

MTR Corporation Limited

## Sheung Shui to Lok Ma Chau Spur Line

Baseline Monitoring Report

December 2022

Verified by: James Choi 

Position: Independent Environmental Checker

Date: 9 December 2022

MTR Corporation Limited

## Sheung Shui to Lok Ma Chau Spur Line

### Baseline Monitoring Report

December 2022

Certified by: Viola Tong 

Position: Environmental Team Leader

Date: 9 December 2022

MTR Corporation Limited  
**Sheung Shui to Lok Ma Chau  
Spur Line**  
Baseline Monitoring Report

281521-REP-016-01

Revision A 9 December 2022

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 281521

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**ARUP**

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## Executive Summary

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The MTR Corporation Limited (MTRCL) was invited by the Government to commence the detail planning and design of the railway station at Kwu Tung (i.e. hereafter called the Project).

In order to expand the scope of the existing Further Environmental Permit (FEP) (No. FEP-06/129/2002/H) of “Sheung Shui to Lok Ma Chau Spur Line” (LMC Spur Line) held by MTRCL to cover the construction and operation of the proposed railway station at Kwu Tung, variation of this FEP would be required.

The Environmental Review Report (ERR) had been prepared and submitted under the VEP application to demonstrate no unacceptable impacts will be resulted from the Project, and no exceedance or violation of environmental performance requirement as set out in the approved EIA for LMC Spur Line. The VEP application had been approved and a new Environmental Permit (No. FEP-06/129/2002/I) was granted by EPD on 24 December 2021.

In accordance with the approved Updated Environmental Monitoring and Audit Manual (Updated EM&A Manual) for the Project, baseline environmental monitoring should be conducted prior to the commencement of construction works. Pursuant to EP Condition 4.3, Baseline Monitoring Report shall be submitted to the Director of Environmental Protection (DEP) at least 2 weeks before the commencement of construction of the Project.

The baseline air quality monitoring was conducted at five (5) monitoring stations (CD1a, CD2a, CD3a, CD4a and CD5a) between 9 and 22 November 2022. Overall, the baseline air quality monitoring results are considered representative to the ambient air quality conditions of the sensitive receivers in the vicinity of the Project. The Action and Limit Levels for air quality (1-hour TSP levels) were established based on the baseline monitoring results. The derived Action Levels are ranged from 275 ug/m<sup>3</sup> to 281 ug/m<sup>3</sup>, while the Limit Levels is 500 ug/m<sup>3</sup>.

# 1 Introduction

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## 1.1 Background

**1.1.1** The Environmental Impact Assessment (EIA) report for “Sheung Shui to Lok Ma Chau Spur Line” (Register No.: AEIAR-052/2002) (i.e. hereafter called the approved EIA for LMC Spur Line) conducted by Kowloon-Canton Railway Corporation (KCRC) was approved in 2002, and addressed the environmental impacts caused by the LMC Spur Line. As far as the railway station at Kwu Tung is concerned, the approved EIA for LMC Spur Line had considered the potential construction and operational impacts for the railway station at Kwu Tung enabling works including the station box structure.

**1.1.2** In December 2020, the MTR Corporation Limited (MTRCL) was invited by the Government to commence the detail planning and design of the railway station at Kwu Tung (i.e. hereafter called the Project).

**1.1.3** The construction and operation of the LMC Spur Line constitutes to Item A.2 Designated Project (DP) “A railway and its associated stations”, under Part I Schedule 2 of Environmental Impact Assessment Ordinance (EIAO). KCRC had applied for and had been granted numbers of Environmental Permits (EPs) and Further Environmental Permits (FEP) for its construction and operation of LMC Spur Line, including the existing tunnel box and enabling works.

**1.1.4** In order to expand the scope of the Further Environmental Permit (FEP) (No. FEP-06/129/2002/H) held by MTRCL to cover the construction and operation of the proposed railway station at Kwu Tung, variation of this FEP would be required.

**1.1.5** The Environmental Review Report (ERR) had been prepared and submitted under the VEP application to demonstrate no unacceptable impacts will be resulted from the Project, and no exceedance or violation of environmental performance requirement as set out in the approved EIA for LMC Spur Line. The VEP application had been approved and a new Environmental Permit (No. FEP-06/129/2002/I) was granted by EPD on 24 December 2021.

**1.1.6** In accordance with the EP Condition 2.8, an Updated Environmental Monitoring and Audit (EM&A) Manual has been submitted and approved by EPD on 7 November 2022 taking into account any specific requirements with respect to the latest site conditions of the Project on Kwu Tung Station. Pursuant to EP condition 4.2 and 4.3, baseline environmental monitoring should be conducted in accordance with the requirements of the Updated EM&A Manual and Baseline Monitoring

Report should be submitted to the Director of Environmental Protection (DEP) at least 2 weeks before the commencement of construction of the Project.

**1.1.7** Baseline air quality monitoring was conducted at the designated monitoring stations before the commencement of construction works.

## **1.2 Purpose of the Report**

**1.2.1** This Baseline Monitoring Report contains baseline measurement findings of the monitoring stations. The purposes of this Baseline Monitoring Report are to:

- Summarise the findings of baseline air quality monitoring; and
- Establish the Action and Limit (A/L) levels in accordance with the Updated EM&A Manual for the subsequent impact monitoring during construction stage.

## **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 air quality monitoring requirements, methodology and monitoring results of construction dust; and
- Section 3 – concludes the findings of baseline air quality monitoring.

## 2 Air Quality Monitoring

### 2.1 Monitoring Requirement

**2.1.1** According to the requirements in the Updated EM&A Manual, baseline air quality monitoring should be carried out for a continuous period of at least two weeks with three sets of 1-hour ambient measurements taken daily at the designated monitoring stations prior to the commissioning of major construction works. Further details of the baseline air quality monitoring are presented in the following sections.

### 2.2 Monitoring Locations

**2.2.1** According to the Updated EM&A Manual, a total of five (5) monitoring stations are selected. Location of the monitoring stations are listed in **Table 2.1** and are shown in **Figure 2.1**.

**Table 2.1** Baseline construction dust monitoring stations

Monitoring Station ID	Description
CD1a	Village Houses along Ma Tso Lung Road
CD2a	Village Houses near Shek Tsai Leng
CD3a	Village Houses along Ho Sheung Heung Road
CD4a	Construction site office of Advance Site Formation and Engineering Infrastructure Works at Kwu Tung North and Fanling North New Development Areas – Contract No. ND/2019/06
CD5a	Dills Corner Garden

### 2.3 Monitoring Parameters, Frequency and Duration

**Table 2.2** Monitoring parameters, frequency and duration of baseline air quality monitoring

Parameter	Duration	Frequency
1-hour TSP	Consecutive days of at least 2 weeks before commencement of major construction works	3 times per day

### 2.4 Monitoring Equipment

**2.4.1** According to the approved Updated EM&A Manual, the 1-hour TSP levels shall be measured by High Volume Sampling (HVS) method following the standard set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50).

**2.4.2** Since the property owners/ operators of the designated construction dust monitoring stations rejected to provide power supply, it is unavailable to conduct



baseline air quality monitoring by HVS. As a result, portable direct reading dust meters had been used to measure 1-hour TSP levels in undertaking the baseline air quality monitoring for the Project.

**2.4.3** The portable direct reading dust meter is capable of providing comparable results of monitoring data as that provided by HVS. Furthermore, the portable direct reading dust meter has been widely adopted to measure 1-hour TSP levels for a number of designated projects of major infrastructure works.

