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Civil Engineering and Development Department

Service Contract No. WD/02/2021

Environmental Team for Hung Shui Kiu/Ha Tsuen New Development Area Stage 1 – Site Formation and Engineering Infrastructure

Baseline Monitoring Report
(Environmental Permit No. EP-528/2017)

Document No.

ASCL	/	210168223	/	BMR	/	5
Publisher		Project Code		Sequential No.		Revision Index

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Date	7 October 2022	7 October 2022

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Our ref.: LES/J2021-08/CS/L021
Date : 14 October 2022

By Post and Email

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West Development Office
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Attn: Mr. HO Kai Ho, Chief Engineer/West 4 (CE/W4)

Dear Mr. HO,

Agreement No. WD/01/2021
Hung Shui Kiu / Ha Tsuen New Development Area Stage 1 Works – Independent Environmental Checker
Baseline Monitoring Report

Reference is made to the Baseline Monitoring Report (Ref. No. ASCL/210168223/BMR/5, dated 7 October 2022) provided by the Environmental Team (ET) with the ET Leader's certification letter (Ref: PL-202210018 dated 14 October 2022). We hereby verify the captioned for submission under Condition 3.3 of Environmental Permit No. EP-528/2017.

Yours faithfully,
For and On Behalf Of
Lam Environmental Services Limited

Raymond Dai
Independent Environmental Checker

c.c.:	Acuity Sustainability Consulting Limited	Mr. F.C. Tsang	(By email)
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Revision History

Rev.	Description of Modification	Date
0.	First issue for comments	14/7/2022
1.	Revised according to IEC's comment	17/8/2022
2.	Revised according to IEC's comment	26/8/2022
3.	Revised according to IEC's comment	20/9/2022
4.	Revised according to IEC's comment	30/9/2022
5.	Revised according to IEC's comment	7/10/2022

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TABLE OF CONTENT

The copyright of this document is owned by Acuity Sustainability Consulting Limited. It may not be reproduced except with prior written approval from the Company.

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

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EXECUTIVE SUMMARY

In accordance with the Updated Environmental Monitoring and Audit Manual (April 2022) for the Project, baseline environmental monitoring for air quality and water quality should be conducted prior to the commencement of construction works of the interim section of Road D1. Pursuant to EP Condition 3.3, Baseline Monitoring Report shall be submitted to the Director of Environmental Protection at least 2 weeks before the commencement of construction of the Project. As the construction works would commence by end of 2022, baseline monitoring for air quality and water quality were conducted according to the Updated Environmental Monitoring and Audit Manual (April 2022) before the commencement of construction works.

The baseline monitoring for 1-hour TSP monitoring was carried out between 9 December 2021 and 22 December 2021 at three air quality monitoring stations. Baseline 1-hour TSP monitoring was conducted at least three times per day at each monitoring station when the highest dust impact was expected. Data collected were reviewed and analyzed to establish the background air quality at three monitoring stations. **Table A1** summarizes the results of the baseline 1-hour TSP monitoring.

Table A1 Summary of Baseline 1-hour TSP Monitoring Results

Stations	Average (µg/m^3)	Range (µg/m^3)	Sampling Parameter
AM23	62.1	51.0 – 71.0	1-hour TSP
AM24	61.5	51.0 – 70.0	
AM25a(1)	77.2	62.0 – 98.0	

NOTE:

(1) The air quality monitoring station AM25 is currently located at an open/ storage area that is deemed not suitable for setting up air quality monitoring station. An alternative monitoring station AM25a next to San Wai Sewage Treatment Plant is proposed and approved by the IEC and the EPD.

The baseline 1-hour TSP monitoring results form the basis for determining the air quality criteria for the impact monitoring. **Table A2** presents the Action and Limit Levels for impact monitoring of 1-hour TSP.

Table A2 Calculated Action and Limit Levels for 1-hour TSP

Monitoring Stations	Action Level (µg/m^3)	Limit Level (µg/m^3)
AM23	290.4	500
AM24	290.0	
AM25a	300.2	

Baseline water quality monitoring was also carried out at six water quality monitoring stations. Data collected were reviewed and analyzed to establish the background water quality at these six monitoring stations. **Table A3** summarizes the results of the baseline water quality monitoring.

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Table A3 Summary of Baseline Water Quality Monitoring Results

Locations		Parameters				
		Temperature (°C)	**pH**	**Dissolved Oxygen (DO) (mg/L) (Middle)**	**Turbidity (NTU)**	**Suspended Solids (SS) (mg/L)**
U1	Avg.	22.6	8.1	7.3	17.5	12.8
	Min.	19.9	7.3	4.3	4.7	3.7
	Max.	26.8	9.1	10.5	53.2	36.0
U2	Avg.	22.7	7.9	7.1	8.3	5.4
	Min.	20.3	7.3	3.4	2.5	1.3
	Max.	26.3	8.6	10.7	24.3	16.0
SW	Avg.	22.7	7.9	7.2	11.5	6.2
	Min.	20.2	7.4	3.5	1.9	<1.0
	Max.	26.4	8.6	10.7	23.2	24.0
HT	Avg.	22.6	8.0	6.9	16.2	15.4
	Min.	20.2	7.3	2.2	2.8	<1.0
	Max.	26.1	8.7	10.6	45.1	69.0
TKW1	Avg.	22.7	8.0	7.7	14.3	9.4
	Min.	20.3	7.4	2.8	3.4	<1.0
	Max.	26.4	8.7	10.8	63.2	54.0
TKW	Avg.	22.7	7.9	7.0	14.4	10.2
	Min.	20.2	7.4	2.4	4.0	<1.0
	Max.	26.3	8.7	10.3	57.3	52.0

The Action and Limit Levels for impact monitoring of water quality are presented in **Table A4**. They were derived based on the criteria specified in the Updated EM&A Manual.

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Table A4 Derived Action and Limit Levels for Water Quality

Parameters	Action Levels	Limit Levels
SW		
DO (mg/L) (3)	3.7	3.5
Turbidity (NTU)	21.4	22.9
SS (mg/L)	9.7	9.9
pH	Less than 6.6 or greater than 8.4	Less than 6.5 or greater than 8.5
HT		
DO (mg/L) (3)	2.4	2.2
Turbidity (NTU)	32.3	32.6
SS (mg/L)	34.0	38.7
pH	Less than 6.6 or greater than 8.4	Less than 6.5 or greater than 8.5
TKW1		
DO (mg/L) (3)	2.8	2.8
Turbidity (NTU)	27.9	29.2
SS (mg/L)	16.0	18.4
pH	Less than 6.6 or greater than 8.4	Less than 6.5 or greater than 8.5
TKW		
DO (mg/L) (3)	2.5	2.4
Turbidity (NTU)	24.2	24.6
SS (mg/L)	19.8	21.6
pH	Less than 6.6 or greater than 8.4	Less than 6.5 or greater than 8.5

Notes:
(1) For DO, non-compliance of the water quality limit occurs when monitoring result is lower than the limit.
(2) For Turbidity and Suspended Solids (SS), non-compliance of the water quality limit occurs when monitoring result is higher than the limit.
(3) The derived Action Levels and Limit Levels for dissolved oxygen only apply to mid-depth.

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1 INTRODUCTION

1.1 Project Background

1.1.1 The HSK/HT NDA occupies an area of approximately 714 ha and is located in the north-western part of the New Territories, midway between Tuen Mun and Tin Shui Wai New Towns. It is bounded by Tin Ying Road/ Ping Ha Road/ Kiu Hung Road to the east, Castle Peak Road to the south, Kong Sham Western Highway ("KSWH") to the west, and Tin Ha Road, Lau Fau Shan Road and hillslopes along Deep Bay Road to the north. In the wider context, the proposed Project is strategically located in close proximity to Shenzhen, particularly Shenzhen Bay Control Point, Qianhai, and Shekou and efficiently linked with the Greater Pearl River Delta ("PRD") region. The KSWH and the possible highway connecting the Project area with the Tuen Mun - Chek Lap Kok Link, the Hong Kong International Airport, Kwai Tsing Container Terminals, and the Hong Kong-Zhuhai-Macao Bridge and its Boundary Crossing facilities. New strategic highway infrastructure connecting the Project area with the urban area will also be planned to address the long-term development needs of North West New Territories ("NWNT"). The proposed West Rail Hung Shui Kiu Station ("HSK Station"), with its alignment traversing the Project allows convenient and efficient access to and from the Project area.

1.1.2 The works under HSK/HT NDA Stage 1 works comprises the construction of interim section of new distributor road (Road D1) (hereinafter call "the Project") that is a designated project ("DP") (defined under item A1 in Schedule 2 of the Environmental Impact Assessment Ordinance) connecting the site for the first batch of multi-storey buildings ("MSBs") at Sites 3-6, 3-7 and 3-8 to the existing Ha Tsuen Roundabout of KSWH.

1.1.3 The HSK/HT NDA Stage 1 works would be implemented under a fast track programme, involving various complex tasks for providing infrastructure and forming the five development sites to be conducted in parallel, so as to tie in with operation of the development MSBs or other land-efficient means and population intake of the village resite house in 2025 tentatively.

1.1.4 The scope of works covered by Public Works Programme (PWP) Item No. 7796CL comprise the followings:

(i) Site formation works for Site 2-18, Site 2-19, Site 3-6, Site 3-7 and Site 3-8;

(ii) Land decontamination works including ground investigation works for Site 2-18, Site 2-19, Site 3-6, Site 3-7 and Site 3-8 and other areas within the boundaries of the site;

(iii) Construction of a district distributor road connecting to the existing interchange underneath KSWH, construction of local roads, widening of a section of Fung Kong Tsuen Road and associated junction/ road improvements; and

(iv) Engineering infrastructure works comprising sewerage works (including a pumping station), drainage works (including a detention pond), waterworks and landscaping works.

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1.1.5 Acuity Sustainability Consulting Limited (ASCL) is commissioned by Civil Engineering and Development Department (CEDD) to undertake the Environmental Team (ET) services as required and/or implied, both explicitly and implicitly, in the Environmental Permit (EP), Environmental Impact Assessment (EIA) Report (Register No. AEIAR-203/2016) and Environmental Monitoring and Audit (EM&A) Manual for the Project; and to carry out the EM&A programme in fulfillment of the EIA Report's, EM&A requirements under Service Contract No. WD/02/2021.

1.1.6 Pursuant to the Environmental Impact Assessment Ordinance (EIAO), the Director of Environmental Protection Department (EPD) granted the Environmental Permits (Nos.: EP-526/2017, EP-527/2017, EP-528/2017, EP-529/2017, EP-530/2017 and EP-531/2017) to the CEDD for the Project. The HSK/HT NDA Stage 1 works comprise the interim section of Road D1 that is governed under Environmental Permit No. EP-528/2017. No other DPs are identified within the scope of HSK/HT NDA Stage 1 works.

1.2 Purpose of the Report

1.2.1 According to Appendix A of the Updated EM&A Manual for the Project, baseline monitoring for air quality and water quality should be conducted prior to the commencement of construction works. No designated noise monitoring stations are located with the 300 m buffer zone of the interim section of Road D1. As such, baseline (and construction phase) noise monitoring for Road D1 (interim section) is not recommended.

1.2.2 The EM&A requirements for baseline monitoring under Contract No. YL/2020/03 are set out in the Updated EM&A Manual (April 2022) and Contract Specification. Environmental aspect of air quality and water quality were identified as the key issues requiring implementation of monitoring programme during the construction phase of the Project.

1.2.3 This report presents the monitoring methodology, findings and results for the baseline air quality and water quality monitoring of the Project. According to the Updated EM&A Manual (April 2022), baseline landscape and visual monitoring should also be conducted. The results are reported in a separate standalone Baseline Landscape and Visual Monitoring Report.

1.3 Report Structure

1.3.1 This Baseline Monitoring Report comprises the following sections:

Section 1 introduces the background of the Project and purpose of this Report;

Section 2 presents the baseline monitoring methodologies, requirements, results, influencing factors, as well as determination of the action and limit levels of air quality;

Section 3 presents the baseline monitoring methodologies, requirements, results, influencing factors, as well as determination of the action and limit levels of water quality; and

Section 4 concludes the findings of baseline monitoring.

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2 AIR QUALITY

2.1 Monitoring Requirement

2.1.1 Baseline air quality monitoring shall be carried out to determine the ambient 1-hour Total Suspended Particulates (TSP) levels at designated monitoring stations for 14 consecutive days prior to the commissioning of the construction works. 1-hour TSP monitoring should be carried out at least three times per day at each monitoring station when the highest dust impact are expected.

2.2 Monitoring Equipment and Methodology

2.2.1 Direct reading dust meters were used for measuring 1-hour TSP levels during the baseline air quality monitoring. According to paragraph 4.3.5 of the Updated EM&A Manual, the proposed use of direct reading dust meter was submitted to and agreed by the IEC.

2.2.2 The direct reading dust meters have been calibrated against high volume samples (HVSs) annually. A 2-day, three 3-hour measurement results per day from direct reading dust meters were taken to compare with the sampling results from the HVSs. The correlation between the direct reading dust meters and the HVSs were then concluded. By accounting for the correlation factor, the direct reading dust meters are considered to achieve comparable results as that of the HVSs.

2.2.3 Sufficient number of monitoring instruments were prepared by the ET for carrying out the baseline monitoring. All equipment and associated instrumentation were clearly labelled.

2.2.4 Equipment used in the baseline air quality monitoring programme is summarized in **Table 2.1**. Calibration certificates for the air quality monitoring equipment are attached in **Appendix A**.

Table 2.1 Baseline Air Quality Monitoring Equipment

Equipment	Brand and Model	Serial No.
Direct Reading Dust Meter	Aerocet 831	A14259
	Sibata LD-5R	851816
		851820
		992818

2.3 Monitoring Parameters, Frequency and Duration

2.3.1 **Table 2.2** summarizes the monitoring parameters, frequency and duration of the baseline air quality monitoring.

Table 2.2 Baseline Air Quality Monitoring Parameters, Frequency and Duration

Parameters	Duration	Frequency
1-hour TSP	Daily for at least 14 consecutive days	3 times per day

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2.4 Monitoring Location

2.4.1 According to the environmental findings detailed in the EIA report, the designated locations for the air quality monitoring are listed in **Table 2.3**.

Table 2.3 Original Air Quality Monitoring Stations for Baseline and Impact Monitoring

Station(s)	EIA ID	Monitoring Location
AM23	P1032	Planned Port Back-up, Storage and Workshop (at Site 3-6)
AM24	P1501	Planned Port Back-up, Storage and Workshop (at Site 3-8)
AM25	P606	Planned Port Back-up, Storage and Workshop (at Site 3-14)

2.4.2 The air quality monitoring station AM25 is currently located within an "open area" for parking of heavy goods vehicles. It is considered not safe and not suitable to set up the monitoring station within the open area. Hence, it is proposed to relocate AM25 to AM25a next to Sai Wan Sewage Treatment Plant (**Figure 2.1**) about 100 m south-southwest from AM25. The alternative monitoring stations of AM25a meets the following criteria as stated in Section 4.5.4 of the Updated EM&A Manual.

(i) At location close to the major dust emission source;
(ii) Close to the (planned) air sensitive receivers as defined in the EIAO-TM;
(iii) Proper position/ sitting and orientation of the monitoring equipment; and
(iv) Take into account the prevailing meteorological conditions (the prevailing meteorological conditions at AM25 and AM25a will be very similar as they are located at a flat land without barriers and around 100 m away from each other).

2.4.3 The Proposal for Alternative Monitoring Station (Air Quality) for monitoring station AM25a has been verified by the IEC and endorsed by the EPD. The updated locations for air quality monitoring are listed in **Table 2.4**.

Table 2.4 Updated Air Quality Monitoring Stations for Baseline and Impact Monitoring

Station(s)	EIA ID	Monitoring Location
AM23	P1032	Planned Port Back-up, Storage and Workshop (at Site 3-6)
AM24	P1501	Planned Port Back-up, Storage and Workshop (at Site 3-8)
AM25a	-	San Wai Sewage Treatment Plant near the Planned Port Back-up, Storage and Workshop (at Site 3-14)

2.4.4 The locations of all original air quality monitoring stations and the alternative air quality monitoring stations are shown in **Figure 2.1**. Photos of baseline air quality monitoring stations are presented in **Table 2.5**.

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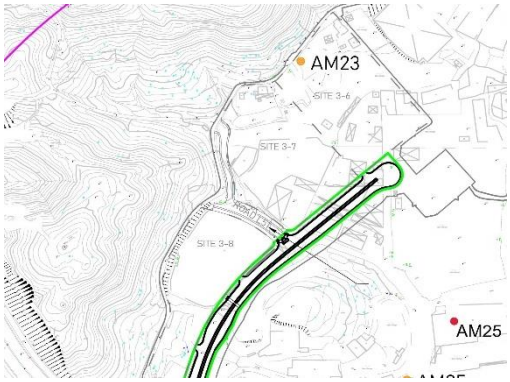
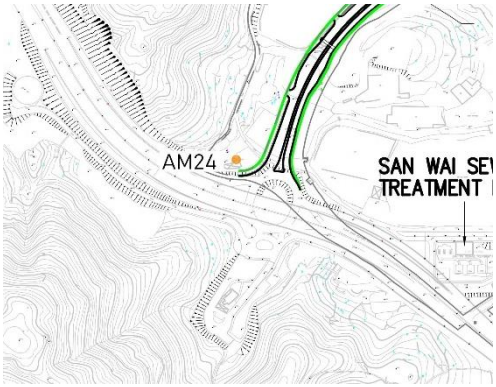
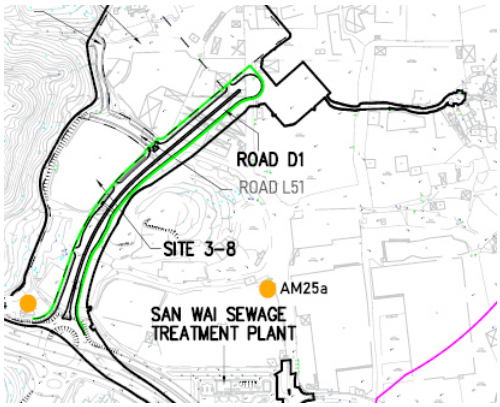
Table 2.5 Photos of Baseline Air Quality Monitoring Stations

ID	Direct reading dust meter Position	Monitoring direction
AM23		
AM24		
AM25a		

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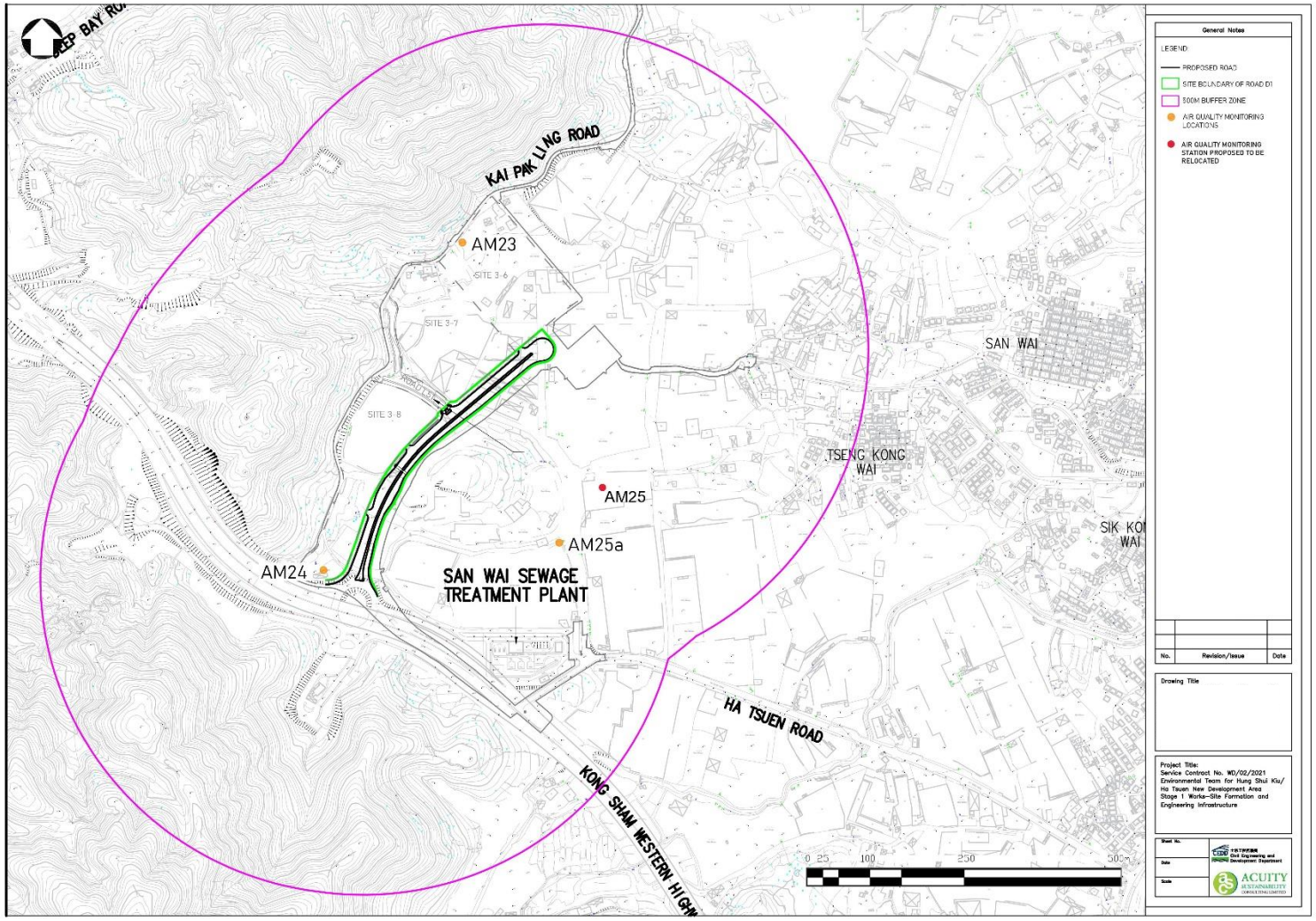

Figure 2.1 Air Quality Monitoring Locations

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2.5 Results and Observations

2.5.1 Baseline monitoring for air quality was conducted from 9 December 2021 to 22 December 2021 (**Figure 2.2**). The baseline air quality monitoring result are summarized in **Table 2.6**. Details of air quality results are presented in **Appendix B**.

2.5.2 During the baseline monitoring, no construction activity of the Project was conducted in the vicinity of the monitoring locations and in the project site.

2.5.3 No other major dust emission sources were noted. Weather condition of the whole baseline monitoring period was sunny and fine. Extracts of Meteorological Observations for Hong Kong available from the Hong Kong Observatory – Lau Fau Shan, which reflect the weather summary of the baseline air quality monitoring period, are presented in **Appendix G**.

Table 2.6 Summary of Baseline 1-hour TSP Monitoring Results

Monitoring Station (s)	TSP Concentration, µg/m³		
	Average	Min.	Max.
AM23 - Planned Port Back-up, Storage and Workshop (at Site 3-6)	62.1	51.0	71.0
AM24 - Planned Port Back-up, Storage and Workshop (at Site 3-8)	61.5	51.0	70.0
AM25a - San Wai Sewage Treatment Plant near the Planned Port Back-up, Storage and Workshop (at Site 3-14)	77.2	62.0	98.0

2.6 Action and Limit Levels

2.6.1 The baseline 1-hour TSP monitoring results form the basis for determining the air quality criteria for the impact monitoring. **Table 2.7** shows the criteria for establishing the Action and Limit Levels for air quality monitoring.

Table 2.7 Action and Limit Levels for Air Quality during Construction Period

Parameters	Action Level (µg/m³)	Limit Level (µg/m³)
1-hour TSP Level (µg/m³)	BL ≤ 384 µg/m³, AL = (BL × 1.3 + LL)/2 BL > 384 µg/m³, AL = LL	500

2.6.2 Following the above guidelines, the Action and Limit Levels for 1-hour TSP impact monitoring have been set and presented in **Table 2.8**.

Table 2.8 Calculated Action and Limit Levels for 1-hour TSP

Monitoring Station(s)	Action Level (µg/m³)	Limit Level (µg/m³)
AM23	290.4	500
AM24	290.0	
AM25a	300.2	

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Figure 2.2 Baseline Air Quality Monitoring Schedule

Contract No. WD/02/2021 Enviornmental Team for Hung Shui Kiu/ Ha Tsuen New Development Area Stage 1 Works - Site Formation and Engineering Infrastructure						
Baseline Air Quality Monitoring Schedule						
December 2021						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1	2	3	4
5	6	7	8	9 Baseline 1-hour TSP Monitoring	10 Baseline 1-hour TSP Monitoring	11 Baseline 1-hour TSP Monitoring
12 Baseline 1-hour TSP Monitoring	13 Baseline 1-hour TSP Monitoring	14 Baseline 1-hour TSP Monitoring	15 Baseline 1-hour TSP Monitoring	16 Baseline 1-hour TSP Monitoring	17 Baseline 1-hour TSP Monitoring	18 Baseline 1-hour TSP Monitoring
19 Baseline 1-hour TSP Monitoring	20 Baseline 1-hour TSP Monitoring	21 Baseline 1-hour TSP Monitoring	22 Baseline 1-hour TSP Monitoring	23	24	25
26	27	28	29	30	31	

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3 WATER QUALITY

3.1 Monitoring Requirements

3.1.1 In accordance with the recommendations of the EIA Report (EIAO Register No. AEIAR-203/2016) and the Updated EM&A Manual (April 2022), the baseline water quality monitoring was conducted to establish baseline conditions prior to the commencement of the construction works. The baseline conditions for water quality were established to derive the Action and Limit levels for impact stations.

3.2 Water Quality Parameters and Monitoring Frequency

3.2.1 The parameters that have been selected for measurement in-situ and in the laboratory are those that are either determined in the EIA to be those with the most potential to be affected by the construction works or a standard check on water quality conditions. Parameters to be measured in the baseline water quality monitoring are listed in **Table 3.1**.

Table 3.1 Parameters measured in the Baseline Water Quality Monitoring

Parameters	Units	Abbreviations	Frequency
In-situ measurements			3 days per week for at least 4 weeks (the interval between 2 sets of monitoring should not be less than 36 hours)
Dissolved oxygen	mg/L	DO	
Dissolved oxygen saturation	%	DO%	
Temperature	°C	-	
pH	-	-	
Turbidity	NTU	-	
Laboratory measurements			
Suspended Solids	mg/L	SS	

3.2.2 In addition to the water quality parameters, other relevant data were also being measured and recorded in data record sheet, including the location of the sampling stations, time, weather conditions, special phenomena and work activities undertaken around the monitoring stations and works area that may influence the monitoring results.

3.3 Monitoring Locations

3.3.1 The baseline water quality monitoring stations in accordance with the Updated EM&A Manual are shown in **Figure 3.1** and detailed in **Table 3.2** below.

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Table 3.2 Original Baseline Water Quality Monitoring Stations

Station	Description	Easting	Northing
U1	Upstream Station	815936	834150
U2	Upstream Station	816240	834009
SW	Gradient station (downstream of U1 and the construction site of Road D1)	816304	834321
HT	Gradient station (downstream of U2 and the construction site of Road D1)	816866	834314
DB	Gradient station	816091	834976

3.3.2 During the site visit in November 2021, water quality monitoring station DB was surrounded by scrubs and vegetation. It is located at a natural stream channel running along the steep slope of the hill to the south-west of Fung Kong Tsuen. The watercourse runs towards the north of Road D1 but, based on the information from the government's GeoInfo Map and the site visit, no downstream watercourse was identified. Thus, water quality monitoring station DB is not recommended for this Contract without upstream/ downstream monitoring locations identified.

3.3.3 A new water quality monitoring station TKW was proposed at an open manmade channel downstream of Road D1 near Tseung Kong Wai and is within the 500 m assessment area of Road D1. Another monitoring location "TKW1" about 20 m upstream of TKW at an open channel was also proposed (refer to Annex A of the Updated EM&A Manual for details). The Proposal has been verified by the IEC and endorsed by the EPD. The updated Baseline Water Quality Monitoring Stations are shown in **Figure 3.1** and detailed in **Table 3.3** below.

Table 3.3 Updated Locations of Baseline Water Quality Monitoring Stations

Station	Description	Easting	Northing
U1	Upstream Station	815936	834150
U2	Upstream Station	816240	834009
SW	Gradient station (downstream of U1 and the construction site of Road D1)	816304	834321
HT	Gradient station (downstream of U2 and the construction site of Road D1)	816866	834314
TKW1	Gradient station (downstream of the construction site of Road D1)	816563	834686
TKW	Gradient station (downstream of TKW1 and construction site of Road D1)	816594	834690

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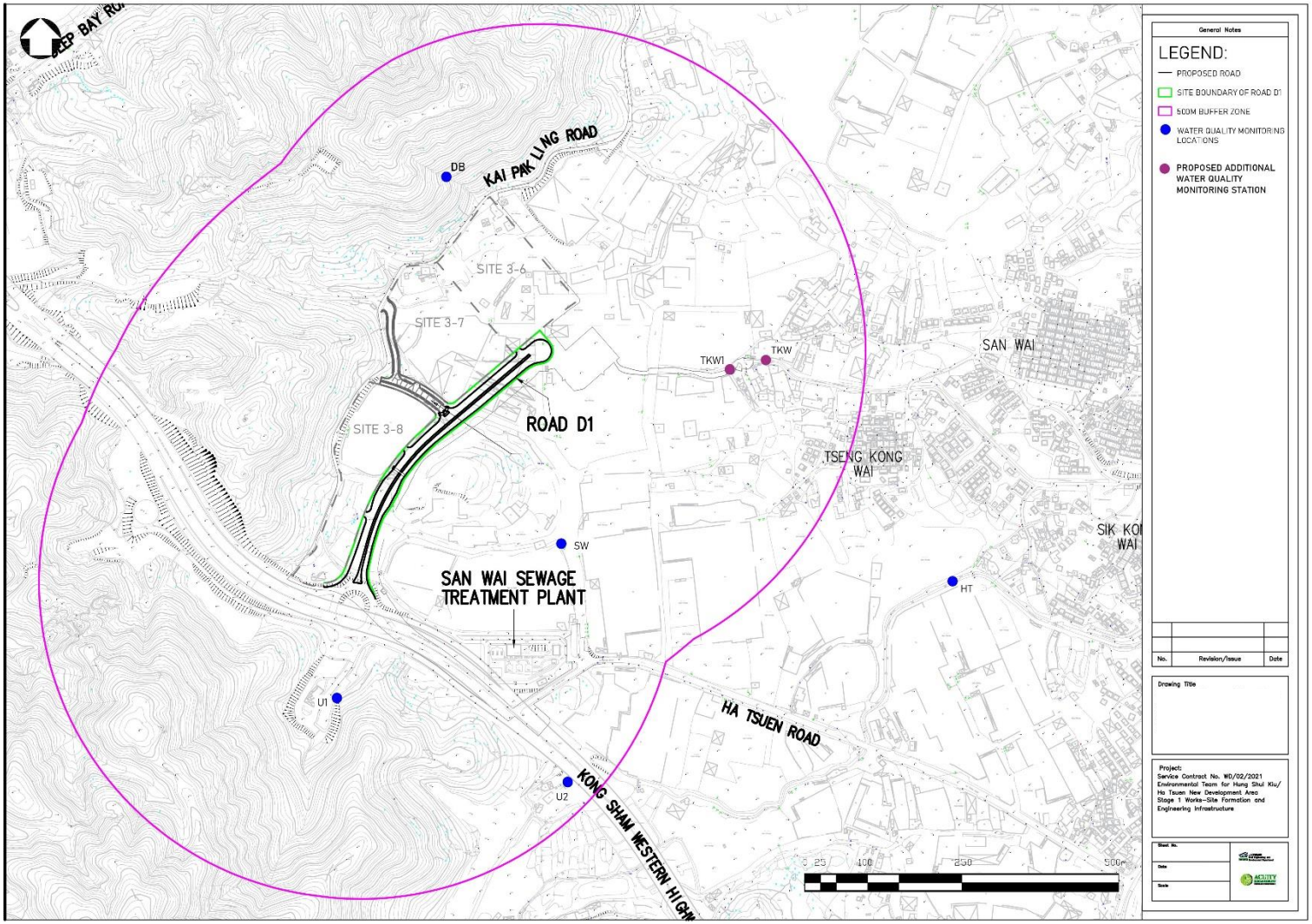

Figure 3.1 Locations of Baseline Water Quality Monitoring Stations

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3.4 Monitoring Equipment and Methodology

3.4.1 In-situ measurements at monitoring locations including DO, DO%, pH, temperature and turbidity were collected using the equipment listed in **Table 3.4** and the detection limit for the in-situ measurement are shown in **Table 3.5**. Calibration certificates for the water quality monitoring equipment are attached in **Appendix A**.

