifunctional Meter	YSI Professional Plus	16J104708
Turbid meter	Xin Rui WGZ-3B	1807073

4.3.16. With respect to the commencement of mini-piling work, water quality monitoring has been implemented starting from 17 March 2022. However, review of action or limit level exceedance was conducted for water quality monitoring results after 27th May 2022 when marine-based construction work commenced. Calibration certificates of the water quality monitoring equipment attached in ***Appendix 4.2*** will be prepared in the reporting month during commencement of monitoring.

LABORATORY MEASUREMENT / ANALYSIS

4.3.17. Analysis of suspended solids will be carried out in a HOKLAS accredited laboratory, which is ALS Technichem (HK) Pty Ltd.

EVENT AND ACTION PLAN

4.3.18. The Action and Limit levels for construction water quality are defined in **Table 4.9** and ***Appendix 4.1***. Should the monitoring results of the water quality parameters at any designated monitoring station exceed the water quality criteria, action in accordance with the Event and Action Plan in ***Appendix 6.1*** shall be carried out.

Table 4.9 Action and Limit Level for Water Quality Monitoring

Monitoring Station	Depth	DO (mg/L) +		Turbidity (NTU) ~		SS (mg/L) ~	
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
W1	Surface, Middle & Bottom	6.5	5.3	7.7 NTU or 120% of upstream control station's turbidity at the same tide of the same day, whichever is higher	12.4 NTU or 130% of upstream control station's turbidity at the same tide of the same day, whichever is higher	8.9 mg/L or 120% of upstream control station's SS at the same tide of the same day, whichever is higher	11.3 mg/L or 130% of upstream control station's SS at the same tide of the same day, whichever is higher
W2							
W4							
W5	Surface, Middle & Bottom	5.9	5.5	9.8 NTU or 120% of upstream control station's turbidity at the same tide of the same day, whichever is higher	10.5 NTU or 130% of upstream control station's turbidity at the same tide of the same day, whichever is higher	12.6 mg/L or 120% of upstream control station's SS at the same tide of the same day, whichever is higher	15.0 mg/L or 130% of upstream control station's SS at the same tide of the same day, whichever is higher
W6							
W7							
W8	Surface & Middle						
	Bottom	5.9	5.5				

Remarks +: For DO, non-compliance occurs when monitoring results is lower than the limits.
Remarks ~: For SS and Turbidity, non-compliance occurs when monitoring results is larger than the limits

5 Monitoring Results

5.0.1 The environmental monitoring will be implemented based on the division of works areas of each designed projects. Overall layout showing work areas and monitoring stations is shown in ***Figure 2.1*** and ***Figure 4.1 – 4.3*** respectively**.**

5.0.2 The environment monitoring schedules for reporting month and coming month are presented in ***Appendix 5.1*****.**

5.1 Noise Monitoring Results

5.1.1 Noise monitoring results measured in this reporting period are reviewed and summarized. Details of noise monitoring results and graphical presentation can be referred in ***Appendix 5.2***.

5.1.2 No action or limit level exceedance was recorded in this reporting month.

5.2 Air Monitoring Results

5.2.1 Air quality monitoring results measured in this reporting period are reviewed and summarized. Details of air monitoring results and graphical presentation can be referred in ***Appendix 5.3***.

5.2.2 No action or limit level exceedance was recorded in this reporting month.

5.3 Water Quality Monitoring Results

5.3.1 Water quality monitoring results measured in this reporting period are reviewed and summarized. Details of water quality monitoring results and graphical presentation can be referred in ***Appendix 5.4***.

5.3.2 Water quality monitoring results were taken before 27th May 2022 as reference such that no action and limit level exceedance was concluded and recorded before the day. Review of action or limit level exceedance was conducted for water quality monitoring results after 27th May 2022 when marine-based construction work commenced.

5.3.3 Exceedances were recorded in this reporting month. Event and Action Plan has been implemented with appropriate action taken as referred to corresponding notification of exceedance. Summary of exceedances recorded during the reporting month are summarized in ***Table 5.3***.

Table 5.3 Summary of Water Quality Exceedances

Station	Parameter	DO (S&M)		DO (Bottom)		Turbidity		SS		Exceedance count	
	Level exceeded	Mid Ebb	Mid Flood	Mid Ebb	Mid Flood	Mid Ebb	Mid Flood	Mid Ebb	Mid Flood	Mid Ebb	Mid Flood
W1	Action	N/A	-	N/A	-	N/A	-	N/A	-	N/A	-
	Limit	N/A	-	N/A	-	N/A	27/05/22	N/A	27/05/22	N/A	2
W2	Action	N/A	30/05/22	N/A	-	N/A	-	N/A	-	N/A	1
	Limit	N/A	-	N/A	-	N/A	27/05/22	N/A	27/05/22	N/A	2
W4	Action	N/A	30/05/22	N/A	-	N/A	-	N/A	-	N/A	1
	Limit	N/A	-	N/A	-	N/A	27/05/22	N/A	27/05/22	N/A	2
W5	Action	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
	Limit	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
W6	Action	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
	Limit	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
W7	Action	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
	Limit	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
W8	Action	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
	Limit	-	N/A	-	N/A	-	N/A	-	N/A	-	N/A
Total	Action	0	2	0	0	0	0	0	0	0	2
	Limit	0	0	0	0	0	3	0	3	0	6

5.3.4 Action level exceedances on DO were recorded at station W2 and W4 during mid-flood on 30 May 2022. Investigation revealed these exceedances could be due to fluctuation around background DO ranges and concluded not related to project.

5.3.5 Limit level exceedance on turbidity and SS were recorded at station W1, W2 and W4 during mid flood on 27 May 2022. Investigation revealed these exceedances could be due high turbidity and SS levels recorded upstream at W5 and concluded not related to project.

5.4 Waste Management

5.4.1 The quantities of waste for disposal in the Reporting Period are summarized in ***Table 5.1*** and ***Table 5.2***. The Monthly Summary Waste Flow Table is shown in ***Appendix 5.5***. Whenever possible, materials were reused on-site as far as practicable.

Table 5.4 Summary of Quantities of Inert C&D Materials

Waste Type	Quantity (this month)	Quantity (Project commencement to the end of last month)	Cumulative Quantity-to-Date
Hard Rock and Large Broken Concrete (Inert) (in '000m^3)	0	0.007	0.007
Reused in this Contract (Inert) (in '000m^3)	0	0	0
Reused in other Projects (Inert) (in '000m^3)	0	0	0
Disposal as Public Fill (Inert) (in '000m^3)	0.019	0.02	0.039

Table 5.2 Summary of Quantities of C&D Wastes

Waste Type	Quantity (this month)	Quantity (Project commencement to the end of last month)	Cumulative Quantity-to-Date
Metals (in '000kg)	0	0	0
Paper / Cardboard Packing (in '000kg)	0	0	0
Plastics (in '000kg)	0	0.03	0.03
Chemical Wastes (in '000kg)	0	0	0
General Refuses (in '000m^3)	0.015	0.036	0.051

6 Compliance Audit

6.1.1 The Event Action Plan for construction noise, air quality and water quality are presented in ***Appendix 6.1***.

6.1.2 The summary of exceedance is presented in ***Appendix 6.2***.

6.2 Noise Monitoring.

6.2.1 No action or limit level exceedance was recorded in this reporting period.

6.3 Air Quality Monitoring

6.3.1 No action or limit level exceedance was recorded in this reporting period.

6.4 Water Quality Monitoring

6.4.1 Action level exceedances on DO were recorded at station W2 and W4 during mid-flood on 30 May 2022. Investigation revealed these exceedances could be due to fluctuation around background DO ranges and concluded not related to project.

6.4.2 Limit level exceedance on turbidity and SS were recorded at station W1, W2 and W4 during mid flood on 27 May 2022. Investigation revealed these exceedances could be due high turbidity and SS levels recorded upstream at W5 and concluded not related to project.

6.5 Review of the Reasons for and the Implications of Non-compliance

6.5.1 No environmental non-compliance was recorded in the reporting month.

6.6 Summary of action taken in the event of and follow-up on non-compliance

6.6.1 There was no particular action taken since no non-compliance was recorded in the reporting period.

7 Environmental Site Audit

7.0.1. Within this reporting month, weekly environmental site audits were conducted on 4, 11, 17 and 25 May 2022. IEC attended the joint site inspection on 25 May 2022.

7.0.2. No non-compliance was found during the site inspection while reminders on environmental measures were recommended. Results and findings of these inspections in this reporting month are listed below in ***Table 7.1***.

Table 7.1 Summary of Environmental Inspections

Item	Date	Reminder(s)/ Observation(s)	Action taken by Contractor	Outcome
20220504_1	4 May 2022	Nil.	Nil.	Nil.
20220511_1	11 May 2022	Nil.	Nil.	Nil.
20220517_1	17 May 2022	Drip tray should be provided to the oil tank.	Oil tank removed.	Completed
20220526_1	26 May 2022	Contractor was reminded to display NRMM labels properly on the crane and excavator.	Labels were displayed.	Completed.

7.0.3. Within this reporting month, monthly landscape site audits were conducted on 26 May 2022.

7.0.4. No non-compliance was found during the landscape site inspection. Results and findings of these inspections in this reporting month are listed below in ***Table 7.2***.

Table 7.2 Summary of Landscape site inspections

Item	Date	Reminder(s)/ Observation(s)	Action taken by Contractor	Outcome
-	-	-	-	-

8. Complaints, Notification of Summons and Prosecution

8.0.1. No environmental complaint, notification of summons and successful prosecution regarding construction works was recorded in the reporting period.

8.0.2. The details of cumulative complaint log and updated summary of complaints are presented in ***Appendix 8.1***.

8.0.3. Cumulative statistic on complaints and successful prosecutions are summarized in ***Table 8.1*** and ***Table 8.2*** respectively.

Table 8.1 Cumulative Statistics on Complaints

Reporting Period	No. of Complaints
May 2022	0
Project commencement to the end of last reporting month	-
Total	**0**

Table 8.2 Cumulative Statistics on Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Successful Prosecutions this month (Offence Date)	Cumulative No. Project-to-Date
Air	-	0	0
Noise	-	0	0
Water	-	0	0
Waste	-	0	0
Total	**-**	**0**	**0**

9. Conclusion

9.0.1. The EM&A programme was carried out in accordance with the EM&A Manual requirements, minor alterations to the programme proposed were made in response to changing circumstances.

9.0.2. Mitigation measures according to the environmental mitigation implementation schedule and the EIA were generally implemented by the Contractor. Hence, the EM&A programme was considered effective and shall be maintained.

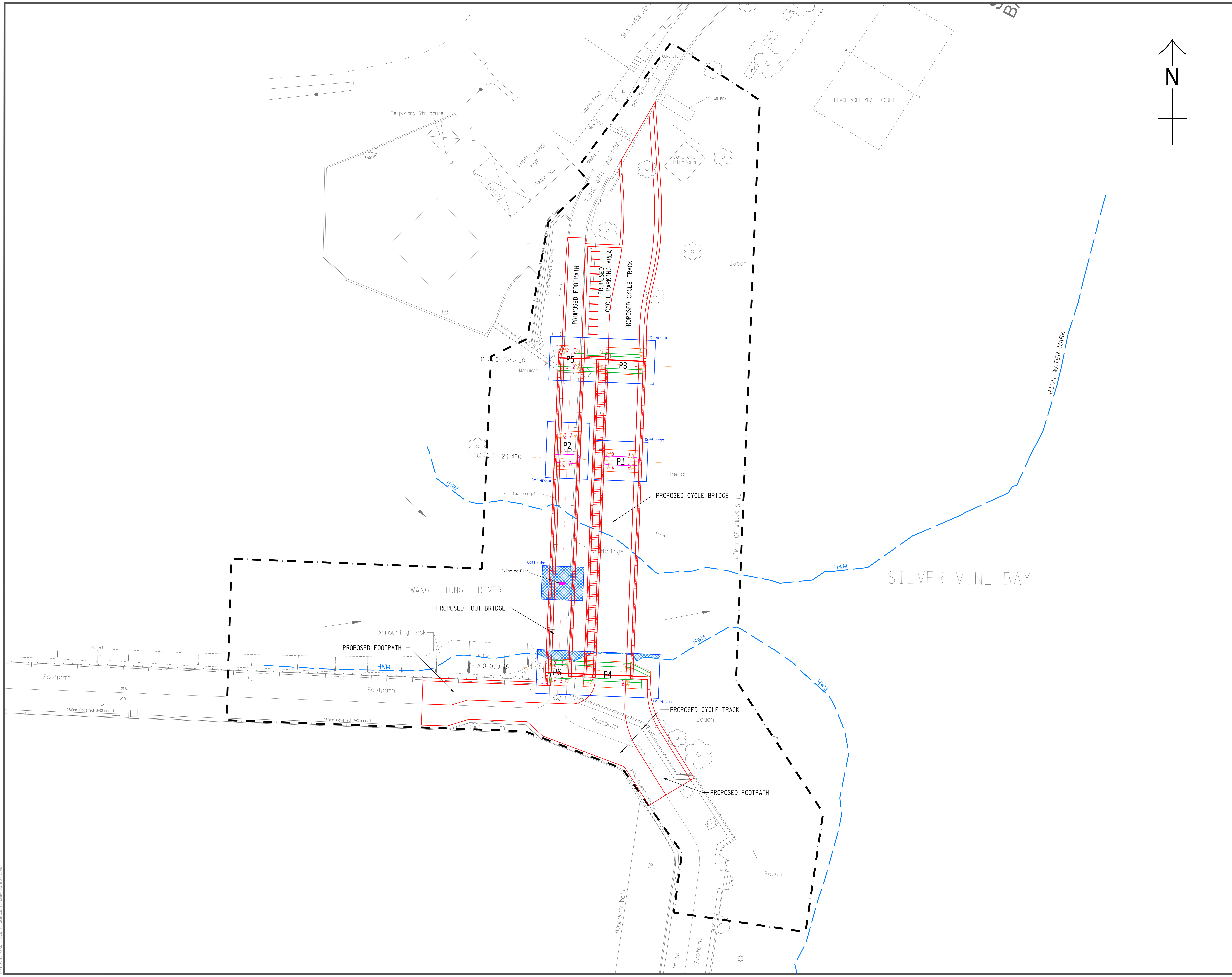
9.0.3. The scheduled construction activities and the recommended mitigation measures for the coming 3 months are listed in ***Table 9.1***. The construction programmes of the Project are provided in ***Appendix 9.1***.

Table 9.1 Construction Activities and Recommended Mitigation Measures in Coming Reporting 3 Months

Key Construction Works	Recommended Mitigation Measures
• Piling construction • Excavation works • Pile cap construction	• Dust control during dust generating works; • Implementation of proper noise pollution control; • Covering noisy part of piling machine with proper sound insulation material; • Provision of surface runoff collection and perimeter protection to properly treat runoff without direct discharge into Wang Tong River; • Provision of water-tight cofferdam for piling construction in Wang Tong River; and • Proper waste handling and storage.

Figure 2.1

Project Layout



NOTES

1. ALL LEVELS ARE IN METRES ABOVE HONG KONG PRINCIPAL DATUM.
2. CO-ORDINATES ARE OF HONG KONG 1980 GRID SYSTEM.
3. ALL LEVELS ALONG KERB ARE KERB BOTTOM LEVEL.
4. CHANNELS ARE U SHAPED EXCEPT WHERE STATED, WIDTHS ARE GIVEN.
5. DATE OF SURVEY FOR HIGH WATER MARK : NOV 2020

LEGEND:

- LIMIT OF WORKS SITE
- HIGH WATER MARK (AS AT NOV.2020)
- PROPOSED PILECAP AND SOCKETED H PILES
- EXCAVATION AND PILING WORKS AREA WITHIN COFFERDAM
- EXCAVATION AREAS BELOW HIGH WATER MARK
- PROPOSED BRIDGE PIERS
- EXTENT OF ABUTMENTS
- WORKS LAYOUT

SOURCE

PROJECT

HY/2019/14

NEW WANG TONG RIVER BRIDGE

DRAWING TITLE

LOCATION PLAN

SCALE	1:200	A1 594X841
DRAWING NO.	CLP-EP-01	REV. -

Figure 2.2

Project Organization Chart

Project Organization Chart

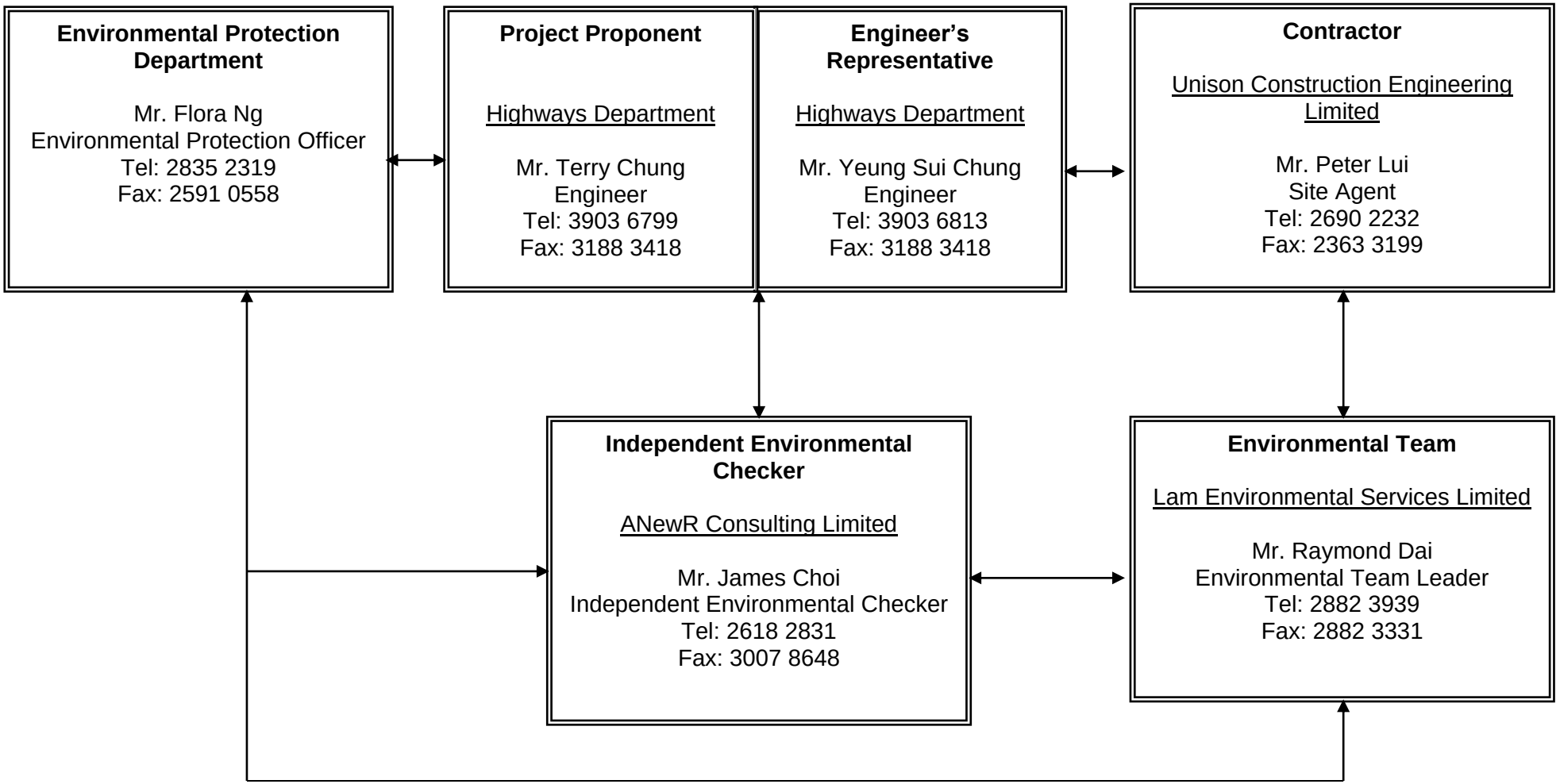
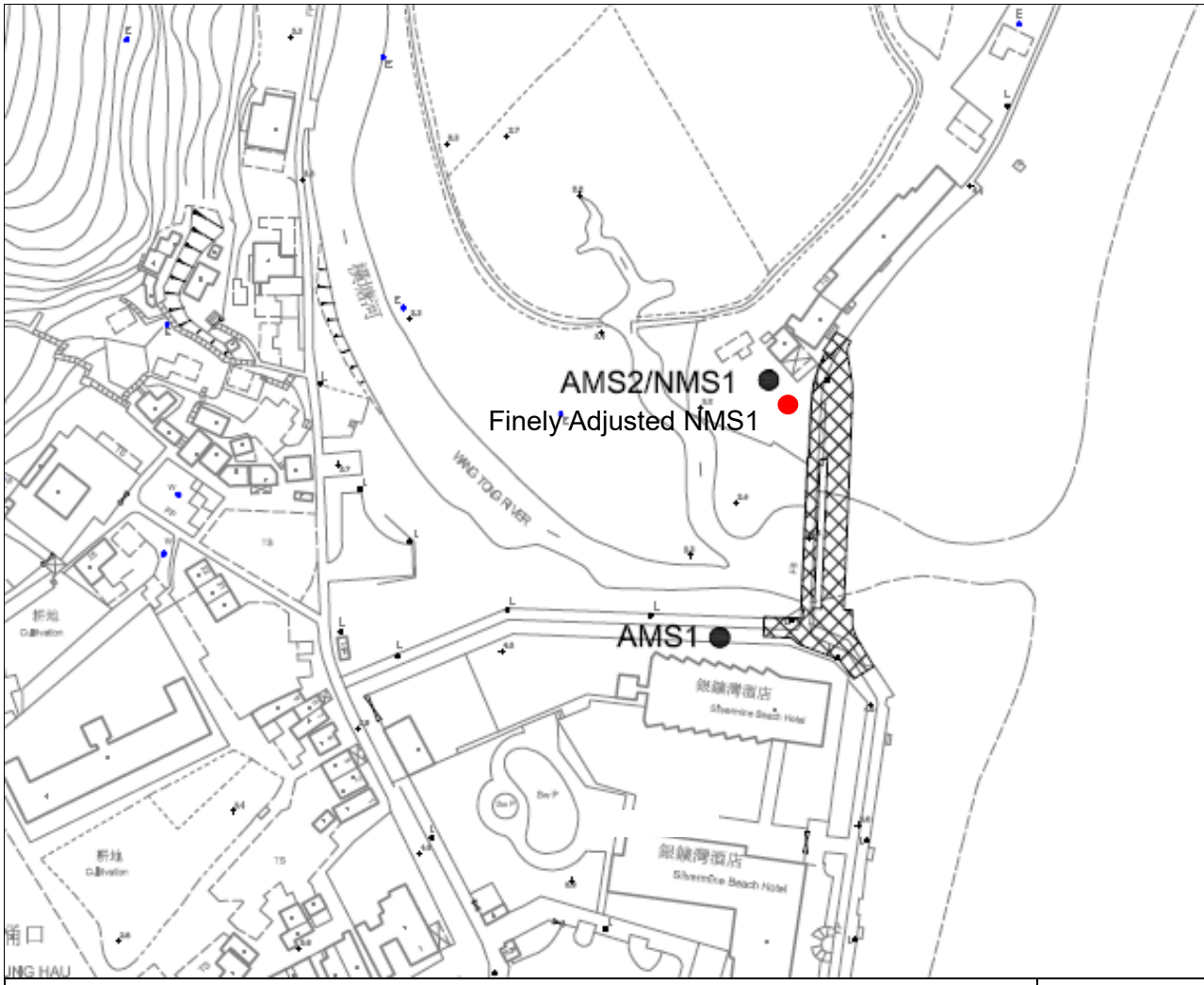


Figure 4.1 to Figure 4.3

Locations of Monitoring Stations



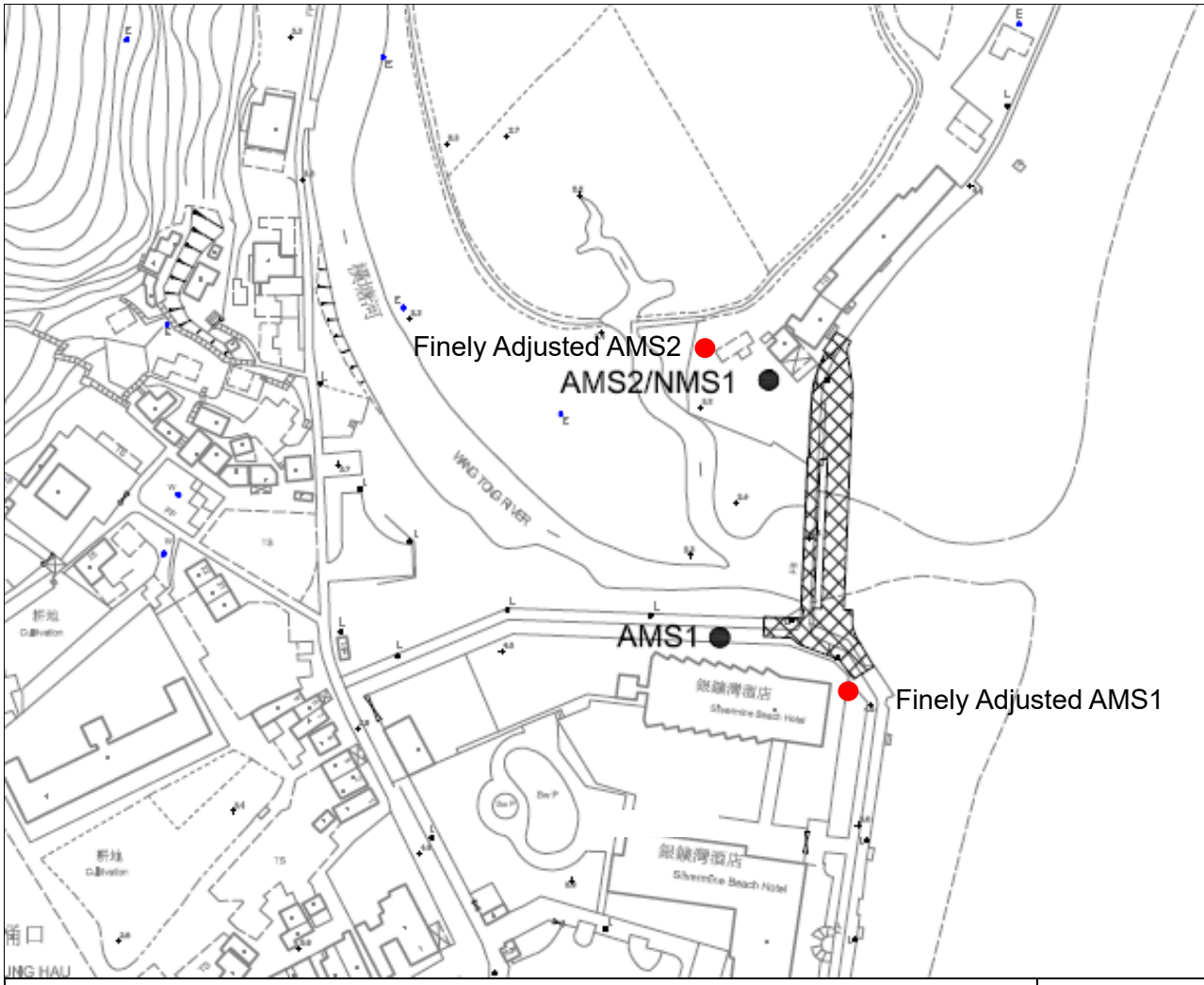
Station	Description
AMS2/NMS1	1 Tung Wan Tau Road

Legend:

- Finely Adjusted Location of Noise Monitoring Station
- Original Noise Monitoring Station stated in EM&A Manual

Figure 4.1

Location of Noise Monitoring Stations



Station	Description
AMS1	Silver Beach Resort
AMS2/NMS1	1 Tung Wan Tau Road

Legend:

- Finely Adjusted Location of Air Quality Monitoring Station
- Original Air Quality Monitoring Station stated in EM&A Manual

Figure 4.2

Location of Air Quality Monitoring Stations

Station	Description	Easting	Northing
W1	Wang Tong River (Major tributary)	817747	814519
W2	Wang Tong River (Major tributary)	817775	814471
W4	Wang Tong River (Minor tributary to Tai Wai Yuen)	817825	814481
W5	Silvermine Bay (Near Silvermine Bay Beach)	817909	814452
W6	Silvermine Bay (Near Silvermine Bay Beach)	818024	814447
W7	Silvermine Bay (Open Water)	818061	814277
W8	Silvermine Bay (Open Water)	818224	814444

Legend:

- Cancelled Water Quality Monitoring Station
- Original Water Quality Monitoring Station stated in EM&A Manual

Figure 4.3

Location of Water Quality Monitoring Stations

Appendix 3.1

Environmental Mitigation Implementation Schedule

Appendix 3.1 - Implementation Schedule of Recommended Mitigation Measures

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
Air Quality Impact						
Construction Phase						
A1	Good housekeeping to minimize dust generation, e.g. by properly handling and storing dusty materials	To minimize dust generation	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A2	Adopt dust control measures, such as dust suppression using water spray on exposed soil, in areas with dusty construction activities, and during material handling	To minimize dust generation due to erosion	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A3	Dust suppression shall be applied to the working area immediately before, during and immediately after site clearance, excavation or earth moving operation to keep the surface wet.	To minimize dust generation due to erosion	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A4	Use water spray to wet the remaining dusty materials on the floor after removing stockpile. The surface of roads or streets shall be free from dust	To minimize dust generation due to erosion	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A5	Storage of dusty materials and debris shall be either entirely covered by impervious sheeting or stored in a three-side and top enclosed area. Alternatively, it should be sprayed with water or a dust suppression chemical to maintain the entire surface wet	To minimize dust generation due to erosion	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A6	All demolished items (e.g. trees, vegetation, structures, debris and rubbish) that may dislodge dust particles shall be covered entirely by impervious sheeting or placed in a three-side and top enclosed area within a day of demolition.	To minimize dust generation	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A7	Store cement bags in shelter with 3 sides and the top covered by impervious materials if the stack exceeds 20 bags	To prevent leakage of cement	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A8	Cement bag shall be debagged, batched and mixed in a three-side and top enclosed area	To minimize dust generation	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A9	Maintain a reasonable height when dropping excavated materials to limit dust generation	To minimize dust generation during movement of excavated materials	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A10	Minimize exposed earth after completion of work in a certain area by hydroseeding, vegetating, soil compacting or paving	To minimize dust generation due to erosion	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
A11	Cover materials on trolleys and trucks before leaving the site to prevent debris from dropping during traffic movement or being blown away by wind	To prevent falling of debris during traffic movement and by wind	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A12	Water or a dust suppression chemical shall be continuously sprayed on the surface where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation is carried out, unless the process is accompanied by the operation of an effective dust extraction and filtering device	To minimize dust emission	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A13	Regular maintenance of plant equipment to prevent black smoke emission	To minimize black smoke emission	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A14	Throttle down or switch off unused machines or machine in intermittent use	To minimize unncessary emission	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A15	Minimize excavation area as far as possible	To minimize dust emission and potential release of odour from exposed ground	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A16	Cover open stockpiles of construction materials (e.g. aggregates, sand and fill materials) with impermeable materials such as tarpaulin during rainstorms.	To prevent soil erosion under rainstorm	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A17	Hoarding of not less than 2.4 m high shall be erected from ground level to surround the work area except for a site entrance or exit	To minimize dust emission	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO
A18	Carry out air quality monitoring throughout the construction period	To monitor construction dust level	HyD's Contractor	At representative ASRs	Prior to and throughout construction phase	EIAO-TM
A19	Carry out regular site inspection to audit the implementation of mitigation measures	To check the implemenation status and effectiveness of mitigation measures	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
Noise Impact						
Construction Phase						
N1	Schedule noisy activities to minimise exposure of nearby NSRs to high levels of construction noise	To minimize construction noise level	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N2	Use hand-held plant equipment or manual equipment as far as possible	To minimize construction noise level	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N3	Use Quality Powered Mechanical Equipment (QPME) which produces lower noise level	To minimize construction noise level	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N4	In the direction of noise sensitive receivers, erect mobile barriers with 3m in height from a few metres of stationary plants, and from about 5m of more mobile plant such as hydraulic breaker to prevent direct view. The barrier should have skid footing and a small cantilevered upper portion. The minimum surface density of the movable noise barrier is 7 kg/m² and provide with noise absorbing material.	To lower noise transmission	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N5	Position mobile noisy equipment in location and direction away from NSR	To minimize noise transmission to NSR	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N6	Use silencer or muffler on plant equipment and should be properly maintained	To minimize noise transmission	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N7	Operate noisy plant equipment such as air compressor, generator and concrete pump within enclosure	To minimize noise transmission	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N8	Cover the noisy part of piling machine with acoustic mat	To minimize noise transmission	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N9	Throttle down or switch off unused machines or machine in intermittent use between work	To mimize noise production	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N10	Avoid carrying out noisy activities at the same time	To mimize noise production	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
N11	Reduce the percentage on-time for some noisy PMEs	To mimize noise production	HyD's Contractor	Whole construction site	Throughout construction phase	NCO, EIAO-TM
N12	Carry out noise monitoring throughout the construction period	To monitor construction noise level	HyD's Contractor	At representative NSRs	Prior to and throughout construction phase	EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
Water Quality Impact						
Construction Phase						
W1	Works in the river (excavation within highwater mark and cutting of pier of Old Bridge) shall be carried out inside the watertight cofferdam. The cofferdam can only be removed after completion of work.	To prevent the excavated materials or cuttings from falling into the water and being carried into the sea	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM
W2	Install sheet piles by vibratory action.	To minimize dispersion of sand	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W3	Erect water-tight temporary working platform that can contain falling debris above Wang Tong River. The platform shall be sheltered by tarpaulin for directing rainwater away from the working platform.	To prevent falling of debris and generation of surface runoff into the river	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W4	Water removed from the cofferdam should be desilted before discharge.	To prevent discharge of silty water	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM
W5	Set up sedimentation tank for settling suspended solids in wastewater before discharge into storm drains. Sand/silt removal facilities such as sand traps, silt traps and sedimentation basin should be provided with adequate capacity.	To reduce the amount of suspended solid in wastewater	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W6	Maintain silt removal facilities, channels, manholes before and after rainstorm.	To prevent failure that may lead to flooding	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W7	Remove silt and grit from silt trap at regular interval.	To prevent blockage that may lead to flooding	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W8	Design works program carefully to minimize work areas, hence minimize soil exposure and site runoff.	To minimize surface runoff and chance of erosion	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W9	Arrange excavation works outside rainy seasons (April to September) as far as possible. If this cannot be achieved, the following measures should be implemented: - Cover temporary exposed slope surfaces with impermeable materials, e.g. tarpaulin - Protect temporary access roads by crushed stone or gravel - Carry out adequate surface protection measures well before the arrival of a rainstorm	To minimize surface runoff and chance of erosion	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
W10	Minimize exposed earth after completion of work in a certain area by hydroseeding, vegetating, soil compacting or paving	To prevent soil erosion under rainstorm	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W11	Cover open stockpiles of construction materials (e.g. aggregates, sand and fill materials) with impermeable materials such as tarpaulin during rainstorms.	To prevent soil erosion under rainstorm	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W12	Cover and temporary seal manholes to prevent silt, construction materials or debris and surface runoff from entering foul sewers.	To prevent overloading of foul sewers	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W13	Placing equipment, materials and wastes away from Wang Tong River and Silver Mine Bay	To prevent water contamination	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM
W14	Remove waste from the site regularly.	To prevent waste accumulation	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
W15	Apply discharge license for effluent discharge. Treat the discharge to comply with the requirement in TM-DSS.	To ensure compliance with effluent discharge requirement	HyD's Contractor	Whole construction site	Throughout construction phase	WPCO, TM-DSS, EIAO-TM
W16	Reuse treated effluent onsite, e.g. dust suppression and general cleaning.	To minimize wastewater generation	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
W17	Monitor effluent water quality.	To ensure compliance with effluent discharge requirement	HyD's Contractor	Whole construction site	Throughout construction phase	WPCO, EIAO-TM
W18	Register as chemical waste producer if chemical waste will be generated.	To control chemical waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
W19	Perform maintenance of vehicles and equipment that have oil leakage and spillage potential on hard standings within a bunded area with sumps and oil interceptors.	To prevent oil leakage or spillage	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
W20	Dispose chemical waste in accordance to Waste Disposal Ordinance. Follow the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* , examples as follows: - Store chemical wastes at designated safe location with adequate space	To avoid accident in waste storage and handling	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
W21	Placing chemical toilet away from waterbodies as far as possible and on stable, impermeable surface	To minimize accidental leakage of sewage into waterbodies	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
W22	Carry out water quality monitoring at water sensitive receivers	To identify any water quality impact due to the project	HyD's Contractor	Whole construction site	Before, throughout and after construction phase	EIAO-TM
W23	Carry out regular site inspection to audit the implementation of mitigation measures	To check the implemenation status and effectiveness of mitigation measures	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM, APCO