**2.4.4** Use of portable direct reading dust meters was proposed and agreed by IEC in accordance with the provision and requirements set out in Section 5.4.5 of the Updated EM&A Manual.

**2.4.5** With the use of portable direct reading dust meter, it can allow prompt and direct results for the EM&A reporting and the implementation of the event and action plan. The portable direct reading dust meter will be calibrated every year against HVS to check the validity and accuracy of the results measured by the direct reading method.

**2.4.6** Details of the monitoring equipment used in the baseline air quality monitoring are summarized in **Table 2.3** and calibration certificates of the monitoring equipment are presented in **Appendix A**.

**Table 2.3** Baseline air quality monitoring equipment

Monitoring Equipment	Brand and Model	Quantity	Serial No.
Portable direct reading dust meter (1-hr TSP)	Sibata Digital Dust Monitor (Model No. LD-5R)	3	620408, 620480, 155717

## 2.5 Monitoring Methodology

**2.5.1** The measuring procedures of the portable direct reading dust meter are in accordance with the procedures specified in the manufacturer's instruction manual.

**2.5.2** The portable direct reading dust meter will be calibrated every year against HVS to check the validity and accuracy of the results measured by the direct reading method. The calibration certificates of the monitoring equipment are presented in **Appendix A**.

**2.5.3** The 1-hour TSP levels were measured by the portable direct reading dust meter in accordance with procedures specified in the Manufacturer's Instruction Manual. The general procedures are described as follows:

- Pulling up the air sampling inlet cover;

- Changing the Mode 0 to BG;
- Pressing Start/Stop switch;
- Turning the knob to SENSI.ADJ and press it;
- Pressing Start/Stop switch again;
- Returning the knob to the position MEASURE slowly;
- Pressing the timer set switch to set measuring time; and
- Removing the cap and start the measurement.

## 2.6 Weather Data

**2.6.1** The existing Ta Kwu Ling Automatic Weather Station operated by Hong Kong Observatory's (HKO) is the nearest weather station of the designated monitoring location which is located at the northeast of the Project Site. It is considered that wind data obtained at this weather station is representative and reliable for the wind data of the Project area and could be used for undertaking the baseline and construction phase air quality monitoring programme for the Project.

**2.6.2** The proposed use of the existing wind data from Ta Kwu Ling Automatic Weather Station collected from the HKO instead of setting up wind monitoring equipment near the monitoring stations was agreed by IEC, and Engineer's Representative (ER)'s approval was also obtained in accordance with the requirements as stated in Section 5.4.7 of the Updated EM&A Manual.

## 2.7 Results and Observations

**2.7.1** The baseline air quality monitoring was conducted between 9 and 22 November 2022. The weather was generally sunny or cloudy during the baseline monitoring period. Construction sites of North East New Territories (NENT) New Development Areas (NDAs) in the vicinity area were observed. No major construction works and events were identified which may have influenced or affected the results of baseline monitoring during the entire baseline air quality monitoring period. The summary of baseline air quality monitoring results are summarized in **Table 2.4**. The detailed monitoring results and graphical plots are shown in **Appendix B**.

**Table 2.4** Baseline air quality monitoring result

Monitoring Station ID	1-hr TSP level	
	Range ( $\mu\text{g}/\text{m}^3$ )	Average ( $\mu\text{g}/\text{m}^3$ )
CD1a	15 - 90	38.8
CD2a	14 - 104	44.8
CD3a	17 - 122	44.3
CD4a	19 - 173	47.6
CD5a	19 - 172	46.2

**2.7.2** Wind data including wind speed and wind direction collected from the HKO Ta Kwu Ling Automatic Weather Station was used for the baseline air quality monitoring and is presented in **Appendix C**.

**2.7.3** As no project-related activities have commenced yet when the baseline air quality monitoring were carried out, the baseline air quality monitoring results obtained are considered representative of the ambient air quality conditions prior to the commencement of construction works for the project.

## 2.8 Action Level and Limit Level

**2.8.1** The monitoring results of 1-hr TSP were below the Limit Level set out in the EIAO-TM and Air Quality Objective (AQO) respectively at the monitoring locations. The Action and Limit Levels for air quality impact monitoring were established according to the criteria and methodology in the Updated EM&A Manual as presented in **Table 2.5**.

**Table 2.5** Derivation of action level and limit level for dust level

Parameter	Action Level	Limit Level
1-hour TSP Level in $\mu\text{g}/\text{m}^3$	For baseline level $\leq 384 \mu\text{g}/\text{m}^3$ , Action level = (baseline level * 1.3 + Limit level)/2;  For baseline level $> 384 \mu\text{g}/\text{m}^3$ , Action level = Limit level	$500 \mu\text{g}/\text{m}^3$

**2.8.2** The derived Action and Limit Levels for air quality impact monitoring during the construction of the Project are presented in **Table 2.6**.

**Table 2.6** Action and Limit Levels for 1-hr TSP

Monitoring Station ID	Action Level (ug/m <sup>3</sup> )	Limit Level (ug/m <sup>3</sup> )
CD1a	275	500
CD2a	279	500
CD3a	279	500
CD4a	281	500
CD5a	280	500

## 2.9 Event and Action Plan

**2.9.1** Should non-compliance of the air quality criteria occur, actions in accordance with the Event and Action Plan in **Table 2.7** shall be carried out.

**Table 2.7** Event and Action Plan for air quality

Event	Action			
	ET	IEC	ER	Contractor
Action level exceedance for one sample	<ol style="list-style-type: none"> <li>1. Repeat measurement to confirm finding;</li> <li>2. If exceedance is confirmed, inform Contractor, IEC and ER;</li> <li>3. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>4. Discuss with the Contractor, IEC and ER on the remedial measures required;</li> <li>5. Increase monitoring frequency.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET, ER and Contractor on possible remedial measures;</li> <li>4. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s), investigate the causes of exceedance and propose remedial measures;</li> <li>2. Implement remedial measures;</li> <li>3. Amend working methods agreed with the ER as appropriate.</li> </ol>
Action level exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Repeat measurement to confirm finding;</li> <li>2. If exceedance is confirmed, inform Contractor, IEC and ER;</li> <li>3. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>4. Advise the Contractor and ER on the effectiveness of the proposed remedial measures;</li> <li>5. Increase monitoring frequency;</li> <li>6. Discuss with IEC and Contractor on remedial actions required;</li> <li>7. If exceedance continues, arrange meeting with IEC and ER to discuss the remedial measures to be taken;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET, ER and Contractor on possible remedial measures;</li> <li>4. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. In consultation with the ET and IEC agree with the Contractor on the remedial measures to be implemented;</li> <li>3. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s), investigate the causes of exceedance and propose remedial measures;</li> <li>2. Submit proposals for remedial measures to the ER, ET and IEC within three working days of notification for agreement;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposal if appropriate.</li> </ol>
Limit level exceedance for one sample	<ol style="list-style-type: none"> <li>1. Repeat measurement to confirm finding;</li> <li>2. If exceedance is confirmed, inform IEC, ER, Contractor and EPD;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Discuss with the ER, IEC and Contractor on the remedial measures and assess effectiveness;</li> <li>5. Keep ER, IEC and EPD informed of the results of the effectiveness of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET, ER and Contractor on possible remedial measures;</li> <li>4. Review and advise the ET and ER on the</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Review and agree on the remedial measures proposed by the Contractor;</li> <li>3. Ensure remedial measures properly implemented;</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s), investigate the causes of exceedance and propose remedial measures</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial actions to ER, ET and IEC within three</li> </ol>