3.4.2 Water samples for suspended solids (SS) analysis were stored in high density polythene bottles, packed in ice (cooled to 4 ℃ without being frozen), and delivered to a HOKLAS laboratory as soon as possible after collection of the water samples.

Table 3.4 Baseline Water Quality Monitoring Equipment

Equipment	Brand and Model	Quantity
Water Sampler	Kahlsico Water Sampler 13SWB20	1
Multi Parameter Water Quality System	HORIBA U-53	2

Table 3.5 Detection Limits and Precision for Water Quality Determinates

Parameters	Detection limit	Accuracy	Precision
DO	0 – 20 mg/L	± 0.1 mg/L	25%
Temperature	0 – 45 °C	± 0.1 °C	
pH	0 – 14	± 0.1	
Turbidity	0 – 1000 NTU	± 2	

3.4.3 During the baseline monitoring, the depths of waters at the monitoring stations were all less than 3 m. Thus, only mid-depth samples were collected. For in situ measurements, duplicate readings were made at each station. Duplicate water samples were also collected at each station.

3.4.4 In-situ monitoring instruments for water quality parameters were checked, calibrated and certified by a laboratory accredited under HOKLAS before use. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring day.

3.5 Laboratory Measurement and Analysis

3.5.1 Analysis of SS was carried out in a HOKLAS accredited laboratory, Acumen Laboratory and Testing Limited (Reg. No. HOKLAS 241). Sufficient water samples were collected at each of the monitoring stations for carrying out the laboratory SS determination.

3.5.2 The SS determination works started within 24 hours after collection of the water samples. The analysis followed the APHA 2540D analytical method with the detection limit of 1.0 mg/L. The quality assurance and quality control results are presented in **Appendix D**. The HOKLAS Laboratory Certificate is attached in **Appendix F**.

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3.5.3 Parameters for laboratory measurements, their standard methods and the detection limits are presented in **Table 3.6**.

Table 3.6 Analytical Methods Applied to Water Quality Samples

Parameter	Standard Method	Detection Limit	Accuracy
Suspended Solids (mg/L)	APHA 2540D	1.0 mg/L	±17%

3.6 Results and Observations

3.6.1 The baseline water quality monitoring was conducted from 3 May 2022 to 29 May 2022 at all six monitoring stations (i.e., U1, U2, SW, HT, TKW1, TKW) (**Figure 3.2**). No construction activities of the Project were conducted in the vicinity of the monitoring locations and in the project site.

3.6.2 The monitoring results are summarized in **Table 3.7**. Details of water quality monitoring results are presented in **Appendix C**.

Table 3.7 Summary of Baseline Water Quality Monitoring Results

Locations		Parameters				
		Temperature (°C)	pH	DO (mg/L) (Middle)	Turbidity (NTU)	SS (mg/L)
U1	Avg.	22.6	8.1	7.3	17.5	12.8
	Min.	19.9	7.3	4.3	4.7	3.7
	Max.	26.8	9.1	10.5	53.2	36.0
U2	Avg.	22.7	7.9	7.1	8.3	5.4
	Min.	20.3	7.3	3.4	2.5	1.3
	Max.	26.3	8.6	10.7	24.3	16.0
SW	Avg.	22.7	7.9	7.2	11.5	6.2
	Min.	20.2	7.4	3.5	1.9	<1.0
	Max.	26.4	8.6	10.7	23.2	24.0
HT	Avg.	22.6	8.0	6.9	16.2	15.4
	Min.	20.2	7.3	2.2	2.8	<1.0
	Max.	26.1	8.7	10.6	45.1	69.0
TKW1	Avg.	22.7	8.0	7.7	14.3	9.4
	Min.	20.3	7.4	2.8	3.4	<1.0
	Max.	26.4	8.7	10.8	63.2	54.0
TKW	Avg.	22.7	7.9	7.0	14.4	10.2
	Min.	20.2	7.4	2.4	4.0	<1.0
	Max.	26.3	8.7	10.3	57.3	52.0

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3.6.3 During the baseline water quality monitoring, significant high pH value was observed at all monitoring stations on 14, 24 and 29 May 2022 with range from 8.5 to 9.1. The particularly high pH values at all monitoring stations appear unusual but are potentially attributed to the domestic discharge from unsewered village and contaminated water from nearby brownfield site.

3.6.4 The baseline water quality monitoring results also indicated that fluctuations of turbidity and SS levels varied over time. It is noticed that extraordinarily high levels of turbidity and SS that might not truly reflect the background condition were occasionally recorded during the baseline monitoring. Without knowing the reasons of these high levels, the turbidity and SS data that are considered as outliers are excluded in the formulation of the Action and Limit Levels.

3.6.5 According to the EIA Report (Register No. AEIAR-203/2016) Section 5 Water Quality Impact, water quality sampling was conducted during the EIA Study, the river quality of Tin Shui Wai Main Channel, Hang Hau Tsuen Channel was subjected to domestic discharge from unsewered villages or expedient connections/ contaminated run-off in the study area.

3.6.6 As the proposed construction of interim section of new distributor road (Road D1) are surrounded by the existing villages and brownfield sites/ open storage areas, watercourses are likely receiving expedient connections of sewage from these villages and contaminated run-off from the brownfield sites/ open storage areas. Thus, the water quality would be affected by the runoff and effluent from the nearby villages and brownfield sites during the impact water quality monitoring.

3.6.7 In contrast to wet season, rainfall is less during dry season and the volume of stream flow is usually lower. The background water quality conditions during the wet and dry seasons would also be different. Therefore, it is recommended to regularly review the water quality baseline conditions during the construction phase of the Project. The environmental performance criteria may need to be re-established if it is evident that the baseline conditions have changed significantly. Updated baseline data should then be sought for re-establishment of the updated environmental performance criteria.

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Figure 3.2 Baseline Water Quality Monitoring Schedule

Contract No. WD/02/2021 Enviornmental Team for Hung Shui Kiu/ Ha Tsuen New Development Area Stage 1 Works - Site Formation and Engineering Infrastructure

Baseline Water Quality Monitoring Schedule (Version 6.0)

May 2022						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
1	2	3 Baseline Water Quality Monitoring	4	5 Baseline Water Quality Monitoring	6	7 Baseline Water Quality Monitoring
8	9 Baseline Water Quality Monitoring	10	11	12 Baseline Water Quality Monitoring	13	14 Baseline Water Quality Monitoring
15	16 Baseline Water Quality Monitoring	17	18	19 Baseline Water Quality Monitoring	20	21 Baseline Water Quality Monitoring
22	23	24 Baseline Water Quality Monitoring	25	26	27 Baseline Water Quality Monitoring	28
29 Baseline Water Quality Monitoring	30	31				

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3.7 Action and Limit Levels

3.7.1 The Action and Limit Levels were derived following the approach specified in the Updated EM&A Manual as shown in **Table 3.8** below.

Table 3.8 Determination of Action and Limit Levels of Water Quality for Impact Monitoring

Parameters	Action	Limit
DO in mg/L	Surface and Middle, Bottom DO ≤5%-ile of baseline data	Surface and Middle DO ≤4 mg/L and 1%-ile of baseline data for surface and middle layers Bottom DO ≤2 mg/L and 1%-ile of baseline data for bottom layer
SS in mg/L	Depth-averaged SS • ≥ 95%-ile of baseline data or • 120% of upstream control station of the same day (applicable to station at SW and HT only)	Depth-averaged SS • ≥ 99%-ile of baseline data or • 130% of upstream control station of the same day (applicable to station at SW and HT only)
Turbidity in NTU	Depth-averaged Turbidity • ≥ 95%-ile of baseline data or • 120% of upstream control station of the same day (applicable to station at SW and HT only)	Depth-averaged Turbidity • ≥ 99%-ile of baseline data or • 130% of upstream control station of the same day (applicable to station at SW and HT only
pH	Beyond the range 6.6 – 8.4	Beyond the range of 6.5 – 8.5

Note:
(1) For DO, non-compliance of the water quality limit occurs when monitoring result is lower than the limit.
(2) For SS and turbidity, non-compliance of the water quality limit occurs when monitoring result is higher than the limit.

3.7.2 Based on the baseline water quality monitoring data and the approach specified above, the Action and Limit Levels were derived and are presented in **Table 3.9**. As discussed in Section 3.6.4, the extraordinarily high values of turbidity and SS data recorded during the baseline monitoring were excluded in the determination of Action and Limit Levels.

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Table 3.9 Derived Action and Limit Levels for Water Quality

Parameters	Action Levels	Limit Levels
SW		
DO (mg/L)	3.7	3.5
Turbidity (NTU)	21.4	22.9
SS (mg/L)	9.7	9.9
pH	Less than 6.6 or greater than 8.4	Less than 6.5 or greater than 8.5
HT		
DO (mg/L)	2.4	2.2
Turbidity (NTU)	32.3	32.6
SS (mg/L)	34.0	38.7
pH	Less than 6.6 or greater than 8.4	Less than 6.5 or greater than 8.5
TKW1		
DO (mg/L)	2.8	2.8
Turbidity (NTU)	27.9	29.2
SS (mg/L)	16.0	18.4
pH	Less than 6.6 or greater than 8.4	Less than 6.5 or greater than 8.5
TKW		
DO (mg/L)	2.5	2.4
Turbidity (NTU)	24.2	24.6
SS (mg/L)	19.8	21.6
pH	Less than 6.6 or greater than 8.4	Less than 6.5 or greater than 8.5

Notes:
(1) For DO, non-compliance of the water quality limit occurs when monitoring result is lower than the limit.
(2) For Turbidity and SS, non-compliance of the water quality limit occurs when monitoring result is higher than the limit.
(3) The derived Action Levels and Limit Levels for dissolved oxygen only apply to mid-depth.

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4 COMMENTS AND CONCLUSION

4.1 Revision for Inclusion in the EM&A Manual

4.1.1 The baseline monitoring was conducted according to the Updated EM&A Manual for air quality and water quality.

4.1.2 All updated air quality and water quality monitoring locations were verified by the IEC and approved by the EPD.

4.1.3 The monitoring methodology, parameters monitored, and monitoring locations are all generally in line with the Updated EM&A Manual for the Project.

4.2 Air Quality

4.2.1 Baseline air quality monitoring was carried out between 9 December 2021 and 22 December 2021 at three monitoring stations.

4.2.2 No construction activity of the Project was conducted in the vicinity of the monitoring locations and in the project site.

4.2.3 Action and Limit Levels were derived from the baseline 1-hour TSP monitoring results according to the Updated EM&A Manual.

4.3 Water Quality

4.3.1 Baseline water quality monitoring was conducted between 3 May 2022 to 29 May 2022 at six monitoring stations (i.e. U1, U2, SW, HT, TKW1 and TKW).

4.3.2 Action and Limit Levels were derived from the baseline water quality monitoring results according to the Updated EM&A Manual.

4.4 Comments/ Recommendations

4.4.1 The baseline water quality monitoring was conducted during a typical wet season in Hong Kong. During the dry season, however, the rainfall is less, and the stream flow would contain higher portion of expedient discharge from local village houses and contaminated runoff from brownfield sites/ open storage area. It is anticipated that the stream flow would contain higher content of turbidity and SS during the dry season. Thus, review of the water quality baseline condition would be required during the construction phase of the Project, particularly when the non-project related exceedances of Action and Limit Levels become frequent. The environmental performance criteria may need to be updated if it is evident that the baseline conditions have changed significantly. If feasible, a supplementary baseline EM&A programme would be carried out to collect the latest background water quality data for review and updating of the environmental performance criteria.

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Appendix A –

Air Quality and Water Quality Monitoring Equipment Calibration Certificates

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Aerocet 831 K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Verification Test Date: 27-Jun-21 to 1-Jul-21
Next Verification Test Date: 1-Jul-22
Unit-under-Test- Model No. Aerocet 831
Unit-under-Test Serial No. A14259
Our Report Refrence No. RPT-21-HVS-0001

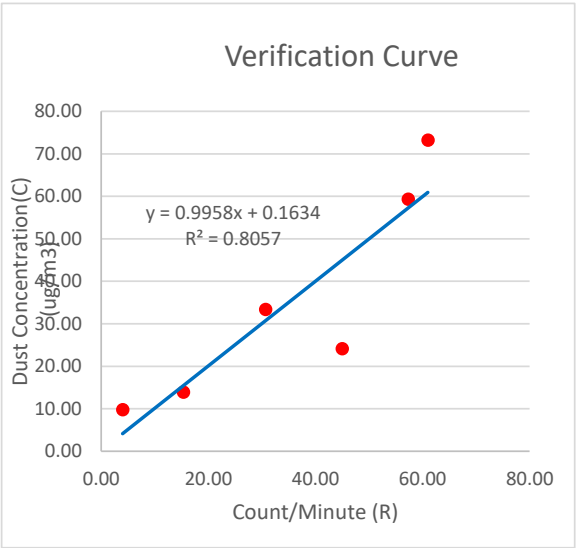
Standard Equipment Information			
Verification Equipment Type		Tisch's TSP HVS	Tish HVS Calibrator
Standard Equipment Model No.		TE-5170X	TE-5028
Equipment serial no.	MFC	1049	1050
Last Calibration Date		17-Jun-21	24-Sep-20
Next Calibration Date		17-Aug-21	24-Sep-21

Verification Test No.	Date	Time			K-Factor	Counts/ Minute (R)	Total Counts (TC)	TSP Sample ID No.	Dust Concentration (ug/m3), (C)
		Start-time	End-time	Elapsed Time (in min)	K-Factor (K=C/R)	x-axis			y axis
1	27/6/2021	1254.37	1257.37	180.00	0.00109	30.67	5520	R210872/1	33.33
2	27/6/2021	1258.44	1261.44	180.00	0.00103	57.33	10320	R210872/2	59.26
3	27/6/2021	1262.31	1265.31	180.00	0.00243	4.00	720	R210872/3	9.72
4	1/7/2021	1265.84	1268.84	180.00	0.00120	61.00	10980	R210887/1	73.15
5	1/7/2021	1269.10	1272.10	180.00	0.00091	15.33	2760	R210887/2	13.89
6	1/7/2021	1272.50	1275.50	180.00	0.00053	45.00	8100	R210887/3	24.07
					0.00120				

K-Factor to be inputted in LD-5R (corrected 1 decimal point): 1.2

By Linear Regression of y on x:
slope, mh= 0.9958
intercept,ch= 0.1634
*Correlation Coefficient,R= 0.8976
Verification Test Result: Strong Correlation, Results were accepted.

* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.



Verified By: _____ Date: 20-07-2021
Technical Manager

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Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Verification Test Date: 12-Sep-21 to 19-Sep-21
Next Verification Test Date: 20-Sep-22
Unit-under-Test- Model No. Sibata LD-5R
Unit-under-Test Serial No. 851816
Our Report Refrence No. RPT-21-HVS-0014

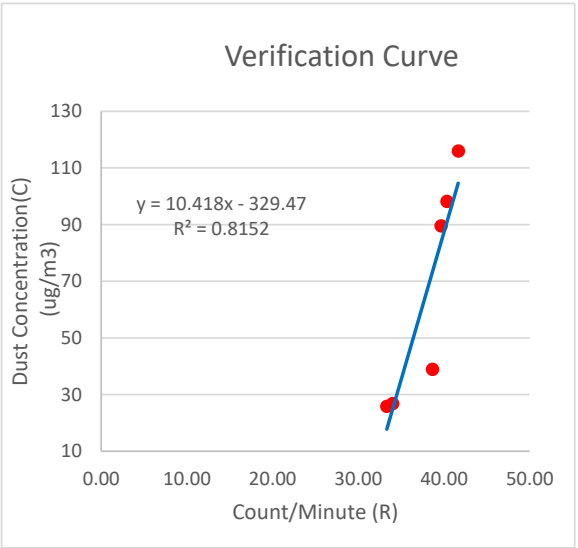
Standard Equipment Information			
Verification Equipment Type		Tisch's TSP HVS	Tish HVS Calibrator
Standard Equipment Model No.		TE-5170X	TE-5028
Equipment serial no.	MFC	1049	1050
Last Calibration Date		4-Sep-21	24-Sep-20
Next Calibration Date		4-Nov-21	24-Sep-21

Verification Test No.	Date	Time			K-Factor	Counts/ Minute (R)	Total Counts (TC)	TSP Sample ID No.	Dust Concentration (ug/m3), (C)
		Start-time	End-time	Elapsed Time (in min)	K-Factor (K=C/R)	x-axis			y axis
1	12/9/2021	4012.12	4014.84	163.20	0.00243	40.33	6582.4	R211363/1	98
2	12/9/2021	4014.84	4018.16	199.20	0.00278	41.67	8300	R211363/2	116
3	12/9/2021	4018.16	4021.16	180.00	0.00226	39.67	7140	R211363/3	89
4	19/9/2021	4046.44	4049.65	192.60	0.00077	33.33	6420	R211364/1	26
5	19/9/2021	4049.65	4052.95	198.00	0.00079	34.00	6732	R211364/2	27
6	19/9/2021	4052.95	4055.56	156.60	0.00101	38.67	6055.2	R211364/3	39
					0.00167				

K-Factor to be inputted in LD-5R (corrected 1 decimal point): 1.7

By Linear Regression of y on x:
slope, mh= 10.4180
intercept,ch= -329.4714
*Correlation Coefficient,R= 0.9029
Verification Test Result: Strong Correlation, Results were accepted.

* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.



Verified By: _____ Date: 09-10-2021
Technical Manager

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Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Verification Test Date: 12-Sep-21 to 19-Sep-21
Next Verification Test Date: 20-Sep-22
Unit-under-Test- Model No. Sibata LD-5R
Unit-under-Test Serial No. 851820
Our Report Refrence No. RPT-21-HVS-0015

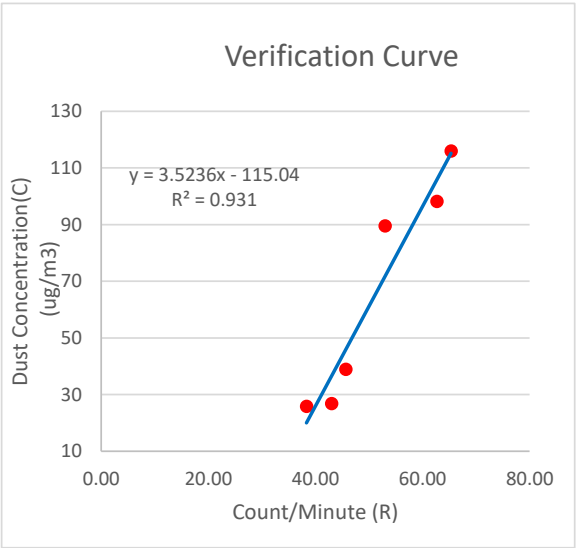
Standard Equipment Information			
Verification Equipment Type		Tisch's TSP HVS	Tish HVS Calibrator
Standard Equipment Model No.		TE-5170X	TE-5028
Equipment serial no.	MFC	1049	1050
Last Calibration Date		4-Sep-21	24-Sep-20
Next Calibration Date		4-Nov-21	24-Sep-21

Verification Test No.	Date	Time			K-Factor	Counts/ Minute (R)	Total Counts (TC)	TSP Sample ID No.	Dust Concentration (ug/m3), (C)
		Start-time	End-time	Elapsed Time (in min)	K-Factor (K=C/R)	x-axis			y axis
1	12/9/2021	4012.12	4014.84	163.20	0.00157	62.67	10227	R211363/1	98
2	12/9/2021	4014.84	4018.16	199.20	0.00177	65.33	13014	R211363/2	116
3	12/9/2021	4018.16	4021.16	180.00	0.00169	53.00	9540	R211363/3	89
4	19/9/2021	4046.44	4049.65	192.60	0.00067	38.33	7383	R211364/1	26
5	19/9/2021	4049.65	4052.95	198.00	0.00062	43.00	8514	R211364/2	27
6	19/9/2021	4052.95	4055.56	156.60	0.00085	45.67	7151.4	R211364/3	39
					0.00120				

K-Factor to be inputted in LD-5R (corrected 1 decimal point): 1.2

By Linear Regression of y on x:
slope, mh= 3.5236
intercept,ch= -115.0408
*Correlation Coefficient,R= 0.9649
Verification Test Result: Strong Correlation, Results were accepted.

* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.



Verified By: _____ Date: 09-10-2021
Technical Manager

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Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Verification Test Date: 12-Sep-21 to 19-Sep-21
Next Verification Test Date: 20-Sep-22
Unit-under-Test- Model No. Sibata LD-5R
Unit-under-Test Serial No. 992818
Our Report Refrence No. RPT-21-HVS-0016

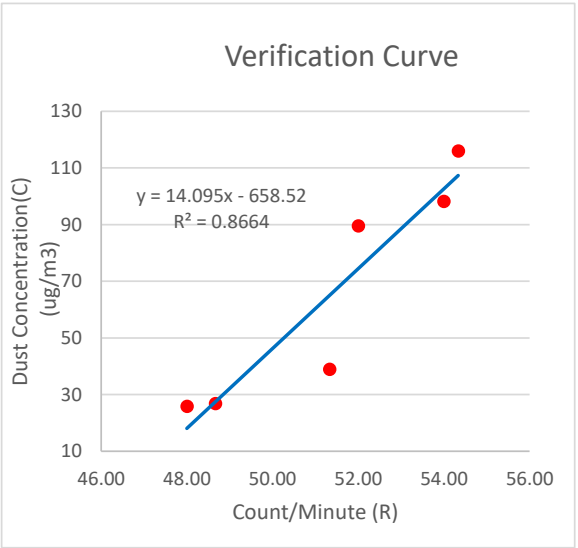
Standard Equipment Information			
Verification Equipment Type		Tisch's TSP HVS	Tish HVS Calibrator
Standard Equipment Model No.		TE-5170X	TE-5028
Equipment serial no.	MFC	1049	1050
Last Calibration Date		4-Sep-21	24-Sep-20
Next Calibration Date		4-Nov-21	24-Sep-21

Verification Test No.	Date	Time			K-Factor	Counts/ Minute (R)	Total Counts (TC)	TSP Sample ID No.	Dust Concentration (ug/m3), (C)
		Start-time	End-time	Elapsed Time (in min)	K-Factor (K=C/R)	x-axis			y axis
1	12/9/2021	4012.12	4014.84	163.20	0.00182	54.00	8812.8	R211363/1	98
2	12/9/2021	4014.84	4018.16	199.20	0.00213	54.33	10823	R211363/2	116
3	12/9/2021	4018.16	4021.16	180.00	0.00172	52.00	9360	R211363/3	89
4	19/9/2021	4046.44	4049.65	192.60	0.00054	48.00	9244.8	R211364/1	26
5	19/9/2021	4049.65	4052.95	198.00	0.00055	48.67	9636	R211364/2	27
6	19/9/2021	4052.95	4055.56	156.60	0.00076	51.33	8038.8	R211364/3	39
					0.00125				

K-Factor to be inputted in LD-5R (corrected 1 decimal point): 1.3

By Linear Regression of y on x:
slope, mh= 14.0955
intercept,ch= -658.5163
*Correlation Coefficient,R= 0.9308
Verification Test Result: Strong Correlation, Results were accepted.

* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.



Verified By: _____ Date: 09-10-2021
Technical Manager

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Email: info@qualityprotest.com; Website: www.qualityprotest.com
Tel: (852) 3956 8717; Fax: (852) 3956 3928

REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB030083
Date of Issue : 21 March 2022

PART A - CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit E, 12/F, Ford Glory Plaza 37-39 Wing
Hong Street, Cheung Sha Wan
Kowloon (HK) Hong Kong
Attn :

PART B - SAMPLE INFORMATION

Name of Equipment :	HORIBA U-53
Manufacturer :	HORIBA
Serial Number :	THAUKESL
Date of Received :	15 March 2022
Date of Calibration :	21 March 2022
Date of Next Calibration :	20 June 2022

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
Turbidity	APHA 21e 2130B
Dissolved oxygen	APHA 21e 4500 O
pH value	APHA 21e 4500 H+
Salinity	APHA 21e 2520B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure

PART D - CALIBRATION RESULT

(1) Turbidity

EXPECTED READING (NTU)	DISPLAY READING (NTU)	TOLERANCE (%)	RESULT
0	0.01	--	Satisfactory
10	10.0	0.00	Satisfactory
20	19.9	-0.50	Satisfactory
100	104.5	4.50	Satisfactory
800	829	3.63	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

(2) Dissolved oxygen

EXPECTED READING (MG/L)	DISPLAY READING (MG/L)	TOLERANCE (MG/L)	RESULT
7.40	7.41	0.01	Satisfactory
3.71	3.65	-0.06	Satisfactory
1.34	1.11	-0.23	Satisfactory
0.42	0.81	0.39	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(3) pH value

TARGET (PH UNIT)	DISPLAY READING (PH UNIT)	TOLERANCE	RESULT

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED SIGNATORY:

LEE Chun-ning
Assistant Manager (Chemical Testing)

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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB030083
Date of Issue : 21 March 2022

TARGET (PH UNIT)	DISPLAY READING (PH UNIT)	TOLERANCE	RESULT
4.00	4.09	0.09	Satisfactory
7.42	7.43	0.01	Satisfactory
10.01	9.86	-0.15	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(4) Salinity

EXPECTED READING (G/L)	DISPLAY READING (G/L)	TOLERANCE (%)	RESULT
10	10.20	2.00	Satisfactory
20	19.58	-2.10	Satisfactory
30	29.84	-0.53	Satisfactory

Tolerance of Salinity should be less than ± 10.0 (%)

(5) Temperature

READING OF REF. THERMOMETER (°C)	DISPLAY READING (°C)	TOLERANCE (°C)	RESULT
14.5	14.96	0.46	Satisfactory
24.5	24.60	0.10	Satisfactory
40.5	39.07	-1.43	Satisfactory

Tolerance of Temperature should be less than ± 2.0 (°C)

Remark(s)

·The "Date of Next Calibration" is recommended according to best practice principals as practiced by QPT or quoted form relevant international standards.

·The results relate only to the calibrated equipment as received

·The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

·"Displayed Reading" denotes the figure shown on item under calibration/ checking regardless of equipment precision or significant figures.

·The "Tolerance Limit" mentioned is the acceptance criteria applicable for similar equipment used by Quality Pro Test-Consult Ltd. or quoted form relevant international standards.