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
Ecological Impact						
Construction Phase						
E1	Before site clearance, the work area should be inspected by ecologist to confirm no active bird nest is present. If any active bird nest is identified, suitable size of buffer area should be established until the nest is abandoned.	To minimize direct impact on the breeding activity of Black-collared Starling	HyD's Contractor	Whole construction site	Before site clearance	EIAO-TM
E2	Erection of hoarding, fencing or provision of clear demarcation of work zones	To minimize direct impact outside work boundary	HyD's Contractor	Whole construction site	Throughout construction phase	EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
Waste Management						
Construction Phase						
WM1	Allocate an area for waste sorting and storage of C&D materials into the following categories for reuse, recycle or disposal if possible. Remove waste from the Site for sorting once generated if no suitable space can be identified.	To minimize waste generation	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
	- excavated material suitable for reuse					
	- inert C&D materials for reuse/disposal offsite					
	- non-inert C&D materials for disposal at landfills					
	- chemical waste					
	- general refuse					
WM2	Adopt good site practice as follows:	To proper handling of waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
	- Provide training to workers on site cleanliness, waste management (waste reduction, reuse and recycle) and chemical handling procedures					
	- Provide sufficient waste collection points and regular removal					
	- Cover waste materials with tarpaulin or in enclosure during transportation					
	- Maintain drainage systems, sumps and oil interceptors					
	- Sort out chemical waste for proper handling and treatment onsite or offsite					
WM3	Adopt waste reduction measures as follows:	To minimize waste generation	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
	- Allocate area/containers for sorting, recovering and storing waste for reuse, recycle or disposal (e.g. demolition debris and excavated materials, general refuse like aluminium cans). Remove waste from the Site for sorting once generated if no suitable space can be identified.					
	- Allocate area for proper storage of construction materials to prevent contamination					

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
WM4	Prepare and implement a site specific Waste Management Plan (WMP) as part of Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/25. Detail waste management method in the form of avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal according to the recommendations on the EIA and EM&A Manual. It should be approved by the ER and regularly reviewed.	To provide guidance to waste management	HyD's Contractor	Whole construction site	Throughout construction phase	ETWB TCW No. 19/2005, EIAO-TM
WM5	Store waste materials properly as follows: - Avoid contamination by proper handling and storing waste - Prevent erosion by covering waste - Maintain and clean storage area regularly - Sort and stockpile different materials at designated location to enhance reuse	To properly store waste	HyD's Contractor	Whole construction site	Throughout construction phase	ProPECC PN 1/94, EIAO-TM
WM6	Apply for relevant waste disposal permits in accordance with the Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28).	To properly dispose waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance (Cap. 354), Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 345) and the Land (Miscellaneous Provisions) Ordinance (Cap. 28), Dumping at Sea Ordinance (Cap. 466), EIAO-TM
WM7	Implement trip-ticket system for recording the amount of waste generated, recycled and disposed, including chemical wastes	To monitor movement of waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, Waste Disposal Ordinance, EIAO-TM
WM8	Reduce water content in wet spoil generated from piling work by mixing with dry materials. Only dispose treated spoil with less than 25% dry density to Public Fill Reception Facilities	To minimize load to reception facilities	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
WM9	Dispose dry waste or waste with less than 70% water content by weight to landfill	To minimize load to reception facilities	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
WM10	Follow the *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste* as follows: - Store chemical wastes with suitable containers. Seal and maintain the container to avoid leakage or spillage during storage, handling and transport - Label chemical waste containers in both English and Chinese with instructions in accordance to Schedule 2 of the Waste Disposal (Chemical Waste) (General) Regulation - The container capacity should be smaller than 450 litres unless agreed by the EPD	To avoid accident in waste storage and handling	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
W11	Comply with the requirement of the chemical storage area: - Store only chemical waste and label clearly the chemical characters of the waste - Have at least 3 sides enclosed and protected from rainfall with cover - Provide sufficient ventilation - Have impermeable floor and has bunds to contain 110% of the capacity of the largest container or 20% of the total volume of the stored waste in the area, whichever is larger - Adequately spaced incompatible materials	To ensure proper storage of chemical waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
W12	Transfer used lubricants, waste oils and other chemicals to oil recycling companies, if possible, and empty oil drums for reuse or refill. No direct or indirect discharge is permitted	To ensure proper disposal of chemical waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
W13	Hire licensed chemical waste disposal contractors for waste collection and removal. Dispose chemical waste at the approved CWTC at Tsing Yi or other licensed facility	To ensure proper disposal of chemical waste	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal (Chemical Waste) (General) Regulation, EIAO-TM
W14	Provide recycling bins for sorting out recyclables for collection by recycling companies. Non-recyclables should be removed to designated landfills every day by licensed collectors to prevent environmental and health nuisance.	To ensure proper recycling and disposal of general refuse	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM
W15	Terminate excavation work if contaminated soil is found. Prepare Land Contamination Plan (CAP) in accordance with EPD's Guidance Note for Contaminated Land Assessment and Remediation for identifying soil and groundwater sampling locations, followed by testing and remediation where necessary.	To identify presence of contaminated soil and provide proper remediation	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
W16	Marine sediment shall be cement solidified and and sent to laboratory for Toxicity Characteristics Leaching Procedure (TCLP) test according to USEPA Method 1311 and 6020. The results are considered satisfactory if Universal Treatment Standards (UTS) are being met as per Table 4.6 of Practice Guide of Investigation and Remediation of Contaminated Land. The Unconfined Compressive Strength (UCS) of the solidified sediment shall also reach 1000kPa according to the above Practice Guide.If the TCLP and UCS testing results cannot meet the criteria, the sediment shall be retreated by cement solidification. After passing the tests, the solidified sediment shall be backfilled on land after the piling work (e.g. for construction of new piers and abutments). Alternatively, the solidified sediment shall be delivered to public fill reception facilities for beneficial reuse as the last resort.	To prevent leakage of contaminants to water.	HyD's Contractor	Whole construction site	Throughout construction phase	Waste Disposal Ordinance, EIAO-TM, Practice Guide of Investigation and Remediation of Contaminated Land

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
Landscape and Visual						
Construction Phase						
CM1	The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape. (Measure for mitigating Landscape and Visual impacts)	To minimise landscape footprint and reduce potential for visual impact	HyD's Contractor	Adjacent to existing bridge	Construction Phase	To approved Detailed Design and RLA's Approval
CM2	Reduction of construction period to practical minimum. (Measure for mitigating Visual impact)	To reduce duration of impacts	HyD's Contractor	N/A	Construction Phase	To approved Detailed Design and RLA's Approval
CM3	Construction traffic (land and sea) including construction plant, construction vessels and barges should be kept to a practical minimum. (Measure for mitigating Visual impact)	To minimise temporary visual impacts	HyD's Contractor	Connecting roads to site and Silver Mine Bay	Construction Phase	To approved Detailed Design and RLA's Approval
CM4	Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours. (Measure for mitigating Visual impact)	To screen works sites and plant	HyD's Contractor	Around works areas	Construction Phase	To approved Detailed Design and RLA's Approval
CM5	Avoidance of excessive height and bulk of site buildings and structures. (Measure for mitigating Visual impact)	To reduce temporary visual impacts	HyD's Contractor	Within works sites	Construction Phase	To approved Detailed Design and RLA's Approval
CM6	Control of night-time lighting by hooding all lights and through minimisation of night working periods. (Measure for mitigating Visual impact)	To reduce temporary visual impacts	HyD's Contractor	Within works sites	Construction Phase	To approved Detailed Design and RLA's Approval

EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to Implement the measure	Location of the measure	When to implement the measure	What requirements or standard for the measure to achieve
CM7	All existing trees shall be carefully protected before, during construction and after construction. A Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees or trees to be transplanted, including trees in contractor's works areas for approval by the Registered Landscape Architect (RLA). This method statement for tree protection and transplanting shall make reference to "Guidelines on Tree Preservation during Construction" and "Guidelines on Tree Transplanting" published by GLTM of the DEVB. Early preparation of trees to be transplanted shall be undertaken to increase their likely survival rate following transplanting. (Measure for mitigating Landscape impact)	To minimise tree impacts and maximise tree preservation	HyD's Contractor	Within and adjacent to works sites	Construction Phase	To approved Detailed Design and RLA's Approval
CM8	Minimisation of Impacts to Wang Tong River through minimised and carefully controlled dredging for pile/abutment removal/construction works. (Measure for mitigating Landscape impact)	To minimise contamination of Wang Tong River	HyD's Contractor	Wang Tong River	Construction Phase	To approved Detailed Design and RLA's Approval

Appendix 4.1

Action and Limit Level

Action and Limit Level

Action and Limit Level for Noise Monitoring

Monitoring Station ID	Time Period	Parameter	Action Level	Limit Level dB(A)
NMS1	0700-1900 hrs on normal weekdays	$L_{eq, 30min}$	When one documented complaint is received	75

Baseline Level for Noise Monitoring
(For reference and calculation of Construction Noise Levels (CNLs))

Monitoring Station ID	Monitoring Station	0700-1900 hrs on normal weekdays	
		$L_{eq (30min)}$, dB(A)	
		Average	Range
NMS1	1 Tung Wan Tau Road	60.1	52.7 – 64.4

Remark:

Each of daily 30-minute sampling period includes six consecutive $L_{eq (5min)}$ readings.

Due to free-field measurement, a correction factor of +3 dB(A) is adopted.

All the Construction Noise Levels (CNLs) reported in this report were adjusted with the corresponding baseline level (i.e. Measured Leq – Baseline Leq = CNL), in order to facilitate the interpretation of the noise exceedance.

Action and Limit Level for Air Quality Monitoring

Monitoring Station ID	1-hour TSP Level		24-hour TSP Level	
	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AMS1	276.5	500.0	176.0	260.0
AMS2	283.7	500.0	176.0	260.0

Action and Limit Level for Water Monitoring

Monitoring Station	Depth	DO (mg/L) +		Turbidity (NTU) ~		SS (mg/L) ~	
		Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
W1	Middle	6.5	5.3	7.7 NTU or 120% of upstream control station's turbidity at the same tide of the same day, whichever is higher	12.4 NTU or 130% of upstream control station's turbidity at the same tide of the same day, whichever is higher	8.9 mg/L or 120% of upstream control station's SS at the same tide of the same day, whichever is higher	11.3 mg/L or 130% of upstream control station's SS at the same tide of the same day, whichever is higher
W2							
W4							
W5	Middle	5.9	5.5	9.8 NTU or 120% of upstream control station's turbidity at the same tide of the same day, whichever is higher	10.5 NTU or 130% of upstream control station's turbidity at the same tide of the same day, whichever is higher	12.6 mg/L or 120% of upstream control station's SS at the same tide of the same day, whichever is higher	15.0 mg/L or 130% of upstream control station's SS at the same tide of the same day, whichever is higher
W6							
W7							
W8	Surface & Middle						
	Bottom	5.9	5.5				

Remarks +: For DO, non-compliance occurs when monitoring results is lower than the limits.
Remarks ~: For SS and Turbidity, non-compliance occurs when monitoring results is larger than the limits.

Appendix 4.2

Copies of Calibration Certificates

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CERTIFICATE OF CALIBRATION

Certificate No.: 21CA1021 05-02 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	Honglim Co., Ltd.
Type/Model No.:	HLES-02
Serial/Equipment No.:	2019612534
Adaptors used:	-

Item submitted by

Curstomer:	Lam Environmental Services Limited.
Address of Customer:	-
Request No.:	-
Date of receipt:	21-Oct-2021

Date of test: 25-Oct-2021

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	04-May-2022	SCL
Preamplifier	B&K 2673	2239857	31-May-2022	CEPREI
Measuring amplifier	B&K 2610	2346941	01-Jun-2022	CEPREI
Signal generator	DS 360	33873	27-May-2022	CEPREI
Digital multi-meter	34401A	US36087050	27-May-2022	CEPREI
Audio analyzer	8903B	GB41300350	28-May-2022	CEPREI
Universal counter	53132A	MY40003662	02-Jun-2022	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1. The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
2. The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
3. The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory: Feng Junqi **Date:** 26-Oct-2021 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the conditon of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument. The results apply to the item as received.

綜合試驗有限公司
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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 21CA1021 05-02 **Page:** 2 **of** 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.02	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz **STF = 0.011 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz **Actual Frequency = 998.27 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz **TND = 0.4 %**

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip **Date:** 25-Oct-2021

Checked by: Chan Yuk Yiu **Date:** 26-Oct-2021

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 22CA0412 03 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Class 1)	Microphone	Preamp
Manufacturer:	Larson Davis	PCB	PCB
Type/Model No.:	LxT1	377B02	PRMLxT1L
Serial/Equipment No.:	0006346	326425	069995
Adaptors used:	-	-	-

Item submitted by

Customer Name:	Lam Environmental Services Limited
Address of Customer:	-
Request No.:	-
Date of receipt:	12-Apr-2022

Date of test: 17-Apr-2022

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2022	CIGISMEC
Signal generator	DS 360	33873	27-May-2022	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory: Feng Junqi **Date:** 19-Apr-2022 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument. The results apply to the item as received.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

1, Electrical Tests

The electrical tests were perfomed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	2.1
	Lin	Pass	1.6	2.2
Linearity range for Leq	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100μs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip Date: 17-Apr-2022

Checked by: Chan Yuk Yiu Date: 19-Apr-2022

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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SMECLab

Sound level meter type:	LxT1	Serial No.	0006346	Date	17-Apr-2022
Microphone type:	377B02	Serial No.	326425		
Preamp type:	PRMLxT1L	Serial No.	069995	Report:	22CA0412 03

SELF GENERATED NOISE TEST

The noise test is performed in the most sensitive range of the SLM with the microphone replaced by an equivalent impedance.

Noise level in A weighting	9.3	dB
Noise level in C weighting	12.5	dB
Noise level in Lin	19.1	dB

LINEARITY TEST

The linearity is tested relative to the reference sound pressure level using a continuous sinusoidal signal of frequency 4 kHz. The measurement is made on the reference range for indications at 5 dB intervals starting from the 94 dB reference sound pressure level. And until within 5 dB of the upper and lower limits of the reference range, the measurements shall be made at 1 dB intervals.(SLM set to LEQ/SPL)

Reference/Expected level	Actual level		Tolerance	Deviation	
	non-integrated	integrated		non-integrated	integrated
dB	dB	dB	+/- dB	dB	dB
94.0	94.0	94.0	0.7	0.0	0.0
99.0	99.0	99.0	0.7	0.0	0.0
104.0	104.0	104.0	0.7	0.0	0.0
109.0	109.0	109.0	0.7	0.0	0.0
114.0	114.0	114.0	0.7	0.0	0.0
115.0	115.0	115.0	0.7	0.0	0.0
116.0	116.0	116.0	0.7	0.0	0.0
117.0	117.0	117.0	0.7	0.0	0.0
118.0	118.0	118.0	0.7	0.0	0.0
119.0	119.0	119.0	0.7	0.0	0.0
120.0	120.0	120.0	0.7	0.0	0.0
89.0	89.0	89.0	0.7	0.0	0.0
84.0	84.0	84.0	0.7	0.0	0.0
79.0	79.0	79.0	0.7	0.0	0.0
74.0	74.0	74.0	0.7	0.0	0.0
69.0	69.0	69.0	0.7	0.0	0.0
64.0	64.0	64.0	0.7	0.0	0.0
59.0	59.0	59.0	0.7	0.0	0.0
54.0	54.0	54.0	0.7	0.0	0.0
49.0	48.9	48.9	0.7	-0.1	-0.1
44.0	44.0	44.0	0.7	0.0	0.0
39.0	39.0	39.0	0.7	0.0	0.0
34.0	34.0	34.0	0.7	0.0	0.0
33.0	33.0	33.0	0.7	0.0	0.0

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Tel: (852) 2873 6860 Fax: (852) 2555 7533 E-mail: smec@cigismec.com Website: www.cigismec.com

SMECLab

Sound level meter type:	LxT1	Serial No.	0006346	Date	17-Apr-2022
Microphone type:	377B02	Serial No.	326425		
Preamp type:	PRMLxT1L	Serial No.	069995	Report:	22CA0412 03

32.0	31.9	31.9	0.7	-0.1	-0.1
31.0	30.9	30.9	0.7	-0.1	-0.1
30.0	29.9	29.9	0.7	-0.1	-0.1

Measurements for an indication of the reference SPL on all other ranges which include it

Other ranges	Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
20-120	94.0	94.0	0.7	0.0

Measurements on all level ranges for indications 2 dB below the upper limit and 2 dB above the lower limit

Ranges	Reference/Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
20-120	30.0	29.9	0.7	-0.1
	118.0	118.0	0.7	0.0

FREQUENCY WEIGHTING TEST

The frequency response of the weighting netwoks are tested at octave intervals over the frequency ranges 31.5 Hz to 12500 Hz. The signal level at 1000 Hz is set to give an indication of the reference SPL.

Frequency weighting A:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	54.6	54.6	1.5	1.5	0.0
63.1	94.0	67.8	67.8	1.5	1.5	0.0
125.9	94.0	77.9	77.9	1.0	1.0	0.0
251.2	94.0	85.4	85.4	1.0	1.0	0.0
501.2	94.0	90.8	90.8	1.0	1.0	0.0
1995.0	94.0	95.2	95.2	1.0	1.0	0.0
3981.0	94.0	95.0	95.0	1.0	1.0	0.0
7943.0	94.0	92.9	92.9	1.5	3.0	0.0
12590.0	94.0	89.7	89.7	3.0	6.0	0.0

Frequency weighting C:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	91.0	91.0	1.5	1.5	0.0
63.1	94.0	93.2	93.2	1.5	1.5	0.0
125.9	94.0	93.8	93.8	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0

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SMECLab

Sound level meter type: LxT1 Serial No. 0006346 Date 17-Apr-2022

Microphone type: 377B02 Serial No. 326425

Preamp type: PRMLxT1L Serial No. 069995 Report: 22CA0412 03

1995.0	94.0	93.8	93.9	1.0	1.0	0.1
3981.0	94.0	93.2	93.3	1.0	1.0	0.1
7943.0	94.0	91.0	91.0	1.5	3.0	0.0
12590.0	94.0	87.8	87.8	3.0	6.0	0.0

Frequency weighting Lin:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	94.0	94.0	1.5	1.5	0.0
63.1	94.0	94.0	94.0	1.5	1.5	0.0
125.9	94.0	94.0	94.0	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0
1995.0	94.0	94.0	94.0	1.0	1.0	0.0
3981.0	94.0	94.0	94.0	1.0	1.0	0.0
7943.0	94.0	94.0	94.1	1.5	3.0	0.1
12590.0	94.0	94.0	94.0	3.0	6.0	0.0

TIME WEIGHTING FAST TEST

Time weighting F is tested on the reference range with a single sinusoidal burst of duration 200 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	115.0	114.9	1.0	1.0	-0.1

TIME WEIGHTING SLOW TEST

Time weighting S is tested on the reference range with a single sinusoidal burst of duration 500 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	111.9	111.8	1.0	1.0	-0.1

PEAK RESPONSE TEST

The onset time of the peak detector is tested on the reference range by comparing the response to a 100 us rectangular test pulse with the response to a 10 ms reference pulse of the same amplitude. The amplitude of the 10 ms reference pulse is such as to produce an indication 1 dB below the upper limit of the primary indicator range.

Positive polarities: (Weighting Z, set the generator signal to single, Lzpeak)

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	119.3	2.0	0.3

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SMECLab

Sound level meter type:	LxT1	Serial No.	0006346	Date	17-Apr-2022
Microphone type:	377B02	Serial No.	326425		
Preamp type:	PRMLxT1L	Serial No.	069995	Report:	22CA0412 03

Negative polarities:

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	119.3	2.0	0.3

RMS ACCURACY TEST

The RMS detector accuracy is tested on the reference range for a crest factor of 3.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz. (Set to INT)

	Ref. Level	Expected level	Tone burst signal	Tolerance	Deviation
Time wighting	dB	dB	indication(dB)	+/- dB	dB
Slow	114.0+6.6	114.0	113.9	0.5	-0.1

TIME WEIGHTING IMPULSE TEST

Time weighting I is tested on the reference range (Set the SLM to LAImax)
Test frequency: 2000 Hz
Amplitude: The upper limit of the primary indicator range.

Single sinusoidal burst of duration 5 ms:

Ref. Level	Single burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
120.0	111.2	111.1	2.0	-0.1

Repeated at 100 Hz

Ref. Level	Repeated burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
120.0	117.3	117.1	1.0	-0.2

TIME AVERAGING TEST

This test compares the SLM reading for continuous sine signals with readings obtained from a sine tone burst sequence having the same RMS level. The test level is 30 dB below the upper limit of the linearity range and repeated for Type 1 SLM with 40 dB below the upper limit of the linearity.

Frequency of tone burst: 4000 Hz
Duration of tone burst: 1 ms

Repetition Time	Level of tone burst	Expected Leq	Actual Leq	Tolerance	Deviation	Remarks
msec	dB	dB	dB	+/- dB	dB	
1000	90.0	90.0	89.9	1.0	-0.1	60s integ.
10000	80.0	80.0	79.9	1.0	-0.1	6min. integ.

PULSE RANGE AND SOUND EXPOSURE LEVEL TEST

The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz
Integration time: 10 sec

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SMECLab

Sound level meter type:	LxT1	Serial No.	0006346	Date	17-Apr-2022
Microphone type:	377B02	Serial No.	326425		
Preamp type:	PRMLxT1L	Serial No.	069995	Report:	22CA0412 03

The integrating sound level meter set to Leq:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10	90.0	60.0	60.0	1.7	0.0

The integrating sound level meter set to SEL:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10.0	90.0	70.0	70.0	1.7	0.0

OVERLOAD INDICATION TEST

For SLM capable of operating in a non-integrating mode.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz.

Level	Level reduced by	Further reduced	Difference	Tolerance	Deviation
at overload (dB)	1 dB	3 dB	dB	dB	dB
114.2	113.2	110.2	3.0	1.0	0.0

For integrating SLM, with the instrument indicating Leq.

For integrating SLM, with the instrument indicating Leq and set to the reference range. The test signal as following:
The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz
Integration time: 10 sec
Single burst duration: 1 msec

Rms level	Level reduced by	Expected level	Actual level	Tolerance	Deviation
at overload (dB)	1 dB	dB	dB	dB	dB
120.9	119.9	79.9	79.9	2.2	0.0

ACOUSTIC TEST

The acoustic test of the complete SLM is tested at the frequency 125 Hz and 8000 Hz using a B&K type 4226 Multifunction Acoustic Calibrator. The test is performed in A weighting.

Frequency	Expected level	Actual level	Tolerance (dB)		Deviation
Hz	dB	Measured (dB)	+	-	dB
1000	94.0	94.0	0.0	0.0	0.0
125	77.9	77.9	1.0	1.0	0.0
8000	92.9	90.8	1.5	3.0	-2.1

---------END---------

TISCH Environmental

RECALIBRATION DUE DATE:
August 3, 2022

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	August 3, 2021	**Rootsmeter S/N:** 438320	**Ta:** 295	°K
Operator:	Jim Tisch		**Pa:** 750.3	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **3166**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3610	3.2	2.00
2	3	4	1	0.9540	6.4	4.00
3	5	6	1	0.8460	7.9	5.00
4	7	8	1	0.8070	8.7	5.50
5	9	10	1	0.6630	12.7	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H(Ta/Pa)}$ (y-axis)
0.9930	0.7296	1.4123	0.9957	0.7316	0.8868
0.9888	1.0365	1.9973	0.9915	1.0393	1.2541
0.9868	1.1664	2.2330	0.9895	1.1696	1.4021
0.9857	1.2215	2.3420	0.9884	1.2248	1.4705
0.9804	1.4788	2.8246	0.9831	1.4828	1.7735
QSTD	**m=**	**1.88375**	**QA**	**m=**	**1.17957**
	b=	**0.03970**		**b=**	**0.02493**
	r=	**0.99998**		**r=**	**0.99998**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H(Ta/Pa)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric 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

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(541) 471-7116 (Fax)
Service@metone.com

Calibration Certificate

The calibration results on this report certify that this instrument complies with the product specifications at the time of calibration. Calibration was performed according to accepted industry methods using equipment, procedures, and standards that are traceable to NIST and ISO.

Recommended calibration interval is 12 months from the first day of use.

Instrument Model# *Aerocet 831* **Instrument Serial#** *Y23153*

Date of Calibration *9/9/2021* **Sensor #** *19493*

JGoddard AT 8
Calibration Technician

AT 1
Quality Check

Temperature *22* °C **Relative Humidity** *41* %

Test Procedure: *Aerocet 831-6100*

PSL Size (µm)	Test Results	Test Spec.	Lot# NIST	Expiration
0.3	Pass	± 10%	223077	04/30/2023
0.5	Pass	± 10%	219480	11/30/2022
1.0	Pass	± 10%	229294	8/31/2023
2.0	Pass	± 10%	REF	NA
5.0	Pass	± 10%	REF	NA
3.0	Pass	± 10%	REF	NA
5.0	Pass	± 10%	REF	NA
10.0	Pass	± 10%	REF	NA

Standards	Model	SN	Cal Due
RH/TEMP SENSOR	083E-1-35	U20080	11/23/2021
Flowmeter	DCL-M	103751	4/1/2022
RH/TEMP SENSOR	083E-1-6	R20313	9/17/2021
DMM	289	27720071	8/24/2022

Hong Kong Calibration Ltd.
香 港 校 正 有限公司

Calibration Certificate

Certificate No. 200342 Page 1 of 2 Pages

Customer : Lam Environmental Services Ltd

Address : 19/F, Remex Centre, 42 Wong Chuk Hang Road, Hong Kong

Order No. : Q14456 **Date of receipt :** 12-Jan-22

Item Tested

Description : Aerosol Mass Monitor

Manufacturer : Met One **I.D.** : --

Model : Aerocet 831 **Serial No.** : W16848

Test Conditions

Date of Test : 24-Jan-22 **Supply Voltage :** --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Calibration procedure : Manufacturer recommended method (gravimetric), Z28.

Test Results

All results were within the tolerance(s).

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S136B	Stop Watch	102964	SCL-HKSAR
S238	Micro Balance	108228	NIM-PRC
S201	Std. Test Dust	61291	NIST
S207B	Std. Flowmeter	LL-2104002489	NIM-PRC

The values given in this Calibration 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 environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : Kin Wong

Approved by : Steve Kwan

Date: 24-Jan-22

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

O

Calibration Certificate

Results :

1. General

Internal Filters : checked and found clean.

2. Flow Meter

UUT Nominal Value (LPM)	Measured Value (LPM)	Tolerance (LPM)	Uncertainty
2.83	2.80	± 0.15	± 0.05

3. Timer

Reference Value	UUT Reading	Tolerance	Uncertainty
10′ 00″ 25	10 min	± 2 sec/hr	± 0.5 sec/hr

4. Dust Particle (PM_{10})

Applied Value ($\mu g/m^3$)	UUT Reading ($\mu g/m^3$) K Factor : 0.66	Tolerance	Uncertainty
630	627	± 20 %	± 10 %

Remark : 1. UUT: Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. ISO 12103-1 A1 respirable standard test dust was used for the calibration.
4. The K Factor Setting : 0.66.

---------- END ----------

Lam Environmental Services Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location	:	AMS1	**Calbration Date**	:	9-Mar-22
Equipment no.	:	HVS020	**Calbration Due Date**	:	9-May-22

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition					
Temperature, T_a	291.7	Kelvin	**Pressure, P_a**	1017	mmHg

Orifice Transfer Standard Information					
Equipment No.	**3880**	**Slope, m_c**	2.08437	**Intercept, bc**	-0.01508
Last Calibration Date	3-Aug-21	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$			
Next Calibration Date	3-Aug-22	$= m_c \times Q_{std} + b_c$			

Calibration of TSP						
Calibration Point	**Manometer Reading H (inches of water)**			**Q_{std}** (m^3 / min.) **X-axis**	**Continuous Flow Recorder, W** (CFM)	**IC** ($W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31$) **Y-axis**
	(up)	(down)	(difference)			
1	1.3	1.3	2.6	0.7906	34	34.4313
2	2.3	2.3	4.6	1.0493	42	42.5327
3	2.9	2.9	5.8	1.1773	48	48.6088
4	3.6	3.6	7.2	1.3109	54	54.6850
5	4.5	4.5	9.0	1.4648	59	59.7484

By Linear Regression of Y on X

Slope, m	=	38.6078	Intercept, b	=	3.2711
Correlation Coefficient*	=	0.9967			
Calibration Accepted	=	Yes/~~No~~**			

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by	:	Harry Po	**Checked by**	:	Alan Ng
Date	:	9-Mar-22	**Date**	:	9-Mar-22

Lam Environmental Services Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location	:	AMS2	**Calbration Date**	:	9-Mar-22
Equipment no.	:	HVS019	**Calbration Due Date**	:	9-May-22

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition					
Temperature, T_a	291.7	Kelvin	**Pressure, P_a**	1017	mmHg

Orifice Transfer Standard Information					
Equipment No.	**3166**	**Slope, m_c**	2.08437	**Intercept, bc**	-0.01508
Last Calibration Date	3-Aug-21	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$			
Next Calibration Date	3-Aug-22	$= m_c \times Q_{std} + b_c$			

Calibration of TSP						
Calibration Point	**Manometer Reading H (inches of water)** (up)	(down)	(difference)	**Q_{std}** (m^3 / min.) **X-axis**	**Continuous Flow Recorder, W** (CFM)	**IC** ($W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31$) **Y-axis**
1	1.7	1.7	3.4	0.9031	30	30.3805
2	2.3	2.3	4.6	1.0493	38	38.4820
3	3.1	3.1	6.2	1.2170	45	45.5708
4	3.5	3.5	7.0	1.2927	50	50.6342
5	4.3	4.3	8.6	1.4320	56	56.7103

By Linear Regression of Y on X

Slope, m = 49.6309 Intercept, b = -14.1495

Correlation Coefficient* = 0.9985

Calibration Accepted = Yes/~~No~~**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks :

Calibrated by	:	Harry Po	**Checked by**	:	Alan ng
Date	:	9-Mar-22	**Date**	:	9-Mar-22

Lam Environmental Services Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location	:	AMS1	**Calbration Date**	:	10-May-22
Equipment no.	:	HVS020	**Calbration Due Date**	:	10-Jul-22

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition			
Temperature, T_a	298.7 Kelvin	**Pressure, P_a**	1010 mmHg

Orifice Transfer Standard Information					
Equipment No.	**3166**	**Slope, m_c**	2.08437	**Intercept, bc**	-0.01508
Last Calibration Date	3-Aug-21	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$			
Next Calibration Date	3-Aug-22	$= m_c \times Q_{std} + b_c$			

Calibration of TSP						
Calibration Point	**Manometer Reading H (inches of water)**			**Q_{std}** (m^3 / min.) **X-axis**	**Continuous Flow Recorder, W** (CFM)	**IC** ($W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31$) **Y-axis**
	(up)	(down)	(difference)			
1	1.4	1.4	2.8	0.8077	32	31.9057
2	2.5	2.5	5.0	1.0769	44	43.8703
3	3.0	3.0	6.0	1.1789	50	49.8526
4	3.8	3.8	7.6	1.3259	54	53.8408
5	4.7	4.7	9.4	1.4738	60	59.8231

By Linear Regression of Y on X

Slope, m = 41.8400 Intercept, b = -1.2050

Correlation Coefficient* = 0.9955

Calibration Accepted = Yes/~~No~~**

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks :

Calibrated by	:	Harry Po	**Checked by**	:	Alan Ng
Date	:	10-May-22	**Date**	:	10-May-22

Lam Environmental Services Limited

Calibration Data for High Volume Sampler (TSP Sampler)

Location	:	AMS2	**Calbration Date**	:	10-May-22
Equipment no.	:	HVS019	**Calbration Due Date**	:	10-Jul-22

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition					
Temperature, T_a	298.7	Kelvin	**Pressure, P_a**	1010	mmHg

Orifice Transfer Standard Information					
Equipment No.	**3166**	**Slope, m_c**	2.08437	**Intercept, bc**	-0.01508
Last Calibration Date	3-Aug-21	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$			
Next Calibration Date	3-Aug-22	$= m_c \times Q_{std} + b_c$			

Calibration of TSP						
Calibration Point	**Manometer Reading H (inches of water)**			**Q_{std}** (m^3 / min.) **X-axis**	**Continuous Flow Recorder, W** (CFM)	**IC** $(W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31)$ **Y-axis**
	(up)	(down)	(difference)			
1	1.8	1.8	3.6	0.9148	32	31.9057
2	2.2	2.2	4.4	1.0106	38	37.8880
3	3.0	3.0	6.0	1.1789	46	45.8644
4	3.6	3.6	7.2	1.2908	52	51.8467
5	4.4	4.4	8.8	1.4262	56	55.8349

By Linear Regression of Y on X

Slope, m	=	47.3198	Intercept, b	=	-10.4257
Correlation Coefficient*	=	0.9944			
Calibration Accepted	=	Yes/~~No~~**			

* if Correlation Coefficient < 0.990, check and recalibration again.