Event	Action			
	ET	IEC	ER	Contractor
		effectiveness of the proposed remedial measures.	4. Supervise implementation of remedial measures.	working days of notification for agreement; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
Limit level exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Repeat measurement to confirm finding;</li> <li>2. If exceedance is confirmed, inform IEC, ER, Contractor and EPD;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>5. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;</li> <li>6. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET</li> <li>2. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>3. Supervise the implementation of remedial measures;</li> <li>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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source(s), investigate the causes of exceedance and propose remedial measures</li> <li>2. Take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial actions to ER, IEC and ET within three working days of notification for agreement;</li> <li>4. Implement the agreed proposals;</li> <li>5. Review and resubmit proposals if problem still not under control;</li> <li>6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

Note:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer or Engineer's Representative

## 3 Conclusion

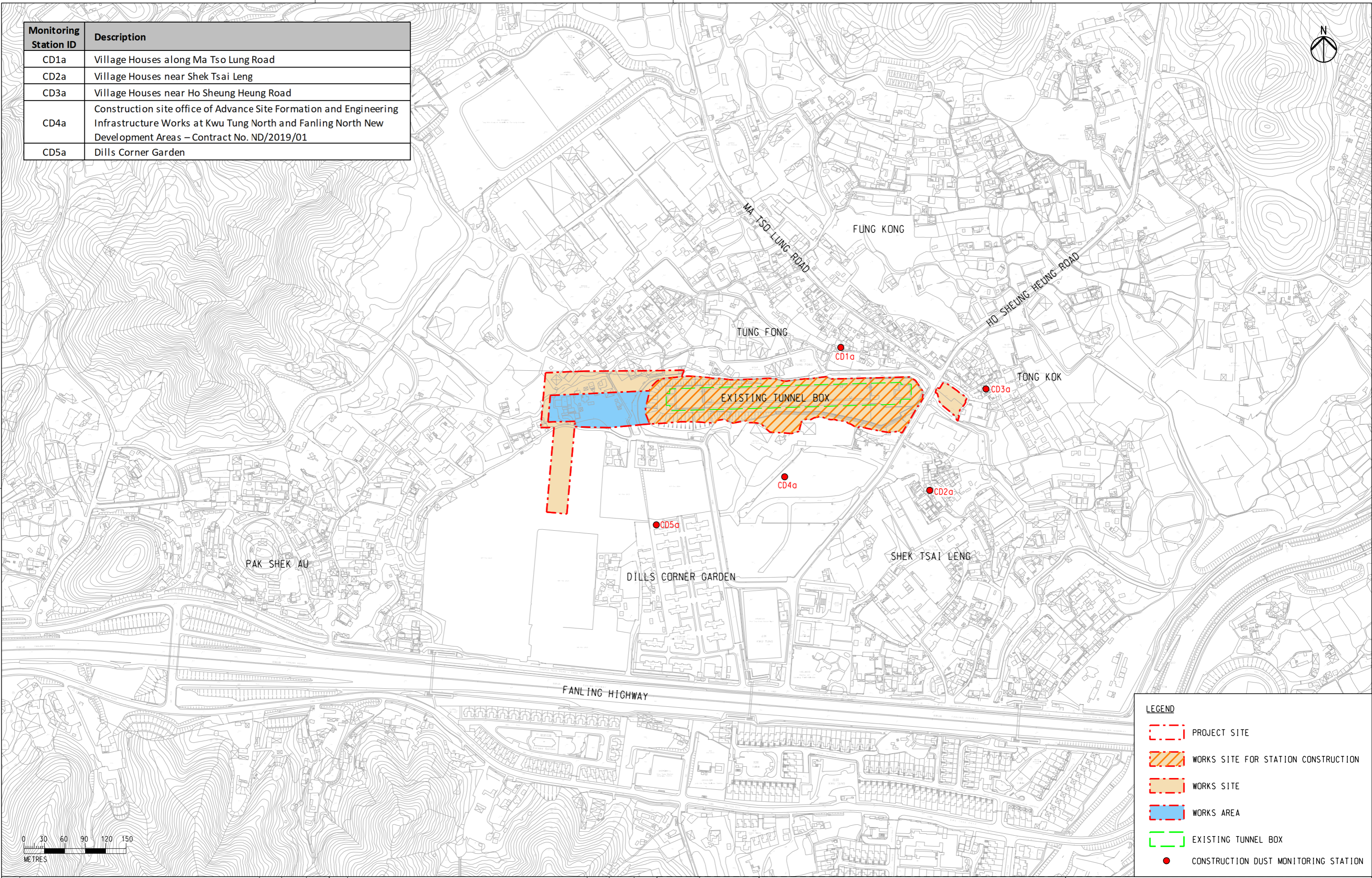
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**3.1.1** Baseline air quality monitoring was carried out between 9 and 22 November 2022 at five (5) designated monitoring stations (i.e. CD1a, CD2a, CD3a, CD4a and CD5a). The baseline air quality monitoring results are considered representative to the ambient air quality conditions of the sensitive receivers in the vicinity of the Project. All monitoring results were below the Limit Level set out in the EIAO-TM and Air Quality Objective (AQO) respectively at all monitoring locations. The Action and Limit Levels for air quality were established based on the baseline monitoring results.

# Figures



Monitoring Station ID	Description
CD1a	Village Houses along Ma Tso Lung Road
CD2a	Village Houses near Shek Tsai Leng
CD3a	Village Houses near Ho Sheung Heung Road
CD4a	Construction site office of Advance Site Formation and Engineering Infrastructure Works at Kwu Tung North and Fanling North New Development Areas – Contract No. ND/2019/01
CD5a	Dills Corner Garden



LEGEND	
	PROJECT SITE
	WORKS SITE FOR STATION CONSTRUCTION
	WORKS SITE
	WORKS AREA
	EXISTING TUNNEL BOX
	CONSTRUCTION DUST MONITORING STATION

G:\common\micr\station\_s\standard\plot\drv\hp\_ar\uph\c3\pdf-c.env\pft  
 \$MODELS\$ H4G\H4G04 12/27/2022 4:09:44 PM  
 J:\2020\2852-00\_CDD\K103\_fm\_Proj\Draw\08\_Env\31\_Drawing\_Deliverables\report\22\_Baseline\_Monitoring\_Report\FIGURE 2.dgn  
 PLOT DRI: H4G\H4G04 12/27/2022 4:09:44 PM  
 MODELNAME: J:\2020\2852-00\_CDD\K103\_fm\_Proj\Draw\08\_Env\31\_Drawing\_Deliverables\report\22\_Baseline\_Monitoring\_Report\FIGURE 2.dgn  
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DESIGNED	GL																				
CHECKED	JC																				
APPROVED	FC																				
DATE	02/DEC/22																				
				ARUP Supported by Arcadis Hong Kong Ltd.				SCALE 1 : 5000 (A3) DRAWING NO. FIGURE 2.1													
A FIRST ISSUE				GL 12/22 FC				REV. A													
REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED	CADD REF.	FIGURE 2.1.dgn	SCALE	DRAWING NO.	REV.							