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專業化驗有限公司
QUALITY PRO TEST-CONSULT LIMITED
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REPORT OF EQUIPMENT PERFORMANCE CHECK/ CALIBRATION

Test Report No. : R-BB040025
Date of Issue : 12 April 2022
Page No. : 1 of 2

PART A - CUSTOMER INFORMATION

Acuity Sustainability Consulting Limited
Unit E, 12/F, Ford Glory Plaza 37-39 Wing
Hong Street, Cheung Sha Wan
Kowloon (HK) Hong Kong
Attn :

PART B - SAMPLE INFORMATION

Name of Equipment :	HORIBA U-53
Manufacturer :	HORIBA
Serial Number :	S2A98W8H
Date of Received :	08 April 2022
Date of Calibration :	11 April 2022
Date of Next Calibration :	10 July 2022

PART C - REFERENCE METHODS/ DOCUMENTS FOR THE CALIBRATION

Test Parameter	Reference Method
Turbidity	APHA 21e 2130B
Dissolved oxygen	APHA 21e 4500 O
pH value	APHA 21e 4500 H+
Salinity	APHA 21e 2520B
Temperature	Section 6 of international Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure

PART D - CALIBRATION RESULT

(1) Turbidity

EXPECTED READING (NTU)	DISPLAY READING (NTU)	TOLERANCE (%)	RESULT
0	0.00	--	Satisfactory
10	11.0	10.0	Satisfactory
20	19.5	-2.5	Satisfactory
100	108	8.0	Satisfactory
800	795	-0.6	Satisfactory

Tolerance of Turbidity should be less than ± 10.0 (%)

(2) Dissolved oxygen

EXPECTED READING (MG/L)	DISPLAY READING (MG/L)	TOLERANCE (MG/L)	RESULT
8.23	8.39	0.16	Satisfactory
5.61	5.79	0.18	Satisfactory
4.20	4.36	0.16	Satisfactory
0.15	0.40	0.25	Satisfactory

Tolerance of Dissolved oxygen should be less than ± 0.5 (mg/L)

(3) pH value

TARGET (PH UNIT)	DISPLAY READING (PH UNIT)	TOLERANCE	RESULT

--- CONTINUED ON NEXT PAGE ---

AUTHORIZED SIGNATORY:

LEE Chun-ning
Assistant Manager (Chemical Testing)

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TARGET (PH UNIT)	DISPLAY READING (PH UNIT)	TOLERANCE	RESULT
4.00	3.99	-0.01	Satisfactory
7.42	7.38	-0.04	Satisfactory
10.01	10.03	0.02	Satisfactory

Tolerance of pH value should be less than ± 0.2 (pH unit)

(4) Salinity

EXPECTED READING (G/L)	DISPLAY READING (G/L)	TOLERANCE (%)	RESULT
10	10.19	1.90	Satisfactory
20	19.96	-0.20	Satisfactory
30	28.49	-5.03	Satisfactory

Tolerance of Salinity should be less than ± 10.0 (%)

(5) Temperature

READING OF REF. THERMOMETER (°C)	DISPLAY READING (°C)	TOLERANCE (°C)	RESULT
10	10.0	0.0	Satisfactory
20	19.9	-0.1	Satisfactory
48	48.0	0.0	Satisfactory

Tolerance of Temperature should be less than ± 2.0 (°C)

Remark(s)

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·The results relate only to the calibrated equipment as received

·The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

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Appendix B –

Baseline Air Quality Monitoring Results and Graphical Presentation

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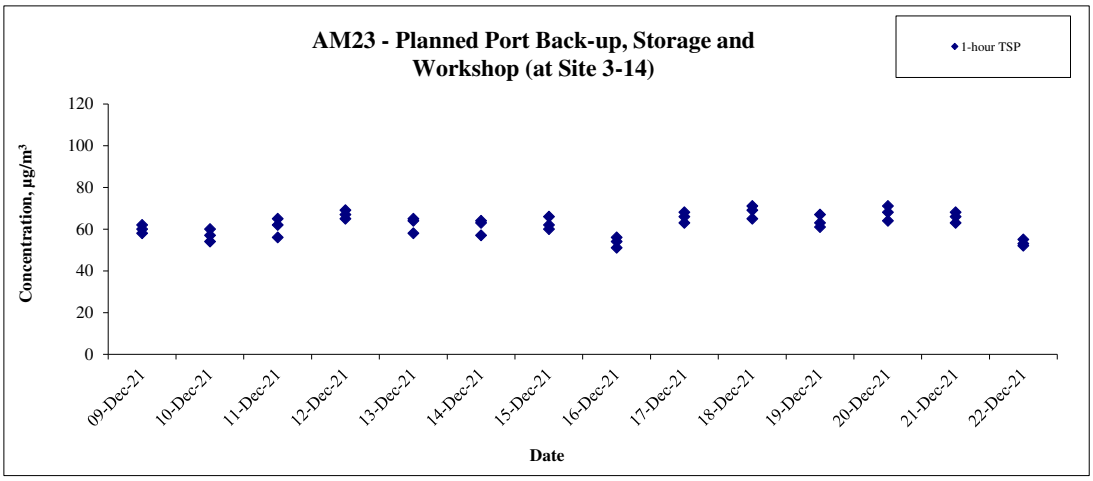
Appendix B - 1-hour TSP Monitoring Result

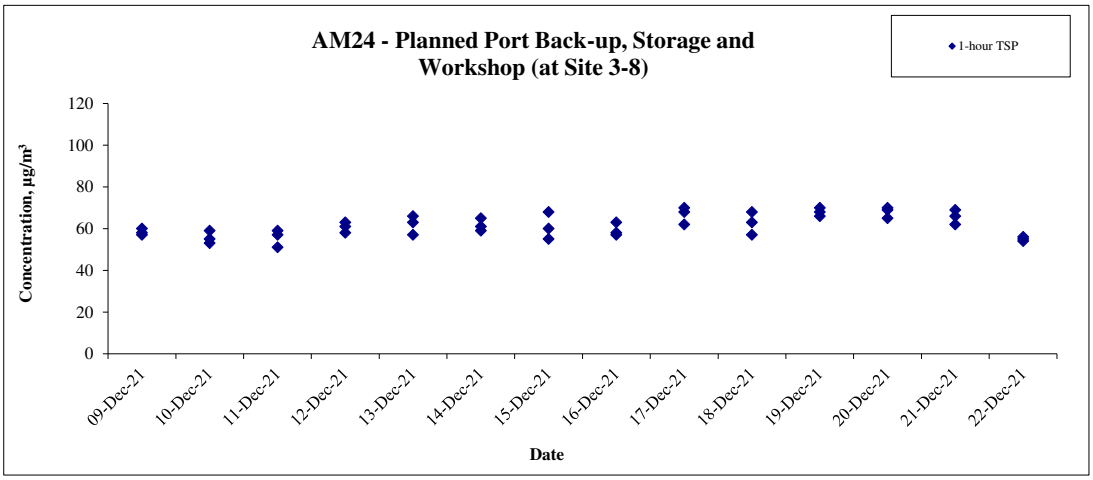
Location AM23 - Planned Port Back-up, Storage and Workshop (at Site 3-6)			
Date	Time	Weather	Particulate Concentration (μg/m^3)
9-Dec-21	15:21	Sunny	62
9-Dec-21	16:21	Sunny	60
9-Dec-21	17:21	Sunny	58
10-Dec-21	13:35	Sunny	60
10-Dec-21	14:35	Sunny	57
10-Dec-21	15:35	Sunny	54
11-Dec-21	13:52	Sunny	65
11-Dec-21	14:52	Sunny	62
11-Dec-21	15:52	Sunny	56
12-Dec-21	14:51	Sunny	67
12-Dec-21	15:51	Sunny	65
12-Dec-21	16:51	Sunny	69
13-Dec-21	13:26	Sunny	65
13-Dec-21	14:26	Sunny	64
13-Dec-21	15:26	Sunny	58
14-Dec-21	15:19	Sunny	63
14-Dec-21	16:19	Sunny	64
14-Dec-21	17:19	Sunny	57
15-Dec-21	14:26	Sunny	66
15-Dec-21	15:26	Sunny	62
15-Dec-21	16:26	Sunny	60
16-Dec-21	9:06	Fine	54
16-Dec-21	10:06	Fine	56
16-Dec-21	11:06	Fine	51
17-Dec-21	9:48	Fine	68
17-Dec-21	10:48	Fine	66
17-Dec-21	11:48	Fine	63
18-Dec-21	14:33	Sunny	71
18-Dec-21	15:33	Sunny	69
18-Dec-21	16:33	Sunny	65
19-Dec-21	13:20	Sunny	67
19-Dec-21	14:20	Sunny	63
19-Dec-21	15:20	Sunny	61
20-Dec-21	13:58	Sunny	71
20-Dec-21	14:58	Sunny	68
20-Dec-21	15:58	Sunny	64
21-Dec-21	13:56	Sunny	66
21-Dec-21	14:56	Sunny	68
21-Dec-21	15:56	Sunny	63
22-Dec-21	13:23	Sunny	55
22-Dec-21	14:23	Sunny	53
22-Dec-21	15:23	Sunny	52
		Minimum	51.0
		Maximum	71.0
		Average	62.1

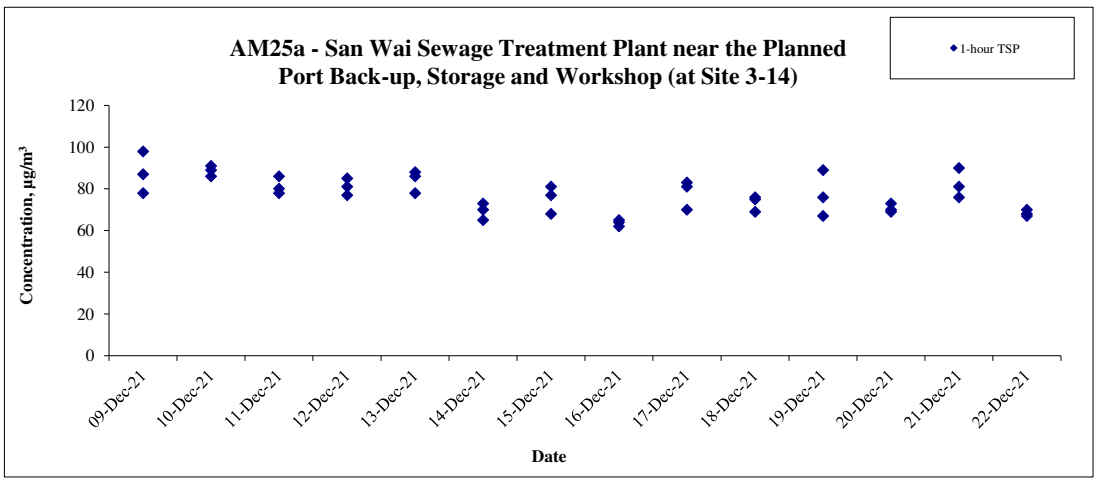
Location AM24 - Planned Port Back-up, Storage and Workshop (at Site 3-8)			
Date	Time	Weather	Particulate Concentration (μg/m^3)
9-Dec-21	15:09	Sunny	60
9-Dec-21	16:09	Sunny	58
9-Dec-21	17:09	Sunny	57
10-Dec-21	13:27	Sunny	59
10-Dec-21	14:27	Sunny	55
10-Dec-21	15:27	Sunny	53
11-Dec-21	13:44	Sunny	59
11-Dec-21	14:44	Sunny	57
11-Dec-21	15:44	Sunny	51
12-Dec-21	14:40	Sunny	63
12-Dec-21	15:40	Sunny	61
12-Dec-21	16:40	Sunny	58
13-Dec-21	13:13	Sunny	66
13-Dec-21	14:13	Sunny	63
13-Dec-21	15:13	Sunny	57
14-Dec-21	15:10	Sunny	65
14-Dec-21	16:10	Sunny	61
14-Dec-21	17:10	Sunny	59
15-Dec-21	14:14	Sunny	68
15-Dec-21	15:14	Sunny	60
15-Dec-21	16:14	Sunny	55
16-Dec-21	8:55	Fine	58
16-Dec-21	9:55	Fine	63
16-Dec-21	10:55	Fine	57
17-Dec-21	9:36	Fine	70
17-Dec-21	10:36	Fine	68
17-Dec-21	11:36	Fine	62
18-Dec-21	14:25	Sunny	68
18-Dec-21	15:25	Sunny	63
18-Dec-21	16:25	Sunny	57
19-Dec-21	13:12	Sunny	70
19-Dec-21	14:12	Sunny	68
19-Dec-21	15:12	Sunny	66
20-Dec-21	13:45	Sunny	69
20-Dec-21	14:45	Sunny	70
20-Dec-21	15:45	Sunny	65
21-Dec-21	13:48	Sunny	69
21-Dec-21	14:48	Sunny	66
21-Dec-21	15:48	Sunny	62
22-Dec-21	13:15	Sunny	56
22-Dec-21	14:15	Sunny	55
22-Dec-21	15:15	Sunny	54
		Minimum	51.0
		Maximum	70.0
		Average	61.5

Location AM25a - San Wai Sewage Treatment Plant near the Planned Port Back-up, Storage and Workshop (at Site 3-14)			
Date	Time	Weather	Particulate Concentration (μg/m^3)
9-Dec-21	15:00	Sunny	98
9-Dec-21	16:00	Sunny	78
9-Dec-21	17:00	Sunny	87
10-Dec-21	13:15	Sunny	89
10-Dec-21	14:15	Sunny	86
10-Dec-21	15:15	Sunny	91
11-Dec-21	13:30	Sunny	78
11-Dec-21	14:30	Sunny	80
11-Dec-21	15:30	Sunny	86
12-Dec-21	14:30	Sunny	85
12-Dec-21	15:30	Sunny	77
12-Dec-21	16:30	Sunny	81
13-Dec-21	13:02	Sunny	78
13-Dec-21	14:02	Sunny	88
13-Dec-21	15:02	Sunny	86
14-Dec-21	15:01	Sunny	70
14-Dec-21	16:01	Sunny	73
14-Dec-21	17:01	Sunny	65
15-Dec-21	14:05	Sunny	81
15-Dec-21	15:05	Sunny	77
15-Dec-21	16:05	Sunny	68
16-Dec-21	8:45	Fine	65
16-Dec-21	9:45	Fine	62
16-Dec-21	10:45	Fine	64
17-Dec-21	9:24	Fine	81
17-Dec-21	10:24	Fine	83
17-Dec-21	11:24	Fine	70
18-Dec-21	14:16	Sunny	76
18-Dec-21	15:16	Sunny	75
18-Dec-21	16:16	Sunny	69
19-Dec-21	13:00	Sunny	89
19-Dec-21	14:00	Sunny	76
19-Dec-21	15:00	Sunny	67
20-Dec-21	13:55	Sunny	70
20-Dec-21	14:55	Sunny	69
20-Dec-21	15:55	Sunny	73
21-Dec-21	13:33	Sunny	76
21-Dec-21	14:33	Sunny	81
21-Dec-21	15:33	Sunny	90
22-Dec-21	13:00	Sunny	67
22-Dec-21	14:00	Sunny	70
22-Dec-21	15:00	Sunny	68
		Minimum	62.0
		Maximum	98.0
		Average	77.2

Baseline 1-hour TSP Concentration Level







Appendix C –

Baseline Water Quality Monitoring Data and Graphical Presentation

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Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kui/ Ha Tsuen
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Water Quality Monitoring Result

Water Quality Monitoring Location : TKW1

Date	Start Time	Water depth (cm)	Temperature (°C)		pH		DO (mg/L)		DO (%)		Turbidity (NTU)		Suspended Solids (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3/5/2022	18:07	10	21.2	21.2	7.7	7.7	3.0	2.9	33.9	32.9	29.3	29.0	19.0	17.5
			21.2		7.7		2.8		31.8		28.6		16.0	
5/5/2022	15:02	10	21.5	21.5	7.5	7.5	2.9	2.9	33.0	32.4	3.4	3.6	4.5	4.3
			21.4		7.5		2.8		31.8		3.7		4.0	
7/5/2022	15:16	9	22.0	22.0	7.6	7.6	10.4	10.4	118.9	119.4	5.3	5.7	5.9	5.5
			22.0		7.6		10.4		119.8		6.1		5.0	
9/5/2022	10:41	7	21.3	21.3	7.5	7.5	10.5	10.5	118.4	118.3	5.4	5.8	5.0	5.5
			21.3		7.5		10.4		118.1		6.3		5.9	
12/5/2022	18:23	15	20.3	20.3	7.5	7.6	10.7	10.7	118.0	117.6	11.7	11.4	14.0	14.5
			20.3		7.6		10.6		117.2		11.1		15.0	
14/5/2022	16:10	16	25.7	25.7	8.5	8.5	8.7	8.7	107.2	107.1	4.8	4.6	2.4	2.3
			25.7		8.5		8.7		107.0		4.3		2.2	
16/5/2022	18:08	20	20.3	20.4	7.4	7.5	10.8	10.8	119.3	119.2	8.6	8.6	2.2	2.1
			20.4		7.5		10.7		119.1		8.5		1.9	
19/5/2022	13:00	18	22.5	22.5	7.8	7.8	6.3	6.1	73.8	71.1	12.9	12.5	<1.0	<1.0
			22.5		7.8		5.9		68.3		12.1		<1.0	
21/5/2022	17:14	17	21.3	21.3	8.3	8.3	4.7	4.7	53.1	52.5	3.8	3.7	2.5	2.4
			21.3		8.3		4.6		51.9		3.6		2.2	
24/5/2022	16:51	16	23.9	23.8	8.7	8.7	8.5	9.4	100.7	110.9	14.2	13.9	2.6	2.5
			23.7		8.7		10.2		121.1		13.5		2.3	
27/5/2022	17:15	17	26.4	26.4	8.4	8.4	9.4	9.4	117.1	117.1	55.8	59.5	54.0	53.5
			26.4		8.4		9.4		117.0		63.2		53.0	
29/5/2022	16:55	17	26.3	26.3	8.6	8.6	6.6	6.6	81.5	81.9	12.8	13.3	2.7	2.5
			26.3		8.6		6.6		82.2		13.7		2.3	

Water Quality Monitoring Location : TKW

Date	Start Time	Water depth (cm)	Temperature (°C)		pH		DO (mg/L)		DO (%)		Turbidity (NTU)		Suspended Solids (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3/5/2022	18:12	20	21.4	21.4	7.5	7.5	2.4	2.5	27.1	27.7	24.6	24.6	20.0	21.0
			21.3		7.5		2.5		28.3		24.5		22.0	
5/5/2022	15:07	20	21.7	21.6	7.6	7.6	2.7	2.7	31.3	30.6	4.5	4.5	5.0	4.7
			21.6		7.6		2.6		29.8		4.4		4.3	
7/5/2022	15:22	19	21.5	21.5	7.4	7.4	10.3	10.3	116.6	116.5	11.5	11.9	9.5	9.8
			21.5		7.4		10.3		116.3		12.3		10.0	
9/5/2022	10:46	21	21.3	21.2	7.5	7.5	9.8	9.9	110.0	110.6	5.8	5.5	4.7	4.7
			21.1		7.4		9.9		111.2		5.2		4.7	
12/5/2022	18:30	24	20.2	20.3	7.6	7.7	9.3	9.5	103.1	104.3	18.5	17.7	16.0	16.0
			20.3		7.7		9.6		105.4		16.8		16.0	
14/5/2022	16:15	18	26.0	26.0	8.6	8.6	7.2	7.2	89.4	89.1	4.1	4.1	2.5	2.6
			26.0		8.6		7.2		88.8		4.0		2.6	
16/5/2022	18:12	22	20.4	20.3	7.7	7.7	9.9	9.9	110.6	110.5	7.7	7.6	2.8	3.0
			20.2		7.7		9.9		110.3		7.6		3.2	
19/5/2022	12:52	21	22.7	22.7	7.7	7.7	5.6	5.6	64.4	64.5	12.7	12.7	<1.0	<1.0
			22.7		7.7		5.6		64.6		12.7		<1.0	
21/5/2022	17:18	17	21.3	21.3	8.3	8.3	5.0	5.0	56.3	56.3	4.4	4.3	2.8	3.0
			21.3		8.3		5.0		56.3		4.1		3.2	
24/5/2022	16:26	19	24.0	23.8	8.7	8.7	7.9	8.4	93.9	99.1	12.3	13.0	2.7	2.7
			23.6		8.6		8.8		104.2		13.6		2.7	
27/5/2022	17:19	17	26.3	26.3	8.3	8.3	8.4	8.6	104.3	106.7	49.9	53.6	51.0	51.5
			26.3		8.3		8.8		109.0		57.3		52.0	
29/5/2022	17:00	17	25.8	25.8	8.5	8.5	5.2	5.1	64.5	63.2	13.1	13.3	2.7	2.8
			25.8		8.5		5.0		61.9		13.5		2.8	

Water Quality Monitoring Location : U1

Date	Start Time	Water depth (cm)	Temperature (°C)		pH		DO (mg/L)		DO (%)		Turbidity (NTU)		Suspended Solids (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3/5/2022	17:01	3	21.2	21.2	7.7	7.7	4.6	4.6	51.7	51.5	5.2	5.1	4.3	4.2
			21.2		7.7		4.6		51.2		5.0		4.0	
5/5/2022	17:45	3	19.9	19.9	7.8	7.8	4.5	4.4	49.5	48.6	12.4	12.3	14.0	15.0
			19.9		7.7		4.3		47.7		12.2		16.0	
7/5/2022	14:00	6	21.6	21.6	7.6	7.6	9.2	9.0	105.1	102.6	4.8	4.9	7.5	7.6
			21.6		7.6		8.8		100.0		5.1		7.6	
9/5/2022	10:48	4	21.9	21.9	7.3	7.3	6.9	6.9	78.8	79.3	5.4	5.1	4.0	4.1
			21.9		7.3		6.9		79.8		4.7		4.2	
12/5/2022	17:40	4	20.7	20.7	7.6	7.6	10.1	10.2	115.5	116.4	8.2	7.6	22.0	25.0
			20.7		7.6		10.3		117.2		7.0		28.0	
14/5/2022	15:32	5	25.5	25.5	9.1	9.1	6.0	5.9	73.2	72.1	21.8	21.9	15.0	15.0
			25.5		9.1		5.8		70.9		22.0		15.0	
16/5/2022	17:45	5	21.3	21.4	8.3	8.3	10.1	10.3	114.2	116.6	8.1	8.4	3.7	3.8
			21.4		8.2		10.5		119.0		8.6		3.9	
19/5/2022	17:23	2	22.1	22.1	7.8	7.8	5.7	5.7	65.4	65.4	26.5	25.7	4.9	4.8
			22.0		7.7		5.7		65.3		24.9		4.7	
21/5/2022	16:16	4	21.3	21.3	8.3	8.3	6.1	6.1	69.1	68.7	9.2	9.3	7.5	7.4
			21.3		8.3		6.1		68.3		9.3		7.3	
24/5/2022	17:50	5	22.2	22.2	8.8	8.8	10.3	11.0	118.5	116.8	35.8	36.2	12.0	12.5
			22.2		8.8		10.0		115.1		36.6		13.0	
27/5/2022	16:26	4	26.8	26.8	7.9	7.9	8.6	8.6	107.9	107.8	52.0	52.6	36.0	34.5
			26.8		7.8		8.6		107.6		53.2		33.0	
29/5/2022	16:27	4	26.5	26.5	8.9	8.9	5.4	5.4	66.8	66.1	20.6	21.1	21.0	19.5
			26.5		8.9		5.3		65.4		21.5		18.0	

Water Quality Monitoring Location : SW

Date	Start Time	Water depth (cm)	Temperature (°C)		pH		DO (mg/L)		DO (%)		Turbidity (NTU)		Suspended Solids (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3/5/2022	17:20	7	21.8	21.8	7.6	7.6	4.5	4.4	51.1	49.5	1.9	2.1	1.2	1.2
			21.8		7.6		4.2		47.8		2.3		1.1	
5/5/2022	18:25	7	20.8	20.8	7.6	7.6	3.6	3.6	39.7	39.2	8.5	8.6	9.7	9.6
			20.8		7.6		3.5		38.7		8.7		9.4	
7/5/2022	14:21	3	21.9	21.9	7.5	7.5	9.7	9.7	110.8	110.9	17.3	18.2	24.0	22.0
			21.9		7.5		9.7		110.9		19.0		20.0	
9/5/2022	10:09	13	21.1	21.4	7.5	7.5	6.2	6.4	70.2	72.3	9.3	9.3	9.0	8.6
			21.7		7.5		6.6		74.4		9.2		8.2	
12/5/2022	18:06	11	20.3	20.3	7.4	7.4	10.7	10.7	118.3	118.3	18.7	18.6	1.1	1.1
			20.3		7.4		10.7		118.2		18.4		1.0	
14/5/2022	15:47	9	25.7	25.7	8.5	8.5	6.8	6.7	83.8	82.1	6.5	6.5	6.9	6.9
			25.7		8.5		6.6		80.4		6.5		6.8	
16/5/2022	18:21	10	20.2	20.2	7.7	7.7	10.7	10.7	118.0	118.0	7.9	8.0	2.4	2.3
			20.2		7.7		10.7		117.9		8.1		2.1	
19/5/2022	17:45	10	22.9	22.9	7.7	7.7	6.0	6.0	70.3	69.5	11.9	11.6	1.8	1.7
			22.9		7.7		5.9		68.6		11.2		1.6	
21/5/2022	16:24	10	21.6	21.6	8.4	8.4	5.4	5.4	61.4	61.6	3.3	3.3	1.1	1.1
			21.6		8.4		5.4		61.8		3.4		<1.0	
24/5/2022	17:22	8	23.4	23.4	8.6	8.6	8.9	8.6	104.2	100.4	23.2	22.5	7.9	7.8
			23.4		8.6		8.2		96.5		21.8		7.7	
27/5/2022	17:01	10	26.4	26.4	8.3	8.3	9.1	9.1	112.7	112.7	16.1	17.1	9.6	9.8
			26.4		8.3		9.1		112.6		18.0		10.0	
29/5/2022	16:40	10	25.9	25.9	8.4	8.5	5.2	5.4	64.8	67.0	13.5	12.7	2.5	2.3
			25.9		8.5		5.5		69.2		11.9		2.1	

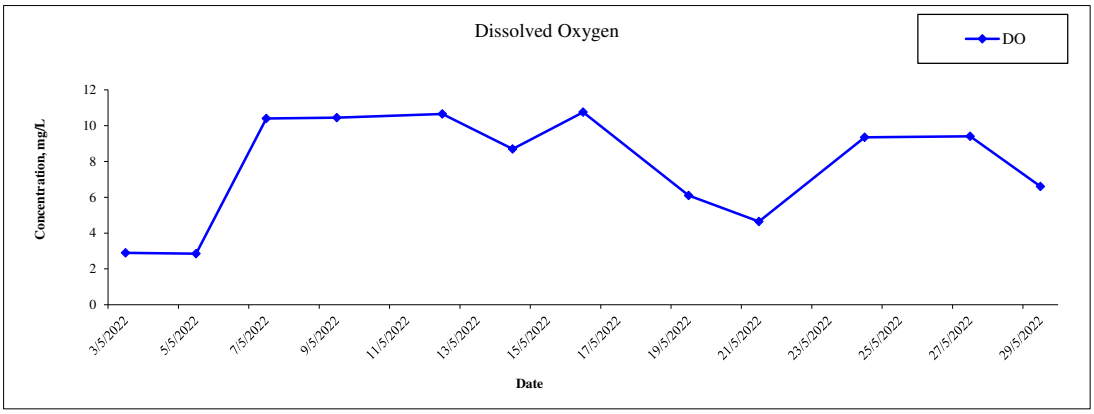
Water Quality Monitoring Location : U2

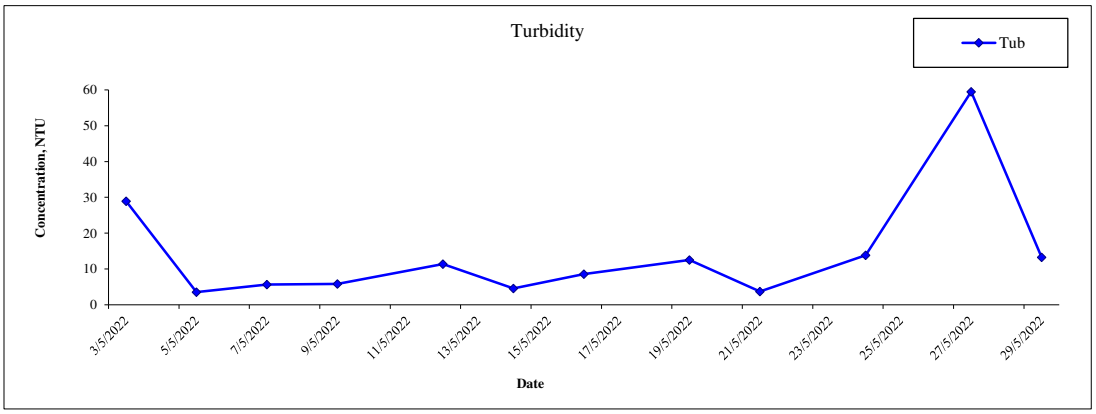
Date	Start Time	Water depth (cm)	Temperature (°C)		pH		DO (mg/L)		DO (%)		Turbidity (NTU)		Suspended Solids (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3/5/2022	17:06	14	21.7	21.7	7.5	7.5	4.5	4.6	51.2	51.5	5.7	5.8	3.3	3.7
			21.7		7.5		4.6		51.7		5.9		4.0	
5/5/2022	18:06	14	20.3	20.3	7.4	7.4	3.4	3.4	37.7	37.6	2.5	2.7	1.3	1.4
			20.3		7.4		3.4		37.5		2.9		1.5	
7/5/2022	13:47	11	21.9	21.9	7.4	7.4	4.3	4.2	49.5	48.4	4.7	4.8	8.1	7.6
			21.9		7.4		4.1		47.3		4.9		7.0	
9/5/2022	10:05	17	21.7	21.7	7..5	7.5	6.3	6.6	72.5	75.3	9.8	9.4	9.2	8.9
			21.7		7.5		6.8		78.1		9.0		8.6	
12/5/2022	17:54	18	20.5	20.5	7.3	7.3	9.7	9.8	108.2	108.7	2.9	2.7	15.0	15.5
			20.5		7.3		9.8		109.1		2.5		16.0	
14/5/2022	15:36	21	25.9	25.9	8.6	8.6	9.1	9.1	112.5	112.5	3.5	3.3	2.2	2.3
			25.9		8.6		9.1		112.5		3.1		2.3	
16/5/2022	17:56	19	20.5	20.6	7.7	7.7	10.7	10.7	119.1	119.0	8.3	8.2	1.4	1.4
			20.6		7.6		10.7		118.9		8.0		1.3	
19/5/2022	18:18	21	23.2	23.2	7.4	7.4	6.1	6.1	71.9	71.1	11.7	11.7	1.4	1.4
			23.2		7.4		6.0		70.2		11.7		1.4	
21/5/2022	16:46	22	21.3	21.3	8.3	8.3	6.0	6.1	68.1	69.3	3.5	3.4	1.4	1.4
			21.3		8.3		6.2		70.4		3.3		1.3	
24/5/2022	17:35	20	23.1	23.2	8.4	8.5	10.5	10.2	122.3	118.5	10.8	11.0	1.8	2.0
			23.2		8.5		9.8		114.6		11.1		2.1	
27/5/2022	16:44	22	26.0	26.0	8.3	8.3	9.3	9.3	115.0	114.9	24.3	23.2	16.0	15.5
			26.0		8.3		9.3		114.8		22.1		15.0	
29/5/2022	16:46	22	26.3	26.3	8.5	8.5	5.0	5.0	62.1	61.4	12.9	13.0	4.8	4.5
			26.3		8.4		4.9		60.6		13.0		4.1	