** Delete as appropriate.

Remarks : _____

Calibrated by	:	Harry Po	**Checked by**	:	Alan ng
Date	:	10-May-22	**Date**	:	10-May-22

ALS Technichem (HK) Pty Ltd
11/F, Chung Shun Knitting Centre
1-3 Wing Yip Street, Kwai Chung
N.T., Hong Kong
T: +852 2610 1044 | F: +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	ALAN NG	**WORK ORDER:**	HK2212773
CLIENT:	LAM GEOTECHNICS LIMITED		
ADDRESS:	19/F, REMEX CENTRE, 42 WONG CHUK HANG ROAD HONG KONG	**SUB- BATCH:**	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	11-Apr-2022
		DATE OF ISSUE:	19-Apr-2022

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client.
The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.
The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.
The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.
The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type:	Multifunctional Meter
Service Nature:	Performance Check
Scope:	Dissolved Oxygen, pH Value, Salinity and Temperature
Brand Name/ Model No.:	[YSI]/ [Professional Plus]
Serial No./ Equipment No.:	[16J104708/17F100236]/ [N/A]
Date of Calibration:	19-April-2022

GENERAL COMMENTS

This report superseded any previous report(s) with same work order number.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2212773

SUB- BATCH: 0
DATE OF ISSUE: 19-Apr-2022
CLIENT: LAM GEOTECHNICS LIMITED

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional Plus]
Serial No./ Equipment No.: [16J104708/17F100236]/ [N/A]
Date of Calibration: 19-April-2022 Date of Next Calibration: 19-July-2022

PARAMETERS:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
8.0	8.0	+0.0
24.0	23.8	-0.2
38.0	37.1	-0.9
	Tolerance Limit (°C)	±2.0

Reference Thermometer:

* The calibration solutions do not have Certificate of Analysis.

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

FT Laboratories Ltd
科達測檢試驗所有限公司

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

Information supplied by customer:

CONTACT:	**MR. JAMES CHU**	**JOB REFERENCE NO.:**	**22777053-C31C3402**
CLIENT:	**LAM ENVIRONMENTAL SERVICES**		
DATE RECEIVED:	**31/03/2022**		
DATE OF ISSUE:	**11/04/2022**		
ADDRESS:	**19/F, REMAX CENTRE,42 WONG CHUK HANG ROAD,HONG KONG**		
PROJECT:	**---**		

METHOD OF PERFORMANCE CHECK/ CALIBRATION:
Ref: APHA22nd ed 2130B

COMMENTS
It is certified that the item under performance check/calibration has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of FT Laboratories Ltd will be followed.

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1807073
Equipment No.:	---
Date of Calibration:	09/04/2022

Remarks:
This is the Final Report. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Certified By: _____ Issue Date: 11/04/2022

WONG Chi Wai Sanio
Senior Chemist

Address: Lot No. DD77 Section 1552 S.A. ss 1RP, Ng Chow South Road, Ping Che, N.T., H.K.
Tel: 27584861, Fax: 27588962

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

WORK ORDER: 22777053-C31C3402
DATE OF ISSUE: 11/04/2022
CLIENT: LAM ENVIRONMENTAL SERVICES

Equipment Type:	Turbidimeter
Brand Name:	Xin Rui
Model No.:	WGZ-3B
Serial No.:	1807073
Equipment No.:	---
Date of Calibration:	09/04/2022
Date of next Calibation:	10/07/2022
Lab I.D.:	H220017-02

Parameters:
Turbidity

Method Ref: APHA 22nd ed. 2130B

Expected Reading (NTU)	Display Reading (NTU)	Tolerance
0	0.00	---
4	3.93	-1.8%
10	9.95	-0.5%
40	39.85	-0.4%
100	100.00	0.0%
400	397	-0.7%
1000	999	-0.1%
	Tolerance Limit (±)	10%

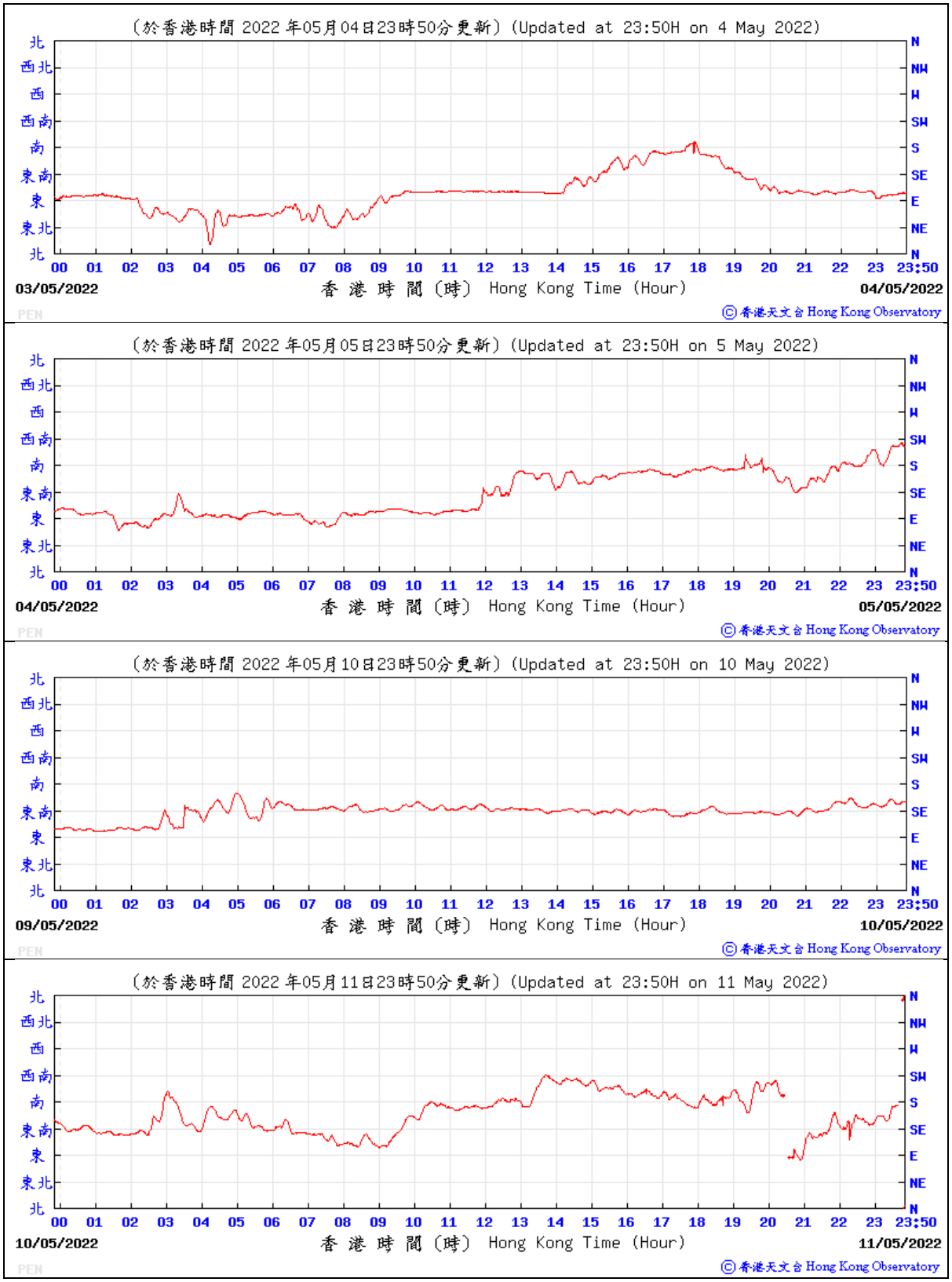
Remark: "Displayed Reading" presents the figures shown on item under calibration/checking regardless of equipment precision or significant figures.

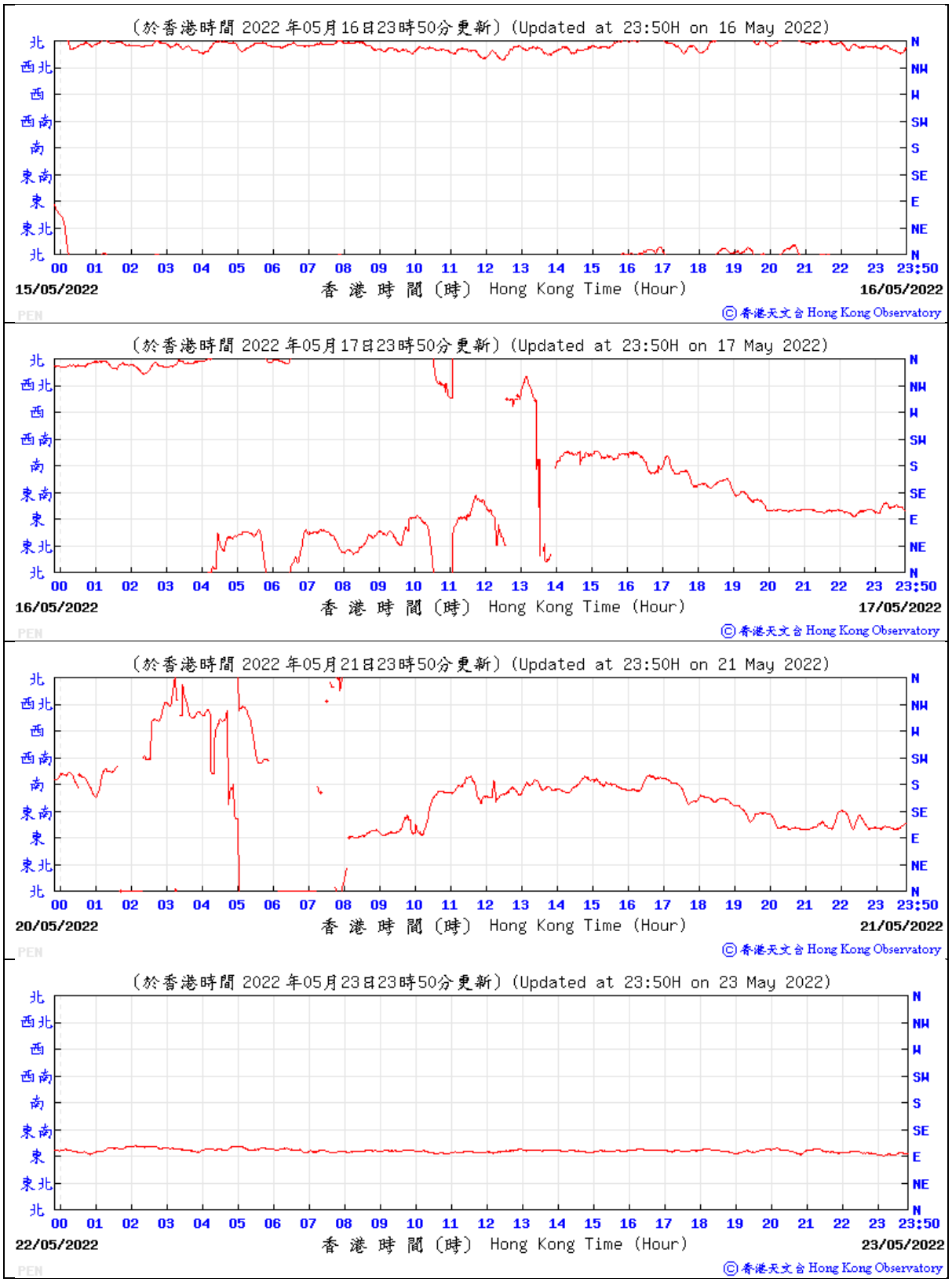
Address: Lot No. DD77 Section 1552 S.A. ss 1RP, Ng Chow South Road, Ping Che, N.T., H.K.
Tel: 27584861, Fax: 27588962

Appendix 4.3

Wind data extracted from HKO Automatic Weather Station

A. Wind Direction extracted from Peng Chau Automatic Weather

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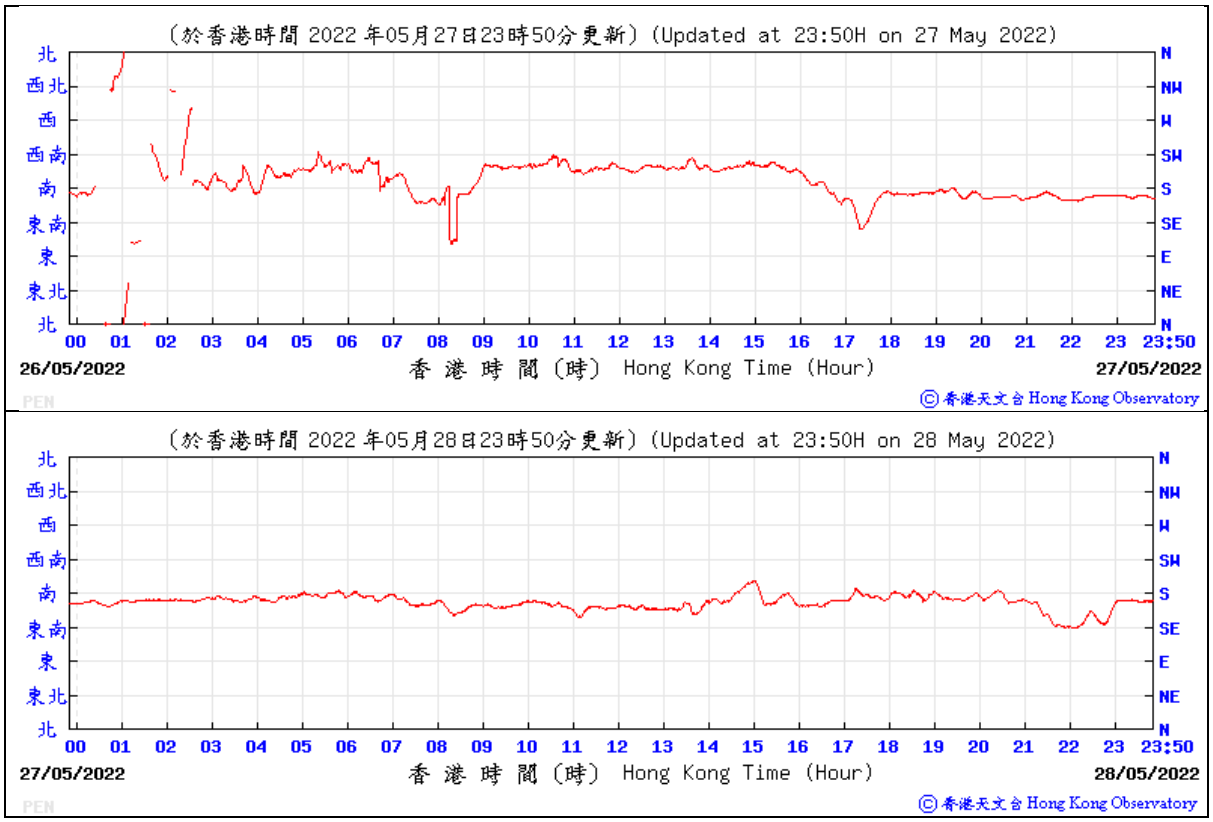
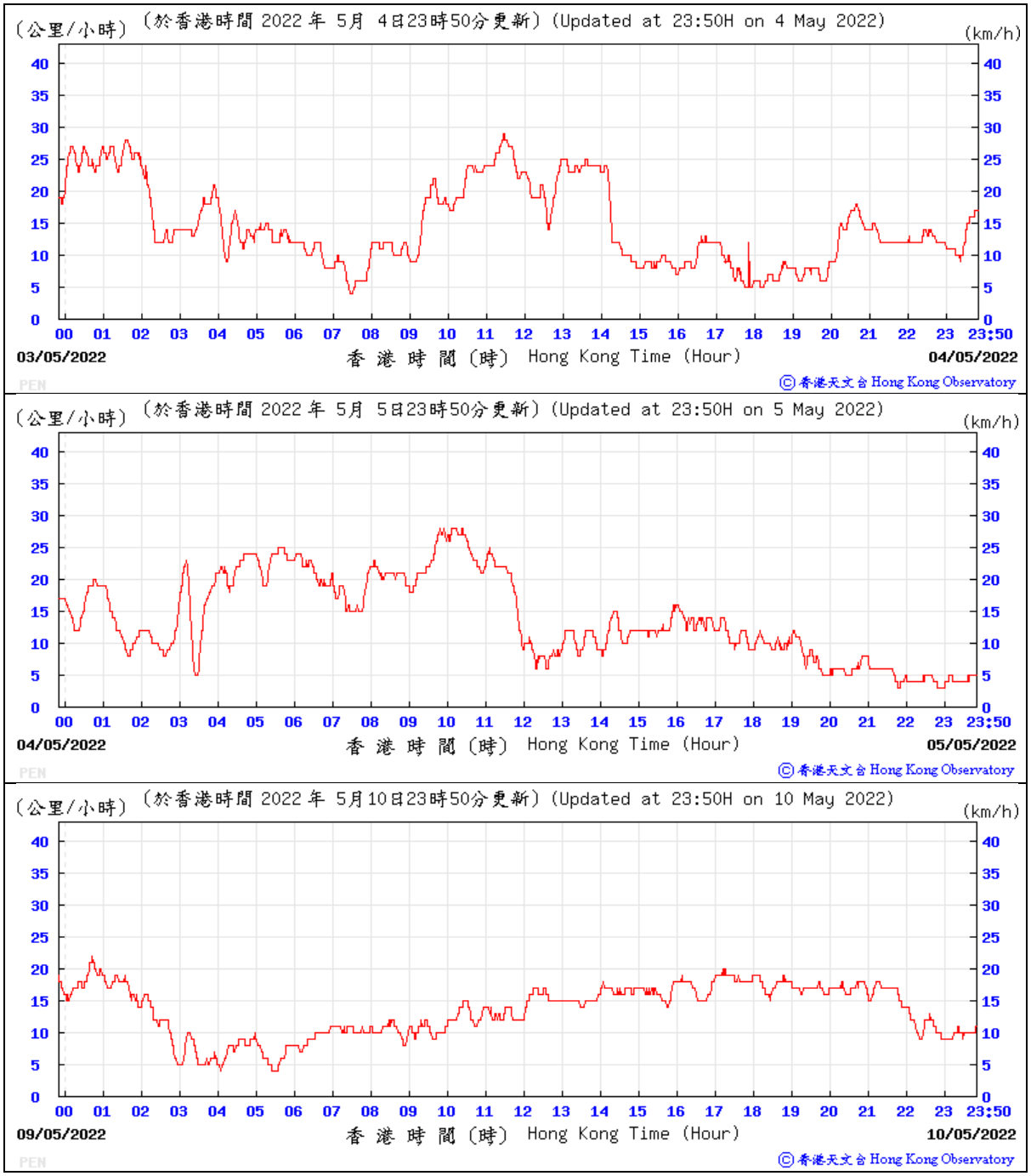
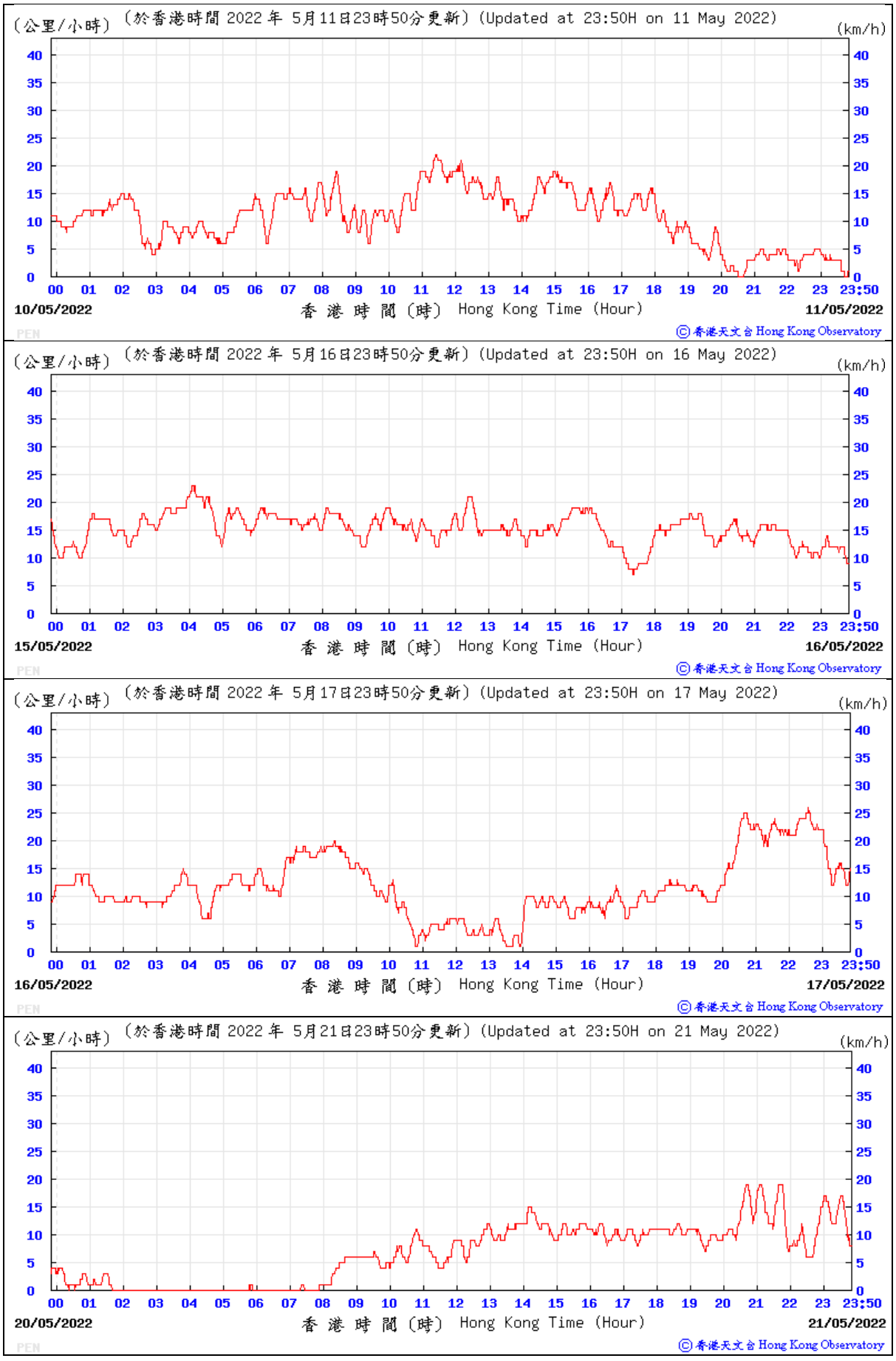
北 西北 西 西南 南 東南 東 東北 北
N NW W SW S SE E NE N
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
15/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
16/05/2022
© 香港天文台 Hong Kong Observatory
(於香港時間 2022 年05月17日23時50分更新) (Updated at 23:50H on 17 May 2022)
北 西北 西 西南 南 東南 東 東北 北
N NW W SW S SE E NE N
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
16/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
17/05/2022
© 香港天文台 Hong Kong Observatory
(於香港時間 2022 年05月21日23時50分更新) (Updated at 23:50H on 21 May 2022)
北 西北 西 西南 南 東南 東 東北 北
N NW W SW S SE E NE N
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
20/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
21/05/2022
© 香港天文台 Hong Kong Observatory
(於香港時間 2022 年05月23日23時50分更新) (Updated at 23:50H on 23 May 2022)
北 西北 西 西南 南 東南 東 東北 北
N NW W SW S SE E NE N
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
22/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
23/05/2022
© 香港天文台 Hong Kong Observatory

Appendix 4.3 Wind Data



B. Wind Speed extracted from Peng Chau Automatic Weather Station

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(km/h)
10/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
11/05/2022
© 香港天文台 Hong Kong Observatory
(公里/小時) (於香港時間 2022 年 5月16日23時50分更新) (Updated at 23:50H on 16 May 2022)
(km/h)
15/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
16/05/2022
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(公里/小時) (於香港時間 2022 年 5月17日23時50分更新) (Updated at 23:50H on 17 May 2022)
(km/h)
16/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
17/05/2022
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(公里/小時) (於香港時間 2022 年 5月21日23時50分更新) (Updated at 23:50H on 21 May 2022)
(km/h)
20/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
21/05/2022
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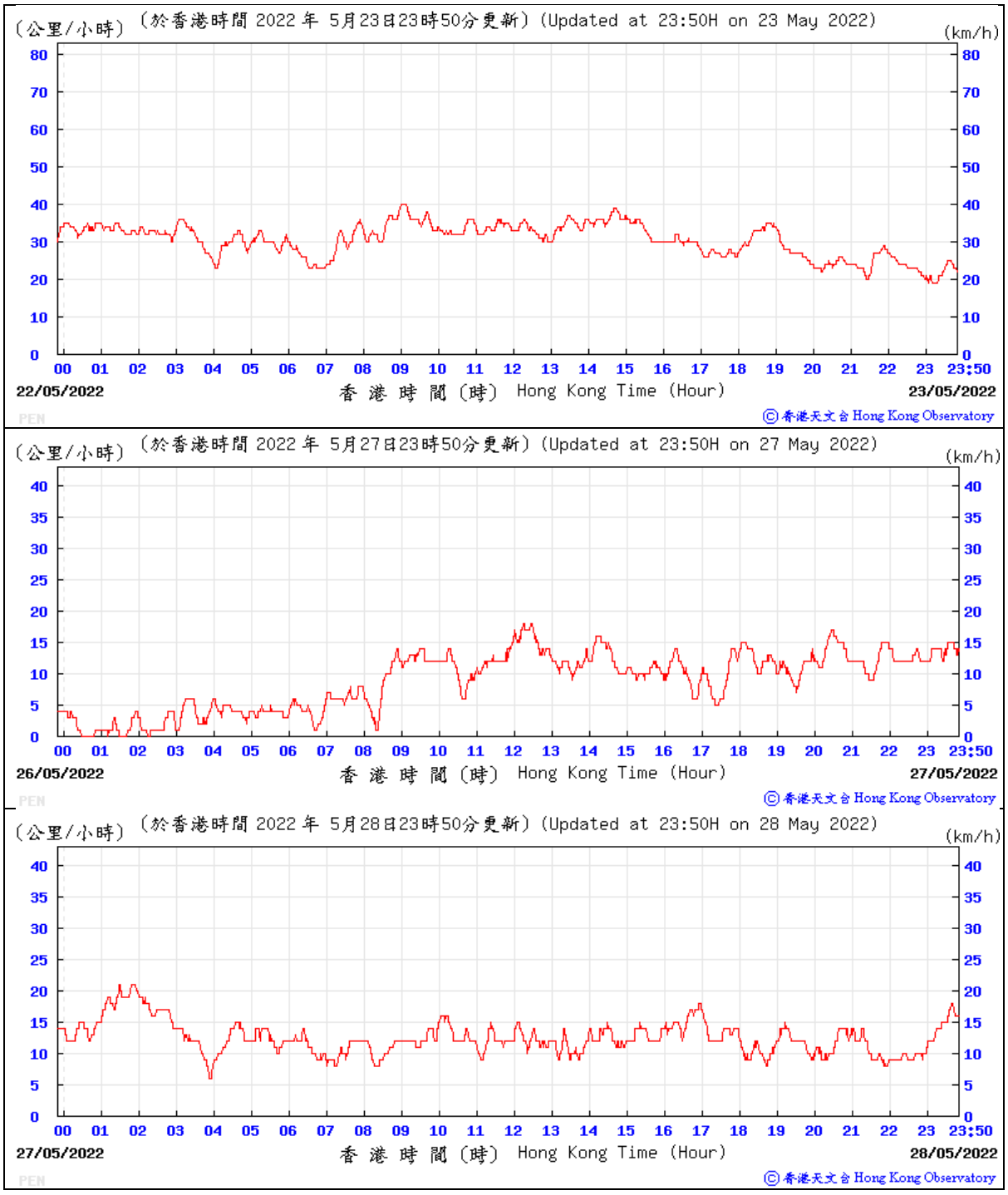
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(km/h)
22/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
23/05/2022
© 香港天文台 Hong Kong Observatory
(公里/小時) (於香港時間 2022 年 5月27日23時50分更新) (Updated at 23:50H on 27 May 2022)
(km/h)
26/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
27/05/2022
© 香港天文台 Hong Kong Observatory
(公里/小時) (於香港時間 2022 年 5月28日23時50分更新) (Updated at 23:50H on 28 May 2022)
(km/h)
27/05/2022
香 港 時 間 (時) Hong Kong Time (Hour)
28/05/2022
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Appendix 5.1

Monitoring Schedules for Reporting Month

Contract No. HY/2019/14
New Wang Tong River Bridge

Tentative Impact Air Quality, Noise and Water Quality Monitoring Schedule
May 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01 May	02 May WQM Mid-Ebb 13:16 Mid-Flood 19:54	03 May	04 May 24-hr TSP WQM Mid-Flood 7:16 Mid-Ebb 14:17	05 May 1-hr TSP NM	06 May WQM Mid-Flood 7:25 Mid-Ebb 15:18	07 May
08 May	09 May	10 May 24-hr TSP WQM Mid-Flood 7:25 Mid-Ebb 19:51	11 May 1-hr TSP NM	12 May WQM Mid-Ebb 9:59 Mid-Flood 15:26	13 May	14 May WQM Mid-Ebb 11:02 Mid-Flood 17:24
15 May	16 May 24-hr TSP WQM Mid-Ebb 12:17 Mid-Flood 19:10	17 May 1-hr TSP NM	18 May WQM Mid-Flood 6:56 Mid-Ebb 13:45	19 May	20 May WQM Mid-Flood 8:14 Mid-Ebb 15:35	21 May 24-hr TSP
22 May	23 May 1-hr TSP NM WQM Mid-Flood 11:41 Mid-Ebb 18:54	24 May	25 May WQM Mid-Ebb 9:25 Mid-Flood 14:50	26 May	27 May 24-hr TSP WQM Mid-Ebb 10:43 Mid-Flood 16:50	28 May 1-hr TSP
29 May	30 May WQM Mid-Ebb 12:22 Mid-Flood 19:12	31 May	01 Jun	02 Jun	03 Jun	04 Jun

Remark:

24-hr TSP stands for 24-hour Total Suspended Particulates Monitoring;

1-hr TSP stands for 1-hour Total Suspended Particulate Monitoring;

NM stands for Noise Monitoring; and

WQM stands for Water Quality Monitoring tenatively scheduled, which actual commencement date will be subject to commencement of cofferdam construction at the river bank side of Wang Tong River.