## Appendix A

### Air Quality Monitoring Equipment Calibration Certificates



### Correlation between HVS & Dust Meter

#### Laser dust monitor Information

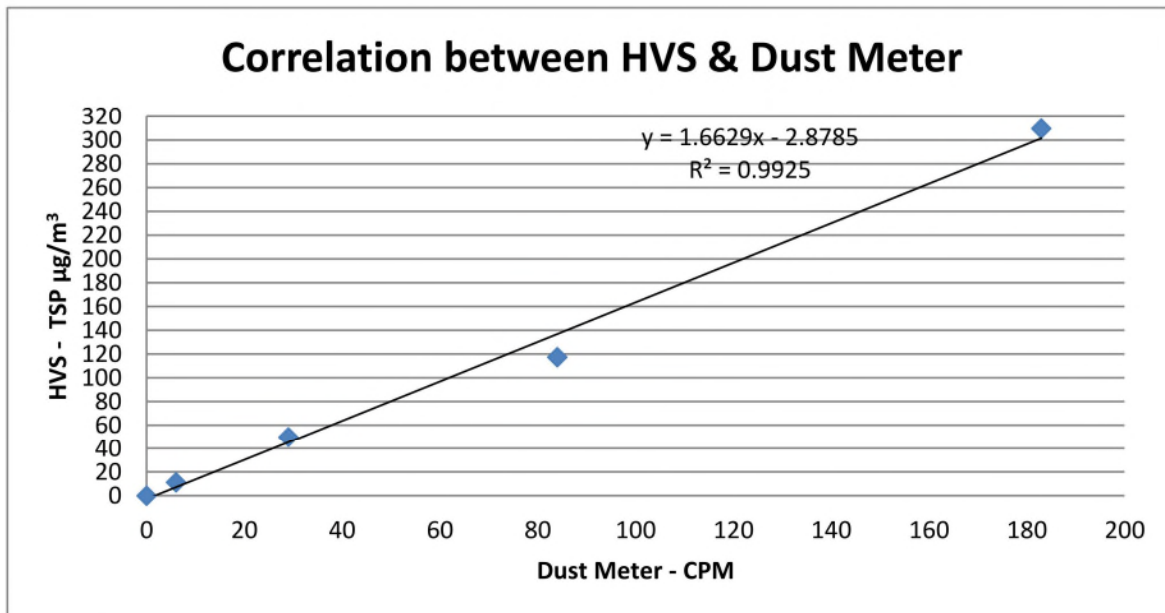
Model: Sibata LD-5R  
Serial No: 155717  
Date of Calibration: 17 Oct 2022  
Date of Next Calibration: 16 Oct 2023

#### High Volume Sampler Information

Model: Tisch TE-5170  
Serial No: 4606  
Method Used: By direct comparison the weight of dust particles trapped in a filter paper using HVS (TSP method) for a certain period, with the reading of the Unit under test. They should be placed at the same location and powered on and off at the same time.

#### Calibration Results:

Calibration Results:	11.1	49.8	117.4	309.5
Dust Meter - CPM	6.0	29.0	84.0	183.0



#### Remarks:

1. K-Factor = 1.6629
2. Correlation coefficient (r) = 0.9925

Calibrated by : A. Ly Date : 20/10/2022 Supervised by : Ho Chun Yip Date : 20/10/2022  
(Assistant Technical Officer) (Technical Officer)



### Correlation between HVS & Dust Meter

#### Laser dust monitor Information

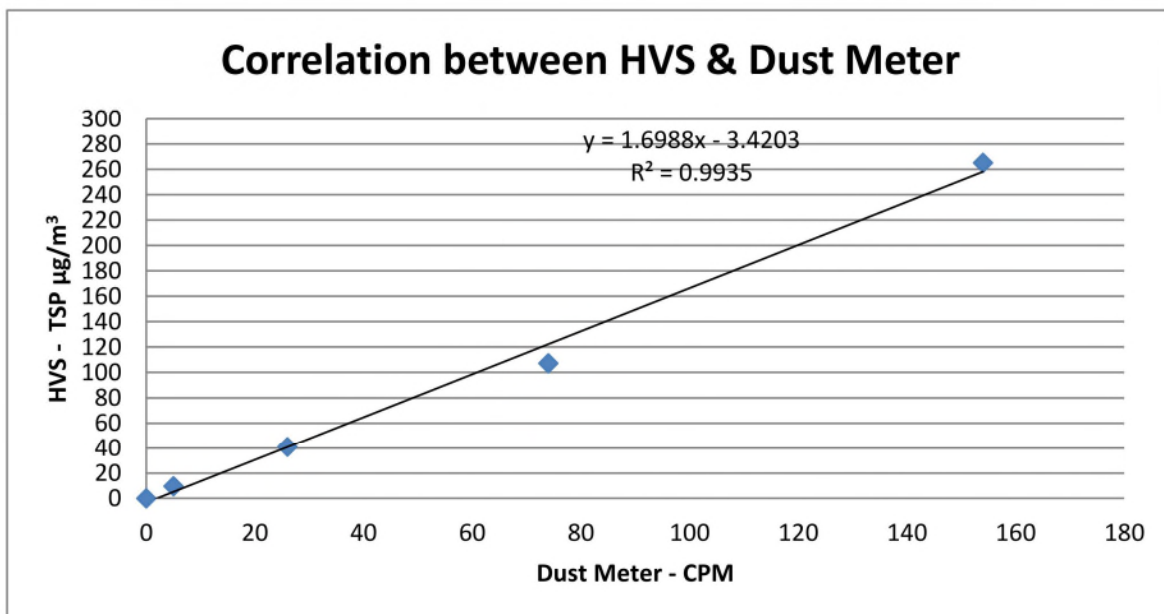
Model: Sibata LD-5R  
Serial No: 620408  
Date of Calibration: 28 Sep 2022  
Date of Next Calibration: 27 Sep 2023

#### High Volume Sampler Information

Model: Tisch TE-5170  
Serial No: 4606  
Method Used: By direct comparison the weight of dust particles trapped in a filter paper using HVS (TSP method) for a certain period, with the reading of the Unit under test. They should be placed at the same location and powered on and off at the same time.

#### Calibration Results:

Calibration Results:	9.6	40.8	107.2	265.3
Dust Meter - CPM	5.0	26.0	74.0	154.0



#### Remarks:

1. K-Factor = 1.6988
2. Correlation coefficient (r) = 0.9935

Calibrated by : A. Ly Date : 30/09/2022 Supervised by : [Signature] Date : 30/09/2022  
(Assistant Technical Officer) (Technical Officer)