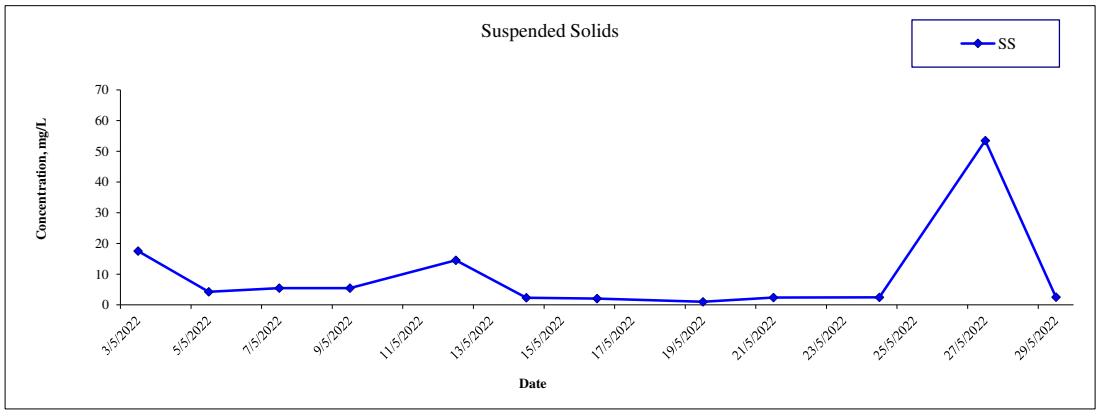
Water Quality Monitoring Location : HT

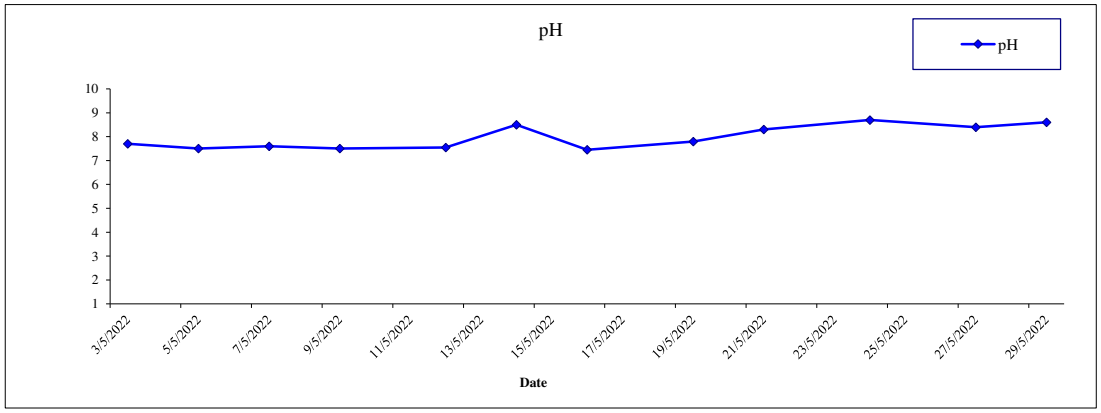
Date	Start Time	Water depth (cm)	Temperature (°C)		pH		DO (mg/L)		DO (%)		Turbidity (NTU)		Suspended Solids (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
3/5/2022	18:31	13	21.6	21.6	7.5	7.5	4.5	4.6	51.4	51.9	45.1	43.5	34.0	37.0
			21.6		7.5		4.6		52.4		41.8		40.0	
5/5/2022	19:11	13	21.2	21.2	7.5	7.5	2.2	2.2	24.9	24.8	7.3	7.4	7.8	7.2
			21.2		7.5		2.2		24.7		7.5		6.5	
7/5/2022	15:36	12	21.2	21.6	7.4	7.4	5.8	5.8	65.2	65.0	32.6	32.5	59.0	64.0
			21.9		7.3		5.7		64.7		32.4		69.0	
9/5/2022	11:16	16	21.3	21.3	7.5	7.5	5.9	5.9	66.4	66.0	26.8	29.1	27.0	28.5
			21.3		7.5		5.8		65.6		31.3		30.0	
12/5/2022	18:41	21	20.3	20.3	7.7	7.7	10.6	10.6	117.2	117.7	13.4	13.7	8.3	8.5
			20.3		7.7		10.6		118.1		13.9		8.6	
14/5/2022	16:18	10	26.1	26.1	8.7	8.7	9.2	9.2	114.1	113.9	2.8	3.0	1.7	1.7
			26.1		8.7		9.2		113.6		3.2		1.6	
16/5/2022	18:42	22	20.2	20.2	7.6	7.6	10.6	10.4	117.7	115.0	8.8	8.9	2.3	2.1
			20.2		7.6		10.2		112.3		8.9		1.9	
19/5/2022	17:59	10	22.6	22.6	7.6	7.6	6.2	6.1	71.7	70.2	12.7	12.7	<1.0	<1.0
			22.6		7.6		5.9		68.6		12.6		<1.0	
21/5/2022	17:37	9	21.4	21.4	8.4	8.4	3.5	3.5	39.5	38.5	3.1	3.0	<1.0	<1.0
			21.4		8.4		3.5		37.4		2.8		<1.0	
24/5/2022	17:09	7	23.5	23.6	8.6	8.6	9.3	9.3	109.1	109.1	9.8	10.1	<1.0	<1.0
			23.6		8.5		9.2		109.0		10.3		<1.0	
27/5/2022	16:52	9	25.8	25.8	8.4	8.4	9.9	9.7	121.7	118.7	20.5	20.5	33.0	31.5
			25.8		8.4		9.4		115.6		20.5		30.0	
29/5/2022	17:10	9	25.8	25.8	8.7	8.7	5.4	5.3	65.8	64.3	10.2	10.3	1.5	1.5
			25.7		8.7		5.1		62.7		10.3		1.5	

Monitoring Location: TKW1









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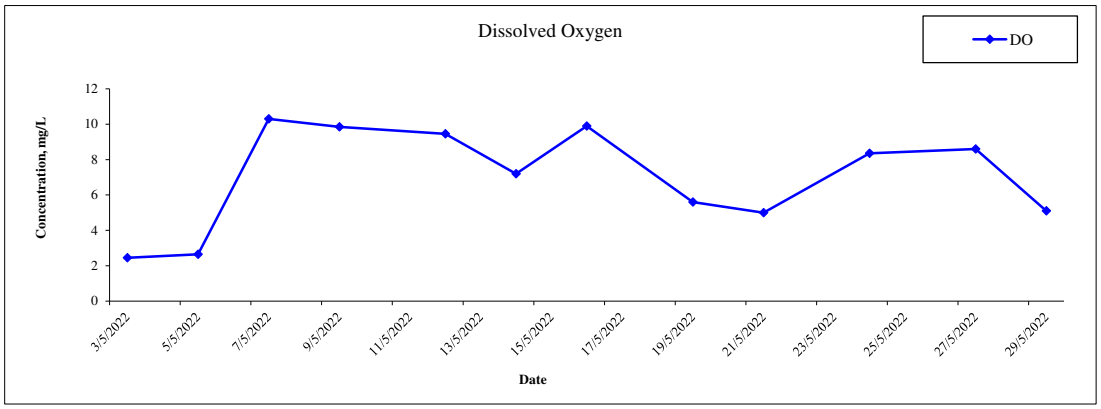
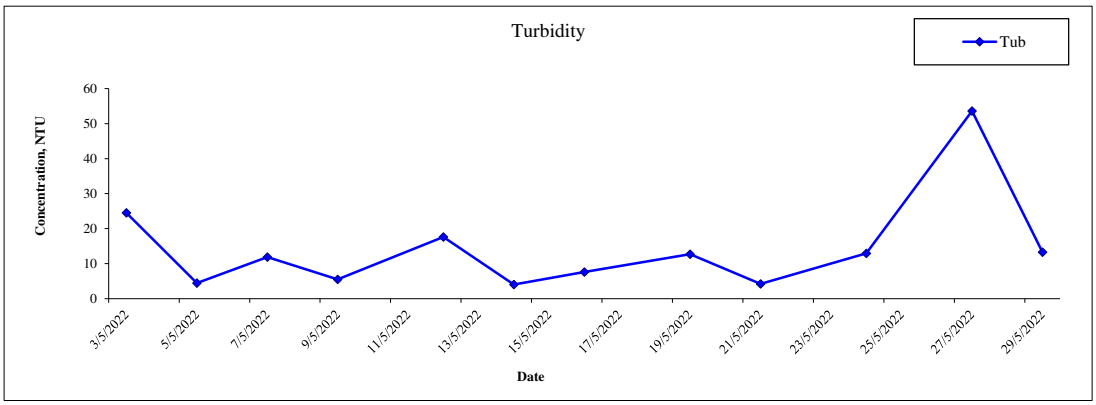
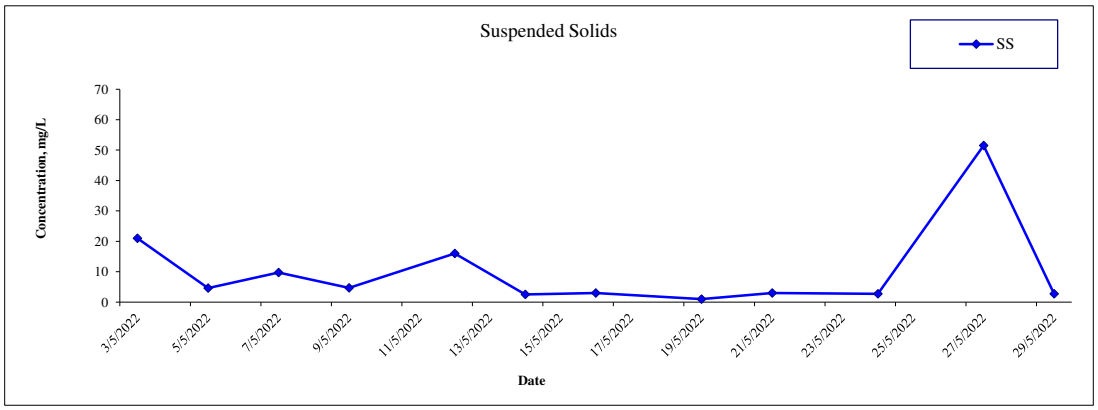
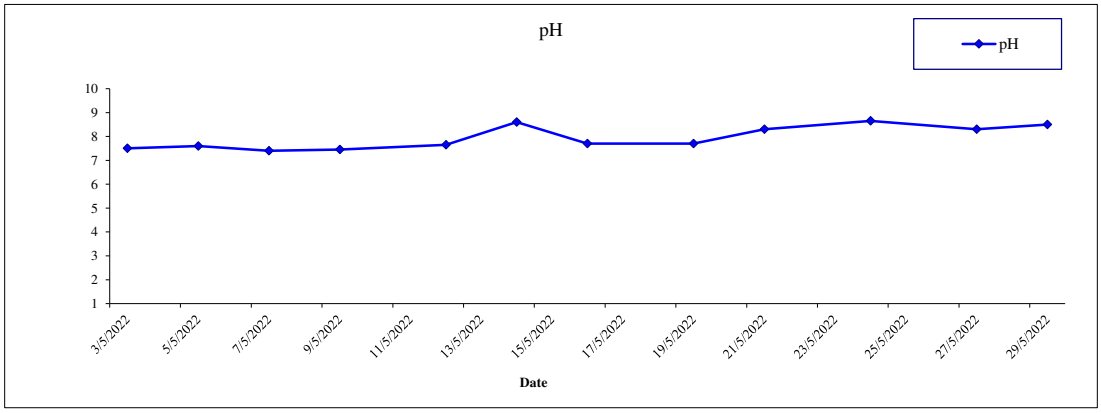
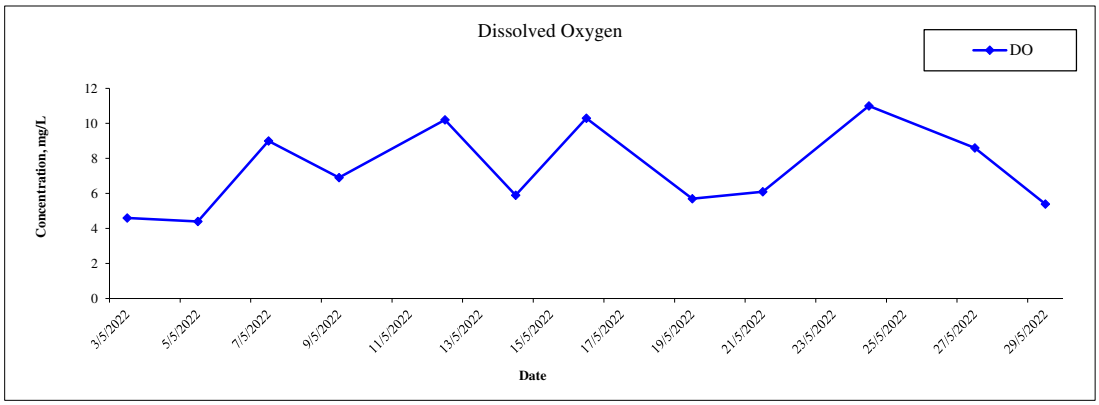


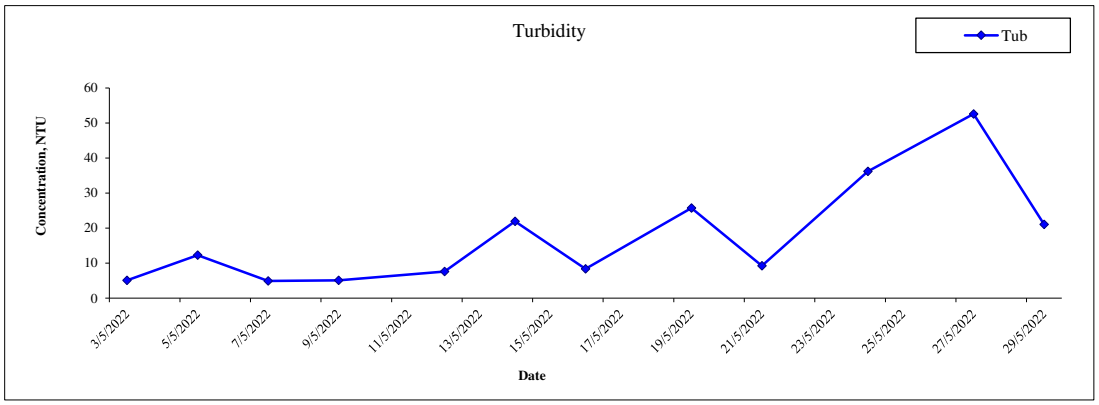


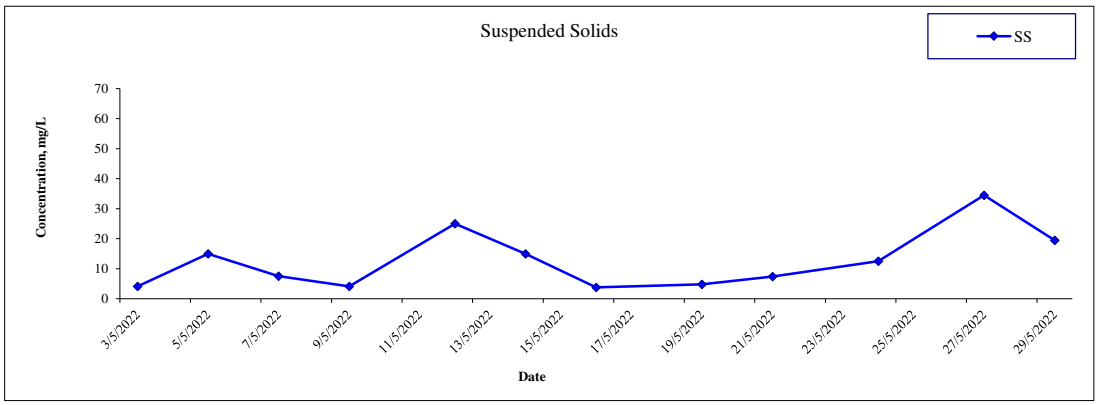


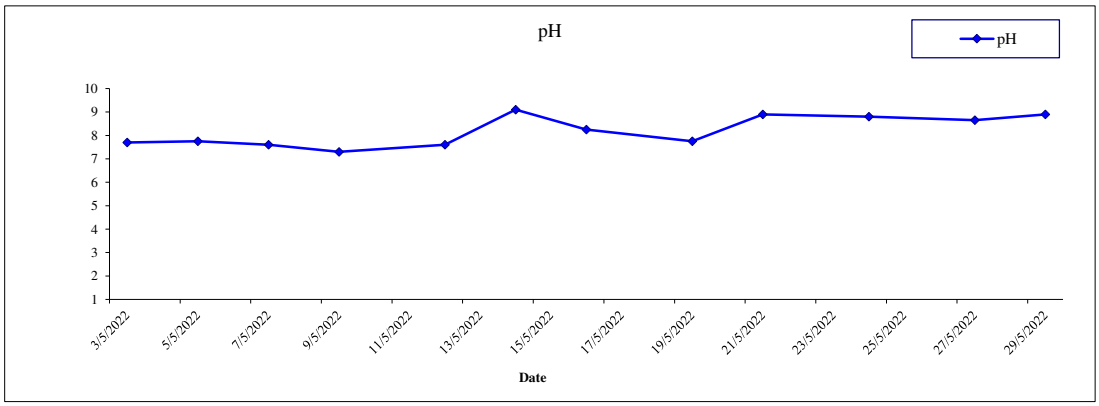


Monitoring Location: U1

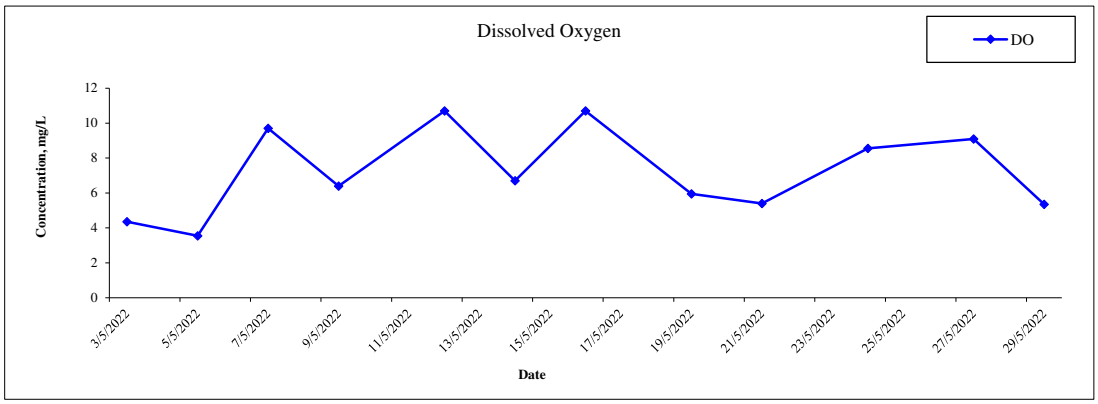


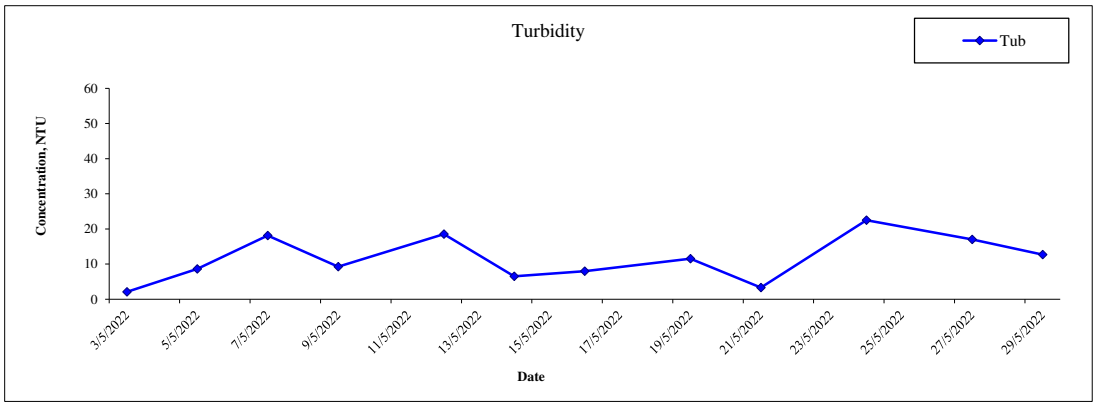


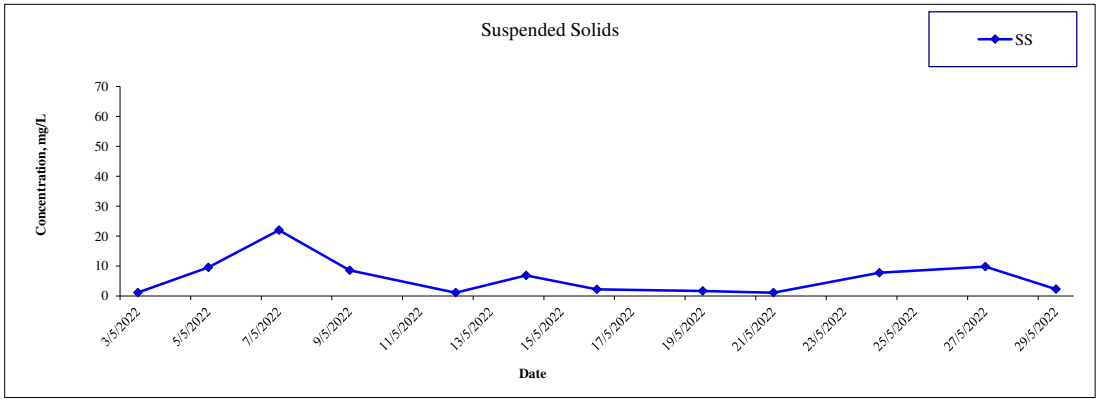


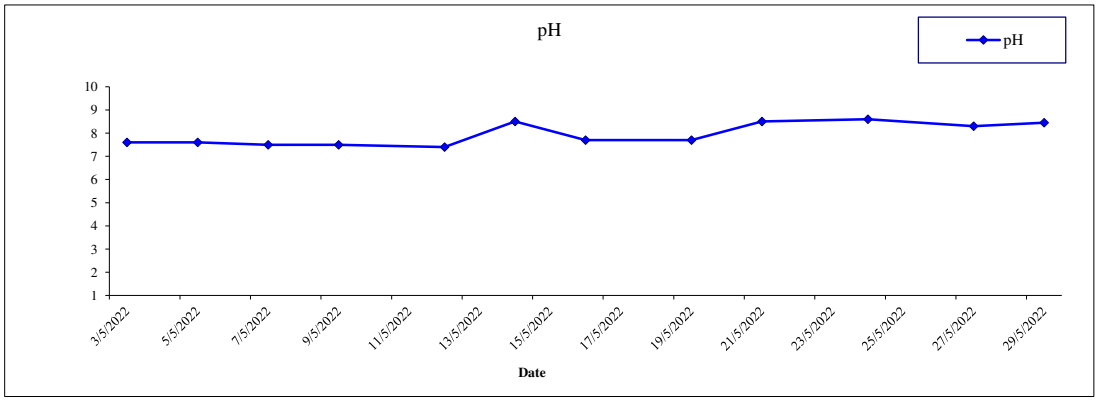


Monitoring Location: SW

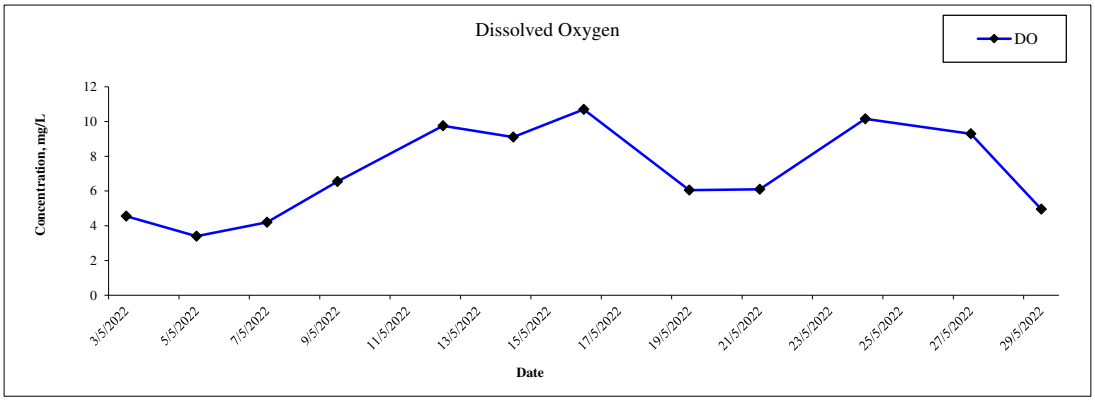


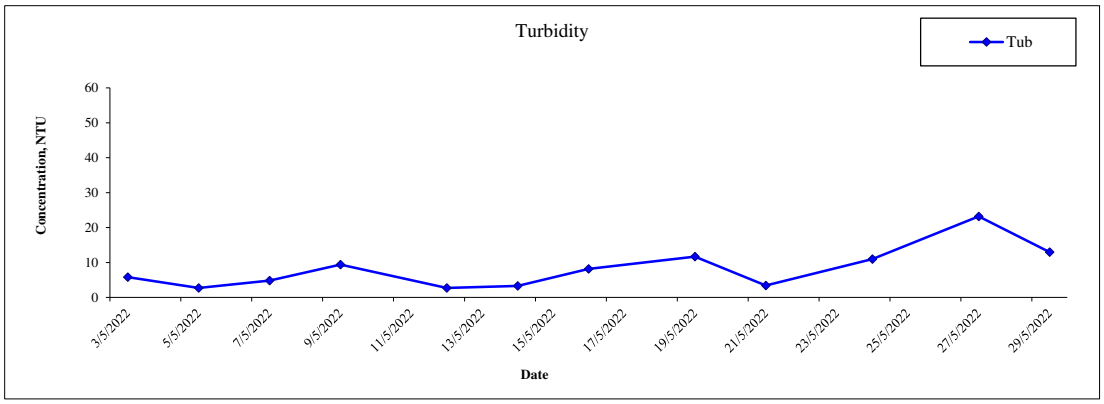


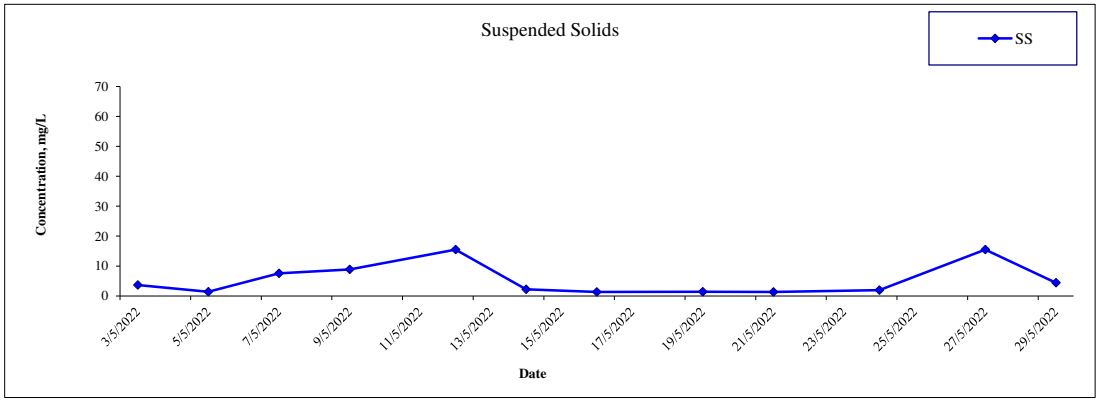


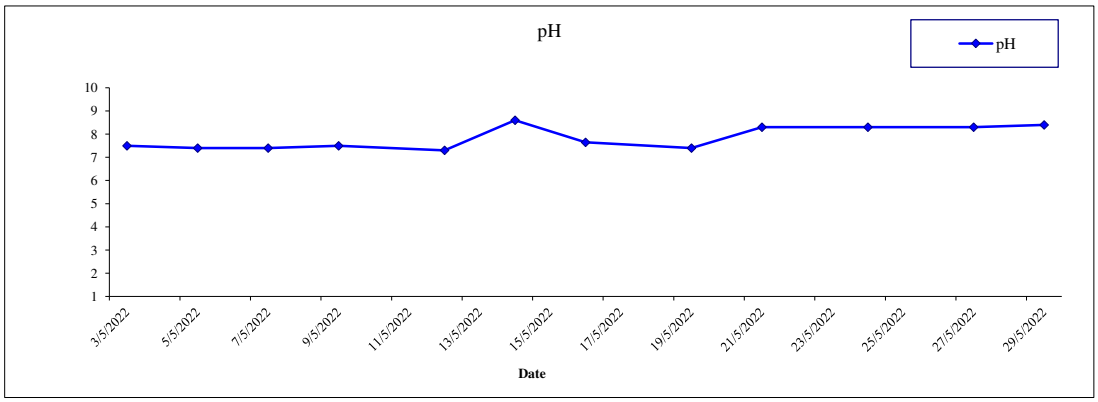


Monitoring Location: U2

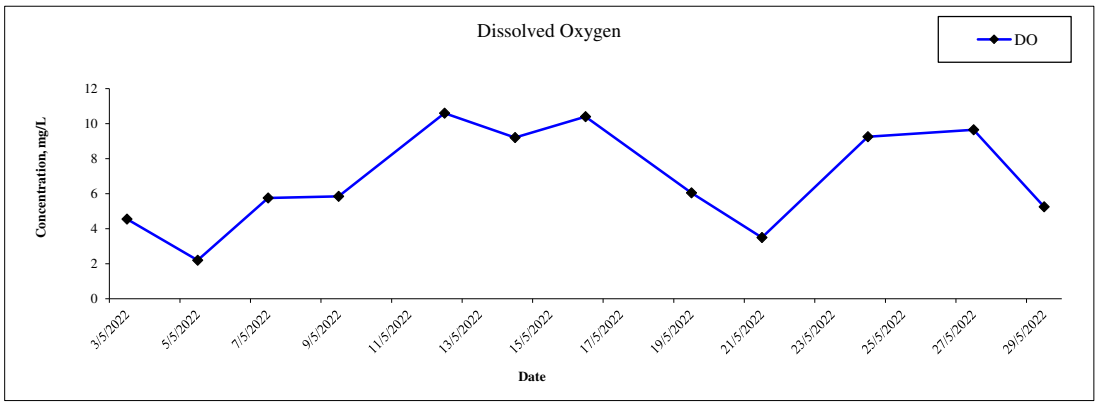


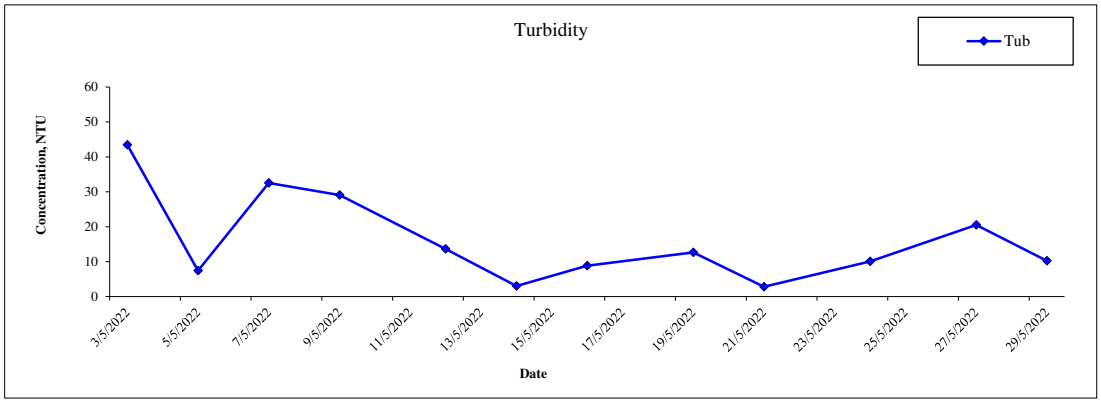


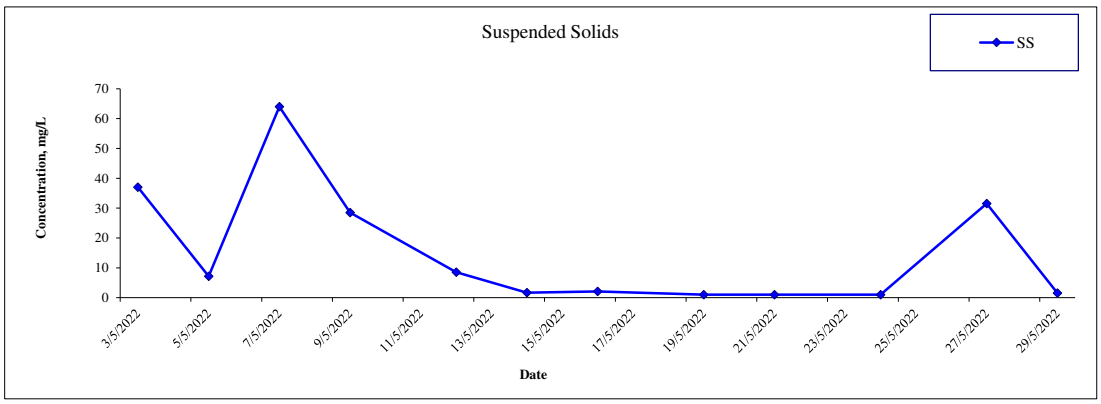


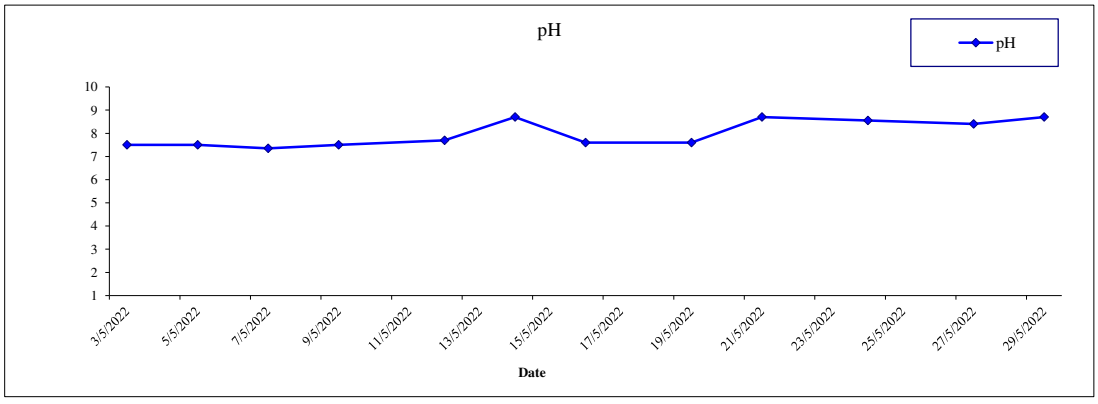


Monitoring Location: HT









Appendix D –
Quality Control Report for Suspended Solids

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Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
Tel: (852) 2333 6823 Fax: (852) 2333 1316