Contract No. HY/2019/14
New Wang Tong River Bridge

Tentative Impact Air Quality, Noise and Water Quality Monitoring Schedule
Jun 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29 May	30 May WQM Mid-Ebb 12:22 Mid-Flood 5:34	31 May	01 Jun 24-hr TSP WQM Mid-Flood 6:11 Mid-Ebb 13:27	02 Jun 1-hr TSP NM	03 Jun	04 Jun WQM Mid-Flood 7:07 Mid-Ebb 15:03
05 Jun	06 Jun	07 Jun 24-hr TSP WQM Mid-Ebb 17:36 Mid-Flood 5:12	08 Jun 1-hr TSP NM	09 Jun WQM Mid-Ebb 9:59 Mid-Flood 15:26	10 Jun	11 Jun WQM Mid-Ebb 11:02 Mid-Flood 17:24
12 Jun	13 Jun 24-hr TSP WQM Mid-Ebb 11:12 Mid-Flood 18:18	14 Jun 1-hr TSP NM	15 Jun WQM Mid-Ebb 12:45 Mid-Flood 20:13	16 Jun	17 Jun WQM Mid-Ebb 14:33 Mid-Flood 7:21	18 Jun 24-hr TSP
19 Jun	20 Jun 1-hr TSP NM WQM Mid-Ebb 17:13 Mid-Flood 10:11	21 Jun	22 Jun WQM Mid-Ebb 7:40 Mid-Flood 13:04	23 Jun	24 Jun 24-hr TSP WQM Mid-Ebb 9:37 Mid-Flood 15:46	25 Jun 1-hr TSP
26 Jun	27 Jun WQM Mid-Ebb 11:32 Mid-Flood 18:39	28 Jun	29 Jun 24-hr TSP WQM Mid-Ebb 12:38 Mid-Flood 5:02	30 Jun 1-hr TSP NM	01 Jul	02 Jul

Remark:

24-hr TSP stands for 24-hour Total Suspended Particulates Monitoring;

1-hr TSP stands for 1-hour Total Suspended Particulate Monitoring;

NM stands for Noise Monitoring; and

WQM stands for Water Quality Monitoring tenatively scheduled, which actual commencement date will be subject to commencement of cofferdam construction at the river bank side of Wang Tong River.

Appendix 5.2

Noise Monitoring Results and Graphical Presentations

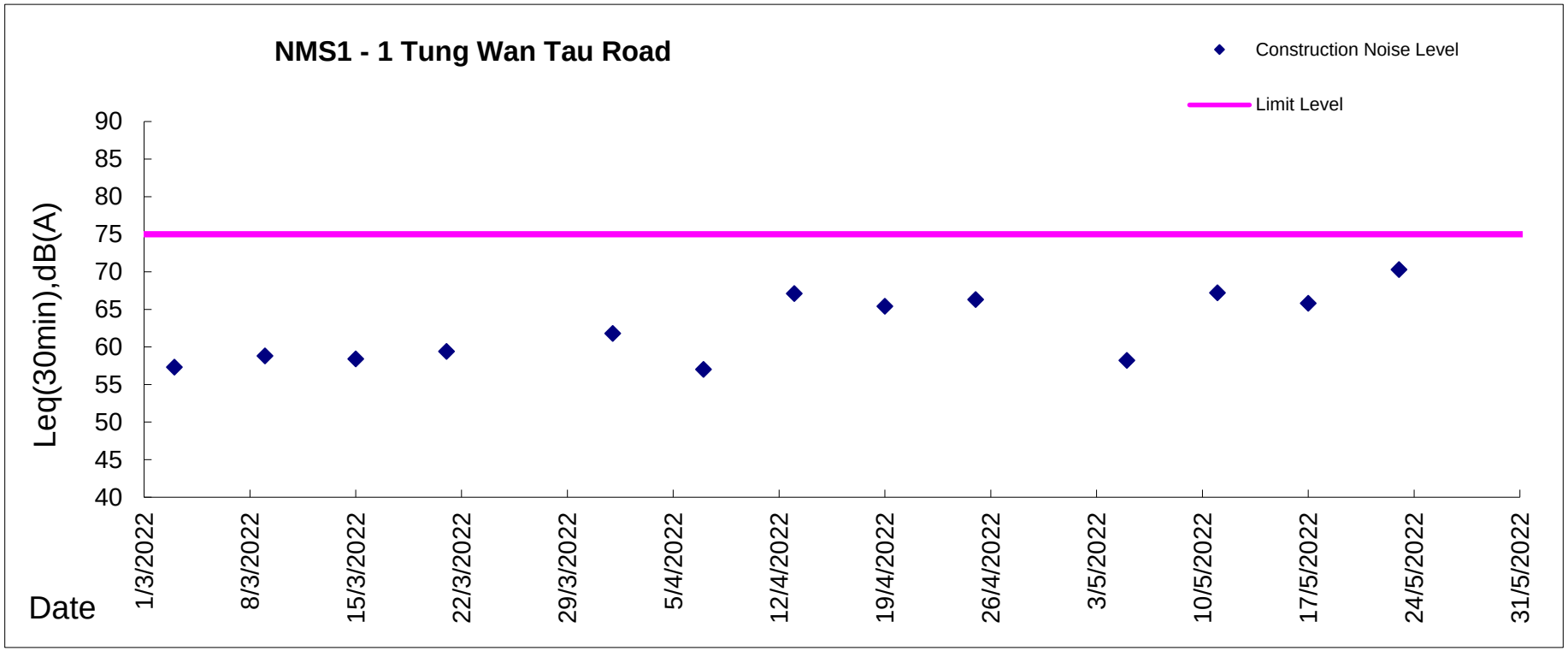
Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)

Location: NMS1 - 1 Tung Wan Tau Road

Date	Weather	Time	Measurement Noise Level			Average Noise Level#	Baseline Level	Construction Noise Level	Limit Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}	L_{eq}
			Unit: dB(A), (30-min)			Unit: dB(A), (30-min)			
5 May 2022	Sunny	10:30	58.2	59.6	56.0	58.2	60.1	<Baseline Level>	75
11 May 2022	Overcast	10:30	67.2	69.5	62.1	67.2	60.1	66.3	75
17 May 2022	Sunny	10:30	65.8	69.8	53.6	65.8	60.1	64.4	75
23 May 2022	Sunny	10:30	70.3	73.3	56.6	70.3	60.1	69.9	75

Remark:
Due to free-field measurement, a correction factor of +3 dB(A) is adopted.


NMS1 - 1 Tung Wan Tau Road
Construction Noise Level
Limit Level
Leq(30min),dB(A)
90
85
80
75
70
65
60
55
50
45
40
Date
1/3/2022
8/3/2022
15/3/2022
22/3/2022
29/3/2022
5/4/2022
12/4/2022
19/4/2022
26/4/2022
3/5/2022
10/5/2022
17/5/2022
24/5/2022
31/5/2022

Appendix 5.3

Air Quality Monitoring Results and Graphical Presentations

Report on 1-hour TSP monitoring at AMS1 - Slivermine Beach Resort
Limit Level (μg/m^3) - 500.0

Date	Weather Condition	Time	TSP Level (μg/m^3)
5-May-22	Sunny	10:25	44.1
5-May-22	Sunny	11:25	42.4
5-May-22	Sunny	12:25	32.5
11-May-22	Rainy	9:51	111.0
11-May-22	Rainy	10:51	84.6
11-May-22	Rainy	11:51	2.3
17-May-22	Sunny	8:00	10.7
17-May-22	Sunny	9:00	7.8
17-May-22	Sunny	10:00	11.9
23-May-22	Sunny	8:39	12.1
23-May-22	Sunny	9:39	35.3
23-May-22	Sunny	10:39	20.4
28-May-22	Sunny	9:23	70.1
28-May-22	Sunny	10:23	23.2
28-May-22	Sunny	11:23	20.4

Report on 1-hour TSP monitoring at AMS2 - 1 Tung Wan Tau Road
Limit Level (μg/m^3) - 500.0

Date	Weather Condition	Time	TSP Level (μg/m^3)
5-May-22	Sunny	10:59	131.6
5-May-22	Sunny	11:59	83.2
5-May-22	Sunny	12:59	90.7
11-May-22	Rainy	10:34	235.2
11-May-22	Rainy	11:34	240.3
11-May-22	Rainy	12:34	6.2
17-May-22	Sunny	8:13	23.9
17-May-22	Sunny	9:13	35.1
17-May-22	Sunny	10:13	27.6
23-May-22	Sunny	9:23	37.3
23-May-22	Sunny	10:23	171.9
23-May-22	Sunny	11:23	93.3
28-May-22	Sunny	8:38	22.9
28-May-22	Sunny	9:38	8.5
28-May-22	Sunny	10:38	7.2

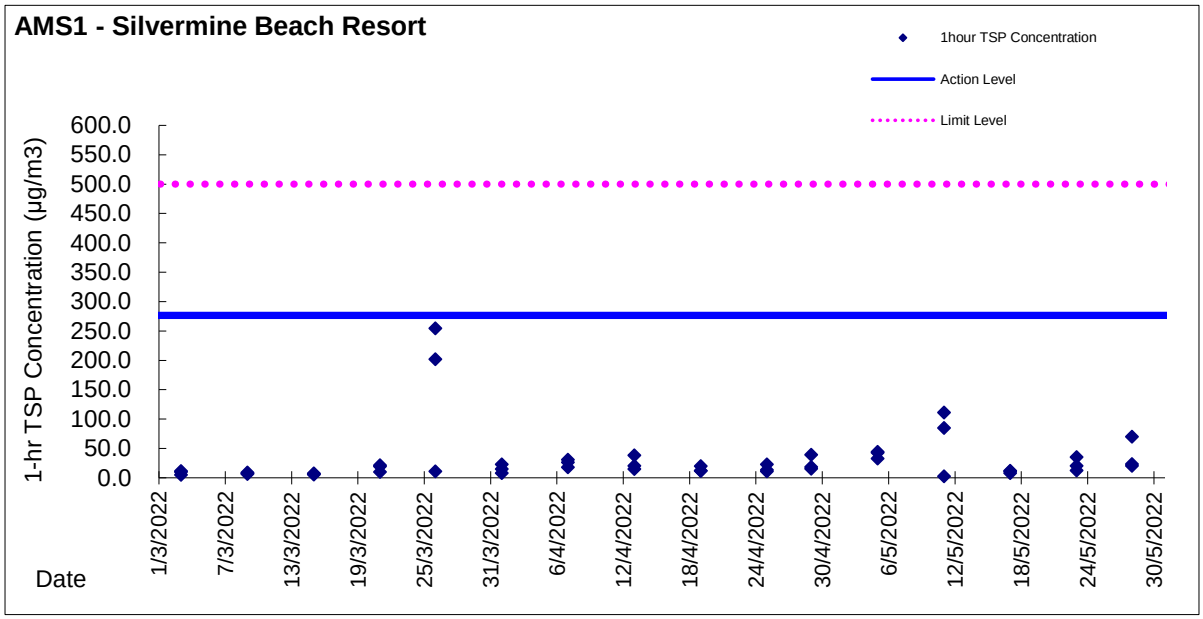
Contract No. HY/2019/04

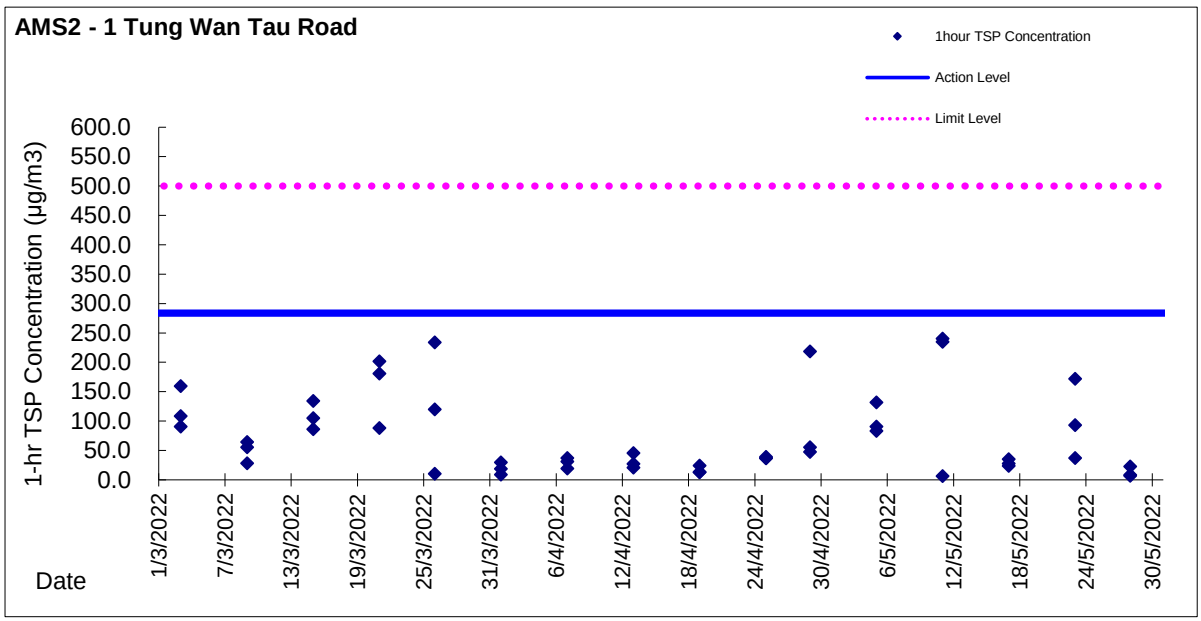
New Wang Tong River Bridge

	Date	Sampling Time	Weather Condition	Filter paper no.	Filter Weight, g		Elapse Time, hr		Sampling	Flow Rate, m^3/min			Total	TSP Level,
					Initial	Final	Initial	Final	Time, hr	Initial, Qsi	Final, Qsf	Average	Volume, m^3	$\mu g/m^3$
AMS1	04/05/22	8:00	Sunny	010572	2.7909	2.8586	1941.55	1965.55	24.00	0.54	0.91	0.73	1046	64.7
AMS1	10/05/22	8:00	Sunny	010389	2.7746	2.8265	1965.55	1989.55	24.00	0.54	0.81	0.67	968	53.6
AMS1	16/05/22	8:00	Rainy	010390	2.7609	2.8241	1989.76	2013.76	24.00	0.48	0.71	0.60	858	73.7
AMS1	21/05/22	8:00	Sunny	010391	2.7728	2.8766	2029.76	2053.76	24.00	0.53	0.96	0.75	1073	96.7
AMS1	27/05/22	8:00	Sunny	010392	2.7576	2.7961	2053.77	2077.77	24.00	0.62	0.65	0.64	920	41.8
AMS2	04/05/22	8:00	Sunny	010566	2.7982	2.8614	2473.64	2497.64	24.00	0.87	0.87	0.87	1247	50.7
AMS2	10/05/22	8:00	Sunny	010379	2.7625	2.8100	2497.64	2521.64	24.00	0.86	0.86	0.86	1244	38.2
AMS2	16/05/22	8:00	Rainy	010380	2.7668	2.8154	2521.64	2545.64	24.00	1.06	1.06	1.06	1532	31.7
AMS2	21/05/22	8:00	Sunny	010381	2.7593	2.8700	2545.64	2569.64	24.00	1.04	1.04	1.04	1493	74.2
AMS2	27/05/22	8:00	Sunny	010382	2.7463	2.7927	2569.65	2593.65	24.00	1.05	1.05	1.05	1515	30.6

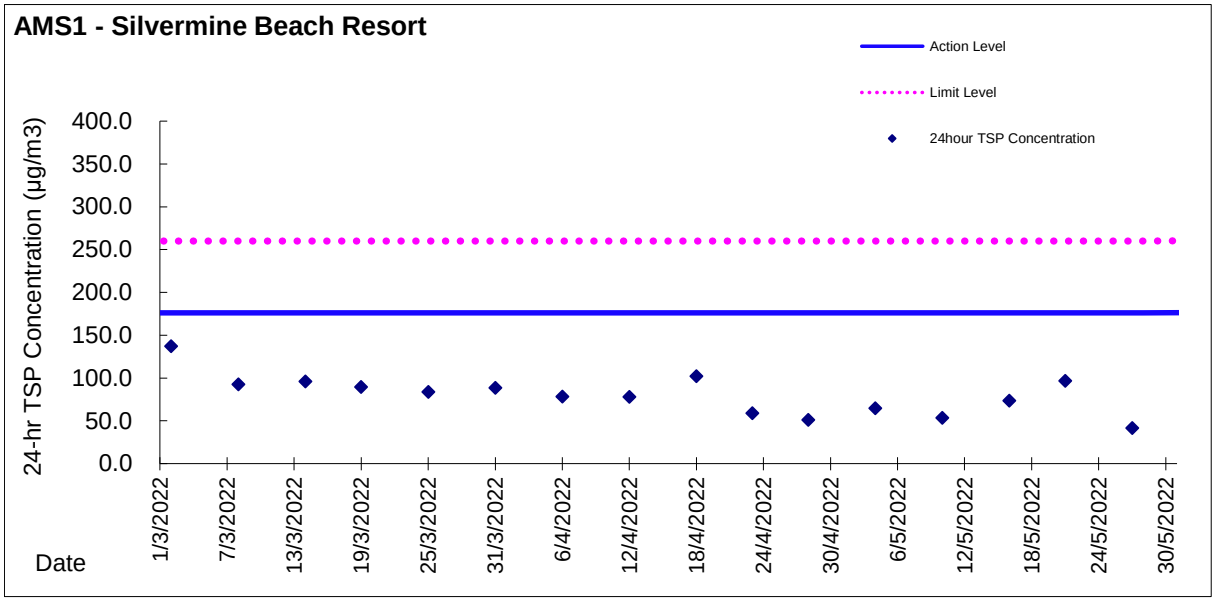
Remarks:

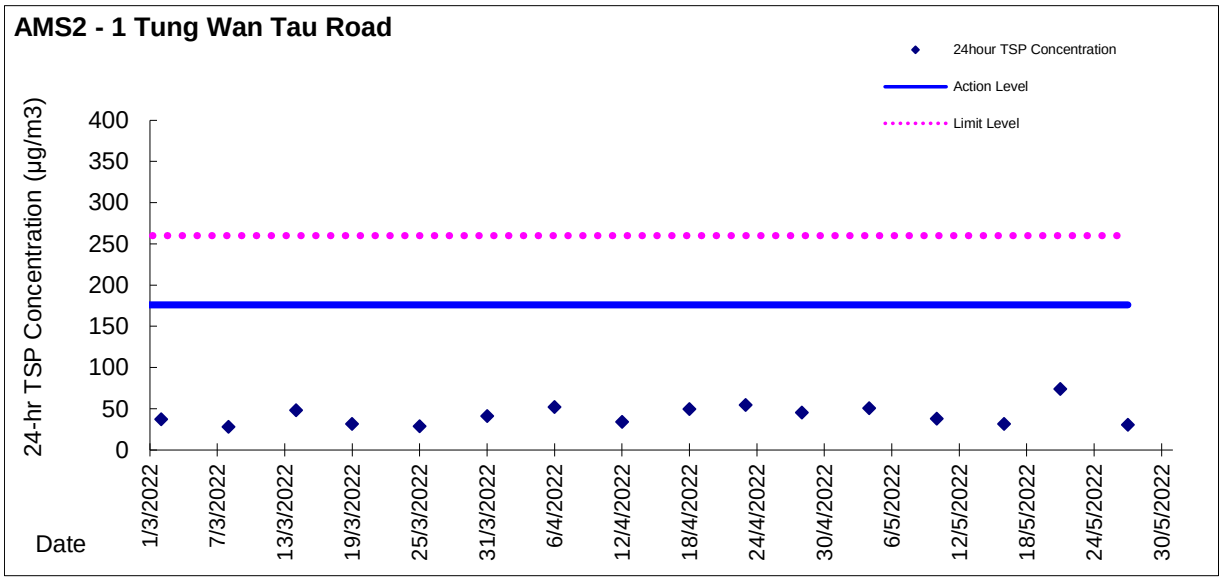
Graphic Presentation of TSP Result





Graphic Presentation of TSP Result





Appendix 5.4

Water Quality Monitoring Results and Graphical Presentations

Water Quality Monitoring at Station W1 (Middle) - Ebb Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Level	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
				m		m	°C			-			ppt			%			mg/L			NTU			mg/L	
							Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W1 Wang Tong River (Major tributary)	4/5/2022	Sunny	13:30	0.50	Middle	0.25	25.50	25.50	25.5	7.09	7.09	7.1	5.79	5.77	5.8	83.10	82.70	82.9	7.11	7.03	7.1	5.30	5.31	5.3	3.30	3.3
			13:35	0.50		0.25	25.50	25.50		7.09	7.09		5.79	5.77		83.10	82.70		7.11	7.03		5.30	5.31		3.30	
	6/5/2022	Sunny	14:45	0.50		0.25	26.90	26.90	26.9	7.20	7.20	7.2	3.87	3.87	3.9	88.70	87.30	88.0	7.89	7.82	7.9	4.91	4.90	4.9	5.00	5.1
			14:50	0.50		0.25	26.90	26.90		7.20	7.20		3.87	3.87		88.70	87.30		7.89	7.82		4.91	4.90		5.20	
	10/5/2022	Rainy	18:20	0.50		0.25	25.00	25.10	25.1	7.10	7.10	7.1	0.77	0.77	0.8	93.40	92.90	93.2	9.44	9.38	9.4	4.83	4.84	4.8	2.70	2.9
			18:25	0.50		0.25	25.00	25.10		7.10	7.10		0.77	0.77		93.40	92.90		9.44	9.38		4.83	4.84		3.00	
	12/5/2022	Thunder	9:30	0.50		0.25	23.70	23.70	23.7	7.02	7.02	7.0	0.26	0.26	0.3	92.70	92.00	92.4	8.27	8.19	8.2	27.99	27.99	28.0	21.80	21.8
			9:35	0.50		0.25	23.70	23.70		7.02	7.02		0.26	0.26		92.70	92.00		8.27	8.19		27.99	27.99		21.80	
	14/5/2022	Rainy	10:30	0.50		0.25	23.80	23.80	23.8	7.44	7.44	7.4	0.22	0.22	0.2	94.00	93.40	93.7	8.69	8.56	8.6	8.33	8.33	8.3	6.50	6.6
			10:35	0.50		0.25	23.80	23.80		7.44	7.44		0.22	0.22		94.00	93.40		8.69	8.56		8.33	8.33		6.60	
	16/5/2022	Rainy	11:15	0.50		0.25	21.80	21.80	21.8	7.01	7.02	7.0	3.77	3.78	3.8	93.80	93.30	93.6	9.66	9.56	9.6	6.20	6.19	6.2	3.70	3.9
			11:20	0.50		0.25	21.80	21.80		7.01	7.02		3.77	3.78		93.80	93.30		9.66	9.56		6.20	6.19		4.00	
	18/5/2022	Sunny	12:45	0.50		0.25	24.90	24.90	24.9	6.88	6.89	6.9	9.36	9.36	9.4	85.80	84.90	85.4	8.55	8.47	8.5	5.57	5.56	5.6	9.30	9.5
			12:50	0.50		0.25	24.90	24.90		6.88	6.89		9.36	9.36		85.80	84.90		8.55	8.47		5.57	5.56		9.70	
	20/5/2022	Sunny	15:00	0.50		0.25	26.40	26.40	26.4	6.90	6.91	6.9	3.30	3.30	3.3	93.40	93.00	93.2	7.94	7.86	7.9	5.33	5.33	5.3	4.80	4.6
			15:05	0.50		0.25	26.40	26.40		6.90	6.91		3.30	3.30		93.40	93.00		7.94	7.86		5.33	5.33		4.40	
	23/5/2022	Cloudy	18:00	0.50		0.25	23.80	23.70	23.8	6.93	6.93	6.9	1.86	1.86	1.9	95.30	93.70	94.5	8.86	7.77	8.3	3.26	3.26	3.3	3.20	3.1
			18:05	0.50		0.25	23.80	23.70		6.93	6.93		1.86	1.86		95.30	93.70		8.86	7.77		3.26	3.26		3.00	
	25/5/2022	Sunny	8:15	0.50		0.25	24.50	24.50	24.5	7.13	7.13	7.1	0.44	0.44	0.4	92.80	92.10	92.5	9.16	9.07	9.1	4.00	4.08	4.0	2.60	2.6
			8:20	0.50		0.25	24.50	24.50		7.13	7.13		0.44	0.44		92.80	92.10		9.16	9.07		4.00	4.08		2.50	
	27/5/2022	Rainy	10:00	0.50		0.25	24.60	24.60	24.6	7.16	7.16	7.2	0.37	0.37	0.4	76.30	75.10	75.7	6.73	6.68	6.7	6.81	6.81	6.8	3.00	3.2
			10:05	0.50		0.25	24.60	24.60		7.16	7.16		0.37	0.37		76.30	75.10		6.73	6.68		6.81	6.81		3.30	
	30/5/2022	Rainy	11:30	0.50		0.25	28.00	28.00	28.0	7.07	7.08	7.1	1.80	1.80	1.8	94.90	94.50	94.7	8.24	8.13	8.2	4.57	4.56	4.6	4.30	4.5
			11:35	0.50		0.25	28.00	28.00		7.07	7.08		1.80	1.80		94.90	94.50		8.24	8.13		4.57	4.56		4.60	

Water Quality Monitoring at Station W1 (Middle) - Flood Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Depth	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
				m		m	°C			-			ppt			%			mg/L			NTU			mg/L	
							Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W1 Wang Tong River (Major tributary)	4/5/2022	Sunny	6:30	0.50	Middle	0.25	21.00	21.00	21.0	6.35	6.35	6.4	1.70	1.70	1.7	86.30	85.20	85.8	7.74	8.57	8.2	3.67	3.67	3.7	2.00	2.0
			6:35	0.50		0.25	21.00	21.00		6.35	6.35		1.70	1.70		86.30	85.20		7.74	8.57		3.67	3.67		2.00	
	6/5/2022	Sunny	6:45	0.50		0.25	24.80	24.50	24.7	7.29	7.29	7.3	4.69	4.69	4.7	87.10	86.00	86.6	8.19	8.08	8.1	3.90	3.91	3.9	3.30	3.2
			6:50	0.50		0.25	24.80	24.50		7.29	7.29		4.69	4.69		87.10	86.00		8.19	8.08		3.90	3.91		3.00	
	10/5/2022	Cloudy	6:45	0.50		0.25	25.00	25.00	25.0	7.00	7.00	7.0	0.79	0.80	0.8	91.30	90.80	91.1	8.44	8.35	8.4	4.51	4.51	4.5	3.30	3.5
			6:50	0.50		0.25	25.00	25.00		7.00	7.00		0.79	0.80		91.30	90.80		8.44	8.35		4.51	4.51		3.60	
	12/5/2022	Thunder	14:45	0.50		0.25	24.00	24.00	24.0	6.94	6.94	6.9	0.14	0.14	0.1	82.00	81.10	81.6	7.72	7.67	7.7	35.40	35.40	35.4	25.70	25.5
			14:50	0.50		0.25	24.00	24.00		6.94	6.94		0.14	0.14		82.00	81.10		7.72	7.67		35.40	35.40		25.20	
	14/5/2022	Rainy	16:30	0.50		0.25	24.00	24.00	24.0	6.96	6.96	7.0	0.27	0.27	0.3	87.00	86.30	86.7	8.42	8.38	8.4	8.31	8.32	8.3	3.40	3.4
			16:35	0.50		0.25	24.00	24.00		6.96	6.96		0.27	0.27		87.00	86.30		8.42	8.38		8.31	8.32		3.40	
	16/5/2022	Rainy	18:00	0.50		0.25	21.70	21.70	21.7	6.92	6.92	6.9	0.69	0.69	0.7	95.10	94.80	95.0	9.27	9.19	9.2	6.16	6.15	6.2	3.20	3.1
			18:05	0.50		0.25	21.70	21.70		6.92	6.92		0.69	0.69		95.10	94.80		9.27	9.19		6.16	6.15		3.00	
	18/5/2022	Sunny	6:15	0.50		0.25	21.30	21.30	21.3	6.99	6.99	7.0	1.93	1.93	1.9	92.80	90.50	91.7	9.41	9.32	9.4	4.63	4.64	4.6	2.70	2.8
			6:20	0.50		0.25	21.30	21.30		6.99	6.99		1.93	1.93		92.80	90.50		9.41	9.32		4.63	4.64		2.80	
	20/5/2022	Sunny	8:00	0.50		0.25	24.90	24.90	24.9	7.01	7.01	7.0	2.66	2.66	2.7	93.30	92.80	93.1	8.13	8.08	8.1	5.32	5.33	5.3	2.90	3.1
			8:05	0.50		0.25	24.90	24.90		7.01	7.01		2.66	2.66		93.30	92.80		8.13	8.08		5.32	5.33		3.20	
	23/5/2022	Cloudy	11:15	0.50		0.25	23.90	23.90	23.9	7.12	7.12	7.1	0.41	0.41	3.4	92.80	92.10	92.5	9.14	9.07	9.1	4.32	4.32	4.3	2.30	2.2
			11:20	0.50		0.25	23.90	23.90		7.12	7.12		0.41	12.51		92.80	92.10		9.14	9.07		4.32	4.32		2.10	
	25/5/2022	Rainy	14:00	0.50		0.25	24.60	24.60	24.6	7.24	7.24	7.2	0.38	0.38	0.4	95.90	95.10	95.5	8.72	8.64	8.7	4.45	4.45	4.5	2.30	2.2
			14:05	0.50		0.25	24.60	24.60		7.24	7.24		0.38	0.38		95.90	95.10		8.72	8.64		4.45	4.45		2.00	
	27/5/2022	Rainy	16:00	0.50		0.25	25.50	25.50	25.5	7.19	7.18	7.2	0.34	0.34	0.3	79.20	78.70	79.0	7.62	7.53	7.6	41.41	41.40	**41.4**	19.70	**19.8**
			16:05	0.50		0.25	25.50	25.50		7.19	7.18		0.34	0.34		79.20	78.70		7.62	7.53		41.41	41.40		19.80	
	30/5/2022	Sunny	18:45	0.50		0.25	27.10	27.10	27.1	7.12	7.12	7.1	0.50	0.50	0.5	91.70	91.10	91.4	7.70	7.62	7.7	7.19	7.18	7.2	3.10	3.3
			18:50	0.50		0.25	27.10	27.10		7.12	7.12		0.50	0.50		91.70	91.10		7.70	7.62		7.19	7.18		3.40	

General Note: Additional data of temperature, pH, salinity, DO saturation, DO and turbidty were obtained in each duplicate set for better representativeness.