### Correlation between HVS & Dust Meter

#### Laser dust monitor Information

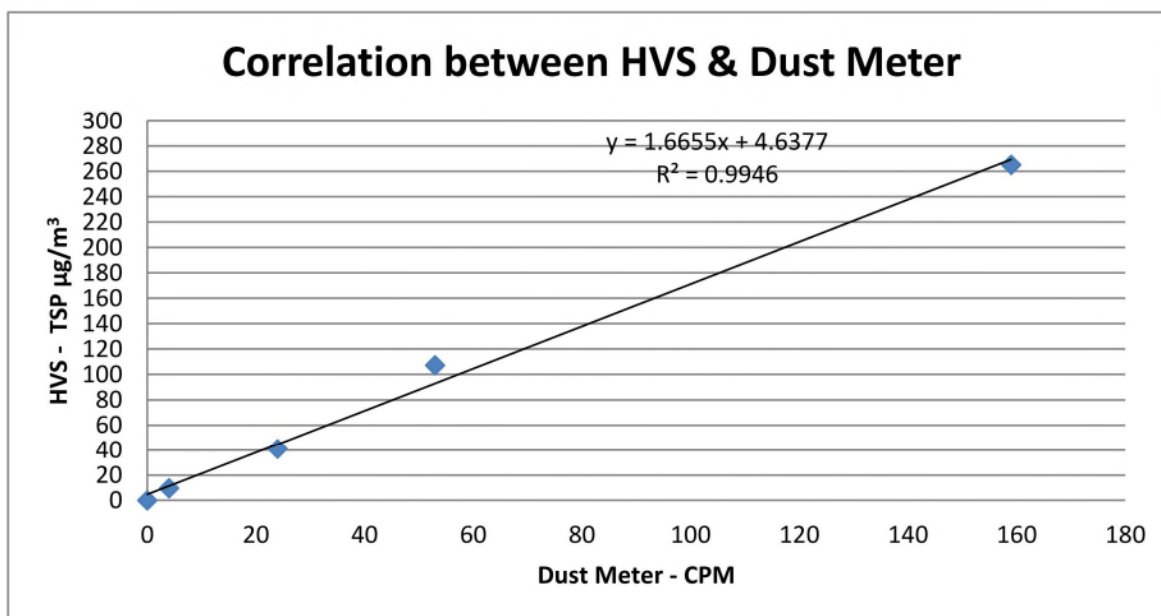
Model: Sibata LD-5R  
Serial No: 620480  
Date of Calibration: 28 Sep 2022  
Date of Next Calibration: 27 Sep 2023

#### High Volume Sampler Information

Model: Tisch TE-5170  
Serial No: 4606  
Method Used: By direct comparison the weight of dust particles trapped in a filter paper using HVS (TSP method) for a certain period, with the reading of the Unit under test. They should be placed at the same location and powered on and off at the same time.

#### Calibration Results:

Calibration Results:	9.6	40.8	107.2	265.3
Dust Meter - CPM	4.0	24.0	53.0	159.0



#### Remarks:

1. K-Factor = 1.6655
2. Correlation coefficient (r) = 0.9946

Calibrated by : A. Ly Date : 30/09/2022 Supervised by : [Signature] Date : 30/09/2022  
(Assistant Technical Officer) (Technical Officer)

## Appendix B

### Detailed Baseline Air Quality Monitoring Results

**CD1a Village Houses along Ma Tso Lung Road**

1-hour TSP ( $\mu\text{g}/\text{m}^3$ )					
Date	Start Time	1st hr	2nd hr	3rd hr	Weather
9/11/2022	10:21	20	17	17	Sunny
10/11/2022	13:54	27	78	90	Sunny
11/11/2022	14:13	20	15	15	Fine
12/11/2022	13:36	32	36	41	Sunny
13/11/2022	14:36	48	34	27	Sunny
14/11/2022	15:12	51	39	36	Sunny
15/11/2022	14:20	71	83	90	Sunny
16/11/2022	9:27	24	22	22	Sunny
17/11/2022	13:16	44	43	39	Sunny
18/11/2022	9:27	20	24	26	Fine
19/11/2022	13:21	31	36	34	Fine
20/11/2022	9:20	49	41	44	Fine
21/11/2022	13:27	32	39	44	Cloudy
22/11/2022	9:16	44	41	41	Cloudy
<b>Average</b>		38.8			
<b>Max</b>		90			
<b>Min</b>		15			

**CD2a Village Houses Near Shek Tsai Leng**

1-hour TSP ( $\mu\text{g}/\text{m}^3$ )					
Date	Start Time	1st hr	2nd hr	3rd hr	Weather
9/11/2022	13:50	39	73	71	Sunny
10/11/2022	14:35	43	83	88	Sunny
11/11/2022	14:26	20	14	14	Fine
12/11/2022	13:16	41	41	26	Sunny
13/11/2022	14:23	43	32	26	Sunny
14/11/2022	15:06	48	37	29	Sunny
15/11/2022	14:07	61	70	78	Sunny
16/11/2022	9:35	26	22	27	Sunny
17/11/2022	13:12	43	37	39	Sunny
18/11/2022	9:31	32	29	29	Fine
19/11/2022	13:17	34	37	36	Fine
20/11/2022	9:27	53	43	46	Fine
21/11/2022	13:32	75	104	82	Cloudy
22/11/2022	9:27	22	46	44	Cloudy
<b>Average</b>		44.8			
<b>Max</b>		104			
<b>Min</b>		14			

**CD3a Village Houses along Ho Sheung Heung Road**

1-hour TSP ( $\mu\text{g}/\text{m}^3$ )					
Date	Start Time	1st hr	2nd hr	3rd hr	Weather
9/11/2022	10:40	20	17	17	Sunny
10/11/2022	10:45	22	22	22	Sunny
11/11/2022	10:40	17	27	24	Fine
12/11/2022	10:07	48	46	37	Sunny
13/11/2022	10:14	122	94	41	Sunny
14/11/2022	11:37	37	39	46	Sunny
15/11/2022	10:52	83	78	66	Sunny
16/11/2022	13:17	31	31	24	Sunny
17/11/2022	9:27	31	37	41	Sunny
18/11/2022	13:09	39	77	82	Fine
19/11/2022	9:54	24	31	36	Fine
20/11/2022	13:12	43	31	49	Fine
21/11/2022	9:44	46	77	71	Cloudy
22/11/2022	13:31	41	46	49	Cloudy
<b>Average</b>		44.3			
<b>Max</b>		122			
<b>Min</b>		17			