Appendix - Quality Control Summary Table

Project Name: Hung Shui Kiu/Ha Tsuen New Development Area Stage 1 Works

		Method Blank Report		Duplicate Report			Sample Spike Report		Pass / Fail
		MDL	Result	Original Result	Duplicate Result	RPD	Spike concentration	Spike Recovery	
Sampling Date	Unit / Job No.	mg/L	mg/L	mg/L	mg/L	%	mg/L	%	/
03/05/2022	R220707	0.22	0.05	19.81	20.01	-1.0	10	97.6	Pass
05/05/2022	R220721	0.22	0.09	14.00	14.99	-6.8	10	94.9	Pass
07/05/2022	R220724	0.22	0.07	23.97	24.56	-2.4	10	95.5	Pass
09/05/2022	R220760	0.22	0.07	9.02	8.51	5.8	10	97.6	Pass
12/05/2022	R220770	0.22	0.08	15.65	14.99	4.3	10	94.3	Pass
14/05/2022	R220778	0.22	0.12	14.88	15.37	-3.2	10	92.6	Pass
16/05/2022	R220785	0.22	0.10	9.65	9.13	5.5	10	93.3	Pass
19/05/2022	R220789	0.22	0.13	7.09	6.93	2.3	10	95.6	Pass
21/05/2022	R220816	0.22	0.11	5.75	5.34	7.4	10	95.4	Pass
24/05/2022	R220840	0.22	0.09	12.51	13.36	-6.6	10	96.3	Pass
27/05/2022	R220841	0.22	0.11	15.62	16.23	-3.8	10	103.3	Pass
29/05/2022	R220842	0.22	0.09	20.70	19.69	5.0	10	93.9	Pass

Appendix E –

Event and Action Plan

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Table E1 – Event and Action Plan for Air Quality

Event	Action			
	ET	IEC	ER	Contractor
Limit Level being exceeded by one sampling	1. Identify source, investigation the causes of exceedance and propose remedial measure; 2. Inform Contractor, IEC, ER, and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; and 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 proposed remedial measures 4. Advise the ER on the effectiveness of proposed remedial measure; and 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measure properly implemented.	1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to ER with a copy to ET and IEC within three working days of notification; 4. Implement the agreed proposals; and 5. Amend proposal if appropriate.
Limit Level being exceeded by two or more consecutive sampling	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 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; and 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by the ET; 2. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; and 4. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; and 4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Identify source(s) and investigate the causes of exceedance; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial measures to the ER with a copy to the IEC and ET within three working days of notification; 4. Implement the agreed proposals; 5. Revise and resubmit proposals if problem still not under control; and 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

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Table E2 Event and Action Plan for Water Quality

Event	Action			
	ET	IEC	ER	Contractor
Action Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented;	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; 6. Implement the agreed mitigation measures.
Action Level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC and Contractor; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IEC and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurement on next day of exceedance.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.

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Event	Action			
	ET	IEC	ER	Contractor
Limit Level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor 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.	1. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented 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. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit Level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor 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. Discuss with ET and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; 3. Assess the effectiveness of the implemented 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. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level.	1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities.

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Appendix F –

HOKLAS Laboratory Certificate

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Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ACUMEN LABORATORY AND TESTING LIMITED
浩科檢測中心有限公司

Flat/Rm D, 12/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong
香港九龍長沙灣永康街37-39號福源廣場12樓D室

is accredited by the Hong Kong Accreditation Service (HKAS) to ISO/IEC 17025:2017
for performing specific laboratory activities as listed in the scope of accreditation within the test category of
獲香港認可處根據ISO/IEC 17025:2017認可
進行載於認可範圍內下述測試類別中的指定實驗所活動

Environmental Testing
環境測試

This accreditation to ISO/IEC 17025:2017 demonstrates technical competence for a defined scope and the implementation of a management system relevant to laboratory operation (see joint IAF-ILAC-ISO Communiqué).
此項 ISO/IEC 17025:2017 的認可資格證明此實驗所具備指定範疇內所須的技術能力並實施一套與實驗所運作相關的管理體系
(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

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

SHUM Wai-leung, Executive Administrator
執行幹事 沈偉良
Issue Date : 15 November 2021
簽發日期：二零二一年十一月十五日

Registration Number : HOKLAS 241
註冊號碼：

Date of First Registration : 16 July 2014
首次註冊日期：二零一四年七月十六日

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

L 002316

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Appendix G –

Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

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Appendix G – Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

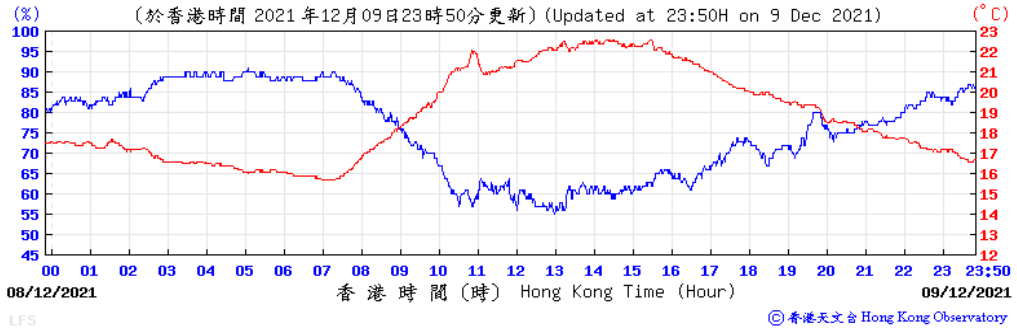
Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
9 December 2021	18.8	76	-	080	8.6
10 December 2021	19.8	74	-	080	11.5
11 December 2021	20.1	76	-	070	12.1
12 December 2021	20.6	74	-	080	11.5
13 December 2021	17.0	61	-	040	13.9
14 December 2021	20.9	68	-	070	9.1
15 December 2021	20.8	82	0.5	070	11.1
16 December 2021	22.4	86	0.5	080	8.8
17 December 2021	20.6	69	-	030	17.7
18 December 2021	16.8	55	-	040	18.9
19 December 2021	16.5	44	-	030	14.9
20 December 2021	15.3	76	11.5	050	13.4
21 December 2021	15.0	97	13.5	360	11.0
22 December 2021	18.5	81	-	360	7.0
3 May 2022	21.4	68	-	070	10.2
5 May 2022	24.5	73	-	140	10.6
7 May 2022	24.3	84	1.5	080	9.3
9 May 2022	25.2	79	-	070	7.8
12 May 2022	24.2	99	141.5	150	11.4
14 May 2022	23.7	97	4.0	080	8.8
16 May 2022	19.1	89	5.5	050	13.5
19 May 2022	25.2	65	-	070	10.2
21 May 2022	26.0	81	-	140	9.7

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
24 May 2022	25.6	88	-	080	15.6
27 May 2022	25.8	95	23.0	150	6.6
29 May 2022	28.5	83	-	150	14.3

Noted: The above information was extracted from the daily weather summary by Hong Kong.

9-Dec-21

Temperature/ Humidity



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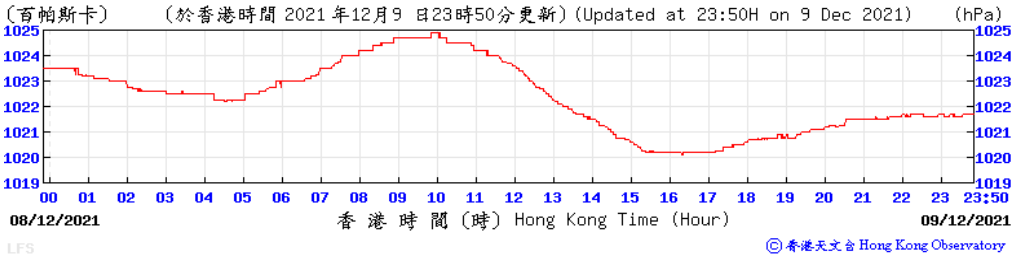
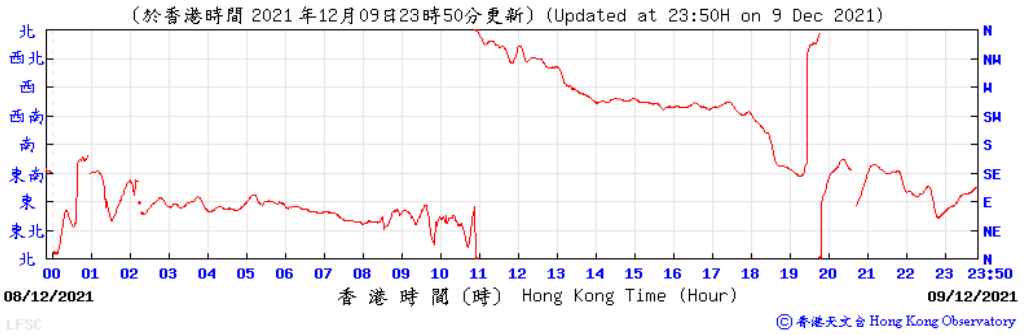
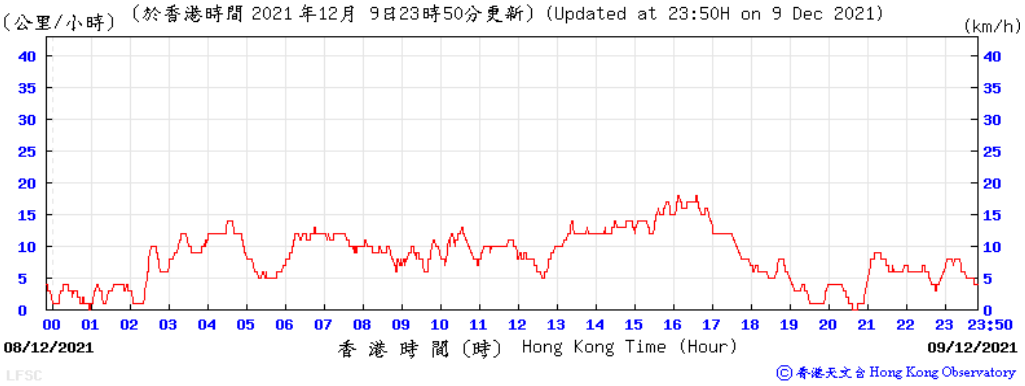


Wind Direction

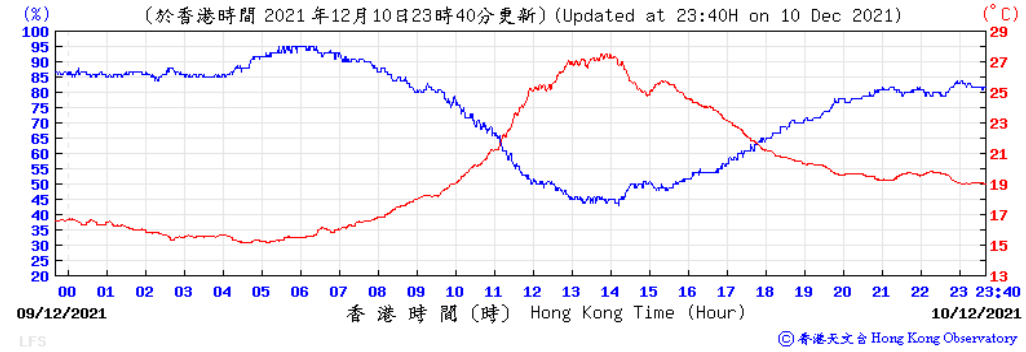


Wind Speed



10-Dec-21

Temperature/ Humidity



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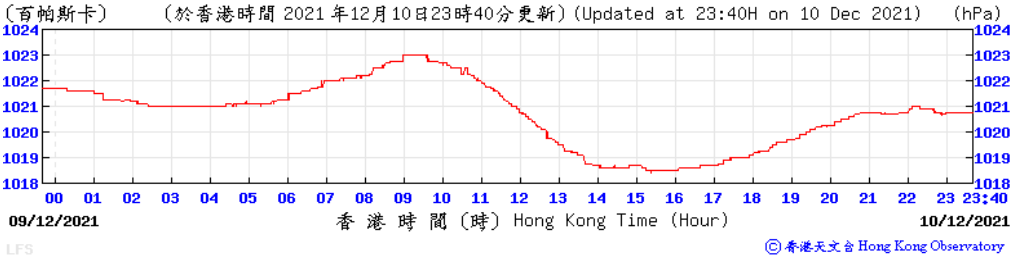

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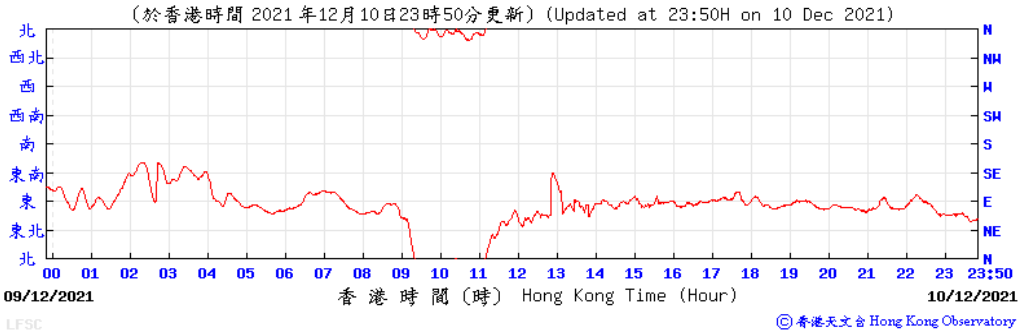

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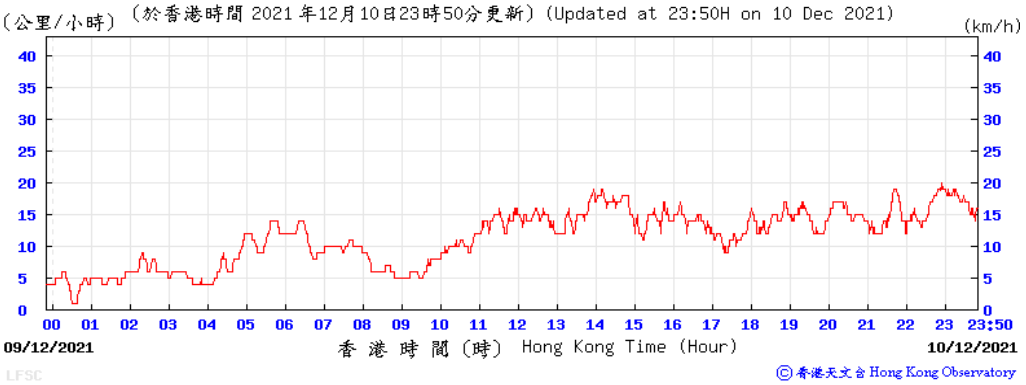
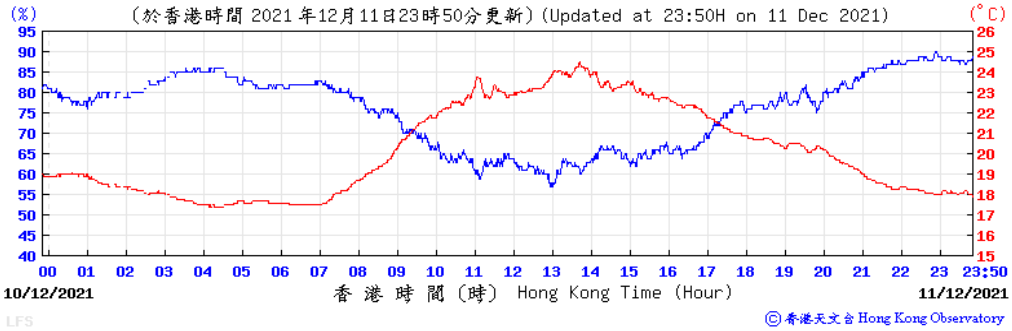


Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kui/ Ha Tsuen
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

11-Dec-21

Temperature/ Humidity



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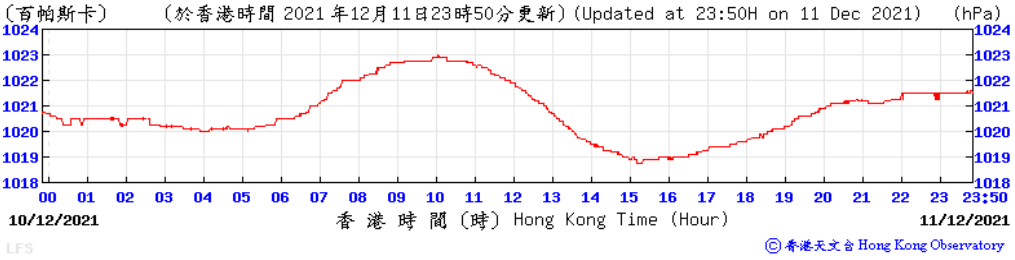

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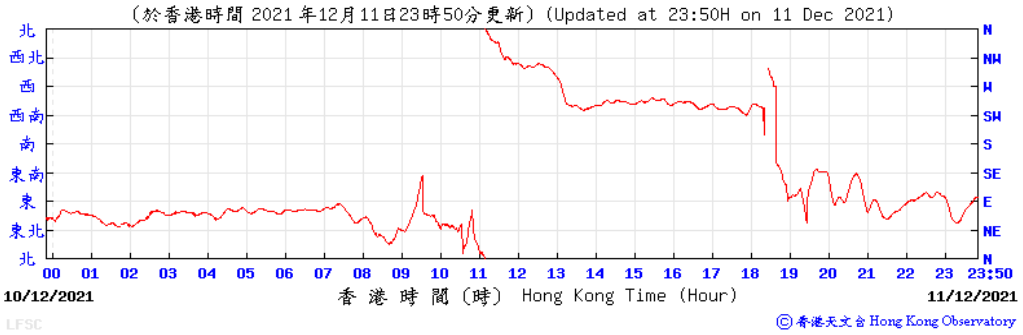

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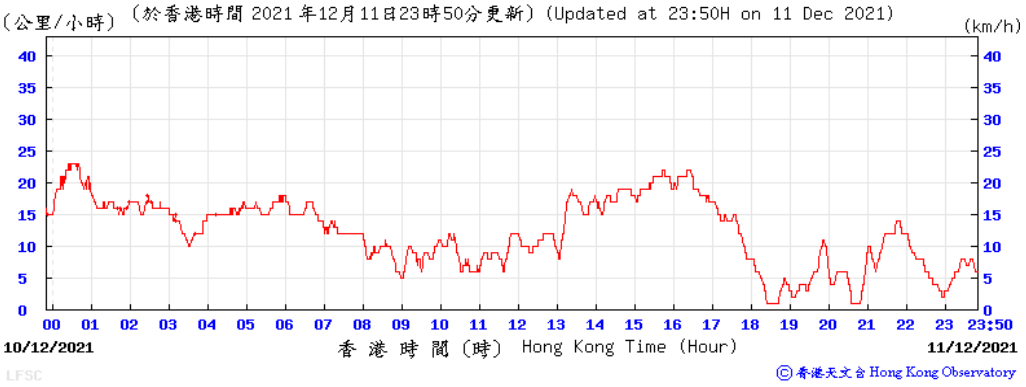
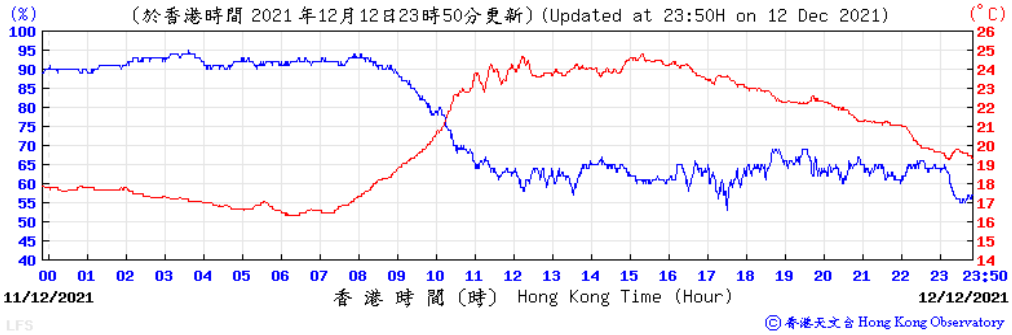


Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kui/ Ha Tsuen
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

12-Dec-21

Temperature/ Humidity



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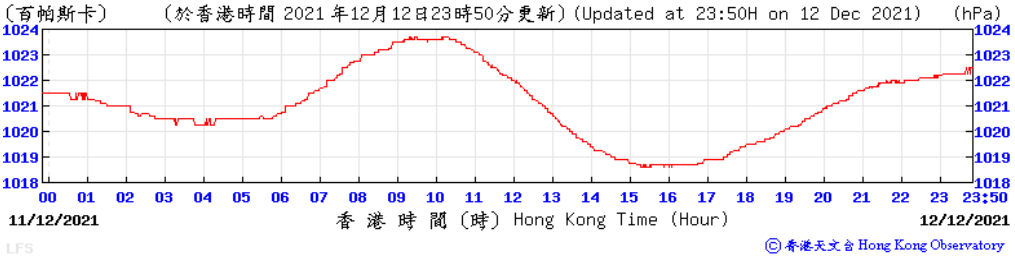

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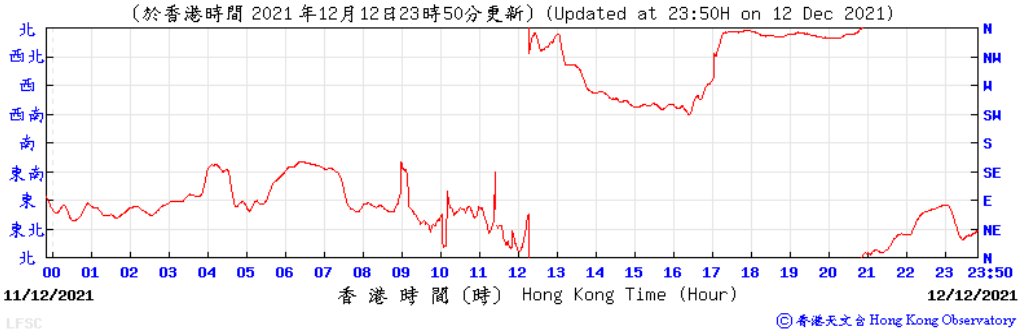

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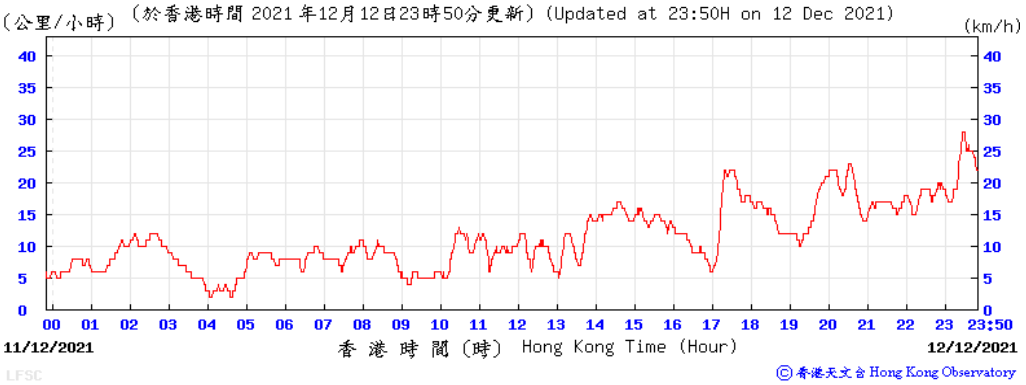
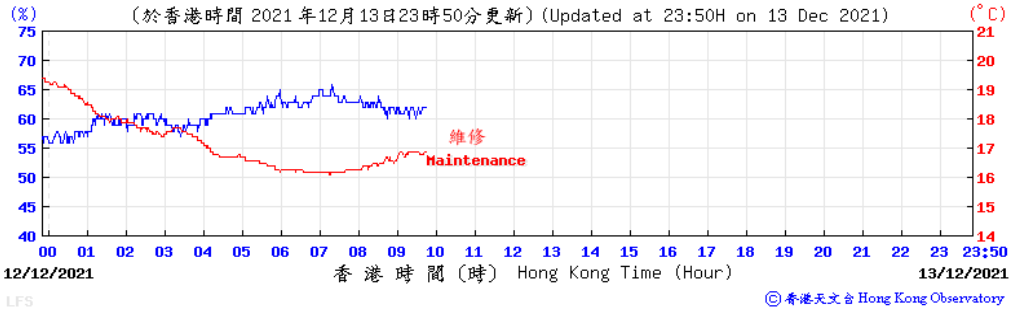


13-Dec-21

Temperature/ Humidity



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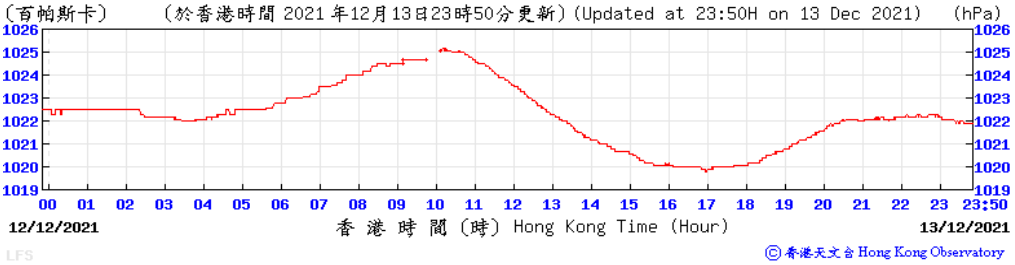

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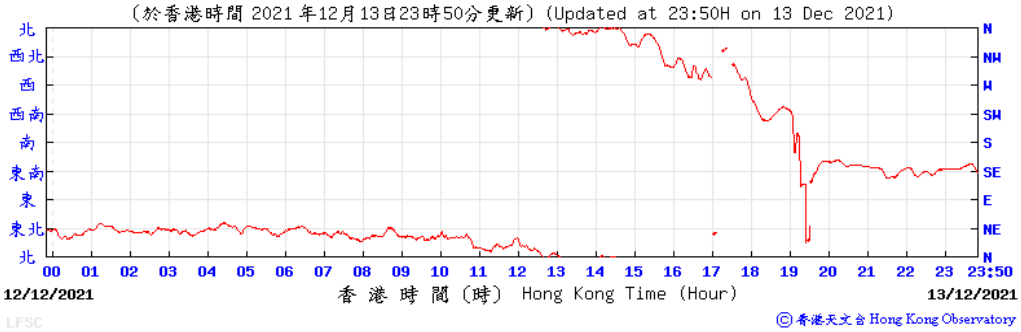

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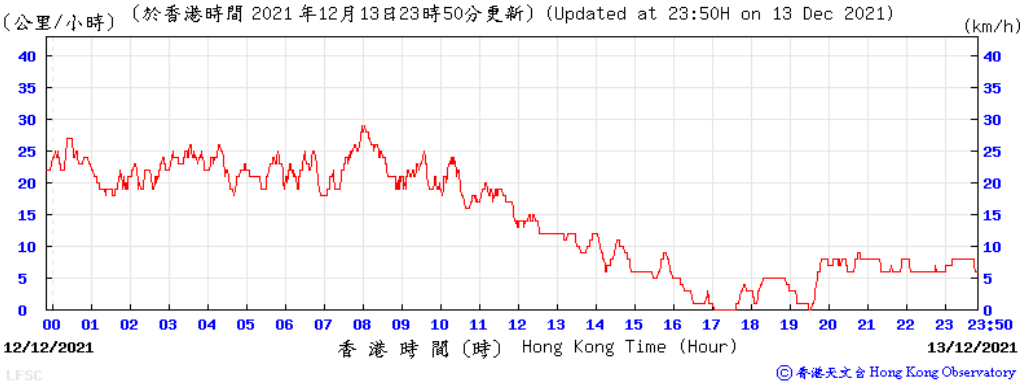