Water Quality Monitoring at Station W2 (Middle) - Ebb Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Level	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W2 Wang Tong River (Major tributary)	4/5/2022	Sunny	13:45	0.50	Middle	0.25	26.10	26.10	26.1	7.45	7.46	7.5	10.13	10.13	10.1	88.10	87.60	87.9	7.30	8.26	7.8	5.89	5.90	5.9	4.60	4.9
			13:50	0.50		0.25	26.10	26.10		7.45	7.46		10.13	10.13		88.10	87.60		7.30	8.26		5.89	5.90		5.10	
	6/5/2022	Sunny	15:00	0.50		0.25	26.90	26.90	26.9	7.43	7.43	7.4	6.61	6.61	6.6	80.80	80.10	80.5	7.03	6.96	7.0	4.83	4.84	4.8	4.80	4.9
			15:05	0.50		0.25	26.90	26.90		7.43	7.43		6.61	6.61		80.80	80.10		7.03	6.96		4.83	4.84		5.00	
	10/5/2022	Rainy	18:35	0.50		0.25	25.10	25.10	25.1	7.22	7.22	7.2	2.37	2.37	2.4	86.20	85.70	86.0	7.34	7.31	7.3	5.83	5.84	5.8	5.80	5.6
			18:40	0.50		0.25	25.10	25.10		7.22	7.22		2.37	2.37		86.20	85.70		7.34	7.31		5.83	5.84		5.40	
	12/5/2022	Thunder	9:45	0.50		0.25	24.00	24.00	24.0	7.09	7.09	7.1	0.42	0.42	0.4	88.70	87.90	88.3	7.74	7.69	7.7	24.29	24.29	24.3	15.20	15.1
			9:50	0.50		0.25	24.00	24.00		7.09	7.09		0.42	0.42		88.70	87.90		7.74	7.69		24.29	24.29		15.00	
	14/5/2022	Rainy	10:45	0.50		0.25	23.90	23.90	23.9	7.18	7.18	7.2	0.48	0.48	0.5	83.30	82.60	83.0	8.21	8.13	8.2	9.67	9.18	9.4	9.30	9.5
			10:50	0.50		0.25	23.90	23.90		7.18	7.18		0.48	0.48		83.30	82.60		8.21	8.13		9.67	9.18		9.70	
	16/5/2022	Rainy	11:30	0.50		0.25	21.80	21.80	21.8	7.17	7.17	7.2	5.10	5.10	5.1	88.80	88.10	88.5	7.92	7.86	7.9	5.83	5.83	5.8	4.40	4.6
			11:35	0.50		0.25	21.80	21.80		7.17	7.17		5.10	5.10		88.80	88.10		7.92	7.86		5.83	5.83		4.70	
	18/5/2022	Sunny	13:00	0.50		0.25	24.90	24.90	24.9	7.34	7.35	7.3	10.62	10.62	10.6	85.90	85.20	85.6	7.28	7.20	7.2	5.99	5.98	6.0	8.50	8.6
			13:05	0.50		0.25	24.90	24.90		7.34	7.35		10.62	10.62		85.90	85.20		7.28	7.20		5.99	5.98		8.60	
	20/5/2022	Sunny	15:15	0.50		0.25	26.50	26.50	26.5	7.14	7.14	7.1	5.13	5.13	5.1	82.30	81.90	82.1	7.60	7.54	7.6	6.93	6.94	6.9	10.70	10.5
			15:20	0.50		0.25	26.50	26.50		7.14	7.14		5.13	5.13		82.30	81.90		7.60	7.54		6.93	6.94		10.20	
	23/5/2022	Cloudy	18:15	0.50		0.25	23.80	23.80	23.8	7.38	7.38	7.4	3.67	3.67	3.7	82.10	81.80	82.0	7.89	7.81	7.9	4.47	4.46	4.5	3.40	3.5
			18:20	0.50		0.25	23.80	23.80		7.38	7.38		3.67	3.67		82.10	81.80		7.89	7.81		4.47	4.46		3.60	
	25/5/2022	Sunny	8:30	0.50		0.25	23.90	23.90	23.9	7.15	7.15	7.2	1.30	1.30	1.3	82.90	82.10	82.5	8.15	8.11	8.1	5.83	5.83	5.8	6.50	6.7
			8:35	0.50		0.25	23.90	23.90		7.15	7.15		1.30	1.30		82.90	82.10		8.15	8.11		5.83	5.83		6.90	
	27/5/2022	Rainy	10:15	0.50		0.25	25.00	25.00	25.0	7.21	7.21	7.2	1.35	1.35	1.4	78.60	77.90	78.3	7.37	7.28	7.3	8.50	8.50	8.5	7.80	7.8
			10:20	0.50		0.25	25.00	25.00		7.21	7.21		1.35	1.35		78.60	77.90		7.37	7.28		8.50	8.50		7.80	
	30/5/2022	Rainy	11:45	0.50		0.25	28.40	28.40	28.4	7.28	7.28	7.3	2.32	2.32	2.3	82.10	81.60	81.9	7.26	7.17	7.2	5.17	5.17	5.2	3.20	3.4
			11:50	0.50		0.25	28.40	28.40		7.28	7.28		2.32	2.32		82.10	81.60		7.26	7.17		5.17	5.17		3.60	

Water Quality Monitoring at Station W2 (Middle) - Flood Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Depth	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W2 Wang Tong River (Major tributary)	4/5/2022	Sunny	6:45	0.50	Middle	0.25	21.60	21.60	21.6	6.45	6.46	6.5	7.03	7.03	7.0	79.90	78.33	79.1	7.59	7.47	7.5	5.17	5.18	5.2	3.20	3.1
			6:50	0.50		0.25	21.60	21.60		6.45	6.46		7.03	7.03		79.90	78.33		7.59	7.47		5.17	5.18		2.90	
	6/5/2022	Sunny	7:00	0.50		0.25	23.30	23.30	23.3	7.35	7.35	7.4	5.80	5.80	5.8	82.40	81.70	82.1	7.36	7.30	7.3	3.81	3.82	3.8	3.00	3.2
			7:05	0.50		0.25	23.30	23.30		7.35	7.35		5.80	5.80		82.40	81.70		7.36	7.30		3.81	3.82		3.30	
	10/5/2022	Cloudy	7:00	0.50		0.25	25.00	25.00	25.0	7.11	7.12	7.1	1.65	1.65	1.7	84.40	83.80	84.1	7.34	7.28	7.3	5.33	5.33	5.3	3.40	3.6
			7:05	0.50		0.25	25.00	25.00		7.11	7.12		1.65	1.65		84.40	83.80		7.34	7.28		5.33	5.33		3.80	
	12/5/2022	Thunder	15:00	0.50		0.25	24.30	24.30	24.3	7.10	7.10	7.1	0.18	0.18	0.2	85.00	84.40	84.7	7.68	7.62	7.7	33.70	33.70	33.7	17.00	16.8
			15:05	0.50		0.25	24.30	24.30		7.10	7.10		0.18	0.18		85.00	84.40		7.68	7.62		33.70	33.70		16.60	
	14/5/2022	Rainy	16:45	0.50		0.25	24.00	24.10	24.1	7.00	7.07	7.0	0.60	0.60	0.6	86.10	85.60	85.9	7.64	7.59	7.6	8.33	8.34	8.3	6.00	5.8
			16:50	0.50		0.25	24.00	24.10		7.00	7.07		0.60	0.60		86.10	85.60		7.64	7.59		8.33	8.34		5.50	
	16/5/2022	Rainy	18:15	0.50		0.25	21.40	21.40	21.4	6.99	6.99	7.0	1.32	1.32	1.3	82.50	81.90	82.2	8.12	8.08	8.1	9.17	9.17	9.2	13.10	12.9
			18:20	0.50		0.25	21.40	21.40		6.99	6.99		1.32	1.32		82.50	81.90		8.12	8.08		9.17	9.17		12.70	
	18/5/2022	Sunny	6:30	0.50		0.25	22.40	22.40	22.4	7.75	7.75	7.8	16.42	16.42	16.4	82.50	81.10	81.8	7.46	7.37	7.4	4.83	4.83	4.8	3.60	3.8
			6:35	0.50		0.25	22.40	22.40		7.75	7.75		16.42	16.42		82.50	81.10		7.46	7.37		4.83	4.83		4.00	
	20/5/2022	Sunny	8:15	0.50		0.25	26.80	26.80	26.8	7.79	7.80	7.8	20.09	20.09	20.1	82.20	81.80	82.0	6.87	6.74	6.8	9.40	9.40	9.4	8.00	8.0
			8:20	0.50		0.25	26.80	26.80		7.79	7.80		20.09	20.09		82.20	81.80		6.87	6.74		9.40	9.40		8.00	
	23/5/2022	Cloudy	11:30	0.50		0.25	24.00	24.00	24.0	7.63	7.64	7.6	11.18	11.18	11.2	88.00	87.50	87.8	7.70	7.67	7.7	9.98	9.97	10.0	9.80	9.6
			11:35	0.50		0.25	24.00	24.00		7.63	7.64		11.18	11.18		88.00	87.50		7.70	7.67		9.98	9.97		9.40	
	25/5/2022	Rainy	14:15	0.50		0.25	25.00	25.00	25.0	7.34	7.35	7.3	0.94	0.94	0.9	89.00	88.30	88.7	7.13	7.08	7.1	9.21	9.21	9.2	10.00	10.3
			14:20	0.50		0.25	25.00	25.00		7.34	7.35		0.94	0.94		89.00	88.30		7.13	7.08		9.21	9.21		10.50	
	27/5/2022	Rainy	16:15	0.50		0.25	25.60	25.60	25.6	7.32	7.32	7.3	0.44	0.44	0.4	88.00	86.90	87.5	7.20	7.12	7.2	42.00	41.79	**41.9**	23.00	**23.1**
			16:20	0.50		0.25	25.60	25.60		7.32	7.32		0.44	0.44		88.00	86.90		7.20	7.12		42.00	41.79		23.20	
	30/5/2022	Sunny	18:55	0.50		0.25	27.00	27.00	27.0	7.26	7.26	7.3	1.61	1.61	1.6	79.60	78.70	79.2	6.46	6.39	**6.4**	6.56	6.55	6.6	5.00	4.8
			19:00	0.50		0.25	27.00	27.00		7.26	7.26		1.61	1.61		79.60	78.70		6.46	6.39		6.56	6.55		4.60	

General Note: Additional data of temperature, pH, salinity, DO saturation, DO and turbidty were obtained in each duplicate set for better representativeness.

Water Quality Monitoring at Station W4 (Middle) - Ebb Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Level	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W4 Wang Tong River (Minor tributary to Tai Wai Yuen)	4/5/2022	Sunny	14:00	0.50	Middle	0.25	26.20	26.20	26.2	7.49	7.49	7.5	17.64	17.64	17.6	79.80	79.20	79.5	6.78	6.64	6.7	5.17	5.17	5.2	2.80	2.7
			14:05	0.50		0.25	26.20	26.20		7.49	7.49		17.64	17.64		79.80	79.20		6.78	6.64		5.17	5.17		2.50	
	6/5/2022	Sunny	15:15	0.50		0.25	26.90	26.90	26.9	7.64	7.64	7.6	16.25	16.25	16.3	84.50	83.00	83.8	7.23	6.89	7.1	5.55	5.56	5.6	4.80	4.9
			15:20	0.50		0.25	26.90	26.90		7.64	7.64		16.25	16.25		84.50	83.00		7.23	6.89		5.55	5.56		5.00	
	10/5/2022	Rainy	18:50	0.50		0.25	25.10	25.10	25.1	7.19	7.19	7.2	1.98	1.99	2.0	75.10	74.50	74.8	6.87	6.84	6.9	4.95	4.94	4.9	3.50	3.8
			18:55	0.50		0.25	25.10	25.10		7.19	7.19		1.98	1.99		75.10	74.50		6.87	6.84		4.95	4.94		4.00	
	12/5/2022	Thunder	10:00	0.50		0.25	24.00	24.00	24.0	7.12	7.12	7.1	0.61	0.61	0.6	86.90	85.20	86.1	8.21	8.10	8.2	29.48	29.48	29.5	14.40	14.2
			10:05	0.50		0.25	24.00	24.00		7.12	7.12		0.61	0.61		86.90	85.20		8.21	8.10		29.48	29.48		14.00	
	14/5/2022	Rainy	11:00	0.50		0.25	23.80	23.80	23.8	7.07	7.07	7.1	0.92	0.92	0.9	86.20	85.60	85.9	7.85	7.81	7.8	9.95	9.95	10.0	7.20	7.0
			11:05	0.50		0.25	23.80	23.80		7.07	7.07		0.92	0.92		86.20	85.60		7.85	7.81		9.95	9.95		6.80	
	16/5/2022	Rainy	11:45	0.50		0.25	21.90	21.90	21.9	7.15	7.15	7.2	9.24	9.24	9.2	81.30	80.70	81.0	7.25	7.16	7.2	6.69	6.69	6.7	6.00	5.8
			11:50	0.50		0.25	21.90	21.90		7.15	7.15		9.24	9.24		81.30	80.70		7.25	7.16		6.69	6.69		5.60	
	18/5/2022	Sunny	13:15	0.50		0.25	24.90	24.90	24.9	7.39	7.40	7.4	14.33	14.33	14.3	77.50	76.90	77.2	7.48	7.36	7.4	6.45	6.45	6.5	13.80	13.6
			13:20	0.50		0.25	24.90	24.90		7.39	7.40		14.33	14.33		77.50	76.90		7.48	7.36		6.45	6.45		13.40	
	20/5/2022	Sunny	15:30	0.50		0.25	26.60	26.60	26.6	7.31	7.30	7.3	8.65	8.65	8.7	73.70	73.10	73.4	6.91	6.83	6.9	6.92	6.92	6.9	5.40	5.6
			15:35	0.50		0.25	26.60	26.60		7.31	7.30		8.65	8.65		73.70	73.10		6.91	6.83		6.92	6.92		5.80	
	23/5/2022	Cloudy	18:30	0.50		0.25	23.80	23.80	23.8	7.50	7.50	7.5	4.84	4.84	4.8	79.70	79.30	79.5	7.82	7.75	7.8	5.18	5.18	5.2	5.10	5.1
			18:35	0.50		0.25	23.80	23.80		7.50	7.50		4.84	4.84		79.70	79.30		7.82	7.75		5.18	5.18		5.00	
	25/5/2022	Sunny	8:45	0.50		0.25	23.70	23.70	23.7	7.19	7.19	7.2	2.99	2.99	3.0	78.80	78.10	78.5	8.10	7.93	8.0	6.55	6.55	6.6	8.00	8.2
			8:50	0.50		0.25	23.70	23.70		7.19	7.19		2.99	2.99		78.80	78.10		8.10	7.93		6.55	6.55		8.30	
	27/5/2022	Rainy	10:30	0.50		0.25	25.10	25.10	25.1	7.34	7.34	7.3	4.33	4.33	4.3	73.00	72.40	72.7	6.55	6.43	6.5	9.73	9.73	9.7	7.10	7.0
			10:35	0.50		0.25	25.10	25.10		7.34	7.34		4.33	4.33		73.00	72.40		6.55	6.43		9.73	9.73		6.80	
	30/5/2022	Rainy	12:00	0.50		0.25	28.50	28.50	28.5	7.45	7.45	7.5	4.28	4.28	4.3	80.30	79.10	79.7	6.90	6.86	6.9	7.65	7.65	7.7	9.20	9.4
			12:05	0.50		0.25	28.50	28.50		7.45	7.45		4.28	4.28		80.30	79.10		6.90	6.86		7.65	7.65		9.60	

Water Quality Monitoring at Station W4 (Middle) - Flood Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Depth	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W4 Wang Tong River (Minor tributary to Tai Wai Yuen)	4/5/2022	Sunny	7:00	0.50	Middle	0.25	21.70	21.70	21.7	6.66	6.67	6.7	6.36	6.36	6.4	77.10	76.00	76.6	7.03	7.00	7.0	5.46	5.46	5.5	4.40	4.4
			7:05	0.50		0.25	21.70	21.70		6.66	6.67		6.36	6.36		77.10	76.00		7.03	7.00		5.46	5.46		4.30	
	6/5/2022	Sunny	7:15	0.50		0.25	23.90	23.90	23.9	7.46	7.46	7.5	13.82	13.82	13.8	81.60	80.90	81.3	7.03	6.98	7.0	4.43	4.44	4.4	3.00	3.2
			7:20	0.50		0.25	23.90	23.90		7.46	7.46		13.82	13.82		81.60	80.90		7.03	6.98		4.43	4.44		3.30	
	10/5/2022	Cloudy	7:15	0.50		0.25	25.10	25.10	25.1	7.18	7.19	7.2	3.82	3.82	3.8	72.20	71.40	71.8	6.57	6.43	6.5	5.70	5.71	5.7	5.10	5.3
			7:20	0.50		0.25	25.10	25.10		7.18	7.19		3.82	3.82		72.20	71.40		6.57	6.43		5.70	5.71		5.50	
	12/5/2022	Thunder	15:15	0.50		0.25	24.20	24.20	24.2	7.06	7.06	7.1	0.34	0.34	0.3	79.90	78.10	79.0	6.95	6.89	6.9	38.14	38.14	38.1	23.80	24.1
			15:20	0.50		0.25	24.20	24.20		7.06	7.06		0.34	0.34		79.90	78.10		6.95	6.89		38.14	38.14		24.30	
	14/5/2022	Rainy	17:00	0.50		0.25	24.10	24.10	24.1	7.11	7.11	7.1	1.87	1.87	1.9	74.60	73.70	74.2	7.14	7.08	7.1	8.45	8.45	8.5	7.60	7.5
			17:05	0.50		0.25	24.10	24.10		7.11	7.11		1.87	1.87		74.60	73.70		7.14	7.08		8.45	8.45		7.40	
	16/5/2022	Rainy	18:30	0.50		0.25	21.50	21.50	21.5	7.14	7.14	7.1	4.83	4.83	4.8	75.60	75.10	75.4	6.91	6.85	6.9	7.74	7.73	7.7	8.30	8.5
			18:35	0.50		0.25	21.50	21.50		7.14	7.14		4.83	4.83		75.60	75.10		6.91	6.85		7.74	7.73		8.70	
	18/5/2022	Sunny	6:45	0.50		0.25	22.80	22.80	22.8	7.98	7.98	8.0	27.93	27.93	27.9	84.80	83.50	84.2	6.68	6.59	6.6	4.45	4.44	4.4	2.70	4.4
			6:50	0.50		0.25	22.80	22.80		7.98	7.98		27.93	27.93		84.80	83.50		6.68	6.59		4.45	4.44		6.00	
	20/5/2022	Sunny	8:30	0.50		0.25	27.00	27.00	27.0	8.03	8.03	8.0	27.51	27.51	27.5	84.30	83.00	83.7	6.62	6.47	6.5	9.42	9.41	9.4	8.30	8.5
			8:35	0.50		0.25	27.00	27.00		8.03	8.03		27.51	27.51		84.30	83.00		6.62	6.47		9.42	9.41		8.60	
	23/5/2022	Cloudy	11:45	0.50		0.25	24.00	24.00	24.0	7.91	7.91	7.9	15.74	15.74	15.7	77.60	76.80	77.2	7.26	7.17	7.2	9.97	9.96	10.0	9.70	9.6
			11:50	0.50		0.25	24.00	24.00		7.91	7.91		15.74	15.74		77.60	76.80		7.26	7.17		9.97	9.96		9.50	
	25/5/2022	Rainy	14:30	0.50		0.25	25.10	25.10	25.1	7.41	7.41	7.4	1.91	1.91	1.9	83.40	82.80	83.1	7.71	7.66	7.7	7.43	7.42	7.4	6.80	6.8
			14:35	0.50		0.25	25.10	25.10		7.41	7.41		1.91	1.91		83.40	82.80		7.71	7.66		7.43	7.42		6.80	
	27/5/2022	Rainy	16:30	0.50		0.25	26.00	26.00	26.0	7.28	7.28	7.3	0.51	0.51	0.5	79.00	78.40	78.7	6.69	6.65	6.7	33.18	33.18	**33.2**	20.70	**20.9**
			16:35	0.50		0.25	26.00	26.00		7.28	7.28		0.51	0.51		79.00	78.40		6.69	6.65		33.18	33.18		21.00	
	30/5/2022	Sunny	19:05	0.50		0.25	26.90	26.90	26.9	7.26	7.25	7.3	1.61	1.61	1.6	77.60	76.50	77.1	6.32	6.27	**6.3**	6.46	6.46	6.5	4.00	3.8
			19:10	0.50		0.25	26.90	26.90		7.26	7.25		1.61	1.61		77.60	76.50		6.32	6.27		6.46	6.46		3.60	

General Note: Additional data of temperature, pH, salinity, DO saturation, DO and turbidty were obtained in each duplicate set for better representativeness.

Water Quality Monitoring at Station W5 (Middle) - Ebb Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Level	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W5 Silvermine Bay (Near Silvermine Bay Beach)	4/5/2022	Sunny	14:15	0.50	Middle	0.25	25.70	25.70	25.7	7.81	7.81	7.8	22.21	22.21	22.2	88.40	87.90	88.2	6.84	6.75	6.8	6.71	6.70	6.7	2.50	2.8
			14:20	0.50		0.25	25.70	25.70		7.81	7.81		22.21	22.21		88.40	87.90		6.84	6.75		6.71	6.70		3.10	
	6/5/2022	Sunny	15:30	0.50		0.25	27.00	26.90	27.0	7.93	7.93	7.9	20.77	20.77	20.8	85.20	84.60	84.9	6.92	6.84	6.9	6.55	6.54	6.5	4.80	4.8
			15:35	0.50		0.25	27.00	26.90		7.93	7.93		20.77	20.77		85.20	84.60		6.92	6.84		6.55	6.54		4.70	
	10/5/2022	Rainy	19:05	0.50		0.25	25.50	25.50	25.5	7.36	7.36	7.4	2.42	2.42	2.4	78.60	78.10	78.4	6.69	6.61	6.7	7.43	7.43	7.4	5.80	6.0
			19:10	0.50		0.25	25.50	25.50		7.36	7.36		2.42	2.42		78.60	78.10		6.69	6.61		7.43	7.43		6.20	
	12/5/2022	Thunder	10:15	0.50		0.25	23.90	23.90	23.9	7.20	7.20	7.2	0.59	0.59	0.6	90.20	89.30	89.8	8.51	8.43	8.5	24.81	24.82	24.8	16.60	16.8
			10:20	0.50		0.25	23.90	23.90		7.20	7.20		0.59	0.59		90.20	89.30		8.51	8.43		24.81	24.82		17.00	
	14/5/2022	Rainy	11:15	0.50		0.25	23.90	23.90	23.9	7.13	7.13	7.1	1.42	1.41	1.4	79.40	79.00	79.2	7.66	7.57	7.6	9.70	9.71	9.7	13.90	14.1
			11:20	0.50		0.25	23.90	23.90		7.13	7.13		1.42	1.41		79.40	79.00		7.66	7.57		9.70	9.71		14.20	
	16/5/2022	Rainy	12:00	0.50		0.25	22.00	22.00	22.0	7.31	7.31	7.3	14.79	14.79	14.8	82.40	81.60	82.0	7.44	7.35	7.4	6.97	6.96	7.0	11.90	12.1
			12:05	0.50		0.25	22.00	22.00		7.31	7.31		14.79	14.79		82.40	81.60		7.44	7.35		6.97	6.96		12.30	
	18/5/2022	Sunny	13:30	0.50		0.25	24.40	24.40	24.4	7.54	7.54	7.5	14.16	14.16	14.2	82.40	81.80	82.1	7.12	7.06	7.1	7.05	7.06	7.1	20.50	20.3
			13:35	0.50		0.25	24.40	24.40		7.54	7.54		14.16	14.16		82.40	81.80		7.12	7.06		7.05	7.06		20.00	
	20/5/2022	Sunny	15:45	0.50		0.25	26.50	26.50	26.5	7.35	7.35	7.4	8.16	8.16	8.2	74.10	73.60	73.9	6.73	6.69	6.7	6.46	6.46	6.5	7.20	7.5
			15:50	0.50		0.25	26.50	26.50		7.35	7.35		8.16	8.16		74.10	73.60		6.73	6.69		6.46	6.46		7.70	
	23/5/2022	Cloudy	18:45	0.50		0.25	24.00	24.00	24.0	7.56	7.56	7.6	8.52	8.52	8.5	76.30	75.90	76.1	7.69	7.61	7.7	5.44	5.44	5.4	4.80	5.0
			18:50	0.50		0.25	24.00	24.00		7.56	7.56		8.52	8.52		76.30	75.90		7.69	7.61		5.44	5.44		5.10	
	25/5/2022	Sunny	9:00	0.50		0.25	23.80	23.80	23.8	7.32	7.32	7.3	4.54	4.54	4.5	77.00	76.40	76.7	6.78	6.71	6.7	6.80	6.79	6.8	7.50	7.4
			9:05	0.50		0.25	23.80	23.80		7.32	7.32		4.54	4.54		77.00	76.40		6.78	6.71		6.80	6.79		7.20	
	27/5/2022	Rainy	10:45	0.50		0.25	25.10	25.10	25.1	7.44	7.44	7.4	3.47	3.47	3.5	75.80	75.10	75.5	7.09	7.00	7.0	8.18	8.18	8.2	7.00	7.0
			10:50	0.50		0.25	25.10	25.10		7.44	7.44		3.47	3.47		75.80	75.10		7.09	7.00		8.18	8.18		6.90	
	30/5/2022	Rainy	12:15	0.50		0.25	28.50	28.50	28.5	7.58	7.58	7.6	6.87	6.87	6.9	79.00	78.30	78.7	6.51	6.45	6.5	5.82	5.82	5.8	5.10	5.2
			12:20	0.50		0.25	28.50	28.50		7.58	7.58		6.87	6.87		79.00	78.30		6.51	6.45		5.82	5.82		5.20	

Water Quality Monitoring at Station W5 (Middle) - Flood Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Depth	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W5 Silvermine Bay (Near Silvermine Bay Beach)	4/5/2022	Sunny	7:15	0.50	Middle	0.25	21.60	21.60	21.6	6.80	6.81	6.8	6.11	6.12	6.1	76.70	76.10	76.4	7.29	7.20	7.2	4.56	4.56	4.6	3.20	3.1
			7:20	0.50		0.25	21.60	21.60		6.80	6.81		6.11	6.12		76.70	76.10		7.29	7.20		4.56	4.56		2.90	
	6/5/2022	Sunny	7:30	0.50		0.25	23.50	23.50	23.5	7.44	7.44	7.4	5.48	5.49	5.5	84.10	83.50	83.8	7.31	7.22	7.3	4.33	4.33	4.3	3.00	3.0
			7:35	0.50		0.25	23.50	23.50		7.44	7.44		5.48	5.49		84.10	83.50		7.31	7.22		4.33	4.33		2.90	
	10/5/2022	Cloudy	7:30	0.50		0.25	25.20	25.20	25.2	7.33	7.33	7.3	4.40	4.41	4.4	72.80	71.90	72.4	6.43	6.37	6.4	5.18	5.18	5.2	4.20	4.2
			7:35	0.50		0.25	25.20	25.20		7.33	7.33		4.40	4.41		72.80	71.90		6.43	6.37		5.18	5.18		4.20	
	12/5/2022	Thunder	15:30	0.50		0.25	24.10	24.10	24.1	7.14	7.14	7.1	0.51	0.51	0.5	81.30	80.90	81.1	7.24	7.17	7.2	60.14	60.13	60.1	35.60	35.3
			15:35	0.50		0.25	24.10	24.10		7.14	7.14		0.51	0.51		81.30	80.90		7.24	7.17		60.14	60.13		35.00	
	14/5/2022	Rainy	17:15	0.50		0.25	24.00	24.00	24.0	7.27	7.27	7.3	1.30	1.30	1.3	80.70	79.10	79.9	7.56	7.50	7.5	8.56	8.57	8.6	6.20	6.4
			17:20	0.50		0.25	24.00	24.00		7.27	7.27		1.30	1.30		80.70	79.10		7.56	7.50		8.56	8.57		6.50	
	16/5/2022	Rainy	18:45	0.50		0.25	21.40	21.40	21.4	7.33	7.33	7.3	2.42	2.42	2.4	80.20	79.70	80.0	7.53	7.47	7.5	7.25	7.24	7.2	7.90	8.1
			18:50	0.50		0.25	21.40	21.40		7.33	7.33		2.42	2.42		80.20	79.70		7.53	7.47		7.25	7.24		8.30	
	18/5/2022	Sunny	7:00	0.50		0.25	22.90	22.90	22.9	8.02	8.02	8.0	28.17	28.17	28.2	81.50	80.60	81.1	6.64	6.57	6.6	3.68	3.67	3.7	6.80	6.9
			7:05	0.50		0.25	22.90	22.90		8.02	8.02		28.17	28.17		81.50	80.60		6.64	6.57		3.68	3.67		6.90	
	20/5/2022	Sunny	8:45	0.50		0.25	27.00	27.00	27.0	8.08	8.08	8.1	27.71	27.71	27.7	85.60	84.70	85.2	6.37	6.31	6.3	10.00	10.00	10.0	8.50	8.7
			8:50	0.50		0.25	27.00	27.00		8.08	8.08		27.71	27.71		85.60	84.70		6.37	6.31		10.00	10.00		8.80	
	23/5/2022	Cloudy	12:00	0.50		0.25	24.10	24.10	24.1	8.00	8.00	8.0	17.46	17.90	17.7	83.90	83.00	83.5	7.27	7.21	7.2	12.69	12.69	12.7	10.90	11.1
			12:05	0.50		0.25	24.10	24.10		8.00	8.00		17.46	17.90		83.90	83.00		7.27	7.21		12.69	12.69		11.20	
	25/5/2022	Rainy	14:45	0.50		0.25	25.10	25.20	25.2	7.60	7.60	7.6	1.81	1.81	1.8	79.40	78.40	78.9	7.74	7.67	7.7	9.33	9.33	9.3	11.10	11.4
			14:50	0.50		0.25	25.10	25.20		7.60	7.60		1.81	1.81		79.40	78.40		7.74	7.67		9.33	9.33		11.60	
	27/5/2022	Rainy	16:50	0.50		0.25	25.90	25.90	25.9	7.32	7.32	7.3	0.92	0.92	0.9	73.80	73.10	73.5	6.94	6.87	6.9	33.55	33.55	33.6	19.70	19.5
			16:45	0.50		0.25	25.90	25.90		7.32	7.32		0.92	0.92		73.80	73.10		6.94	6.87		33.55	33.55		19.30	
	30/5/2022	Sunny	19:15	0.50		0.25	26.20	26.20	26.2	7.51	7.51	7.5	1.73	1.73	1.7	71.80	71.00	71.4	6.82	6.79	6.8	10.31	10.32	10.3	6.10	6.0
			19:20	0.50		0.25	26.20	26.20		7.51	7.51		1.73	1.73		71.80	71.00		6.82	6.79		10.31	10.32		5.80	

General Note: Additional data of temperature, pH, salinity, DO saturation, DO and turbidty were obtained in each duplicate set for better representativeness.

Water Quality Monitoring at Station W6 (Middle) - Ebb Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Level	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W6 Silvermine Bay (Near Silvermine Bay Beach)	4/5/2022	Sunny	14:30	2.20	Middle	1.10	25.90	25.90	25.9	8.06	8.06	8.1	30.08	30.08	30.1	91.30	89.60	90.5	6.99	6.86	6.9	3.48	3.48	3.5	2.80	2.9
			14:35	2.20		1.10	25.90	25.90		8.06	8.06		30.08	30.08		91.30	89.60		6.99	6.86		3.48	3.48		2.90	
	6/5/2022	Sunny	15:45	2.00		1.00	26.60	26.60	26.6	8.29	8.29	8.3	30.45	30.45	30.5	83.40	82.90	83.2	6.64	6.50	6.6	4.06	4.06	4.1	5.00	5.2
			15:50	2.00		1.00	26.60	26.60		8.29	8.29		30.45	30.45		83.40	82.90		6.64	6.50		4.06	4.06		5.30	
	10/5/2022	Rainy	19:20	2.00		1.00	25.20	25.30	25.3	8.05	8.05	8.1	28.70	28.70	28.7	88.80	88.00	88.4	6.75	6.70	6.7	3.50	3.50	3.5	3.20	3.4
			19:25	2.00		1.00	25.20	25.30		8.05	8.05		28.70	28.70		88.80	88.00		6.75	6.70		3.50	3.50		3.60	
	12/5/2022	Thunder	0:00	-		-	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	0.0
			0:00	-		-	-	-		-	-		-	-		-	-		-	-		-	-		-	
	14/5/2022	Rainy	11:30	2.00		1.00	24.70	24.70	24.7	8.00	8.00	8.0	22.36	22.36	22.4	8.17	8.12	8.1	7.01	6.90	7.0	5.71	5.72	5.7	9.20	9.1
			11:35	2.00		1.00	24.70	24.70		8.00	8.00		22.36	22.36		8.17	8.12		7.01	6.90		5.71	5.72		9.00	
	16/5/2022	Rainy	12:15	2.10		1.05	22.50	22.50	22.5	7.83	7.83	7.8	24.30	24.30	24.3	82.00	81.40	81.7	6.56	6.43	6.5	6.32	6.31	6.3	5.80	5.6
			12:20	2.10		1.05	22.50	22.50		7.83	7.83		24.30	24.30		82.00	81.40		6.56	6.43		6.32	6.31		5.40	
	18/5/2022	Sunny	13:45	1.90		0.95	25.00	25.00	25.0	8.05	8.05	8.1	23.20	23.19	23.2	86.60	85.00	85.8	6.86	6.70	6.8	7.20	7.19	7.2	6.20	6.0
			13:50	1.90		0.95	25.00	25.00		8.05	8.05		23.20	23.19		86.60	85.00		6.86	6.70		7.20	7.19		5.80	
	20/5/2022	Sunny	16:00	2.20		1.10	28.00	28.00	28.0	8.30	8.30	8.3	26.74	26.74	26.7	86.20	85.30	85.8	6.51	6.40	6.5	3.91	3.93	3.9	6.30	6.2
			16:05	2.20		1.10	28.00	28.00		8.30	8.30		26.74	26.74		86.20	85.30		6.51	6.40		3.91	3.93		6.00	
	23/5/2022	Cloudy	19:00	2.00		1.00	24.30	24.30	24.3	8.04	8.04	8.0	21.83	21.83	21.8	76.20	75.60	75.9	6.70	6.65	6.7	6.71	6.71	6.7	7.60	7.3
			19:05	2.00		1.00	24.30	24.30		8.04	8.04		21.83	21.83		76.20	75.60		6.70	6.65		6.71	6.71		7.00	
	25/5/2022	Sunny	9:15	2.10		1.05	24.90	24.80	24.9	7.94	7.94	7.9	23.92	23.92	23.9	79.90	79.00	79.5	7.03	6.95	7.0	4.33	4.33	4.3	7.60	7.9
			9:20	2.10		1.05	24.90	24.80		7.94	7.94		23.92	23.92		79.90	79.00		7.03	6.95		4.33	4.33		8.10	
	27/5/2022	Rainy	11:00	1.90		0.95	26.00	26.00	26.0	7.94	7.94	7.9	27.04	27.04	27.0	83.60	83.00	83.3	6.30	6.19	6.2	3.66	3.66	3.7	4.00	4.3
			11:05	1.90		0.95	26.00	26.00		7.94	7.94		27.04	27.04		83.60	83.00		6.30	6.19		3.66	3.66		4.50	
	30/5/2022	Rainy	12:30	2.10		1.05	28.90	28.90	28.9	8.20	8.20	8.2	21.06	21.06	21.1	82.60	81.90	82.3	6.25	6.19	6.2	4.45	4.45	4.5	4.00	3.8
			12:35	2.10		1.05	28.90	28.90		8.20	8.20		21.06	21.06		82.60	81.90		6.25	6.19		4.45	4.45		3.60	

Remark(s): Sampling at W6 was cacelled due to weather condition on 12 May so that no data can be provided.