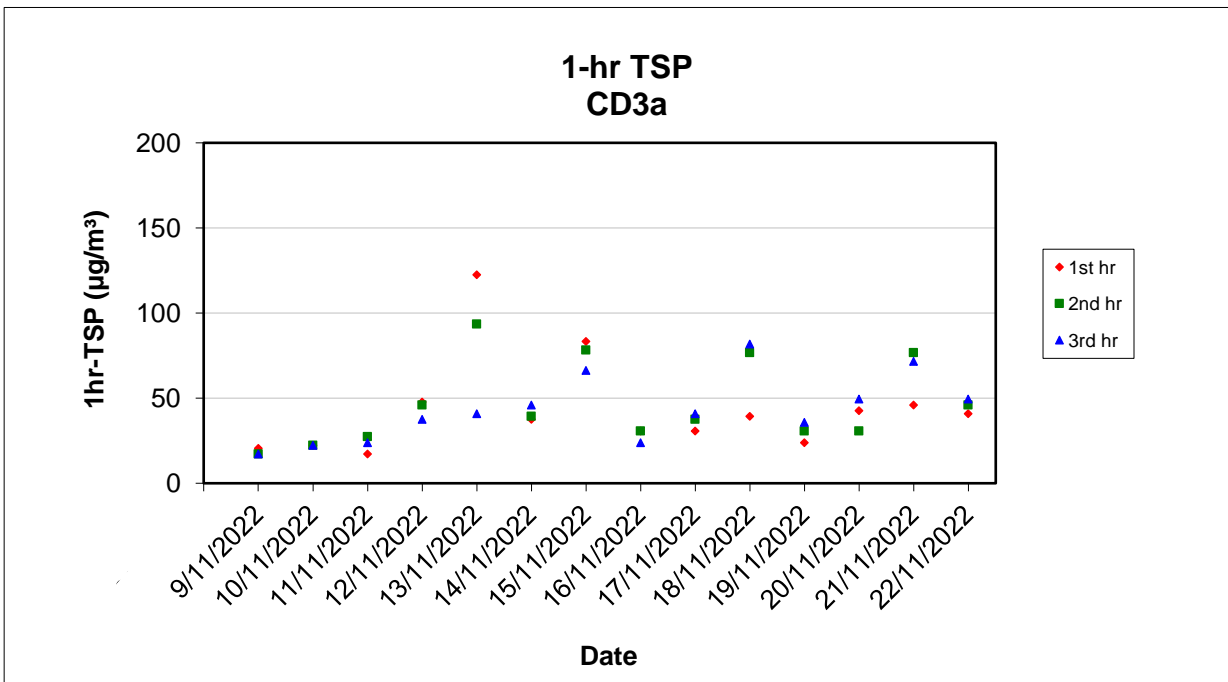
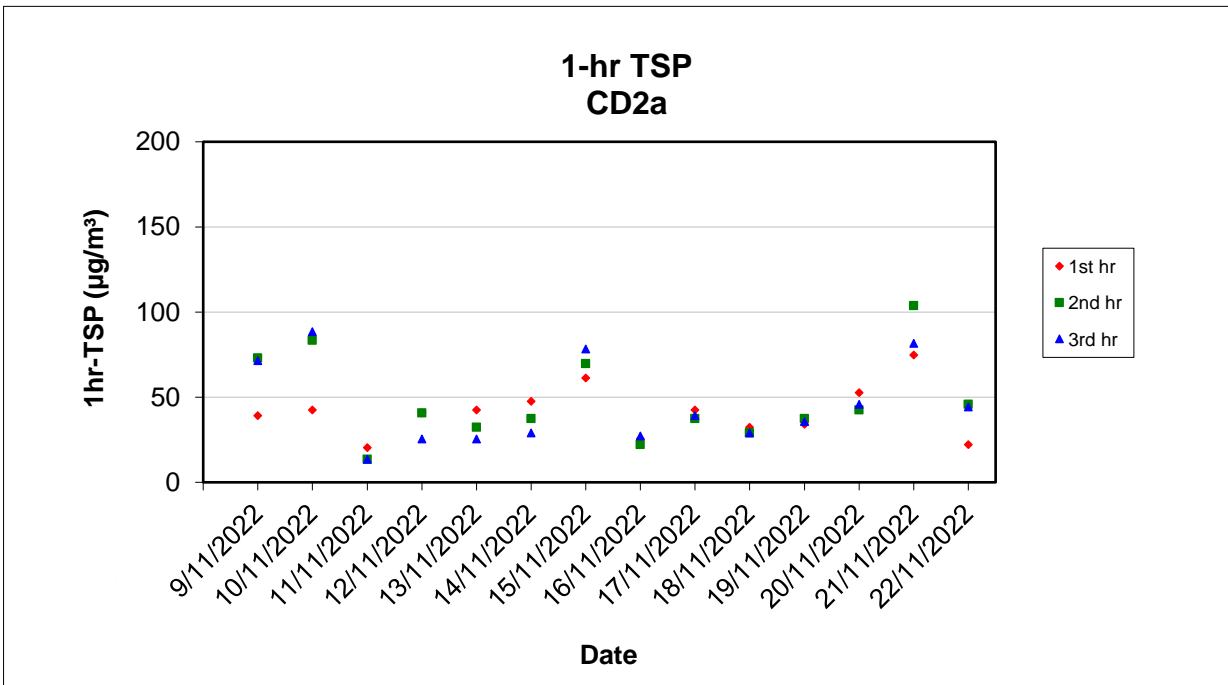
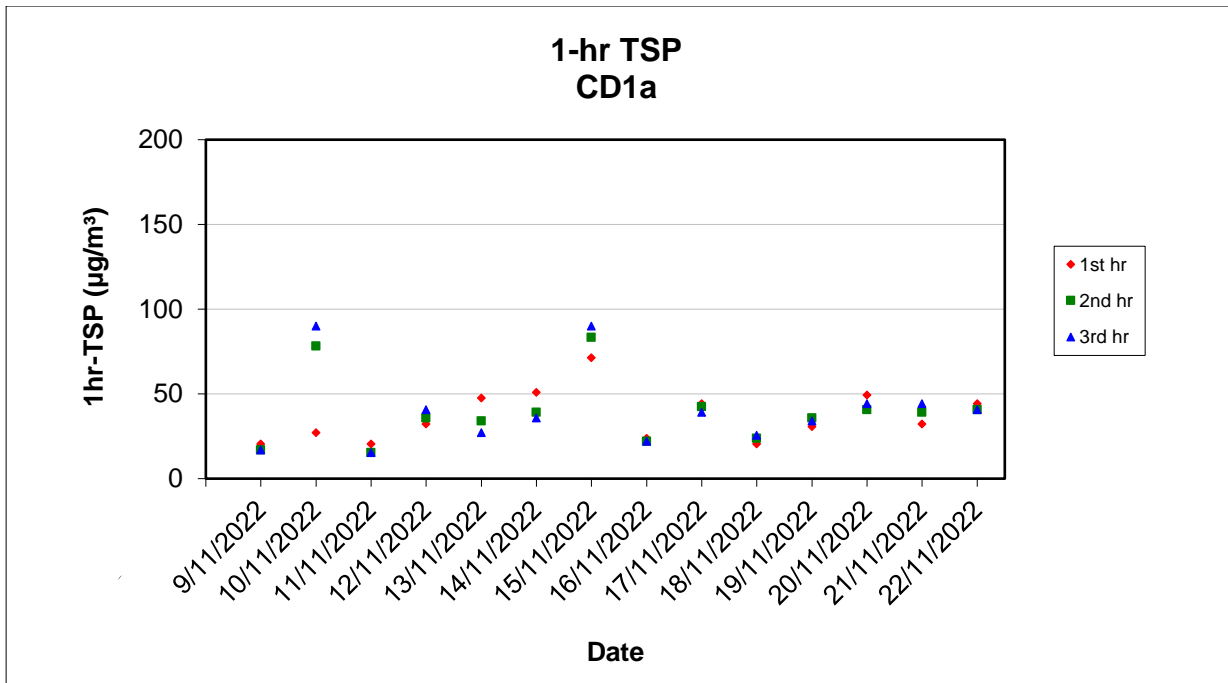
**CD4a Construction site office**