14-Dec-21

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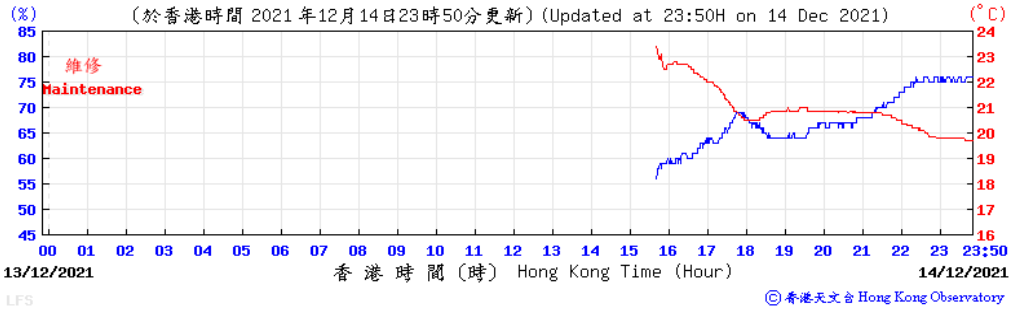

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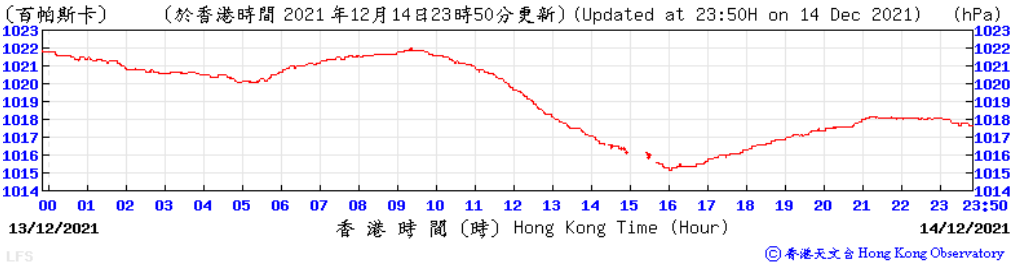

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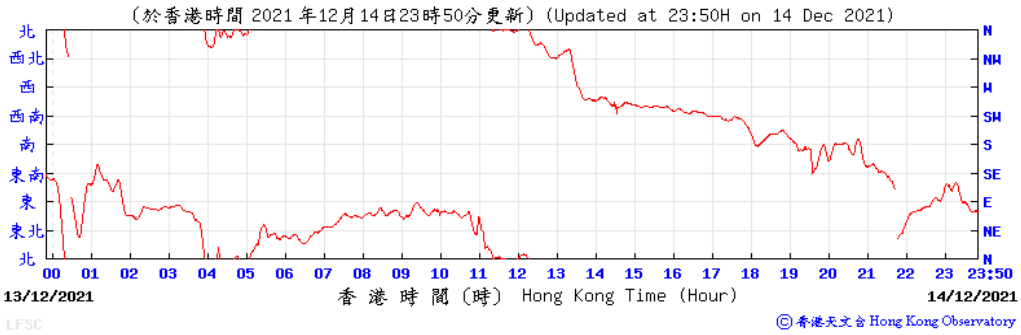

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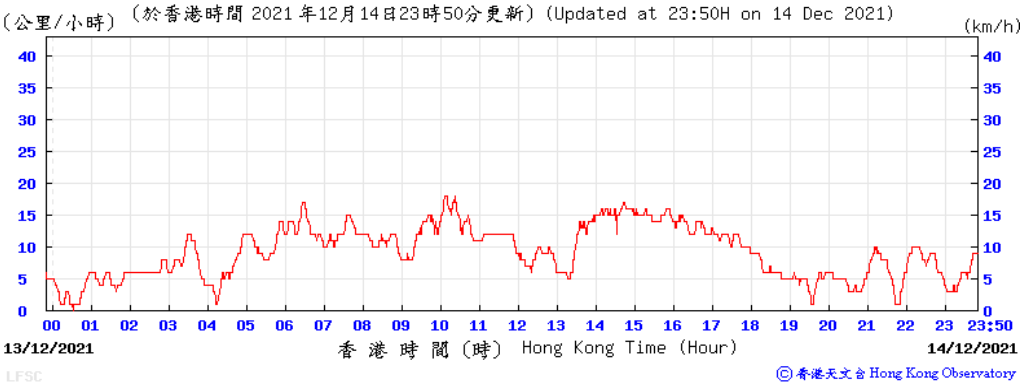
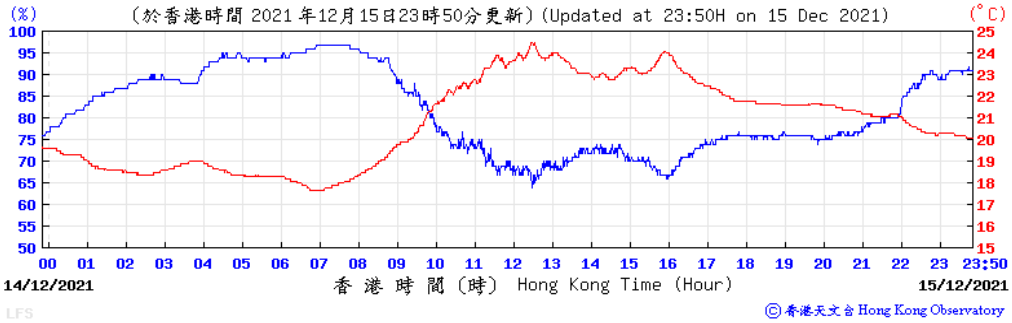


Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kui/ Ha Tsuen
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

15-Dec-21

Temperature/ Humidity



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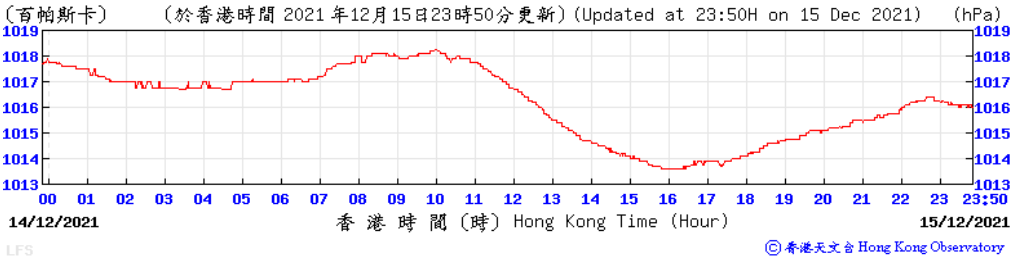

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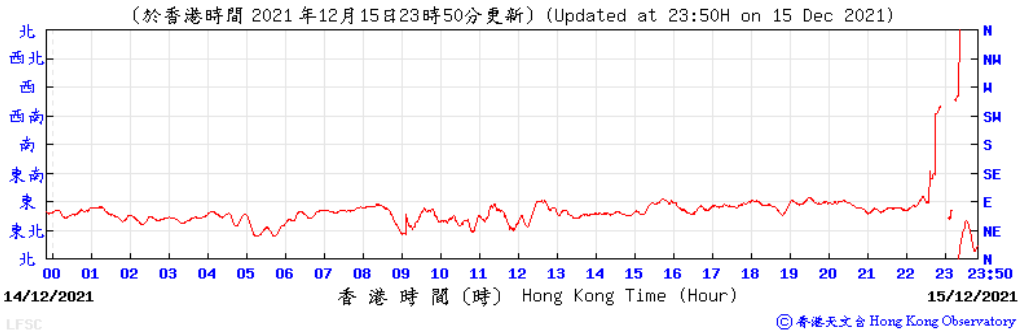

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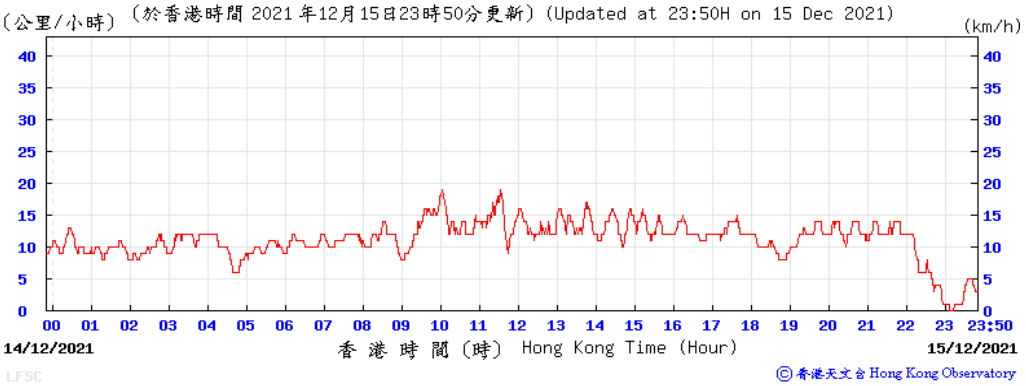
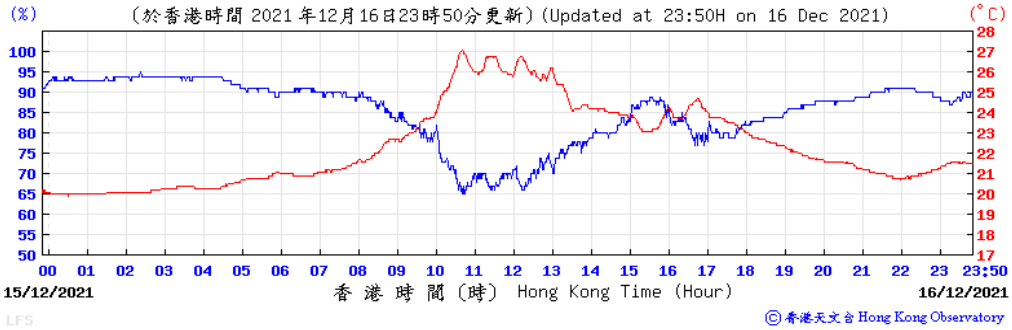


Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kui/ Ha Tsuen
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

16-Dec-21

Temperature/ Humidity



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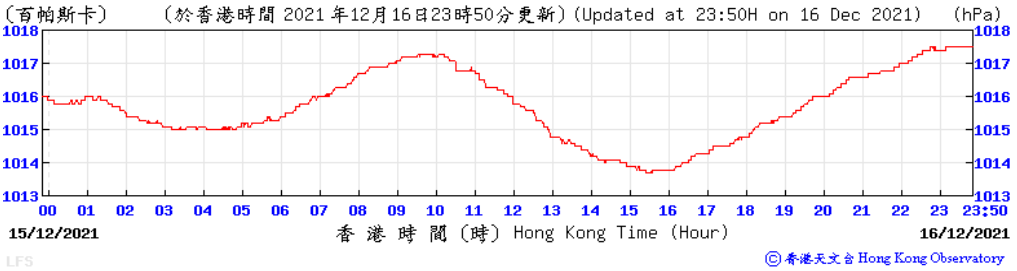

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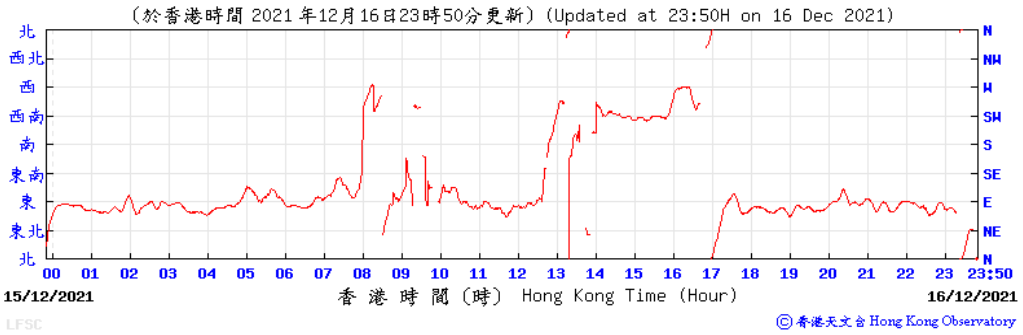

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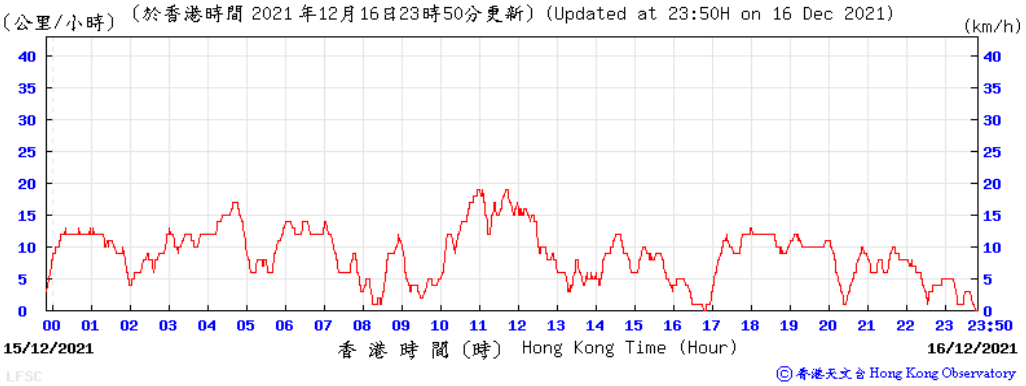

Service Contract No. WD/02/2021
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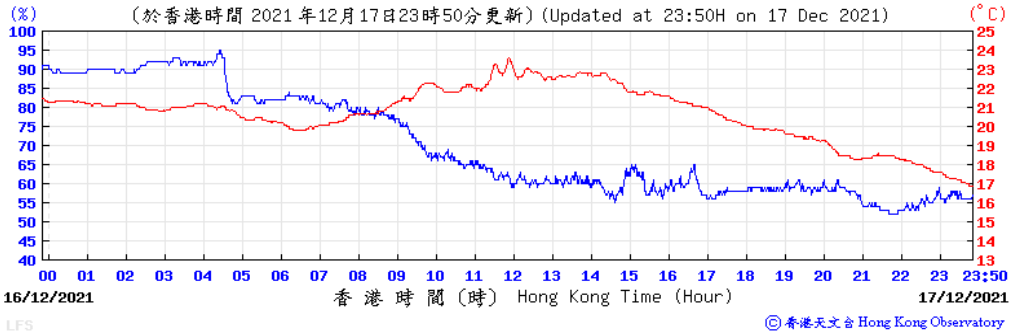
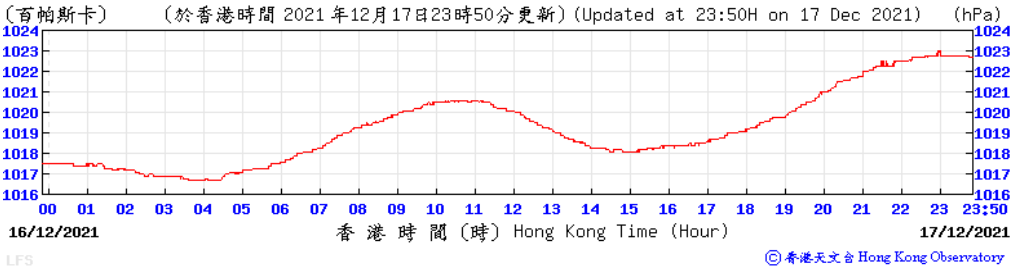
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

17-Dec-21

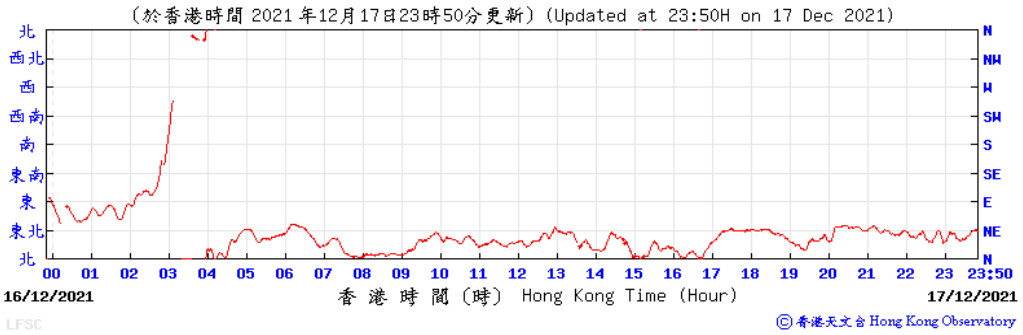
Temperature/ Humidity



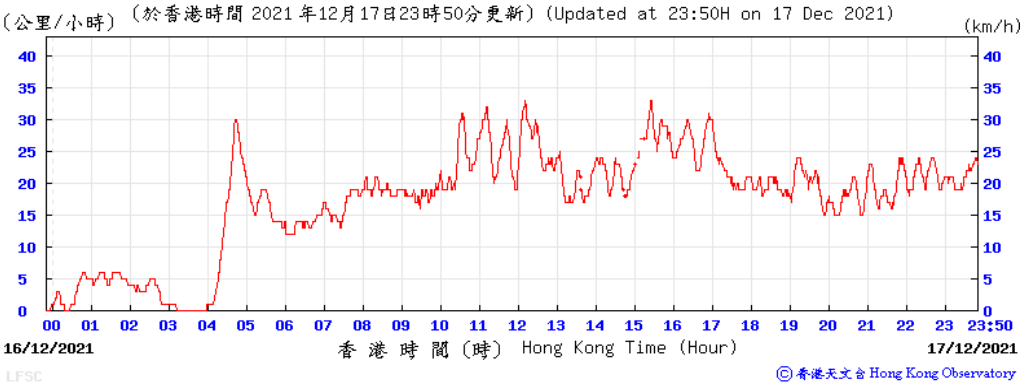
Pressure



Wind Direction

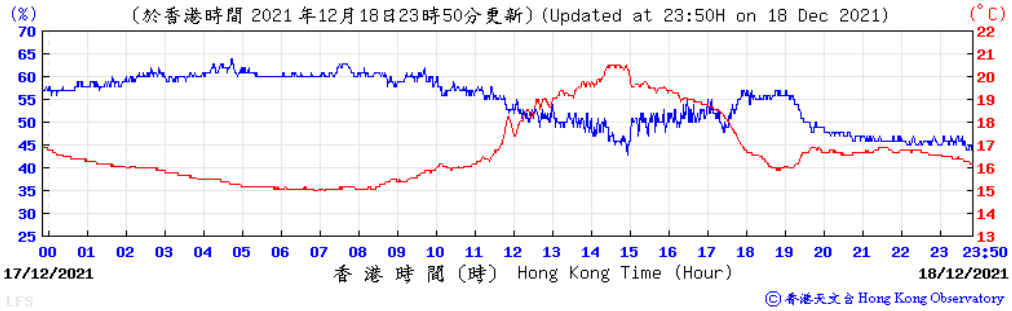


Wind Speed

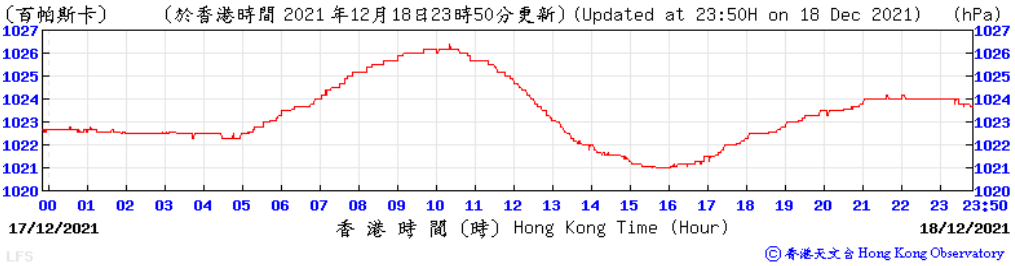


18-Dec-21

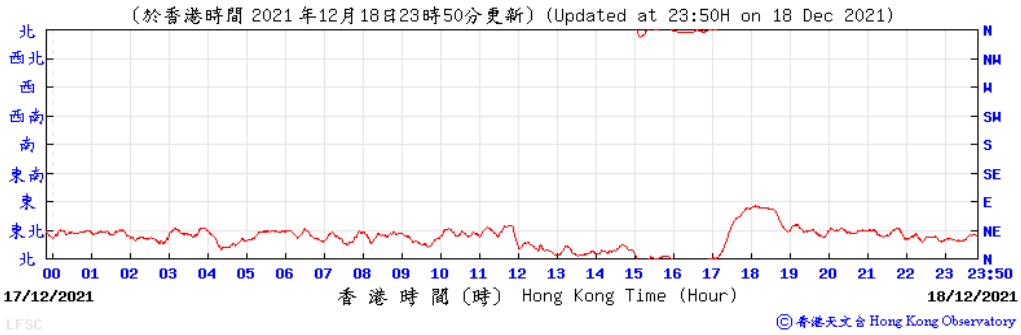
Temperature/ Humidity



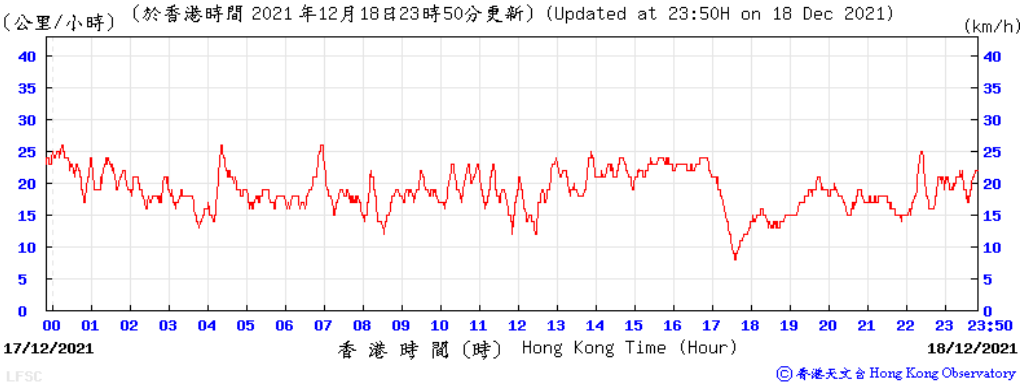
Pressure



Wind Direction

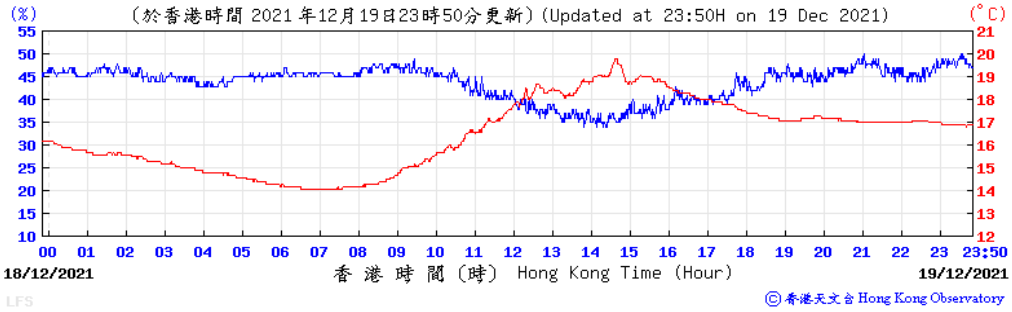


Wind Speed

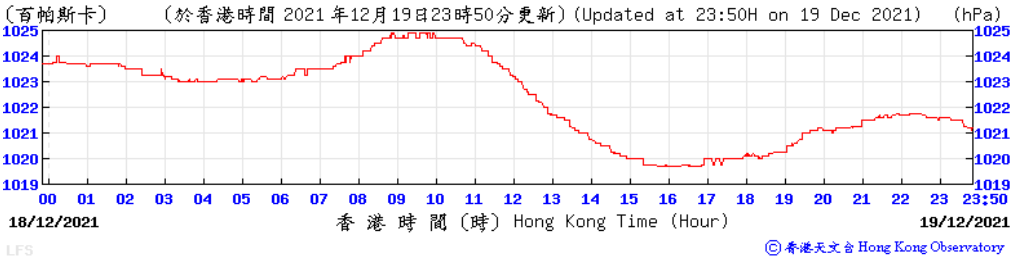


19-Dec-21

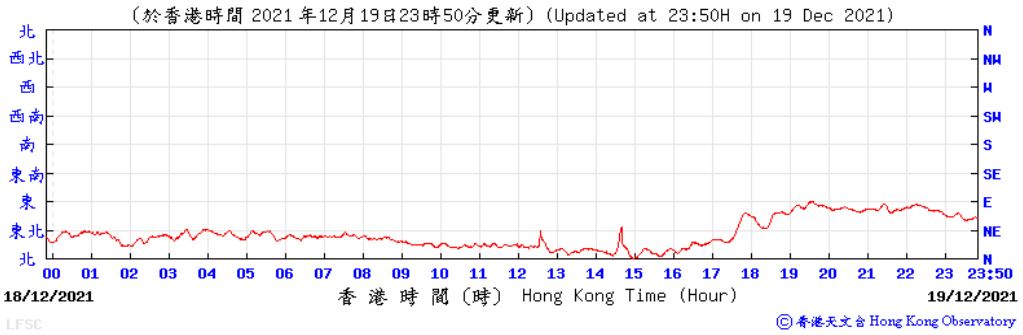
Temperature/ Humidity



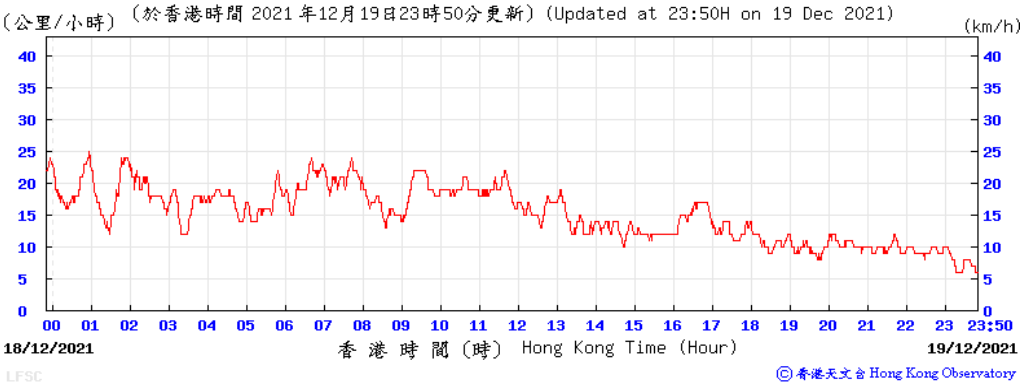
Pressure



Wind Direction



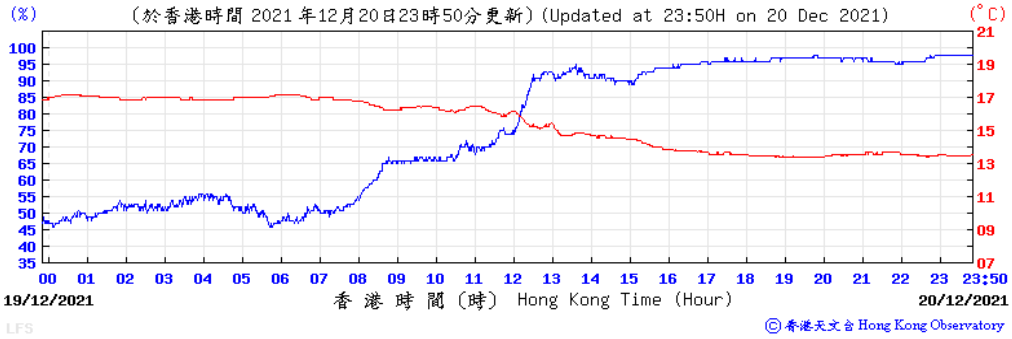
Wind Speed



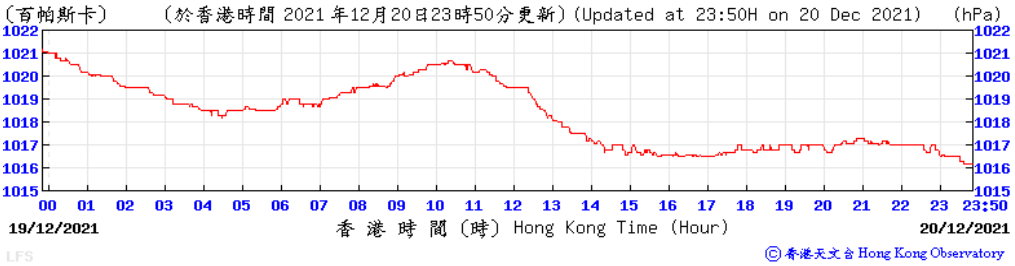
Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kui/ Ha Tsuen
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