Water Quality Monitoring at Station W6 (Middle) - Flood Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Depth	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W6 Silvermine Bay (Near Silvermine Bay Beach)	4/5/2022	Sunny	7:30	2.50	Middle	1.25	24.00	24.00	24.0	6.96	6.91	6.9	31.32	31.32	31.3	80.00	79.40	79.7	6.45	6.29	6.4	3.35	3.35	3.4	3.50	3.4
			7:35	2.50		1.25	24.00	24.00		6.96	6.91		31.32	31.32		80.00	79.40		6.45	6.29		3.35	3.35		3.20	
	6/5/2022	Sunny	7:45	2.30		1.15	25.70	25.70	25.7	8.12	8.12	8.1	30.12	30.12	30.1	84.30	83.60	84.0	6.63	6.50	6.6	3.35	3.34	3.3	2.10	2.2
			7:50	2.30		1.15	25.70	25.70		8.12	8.12		30.12	30.12		84.30	83.60		6.63	6.50		3.35	3.34		2.30	
	10/5/2022	Cloudy	7:45	2.10		1.05	25.60	25.60	25.6	7.95	7.95	8.0	28.72	28.73	28.7	85.00	84.60	84.8	6.49	6.35	6.4	1.96	1.97	2.0	3.10	3.0
			7:50	2.10		1.05	25.60	25.60		7.95	7.95		28.72	28.73		85.00	84.60		6.49	6.35		1.96	1.97		2.90	
	12/5/2022	Thunder	15:45	2.20		1.10	24.40	24.40	24.4	7.41	7.47	7.4	7.96	8.10	8.0	83.00	82.40	82.7	6.92	6.84	6.9	31.48	31.48	31.5	29.60	29.4
			15:50	2.20		1.10	24.40	24.40		7.41	7.47		7.96	8.10		83.00	82.40		6.92	6.84		31.48	31.48		29.10	
	14/5/2022	Rainy	17:30	2.40		1.20	24.50	24.50	24.5	7.88	7.88	7.9	14.91	14.91	14.9	87.20	86.50	86.9	7.07	6.97	7.0	4.95	4.95	5.0	3.10	3.0
			17:35	2.40		1.20	24.50	24.50		7.88	7.88		14.91	14.91		87.20	86.50		7.07	6.97		4.95	4.95		2.90	
	16/5/2022	Rainy	19:00	2.40		1.20	23.20	23.20	23.2	7.89	7.89	7.9	27.67	27.67	27.7	83.30	82.80	83.1	6.61	6.54	6.6	5.38	5.37	5.4	4.10	4.2
			19:05	2.40		1.20	23.20	23.20		7.89	7.89		27.67	27.67		83.30	82.80		6.61	6.54		5.38	5.37		4.30	
	18/5/2022	Sunny	7:15	2.80		1.40	23.90	23.90	23.9	8.08	8.08	8.1	28.68	28.68	28.7	83.80	82.90	83.4	6.51	6.48	6.5	3.81	3.81	3.8	4.70	4.7
			7:20	2.80		1.40	23.90	23.90		8.08	8.08		28.68	28.68		83.80	82.90		6.51	6.48		3.81	3.81		4.60	
	20/5/2022	Sunny	9:00	2.80		1.40	26.90	26.90	26.9	8.15	8.15	8.2	28.51	28.51	28.5	80.00	79.40	79.7	6.37	6.33	6.4	3.92	3.92	3.9	3.20	3.4
			9:05	2.80		1.40	26.90	26.90		8.15	8.15		28.51	28.51		80.00	79.40		6.37	6.33		3.92	3.92		3.60	
	23/5/2022	Cloudy	12:15	2.30		1.15	24.20	24.20	24.2	8.10	8.10	8.1	22.21	22.21	22.2	80.50	79.70	80.1	6.80	6.73	6.8	2.55	2.54	2.5	3.60	3.7
			15:20	2.30		1.15	24.20	24.20		8.10	8.10		22.21	22.21		80.50	79.70		6.80	6.73		2.55	2.54		3.80	
	25/5/2022	Rainy	15:00	2.40		1.20	25.50	25.60	25.6	7.97	7.97	8.0	25.59	25.59	25.6	80.90	79.50	80.2	6.31	6.25	6.3	4.17	4.17	4.2	4.80	5.0
			15:05	2.40		1.20	25.50	25.60		7.97	7.97		25.59	25.59		80.90	79.50		6.31	6.25		4.17	4.17		5.20	
	27/5/2022	Rainy	17:00	2.20		1.10	26.10	26.10	26.1	8.02	8.02	8.0	25.21	25.21	25.2	78.30	77.60	78.0	6.25	6.20	6.2	8.71	8.71	8.7	4.70	4.9
			17:05	2.20		1.10	26.10	26.10		8.02	8.02		25.21	25.21		78.30	77.60		6.25	6.20		8.71	8.71		5.00	
	30/5/2022	Sunny	19:30	2.50		1.25	27.30	27.30	27.3	8.23	8.23	8.2	21.89	21.89	21.9	83.60	82.60	83.1	6.22	6.16	6.2	5.84	5.83	5.8	7.60	7.8
			19:35	2.50		1.25	27.30	27.30		8.23	8.23		21.89	21.89		83.60	82.60		6.22	6.16		5.84	5.83		7.90	

General Note: Additional data of temperature, pH, salinity, DO saturation, DO and turbidty were obtained in each duplicate set for better representativeness.

Water Quality Monitoring at Station W7 (Middle) - Ebb Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Level	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W7 Silvermine Bay (Open Water)	4/5/2022	Sunny	14:45	2.50	Middle	1.25	26.00	26.00	26.0	8.09	8.09	8.1	30.54	30.53	30.5	85.90	84.70	85.3	6.66	6.53	6.6	2.29	2.29	2.3	3.20	2.7
			14:50	2.50		1.25	26.00	26.00		8.09	8.09		30.54	30.53		85.90	84.70		6.66	6.53		2.29	2.29		2.10	
	6/5/2022	Sunny	16:00	2.30		1.15	26.60	26.60	26.6	8.30	8.30	8.3	30.63	30.63	30.6	80.40	79.70	80.1	6.42	6.37	6.4	3.89	3.89	3.9	5.00	5.2
			16:05	2.30		1.15	26.60	26.60		8.30	8.30		30.63	30.63		80.40	79.70		6.42	6.37		3.89	3.89		5.40	
	10/5/2022	Rainy	19:35	2.40		1.20	25.30	25.30	25.3	8.17	8.18	8.2	29.41	29.41	29.4	88.90	87.30	88.1	6.98	6.93	7.0	2.45	2.44	2.4	3.40	3.3
			19:40	2.40		1.20	25.30	25.30		8.17	8.18		29.41	29.41		88.90	87.30		6.98	6.93		2.45	2.44		3.10	
	12/5/2022	Thunder	0:00	-		-	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	0.0
			0:00	-		-	-	-		-	-		-	-		-	-		-	-		-	-		-	
	14/5/2022	Rainy	11:45	2.30		1.15	25.00	25.00	25.0	8.08	8.08	8.1	24.97	24.97	25.0	86.90	86.20	86.6	6.92	6.81	6.9	2.78	2.79	2.8	4.60	4.4
			11:50	2.30		1.15	25.00	25.00		8.08	8.08		24.97	24.97		86.90	86.20		6.92	6.81		2.78	2.79		4.20	
	16/5/2022	Rainy	12:30	2.30		1.15	22.90	22.90	22.9	7.93	7.93	7.9	27.57	27.54	27.6	80.30	79.80	80.1	6.40	6.32	6.4	4.21	4.21	4.2	4.30	4.5
			12:35	2.30		1.15	22.90	22.90		7.93	7.93		27.57	27.54		80.30	79.80		6.40	6.32		4.21	4.21		4.70	
	18/5/2022	Sunny	14:00	2.30		1.15	25.10	25.10	25.1	8.10	8.10	8.1	27.76	27.76	27.8	87.10	86.30	86.7	6.49	6.40	6.4	4.56	4.55	4.6	11.20	11.0
			14:05	2.30		1.15	25.10	25.10		8.10	8.10		27.76	27.76		87.10	86.30		6.49	6.40		4.56	4.55		10.70	
	20/5/2022	Sunny	16:15	2.80		1.40	28.10	28.10	28.1	8.34	8.34	8.3	26.97	26.97	27.0	77.80	77.20	77.5	6.47	6.38	6.4	3.81	3.80	3.8	4.60	4.3
			16:20	2.80		1.40	28.10	28.10		8.34	8.34		26.97	26.97		77.80	77.20		6.47	6.38		3.81	3.80		4.00	
	23/5/2022	Cloudy	19:15	2.20		1.10	24.50	24.50	24.5	8.25	8.25	8.3	25.80	25.80	25.8	79.50	79.00	79.3	6.65	6.51	6.6	1.95	1.95	2.0	4.10	4.3
			19:20	2.20		1.10	24.50	24.50		8.25	8.25		25.80	25.80		79.50	79.00		6.65	6.51		1.95	1.95		4.40	
	25/5/2022	Sunny	9:30	2.30		1.15	24.90	24.90	24.9	8.07	8.07	8.1	26.75	26.75	26.8	76.80	75.90	76.4	6.15	6.09	6.1	2.97	2.96	3.0	4.20	4.4
			9:35	2.30		1.15	24.90	24.90		8.07	8.07		26.75	26.75		76.80	75.90		6.15	6.09		2.97	2.96		4.50	
	27/5/2022	Rainy	11:15	2.10		1.05	26.10	26.10	26.1	8.04	8.04	8.0	27.53	27.53	27.5	79.80	78.60	79.2	6.14	6.09	6.1	3.51	3.51	3.5	4.00	3.9
			11:20	2.10		1.05	26.10	26.10		8.04	8.04		27.53	27.53		79.80	78.60		6.14	6.09		3.51	3.51		3.70	
	30/5/2022	Rainy	12:45	2.40		1.20	28.70	28.70	28.7	8.29	8.29	8.3	22.99	22.99	23.0	81.60	80.80	81.2	6.23	6.16	6.2	3.37	3.37	3.4	3.90	4.0
			12:50	2.40		1.20	28.70	28.70		8.29	8.29		22.99	22.99		81.60	80.80		6.23	6.16		3.37	3.37		4.10	

Remark(s): Sampling at W7 was cacelled due to weather condition on 12 May so that no data can be provided.

Water Quality Monitoring at Station W7 (Middle) - Flood Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Depth	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W7 Silvermine Bay (Open Water)	4/5/2022	Sunny	7:45	2.80	Middle	1.40	24.20	24.20	24.2	7.28	7.29	7.3	31.66	31.66	31.7	84.40	83.50	84.0	6.88	6.72	6.8	2.96	2.96	3.0	4.60	4.8
			7:50	2.80		1.40	24.20	24.20		7.28	7.29		31.66	31.66		84.40	83.50		6.88	6.72		2.96	2.96		5.00	
	6/5/2022	Sunny	8:00	2.60		1.30	25.50	25.50	25.5	8.10	8.11	8.1	30.49	30.49	30.5	85.60	84.80	85.2	6.42	6.39	6.4	4.18	4.18	4.2	3.40	3.6
			8:05	2.60		1.30	25.50	25.50		8.10	8.11		30.49	30.49		85.60	84.80		6.42	6.39		4.18	4.18		3.70	
	10/5/2022	Cloudy	8:00	2.50		1.25	25.80	25.80	25.8	8.14	8.14	8.1	29.44	29.44	29.4	85.70	85.20	85.5	6.55	6.41	6.5	2.03	2.03	2.0	2.00	2.0
			8:05	2.50		1.25	25.80	25.80		8.14	8.14		29.44	29.44		85.70	85.20		6.55	6.41		2.03	2.03		2.00	
	12/5/2022	Thunder	16:00	2.70		1.35	24.40	24.40	24.4	8.03	8.03	8.0	21.98	21.98	22.0	84.40	83.90	84.2	6.71	6.68	6.7	6.60	6.59	6.6	7.60	7.3
			16:05	2.70		1.35	24.40	24.40		8.03	8.03		21.98	21.98		84.40	83.90		6.71	6.68		6.60	6.59		7.00	
	14/5/2022	Rainy	17:45	2.70		1.35	24.60	24.60	24.6	7.96	7.96	8.0	19.97	19.97	20.0	77.60	77.10	77.4	6.78	6.78	6.8	5.44	5.43	5.4	5.70	5.7
			17:50	2.70		1.35	24.60	24.60		7.96	7.96		19.97	19.97		77.60	77.10		6.78	6.78		5.44	5.43		5.60	
	16/5/2022	Rainy	19:15	2.60		1.30	23.20	23.20	23.2	7.98	7.98	8.0	26.10	26.10	26.1	82.40	82.10	82.3	6.56	6.51	6.5	9.33	9.33	9.3	7.00	7.2
			19:20	2.60		1.30	23.20	23.20		7.98	7.98		26.10	26.10		82.40	82.10		6.56	6.51		9.33	9.33		7.40	
	18/5/2022	Sunny	7:30	3.10		1.55	24.00	24.00	24.0	8.08	8.07	8.1	28.19	28.19	28.2	78.20	77.80	78.0	6.67	6.51	6.6	3.26	3.26	3.3	5.00	4.9
			7:35	3.10		1.55	24.00	24.00		8.08	8.07		28.19	28.19		78.20	77.80		6.67	6.51		3.26	3.26		4.70	
	20/5/2022	Sunny	9:15	3.40		1.70	26.90	26.90	26.9	8.17	8.17	8.2	28.76	28.76	28.8	87.20	86.50	86.9	6.56	6.47	6.5	3.67	3.67	3.7	4.20	4.4
			9:20	3.40		1.70	26.90	26.90		8.17	8.17		28.76	28.76		87.20	86.50		6.56	6.47		3.67	3.67		4.60	
	23/5/2022	Cloudy	12:30	2.50		1.25	24.30	24.30	24.3	8.23	8.23	8.2	24.47	24.47	24.5	87.70	86.20	87.0	6.75	6.71	6.7	1.77	1.77	1.8	3.60	3.8
			12:35	2.50		1.25	24.30	24.30		8.23	8.23		24.47	24.47		87.70	86.20		6.75	6.71		1.77	1.77		4.00	
	25/5/2022	Rainy	15:15	2.60		1.30	25.90	26.00	26.0	8.06	8.06	8.1	24.38	24.38	24.4	79.30	78.60	79.0	6.44	6.32	6.4	3.44	3.44	3.4	4.60	4.8
			15:20	2.60		1.30	25.90	26.00		8.06	8.06		24.38	24.38		79.30	78.60		6.44	6.32		3.44	3.44		5.00	
	27/5/2022	Rainy	17:15	2.40		1.20	26.20	26.20	26.2	8.11	8.11	8.1	27.61	27.61	27.6	85.40	84.50	85.0	6.59	6.46	6.5	5.16	5.15	5.2	4.40	4.6
			17:20	2.40		1.20	26.20	26.20		8.11	8.11		27.61	27.61		85.40	84.50		6.59	6.46		5.16	5.15		4.80	
	30/5/2022	Sunny	19:45	2.80		1.40	27.60	27.60	27.6	8.30	8.30	8.3	22.90	22.90	22.9	88.00	87.10	87.6	6.23	6.17	6.2	3.90	3.90	3.9	4.50	4.3
			19:50	2.80		1.40	27.60	27.60		8.30	8.30		22.90	22.90		88.00	87.10		6.23	6.17		3.90	3.90		4.00	

General Note: Additional data of temperature, pH, salinity, DO saturation, DO and turbidty were obtained in each duplicate set for better representativeness.

Water Quality Monitoring at Station W8 (Surface) - Ebb Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Level	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W8 Silvermine Bay (Open Water)	4/5/2022	Sunny	15:00	3.90	Surface	1.00	25.60	25.60	25.6	8.11	8.11	8.1	30.56	30.56	30.6	75.80	75.10	75.5	6.30	6.22	6.3	2.56	2.56	2.6	2.40	2.2
			15:05	3.90		1.00	25.60	25.60		8.11	8.11		30.56	30.56		75.80	75.10		6.30	6.22		2.56	2.56		2.00	
	6/5/2022	Sunny	16:15	3.70		1.00	26.20	26.20	26.2	8.36	8.36	8.4	30.68	30.68	30.7	85.30	84.70	85.0	7.12	6.97	7.0	3.61	3.60	3.6	3.70	3.5
			16:20	3.70		1.00	26.20	26.20		8.36	8.36		30.68	30.68		85.30	84.70		7.12	6.97		3.61	3.60		3.30	
	10/5/2022	Rainy	19:50	3.80		1.00	25.20	25.20	25.2	8.26	8.26	8.3	29.59	29.59	29.6	82.70	82.00	82.4	6.47	6.39	6.4	2.50	2.50	2.5	4.10	4.3
			19:55	3.80		1.00	25.20	25.20		8.26	8.26		29.59	29.59		82.70	82.00		6.47	6.39		2.50	2.50		4.50	
	12/5/2022	Thunder	0:00	-		-	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	0.0
			0:00	-		-	-	-		-	-		-	-		-	-		-	-		-	-		-	
	14/5/2022	Rainy	12:00	3.60		1.00	25.00	25.00	25.0	8.08	8.08	8.1	22.86	22.86	22.9	76.60	76.00	76.3	7.22	7.17	7.2	4.97	4.97	5.0	5.20	5.0
			12:05	3.60		1.00	25.00	25.00		8.08	8.08		22.86	22.86		76.60	76.00		7.22	7.17		4.97	4.97		4.80	
	16/5/2022	Rainy	12:45	3.70		1.00	23.00	23.00	23.0	7.99	8.00	8.0	26.89	26.89	26.9	92.40	91.30	91.9	7.78	7.69	7.7	4.49	4.49	4.5	3.60	3.8
			12:50	3.70		1.00	23.00	23.00		7.99	8.00		26.89	26.89		92.40	91.30		7.78	7.69		4.49	4.49		4.00	
	18/5/2022	Sunny	14:15	3.50		1.00	25.10	25.10	25.1	8.12	8.12	8.1	25.87	25.87	25.9	80.20	79.50	79.9	6.68	6.61	6.6	4.70	4.70	4.7	4.80	4.7
			14:20	3.50		1.00	25.10	25.10		8.12	8.12		25.87	25.87		80.20	79.50		6.68	6.61		4.70	4.70		4.60	
	20/5/2022	Sunny	16:30	3.90		1.00	28.40	28.40	28.4	8.35	8.35	8.4	27.31	27.31	27.3	82.40	81.70	82.1	6.31	6.24	6.3	4.57	4.56	4.6	4.10	4.2
			16:35	3.90		1.00	28.40	28.40		8.35	8.35		27.31	27.31		82.40	81.70		6.31	6.24		4.57	4.56		4.30	
	23/5/2022	Cloudy	19:30	3.70		1.00	24.50	24.60	24.6	8.25	8.25	8.3	24.80	24.80	24.8	81.90	81.20	81.6	6.83	6.75	6.8	2.23	2.23	2.2	4.00	3.9
			19:35	3.70		1.00	24.50	24.60		8.25	8.25		24.80	24.80		81.90	81.20		6.83	6.75		2.23	2.23		3.80	
	25/5/2022	Sunny	9:45	3.70		1.00	25.00	25.00	25.0	8.10	8.10	8.1	26.33	26.33	26.3	81.50	81.00	81.3	6.21	6.18	6.2	2.21	2.21	2.2	4.00	3.8
			9:50	3.70		1.00	25.00	25.00		8.10	8.10		26.33	26.33		81.50	81.00		6.21	6.18		2.21	2.21		3.60	
	27/5/2022	Rainy	11:30	3.60		1.00	26.20	26.20	26.2	8.06	8.06	8.1	26.86	26.86	26.9	80.90	80.00	80.5	6.47	6.38	6.4	3.37	3.37	3.4	4.90	5.1
			11:35	3.60		1.00	26.20	26.20		8.06	8.06		26.86	26.86		80.90	80.00		6.47	6.38		3.37	3.37		5.20	
	30/5/2022	Rainy	13:00	3.60		1.00	28.50	28.50	28.5	8.33	833.00	420.7	23.32	23.32	23.3	81.40	81.00	81.2	6.18	6.09	6.1	2.71	2.71	2.7	5.00	4.8
			13:05	3.60		1.00	28.50	28.50		8.33	833.00		23.32	23.32		81.40	81.00		6.18	6.09		2.71	2.71		4.60	

Remark(s): Sampling at W8 Surface was cacelled due to weather condition on 12 May so that no data can be provided.

Water Quality Monitoring at Station W8 (Surface) - Flood Tide

Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Depth	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W8 Silvermine Bay (Open Water)	4/5/2022	Sunny	8:00	4.20	Surface	1.00	23.90	23.90	23.9	7.61	7.62	7.6	31.71	31.71	31.7	84.60	83.20	83.9	6.65	6.59	6.6	2.43	2.41	2.4	2.00	2.0
			8:05	4.20		1.00	23.90	23.90		7.61	7.62		31.71	31.71		84.60	83.20		6.65	6.59		2.43	2.41		2.00	
	6/5/2022	Sunny	8:15	4.00		1.00	25.80	25.80	25.8	8.18	8.18	8.2	30.59	30.59	30.6	84.20	83.70	84.0	7.03	6.98	7.0	2.71	2.71	2.7	4.60	4.4
			8:20	4.00		1.00	25.80	25.80		8.18	8.18		30.59	30.59		84.20	83.70		7.03	6.98		2.71	2.71		4.20	
	10/5/2022	Cloudy	8:15	3.90		1.00	25.70	25.70	25.7	8.20	8.20	8.2	29.61	29.61	29.6	86.90	85.30	86.1	6.74	6.65	6.7	1.98	1.99	2.0	2.30	2.4
			8:20	3.90		1.00	25.70	25.70		8.20	8.20		29.61	29.61		86.90	85.30		6.74	6.65		1.98	1.99		2.50	
	12/5/2022	Thunder	16:15	4.00		1.00	24.40	24.40	24.4	8.09	8.10	8.1	19.22	19.22	19.2	86.10	85.30	85.7	7.01	6.98	7.0	8.83	8.88	8.9	17.70	17.5
			16:20	4.00		1.00	24.40	24.40		8.09	8.10		19.22	19.22		86.10	85.30		7.01	6.98		8.83	8.88		17.20	
	14/5/2022	Rainy	18:00	4.00		1.00	24.60	24.60	24.6	8.05	8.05	8.1	22.19	22.19	22.2	83.30	82.90	83.1	6.64	8.51	7.6	4.05	4.05	4.1	4.50	4.5
			18:05	4.00		1.00	24.60	24.60		8.05	8.05		22.19	22.19		83.30	82.90		6.64	8.51		4.05	4.05		4.54	
	16/5/2022	Rainy	19:30	4.00		1.00	23.20	23.30	23.3	8.06	8.06	8.1	28.11	28.11	28.1	82.70	81.90	82.3	6.38	6.31	6.3	4.69	4.68	4.7	2.70	2.9
			19:35	4.00		1.00	23.20	23.30		8.06	8.06		28.11	28.11		82.70	81.90		6.38	6.31		4.69	4.68		3.00	
	18/5/2022	Sunny	7:45	4.40		1.00	24.10	24.10	24.1	8.11	8.11	8.1	28.63	28.62	28.6	82.40	81.70	82.1	6.39	6.33	6.4	2.58	2.57	2.6	2.50	2.7
			7:50	4.40		1.00	24.10	24.10		8.11	8.11		28.63	28.62		82.40	81.70		6.39	6.33		2.58	2.57		2.80	
	20/5/2022	Sunny	9:30	4.40		1.00	26.50	26.50	26.5	8.17	8.17	8.2	28.77	28.77	28.8	86.30	85.80	86.1	6.40	6.36	6.4	3.66	3.67	3.7	4.60	4.8
			9:35	4.40		1.00	26.50	26.50		8.17	8.17		28.77	28.77		86.30	85.80		6.40	6.36		3.66	3.67		5.00	
	23/5/2022	Cloudy	12:45	4.00		1.00	24.50	24.50	24.5	8.28	8.28	8.3	25.96	25.96	26.0	77.90	77.50	77.7	6.74	6.70	6.7	1.61	1.61	1.6	2.20	2.2
			12:50	4.00		1.00	24.50	24.50		8.28	8.28		25.96	25.96		77.90	77.50		6.74	6.70		1.61	1.61		2.10	
	25/5/2022	Rainy	15:30	4.00		1.00	25.80	25.80	25.8	8.09	8.09	8.1	25.12	25.12	25.1	76.90	76.10	76.5	6.46	6.39	6.4	2.41	2.41	2.4	3.50	3.7
			15:35	4.00		1.00	25.80	25.80		8.09	8.09		25.12	25.12		76.90	76.10		6.46	6.39		2.41	2.41		3.80	
	27/5/2022	Rainy	17:30	3.90		1.00	26.10	26.10	26.1	8.14	8.14	8.1	26.35	26.35	26.4	83.60	83.10	83.4	6.15	6.10	6.1	4.56	4.56	4.6	5.40	5.6
			17:35	3.90		1.00	26.10	26.10		8.14	8.14		26.35	26.35		83.60	83.10		6.15	6.10		4.56	4.56		5.80	
	30/5/2022	Sunny	20:00	4.00		1.00	27.60	27.60	27.6	8.35	8.35	8.4	22.54	22.54	22.5	78.60	77.50	78.1	6.52	6.47	6.5	5.44	5.44	5.4	4.70	4.9
			20:05	4.00		1.00	27.60	27.60		8.35	8.35		22.54	22.54		78.60	77.50		6.52	6.47		5.44	5.44		5.00	

General Note: Additional data of temperature, pH, salinity, DO saturation, DO and turbidty were obtained in each duplicate set for better representativeness.

Water Quality Monitoring at Station W8 (Bottom) - Ebb Tide

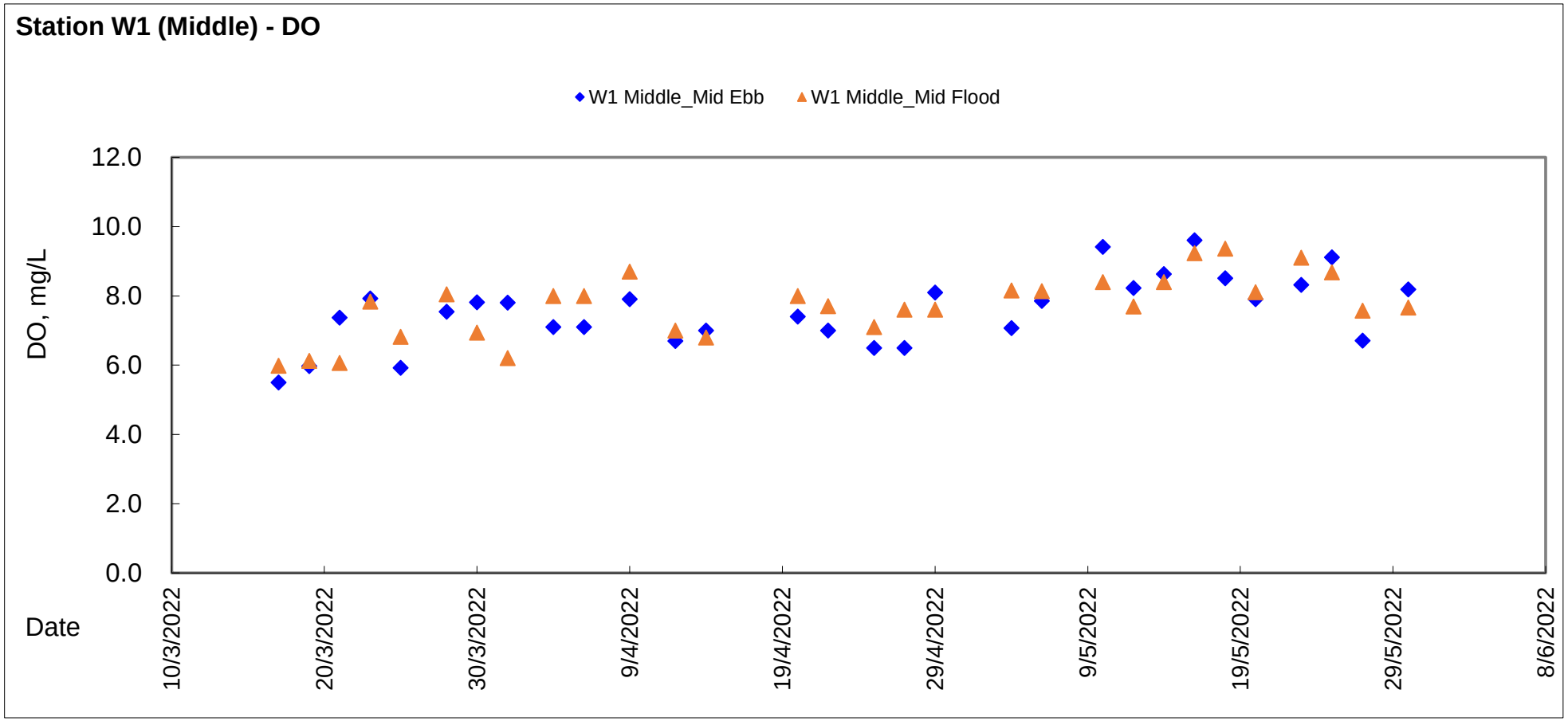
Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Level	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W8 Silvermine Bay (Open Water)	4/5/2022	Sunny	15:10	3.90	Bottom	2.90	25.50	25.50	25.5	8.12	8.11	8.1	30.55	30.55	30.6	83.10	82.40	82.8	6.41	6.35	6.4	2.57	2.56	2.6	2.00	2.0
			15:15	3.90		2.90	25.50	25.50		8.12	8.11		30.55	30.55		83.10	82.40		6.41	6.35		2.57	2.56		2.00	
	6/5/2022	Sunny	16:25	3.70		2.70	26.40	26.40	26.4	8.36	8.36	8.4	30.65	30.65	30.7	82.80	31.90	57.4	6.74	6.65	6.7	4.19	4.19	4.2	4.80	5.1
			16:30	3.70		2.70	26.40	26.40		8.36	8.36		30.65	30.65		82.80	31.90		6.74	6.65		4.19	4.19		5.30	
	10/5/2022	Rainy	20:00	3.80		2.80	25.30	25.30	25.3	8.27	8.26	8.3	29.59	29.59	29.6	81.10	80.70	80.9	6.77	6.68	6.7	2.05	2..06	2.1	3.30	3.5
			20:05	3.80		2.80	25.30	25.30		8.27	8.26		29.59	29.59		81.10	80.70		6.77	6.68		2.05	2..06		3.60	
	12/5/2022	Thunder	0:00	-		-	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	-	0.0	-	0.0
			0:00	-		-	-	-		-	-		-	-		-	-		-	-		-	-		-	
	14/5/2022	Rainy	12:10	3.60		2.60	25.00	25.00	25.0	8.09	8.09	8.1	25.23	25.23	25.2	83.70	83.10	83.4	6.70	6.67	6.7	2.96	2.96	3.0	3.00	3.2
			12:15	3.60		2.60	25.00	25.00		8.09	8.09		25.23	25.23		83.70	83.10		6.70	6.67		2.96	2.96		3.40	
	16/5/2022	Rainy	13:00	3.70		2.70	23.10	23.10	23.1	8.02	8.02	8.0	27.43	27.43	27.4	80.30	79.70	80.0	6.39	6.33	6.4	4.17	4.17	4.2	3.00	3.2
			13:05	3.70		2.70	23.10	23.10		8.02	8.02		27.43	27.43		80.30	79.70		6.39	6.33		4.17	4.17		3.40	
	18/5/2022	Sunny	14:25	3.50		2.50	25.00	25.00	25.0	8.15	8.15	8.2	27.77	27.77	27.8	83.10	82.60	82.9	6.55	6.50	6.5	4.96	4.95	5.0	5.20	5.4
			14:30	3.50		2.50	25.00	25.00		8.15	8.15		27.77	27.77		83.10	82.60		6.55	6.50		4.96	4.95		5.50	
	20/5/2022	Sunny	16:40	3.90		2.90	28.30	28.30	28.3	8.31	8.31	8.3	24.86	24.86	24.9	78.00	77.30	77.7	6.36	6.23	6.3	3.37	3.37	3.4	3.10	3.4
			16:45	3.90		2.90	28.30	28.30		8.31	8.31		24.86	24.86		78.00	77.30		6.36	6.23		3.37	3.37		3.60	
	23/5/2022	Cloudy	19:40	3.70		2.70	24.60	24.60	24.6	8.27	8.27	8.3	25.06	25.06	25.1	86.90	86.10	86.5	6.93	6.88	6.9	1.53	1.52	1.5	5.30	5.6
			19:45	3.70		2.70	24.60	24.60		8.27	8.27		25.06	25.06		86.90	86.10		6.93	6.88		1.53	1.52		5.80	
	25/5/2022	Sunny	9:55	3.70		2.70	24.90	24.90	24.9	8.09	8.09	8.1	27.59	27.59	27.6	80.00	79.60	79.8	6.23	6.17	6.2	4.43	4.44	4.4	5.40	5.6
			10:00	3.70		2.70	24.90	24.90		8.09	8.09		27.59	27.59		80.00	79.60		6.23	6.17		4.43	4.44		5.70	
	27/5/2022	Rainy	11:40	3.60		2.60	26.00	26.00	26.0	8.08	8.08	8.1	28.51	28.51	28.5	79.06	78.70	78.9	6.31	6.20	6.3	3.50	3.51	3.5	6.60	6.7
			11:45	3.60		2.60	26.00	26.00		8.08	8.08		28.51	28.51		79.06	78.70		6.31	6.20		3.50	3.51		6.80	
	30/5/2022	Rainy	13:10	3.60		2.60	28.20	28.20	28.2	8.30	8.30	8.3	24.58	24.58	24.6	82.20	81.80	82.0	6.28	6.20	6.2	3.33	3.33	3.3	3.10	3.0
			13:15	3.60		2.60	28.20	28.20		8.30	8.30		24.58	24.58		82.20	81.80		6.28	6.20		3.33	3.33		2.80	

Remark(s): Sampling at W8 Bottom was cacelled due to weather condition on 12 May so that no data can be provided.