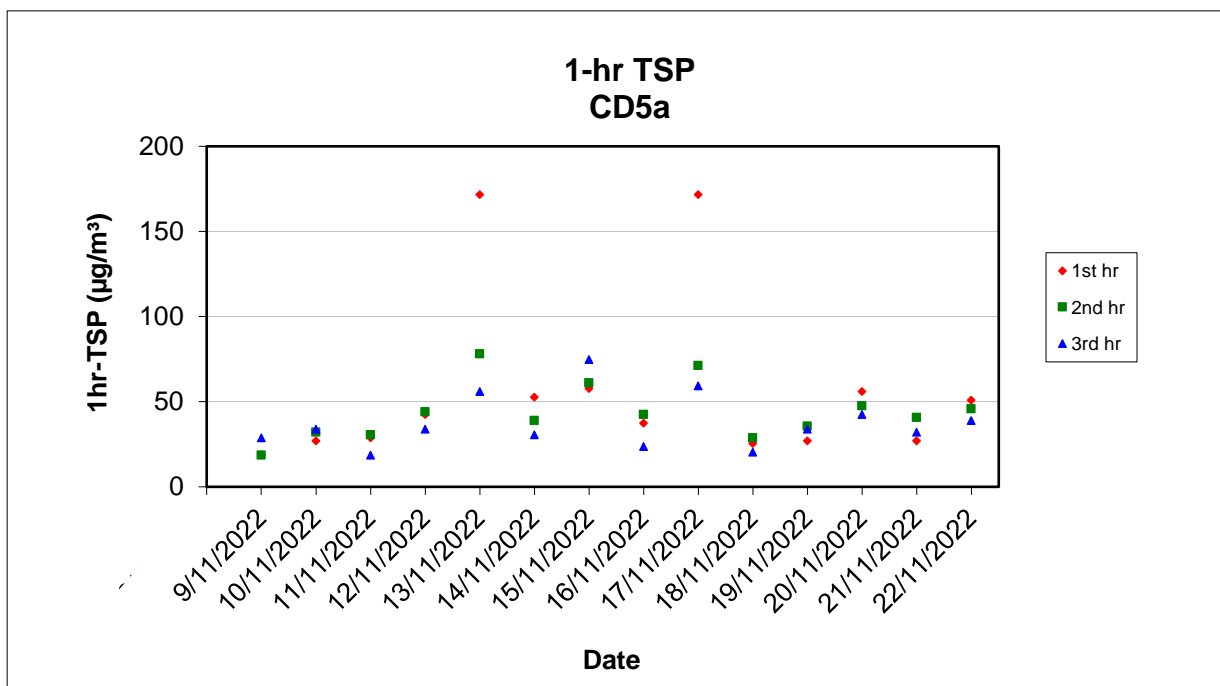
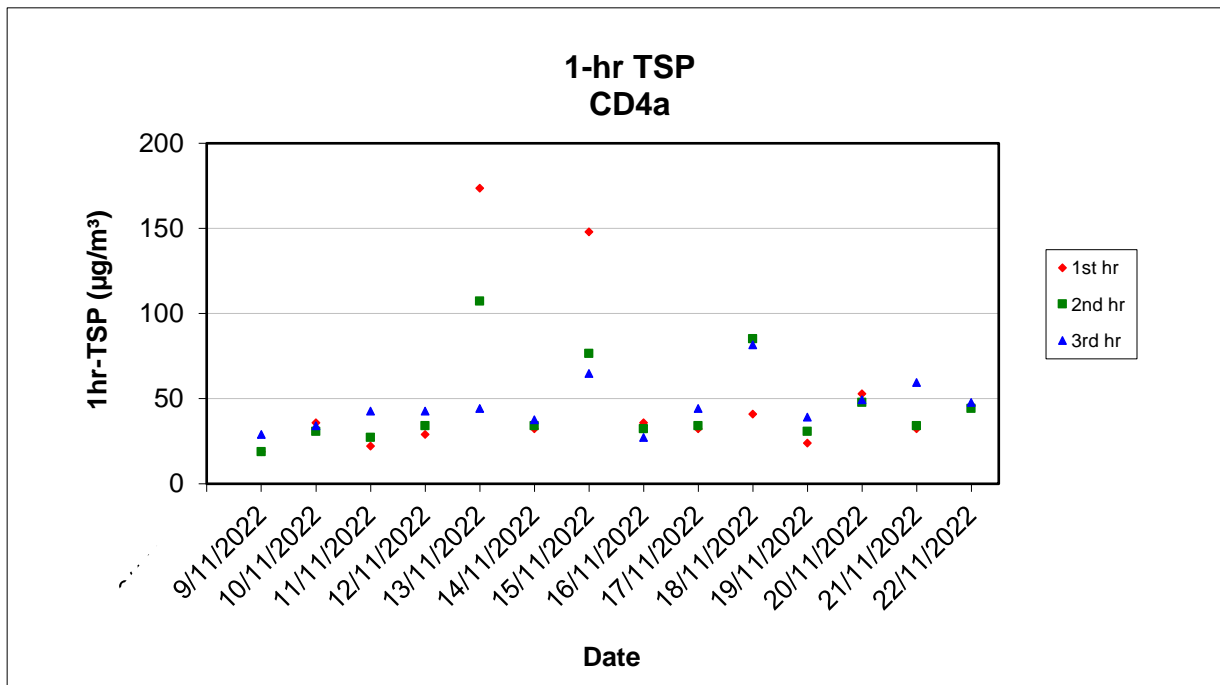
1-hour TSP ( $\mu\text{g}/\text{m}^3$ )					
Date	Start Time	1st hr	2nd hr	3rd hr	Weather
9/11/2022	11:17	19	19	29	Sunny
10/11/2022	11:10	36	31	34	Sunny
11/11/2022	10:26	22	27	43	Fine
12/11/2022	9:51	29	34	43	Sunny
13/11/2022	10:02	173	107	44	Sunny
14/11/2022	11:21	32	34	37	Sunny
15/11/2022	10:40	148	77	65	Sunny
16/11/2022	13:26	36	32	27	Sunny
17/11/2022	9:14	32	34	44	Sunny
18/11/2022	13:14	41	85	82	Fine
19/11/2022	9:45	24	31	39	Fine
20/11/2022	13:21	53	48	49	Fine
21/11/2022	9:31	32	34	60	Cloudy
22/11/2022	13:41	46	44	48	Cloudy
<b>Average</b>		47.6			
<b>Max</b>		173			
<b>Min</b>		19			

**CD5a Dills Corner Garden**

1-hour TSP ( $\mu\text{g}/\text{m}^3$ )					
Date	Start Time	1st hr	2nd hr	3rd hr	Weather
9/11/2022	14:50	19	19	29	Sunny
10/11/2022	11:42	27	32	34	Sunny
11/11/2022	10:07	29	31	19	Fine
12/11/2022	9:37	43	44	34	Sunny
13/11/2022	9:44	172	78	56	Sunny
14/11/2022	11:02	53	39	31	Sunny
15/11/2022	10:27	58	61	75	Sunny
16/11/2022	9:14	37	43	24	Sunny
17/11/2022	9:06	172	71	60	Sunny
18/11/2022	9:17	26	29	20	Fine
19/11/2022	9:31	27	36	34	Fine
20/11/2022	9:14	56	48	43	Fine
21/11/2022	9:20	27	41	32	Cloudy
22/11/2022	9:05	51	46	39	Cloudy
<b>Average</b>		46.2			
<b>Max</b>		172			
<b>Min</b>		19			






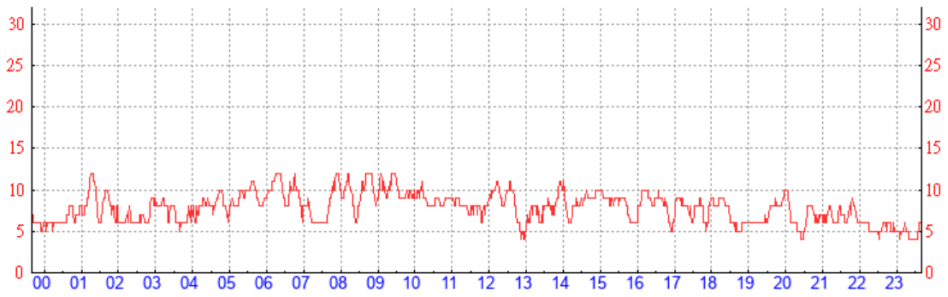




## Appendix C

Wind Data at Ta Kwu Ling  
Automatic Weather Station collected  
by the Hong Kong Observatory