20-Dec-21

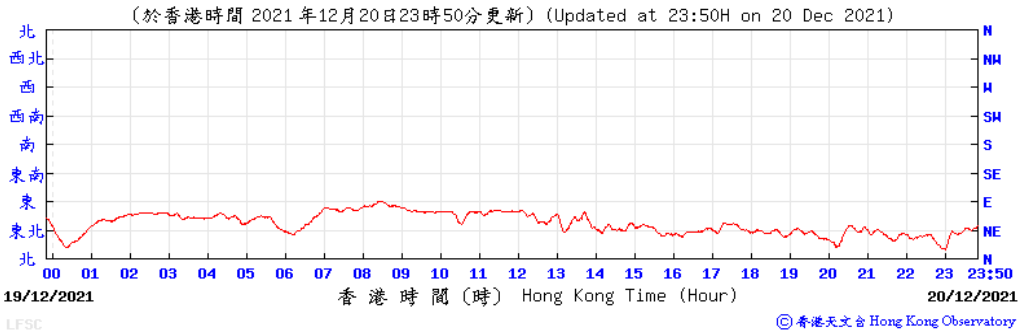
Temperature/ Humidity



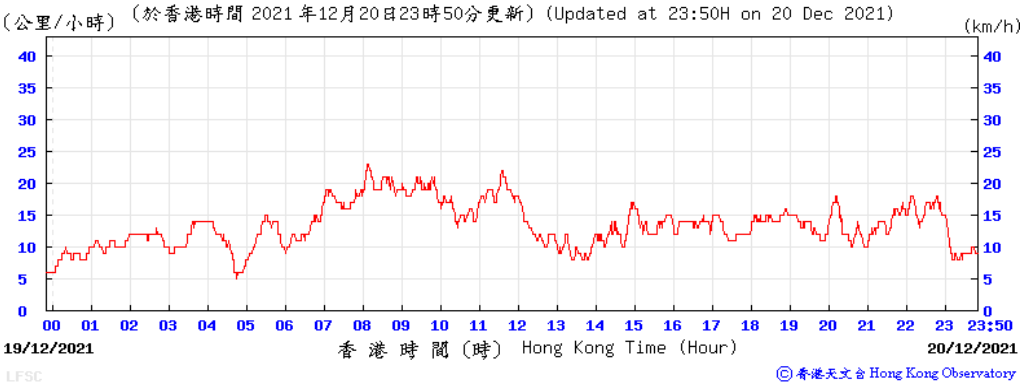
Pressure



Wind Direction



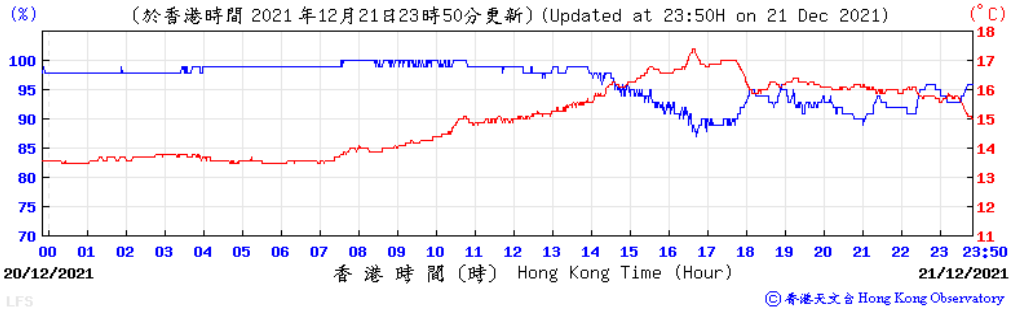
Wind Speed



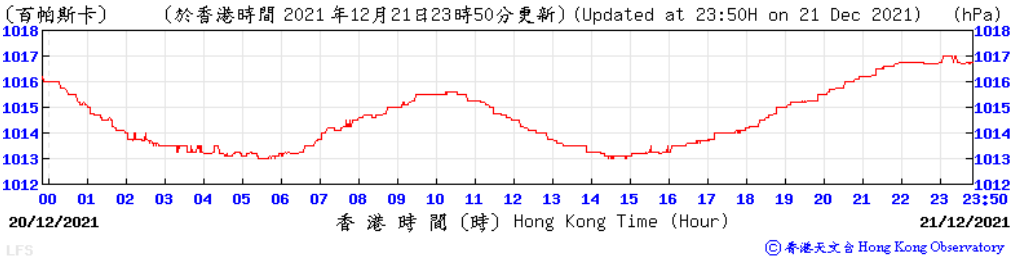
Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kui/ Ha Tsuen
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

21-Dec-21

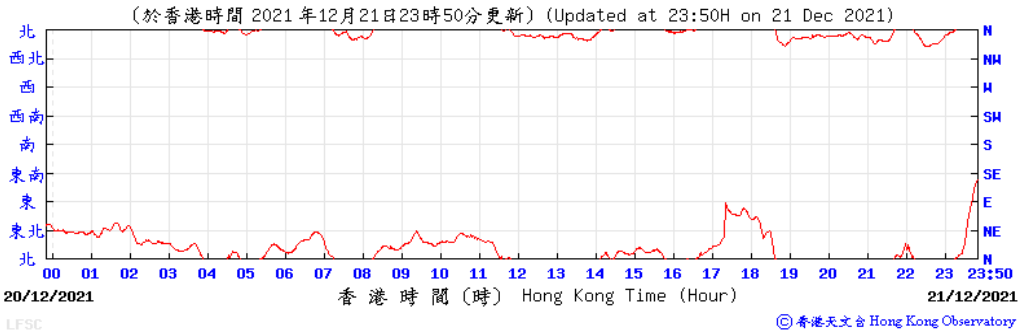
Temperature/ Humidity



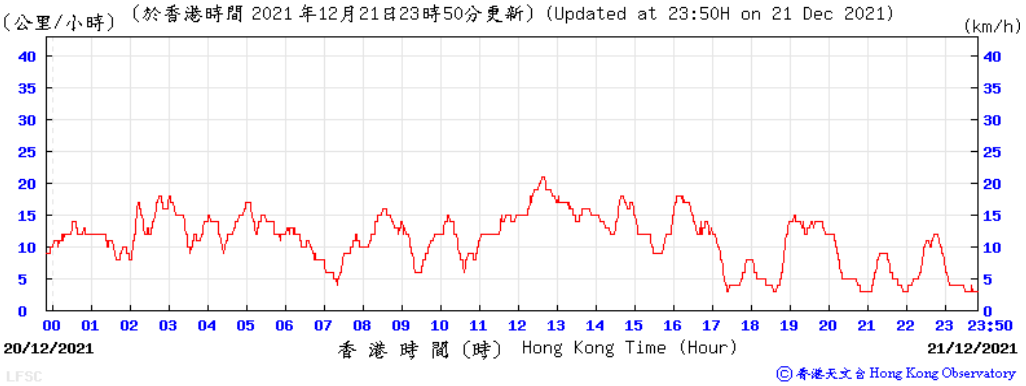
Pressure



Wind Direction

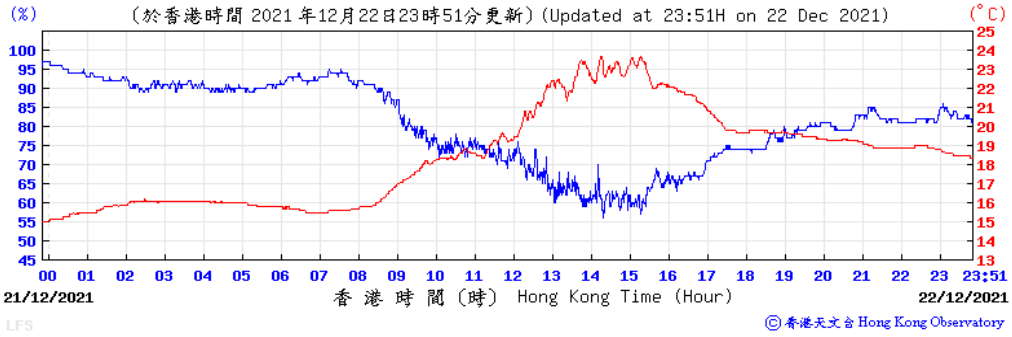


Wind Speed

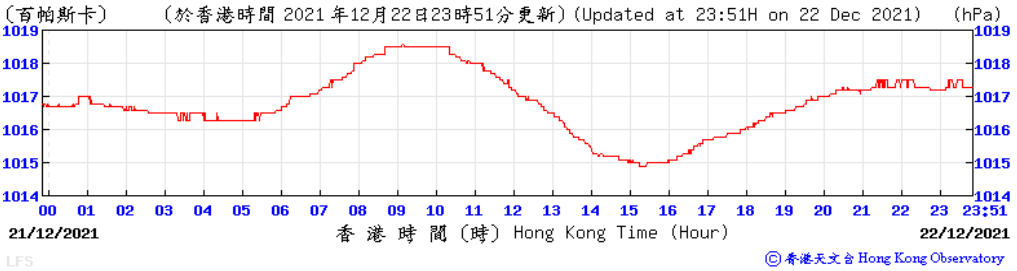


22-Dec-21

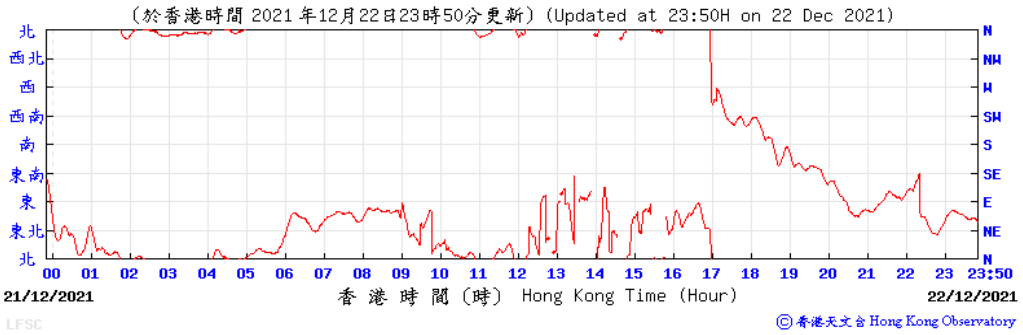
Temperature/ Humidity



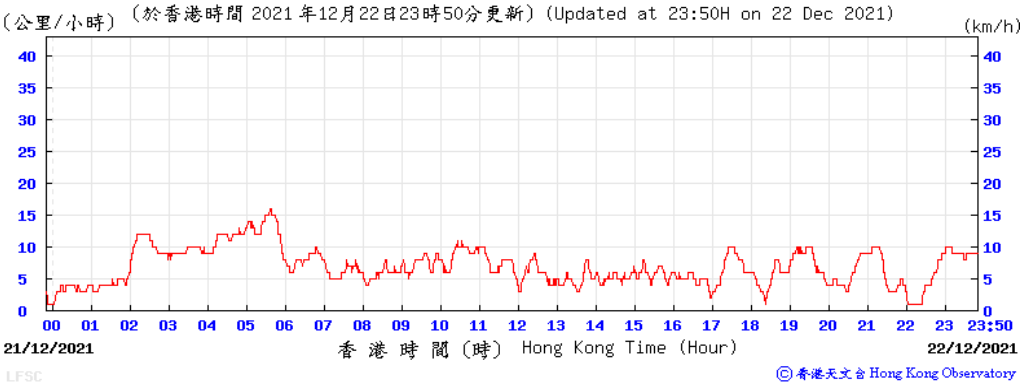
Pressure



Wind Direction

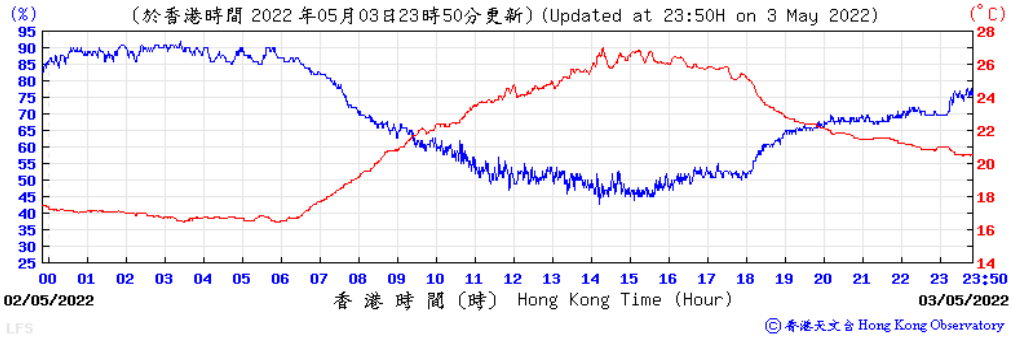


Wind Speed

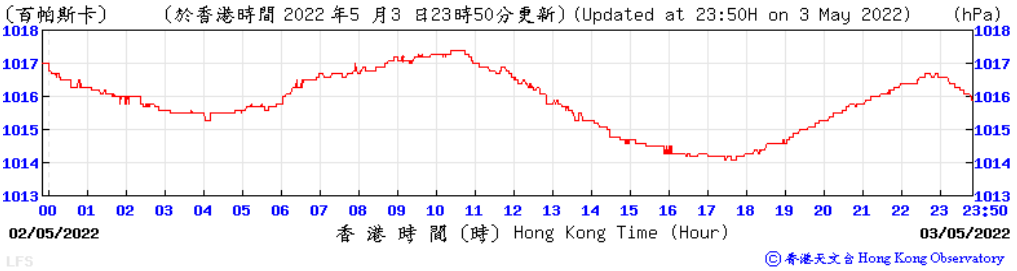


3-May-22

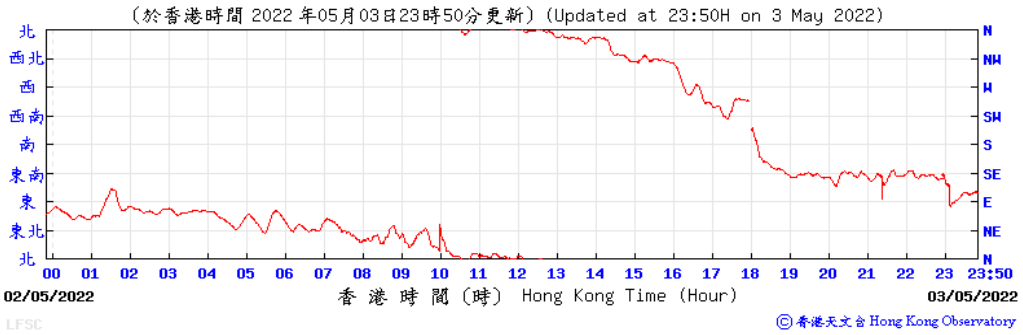
Temperature/ Humidity



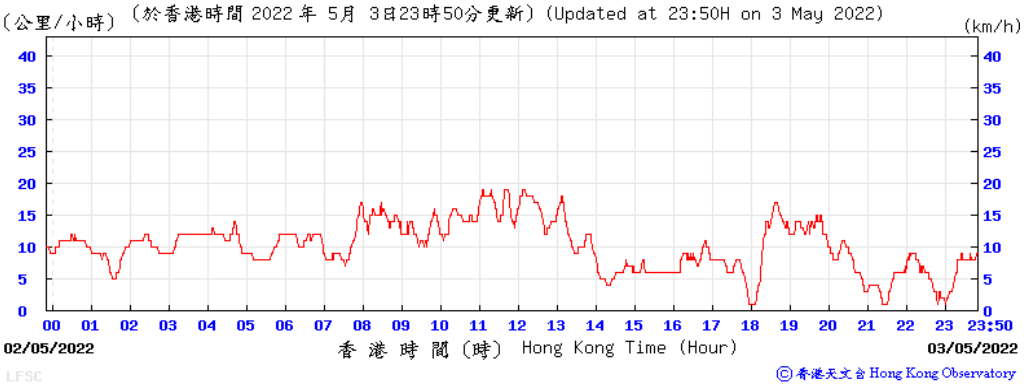
Pressure



Wind Direction

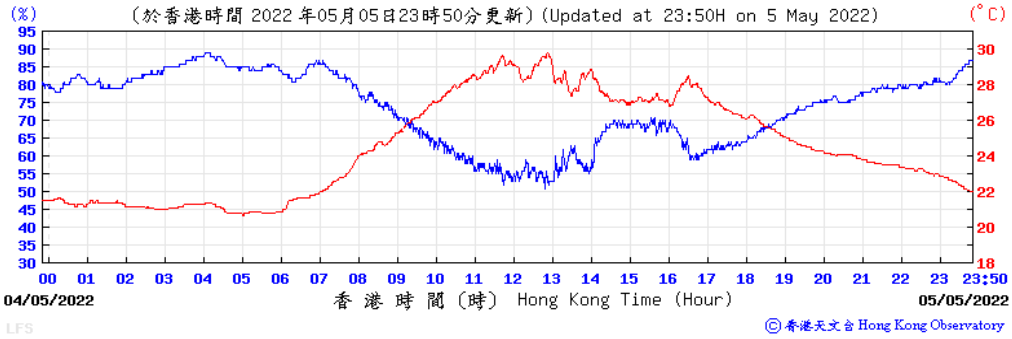


Wind Speed

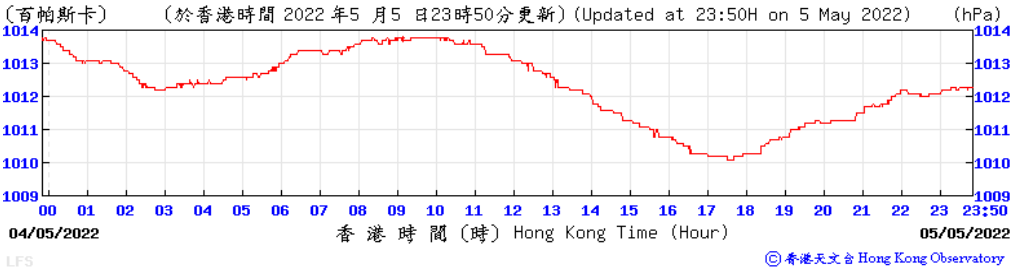


5-May-22

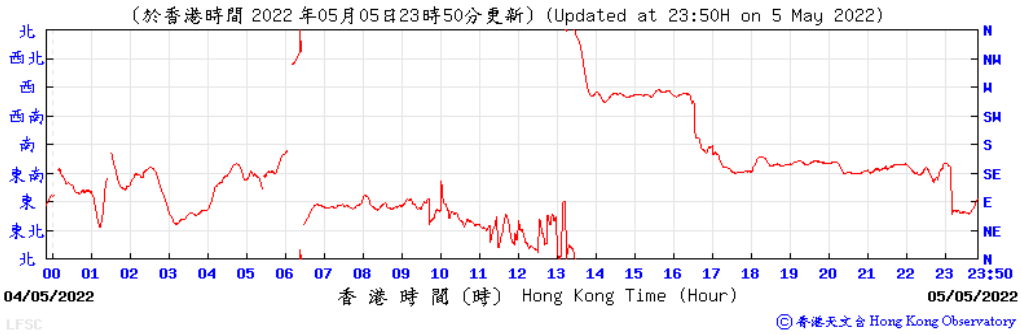
Temperature/ Humidity



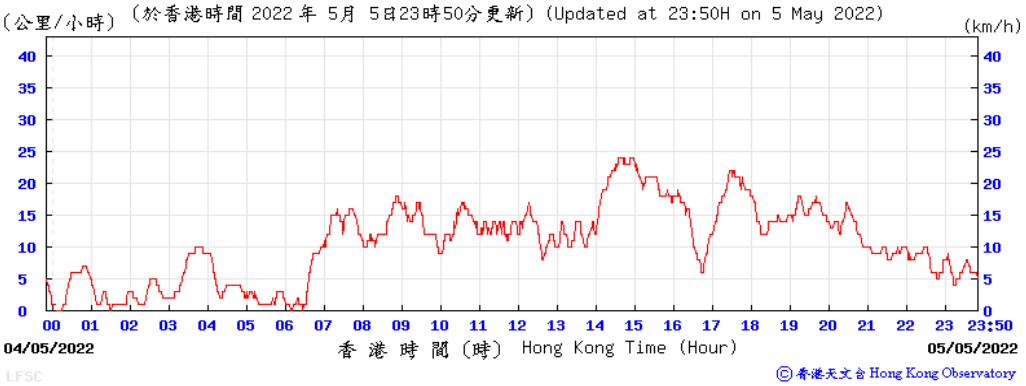
Pressure



Wind Direction

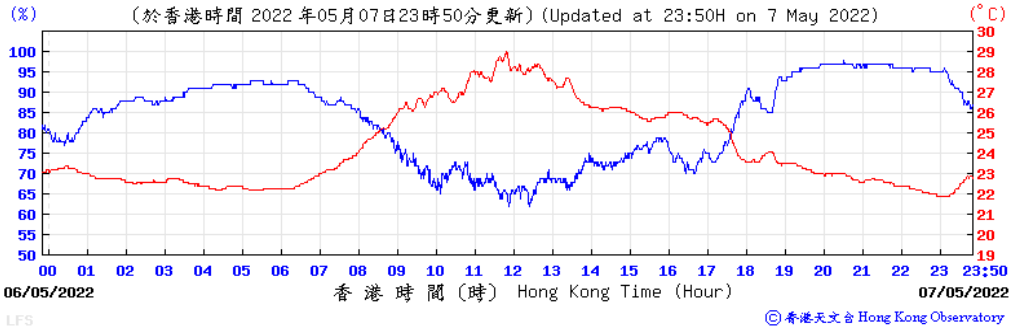


Wind Speed

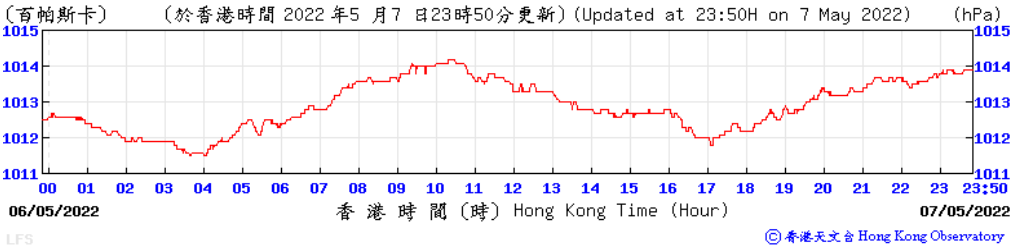


7-May-22

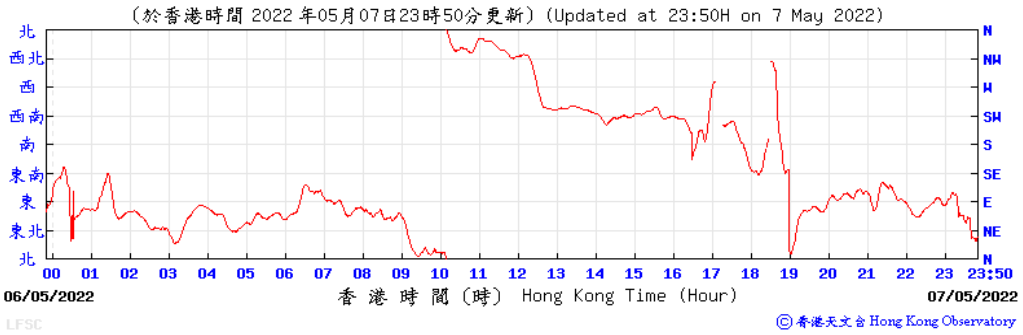
Temperature/ Humidity



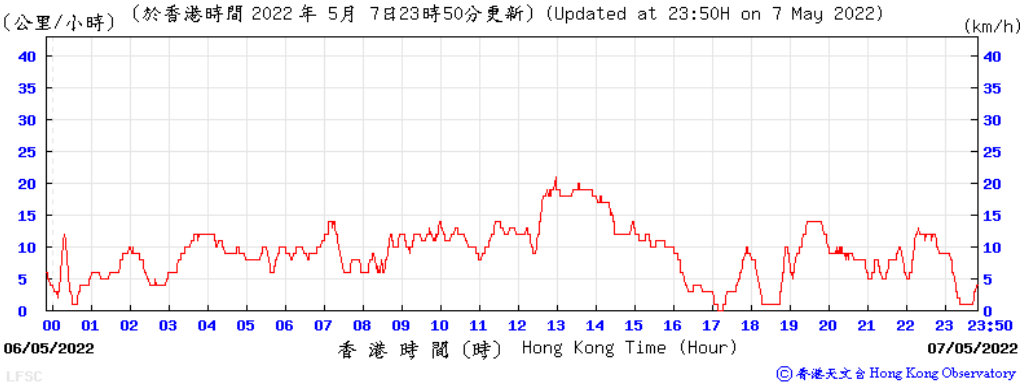
Pressure



Wind Direction

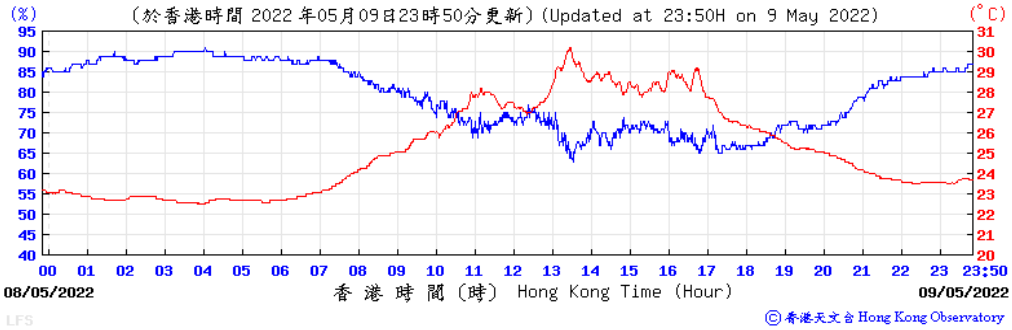


Wind Speed

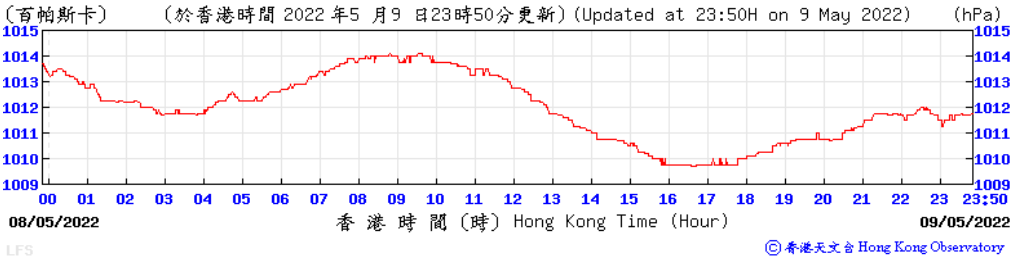


9-May-22

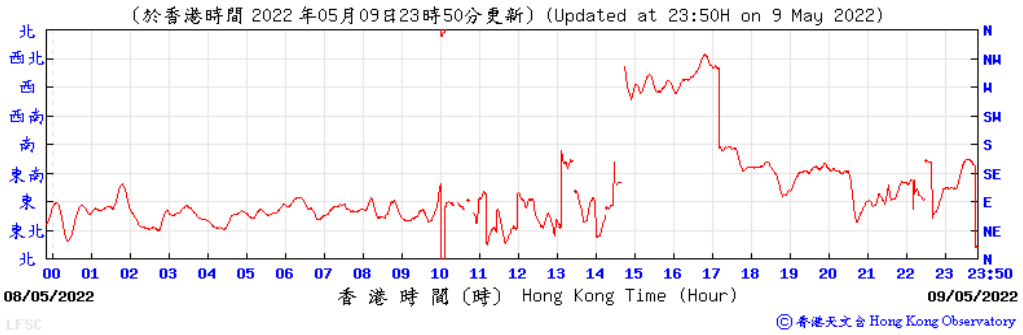
Temperature/ Humidity



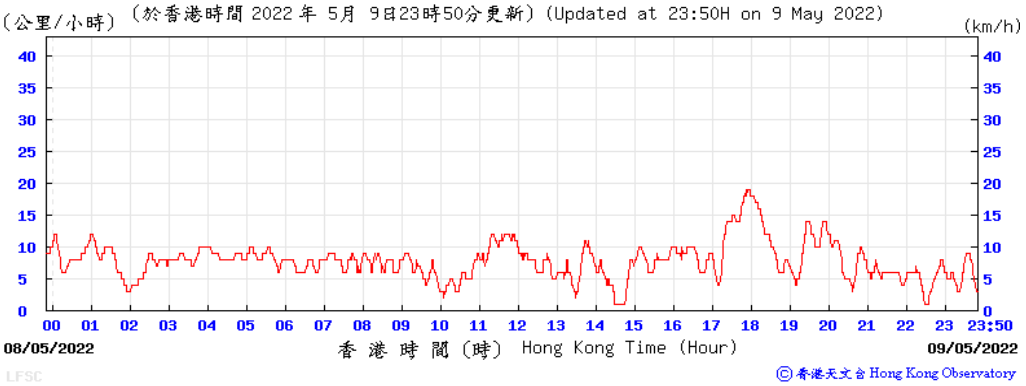
Pressure



Wind Direction



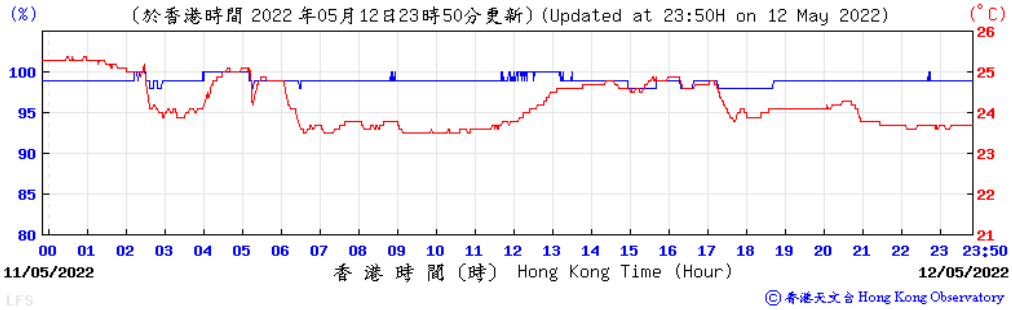
Wind Speed



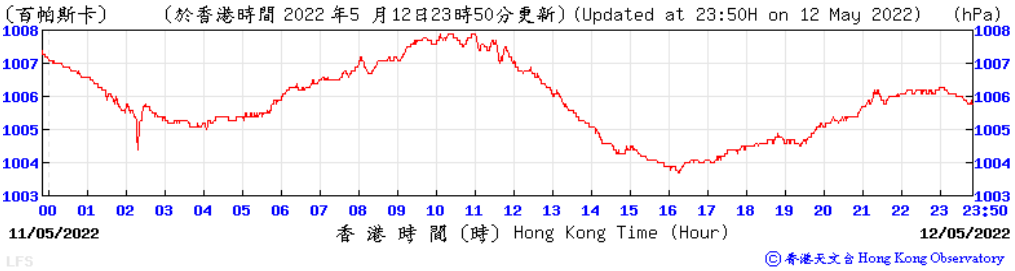
Service Contract No. WD/02/2021
Environmental Team for Hung Shui Kui/ Ha Tsuen
New Development Are Stage 1 Works - Site Formation and Engineering Infrastructure
Extract of Meteorological Observations for Hong Kong – Lau Fau Shan