Water Quality Monitoring at Station W8 (Bottom) - Flood Tide

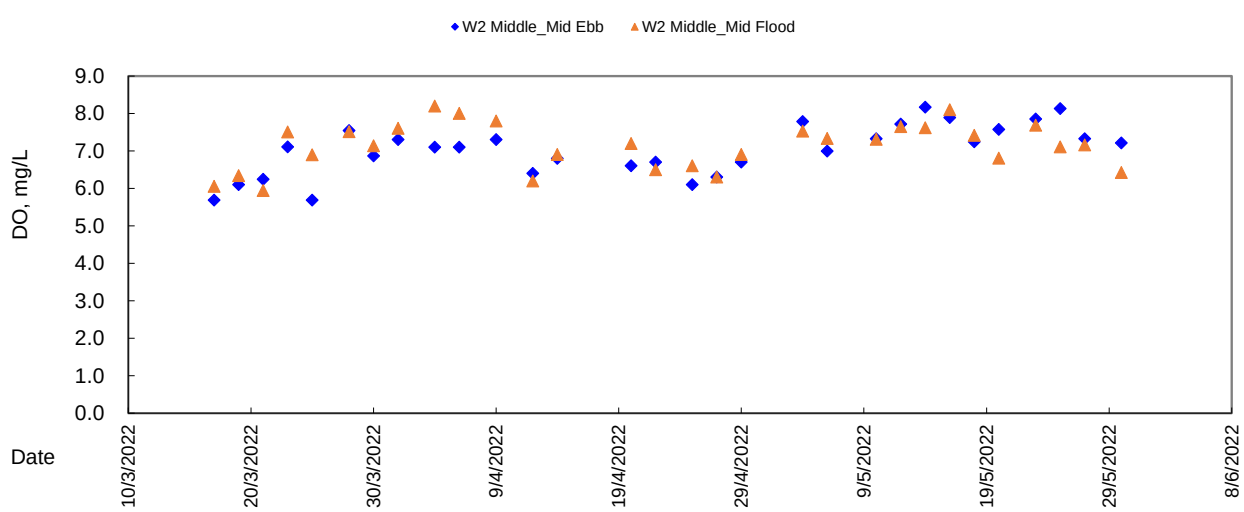
Station Reference	Sampling Date	Weather	Sampling Time	Water Depth	Sampling Depth	Sampling Depth	Temperature			pH			Salinity			DO Saturation			DO			Turbidity			SS	
							°C			-			ppt			%			mg/L			NTU			mg/L	
				m		m	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value		Average	Value	Average
W8 Silvermine Bay (Open Water)	4/5/2022	Sunny	8:10	4.20	Bottom	3.20	23.90	23.90	23.9	7.70	7.75	7.7	31.86	31.86	31.9	85.00	84.50	84.8	6.46	6.43	6.4	2.22	2.22	2.2	3.00	3.2
			8:15	4.20		3.20	23.90	23.90		7.70	7.75		31.86	31.86		85.00	84.50		6.46	6.43		2.22	2.22		3.30	
	6/5/2022	Sunny	8:25	4.00		3.00	25.40	25.40	25.4	8.18	8.18	8.2	30.64	30.63	30.6	82.10	81.60	81.9	6.59	6.54	6.6	2.58	2.57	2.6	2.00	2.0
			8:30	4.00		3.00	25.40	25.40		8.18	8.18		30.64	30.63		82.10	81.60		6.59	6.54		2.58	2.57		2.00	
	10/5/2022	Cloudy	8:25	3.90		2.90	25.70	25.70	25.7	8.21	8.21	8.2	29.62	29.62	29.6	86.10	85.90	86.0	6.74	6.66	6.7	2.57	2.57	2.6	2.90	3.0
			8:30	3.90		2.90	25.70	25.70		8.21	8.21		29.62	29.62		86.10	85.90		6.74	6.66		2.57	2.57		3.00	
	12/5/2022	Thunder	16:25	4.00		3.00	24.40	24.40	24.4	8.12	8.12	8.1	23.40	23.40	23.4	78.00	77.10	77.6	6.69	6.54	6.6	5.33	5.33	5.3	8.70	8.9
			16:30	4.00		3.00	24.40	24.40		8.12	8.12		23.40	23.40		78.00	77.10		6.69	6.54		5.33	5.33		9.00	
	14/5/2022	Rainy	18:10	4.00		3.00	24.80	24.80	24.8	8.08	8.08	8.1	23.54	23.54	23.5	83.00	82.40	82.7	6.47	6.43	6.5	3.38	3.37	3.4	2.20	2.3
			18:15	4.00		3.00	24.80	24.80		8.08	8.08		23.54	23.54		83.00	82.40		6.47	6.43		3.38	3.37		2.40	
	16/5/2022	Rainy	19:40	4.00		3.00	23.40	23.40	23.4	8.07	8.07	8.1	28.41	28.41	28.4	82.40	81.10	81.8	6.41	6.38	6.4	3.77	3.77	3.8	3.60	3.5
			19:45	4.00		3.00	23.40	23.40		8.07	8.07		28.41	28.41		82.40	81.10		6.41	6.38		3.77	3.77		3.30	
	18/5/2022	Sunny	7:55	4.40		3.40	24.10	24.10	24.1	8.09	8.09	8.1	29.00	29.00	29.0	77.60	76.40	77.0	6.59	6.43	6.5	4.82	4.82	4.8	4.20	4.0
			8:00	4.40		3.40	24.10	24.10		8.09	8.09		29.00	29.00		77.60	76.40		6.59	6.43		4.82	4.82		3.80	
	20/5/2022	Sunny	9:40	4.40		3.40	26.20	26.20	26.2	8.14	8.14	8.1	28.97	28.97	29.0	81.10	80.40	80.8	6.20	6.11	6.2	3.81	3.80	3.8	3.60	3.7
			9:45	4.40		3.40	26.20	26.20		8.14	8.14		28.97	28.97		81.10	80.40		6.20	6.11		3.81	3.80		3.80	
	23/5/2022	Cloudy	12:55	4.00		3.00	24.50	24.50	24.5	8.31	8.31	8.3	26.24	26.24	26.2	87.70	86.60	87.2	6.85	6.79	6.8	1.31	1.31	1.3	3.40	3.5
			13:00	4.00		3.00	24.50	24.50		8.31	8.31		26.24	26.24		87.70	86.60		6.85	6.79		1.31	1.31		3.60	
	25/5/2022	Rainy	15:40	4.00		3.00	25.60	25.70	25.7	8.12	8.12	8.1	27.09	27.09	27.1	77.50	77.10	77.3	6.35	6.25	6.3	3.38	3.38	3.4	4.60	4.4
			15:45	4.00		3.00	25.60	25.70		8.12	8.12		27.09	27.09		77.50	77.10		6.35	6.25		3.38	3.38		4.20	
	27/5/2022	Rainy	17:40	3.90		2.90	25.90	25.90	25.9	8.12	8.12	8.1	29.00	29.00	29.0	80.20	79.70	80.0	6.40	6.29	6.3	4.19	4.19	4.2	4.50	4.7
			17:45	3.90		2.90	25.90	25.90		8.12	8.12		29.00	29.00		80.20	79.70		6.40	6.29		4.19	4.19		4.80	
	30/5/2022	Sunny	20:10	4.00		3.00	27.70	27.70	27.7	8.35	8.35	8.4	23.92	23.92	23.9	73.50	72.80	73.2	6.53	6.44	6.5	3.33	3.33	3.3	3.80	3.6
			10:15	4.00		3.00	27.70	27.70		8.35	8.35		23.92	23.92		73.50	72.80		6.53	6.44		3.33	3.33		3.40	

General Note: Additional data of temperature, pH, salinity, DO saturation, DO and turbidty were obtained in each duplicate set for better representativeness.

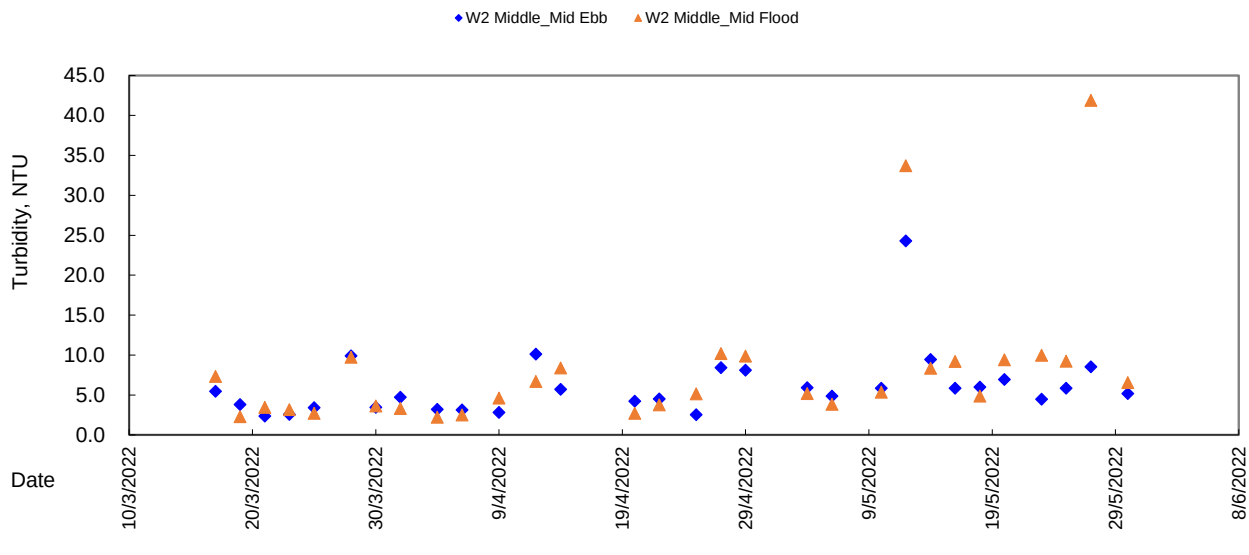

Station W1 (Middle) - DO
W1 Middle_Mid Ebb
W1 Middle_Mid Flood
12.0
10.0
8.0
6.0
4.0
2.0
0.0
DO, mg/L
Date
10/3/2022
20/3/2022
30/3/2022
9/4/2022
19/4/2022
29/4/2022
9/5/2022
19/5/2022
29/5/2022
8/6/2022