# Wind Data at Ta Kwu Ling Automatic Weather Station

Date	Wind Speed
09/11/2022	<p>(公里/小時) (於香港時間09/11/2022 23 時 40 分更新) ( Updated at 23:40H on 09/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
10/11/2022	<p>(公里/小時) (於香港時間10/11/2022 23 時 40 分更新) ( Updated at 23:40H on 10/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
11/11/2022	<p>(公里/小時) (於香港時間11/11/2022 23 時 40 分更新) ( Updated at 23:40H on 11/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
12/11/2022	<p>(公里/小時) (於香港時間12/11/2022 23 時 40 分更新) ( Updated at 23:40H on 12/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>

Date	Wind Speed
13/11/2022	<p>(公里/小時) (於香港時間13/11/2022 23 時 40 分更新) ( Updated at 23:40H on 13/11/2022 ) (km/h)</p>  <p>TKLC ©香港天文台 Hong Kong Observatory</p>
14/11/2022	<p>(公里/小時) (於香港時間14/11/2022 23 時 40 分更新) ( Updated at 23:40H on 14/11/2022 ) (km/h)</p>  <p>TKLC ©香港天文台 Hong Kong Observatory</p>
15/11/2022	<p>(公里/小時) (於香港時間15/11/2022 23 時 40 分更新) ( Updated at 23:40H on 15/11/2022 ) (km/h)</p>  <p>TKLC ©香港天文台 Hong Kong Observatory</p>
16/11/2022	<p>(公里/小時) (於香港時間16/11/2022 23 時 50 分更新) ( Updated at 23:50H on 16/11/2022 ) (km/h)</p>  <p>TKLC ©香港天文台 Hong Kong Observatory</p>

Date	Wind Speed
17/11/2022	<p>(公里/小時) (於香港時間17/11/2022 23 時 40 分更新) ( Updated at 23:40H on 17/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
18/11/2022	<p>(公里/小時) (於香港時間18/11/2022 23 時 50 分更新) ( Updated at 23:50H on 18/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
19/11/2022	<p>(公里/小時) (於香港時間19/11/2022 23 時 40 分更新) ( Updated at 23:40H on 19/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
20/11/2022	<p>(公里/小時) (於香港時間20/11/2022 23 時 50 分更新) ( Updated at 23:50H on 20/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>

Date	Wind Speed
21/11/2022	<p>(公里/小時) (於香港時間21/11/2022 23 時 50 分更新) ( Updated at 23:50H on 21/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
22/11/2022	<p>(公里/小時) (於香港時間22/11/2022 23 時 50 分更新) ( Updated at 23:50H on 22/11/2022 ) (km/h)</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>

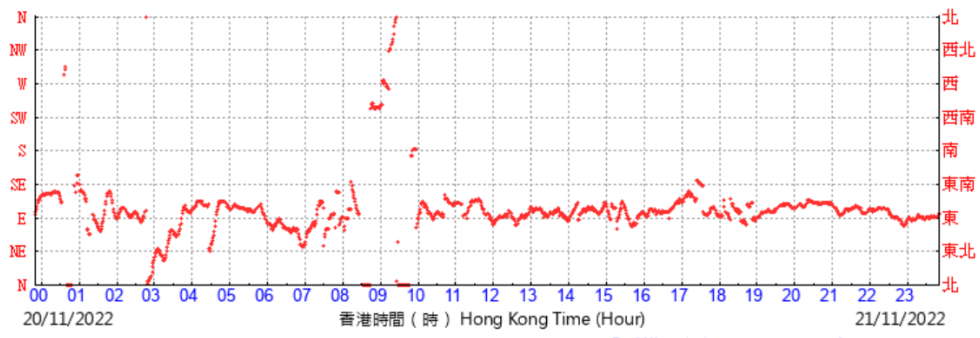
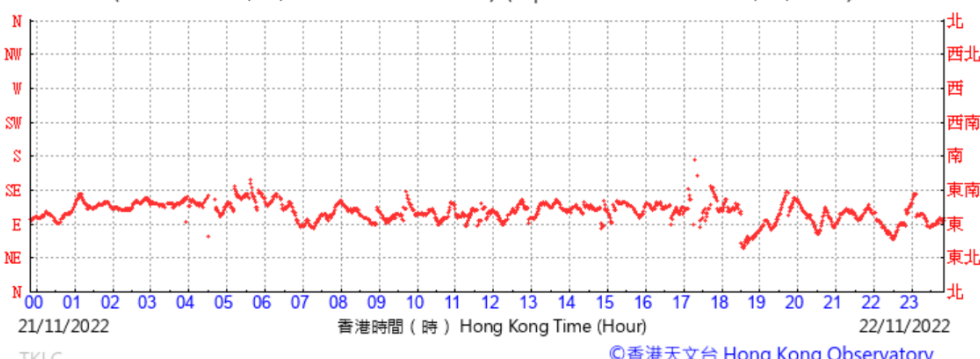
# Wind Data at Ta Kwu Ling Automatic Weather Station

Date	Wind Direction
09/11/2022	<p>(於香港時間09/11/2022 23 時 40 分更新) ( Updated at 23:40H on 09/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
10/11/2022	<p>(於香港時間10/11/2022 23 時 40 分更新) ( Updated at 23:40H on 10/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
11/11/2022	<p>(於香港時間11/11/2022 23 時 40 分更新) ( Updated at 23:40H on 11/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
12/11/2022	<p>(於香港時間12/11/2022 23 時 40 分更新) ( Updated at 23:40H on 12/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>



Date	Wind Direction
13/11/2022	<p>(於香港時間13/11/2022 23 時 40 分更新) ( Updated at 23:40H on 13/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
14/11/2022	<p>(於香港時間14/11/2022 23 時 40 分更新) ( Updated at 23:40H on 14/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
15/11/2022	<p>(於香港時間15/11/2022 23 時 40 分更新) ( Updated at 23:40H on 15/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
16/11/2022	<p>(於香港時間16/11/2022 23 時 50 分更新) ( Updated at 23:50H on 16/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>

Date	Wind Direction
17/11/2022	<p>(於香港時間17/11/2022 23 時 40 分更新) ( Updated at 23:40H on 17/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
18/11/2022	<p>(於香港時間18/11/2022 23 時 50 分更新) ( Updated at 23:50H on 18/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
19/11/2022	<p>(於香港時間19/11/2022 23 時 40 分更新) ( Updated at 23:40H on 19/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>
20/11/2022	<p>(於香港時間20/11/2022 23 時 50 分更新) ( Updated at 23:50H on 20/11/2022 )</p> <p>TKLC ©香港天文台 Hong Kong Observatory</p>

Date	Wind Direction
21/11/2022	<p>(於香港時間21/11/2022 23 時 50 分更新) ( Updated at 23:50H on 21/11/2022 )</p>  <p>TKLC ©香港天文台 Hong Kong Observatory</p>
22/11/2022	<p>(於香港時間22/11/2022 23 時 50 分更新) ( Updated at 23:50H on 22/11/2022 )</p>  <p>TKLC ©香港天文台 Hong Kong Observatory</p>