12-May-22

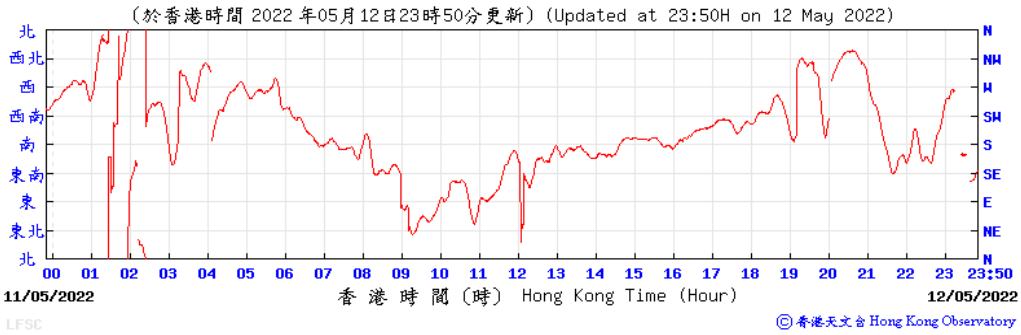
Temperature/ Humidity



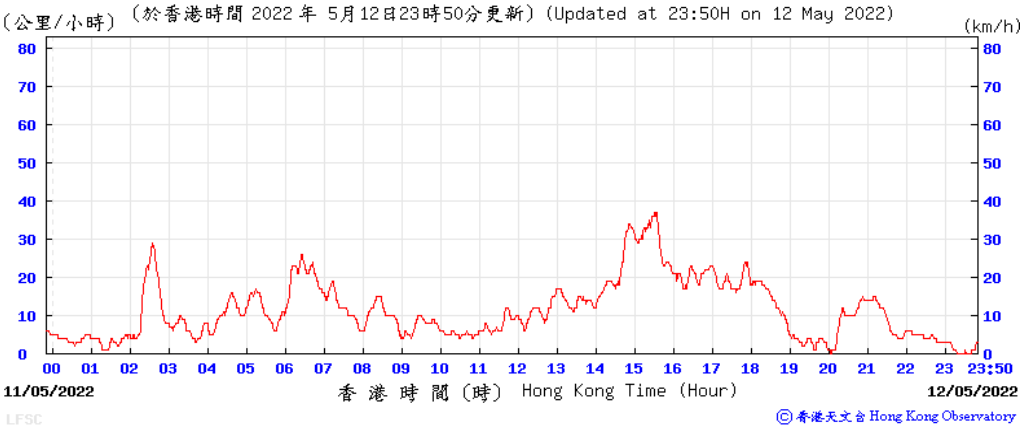
Pressure



Wind Direction

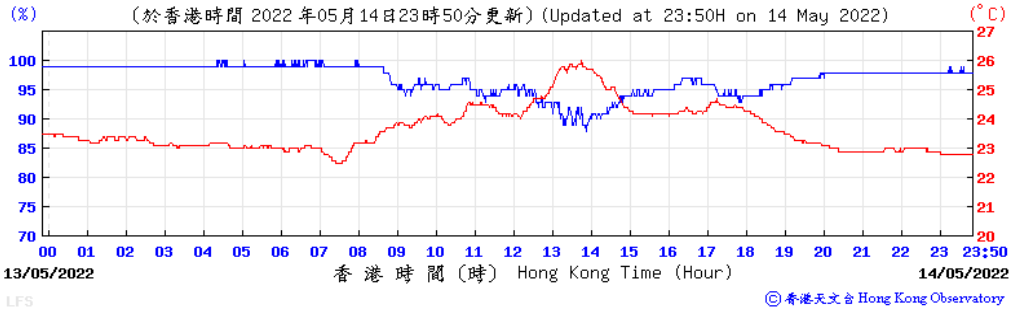


Wind Speed

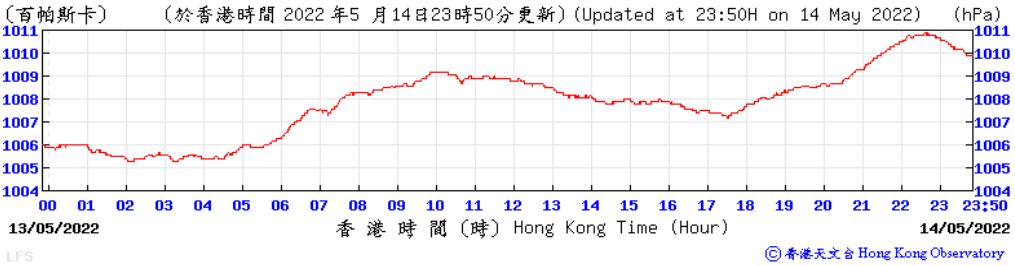


14-May-22

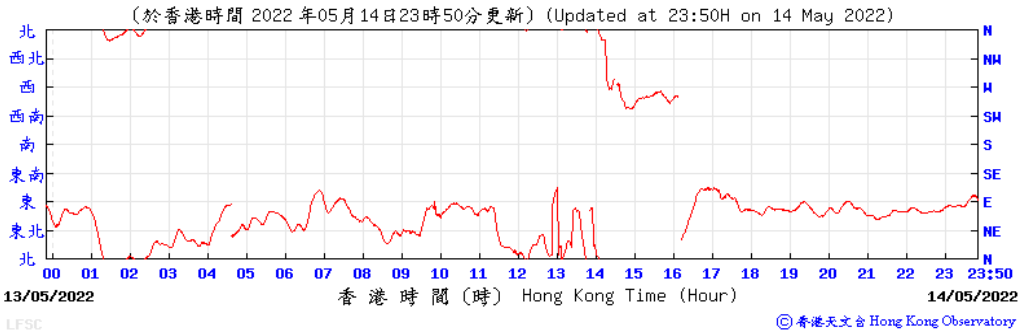
Temperature/ Humidity



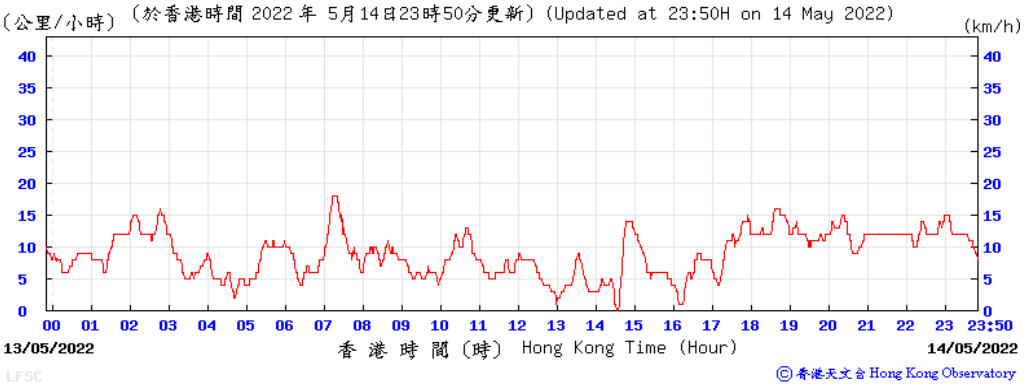
Pressure



Wind Direction

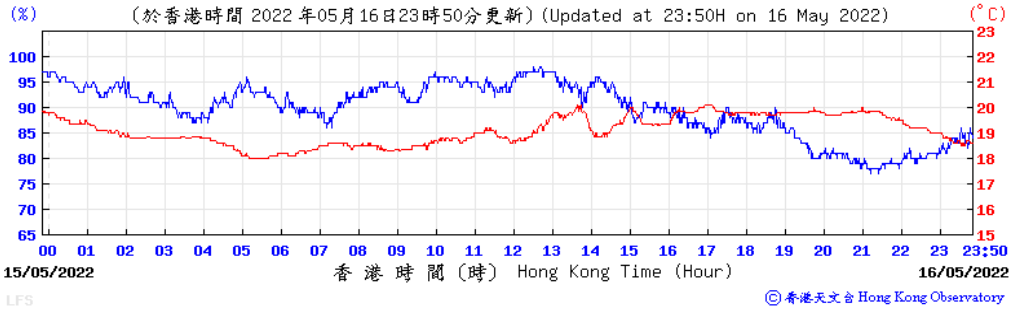


Wind Speed

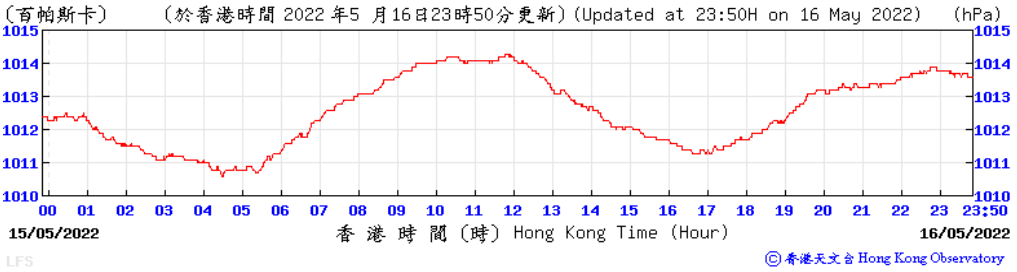


16-May-22

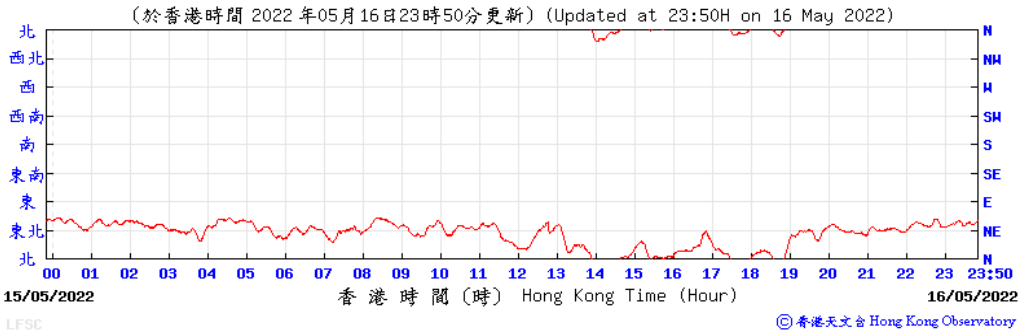
Temperature/ Humidity



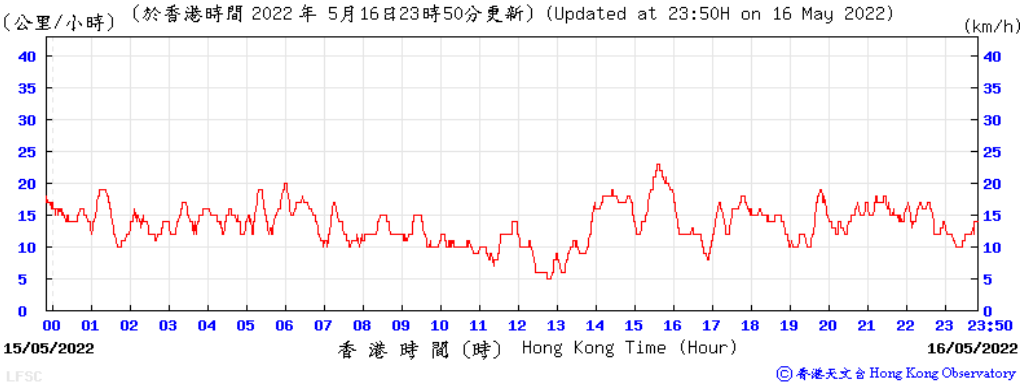
Pressure



Wind Direction

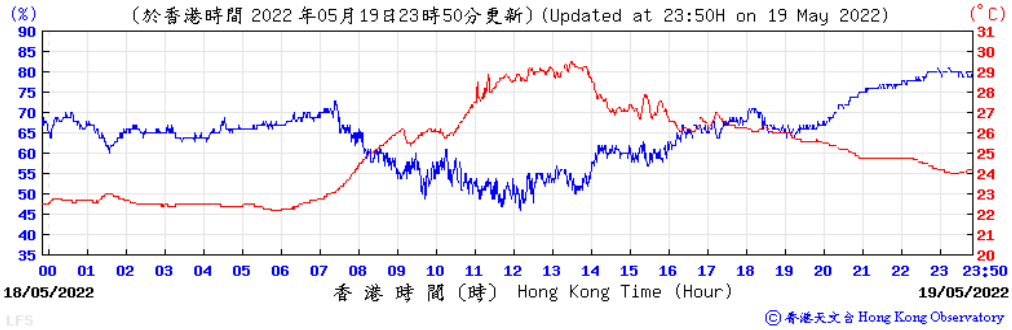


Wind Speed

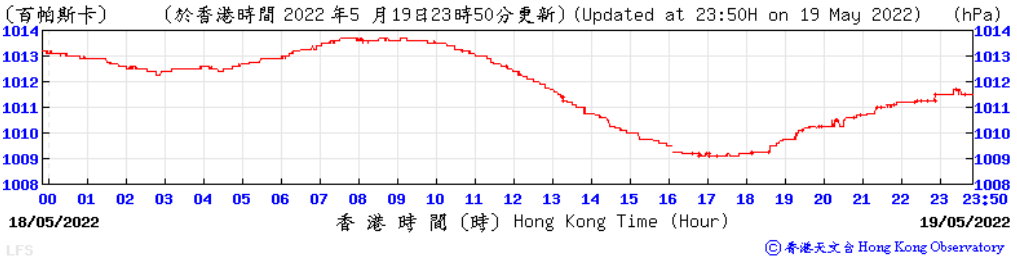


19-May-22

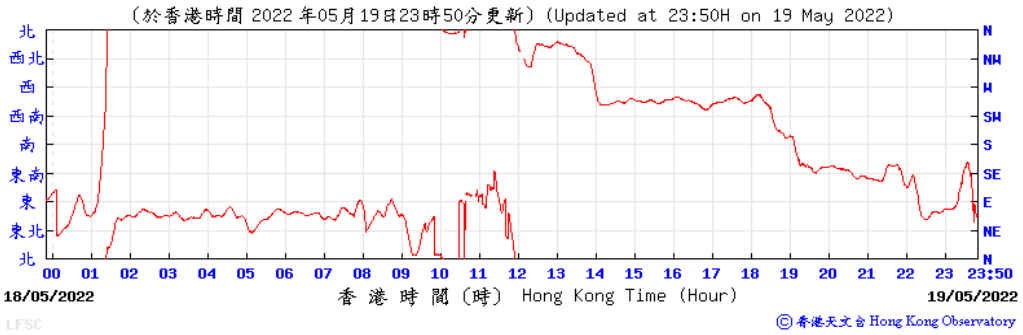
Temperature/ Humidity



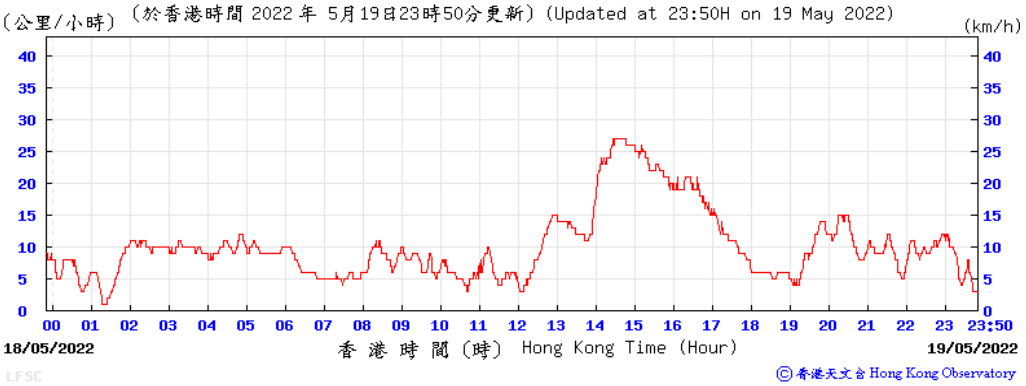
Pressure



Wind Direction

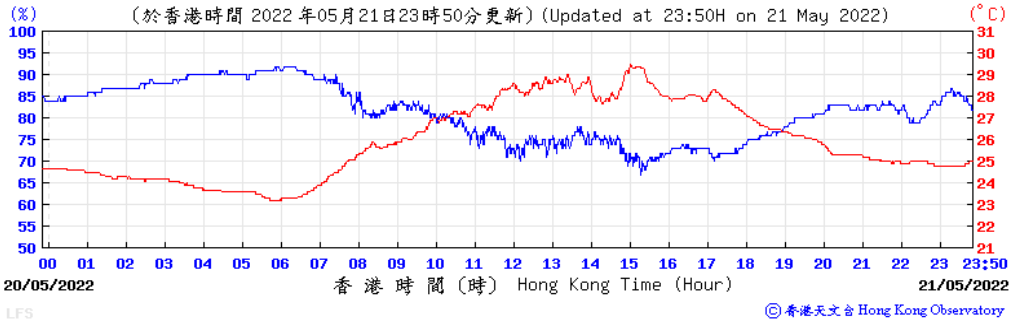


Wind Speed

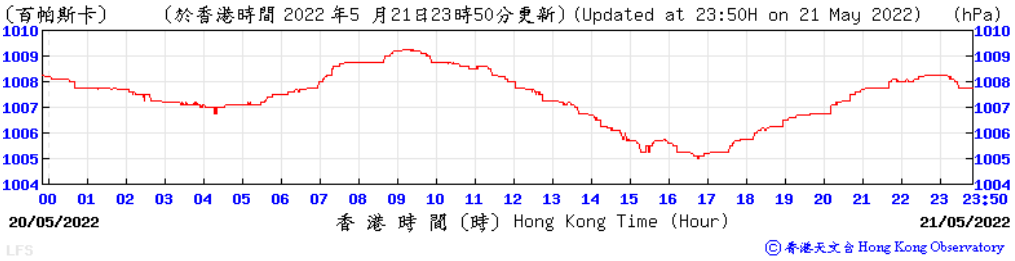


21-May-22

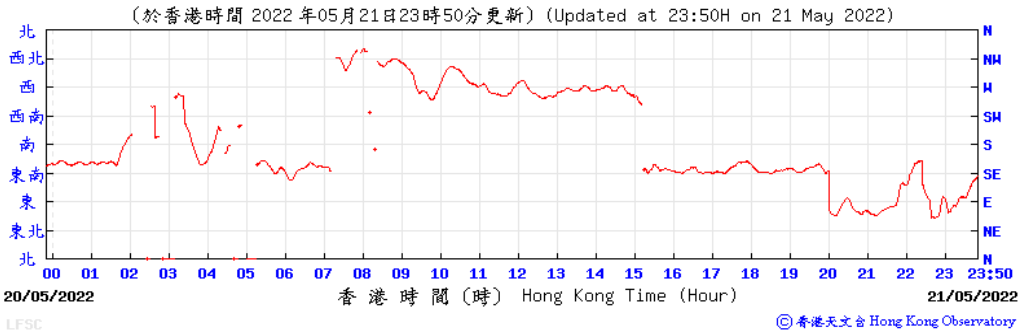
Temperature/ Humidity



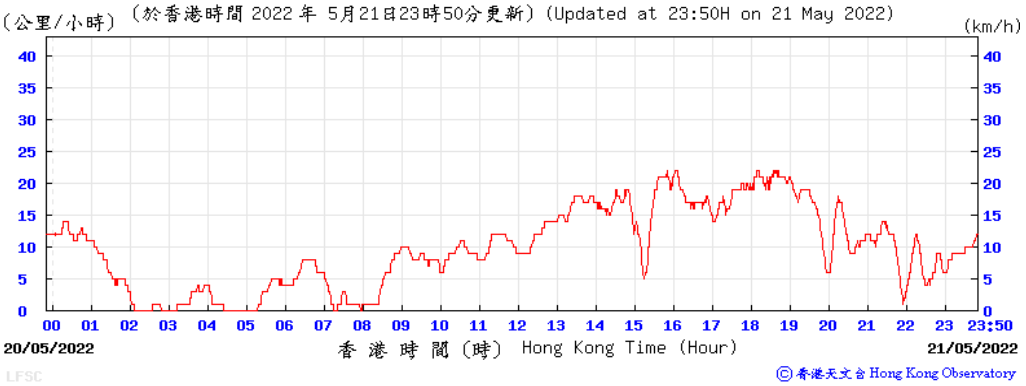
Pressure



Wind Direction

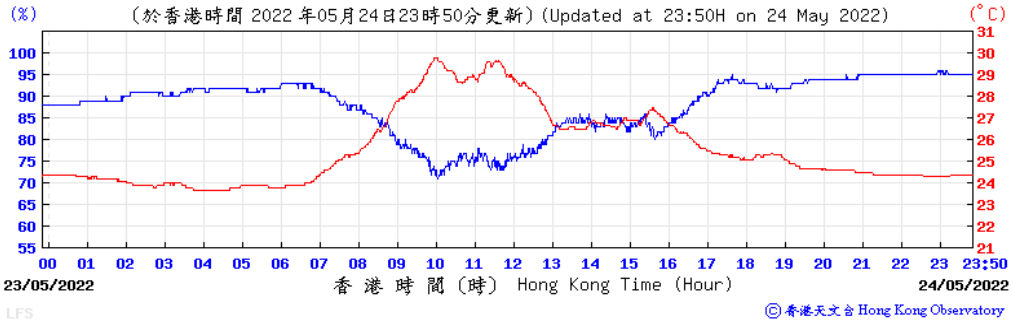


Wind Speed

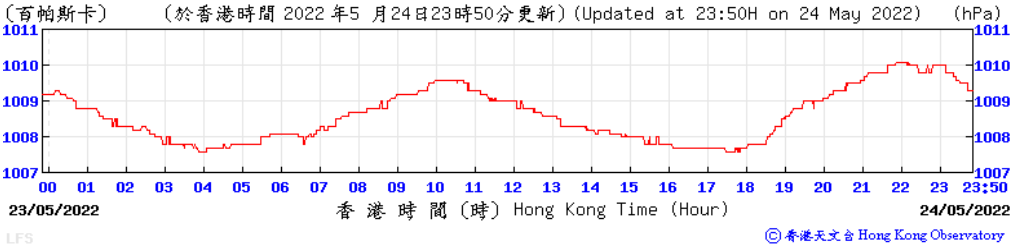


24-May-22

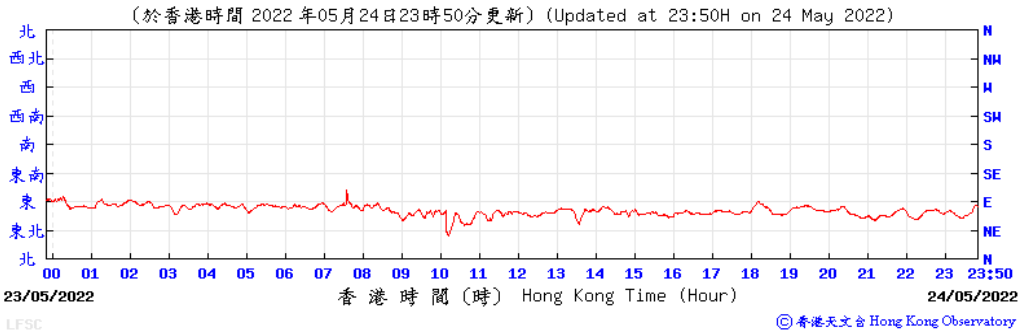
Temperature/ Humidity



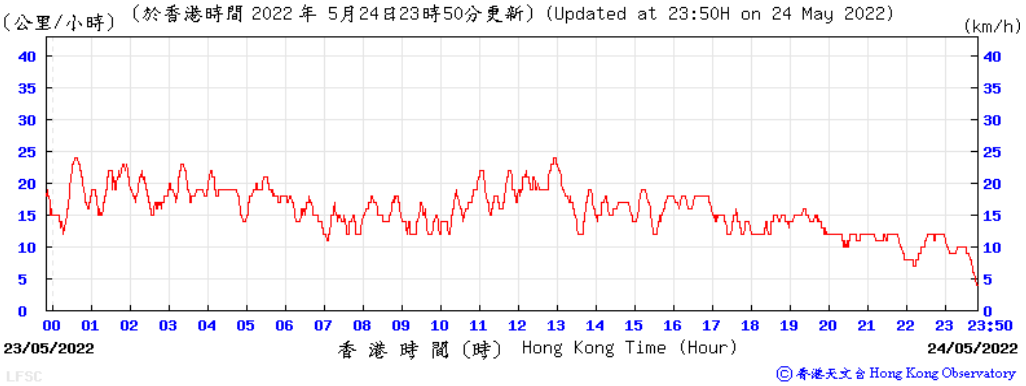
Pressure



Wind Direction

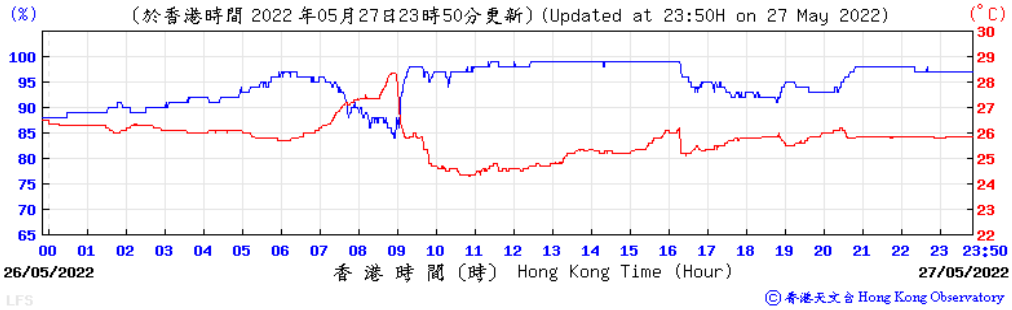


Wind Speed

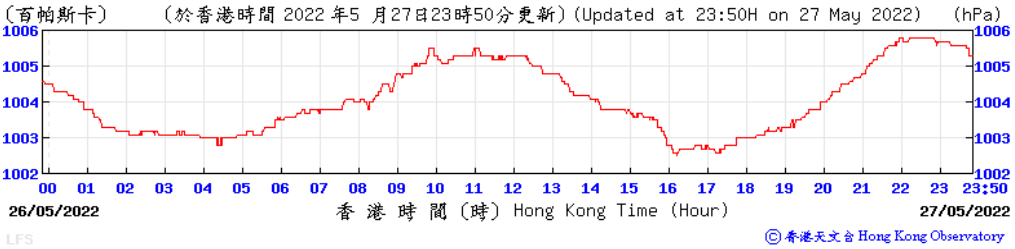


27-May-22

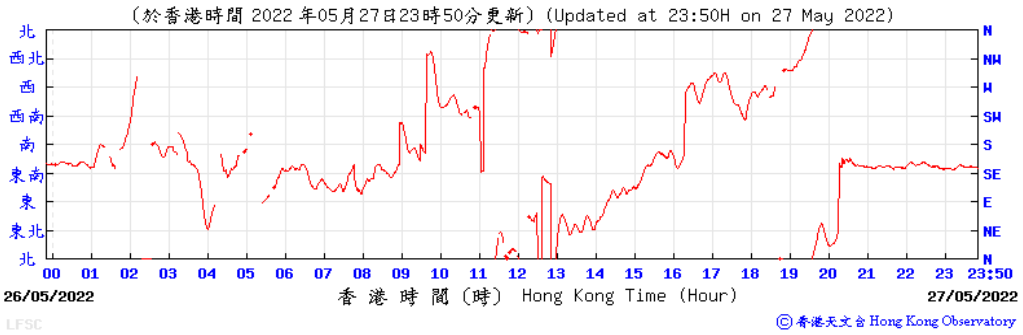
Temperature/ Humidity



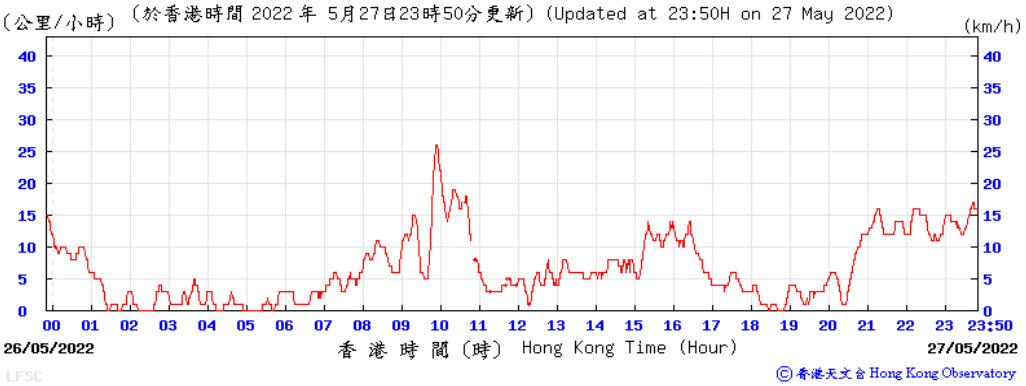
Pressure



Wind Direction

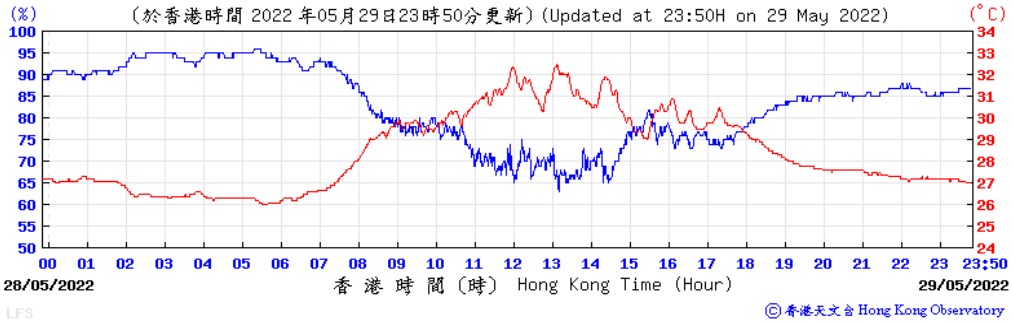


Wind Speed

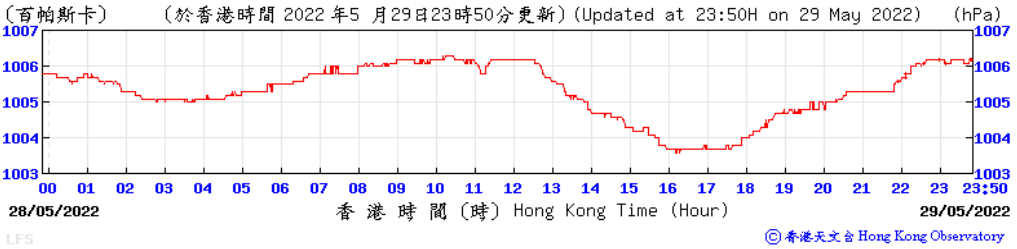


29-May-22

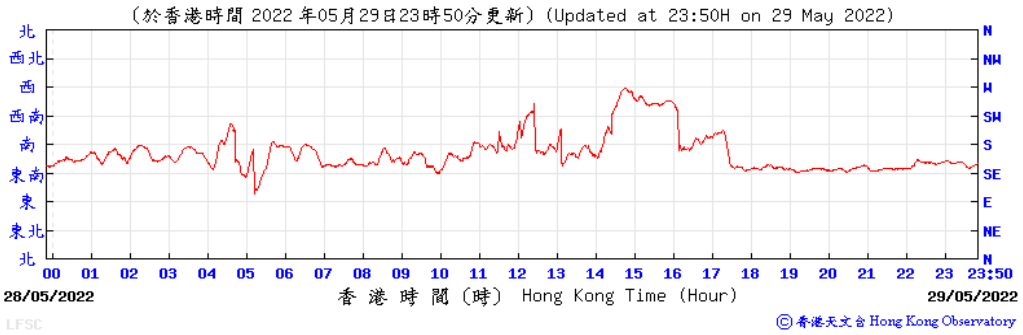
Temperature/ Humidity



Pressure



Wind Direction



Wind Speed