Graphic Presentation of WQM Result

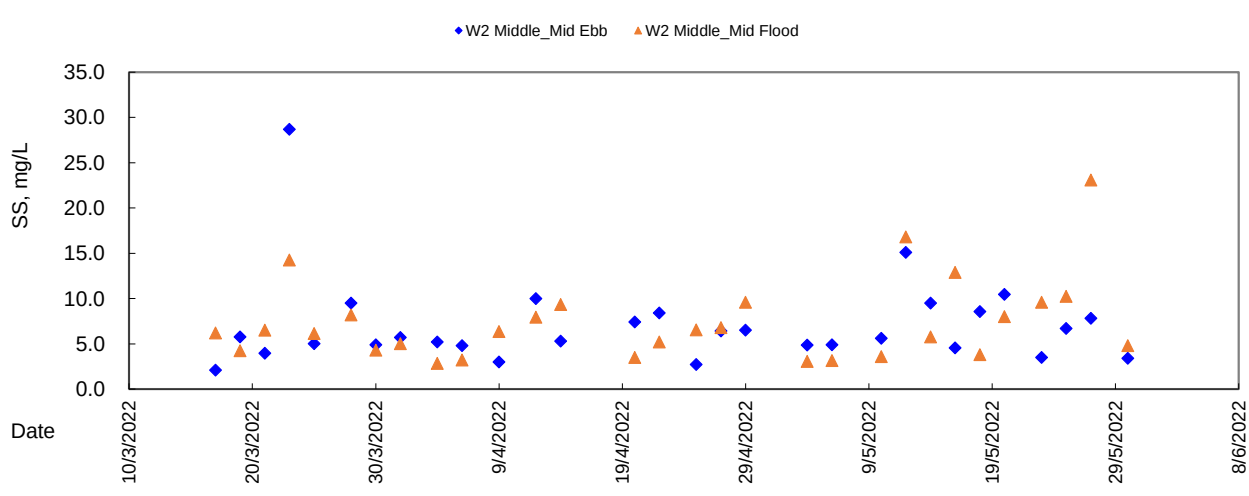
Station W2 (Middle) - DO



Station W2 (Middle) - Turbidity

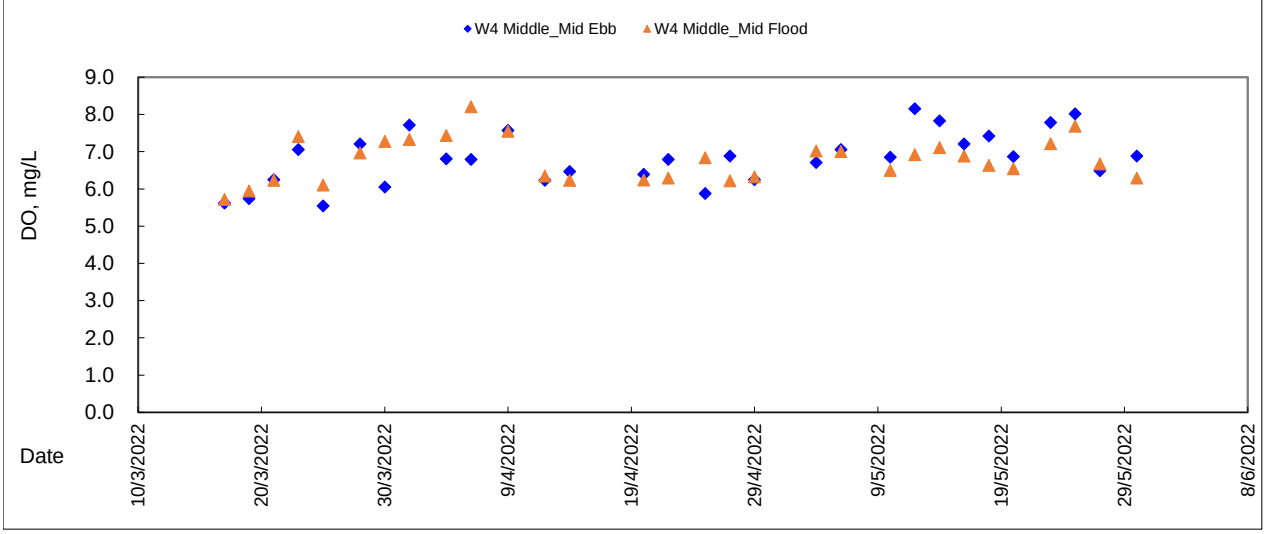


Station W2 (Middle) - Suspended Solid

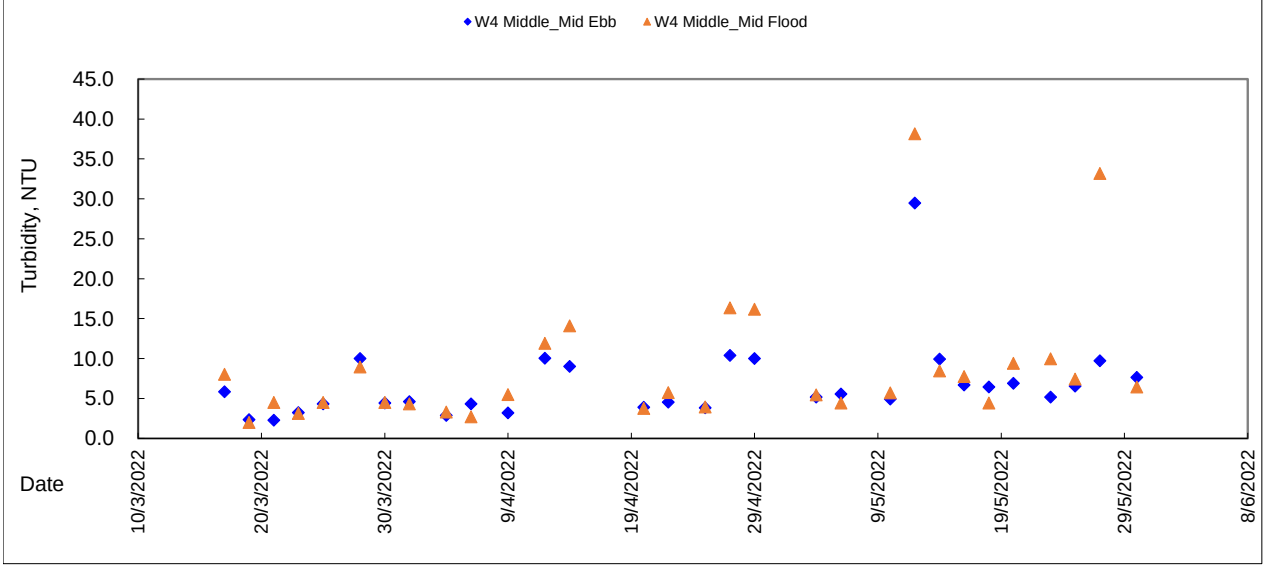


Graphic Presentation of WQM Result

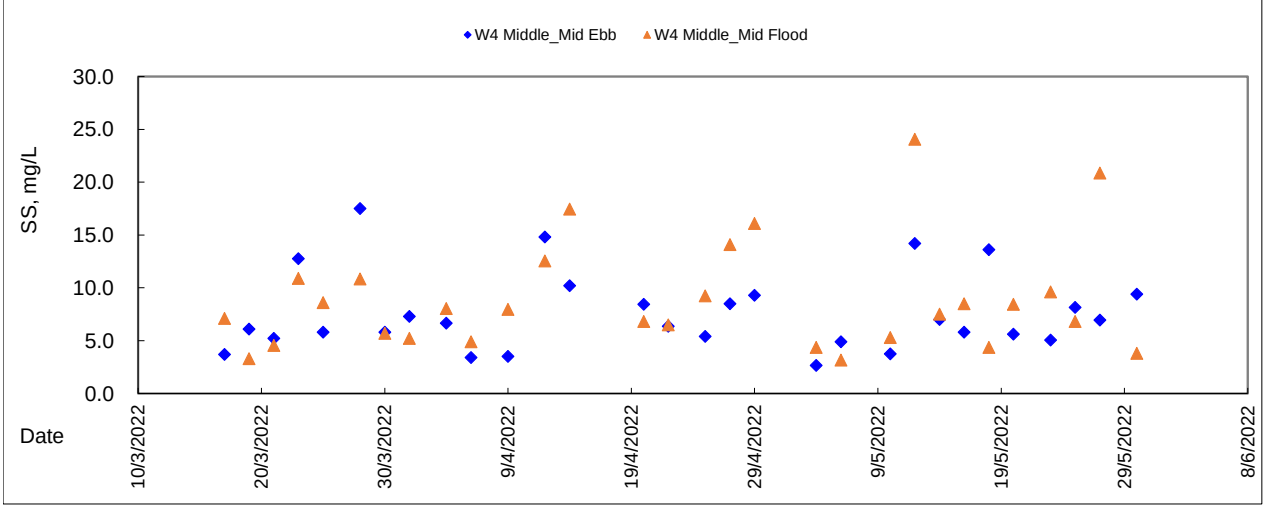
Station W4 (Middle) - DO



Station W4 (Middle) - Turbidity

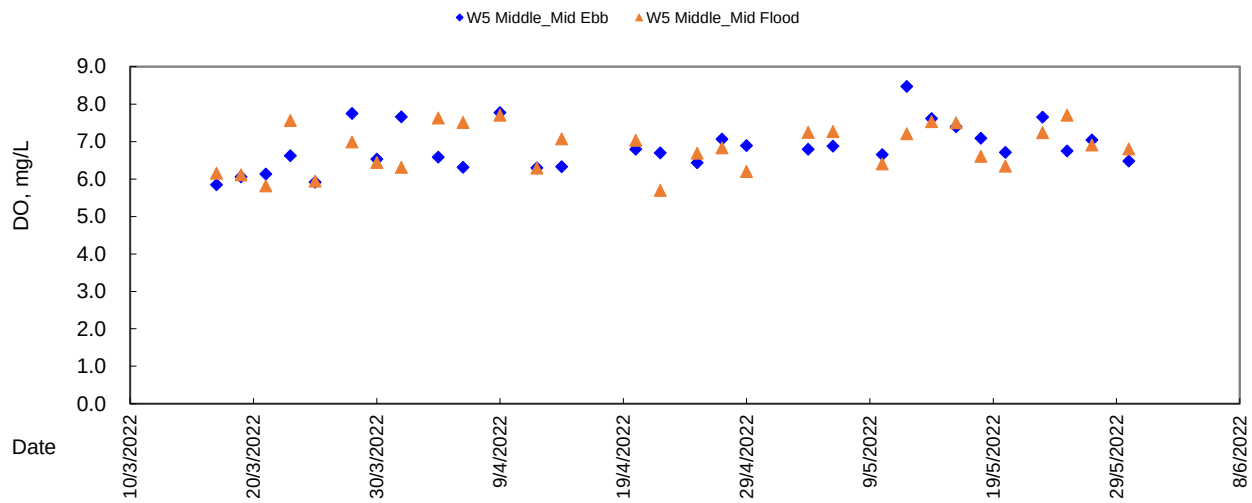


Station W4 (Middle) - Suspended Solid

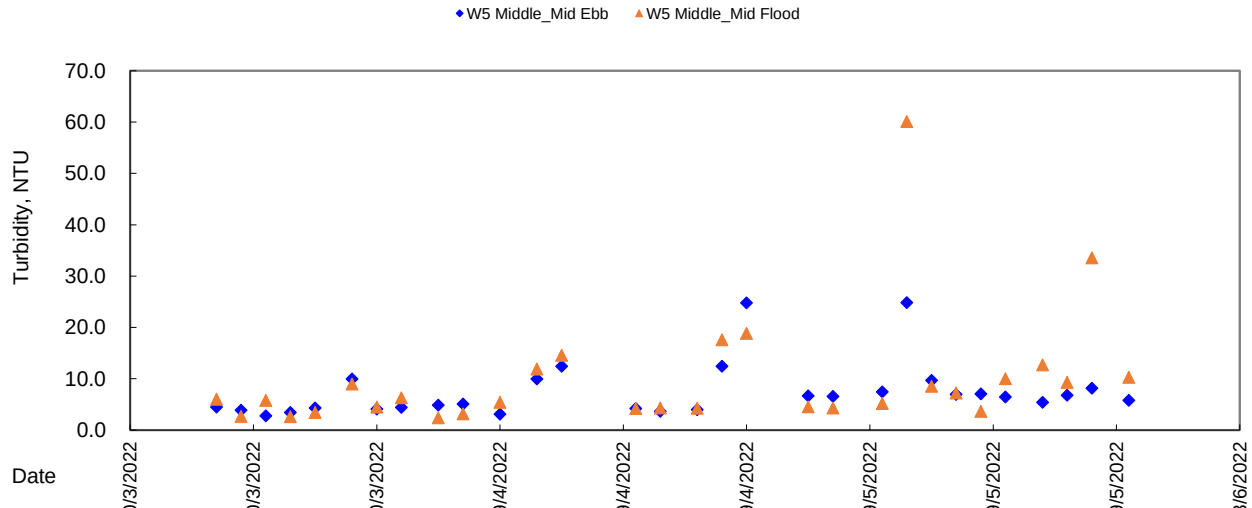


Graphic Presentation of WQM Result

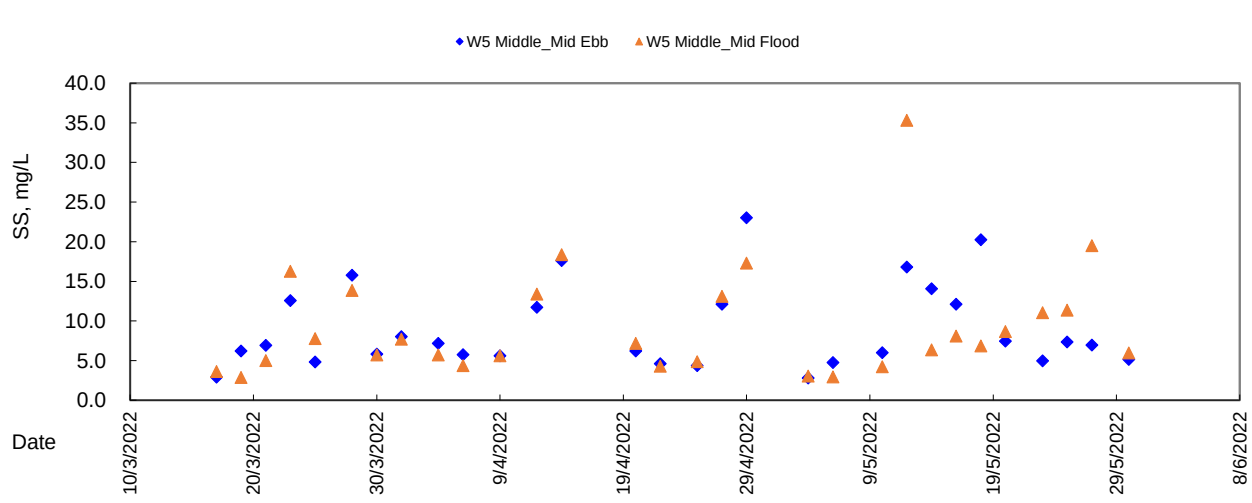
Station W5 (Middle) - DO



Station W5 (Middle) - Turbidity

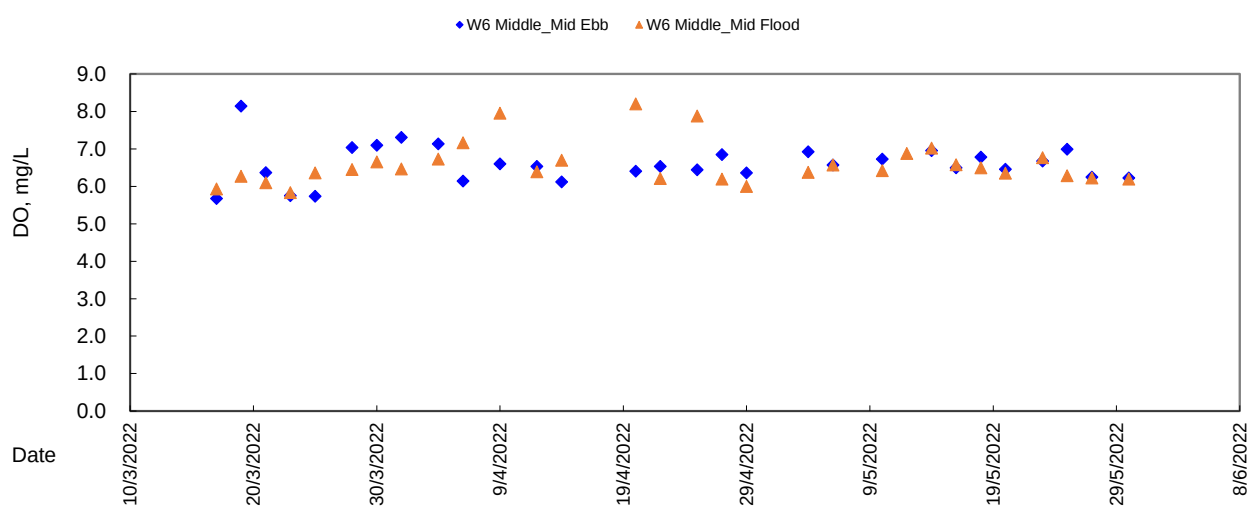


Station W5 (Middle) - Suspended Solid

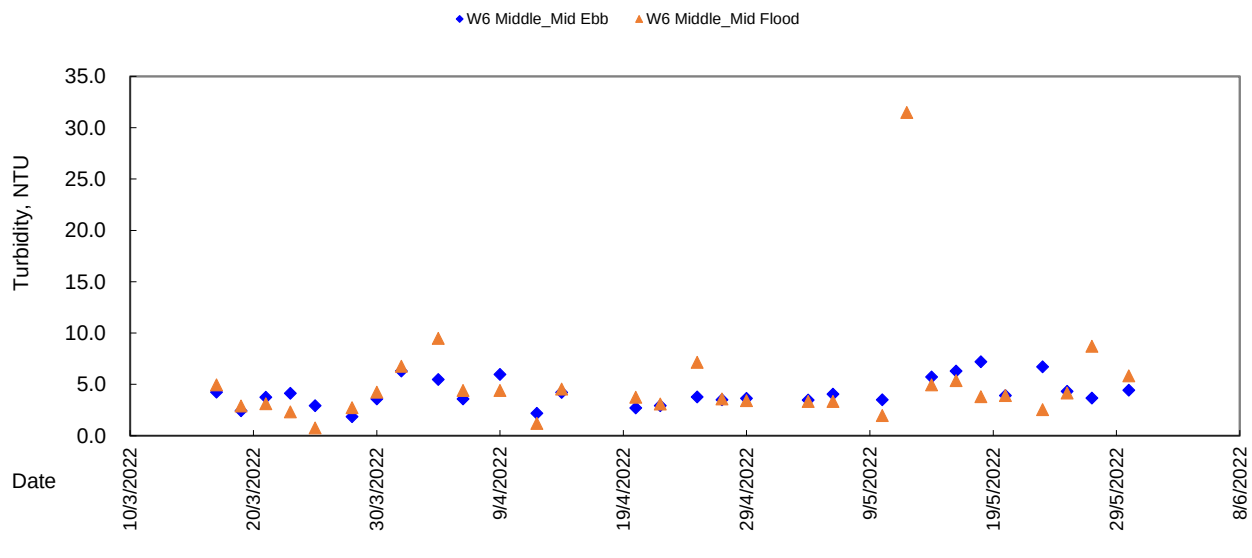


Graphic Presentation of WQM Result

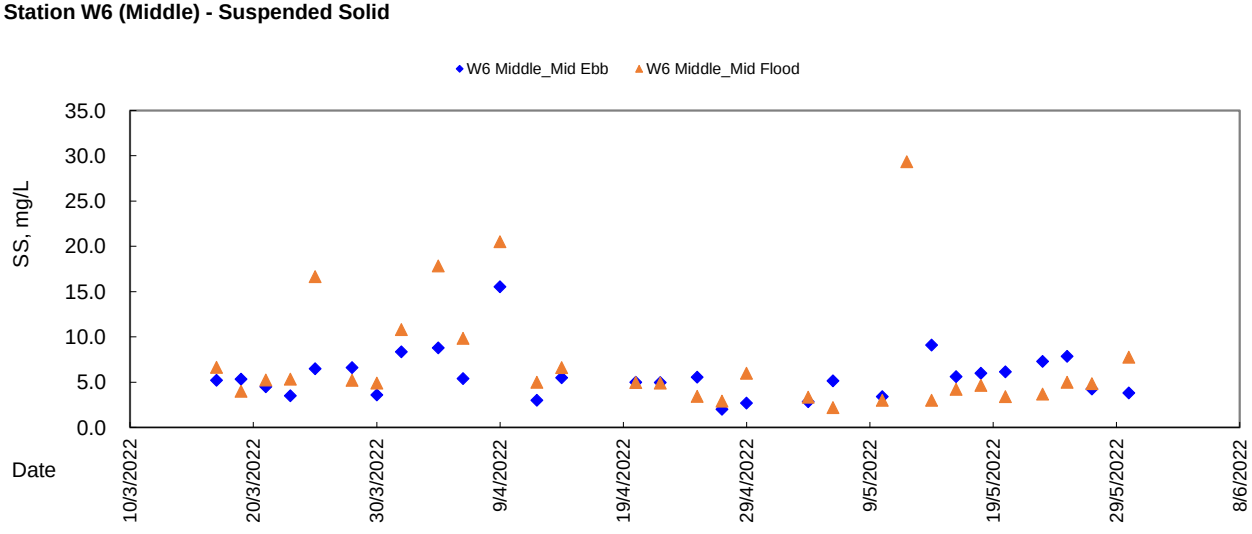
Station W6 (Middle) - DO



Station W6 (Middle) - Turbidity

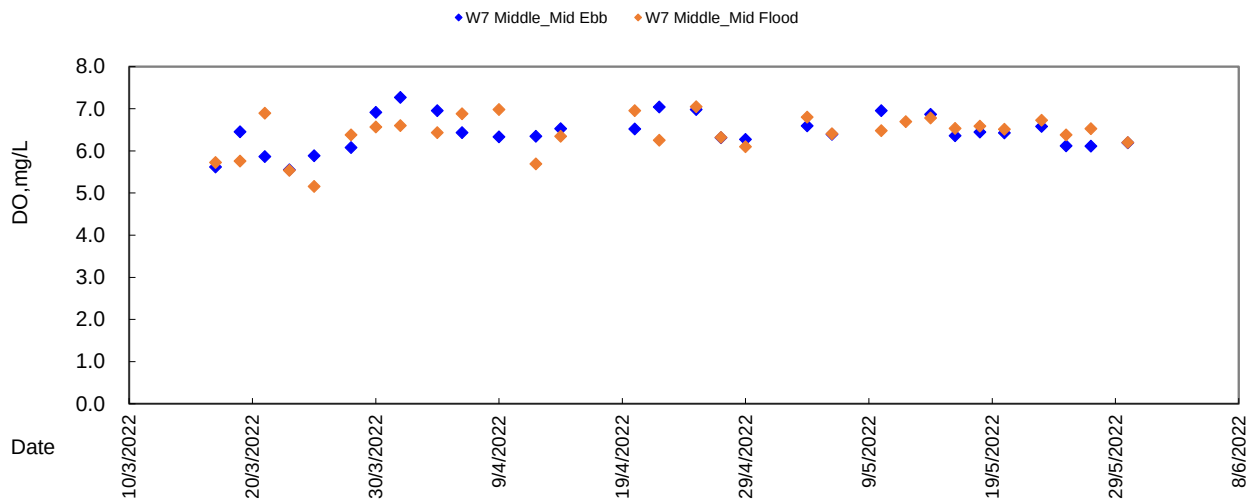


Station W6 (Middle) - Suspended Solid

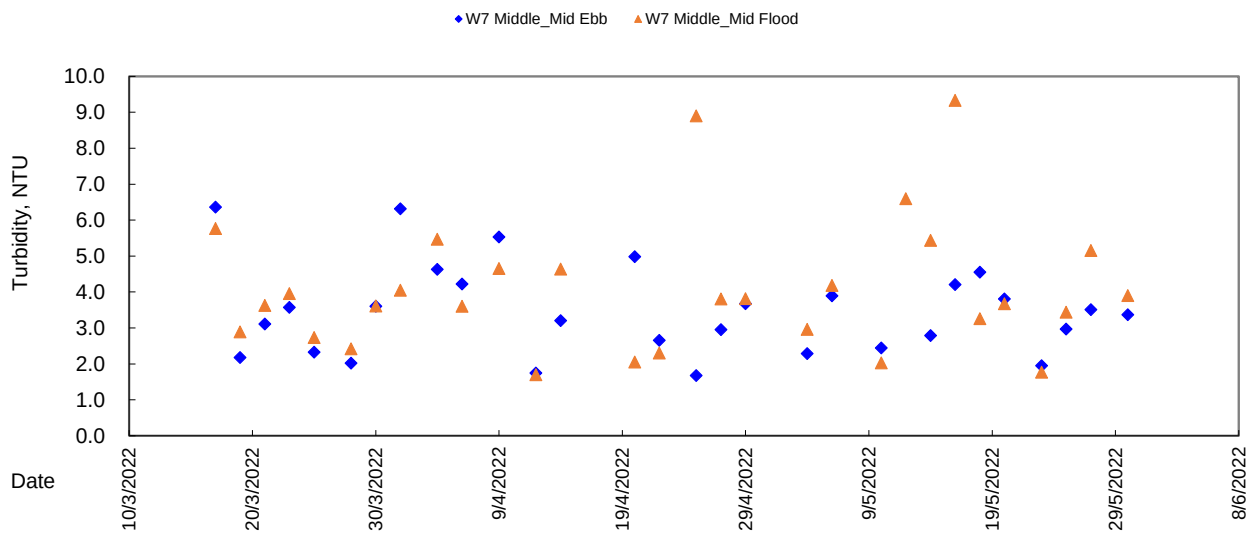


Graphic Presentation of WQM Result

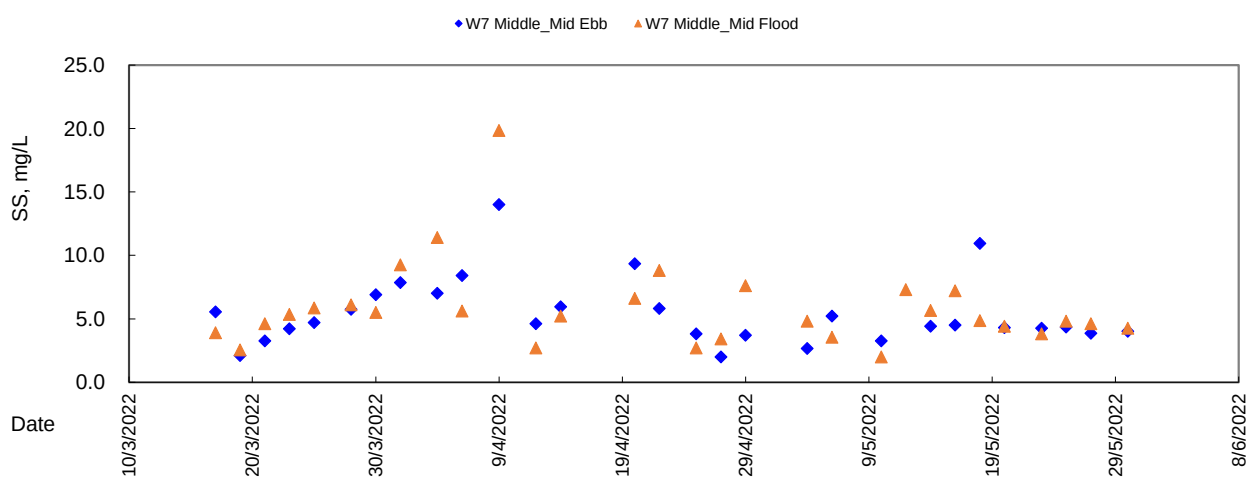
Station W7 (Middle) - DO



Station W7 (Middle) - Turbidity

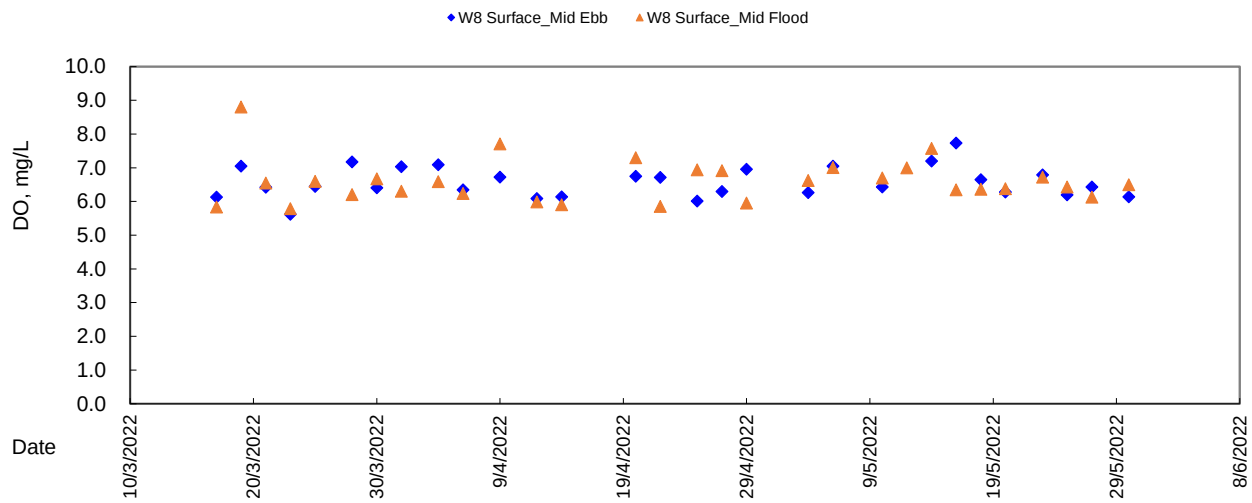


Station W7 (Middle) - Suspended Solid

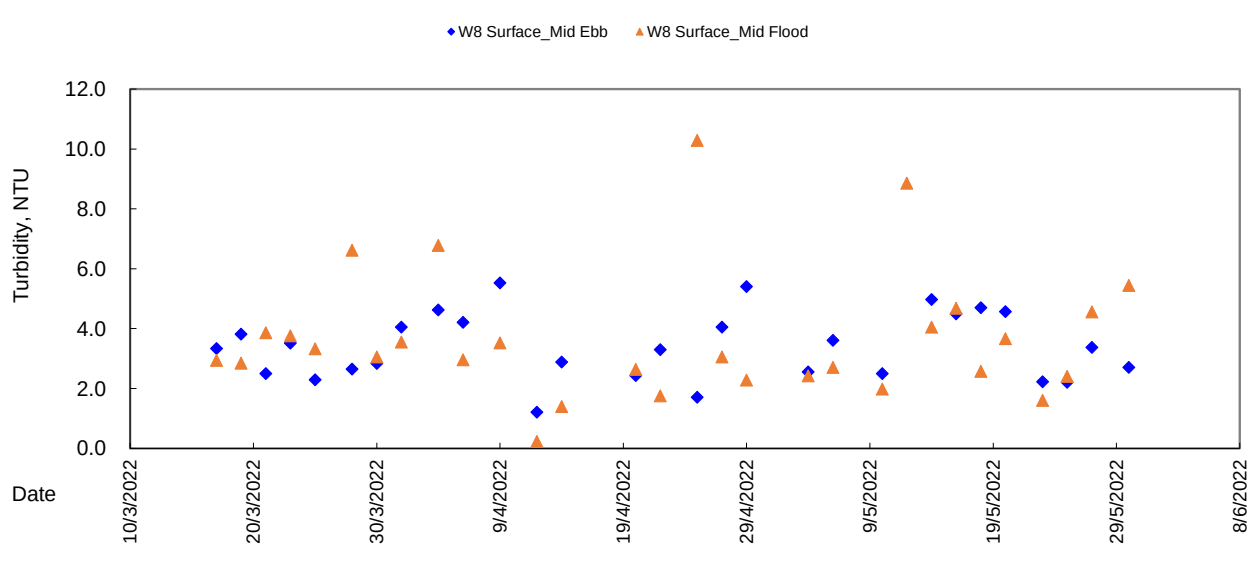


Graphic Presentation of WQM Result

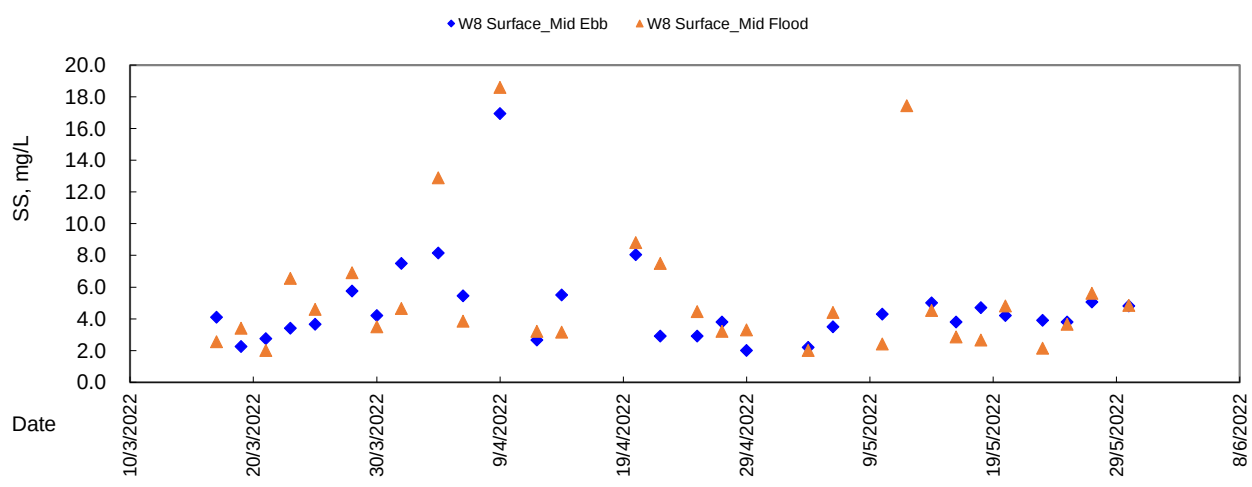
Station W8 (Surface) - DO



Station W8 (Surface) - Turbidity

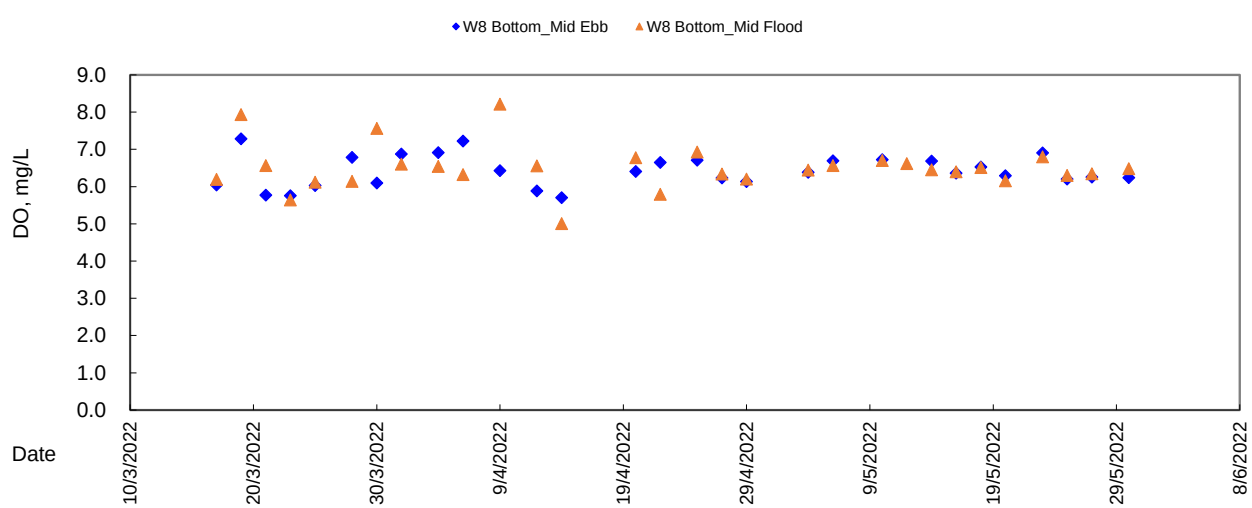


Station W8 (Surface) - Suspended Solid

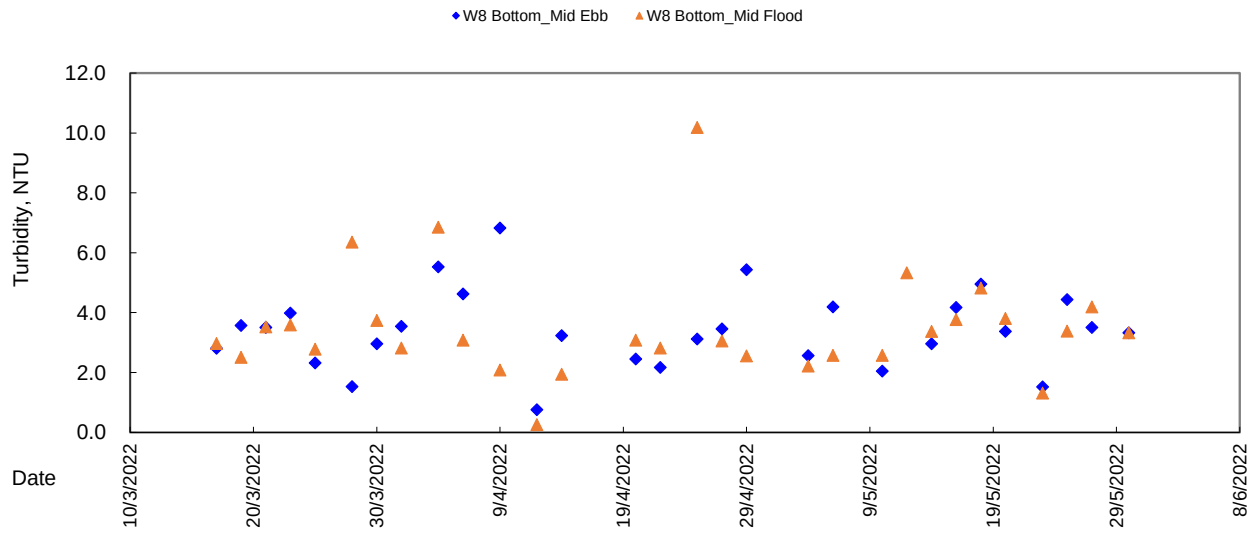


Graphic Presentation of WQM Result

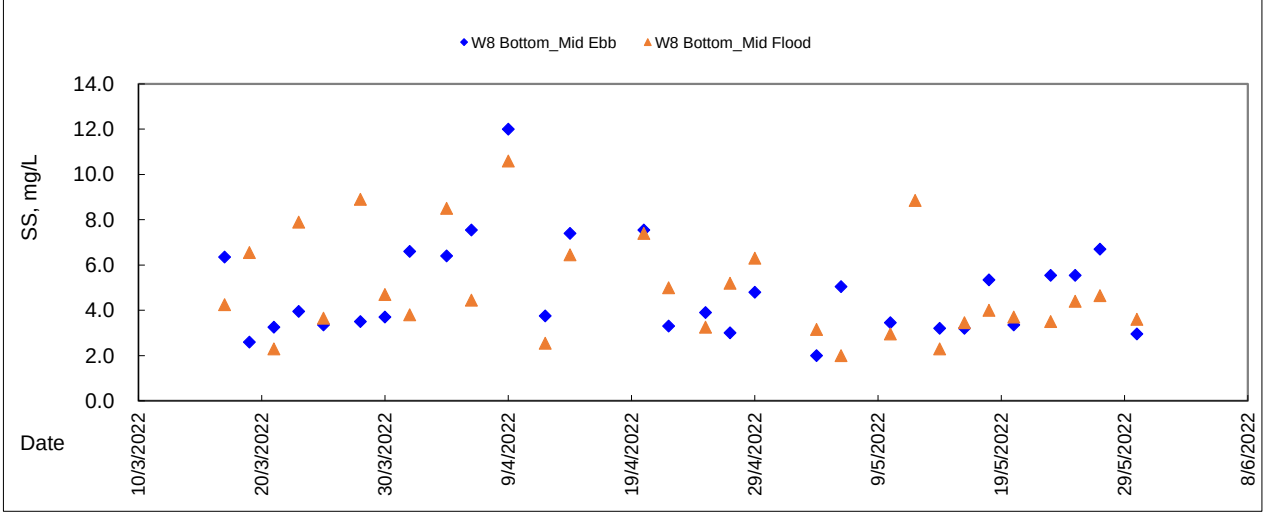
Station W8 (Bottom) - DO



Station W8 (Bottom) - Turbidity



Station W8 (Bottom) - Suspended Solid



Appendix 5.5

Monthly Summary Waste Flow Table

Name of Department: ~~ArchSD/CEDD~~/HA/~~EMSD~~/HyD/~~WSD~~ Contract No.: ___HY/2019/14___

(Notes: The following Waste Flow Table should be used for contracts either not included under the Pay for Safety and Environment Scheme or exempted from the full requirement for environmental management)

Monthly Summary Waste Flow Table for 2022

Monthly ending	Actual Quantities of Inert C&D Materials Generated						Actual Quantities of C&D Wastes Generated				
	Total Quantity Generated	Broken Concrete (see Note 3)	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 2)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000 kg)	(in'000m^3)
Jan	0	0	0	0	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0	0	0	0	0
Mar	0.01	0	0	0	0.01	0	0	0	0	0	0
Apr	0.01	0	0	0	0.01	0	0	0	0	0	0
May	0.019	0	0	0	0.019	0	0	0	0	0	0.015
Jun											
Sub Total	0.039	0	0	0	0.039	0	0	0	0	0	0.015
Jul											
Aug											
Sept											
Oct											
Nov											
Dec											
Total	0.039	0	0	0	0.039	0	0	0	0	0	0.015

Notes: (1) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
(2) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
(3) Broken concrete for recycling into aggregates.

Appendix 6.1

Event Action Plans

Appendix 6.1 Event and Action Plan

Event and Action Plan for Construction Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Inform IEC, ER and Contractor; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Repeat measurement to confirm finding.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Inform IEC, ER and Contractor; 2. Identify source; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC, ER and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET/ER on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER and IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Event and Action Plan for Construction Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
LIMIT LEVEL				
1.Exceedance for one sample	1. Inform IEC, ER, Contractor and EPD; 2. Identify source, investigate the causes of exceedance and propose remedial measures; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on remedial actions 3. Submit proposals for remedial actions to IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
2.Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER and Contractor to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 5. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to terminate that portion of work until the exceedance ceases.	1. Take immediate action to avoid further exceedance; 2. Discuss with ET and IEC on remedial actions 3. Submit proposals for remedial actions to ER and IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the ER until the exceedance ceases.

Event and Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	1. Notify IEC, ER and Contractor of exceedance; 2. Identify source 3. Investigate the causes of exceedance and propose remedial measures; 4. Report the results of investigation to the IEC, ER and Contractor; 5. Discuss with the IEC, ER and Contractor and formulate remedial measures; 6. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to ER with copy to ET and IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, ER, EPD and Contractor; 2. Identify source; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented; 5. If exceedance continues, investigate what portion of the work is responsible and instruct the Contractor to terminate that portion of work until the exceedance ceases.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER with copy to ET and IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Terminate the relevant portion of works as determined by the ER until the exceedance ceases.

Event and Action Plan for Water Quality

EVENT	ACTION			
	ET Leader	**IEC**	**ER**	**Contractor**
ACTION LEVEL				
Action level being exceeded by one sampling day	1. Repeat in situ measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods.	1. Check monitoring data submitted by ET and Contractor's working methods.	1. Confirm receipt of notification of non-compliance in writing; 2. Notify Contractor.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Action level.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly; 4. Supervise the implementation of mitigation measures.	. Discuss with IEC on the proposed mitigation measures; 2. Ensure mitigation measures are properly implemented; 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of additional mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 5. Implement the agreed mitigation measures.

Event and Action Plan for Water Quality

EVENT	ACTION			
	ET Leader	**IEC**	**ER**	**Contractor**
LIMIT LEVEL				
Limit level being exceeded by one sampling day	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to review the working methods.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment and consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER.
Limit level being exceeded by two or more consecutive sampling days	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1. Check monitoring data submitted by ET and Contractor's working method; 2. Discuss with ET and Contractor on possible remedial actions; 3. Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly; 4. Supervise the implementation of mitigation measures.	1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	1. Take immediate action to avoid further exceedance; 2. Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; 5. As directed by the Supervising Officer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Appendix 6.2

Summary for Notification of Exceedance

Ref. No.	Date	Time	Location	Parameter	Value	Unit	Level exceeded	Follow-up action	
X_W001	27/5/2022	Mid-flood	W1 Middle	Turb	41.4	NTU	Limit: 12.4NTU (99%-tile)	Cause of Exceedances:	High turbidity and SS recorded at upstream control station W5 (Turb: 33.6NTU, SS:15.9 mg/L) stirred up downstream riverbed during tidal flush
				SS	19.8	mg/L	Limit: 11.3mg/L (99%-tile)	ET's conclusions and recommendations for mitigation:	Exceedance not related to project, advised contractor to maintain on-going water mitigation measures and cofferdam condition
								Contractor's actions to implement the mitigation:	Construction activities were checked and marine piling works was observed inactive; Cofferdam was checked and no linkage or discharge of polluted water was observed
								Action required under EAP:	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor.
								Action taken under EAP:	2, 3 & 4 (1 & 5 - N/A due to not related project works)
								Comments/Remarks	No exceedance recorded in the next monitoring event
X_W002	27/5/2022	Mid-flood	W2 Middle	Turb	41.9	NTU	Limit: 12.4NTU (99%-tile)	Cause of Exceedances:	High turbidity and SS recorded at upstream control station W5 (Turb: 33.6NTU, SS:15.9 mg/L) stirred up downstream riverbed during tidal flush
				SS	23.1	mg/L	Limit: 11.3mg/L (99%-tile)	ET's conclusions and recommendations for mitigation:	Exceedance not related to project, advised contractor to maintain on-going water mitigation measures and cofferdam condition
								Contractor's actions to implement the mitigation:	Construction activities were checked and marine piling works was observed inactive; Cofferdam was checked and no linkage or discharge of polluted water was observed
								Action required under EAP:	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor.
								Action taken under EAP:	2, 3 & 4 (1 & 5 - N/A due to not related project works)
								Comments/Remarks	No exceedance recorded in the next monitoring event
X_W003	27/5/2022	Mid-flood	W4 Middle	Turb	33.2	NTU	Limit: 12.4NTU (99%-tile)	Cause of Exceedances:	High turbidity and SS recorded at upstream control station W5 (Turb: 33.6NTU, SS:15.9 mg/L) stirred up downstream riverbed during tidal flush
				SS	20.9	mg/L	Limit: 11.3mg/L (99%-tile)	ET's conclusions and recommendations for mitigation:	Exceedance not related to project, advised contractor to maintain on-going water mitigation measures and cofferdam condition
								Contractor's actions to implement the mitigation:	Construction activities were checked and marine piling works was observed inactive; Cofferdam was checked and no linkage or discharge of polluted water was observed
								Action required under EAP:	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER and EPD; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC, ER and Contractor.
								Action taken under EAP:	2, 3 & 4 (1 & 5 - N/A due to not related project works)
								Comments/Remarks	No exceedance recorded in the next monitoring event
X_W004	30/5/2022	Mid-flood	W2 Middle	DO	6.4	mg/L	Action: 6.5mg/L (95%-tile)	Cause of Exceedances:	Localized fluctuation around baseline DO range; no river channel blockage was observed
								ET's conclusions and recommendations for mitigation:	Exceedance not related to project, advised contractor to maintain on-going water mitigation measures and cofferdam condition
								Contractor's actions to implement the mitigation:	Construction activities were checked and marine piling works was observed inactive; Cofferdam was checked and no linkage or discharge of polluted water was observed
								Action required under EAP:	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods.
								Action taken under EAP:	2, 3 & 4 (1 - N/A due to not related project works)
								Comments/Remarks	No exceedance recorded in the next monitoring event
X_W005	30/5/2022	Mid-flood	W4 Middle	DO	6.3	mg/L	Action: 6.5mg/L (95%-tile)	Possible reason:	Localized fluctuation around baseline DO range; no river channel blockage was observed
								ET's conclusions and recommendations for mitigation:	Exceedance not related to project, advised contractor to maintain on-going water mitigation measures and cofferdam condition
								Contractor's actions to implement the mitigation:	Construction activities were checked and marine piling works was observed inactive; Cofferdam was checked and no linkage or discharge of polluted water was observed

Ref. No.	Date	Time	Location	Parameter	Value	Unit	Level exceeded	Follow-up action	
								Action required under EAP:	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods.
								Action taken under EAP:	2, 3 & 4 (1 - N/A due to not related project works)
								Comments/Remarks	No exceedance recorded in the next monitoring event

Appendix 8.1

Complaint Log

Environmental Complaints Log

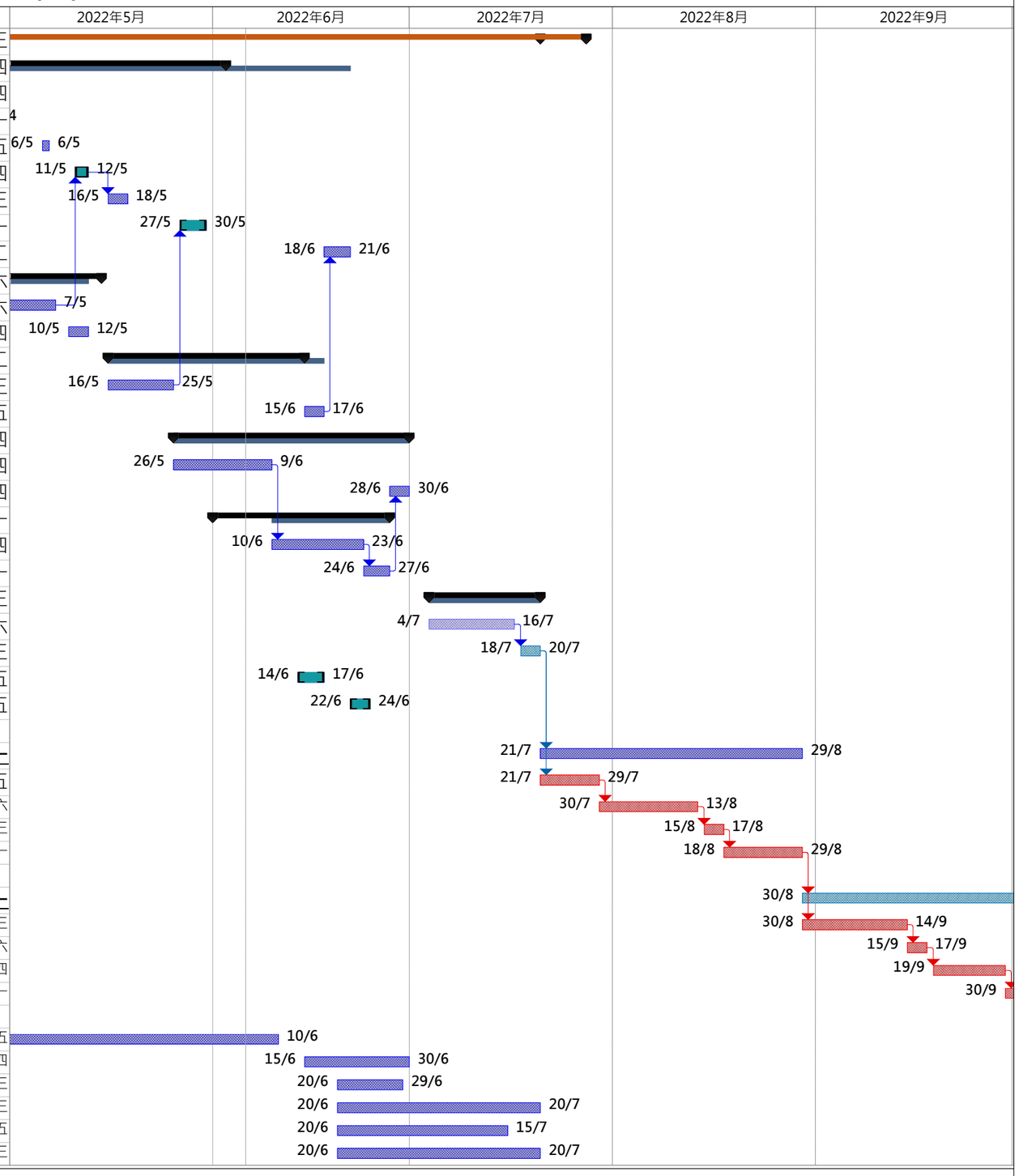
Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
-	-	-	-	-	-	-

Appendix 9.1

Construction Programme of Individual Contracts

Contract No. HY/2019/14 - New Wang Tong River Bridge
3-Month Rolling Programme

識別碼	Task Name	Period	Start	End
1	**Piling Constuction**	**109 days**	3月14日星期一	7月27日星期三
2	Piling P2-7 to 17	64 days	3月14日星期一	6月2日星期四
3	Drilling to rock head	30 days	3月14日星期一	4月21日星期四
4	Piling P2-10, 11,14 Rock Socket	3 days	4月22日星期五	4月25日星期一
5	Piling P2-10, 11, 14 rebar installation and grouting	1 day	5月6日星期五	5月6日星期五
6	Piling P2-7,9,12,13 Rock Socket	2 days	5月11日星期三	5月12日星期四
7	Piling P2-7,9,12,13 rebar installation and grouting	3 days	5月16日星期一	5月18日星期三
8	Piling P2-8,15,16 & 17 Rock Socket	3 days	5月27日星期五	5月30日星期一
9	Piling P2-8,15,16,17 rebar installation and grouting	3 days	6月18日星期六	6月21日星期二
10	Piling P3-8,10,12,14	15 days	4月26日星期二	5月14日星期六
11	Drilling to rock socket	10 days	4月26日星期二	5月7日星期六
12	Rebar installation and grouting	3 days	5月10日星期二	5月12日星期四
13	Piling P3-7,9,11,13	25 days	5月16日星期一	6月14日星期二
14	Drilling to rock socket	9 days	5月16日星期一	5月25日星期三
15	Rebar installation and grouting	3 days	6月15日星期三	6月17日星期五
16	Piling P1-7,10,12,15	30 days	5月26日星期四	6月30日星期四
17	Drilling to rock socket	12 days	5月26日星期四	6月9日星期四
18	Rebar installation and grouting	3 days	6月28日星期二	6月30日星期四
19	Piling P1-8,14,17,18	22 days	6月1日星期三	6月27日星期一
20	Drilling to rock socket	12 days	6月10日星期五	6月23日星期四
21	Rebar installation and grouting	3 days	6月24日星期五	6月27日星期一
22	Piling P1-9,11,13,16	15 days	7月4日星期一	7月20日星期三
23	Drilling to rock socket	12 days	7月4日星期一	7月16日星期六
24	Rebar installation and grouting	3 days	7月18日星期一	7月20日星期三
25	Pile Loading test (Compression)	4 days	6月14日星期二	6月17日星期五
26	Pile Loading test (Tension)	3 days	6月22日星期三	6月24日星期五
27				
28	**Sub-structure Construction - Pile Cap MP1, MP2 & MP3**	**34 days**	**7月21日星期四**	**8月29日星期一**
29	Excavation to Pile Cap founding Level	8 days	7月21日星期四	7月29日星期五
30	Rebar fixing & formwork erection	13 days	7月30日星期六	8月13日星期六
31	Concrete placing	3 days	8月15日星期一	8月17日星期三
32	Concrete curing & formwork removal	10 days	8月18日星期四	8月29日星期一
33				
34	**Sub-structure Construction - Abutment S1, N1 & pier C1**	**28 days**	**8月30日星期二**	**10月3日星期一**
35	Rebar fixing & formwork erection	13 days	8月30日星期二	9月14日星期三
36	Concrete placing	3 days	9月15日星期四	9月17日星期六
37	Concrete curing & formwork removal	10 days	9月19日星期一	9月29日星期四
38	backfilling cofferdam	2 days	9月30日星期五	10月3日星期一
39				
40	Pot Bearing Design and Method Statement Submission and Approval	43 days	4月19日星期二	6月10日星期五
41	Pile Cap, Abutment & Pier Construction Method Statement Submission & Approv	14 days	6月15日星期三	6月30日星期四
42	Material Submission - Rebar for Pile Cap, Abutment & Pier	9 days	6月20日星期一	6月29日星期三
43	Cycle Bridge shop drawings submissionb & approval	26 days	6月20日星期一	7月20日星期三
44	Material Submission - Cycle Bridge	22 days	6月20日星期一	7月15日星期五
45	Erection of Cycle Bridge Method Statement submssion & approval	26 days	6月20日星期一	7月20日星期三



HY/2019/14 3-Month Rolling Programm
Date: 20220604

任務	上顯型任務	分割	非作用中的任務	手動任務	僅定義開始日期	進度	
要徑任務	上顯型要徑任務	外部任務	非作用中的里程碑	僅包含工期	僅包含完成時間	期限	
里程碑	上顯型里程碑	專案摘要	非作用中的里程碑	手動上顯型摘要	外部任務		
摘要	上顯型進度	摘要群組	非作用中的摘要	手動摘要	外部里程碑		